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What Stayers Do?

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Hao Wang, Jan Fidrmuc, Qi Luo, Mingzhong Luo

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Telephone +49 (0)89 2180-2740, Telefax +49 (0)89 2180-17845, email office@cesifo.de
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Abstract

While much research on China has focused on rural to urban migration and transitions of rural households away from agriculture, little is known about the changes within the rural agricultural sector. Yet, the agricultural sector continues to account for a large share of employment. We study the determinants of transitions from subsistence farming into either formal agricultural employment or agricultural self-employment. We pay particular attention to the role of capital endowments. We find that financial capital plays a relatively limited role, compared to natural, human, social and political capital.

JEL-Codes: D130, O180, Q100, Q120.

Keywords: on-farm transitions, rural household livelihood strategy, capital endowments, labor allocation.

Hao Wang
Department of Economics and Finance
Brunel University
London / United Kingdom
Hao.Wang@brunel.ac.uk

Jan Fidrmuc
Department of Economics and Finance
Brunel University
London / United Kingdom
Jan.Fidrmuc@brunel.ac.uk or
jan@fidrmuc.net

Qi Luo
College of Economics and Management
South China Agricultural University
China - Guangzhou, Guangdong, 510640
Qi.Luo@brunel.ac.uk

*Mingzhong Luo**
College of Economics and Management
South China Agricultural University
China - Guangzhou, Guangdong, 510640
luomingzhong@scau.edu.cn

*corresponding author

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1. Introduction

Since the economic reforms started in 1978, China's rural areas have undergone tremendous changes. With the liberalization of agrarian capitalism, private agricultural firms have emerged rapidly (Zhan, 2017). Rural China is thus changing from a closed and tightly regulated peasant economy to a diversified and open market economy (Long et al., 2010; Long & Liu, 2016). After the relaxing of *Hukou* restrictions[1], a continuous migration from rural to urban areas has occurred in China since the late 1980s, with migrants from rural areas seeking better job opportunities (and sometimes also education and/or medical services) in urban centers. There is a large body of research on this issue, for instance Li et al. (2016), Tian et al. (2016), Liu & Xing (2016), Xie et al. (2017), Zhao et al. (2017), Wang et al. (2011), Dekle & Vandenbrouche (2012), Lei et al. (2013), and Wang et al. (2016). Compared with the plentiful studies on the determinants and impacts of rural-urban migration, however, there has been little quantitative analysis of rural livelihood transitions. The few previous studies (Adimassu et al., 2012; Bhandari, 2013; Han & Hare, 2013; Wang et al., 2016) focus on transition from farming to non-farming activities, which the literature refers to as *off-farm transition*. What is lacking is a discussion of *on-farm transitions*: from low-productivity subsistence farming to formal employment and/or self-employment in agriculture. The ability of rural households to undertake such on-farm transitions will be instrumental to the well-being of the rural residents.

Central to the entire discipline of rural household transformation is the concept of capital endowments. In line with Lewis's (1954) view on the interactions between labor, development and migration, the rural residents' socio-economic characteristics and capital endowments should play decisive roles in rural livelihood strategies (Beddington, 1999; Adimassu et al., 2012; Mikulcak et al., 2015; Li et al., 2016; Tian et al., 2016; Tregear & Cooper, 2016). Therefore, the main purpose of this paper is to explore the role played by capital endowments. To this effect, we employ a large and representative rural household cross sectional data set covering 9 provinces from east, central and west China. We focus on households rather than individuals because the decision making on livelihood transitions is a profit maximizing and risk minimizing process of a household (Stark,

[1] '*Hukou*' is a household registration system, which designates all individuals as either rural or urban residents. In the past, individuals were expected to remain in the area stated in their Hukou, and changing either one's status (from rural to urban) or place of residence was difficult. Even at present, individuals with a rural Hukou have limited access to public goods and services in urban areas. See Chan & Zhang (1999) for a detailed explanation of the *Hukou* system.

1984, Taylor, 1987). Accordingly, taking an entire household as the observation unit helps us to get a fuller picture of what drives rural transitions.

The remaining part of this paper is organized as follows. In the next section, we review the existing literature on capital endowments, namely, human, financial, social, political and natural capital; and discuss their effects on on-farm transitions of the rural stayers. Section 3 provides information of the data and methodology in use. Section 4 presents the findings obtained with the data set of 2704 observations from 9 provinces. Section 5 concludes.

2. Transition of Rural Residents and Capital Endowments

2.1 On-farm transitions in rural China

After four decades, the economic reform in China has entered a mature phase, which enables the rural people have wider choices of occupations (Xia & Simmons, 2007; Wang et al., 2016). These can be categorized into 3 types, namely, traditional (largely subsistence) farming, rural (on-farm) employment or self-employment, and off-farm (non-agricultural) employment or self-employment. Off-farm transitions reallocating the labor from the agricultural sector to the other sectors are driven by the higher demand for labor and higher productivity in the non-agricultural sectors, and has so-far received most attention in the literature (see Lei et al., 2013).

