MỤC LỤC

ẢNH HƯỞNG CỦA ĐẶC ĐIỂM HỘ ĐẾN CHUYỂN DỊCH LAO ĐỘNG NÔNG THÔN NGHIÊN CỨU ĐIỂN HÌNH TẠI HUYỆN ĐẠI TỪ TỈNH THÁI NGUYÊN

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Tóm tắt

Nghiên cứu này tập trung vào vấn đề lao động và việc làm ở khu vực nông thôn, các đặc điểm hộ và những vấn đề liên quan khác như thu nhập và tiêu dùng của hộ gia đình, sử dụng đất và điều kiện sống của các hộ gia đình. Địa điểm nghiên cứu là huyện Đại Từ thuộc tỉnh Thái Nguyên. Và tiến hành khảo sát 180 hộ gia đình ở tại hai xã được lựa chọn và kết hợp với việc chọn mẫu ngẫu nhiên. Trong nghiên cứu,này mô hình Tobit cũng sẽ được áp dụng để làm rõ tác động của các đặc điểm hộ gia đình đến chuyển dịch lao động ở khu vực nông thôn.

Từ khóa: *Chuyển dịch lao động, hoạt động nông nghiệp, hoạt động phi nông nghiệp, thay đổi cơ cấu, Tobit, Đại Từ, Thái Nguyên, Việt Nam.*

IMPACT OF HOUSEHOLD CHARACTERISTICS ON LABOR MOBILITY IN RURAL AREA: CASE STUDY IN DAI TU DISTRICT, THAI NGUYEN PROVINCE
Abstract
This research focused on rural employment, the characteristics of personality, household income and consumption, land use and living conditions of households. The research location is Dai Tu district in Thai Nguyen Province. 180 household surveys in two intentionally chosen communes were conducted following the combination method of purposive sampling and random sampling. In the research, the simple Tobit model was applied to find out the impact of household characteristics on labor mobility in rural area..

Keyword: *Labor mobility, farm activity, non-farm activity, structural change, Tobit, Dai Tu, Thai Nguyen, Vietnam.*

JEL classification: D1; D13; H13; J1

1. Introduction

In Vietnam, before the economic reform of 1986, agriculture played an important role in the country's economy. According the Vietnamese general statistics office, in 1986 the rural resident accounted for over 80% of the population, while the GDP contribution from agriculture was 38%. However, after the economic reform in 1986 and the trade embargo ended in 1994, Vietnam has strongly developed in economics, politics and society in general. During the last 25 years, Vietnam has made significant achievements. The annual GDP growth increased on an average of 7% between 1986 and 2008 (Brian and Nina, 2013) and 6% between 2008 and 2018 (The World Bank). This economic progress led to a drastic shift in the composition of Vietnam's GDP, as economic activities shifted away from agriculture toward services and manufacturing.

There are many determinants which impacts on the labor mobility, but household characteristics is one of important factor. Recently in Vietnam, there has been research which has mentioned this problem, but it was not very persuasive. Some of it only focused on the macro approach and skipped all micro and internal factors, while others research did not give empirical evidence.

