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Individual-level employment transitions in rural Viet Nam

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WIDER Working Paper 2018/154

Individual-level employment transitions in rural Viet Nam

Quang-Thanh Ngo*

December 2018

Abstract: Structural transformation in rural areas is a key issue in economic development. While much of the literature on structural transformation has so far focussed on household- or commune levels or even higher aggregate levels, little is known about the individual member level. The paper aims at examining factors that affect the individual-level employment rural transitions in Viet Nam, namely: (1) non-transient farm; (2) positive transient farm; (3) out-of-wage transition; (4) transitory farm-household work; and (5) transitory wage-household work. By taking advantage of the Viet Nam Access to Resources Household Survey (VARHS) with data on 2,699 individuals for two years, 2008 and 2016, we find that individual-level human capital and social capital are important factors affecting employment transition status in the rural area. In addition, changes in individual and household characteristics and socio-economic conditions at commune level are important to influence various types of employment transitions.

These results have implications for the development policy on rural transition in developing countries, highlighting the importance of recognizing the positive aspects of changes in individual-, household-, and commune-levels for rural transformation. Promotion of education attainment is necessary at both individual- and household-level to spur the transition out of farming. Broadened policy mechanisms which support and encourage non-farm employment at the household level are also needed. Likewise, development initiatives that focus on increasing the human and social assets of the individual farmers and farming households are more likely to be successful in supporting livelihood diversification and reducing vulnerability.

Keywords: individual-level employment transitions, rural, Viet Nam

JEL classification: Q12, C21, C26, C33

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1 Introduction

Structural transformation in rural areas is a key issue in economic development and may take place at several levels (see, for example, Ellis and Harris 2004; Lanjouw and Lanjouw 2001; Reardon et al. 2001). At the micro-level, it can be the result of decision-making by individual households or even household members (see the most recent research, for example, Newman and Kinghan 2015). On the other hand, at the aggregate level such as a commune or province, government policies can affect the direction and speed of transformation (see, for example Ulrik 2015).

While a large number of studies on structural transformation so far focuses on household- or commune levels or even higher aggregate level—for example: Barrett et al. (2001), Berdegue et al. (2001), Bezemer and Davis (2002), Coppard (2001), Davis (2004), Deininger and Olinto (2001), Lanjouw and Lanjouw (2001), and Tarp (2015)—little is known about the individual member level (which is mostly due to a lack of suitable datasets). Households are differential by their members with different human, financial, and physical assets and economic activities involved and therefore by targeting at individual members of households as individual members of the rural society, policy can bring effective support to enhance the opportunities to participate into non-farm employment in the rural area.

This current study takes advantage of the Viet Nam Access to Resources Household Survey (VARHS) in 2008–16 with intensive information on individual-level employment. The final dataset is compiled by using the individual identification in combination with the information on age and gender, besides the common use of household identification and results in 2,699 individual-level observations in two years: 2008 and 2016. The current paper, thus, tries to examine the following research questions: (1) To what extent do individual characteristics determine patterns of structural transformation in the rural area at individual level in Viet Nam? and (2) What are the roles of changes in individual characteristics, household characteristics, and socio-economic conditions in determining patterns of structural transformation in the rural area at individual level in Viet Nam?

Our primary hypothesis is that: (1) individual characteristics play crucial roles in individual-level transition statuses, namely: (a) non-transient farm (persistent farm), (b) positive transient farm, (c) out-of-wage transition, (d) transitory farm-household work, and (e) transitory wage-household work; and (2) while initial individual characteristics have effects on individual-level transition status, changes in individual/household/commune characteristics are more powerful in determining patterns of structural transformation in the rural area at individual level in Viet Nam.

In general, this research has two objectives. First, it aims to contribute to the literature of employment transformation at the individual levels (a)–(d) previously described. To date, there has been very little analysis of employment transformation at individual level. Second, it provides evidence to deepen understanding of structural transformation in Viet Nam, particularly the factors that determine individuals' movements into and out of the farming sector, moving into the wage sector and household businesses and why some individuals remain in farming. It also points out the factors that determine individuals' movements into farming, wage/salary and household businesses.

We find that individual-level human capital characteristics (such as gender, marital status, age, education attainment), and social capital are important factors affecting transition status in the rural area. In addition, changes in individual, household characteristics and socio-economic conditions at commune level are very important to influence various types of employment transition. Specifically, individual-level changes in education attainment, such as upper secondary

school, are more likely to move persons from household work to wage, while persons with household-level changes in the proportion of attaining lower secondary school are less likely to stay in persistent farming. In addition, with regard to changes in demographic characteristics, individuals in households with an increase in the number of working-age members are less likely to choose to be in persistent farming and to move from agriculture to wage. Moreover, individuals in households with a higher ratio of children under 16 and elderly members are less likely to choose to move from household work to wage. Besides, with respect to changes in social capital, individuals in households with Communist Party of Viet Nam (CPV) members are more likely to choose to move out of wage to farming or household business. In addition, individuals in households with a political network are more likely to choose to move from household work to farming. On top of that, regarding changes in land, individuals in households with increased land are less likely to choose to move out of wage to farming or household business. In addition, individuals in households with land loss are more likely to choose to move from household work to wage. Regarding changes in commune characteristics, individuals in communes with changes due to natural shocks such as a typhoon are less likely to choose to move from farming to wage.

The rest of the paper is organized as follows. Section 2 describes the dataset. Section 3 presents the methodology. Section 4 discusses the empirical results. Section 5 concludes with suggestions for policy consideration and future research.

2 Dataset

2.1 Data source

The data on diverse aspects of rural employment were collected from VARHS datasets. VARHS is a result of a joint project conducted by the Central Institute for Economic Management (CIEM) of the Ministry of Planning and Investment (MPI), the Centre for Agricultural Policy Consulting (the Institute of Policy and Strategy for Agriculture and Rural Development - CAP-IPSARD), which belongs to the Ministry of Agriculture and Rural Development (MARD), the Institute of Labour Science and Social Affairs (ILSSA, under the Ministry of Labour, Invalids and Social Affairs - MoLISA), and the Development Economics Research Group (DERG) of the University of Copenhagen, together with Danida.

The VARHS surveys were designed as collaborative research efforts with the explicit objective of being complementary to the large and nationally representative Viet Nam Household Living Standards Survey (VHLSS) conducted biennially by the General Statistics Office (GSO). Many households surveyed in the VARHS have also been surveyed in the VHLSS. The VARHS thus focuses on building on the substantial database already being collected in the VHLSS, with a specific focus on collecting data and gaining an understanding of the access and interaction of rural Vietnamese households with the markets of land, labour, and employment. The employment module consists of individual-level information on types of jobs (i.e. farming, non-farm or non-agriculture), and information on demographic characteristics, education, occupation, and industry for all employed persons.

The VARHS was carried out in the rural areas of twelve provinces in Viet Nam: (1) four (ex-Ha Tay, Nghe An, Khanh Hoa and Lam Dong); (2) five (Dak Lak, Dak, Nong, Lao Cai, Dien Bien and Lai Chau); and (3) three (Phu Tho, Quang Nam and Long An). These three province groups represent the main geographical differences in Viet Nam. By using VARHS in five years 2008, 2010, 2012, 2014, and 2016, the research gains a dataset of 1,258 individuals in two years: 2008 and 2016.