Nevertheless, 41.5% of China's population still lives in the rural areas and 27.7% of total employment is in the agricultural sector, which generates 7.92% of the gross domestic product (NBSC, 2017). Hence, the rural areas, and the changes that they undergo, are of considerable importance to China. The processes of globalization and internationalization of the Chinese economy, along with government policies favoring the development of agriculture and rural economies, such as the elimination of agricultural taxes and the increase in agricultural subsidies (Gale, 2013; Tian et al., 2016), foster gradual modernization of agriculture in China (Mohapatra et al., 2007). As a result, rural households staying in traditional farming occupations can undergo on-farm transitions. Stayers have three options with respect to on-farm transition. They can either choose not to transform (which means that they continue with traditional farming), transform into on-farm jobs, or start their own agricultural businesses. Whether they choose to transform, and which type of transition they select – into employment or into self-employment – can depend on their capital endowments.

2.2 Capital endowments and on-farm transitions

The *capital endowments* considered in this study include both tangible and intangible capital. Capital endowments can be divided into human capital; financial capital; natural capital; social capital, and political capital (Carney, 1998; Chambers, 2006; Li et al, 2012).

2.2.1 Human capital

Human capital can be defined as the "productive wealth embodied in labor, skills and knowledge" (Tan, 2014) and refers to the capabilities and potential of a person determined by his or her innate and acquired abilities to pursue and achieve his or her objectives (DFID, 1999; Bhandari, 2013; Inwood, 2015). As an important dimension of human capital, education plays a crucial role in decision making of rural households (Bhandari, 2013). Zhang et al. (2002) compare the effects of education in different periods and confirm that those who are more educated benefit from more off-farm opportunities. Similarly, Wang et al. (2016) argue that there is a strongly positive relationship between human capital investment and self-employment and managerial employment. In fact, as there are more opportunities for on-farm transitions nowadays, formal education, agricultural skill training and entrepreneurial training may also drive people to choose to be on-farm self-employed since they have better professional and management skills to start their own businesses instead of being employed.

With respect to gender, female on farm employment is significant in developing countries (Boserup, 1971) and the household gender composition affects the livelihood transition (Bhandari, 2013). Since self-employment or firm start-up needs high risk tolerance (Ahn, 2010; Hvide and Panos, 2013; Skriabikova et al., 2014), rural households with higher female ratios may prefer to seek on-farm jobs rather than to be on-farm self-employed as women are more risk averse than men, especially under financial investment circumstances (Hohnisch et al., 2014; Sarin & Wieland, 2016; Apcella et al., 2017).

The experience of former rural-to-urban migrants endows rural people with greater human capital. The migrant-worker experience may not only help other members gain information on transition but gain more confidence and experience to set up their own on-farm businesses.

2.2.2 Financial capital

Financial capital is the stock of financial assets including bank deposits, bonds and equity (Best, 2017). Financial capital is essential for firm growth (Fowowe, 2017) and the lack of bank loans can hindersfirms, especially small firms, from growing (Lee and Stebunovs, 2016). Therefore, the rural households' on-farm transitions are also affected by financial capital, especially so with respect to transitions into self-employment. The rural households' financial capital consists of their savings, i.e. internal capital, and the bank loans, their external capital.

2.2.3 Natural capital

Natural capital includes all natural resources, of which farmland is the most the most crucial resource in rural agrarian society (Kimhi & Bollman, 1999; Goetz & Debertin, 2001; Bhandari, 2013; Li et al., 2016). By investigating the trend of farmland fragmentation dynamics, Su et al., (2014) conclude that the quality, quantity and the fragmentation of farmland have significant relations with migration decisions. Therefore, the relationship between rural on-farm transition and natural capital is mainly to be driven by both the quantity and quality of the farmland as well as the farmland fragmentation.

2.2.4 Social capital

Social capital refers to the networks created through social relations that can be mobilized to facilitate transactions, reduce freeriding, influence goals and to expand access to better opportunities (Fidrmuc & Gërxhani, 2008; Bhandari, 2013; Moyes et al., 2015). In rural China, *Guanxi*[2] (social ties) can be approximated by the size of the network of relatives and acquaintances. Additionally, having a common surname can be a sign of kinship ties with other bearers of the same name, so as to endow such households with more social capital.

Moyes et al. (2015) show that social capital greatly contributes to enterprise creation in rural areas. In the rural on-farm transition, having more relatives and friends as well as inheriting a popular family name can help to start on-farm business in rural China.

[2] *GuanXi* (關係) is a widely used term to describe social network in China and it has extremely significant impact on people's activity in China, see Zhang & Li (2003) in detail.

2.2.5 Political capital

Political capital is another type of *Guanxi* which is has the potential to be more effective than other types of *Guanxi* in rural China. It refers to networks which are built on political rather than social foundations, such as being related to or friends with a village cadre[3]. Some studies suggest that political capital is associated with higher income (Jin et al., 2014) and has a profound impact on rural residents' labor market performance (Zhang et al, 2012; Wang et al, 2016). Their explanation rests on the observations that cadre members have better information about jobs and business opportunities and are in a better position to help household members. When attempting to start an on-farm business, the access to market information is of importance. The cadres can thus open door to success as entrepreneurs (Zhang et al., 2012).