In addition, some studies by the Vietnamese Ministry of Agriculture and Rural Development (VMARD) have examined structural economic change in agriculture in Vietnam. Some of these studies are "solutions of structural change in agricultural production to improve the productivity of land use", "researching on policy recommendation for structural change in the agriculture and the rural", and "researching on the relationship between the economic structure of rural and farm's income in the Red River Delta". Likewise, the Ministry of Planning and Investment of Vietnam (MPIV) has conducted other studies on economic transformation in agriculture; however, all were conducted as an overview report for internal circulation, and the determinants of labor mobility were not analyzed. Therefore, this research will therefore provide some empirical analysis to clarify the correlation between household characteristics and labor mobility. The research intends to analyze the household characteristics which influence participation of rural labor in non-farm activities in order to determine the role of each factor.
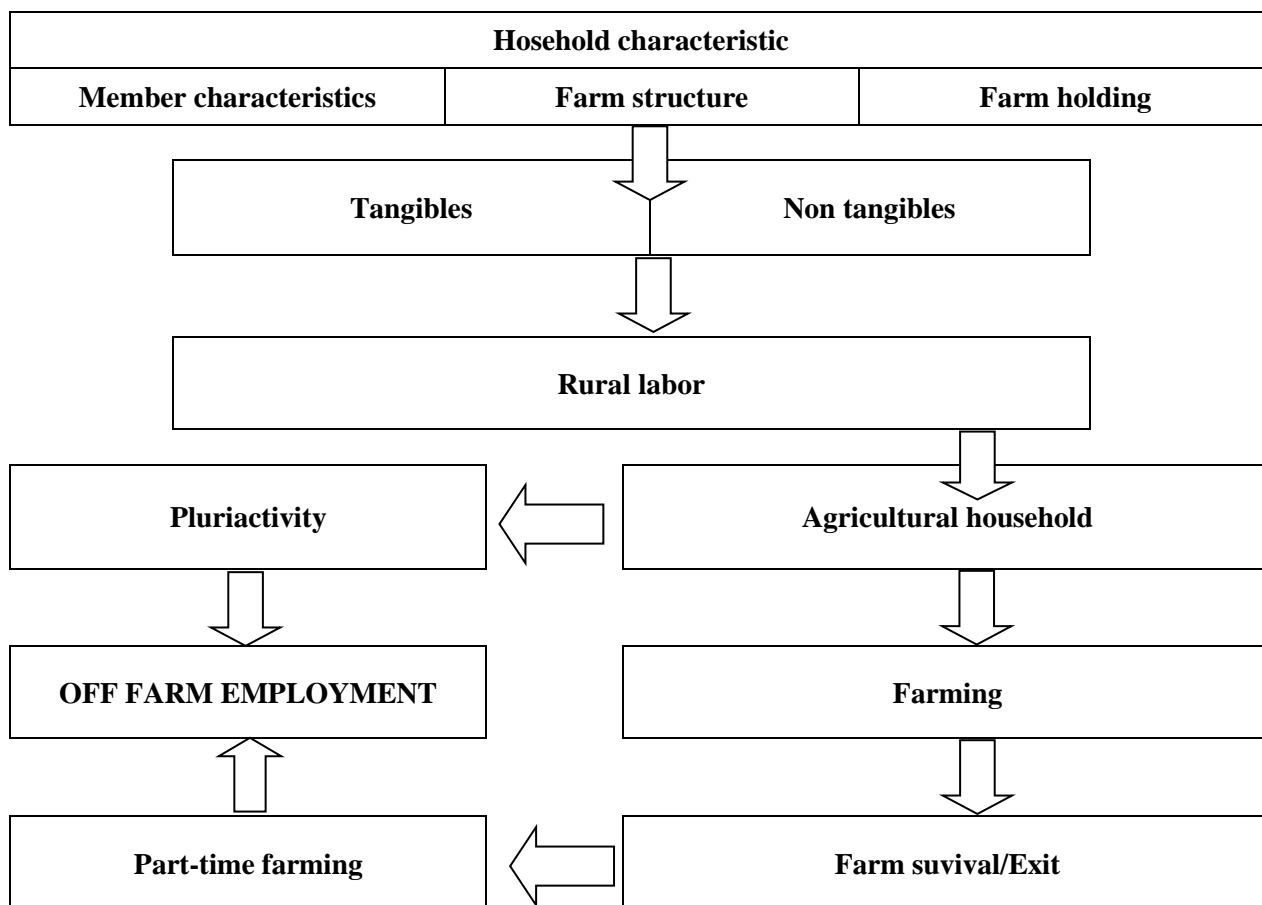
Figure 1. Conceptual frame work

Source: Adapted from JUDITH M. et al., 2011

2. Methodology

2.1. Conceptual framework

Individual characteristics of agricultural household members

Individual characteristics affect the decision-making in rural households. These individual characteristics are age, education, gender, individual's status, and health status in the household. As the dimensions of structural change are interrelated, individual characteristics can affect other dimensions of structural modification, such as farm survival and growth, specialization of agricultural production and diversification (JUDITH M. et al., 2011).

Characteristics household structure

Household structure is another factor affecting restructuring of the agricultural transformation. Modern life leads to major changes in the family structure in many countries, where in the past, women played a very limited role in the family, today they represent a more important role and have become the family's main source of labor. Besides, the birth rate also tends to decrease as the number of children in families tends to fall while the average labor age is increasing. In addition to the gender and age of labor, factors such as the number of household members, the dependency ratio, and the annual working units also play a significant role in the process of household decision-making (JUDITH M. et al., 2011).