2.2 The sample

From a truly unique five-wave panel of rural household-level dataset in 2008–16 with 2,131 observations in Viet Nam and a five-wave panel of rural commune-level dataset in 2008–16 with 2,090 observations, we construct a sample of individual-level employment transitions in two years, 2008 and 2016, with 2,699 observations. The procedures are as follows:

Step 1: Separate individual-level datasets are created: 2008 (with 9,009 observations), 2010 (8,934), 2012 (8,379), 2014 (8,222), and 2016 (7,979 observations). Information includes position in the household, marriage status, gender, age, political-social membership, educational level, and employment status. Individual-level employment statuses include, exclusively: (1) wage/salary, (2) agriculture, (3) household business, (4) common properties resources. Individual-level employment statuses also includes: (5) household work, and (6) unemployed, which are not necessarily exclusive from each other. Household identification (including codes of province, district, commune, and household) is also kept.

Step 2: Using a combination of the age and gender as an individual identification, besides the common use of household identification, a consolidation of individual-level datasets with household- and commune-level dataset is conducted. At this stage, several yearly household identifications have been used and finally, a five-wave and individual-level panel dataset with a maximized number of observations of 5,072 is obtained. The process goes further by dropping duplicated observations determined by a combination of household identification, individual identification, and age information in five waves of surveys, and the final five-wave and individual-level panel dataset have 4,611 observations. This dataset contains individuals who come from different households and belong to the same households as well.

Step 3: A sample of individual-level employment transitions between 2008 and 2016 is derived from the full set of five-wave and individual-level panel dataset of 4,611 observations. As a transitional stage, a sample including only individuals in 2008 who belong to one of these statuses: (1) farming, (2) household business, (3) wage/salary, and (4) household work, is refined and resulted in 2,699 observations. Employment transitions then are defined as follows:

- (1) non-transient farm (or persistent farm), defined as an individual to be in agriculture throughout the survey period (i.e., individual in agriculture in 2008, 2010, 2012, 2014 and in 2016);
- (2) positive transient farm, defined as an individual moving from agriculture and to be employed in wage/salary sector (i.e., individual in agriculture in 2008 and in wage/salary sector between 2010 and 2016);
- (3) out-of-wage transition, defined as an individual to move from wage to farming or to household business (i.e., individual in wage/salary in 2008 and in farming or household business between 2010 and 2016);
- (4) transitory farm-household work, defined as an individual to move from household work to agriculture (i.e., individual in household work in 2008 and in agriculture between 2010 and 2016), and;
- (5) transitory wage-household work, defined as an individual to move from household work to wage (i.e., individual in household work in 2008 and in wage/salary sector between 2010 and 2016).

More detailed definitions of terminology and sample descriptions are presented in Section 3.1. At the end of that stage, a sample of individual-level employment transitions between 2008 and 2016 with 2,698 observation is created and employed in the following sections. The final dataset

contains individuals who come from different households as well as individuals who belong to the same households.

3 Methodology

3.1 Definitions

In our definition, employment includes: (1) working for a wage/salary outside the household; (2) participating in household production related to agriculture, forestry and aquaculture (or farm); (3) doing trading, services, transportation, or other business (self-employed) for the household (or non-farm, non-wage activities, not housework); (4) using common property resources to generate income for the household (hunting, fishing in the sea or lakes not on your property, gathering honey and berries, gathering forestry products etc.); (5) doing housework or chores (cleaning, collecting firewood, washing clothes, cooking, etc.).

The current study follows the ‘spell’ approach, which is widely used in poverty studies in identifying and measuring chronic and transient poverty (income- and consumption-based poverty) on the basis of panel data (Yaqub, 2000). The spell approach focuses on the number or length of spells of poverty experienced by households (Hulme and Shepherd, 2003).

The spell approach, in the current paper, is employed by categorizing employment transitions in rural Viet Nam as non-transient farm (or persistent farm, defined as an individual to be in agriculture throughout the survey period), positive transient farm (defined as a farming individual to be employed in wage/salary sector), out-of-wage transitory (defined as an individual to move from wage to farming or to household business), transitory farm household work (defined as an individual to move from household work to agriculture), and transitory wage household work (defined as an individual to move from household work to wage) (Table 1).

Table 1: Definitions of transitions in the rural area

Transition type	2008-2016
Non-transient farm	Farm during the whole period
Positive transient farm	Agriculture to wage/salary
Out-of-wage transition	Out of wage/salary to farming or to household business
Transitory farm household work	HH work to agriculture
Transitory wage household work	HH work to wage/salary

Source: Authors' compilation from VARHS 2008–16.

In practice, persistent farm is defined as an individual to be in agriculture throughout the survey five-wave period. We, in addition, define in general negative transient if individuals with times of being out of agriculture larger than that of being in agriculture (1 time in 4 waves), and positive transient if individuals with times of being out of agriculture equal to or larger than that of being in agriculture (from 2 times in 4 waves). Therefore, transitory farm is defined as both negative transient and positive transient for those individuals who have at least one time in wage/salary sector, positive farm is defined as both negative transient and positive transient for those individuals who own or are involved in the household business) (Table 2).

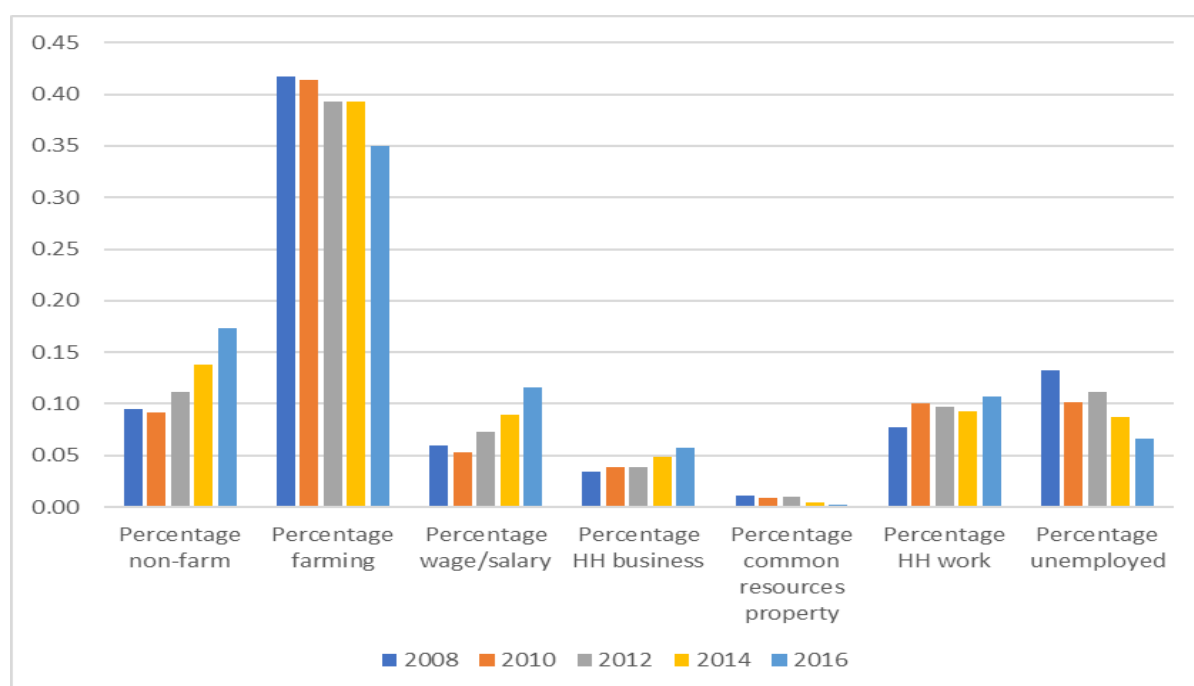
Table 2: Definition of transitions from agriculture