3. Data Methodology

3.1 Data

Our data set is based on the "Cultivation and Reform of Land and Relevant Factors in Rural China" survey collected in 2015.[4] The survey sampling locations have been carefully selected. The 31 provinces (including municipalities and autonomous regions) in China were first divided into 3 groups ("class 1", "class 2" and "class 3") based on a cluster analysis of population, per capita GDP, agricultural acreage, proportion of agricultural acreage, proportion of agricultural population and proportion of agricultural production.[5] Geographically, China is usually divided into three broad regions: "western", "central" and "eastern". Therefore, combining socio-economic and geographical dimensions yields 9 groups. The provinces included in the survey were selected randomly from each group. Those 9 selected provinces are, namely, Guangdong, Guizhou, Henan, Jiangsu, Jiangxi, Liaoning, Ningxia, Shanxi and Sichuan as shown in Table 1.

By using the same method, the counties in each province were then divided according to their population; per capita GDP; agricultural acreage; proportion of agricultural acreage; proportion of agricultural population and proportion of agricultural production into 3 groups. Then, 1 county was

[3] "Cadres (*XiangCunGanBu*), who may be political or administrative leaders, hold most important political positions in China's rural communities" (Zhang & Li, 2003; Zhang et al., 2012).

[4] National Natural Science Foundation of China (No.71333004) led by Team Prof. Biliang Luo.

[5] For the cluster analysis basis, see the Appendix A.

randomly selected from each group. Within each selected county, townships and then villages were chosen following the same procedure as county selection.[6] Finally, households were selected randomly according to the roster of each village, to obtain 240 households in each sampled province. In order to enhance the comparability of provinces, the sample sizes in Guangdong and Jiangxi were increased to 600. To ensure the quality of collected data, the final questionnaire has been developed on the basis of a pilot survey. Households have been surveyed by means of face-to-face interviews. As a result, a total of 2880 households have been interviewed for the survey. Eliminating invalid questionnaires (those with incomplete or inconsistent responses), the final sample contains 2704 households with valid questionnaires. Sampling locations and quantities shown in Fig. 1.

Table 1 Provincial Samples

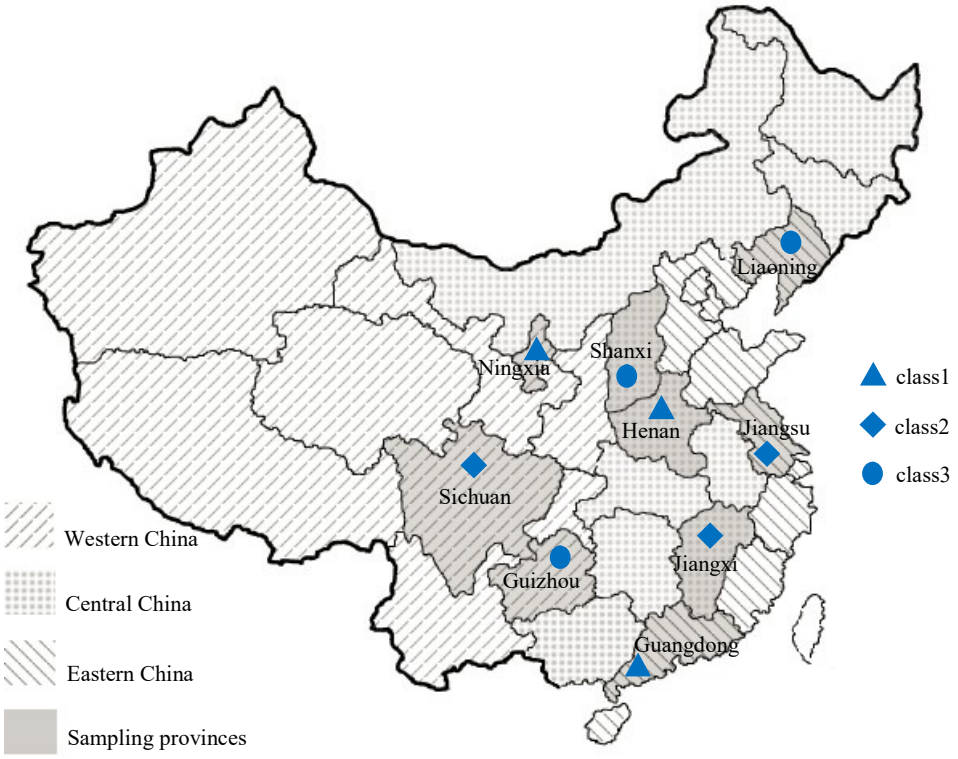
Class	Eastern China	Central China	Western China
Class1	Beijing; **Guangdong**; Shandong; Tianjin; Shanghai	Heilongjiang; **Henan**; Hainan	**Ningxia**; Qinghai; Tibet
Class2	Zhejiang; **Jiangsu**; Fujian	Inner Mongolia; **Jiangxi**; Hebei; Anhui; Hubei; Hunan	Chongqing; **Sichuan**; Yunnan
Class3	**Liaoning**	**Shanxi**; Jilin; Guangxi	Shaanxi; **Guizhou**; Gansu; Xinjiang

3.2 Dependent variables

Since our main aim is to explore how capital endowments affect on-farm transitions, the dependent variable, *Y*, captures the decisions of the household with respect to on-farm transitions as Table 2 presents. Given that the unit of observation is a rural household, when there is no household member transitioning to either on-farm employment or agribusiness, *Y* equals 0; when one or more household members become on-farm workers, *Y* equals 1; when one or more household members become agribusiness owners, *Y* equals 2; and when household has members who move both into on-farm employment and set up agribusinesses, *Y* equals 3.