Characteristics of farm holdings

Most of empirical research dealing with the agricultural holding focuses on the economic implication of the household. Theoretically, farm income is the most favorable approach, however sometimes it is difficult to calculate the farm income thus the researchers usually use the farm revenues as a substituted indicator. Otherwise, the size of agricultural holdings and farm production type would be other indices to analyze (JUDITH M. Et al., 2011).

2.2. Tobit model

The Tobit regression will clarify the determinant factors which affect the decision of participation in farm activity, non-farm activity or part-farming. In the Tobit model, the factors of individual characteristics of agricultural household members, agricultural holdings, and household structure will be estimated. Efficiency

and productivity is an estimated variable, but calculating the productivity for a household is complex. Especially, using the traditional method, productivity is measured by the output divided by input, however, this method contains a limitation. Normally, the productivity measurement consists of multi inputs and outputs. In the household, the inputs and outputs are not uniform. For example: Income, farm size, production, education, and working hours. Therefore, measurement of household productivity is very complex and challenging. In addition, by using the traditional measurement, the productivity would be correlated with another variable in the Tobit regression.

The Tobit model is demonstrated following the formulation below:

$y_i^* = X_i\beta + \epsilon_i$

X_i is the household propensity to earn income from a certain source, is a matrix of variables such as household asset endowments, household characteristics, institutions and location characteristics, which describe the potential benefits of participating in various activities, β is a parameter vector to be estimated, ϵ is a random disturbance term. The model assumes that $\epsilon_i \sim N(0, \sigma^2)$.

Y* is a latent variable that is observed for values greater than τ and censored otherwise. The observed y is defined by the following measurement equation:

$$yi = \begin{cases} y^* & if \ y^* > T \\ T_y & if \ y^* \leq T \end{cases}$$

In the typical Tobit model, we assume that $\tau = 0$ i.e. the data are censored at 0. Thus, we have:

$$yi = \begin{cases} y^* & if \ y^* > 0 \\ 0 & if \ y^* \leq 0 \end{cases}$$

The coefficients of activity income are estimated by the maximum likelihood estimation and the log-likelihood function for the Tobit model is expressed as follows:

$$lnL = \sum_{i=1}^{N} \left\{ di\left(ln\sigma + ln\phi\left(\frac{yi - Xi\beta}{\sigma}\right)\right) + (1 - di)ln\left(1 - \phi\left(\frac{Xi\beta}{\sigma}\right)\right) \right\}$$

Where, Φ is the Cumulative Density Function (CDF) of the standard normal distribution function; Here the first part of the likelihood function is essentially the classical regression model for the non-zero observations, while the second half represents the probabilities for the censored observations. The maximum likelihood estimator has the

desirable properties of being both consistent and asymptotically efficient.

The explanatory variables used for the analyses are grouped into the individual characteristics of agricultural household members, agricultural holdings, and household structure. The individual characteristics of agricultural household members include age, sex, health status, and education. The agricultural holdings include farm size, household income, household expenditure, current job of household head, efficiency, saving and total assets. The farm structure contains livestock income in total, sex ratio and the ratio of active labor in total numbers.

A household survey has been conducted, which focuses on the rural employment, and relates to the characteristics of personality, household income and consumption, land use and living condition of the household. Research location is a Dai Tu district in Thai Nguyen province. 180 household surveys in two intentionally chosen communes were conducted following a combination method of intentional sampling and casual sampling. The venue contains 2 communes which are Cu Van and Van Yen. The location might be a determining factor of labor mobility, therefore two separated communes have been chosen. Cu Van is located near the Thai Nguyen City, while Van Yen is 30km from the Thai Nguyen City, in which Cu Van has higher living condition compare with Van Yen.

3. Data and overview of venue

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Table 1: *The overview of collected data in the venue, 2017*

Indicators	Explanation	Min.	Max.	Mean
Total family members	Person	1.00	7.00	3.86
Share of Active labor	Proportion	0.33	1.00	0.68
Labor head health status	Range score	1.00	4.00	2.52
Household head job (Dummy variable)	1nonfarm activity, 0 farm activity	0.00	1.00	0.85
Average age of active labor	Year old	24.50	73.00	37.40
Sex ratio of active labor	Male/female	0.00	4.00	1.24
Average year of school	Years	3.00	13	7.53
Average work hours (per day)	Hours/person	3.75	12	8.20
Average day off (per week)	Days/person	0.50	4	1.49
Total farm area	m^2	130	144900	3646
Annual crop area	m^2	0.00	5400	1517
Net income of crops	1000 Dongs	-1350	88773	10357
Net Livestock income	1000 Dongs	-6500	152000	8228
Net income per plot	1000 Dongs	-4713	23170	2807
Farm activity net income	1000 Dongs	-2880	160900	18585
Farm activity revenue	1000 Dongs	0.00	315000	32691
Non-farm activity revenue	1000 Dongs	0.00	282000	57416
Household saving	1000 Dongs	-170156	225330	24239
Labor income	1000 Dongs	-700.00	116450	30412
Expenditure per member	1000 Dongs	1155	58800	13654
Main current assets	1000 Dongs	2500	131000	39408
Efficiency	%	62	100	78
Ratio of non-farm activity	Proportion	0.00	1.00	0.51