Type of transition from agriculture	Feature	Definition	
(1) persistent farm	An individual persistently in agriculture	Individuals are in agriculture throughout the survey period	
(2) Non-persistent		Positive transient	Negative transient
(a) transitory non-persistent farm	Individual moves from farm to be employed in wage/salary sector	Individuals with times of being in wage/salary sector equal to or larger than that of being in agriculture (from 2 times in 4 waves, from 2010).	Individuals with times of being in wage/salary sector larger than that of being in agriculture (1 time in 4 waves, from 2010)
(b) positive non-persistent farm	Individual who owns or is involved in the household business	Individuals with times of being in the household business equal to or larger than that of being in agriculture (from 2 times in 4 waves, from 2010).	Individuals with times of being in the household business larger than that of being in agriculture (1 time in 4 waves, from 2010)

Source: Author's compilation from VARHS 2008–16.

Figure 1 reports some summary statistics relating to individuals' employment status for individuals included in the five-wave panel, treating the different waves as separate cross sections. The first column shows that the proportion of non-farm employment increases gradually over time with about 1.5 per cent per year. Income diversification and diversification of activities are important trends in rural of Viet Nam.

Figure 1: Statistic description of transition status, 2008–16



Source: Author's calculation from VARHS 2008-16.

The next set of columns relates to the proportion of individuals involved in certain activities. A large majority of individuals work as farmers in each of the years. However, the proportion does decline gradually over time with about 2 per cent per year. In the third column, the proportion of wage/salary increases in the period of 2008–16 with about 2 per cent per year in the latest 3 years, namely 2012, 2014, and 2016. In the fourth column, the proportion of household enterprises increases in the period of 2008–16 with less than 1 per cent per year. In the fifth column, the proportion of engagement in common resource property decreases in the period of 2008–16 until

nearly zero percent. The last column in Figure 1 relates to the percentage of unemployment with a decline of nearly 1 per cent per year during the period. In general, what is clear from Figure 1 is the importance of non-farm activities from the individual level. That in itself is a signal of the success of rural transformation in Viet Nam. However, the analysis to date is only conducted at an aggregate level and does not exploit the panel features of the data set; the remainder of this paper now analyses these three activities separately and in more detail.

3.2 Methods of analysis

The current paper estimates the determinants of the individual-level employment transitions. The model is identified as follows (Model 1):

$$Trans_{ijk} = \{INDI_i^0\alpha + INCOME_j^0\beta + \alpha_k + u_i + e_{ijk} \geq 0\} \quad (1)$$

Where: the script ijk denotes individual i in household j and commune k . While 0 denotes the year 2008, 1 denotes the year 2016. α_k is cluster specific effect which change across clusters and it is assumed that $\alpha_k \sim [0, \sigma_k^2]$. ε_{ijk} has zero mean and constant variance, and u_i is an individual specific fixed effect.

Trans is individual's transitions in the rural area as defined in Table 1, in which: 1 is non-transient farm, 2 is positive transient farm, 3 is out-of-wage transition, 4 is transitory farm household work, 5 is transitory wage household work).

INDI is a vector of individual characteristics in 2008, including marital status, age, and educational attainment, social capital (social network), according to Walter and Heinrichs (2015), Simoes et al. (2016), Liu and Liu (2016), Barrett et al. (2001), Coppard (2001), Deininger and Olinto (2001), Reardon et al. (2001), and Reardon (1997). A positive and significant association between education levels and non-farm income at individual level has been empirically established in different developing country contexts (see for example: Barrett et al. 2001; Coppard 2001; Deininger and Olinto 2001; Reardon et al. 2001). Better educated individuals are likely to possess skills which facilitate successful involvement in non-farm activities, including the ability to manage a business, process relevant information, adapt to changing demand patterns, and liaise with public and private service providers. They are also likely to have greater aspirations with regard to working outside agriculture. Being married and having young children and elderly parents is likely to reduce the propensity of females participate in the labour market. Nevertheless, the availability of domestic help can enable mothers to go out to work. In contrast, being married, being heads of households, and having children and elderly parents are likely to compel males to participate in the labour market.

INCOME is household income in 2008 (Barrett et al. 2001; Coppard 2001; Deininger and Olinto 2001; Reardon et al. 2001; Reardon 1997).

The factors affecting the probability of choosing a particular employment status could also affect the probability of choosing another type of employment. Consequently, the error terms of employment choice functions are correlated. This unique characteristic requires the application of the so-called seemingly (un)related regression (SURE) model (Zellner 1962; Zellner 1963). The SURE model is developed to be joint estimates from several regression models, where the error terms associated with the dependent variables are assumed to be correlated across the following equations. Therefore, the empirical model of employment transition includes a set of five simultaneous equations which can be further elaborated as follows:

$$\begin{cases} Trans_{ijk1} = INDI_{i1}^0\alpha + INCOME_{j1}^0\beta + \alpha_k + u_i + e_{ijk1} \\ Trans_{ijk2} = INDI_{i2}^0\alpha + INCOME_{j2}^0\beta + \alpha_k + u_i + e_{ijk2} \\ Trans_{ijk3} = INDI_{i3}^0\alpha + INCOME_{j3}^0\beta + \alpha_k + u_i + e_{ijk3} \\ Trans_{ijk4} = INDI_{i4}^0\alpha + INCOME_{j4}^0\beta + \alpha_k + u_i + e_{ijk4} \\ Trans_{ijk5} = INDI_{i5}^0\alpha + INCOME_{j5}^0\beta + \alpha_k + u_i + e_{ijk5} \end{cases}$$

The second objective of the current study is to examine the roles of changes in individual characteristics, household characteristics, and socio-economic conditions in determining patterns of structural transformation in the rural area at individual level in Viet Nam. Therefore, we seek for the effects of changes related to individual, household, and commune characteristics between 2008 and 2016, respectively. A set of alternative models of transitions in rural area are named as Model 1a, 1b, and 1c as follows:

$$Trans_{ijk} = \{INDI_i^0\alpha + INCOME_j^0\beta + \Delta INDI_i^{1-0}\delta_1 + \alpha_k + u_i + e_{ijk} \geq 0\} \quad (1a)$$

$$Trans_{ijk} = \{INDI_i^0\alpha + INCOME_j^0\beta + \Delta HHC_i^{1-0}\delta_2 + \alpha_k + u_i + e_{ijk} \geq 0\} \quad (1b)$$

$$Trans_{ijk} = \{INDI_i^0\alpha + INCOME_j^0\beta + \Delta COME_i^{1-0}\delta_3 + \alpha_k + u_i + e_{ijk} \geq 0\} \quad (1c)$$

in which, $\Delta INDI_i^{1-0}$, ΔHHC_i^{1-0} , and $\Delta COME_i^{1-0}$ are vectors of changes in individual characteristics (INDI), household characteristics (HHC), and community characteristics (COM) during 2008–16, respectively. The initial variables represent the individual conditions ($INDI_i^0$) and changes in individual characteristics ($\Delta INDI_i^{1-0}$), changes in household characteristics (ΔHHC_i^{1-0}), and changes in community characteristics ($\Delta COME_i^{1-0}$) as well may change the transition status in the future. For example, farms decide to be non-farms after changing their marital status or furthering their education. Meanwhile, a new policy issue might make the farms become non-farms.