[6] Chinese provinces are further subdivided, hierarchically, into prefectures, counties, townships, and villages.

Fig. 1: Survey Locations



Province	Guangdong	Guizhou	Henan	Jiangsu	Jiangxi	Liaoning	Ningxia	Shanxi	Sichuan
Sample Quantity	600	240	240	240	240	600	240	240	240
Valid Samples	547	239	230	239	587	221	226	201	214

Table 2 Dependent Variables for On-farm Transitions

Variables	Observations	Proportion (%)	Mean	Std. Dev.	Min	Max
Dependent Variable	2704	100	0.2726	0.5960	0	3
No household member is on-farm worker or an agribusiness owner: $Y = 0$	2147	79.40	/	/	/	/
Household member is an on-farm worker: $Y = 1$	409	15.13	/	/	/	/
Household member is an agribusiness owner: $Y = 2$	116	4.29	/	/	/	/
Household members are both an on-farm worker and an agribusiness owner: $Y = 3$	32	1.18	/	/	/	/

3.3 Independent variables

Table 3 shows the measures human capital, financial capital, natural capital, social capital and political capital used in our analysis, as discussed in section 2. Note that the survey only collects information about the household, not about individual household members (with the exception of the household head).

Human capital is measured by the number of active household members, their gender distribution, (average) educational attainment, access to training, and experience of rural-to-urban migration. Households with more available laborers and more educated and trained members are believed to have higher human capital endowments (Schultz, 1961; Wang et al., 2016; Muchomba, 2017). Specifically, we set the length of compulsory education in China, nine years, as the threshold level of education, and distinguish between households whose average education level is 9 or less and those with greater values. As for training, the Chinese government has funded non-profit organizations to offer training programs, which the farmers can receive for free (Pan et al, 2017). We therefore include a measure whether members of household have received such training.

Financial capital is measured by the household's total income, comparison of present income with the past and with other households, and availability of savings and bank loans. The household income and savings directly reflect the household financial conditions. Bank loans can be an efficient way to support a rural transition, especially for the residents who intend to start a business. Moreover, having easy access to a bank loan implies the presence of sufficient collateral which reflects the financial capital of household.

Natural capital is measured by household's contracted farmland, actual farmland, land quality and size of land holdings. Farmland and land quality are indicators of the condition of the natural capital base. However, due to the limited farmland and the implementation of Household Responsibility System (HRS)[7] in the late 1970s and early 1980s that followed the principle of equality (according to household size, the number of active members in a household, or both) in farmland allocation, farming operations in rural China are small and fragmented (Qing Tian et al, 2016). Therefore, we use the farmland fragmentation to observe the condition of farmland.

Social capital is measured by the amount of relatives or friends and whether the households' surname is popular in the respondent's village.[8] In rural China, due to the small scale of villages,

[7] Household Responsibility System (*Jia Ting Lian Chan Cheng Bao Ze Ren Zhi*) was a practice in China, first adopted in agriculture in 1979. In the traditional Maoist organization of the rural economy, farmers were given a quota by the government specifying the quantity of goods to produce. They received a reward for meeting the quota. Going beyond the quota rarely produced a further economic reward.

[8] Unlike most other countries, China has a relatively few unique surnames, with 100 most common surnames accounting for 84.7% of the population of the country (see 公安部统计："王"成中国第一大姓,有 9288 万人 (Public Security Bureau Statistics: 'Wang' Found China's #1 Surname, Includes 92.88m People)." Available at: http://news.eastday.com/c/20070424/u1a2791347.html (accessed 28-01-2018). The three most common surnames, Wang (王), Li (李), and Zhang (张) account for 7.3%, 7.2% and 6.8%, respectively, of the Chinese population (92.9mn,

the fact that people share the same surname may mean that they are (clan) relatives. They may be more willing to help each other as a result. Moreover, the authorities in the village are more likely to come from the most popular surnames, so that social capital can be closely related with political capital.

Political capital is measured as household members being one of the village cadres, and membership of household members in the Communist Party of China (CPC). The rural on-farm transition can take place both within the village and outside. Therefore, both in-village cadre status and outside cadre status are into account. Being a CPC member may enable people to have better access to political connections which can in turn translate into economic gains. In rural China, CPC membership increases people's involvement in managerial occupations (Wang et al., 2016). Also, having a CPC member as a director can lower firm's risk (Li & Chan, 2016).

3.4 Additional control variables

The only member of household for whom individual information is available is the household head. Four characteristics (age, gender, educational level and migrant work experience) of the household head, along with traffic condition and distance from home to the center of township are selected as additional control variables for robustness check as shown in Table 4.

92.1mn and 87.5mn in absolute numbers). However, there are important regional differences in the popularity of surnames. For the purposes of our survey, respondents were asked only whether their name was popular in the village.