Source: The author's calculation based on surveyed data

Table1 provides basic information of the household, which relates to farm characteristics, household labor, farm efficiency, and characteristics of a household member. In the table, the farm size has been shown with an area of 0.36 ha in average, approximately 4 members per household and 68% of the population is involved in active labor. In total labor of the venue, there is 51% of labor participation in non-farm activities, and non-farm activities bring the main income to the household. The labor income achieves the average level of 31,000,000 dongs (equal to 1550 USD) per year in rural areas (in Table 1, labor income is 30,412,000 Dongs). In general, there is no significant difference compared to other rural areas in Vietnam. However, one of problems is the low level of education and unskilled labor. Located in the third biggest education center in Vietnam, there are only seven people with a bachelor degree in a total of 4303 laborers in the two communes, moreover, 95% of laborers are unskilled (DTSO, 2012), it is 93.3% in the survey. Therefore, education is expected to be a determinant factor which effects labor mobility.

Another indicator is efficiency, which is measured by the DEA model. Result shows that the average level of household efficiency is 78%. In the DEA model, there are 18 households which are the most productive and effective to be considered at a level of 100% efficiency. They determine a frontier line, and the efficiency of other households was measured by estimating the distance to the frontier line.

4. Result discussion

The Table 2 showed the result of the Tobit estimation (includes only significant variables), in which the significant variables are determinant factors which influence the non-farm activity labor proportion.

Table 2: Impact of household characteristics on labor mobility

Indicators	Coefficients	
Year of school	.0307744	*
Household head job	.4164708	***
Labor average work hour	.0971248	**
Farm activity revenue	5.55e-06	***
Non-farm activity income	4.62e-06	**
Household expenditure	-2.60e-06	**
Household saving	-3.91e-06	*
Efficiency	1.292035	***
Income per plot	-.0000574	***
Labor health status	-.1196751	**

*, ** *and* *** *indicate statistical significance at 10, 5 and 1% probability levels, respectively.*

Source: The author's calculation based on surveyed data

The dependent variable is the proportion of non-farm activity participation in the household which is defined by the range value from "0" to 1, in which 0 is 100% of household labor participation in farm activity, and "1" is 100% of household labor which is in non-farm activity, the value in between is considered as mixed activity and the higher value is a higher proportion of non-farm activity. Regarding the conceptual framework, the dependent variable is determined by a set of independent variables. After the rejection of some variable with high levels of correlation, there were 22 independent variables in the model.

The result of Tobit regression reflects that the proportion of labor activity participation is affected by 10 independent variables, which are years of school, house head's job, Labor average working hours, farm activity income, non-farm activity income, household expenditure, household saving, income per plot, labor health status, and efficiency. With the Pseudo R^2 equal to 0.4250, which means 42.5% of the dependent variable is explained by those factors in the model. In this research, the internal factors determined 42.5% decision of non-farm activity participation. In addition, the decision of labor in farm or non-farm activities is explained by external factors and non-tangible internal factor, it is the reason for the low Pseudo R^2.

The non-farm activity proportion is not significantly impacted by normal factors like gender, age, location, and farm size. Normally there is a significant difference between ethnic groups regarding income, education and also labor allocation in Vietnam (IDS, 2008), however, in this research, with the small sample, the ethnicity is not significant.

In the resulting table, efficiency is the most effective factor which influences significantly the non-farm activity participation. Table 2 showed that, the non-farm activity households are more effective than the farm activity households are. However, in the mixed activity group, there is not much clear for the correlation. At the middle line of Table 2, the households have an equal share of labor participation, and the lowest efficiency household belongs to this group. In reality, the labor in these households' works in farming, but there is not enough farming work for them. Participation in non-farm activities would be only considered to fill up leisure time, therefore efficiency is not concerned here.