HHC is a vector of household characteristics, including age of working-age members, the ratio of children, number of working-age members, and number of Vietnamese communist party member, shares of education levels among household members, social capital (social network), land endowments (land ownership in hectares), size of living house (in square metres), access to credit, and access to government transfer (see for example: Fafchamps and Minten 1998; Montgomery 1991; Rozelle et al. 1999; Banerjee 1983; Wu and Zhou 1996; Nee 1996; Bezemer and Davis 2002; Davis 2004; Coppard 2001; Rennings et al. 2001; Liu et al. 2018; Martin and Lorenzen 2016; Rigg et al. 2018; Sackey 2018).

COM is a vector of the climate variability, which is represented by the number of weather shocks (Doss et al. 2008; Povel 2015) that the commune has experienced during the last three years (Barrett, 2014).

4 Empirical analysis and discussions

4.1 Description of the data

Table 3 presents an overall picture of rural transition during 2008–16, which is based on the 2,699 individuals in the five-wave panel between 2008 and 2016, looking in particular at the extent to which individuals move within a number of activities, namely: farming, wage, household business,

and household work. While individuals persistently engaged in agriculture is dominant in the sample (16.30 percent), Table 3 shows variations of other activities by individuals. Individuals moving from agriculture to wage account for 4.56 per cent, while moving to household work is 13.78 per cent in the sample. Similarly, individuals moving from wage to household work also account for 13.78 per cent in the sample. Individuals moving from wage to both farming and household business are about 3.78 per cent. During the period, there are 7.97 per cent of individuals moving from household to farming, and 3.74 per cent moving from household to wage, a little bit lower than the percentage of individuals moving from farming to wage (4.56 percent).

Table 3: Summary of transition in rural area (2008–16)

From	To Farming, %	To Wage, %	To HH business, %	To HH work, %	To Other, %	Total, %
Farming	16.30 (440)	4.56 (123)	1.37 (37)	13.78 (372)	63.99 (1,727)	100.00 (2,699)
Wage	2.56 (69)	1.44 (39)	1.22 (33)	13.78 (372)	80.99 (2,186)	100.00 (2,699)
HH business	0.59 (16)	1.11 (30)	1.11 (30)	1.30 (35)	95.89 (2,588)	100.00 (2,699)
HH work	7.97 (215)	3.74 (101)	0.59 (16)	0.70 (19)	87.00 (2,348)	100.00 (2,699)

Notes: HH: household; Number of observations in parentheses.

Source: Author's estimation from VARHS 2008–16.

The interest here is on modelling the correlates of individuals engaging in these activities. Five different forms of individual-level employment transitions in the rural area are examined in the current paper: (1) the choice by farming individuals to be in agriculture during the survey period; (2) the choice by farming individuals to be employed in wage/salary sector; (3) the choice by wage individuals to go out of wage sector to farming or household business; (4) the choice by household-work individuals to involve into agriculture sector; and (5) the choice by household-work individuals to move from household work to wage sector. Table 4 presents details of these forms of employment choices in the rural area in terms of conditions in the initial year of 2008.

Comparing individuals who are working in agriculture throughout the period 2008–16 (column 1) and those who move to wage/salary (column 2) in Table 4, we find that the former is less likely to be male, more likely to get married, more likely to be older, more likely to be the household head, and have a higher income per capita. Unsurprisingly, those individuals engaged in agriculture (column 1) report more probability to be a member of Farm Union. Membership in CPV is likely to be the same between the two groups. Regarding education level, those individuals engaged in agriculture (column 1) show more probability to be unable to read and write, more likely to complete primary school, whereas those who do not are more likely to finish upper secondary school, and can read and/or write (but never went to school) as well.

Table 4: Transition in rural area: Initial year in 2008

Variable	Persistent farming (1)	Positive transient farm (To wage) (2)	Positive out of wage (3)	Transitory farm- HH work (HH work to farming) (4)	Transitory wage- HH work (HH work to wage) (5)
Sex (=1)	0.37	0.71***	0.60***	0.41	0.44*
Married (=1)	0.88	0.35***	0.64***	0.44***	0.23***
Age (years)	46.15	27.64***	34.70***	41.74***	26.27***
Age squared (years)	23.00	9.58***	14.05***	23.78	12.40***
Head (=1)	0.38	0.20***	0.31	0.29**	0.13***
Cannot read and write (=1)	0.11	0.04**	0.02***	0.10	0.13
Completed primary (=1)	0.27	0.13***	0.17	0.38***	0.43***

Variable	Persistent farming (1)	Positive transient farm (To wage) (2)	Positive out of wage (3)	Transitory farm-HH work (HH work to farming) (4)	Transitory wage-HH work (HH work to wage) (5)
Completed lower secondary (=1)	0.51	0.46	0.39**	0.34***	0.34***
Completed upper secondary (=1)	0.11	0.33***	0.42***	0.12	0.06*
Can read and write but never went to school (=1)	0.01	0.03*	0.00	0.05***	0.04**
CPV member (=1)	0.02	0.01	0.06***	0.02	0.01
In farmer group (=1)	0.16	0.07***	0.05***	0.07***	0.02***
Net total income per capita in 2008 (log)	8.85	8.46***	9.24***	8.67***	8.57***
Number of observations	437	123	110	372	216

Note: HH: Household; *** p<0.01, ** p<0.05, * p<0.1; all are non-parametric two-sample test: Mann–Whitney U test and compared with column (1). Total sample: 2,698.

Source: Author's estimation from VARHS 2008–16.

Comparing individuals who are working in agriculture throughout the period 2008–16 (column 1) and those who move out of wage (column 3) in Table 4, we find that the latter is more likely to be male, has a higher income per capita, but less likely to get married, and less likely to be older. Unsurprisingly, those individuals engaged in agriculture (column 1) disclose more probability to be a member of Farmer Union. However, those individuals engaged in wage (column 3) inform more probability to be a member of CPV. Regarding education level, those individuals engaged in agriculture (column 1) reveal more probability to be unable to read and write, whereas those who do not are more likely to finish upper secondary school.

Comparing individuals who are working in agriculture throughout the period 2008–16 (column 1) and those who move from household work to farming (column 4) in Table 4, we observe that the latter is more likely to be male, but less likely to get married, less likely to be older, less likely to be the head of the household, and has a lower income per capita. Unsurprisingly, those individuals engaged in agriculture (column 1) present more probability to be a member of Farmer Union. However, those individuals engaged in farming from household work (column 4) narrate similar probability to be a member of CPV. Regarding education level, those individuals engaged in agriculture (column 1) report less probability to obtain upper secondary, whereas those who do not are more likely to finish primary school, lower secondary school, and can read and/or write (but never went to school) as well.