Table 3 Independent Variables (N=2704)

Description	Values			Mean	Std.Dev.
	0	1	2		
Human capital					
The number of active members of household	/	/	/	3.1368	1.3019
Gender distribution of household active members	female>male	female=male	female<male	1.1845	0.6787
Household active members' average education(of years)	≤9	≥10	/	0.2892	0.4535
Training of agricultural technology	none	yes	/	0.1553	0.3623
Entrepreneurial training	none	yes	/	0.1036	0.3047
Household members was migrant worker	none	yes	/	0.6601	0.4738
Financial capital					
Household total income(yuan)	<30,000	30,000-50,000	>50,000	0.7385	0.8170
Income level compared with 2013	lower	about the same	higher	0.1712	0.6459
Income level compared with other households	lower	about the same	higher	0.9689	0.5970
Savings	no	yes	/	0.7585	0.4281
Bank loan	hard to obtain	easy to obtain	/	0.3706	0.4830
Natural capital					
Contracted farmland	<average	≥average	/	0.4545	0.4980
Actual farmland	<contracted farmland	= contracted farmland	> contracted farmland	0.7737	0.6273
Land quality	poor	average	good	1.2822	0.6673
Land fragmentation	<average	≥average	/	0.4475	0.4973
Productivity	poor	average	good	0.8277	0.5915
Social capital					
Popular surname in the village	not popular	average	popular	1.2955	0.7862
Amount of relatives or friends	few	average	many	1.4013	0.5940
Political capital					
Family members is or was village cadre	none	yes	/	0.2237	0.4168
Relatives or friends is village cadre	none	yes	/	0.2977	0.4573
Family members is cadre outside the village	none	yes	/	0.0492	0.2163
Relatives or friends is cadre outside the village	none	yes	/	0.2141	0.4103
Family members join the CPC	none	yes	/	0.1805	0.3847

Note: See the Appendix for the Table A 2 reporting the number of samples and percentages of respondents in each category.

Table 4 Household Characteristics (N=2704)

Description	Values			Mean	Std.Dev.
	0	1	2		
Age of the household head	/	/	/	43.4576	15.1398
Gender of the household head	male	female	/	0.3628	0.4809
Educational level of the household head	≤9	≥10	/	0.2785	0.4483
Household head's migrant work experience	no	yes	/	0.5910	0.4917
Traffic condition in the village	poor	average	good	1.2241	0.7036
Distance from home to town center (km)	/	/	/	5.6989	6.0312

3.5 Methodology

On-farm transition is essentially a set of decisions on occupational choice. We follow the studies on occupational choice and adopt the Multinomial Logit Model, which has proven to be one of the most suitable methodologies to deal with the occupational choice model in cross-sectional survey data (Greene, 2007; Schmidt & Strauss, 1975; Barkley, 1990; Wang et al., 2016). Hence, the multivariate discrete function is estimated by the method of multinomial logit regression as follows.

$$P_{yk} = e^{V_{yk}} / \sum_{r=1}^{Y} e^{V_{rk}}$$

where

P_{yk} is the probability that decision *y* will be chosen by household *k;*

$V_{yk} = a_0 + a_1 X_1 + \cdots + a_n X_n$, the household utility function with parameters a_0, a_1 … a_n to be estimated and different types of capitals X_1 … X_n, which are the explanatory variables in this paper;

y = 0: Household member is neither a local on-farm worker nor a local agribusiness owner;

y = 1: At least one household member is an on-farm worker;

y = 2: At least one household member is a local agribusiness owner;

y = 3: At least one household member is a local on-farm worker and at least one is a local agribusiness owner.

The analysis proceeds in two steps. We first only include the main explanatory variables. Then, we also include the additional control variables (province fixed effects, and the age and educational level of the household head, etc.).

4. Results and Discussion

In the tables below, we report the marginal effects.[9] This allows us to have a clearer understanding on how the various factors affect the on-farm transitions.

[9] In the main part of this paper, we report the marginal effect since it offers the probability of the variation on dependent variable given one unit change on the independent ones. For the whole tables reporting the relative-risk ratio and marginal effect, see Table A3 and A4 in appendix.

4.1 Human capital and on-farm transitions

The results for human capital shown in Table 5 suggest that having more active household members increases the probability of transitioning into on-farm employment. This is not surprising, as larger households are more likely to have surplus labor that can move into formal employment elsewhere (Fu & Balasubramanyam, 2005). Note that we also control for the amount of land that the household can use (see below). In contrast, the number of active members of household has no influence on agribusiness transition. Training plays an important role: entrepreneurial training exerts significantly positive influence on on-farm transition into both employment and self-employment while agricultural training fosters moving into on-farm self-employment. As expected, migrant work experience of a household member has positive influence on employment transition, while it has no impact on transition into self-employment: former migrant workers probably have history of past urban employment, and are likely to have acquired human capital that makes them more productive in rural employment as well. As expected, the number of off-farm employed household members has negative effect on transitioning to on-farm worker status: with more household members working off-farm, there are fewer members remaining to work on-farm. Off-farm employment does not, however, have significant influence on on-farm self-employment. Off-farm self-employment has no significant effect on either type of on-farm transition. Finally, gender balance of the household and education of household members do not significantly contribute to the transitions.