The research provides a particular picture for this statement, the efficiency of non-farm activity group is 83.45% the highest compared to other groups. The correlation of efficiency and decisions of non-farm participation can be explained by some basic ideas. First, the inequality between farm and non-farm activity income leads labor to move to non-farm activities which provide higher income. According to Thai Nguyen statistic Office, the agricultural labor productivity was at 9.39 million dongs, which is lower than the average level of all economic sectors (which was 26.69 million Dongs). Secondly, the low efficiency of agricultural labor might be caused by the laborers lacking work (underemployment) and they have a lot of free time. Thirdly, the poor experience in cultivation. An example for this statement is the most efficient households (score at a level of 100 %) are livestock households. Livestock such as swine and poultry production do not require much land and provide higher productivity, in addition, the fast rotation help to minimize the labor leisure.

The "labor education" level is measured by the average years of school of all laborers in the household. At the 10 % significant level, which showed that as average years of school increases, the intensity of non-farm labor increases. The impact of education on labor shifting out of agricultural toward non-agricultural sectors was discussed in much research (JUDITH M. et al. 2011). Nevertheless, its impact is different, which depends on regional features, level of economic development and historical and traditional conditions.

Farm and non-farm income have significantly and positively influenced the non-farm labor proportion in the household. In fact, the farm activity income might not be exactly measured because it contains the labor cost which cannot be separated. Therefore, in this research, the farm activity revenue has been taken as a replacement of income. In this case, the "non-farm activity" income positively influences the non-farm labor proportion and is easily interpreted by the attraction of high income in the non-farm sector to farm activity labors. For the "farm activity revenue", it is a surprise when the agricultural revenue in the extra farming household is higher than in the primary farming household. In reality, the extra farming households not only work in farming, but also invest intensively in agricultural cultivation. The non-farm income allows expanding the agricultural expenditures in fertilizes, new varieties, and other technologies, therefore, the productivity is increased, which would be the reason for higher agricultural revenue. In this point of view, the rural development policy should be concerned with rural credit, which could help to increase the productivity in agricultural. In reality, the decrease of agricultural labor proportion might not reflect the level of economic development to help agricultural laborers to increase their income and have a better life, which could really help the economic sustainable development.

Other variables, which positively influence the non-farm labor proportion, it includes "labor average work hours" and "household head's job". The "household head's job" is a dummy variable, in which "0" is farm activity and "1" is non-farm activity. This variable showed that, the decision of activity participation of family members is affected by the household head's direction. In fact, if the household head works in the non-farm activity, they will encourage their children to avoid agriculture. Meanwhile, the

children in farming households have to help their parents in agricultural cultivation. Therefore, the direction of household head is important for the children's future. For the "labor average work hours", farm activity labor has more leisure time than in non-farm labor, therefore they have to find other jobs to fulfill their leisure time. This is the reason for the positive influence of working time to the non-farm labor proportion.

There are four independent variables which significantly and negatively influence the non-farm labor proportion. Actually, "labor health status" is a positively influenced variable, but the inverse way of scoring health status created this problem. The health status is ranked from 1 to 5, in which 1 is very good and 5 is very bad. Therefore, in this case, the interpretation would be explained by the better health status having more chance to work in non-farm activities. According to DTSO (2012), the venue contains 95% of unskilled labor, therefore their non-farm jobs are only suited to physical work, which requires that they be strong. The fact is that the majority of young man are working in construction and mining in the research venue (from survey).

"Income per plot" is another negatively influenced variable, it is determined by the total agricultural income divided by the number of plots (1 plot is equal to 360 m^2), in which the income is measured by total agricultural revenue minus the agricultural expenditures (which doesn't include labor cost). In this research, the better performance in using agricultural land restrains the labor moving out of the agricultural sector. In other words, the low efficiency of land use leads to labor seeking non-farm activities to improve their income.

"Household saving" and "household expenditure" are both negatively influenced nonfarm ratio of the household. The "household expenditure" has not reflected exactly the correlation because the agricultural expenditure decided the significant difference between farm and non-farm groups (agricultural expenditure in the non-farm household is zero). For "household saving", it is interesting that the saving in the farm activity household is more than in the non-farm activity household. There are two ideals that would explain that statement. First, following the behavior of the worker in economic theory, uncertain income promotes the worker to save money. In reality, agriculture is influenced by climate, diseases, and market