Comparing individuals who are working in agriculture throughout the period 2008–16 (column 1) and those who move from household work to wage (column 5) in Table 4, we are informed that the latter is more likely to be male, higher income per capita, but less likely to get married, less likely to be older, less likely to be the head of the household. Unsurprisingly, those individuals engaged in agriculture (column 1) inscribe more probability to be a member of Farmer Union. However, those individuals engaged in wage (column 5) report similar probability to be a member of CPV. Regarding education level, those individuals engaged in agriculture (column 1) itemize more probability to be unable to read and write, more probability to complete primary school, whereas those who do not are more likely to finish upper secondary school.

Table 5 presents details of these forms of employment choices in the rural area in terms of changes between 2016 and 2008. Comparing individuals who are working in agriculture throughout the period 2008–16 (column 1) and those who move to wage/salary (column 2) in Table 5, with respect to individual characteristics, we find that the former is less likely to get married. Interestingly, those individuals engaged in agriculture report more probability to be a member of Farm Union between

2016 and 2008. Other aspects are less apparent. With respect to changes in household characteristics between 2016 and 2008, households with those individuals engaged in agriculture (column 1) report less probability to have household head changed, more probability to increase in primary school, less probability to obtain upper secondary schools. Table 5 also shows that persistent farmers (column 1) are less in number of working members in a household. The former (column 1) also report higher probability of support from relatives and government. The latter (column 2) less likely faces a pesticide shock. Other differences in terms of CPV membership, access to credit, land per capita, income level, political network member, non-farm employment opportunity, and some types of shocks are less apparent. With respect to changes in commune characteristics between 2016 and 2008, differences are less apparent.

Table 5: Transition in rural area, changes between 2008–16

Variable	Persistent farming (1)	Positive transient farm (To wage) (2)	Positive out of wage (3)	Transitory farm-HH work (HH work to farming) (4)	Transitory wage-HH work (HH work to wage) (5)
Changes in individual characteristics (dummy), from No (in 2008) to Yes (in 2016)					
Married	0.01	0.13***	0.05***	0.03***	0.03**
Divorced	0.00	0.00	0.00	0.03	0.00
Head of HH	0.02	0.00	0.01	0.02	0.01
Completed Lower Secondary	0.04	0.01*	0.00**	0.02	0.03
Completed Upper Secondary	0.03	0.05	0.04	0.06*	0.13***
CPV member	0.00	0.00	0.02	0.00	0.00
In farmer group	0.07	0.03	0.04	0.01***	0.01***
Changes in household characteristics (dummy), from No (in 2008) to Yes (in 2016)					
Head changed	0.00	0.02***	0.01**	0.01**	0.03***
Head being CPV member	0.01	0.00	0.02	0.00	0.00
Increase in primary degree	0.22	0.14*	0.28	0.21	0.22
Increase in Lower secondary degree	0.40	0.37	0.35	0.39	0.46
Increase in Upper secondary school	0.45	0.58**	0.48	0.55***	0.62***
Increase in HH size	0.23	0.26	0.39***	0.25	0.24
Increase in average ages of working-age members	0.69	0.68	0.65	0.46***	0.46***
Increase in numbers working-age members	0.25	0.37**	0.28	0.59***	0.58***
Increase in the ratio of children	0.28	0.30	0.43***	0.41***	0.12***
CPV member(s) (Counting the HH head) of HH	0.01	0.01	0.04	0.00*	0.00
CPV member(s) (Not counting the HH head) of HH	0.01	0.01	0.03	0.00	0.00
Access to credit	0.01	0.02	0.02	0.01	0.00
Increased in arable land	0.19	0.18	0.08***	0.18	0.22
Loss in arable land	0.17	0.20	0.15	0.13*	0.17
Land per capita	0.19	0.18	0.08***	0.22	0.22
Increased in income	0.92	0.97*	0.88	0.91	0.88*
Increased in asset values	0.19	0.20	0.16	0.21	0.23
Increased in housing size	0.19	0.20	0.16	0.21	0.23
Political Network member	0.05	0.06	0.03	0.08	0.09*
Having support from relatives	0.20	0.13*	0.17	0.19	0.09***
Natural shock	0.06	0.04	0.01**	0.05	0.07
Pest shock	0.04	0.02	0.00**	0.03	0.03

Variable	Persistent farming (1)	Positive transient farm (To wage) (2)	Positive out of wage (3)	Transitory farm-HH work (HH work to farming) (4)	Transitory wage-HH work (HH work to wage) (5)
Economic shock	0.02	0.02	0.01	0.02	0.01
Illness shock	0.02	0.02	0.01	0.02	0.01
Changes in commune characteristics (dummy), from No (in 2008) to Yes (in 2016)					
Flood, t-1	0.08	0.13	0.05	0.10	0.10
Drought, t-1	0.20	0.15	0.15	0.20	0.23
Typhoon, t-1	0.09	0.06	0.05	0.10	0.10
Land slide, t-1	0.04	0.08*	0.01*	0.05	0.07
Animal/livestock epidemics, t-1	0.15	0.10	0.18	0.15	0.14
Plant disease, t-1	0.11	0.11	0.15	0.07	0.07
Insects/rats, t-1	0.06	0.06	0.06	0.05	0.05
Flood, t-2	0.10	0.10	0.05	0.12	0.11
Drought, t-2	0.16	0.11	0.06***	0.16	0.21*
Typhoon, t-2	0.12	0.07*	0.07	0.12	0.11
Land slide, t-2	0.05	0.10*	0.03	0.03	0.07
Animal/livestock epidemics, t-2	0.15	0.12	0.20	0.15	0.15
Plant disease, t-2	0.10	0.09	0.15	0.07	0.08
Insects/rats, t-2	0.06	0.04	0.08	0.05	0.05
Number of observations	437	123	110	372	216

Note: HH: Household; *** p<0.01, ** p<0.05, * p<0.1; all are non-parametric two-sample test: Mann–Whitney U test and compared with column (1); Total sample: 2,698.

Source: Author's estimation from VARHS 2008–16.

Comparing individuals who are working in agriculture throughout the period 2008–16 (column 1) and those who move out of wage/salary (column 3) in Table 5, with respect to individual characteristics, we find that the former is less likely to get married. Regarding education level, those individuals engaged in agriculture report more probability to obtain Lower Secondary school. Other aspects are less apparent. With respect to changes in household characteristics between 2016 and 2008, households with those individuals engaged in agriculture (column 1) report more probability to obtain lower secondary school. Table 5 also shows that persistent farmers (column 1) are less in number of members in a household, and less in the ratio of children under 16. The former (column 1) also reports higher probability of increase in arable land area, land per capita, increase in income, support from relatives. The latter (column 3) reports a higher probability of household having CPV members, and less likely faces natural shock and/or pesticide one. Other differences in terms of access to credit, political network member, and non-farm employment opportunity are less apparent. With respect to changes in commune characteristics between 2016 and 2008, the latter (column 3) less likely faces drought in the last year, and flood, land slide, drought in the last two years, and more likely lives with insects/rats within the last two years.

Comparing individuals who are working in agriculture throughout the period 2008–16 (column 1) and those who move from household work to be farming (column 4) in Table 5, with respect to individual characteristics, we find that the former is less likely to get married. Interestingly, those individuals engaged in agriculture report have more probability to be a member of Farm Union between 2016 and 2008. Regarding education level, those who do not engage in agriculture (column 4) are more likely to finish upper secondary school. Other aspects are less apparent. With respect to changes in household characteristics between 2016 and 2008, households with those individuals engaged in agriculture (column 1) report less probability to have household head

changed, less probability to obtain upper secondary school. Table 5 also shows that persistent farmers (column 1) are getting older whereas, and more in number of members in a household, but less in the ratio of children under 16. The former (column 1) also report higher probability of increase in income, but less in being involved in political network and more support from relatives. Other differences in terms of CPV membership, access to credit, land per capita, living area, non-farm employment opportunity, and some types of shocks are less apparent. With respect to changes in commune characteristics between 2016 and 2008, a difference in term of drought within the two years is less observed for the former (column 1).