4.2 Financial capital and on-farm transitions

The financial capital also affects on-farm transition as reported in Table 6. The higher income a household has, the more likely it is to transition into on-farm employment. This is likely to be due to reverse causality: being employed outside the household bring in additional (and higher) income. This interpretation is consistent also with the finding that household with employed members are less likely to report falling earnings compared with the previous year. However, income level does not have a clear impact on on-farm self-employment: the level of income is insignificant, but households that report to have higher than average income are more likely to have self-employed members. Having savings makes formal employment less likely, without affecting transition into self-employment, whereas having bank loans has the opposite effect, being positively correlated

with on-farm employment but not with being an agribusiness owner. The lack of effect of savings and bank loans for transition into self-employment is somewhat surprising: it suggests that agricultural business owners rely little on external finance, or find it difficult to obtain it, unlike those in formal employment who can borrow from banks against future earnings from employment.

Table 5 Human Capital Effect on the Transition of Rural Residents: Marginal Effect, Multinomial Logit

Human capital	**Model 1**			**Model 2**		
	Y=1	**Y=2**	**Y=3**	**Y=1**	**Y=2**	**Y=3**
The number of active members of household	0.015***	-0.002	0.001	0.020***	-0.004	0.003
	(0.005)	(0.003)	(0.001)	(0.005)	(0.004)	(0.002)
Gender distribution of active members of household						
more females than males	-0.012	-0.017	-0.004	-0.009	-0.013	-0.002
	(0.019)	(0.013)	(0.006)	(0.020)	(0.013)	(0.006)
more males than females	-0.004	0.006	-0.007	-0.007	0.006	-0.009*
	(0.015)	(0.008)	(0.005)	(0.015)	(0.008)	(0.005)
Household active members' education level	-0.014	0.004	-0.004	-0.014	0.013	-0.004
	(0.015)	(0.008)	(0.005)	(0.015)	(0.009)	(0.005)
Training in agricultural technology	0.003	0.025***	0.010**	0.011	0.023***	0.010**
	(0.019)	(0.009)	(0.005)	(0.018)	(0.009)	(0.005)
Entrepreneurial training	0.043**	0.050***	0.016	0.049**	0.054	0.020
	(0.021)	(0.009)	(0.005)	(0.020)	(0.009)	(0.005)
Household members was migrant worker	0.207***	-0.016	0.003	0.201***	-0.018*	0.002
	(0.023)	(0.010)	(0.006)	(0.023)	(0.010)	(0.006)
Off-farm employment of household members	-0.280***	0.018	-0.007	-0.288***	0.019	-0.011*
	(0.022)	(0.012)	(0.006)	(0.022)	(0.012)	(0.006)
Off-farm self-employment of household members	-0.017	-0.032	-0.148	-0.017	-0.031	-0.148
	(1.533)	(0.783)	(6.713)	(3.326)	(1.499)	(12.395)
Additional control variables	NO	NO	NO	YES	YES	YES

Note: Model 1 is original model and Model 2 serves as a robustness check with additional control variables; Dependent variable: Y=1: Household member is an on-farm worker; Y=2: Household member is an agribusiness owner; Y=3: Household members are both on-farm workers and agribusiness owners. Significant level: *p<0.1 **p<0.05 ***p<0.01.

Table 6 Financial Capital Effect on the Transition of Rural Residents: Marginal Effect, Multinomial Logit

Financial capital	Model 1			Model 2		
	Y=1	Y=2	Y=3	Y=1	Y=2	Y=3
Household total income(yuan)						
30,000-50,000	0.033**	0.003	0.006	0.027*	0.002	0.004
	(0.016)	(0.010)	(0.006)	(0.016)	(0.01)	(0.006)
＞50,000	0.046***	0.008	0.014**	0.032*	0.002	0.013
	(0.017)	(0.010)	(0.006)	(0.017)	(0.010)	(0.006)
Income level compared with 2013						
lower	-0.048**	0.017	0.006	-0.043	0.013	0.005
	(0.023)	(0.012)	(0.006)	(0.023)	(0.012)	(0.006)
higher	0.000	-0.013	-0.003	0.002	-0.011	-0.002
	(0.015)	(0.009)	(0.005)	(0.015)	(0.009)	(0.005)
Income level compared with other households						
lower	0.003	-0.018	0.006	0.001	-0.016	0.007
	(0.018)	(0.013)	(0.006)	(0.018)	(0.013)	(0.006)
higher	-0.005	0.031***	0.000	-0.007	0.032***	-0.002
	(0.019)	(0.009)	(0.006)	(0.019)	(0.009)	(0.005)
Savings	-0.027*	0.012	-0.003	-0.032**	0.010	-0.001
	(0.016)	(0.011)	(0.005)	(0.016)	(0.011)	(0.005)
Bank loan	0.024*	0.007	-0.001	0.014	0.004	-0.004
	(0.013)	(0.008)	(0.004)	(0.013)	(0.008)	(0.004)
Additional control variables	NO	NO	NO	YES	YES	YES

Note: Model 1 is original model and Model 2 serves as a robustness check with additional control variables; Dependent variable: Y=1: Household member is an on-farm worker; Y=2: Household member is an agribusiness owner; Y=3: Household members are both on-farm workers and agribusiness owners. Significant level: *p<0.1 **p<0.05 ***p<0.01.