Comparing individuals who are working in agriculture throughout the period 2008–16 (column 1) and those who move from household work to wage/salary (column 5) in Table 5, with respect to individual characteristics, we find that the former (column 1) is less likely to get married. Interestingly, those individuals engaged in agriculture (column 1) report more probability to be a member of Farm Union between 2016 and 2008. Regarding education level, those individuals engaged in agriculture (column 1) report more probability to obtain Lower Secondary school. Other aspects are less apparent. With respect to changes in household characteristics between 2016 and 2008, households with those individuals engaged in agriculture (column 1) report less probability to have household head changed, less probability to obtain upper secondary school. Table 6 also shows that persistent farmers (column 1) are less in number of members in a household, but more in the ratio of children under 16. The former (column 1) also reports lower probability of increase in income, in asset values, and living area. Other differences in terms of CPV membership, access to credit, land per capita, non-farm employment opportunity, and some types of shocks are less apparent. With respect to changes in commune characteristics between 2016 and 2008, differences in term of epidemics last year, and flood within the two years are more observed for the former, whereas plant disease within the two years is less observed for the former (column 1).

4.2 Empirical results and discussion

We turn now to a multivariate analysis of the factors associated with being engaged in transitions in the rural area. The likelihood of engaging in each of these activities is modelled as a function of many of the factors already considered in the section 2.2, plus province fixed effects. The model is fixed effect so as to handle the problem of unobserved variables at individual level as well.

Table 6 shows results of SURE model for the likelihood of transitions in the rural area, namely the choice by an individual to be in agriculture during the survey period; the choice to be employed in wage/salary sector; the choice to move out of wage, the choice to move out of household work to farming and to wage (Model 1). Table 7 shows results of SURE model for the likelihood of transitions in the rural area, taking into account the changes in individual characteristics (Model 1a). Table 8 shows results of SURE model for the likelihood of transitions in the rural area, taking into account the changes in household characteristics (Model 1b). Table 9 shows results of SURE model for the likelihood of transitions in the rural area, taking into account the changes in commune characteristics (Model 1c). I use command *sureg* in Stata to estimate concerned models (Zellner (1962), Zellner and Huang (1962), and Zellner (1963)).

The right-hand side variables can largely be regarded as exogenous. I first include gender, material status, head of household, CPV membership, membership of Farmer Union, and education level as well, the relevance of them are strongly suggested by the results in Table 5. Second, age and the square of age are also in the model. Results of the set of regression models on the determinants of rural employment transitions are presented in Tables 6–9. The models explain 9–13 per cent of the variation in the dependent variables.

We firstly discuss the results on Table 6. Regarding the gender of individual, the results show that males are less likely to choose to move to wage/salary than females (column 2), given the other variables in the model are held constant (This is in line with most recent study by Sackey (2018)); males are more likely to choose to move out of wage than females (column 3) while holding all other variables in the model constant; and males are more likely to choose to move from household work to farming than females (column 4) while holding all other variables in the model constant.

With regard to the marital status of individual, the results indicate that married individuals are more likely to choose to move to wage/salary than the unmarried ones (column 2), given the other variables in the model are held constant; married individuals are less likely to choose to move out of wage than the unmarried ones (column 3) while holding all other variables in the model constant.

Age is found to have an inversed U-shaped effect on choices to be persistent farming (column 1), to move to wage/salary (column 2), to move out of wage (column 3). This is in line with study of Liu and Liu (2016), who find that age is an important influence of off-farm employment decision. Sackey (2018) also finds an inversed U-shaped relationship between age and non-farm employment. In addition, ages are found to have a U-shaped effect on choices to move from household work to being farm (column 4), to move from household work to wage (column 5).

With respect to the status of household head of individual, the results point out that household-head individuals are less likely to choose to move out of wage than other family members (column 3) while holding all other variables in the model constant.

In relation to the Farmer Union's membership of household head of individual, the results prove that household-head individuals are more likely to choose to move out of wage than other family members (column 3) while holding all other variables in the model constant. However, that household-head individuals are less likely to choose to move from household work to being farm than other family members (column 4) while holding all other variables in the model constant.

In terms of educational levels, results in Table 6 suggest that individuals with primary, lower secondary school are more likely to be persistent in farming (column 1), while holding all other variables in the model constant. In addition, individuals with lower and upper secondary school, and can read and write but never went to school are more likely to choose to move to wage (column 2). This is in line with study of Liu and Liu (2016), and Sackey (2018), they find that education is an important influence of non-farm employment decision. Moreover, individuals with upper secondary school are more likely to choose to move to out of wage (column 3), while holding all other variables in the model constant. Besides, individuals with lower and upper secondary school are less likely to choose to move from household work to wage (column 5), while holding all other variables in the model constant.

The results in Table 6 also reveal that individuals choose to move out of wage (column 3) when their households have higher income level, and not to move to wage (column 2) while holding all other variables in the model constant. Put it differently, income shocks may be associated with a move from agriculture to wage employment. This is in line with a most recent study in this field by Beck et al. (2018) (for the case of coffee farmers in the Central Highlands of Viet Nam).

Table 6: Basic model of transitions in the rural area, 2008–16 (Model 1)

Variables	(eq. 1) Persistent farming	(eq. 2) Positive transient farm (Agriculture to wage)	(eq. 3) Positive out of wage (Wage to farming or household business)	(eq. 4) Transitory farm-HH work (HH work to farming)	(eq. 5) Transitory wage-HH work (HH work to wage)
Individual characteristics					
Male (dummy)	-0.0365**	0.0554***	0.0214**	-0.0270*	-0.0186
Married (dummy)	0.0469**	-0.0673***	-0.00619	-0.0841***	-0.00559
Age (years)	0.0128***	0.00477***	0.00256**	-0.0146***	-0.0176***
Age squared/100	-0.0115***	-0.00540***	-0.00363***	0.0222***	0.0187***
Head of HH (dummy)	-0.0327	-0.0374***	-0.00358	-0.0167	0.0106
CPV membership (dummy)	-0.0901*	-0.0322	0.0324	0.0116	0.0449
Member of Farm Union (dummy)	0.0410*	-0.0152	-0.0303**	0.00405	-0.00311
Completed Primary (dummy)	0.0661***	0.0112	0.00870		-0.0131
Completed Lower Secondary (dummy)	0.0857***	0.0329**	0.00384		-0.0473***
Completed Upper Secondary (dummy)	0.0182	0.0716***	0.0611***		-0.0827***
Can read and write but no school (dummy)	-0.0705	0.0575**	0.00416		-0.0185
Household characteristics					
Net total income per capita in 2008 (log)	0.00518	-0.0188***	0.0128***	-0.00595	0.000584
Province fixed effect	Yes	Yes	Yes	Yes	Yes
Constant	-0.233***	0.127***	-0.108***	0.405***	0.452***
Observations	2,698	2,698	2,698	2,698	2,698
R-squared	0.090	0.054	0.044	0.114	0.131
Chi2	269.45***	153.51***	125.53***	349.36***	406.32***
Log Likelihood	-653.3	-653.3	-653.3	-653.3	-653.3
Breusch-Pagan test			306.81***		

Note: HH: Household; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Breusch-Pagan test: Breusch-Pagan test of independence of residuals.

Source: Author's estimation from VARHS 2008–16.

Table 7 presents results of SURE model for the likelihood of transitions in the rural area, taking into account the changes in individual characteristics (Model 1a). Results in Table 7 confirm similar findings for transition in the rural area as presented in Table 6. Table 7 also shows that, regarding to changes in individual characteristics, individuals with changes in marital status are more likely to move to wage (column 2), but less likely to move from household work to wage (column 5); individuals with completion of lower secondary school in the sample period are more likely to be persistent in farming (column 1). Moreover, individuals with completion of upper secondary school in the sample period are more likely to move to from household work to wage (column 5). Besides, member of Farmer Union likely increases the probability of being persistent farming (column 5).

Table 7: Extension model of transitions in the rural area (2008–16): changes in individual characteristics (Model 1a)

Variables	(eq. 1) Persistent farming	(eq. 2) Positive transient farm (Agriculture to wage)	(eq. 3) Positive out of wage (Wage to farming or household business)	(eq. 4) Transitory farm-HH work (HH work to farming)	(eq. 5) Transitory wage-HH work (HH work to wage)
Individual characteristics					
Male (dummy)	-0.0359**	0.0529***	0.0213**	-0.0281*	-0.0165
Married (dummy)	0.0460**	-0.0598***	-0.00567	-0.0825***	-0.0107
Age (years)	0.0121***	0.00477***	0.00267**	-0.0145***	-0.0172***
Age squared/100	-0.0106***	-0.00536***	-0.00377***	0.0220***	0.0183***
Head of HH (dummy)	-0.0361*	-0.0346***	-0.00292	-0.0140	0.00760
CPV membership (dummy)	-0.0864*	-0.0297	0.0324	0.00884	0.0431
Member of Farm Union (dummy)	0.0489**	-0.0142	-0.0309**	-0.000917	-0.00338
Completed Primary (dummy)	0.0621**	0.0111	0.00934		-0.0156
Completed Lower Secondary (dummy)	0.0883***	0.0302**	0.00199		-0.0472***

Variables	(eq. 1) Persistent farming	(eq. 2) Positive transient farm (Agriculture to wage)	(eq. 3) Positive out of wage (Wage to farming or household business)	(eq. 4) Transitory farm-HH work (HH work to farming)	(eq. 5) Transitory wage-HH work (HH work to wage)
Completed Upper Secondary (dummy)	0.0197	0.0650***	0.0593***		-0.0782***
Can read and write but no school (dummy)	-0.0766	0.0590**	0.00607		-0.0191
Household characteristics					
Net total income per capita in 2008 (log)	0.00608	-0.0185***	0.0127***	-0.00635	0.000204
Changes between 2016 and 2008, from No (in 2008) to Yes (in 2016) (dummy)					
Married	0.00899	0.120***	0.00738	-0.00542	-0.0562*
Completed Lower Secondary	0.101**	-0.0165	-0.0340	-0.0265	0.0116
Completed Upper Secondary	-0.00546	0.00812	0.00211	-0.0150	0.0468**
Farmer Union member	0.103***	0.00610	-0.00640	-0.0714**	0.00496
Province fixed effect	Yes	Yes	Yes	Yes	Yes
Constant	-0.236***	0.118***	-0.107***	0.411***	0.448***
Observations	2,698	2,698	2,698	2,698	2,698
R-squared	0.094	0.062	0.045	0.116	0.133
Chi2 (prob.)	284.03 (0.0000)	178.91 (0.0000)	128.03 (0.0000)	354.94 (0.0000)	415.32 (0.0000)
Log Likelihood	-628.8	-628.8	-628.8	-628.8	-628.8
Breusch-Pagan test			303.885***		

Note: HH: Household; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Breusch-Pagan test: Breusch-Pagan test of independence of residuals.

Source: Author's estimation from VARHS 2008–16.

Table 8 exposes results of SURE model for the likelihood of transitions in the rural area, taking into account the changes in household characteristics (Model 1b). Results in Table 8 support similar findings for transition in the rural area as presented in Table 6. Table 8 also shows that regarding changes in household level of education, individuals in household with changes in the proportion of attaining primary school is less likely to choose to move to wage (column 2), and individuals in household with changes in the proportion of attaining lower secondary school is less likely to choose to be in persistent farming (column 1), *ceteris paribus*.

With regard to change in demographic characteristics, individuals in household with increase in the number of working-age members is less likely to choose to be in persistent farming (column 1) and to move to wage (column 2). Moreover, individuals in household with higher ratio of children under 16 and elderly members, is less likely to choose to move from household work to wage (column 5).

With respect to changes in social capital, individuals in household with CPV members is more likely to choose to move out of wage to household business or farming (column 3). In addition, individuals in household with political network is more likely to choose to move from household work to farming (column 4).

Regarding changes in land, individuals in household with increase land is less likely to choose to move out of wage to household business or farming (column 4). In addition, individuals in household with land loss is more likely to choose to move from household work to wage (column 5).

Table 8: Extension model of transitions in the rural area (2008–16): changes in household characteristics (Model 1b)

Variables	(eq. 1) Persistent farming	(eq. 2) Positive transient farm (Agriculture to wage)	(eq. 3) Positive out of wage (Wage to farming or household business)	(eq. 4) Transitory farm-HH work (HH work to farming)	(eq. 5) Transitory wage-HH work (HH work to wage)
Individual characteristics					
Male (dummy)	-0.0403**	0.0559***	0.0190**	-0.0291*	-0.0159
Married (dummy)	0.0572***	-0.0640***	-0.00496	-0.0849***	-0.00696
Age (years)	0.0113***	0.00431***	0.00201	-0.0149***	-0.0169***
Age squared/100	-0.0104***	-0.00509***	-0.00319**	0.0227***	0.0180***
Head of HH (dummy)	-0.0276	-0.0350***	-0.000947	-0.0161	0.00716
CPV membership (dummy)	-0.0810*	-0.0336	0.0298	0.00926	0.0496
Member of Farm Union (dummy)	0.0386	-0.0173	-0.0277**	0.00486	-0.00333
Completed Primary (dummy)	0.0588**	0.00590	0.0103		-0.0143
Completed Lower Secondary (dummy)	0.0772***	0.0242*	0.00604		-0.0444**
Completed Upper Secondary (dummy)	0.000959	0.0591***	0.0605***		-0.0794***
Can read and write but no school (dummy)	-0.0627	0.0617**	0.00413		-0.0256
Household characteristics					
Net total income per capita in 2008 (log)	0.00970	-0.0180***	0.0114***	-0.00503	-0.00198
Changes between 2016 and 2008, from No (in 2008) to Yes (in 2016) (dummy)					
Head of HH	-0.0451	0.0268	-0.00536	-0.0355	0.0502
Completed Primary	-0.0267	-0.0232**	0.0146	-0.0116	0.0101
Completed Lower Secondary	-0.0435***	0.00490	-0.00305	0.0117	-0.00969
Completed Upper Secondary	0.0126	-0.00324	0.0155	0.00230	0.00840
Mean of working ages	0.0112	0.00112	-0.0123	0.0128	-0.0191*
Number of working-age members	-0.0326*	-0.0200*	-0.0132	0.0176	0.000376
The ratio of children under 16	-0.0270	0.0156	0.0152	0.0242	-0.0262*
CPV member(s) (Counting the HH head) of HH	0.0445	-0.0162	0.0967***	-0.0921	-0.0299
Land increased	0.0322	0.0123	-0.0236*	-0.0228	0.0191
Land loss	0.0301	0.0141	-0.00295	-0.0122	0.0301**
Income increased	0.0572**	0.0166	0.00367	0.00394	-0.0332*
Political Network member	-0.0442	-0.00791	-0.00732	0.0517*	0.0314
Supports from relatives	0.00640	-0.0101	0.00390	0.0237	-0.00615
Natural shock	0.0140	-0.00126	0.0204	-0.00856	-0.00745
Pesticide shock	-0.0239	-0.0347	-0.0366	0.00440	-0.00802
Province fixed effect	Yes	Yes	Yes	Yes	Yes
Constant	-0.252***	0.127***	-0.0818*	0.372***	0.501***
Observations	2,698	2,698	2,698	2,698	2,698
R-squared	0.100	0.060	0.055	0.119	0.137
Chi2 (prob.)					
Log Likelihood	-597	-597	-597	-597	-597
Breusch-Pagan test			306.442***		