4.3 Natural capital and on-farm transitions

In Table 7, we assess how natural capital contributes to on-farm transitions. Households that possess contracted farmland are more likely to transition into on-farm employment. Having access to more land than contracted is associated with greater probability of self-employment within the household: this may be an effect of transitioning into entrepreneurial activity rather than a driver of it, as self-employed farmers may seek to acquire additional land. On the other hand, households with land of better-than-average quality and with better than average productivity tend to have members in formal employment (after controlling for the amount of land). Land of better quality should be easier to work on, and this should help release some household members to seek employment elsewhere. Likewise, higher productivity level means that less labor is required to work on given quantity of land, again helping release labor into formal employment.

Table 7 Natural Capital Effect on the Transition of Rural Residents: Marginal Effect, Multinomial Logit

Natural capital	Model 1			Model 2		
	Y=1	Y=2	Y=3	Y=1	Y=2	Y=3
Contracted farmland more than average	0.041****	0.002	0.000	0.033**	0.007	-0.006
	(0.015)	(0.009)	(0.005)	(0.015)	(0.009)	(0.005)
Actual farmland						
less than contracted	-0.014	0.005	0.004	-0.011	0.008	0.002
	(0.015)	(0.009)	(0.005)	(0.015)	(0.009)	(0.005)
more than contracted	0.002	0.027***	0.017***	0.010	0.031	0.016
	(0.021)	(0.010)	(0.005)	(0.021)	(0.011)	(0.005)
Land quality						
poor	-0.007	-0.002	-0.001	-0.007	0.000	-0.003
	(0.023)	(0.015)	(0.009)	(0.022)	(0.015)	(0.009)
good	0.037***	0.016*	0.01**	0.030**	0.016*	0.010*
	(0.014)	(0.008)	(0.005)	(0.014)	(0.009)	(0.005)
Land fragmentation	-0.028*	-0.001	0.006	-0.023	0.011	0.008
	(0.015)	(0.009)	(0.005)	(0.018)	(0.010)	(0.006)
Productivity						
low	-0.011	0.012	-0.009	-0.013	0.010	-0.009
	(0.016)	(0.009)	(0.006)	(0.015)	(0.009)	(0.006)
high	0.041*	0.021*	0.006	0.037*	0.020	0.006
	(0.021)	(0.012)	(0.006)	(0.021)	(0.012)	(0.006)
Additional control variables	NO	NO	NO	YES	YES	YES

Note: Model 1 is original model and Model 2 serves as a robustness check with additional control variables; Dependent variable: Y=1: Household member is an on-farm worker; Y=2: Household member is an agribusiness owner; Y=3: Household members are both on-farm workers and agribusiness owners. Significant level: *p<0.1 **p<0.05 ***p<0.01

4.4 Social capital and on-farm transitions

The results in Table 8 indicate that there is an inverted U-shaped relationship between social capital and employment transitions. Both having a popular or unpopular surname is associated with lower probability of on-farm employment transition than having a surname of average popularity. Similarly, those with few and many friends are both less likely to transition into on-farm employment. This implies that transition into formal agricultural employment is more likely for those with a surname that is neither popular nor rare, and those with an intermediate number of friends. A popular surname probably means that many residents in the village share the same surname, and this may diminish the strength of ties among those with the same surname. In contrast, having an unpopular surname means that there are few kinsmen in the village. Interestingly, the effects of the two types of social capital on on-farm self-employment transition are different: those

with popular surnames are (weakly) more likely to move into rural self-employment while having more than average number of friends has no effect on this type of transition.

Table 8 Social Capital Effect on the Transition of Rural Residents: Marginal Effect, Multinomial Logit

Social capital	Model 1			Model 2		
	Y=1	Y=2	Y=3	Y=1	Y=2	Y=3
Popular surname in the village						
not popular surname	-0.05***	0.016	-0.004	-0.046**	0.016	-0.003
	(0.019)	(0.011)	(0.005)	(0.018)	(0.011)	(0.005)
popular surname	-0.041***	0.018*	-0.011**	-0.037**	0.018*	-0.010**
	(0.015)	(0.01)	(0.005)	(0.015)	(0.010)	(0.005)
Number of relatives or friends						
few	-0.054*	-0.014	0.002	-0.053*	-0.013	0.006
	(0.032)	(0.021)	(0.009)	(0.032)	(0.021)	(0.009)
many	-0.044***	-0.004	0.004	-0.040***	-0.001	0.003
	(0.014)	(0.008)	(0.005)	(0.014)	(0.008)	(0.005)
Additional control variables	NO	NO	NO	YES	YES	YES

Note: Model 1 is original model and Model 2 serves as a robustness check with additional control variables; Dependent variable: Y=1: Household member is an on-farm worker; Y=2: Household member is an agribusiness owner; Y=3: Household members are both on-farm workers and agribusiness owners. Significant level: *p<0.1 **p<0.05 ***p<0.01

4.5 Political capital and on-farm transitions

In terms of political capital, having a family member who is a village cadre has a positive effect on the probability of both types of on-farm transitions, as presented in Table 9. Such cadres could potentially help their family members in a variety of ways. For instance, rural cadres can use their position capital to help family members gain better access to higher-level bureaucrats, credit sources, market information or technical expertise (Oi, 1999; Zhang et al, 2012, Jin et al., 2014). Indeed, this only applies when a household member is a village cadre: having (more distant) relatives or friends as village cadres, or having a family member as a cadre outside the village, have no significant influence on on-farm transition. This situation is consistent with the Chinese proverb: "Distant water will not quench a fire nearby" (*Yuan Shui Jiu Bu Le Jin Huo*). Hence, the depth of political capital is much more important than its breadth.