Note: HH: Household; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Breusch-Pagan test: Breusch-Pagan test of independence of residuals

Source: Author's estimation from VARHS 2008–16.

Table 9 displays results of SURE model for the likelihood of transitions in the rural area, taking into account the changes in commune characteristics (Model 1c). Results in Table 9 affirm similar findings for transition from agriculture as presented in Table 6. Table 9 also shows that, regarding to changes in commune characteristics, individuals in commune with changes in natural shocks such as drought is less likely to choose to move out of wage (column 3), to move from farming to wage (for typhoon) (column 2), and from household work to farming (for land slide) (column 4), given the other variables in the model are held constant. However, individuals in commune with changes in natural shocks such as land slide is also more likely to choose to move to wage from farming (column 2).

Table 9: Extension model of transitions in the rural area (2008–16): changes in commune characteristics (Model 1c)

Variables	(eq. 1) Persistent farming	(eq. 2) Positive transient farm (Agriculture to wage)	(eq. 3) Positive out of wage (Wage to farming or household business)	(eq. 4) Transitory farm-HH work (HH work to farming)	(eq. 5) Transitory wage-HH work (HH work to wage)
Individual characteristics					
Male (dummy)	-0.0363**	0.0550***	0.0214**	-0.0277*	-0.0190
Married (dummy)	0.0466**	-0.0674***	-0.00558	-0.0827***	-0.00567
Age (years)	0.0129***	0.00475***	0.00250**	-0.0148***	-0.0176***
Age squared/100	-0.0115***	-0.00541***	-0.00357***	0.0224***	0.0187***
Head of HH (dummy)	-0.0327	-0.0375***	-0.00351	-0.0164	0.0104
CPV membership (dummy)	-0.0900*	-0.0322	0.0314	0.0102	0.0453
Member of Farm Union (dummy)	0.0409*	-0.0160	-0.0304**	0.00581	-0.00358
Completed Primary (dummy)	0.0662***	0.0119	0.00814		-0.0124
Completed Lower Secondary (dummy)	0.0858***	0.0336**	0.00333		-0.0463***
Completed Upper Secondary (dummy)	0.0196	0.0713***	0.0602***		-0.0814***
Can read and write but no school (dummy)	-0.0726	0.0606**	0.00420		-0.0182
Household characteristics					
Net total income per capita in 2008 (log)	0.00505	-0.0181***	0.0125***	-0.00628	0.000860
Changes between 2016 and 2008, from No (in 2008) to Yes (in 2016) (dummy)					
Land slide, t-1	-0.00158	0.0175	-0.0170	0.0374	0.0272
Drought, t-2	0.0227	-0.0164	-0.0191*	0.00631	0.0119
Typhoon, t-2	0.0104	-0.0272**	-0.00682	0.0158	-0.0186
Land slide, t-2	-0.00694	0.0363*	-0.00289	-0.0872***	0.0136
Province fixed effect	Yes	Yes	Yes	Yes	Yes
Constant	-0.239***	0.125***	-0.100**	0.409***	0.447***
Observations	2,698	2,698	2,698	2,698	2,698
R-squared	0.090	0.058	0.046	0.117	0.132
Chi2 (prob.)					
Log Likelihood	-637.9	-637.9	-637.9	-637.9	-637.9
Breusch-Pagan test			306.278***		

Note: HH: Household; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Breusch-Pagan test: Breusch-Pagan test of independence of residuals

Source: Author's estimation from VARHS 2008–16.

5 Concluding remarks

This paper is the first attempt to analyse the employment transitions in the rural area of Viet Nam by using an individual-level dataset. Starting from the VARHS dataset with the five waves from 12 provinces of rural Viet Nam, compilation is further processed by using the individual identification in combination with the information on age and gender, besides the common use of household identification, and result in 2,699 individual-level observations in two years: 2008 and 2016. We find that initial individual-level human capital such as gender, marital status, age, and education attainment, and social capital such as member of social-political organization are important factors affecting employment transition status in the rural area. In addition, changes in individual, household characteristics and socio-economic conditions at commune level are very important to affect various types of employment transition.

Specifically, in regard to changes in individual characteristics, individuals with changes in marital status are more likely to move to wage, but less likely to move from household work to wage; individuals with completion of lower secondary school in the sample period are more likely to be

persistent in farming. Moreover, individuals with completion of upper secondary school in the sample period are more likely to move from household work to wage. Besides, member of Farmer Union likely increases the probability of being persistent farming. With respect to changes in household level, individuals in household with changes in the proportion of attaining primary school are less likely to choose to move from agriculture to wage, and individuals in household with changes in the proportion of attaining lower secondary school are less likely to choose to be in persistent farming. In addition, with regard to change in demographic characteristics, individuals in household with an increase in the number of working-age members are less likely to choose to be in persistent farming and to move from agriculture to wage. Moreover, individuals in household with higher ratio of children under 16 and elderly members are less likely to choose to move from household work to wage. Besides, with respect to changes in social capital, individuals in household with CPV members are more likely to choose to move out of wage to farming or household business. In addition, individuals in household with political network are more likely to choose to move from household work to farming. On top of that, regarding changes in land, individuals in household with increased land are less likely to choose to move out of wage to household business. In addition, individuals in household with land loss are more likely to choose to move from household work to wage. Regarding changes in commune characteristics, individuals in commune with changes in natural shocks such as typhoon are less likely to choose to move from farming to wage, and from household work to farming (for the case of land slide).

Results have implications for development policy for rural transition in developing countries, highlighting the importance of the positive aspects of changes in individual-, household-, and commune-levels for rural transformation. Promotion of education attainment is necessary at both individual- and household-level to spur the transition out of farming. Broadened policy mechanisms which support and encourage non-farm employment at the household level are also needed. Likewise, development initiatives that focus on increasing the human and social assets of the individual farmers and farming households are more likely to be successful in supporting livelihood diversification and reducing vulnerability.

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