Table 9 Political Capital Effect on the Transition of Rural Residents: Marginal Effect, Multinomial Logit

Political capital	Model 1			Model 2		
	Y=1	Y=2	Y=3	Y=1	Y=2	Y=3
Family member is or was village cadre	0.039**	0.026***	0.001	0.042***	0.024***	0.001
	(0.016)	(0.009)	(0.005)	(0.016)	(0.009)	(0.005)
Relative or friend is village cadre	0.015	0.000	0.008*	0.017	-0.003	0.010**
	(0.015)	(0.008)	(0.005)	(0.014)	(0.008)	(0.005)
Family members is cadre outside the village	0.000	0.009	0.007	-0.004	0.002	0.008
	(0.031)	(0.015)	(0.007)	(0.030)	(0.015)	(0.007)
Relatives or friends is cadre outside the village	0.012	0.002	0.001	0.002	0.004	0.002
	(0.017)	(0.009)	(0.005)	(0.016)	(0.009)	(0.005)
Family members join the CPC	-0.034*	-0.008	0.001	-0.030	-0.006	0.002
	(0.019)	(0.01)	(0.005)	(0.019)	(0.010)	(0.005)
Additional control variables	NO	NO	NO	YES	YES	YES

Note: Model 1 is original model and Model 2 serves as a robustness check with additional control variables; Dependent variable: Y=1: Household member is an on-farm worker; Y=2: Household member is an agribusiness owner; Y=3: Household members are both on-farm workers and agribusiness owners. Significant level: *p<0.1 **p<0.05 ***p<0.01.

Table 10 Additional Control Variables Effect on the Transition of Rural Residents: Marginal Effect, Multinomial Logit

Additional control variables	Model 1			Model 2		
	Y=1	Y=2	Y=3	Y=1	Y=2	Y=3
Province fixed effects	NO	NO	NO	YES	YES	YES
Age of the household head	/	/	/	0.008***	-0.001	0.002*
				(0.003)	(0.001)	(0.001)
Age square	/	/	/	0.000	0.000	0.000
				(0.000)	(0.000)	(0.000)
Gender	/	/	/	-0.016	-0.003	-0.006
				(0.014)	(0.008)	(0.005)
Educational level of the household head	/	/	/	0.009	-0.020	-0.001
				(0.018)	(0.011)	(0.006)
Migrant worker experience of the household head	/	/	/	0.034**	0.001	0.003
				(0.014)	(0.008)	(0.004)
Traffic condition in the village	/	/	/			
poor	/	/	/	-0.055**	-0.008	-0.005
				(0.021)	(0.013)	(0.008)
good	/	/	/	0.019	0.012	-0.003
				(0.014)	(0.009)	(0.005)
Distance from home to town	/	/	/	0.001	0.000	0.000
				(0.001)	(0.001)	(0.000)

Note: Model 1 is original model and Model 2 serves as a robustness check with additional control variables; Dependent variable: Y=1: Household member is an on-farm worker; Y=2: Household member is an agribusiness owner; Y=3: Household members are both on-farm workers and agribusiness owners. Significant level: *p<0.1 **p<0.05 ***p<0.01.

It is also interesting that having household members in the Communist Party of China has a weakly negative effect on the likelihood of on-farm employment (and no significant effect on on-farm self-employment): this may either mean that CPC members receive few benefits, or that the Party membership helps them move out of agriculture into off-farm employment or public administration.

4.6 Additional control variables and on-farm transitions

The effects of additional control factors are presented in Table 10. We find that the age of the household head has a positive effect on the decision to transition as on-farm worker. Gender or education level of the household head, somewhat surprisingly, have no effect. Finally, poor traffic conditions in the village discourage on-farm transition into employment.

5. Conclusions

By using a recent targeted survey of rural households, our study investigates the effects of broad measures of human, financial, natural, social, and political capital on rural transitions from subsistence farming into either on-farm employment or on-farm self-employment. Our research confirms that capital endowments are important determinants of livelihood strategies of rural households. Somewhat surprisingly, the role of financial capital, such as savings and access to bank loans, is limited. Instead, our results highlight the importance of natural, human, social and political capital. Specifically, investing in human capital, in the form of receiving training in either agricultural technology or entrepreneurial skills, increases the likelihood of transitioning into on-farm self-employment and employment. Former migrant workers, who have returned to their home village, are more likely to find formal employment, suggesting that the experience of rural-to-urban migration improves the employability of rural workers even in the rural labor market. Both the quality and quantity of farmland are important for on-farm transitions, by helping release surplus labor into formal employment. Social capital is a double-edge sword in terms of on-farm employment as intermediate values seem to be more conducive towards on-farm employment than either high or low endowments. Political capital such as local rural cadre status in the village also exerts positive influence on on-farm transition. However, political connections outside of the village

are less influential. Finally, poor road infrastructure poses a barrier to transition into on-farm employment.

Although off-farm transitions (farm-exit) is still the main trend in rural household livelihood strategy, on-farm transitions should not be neglected given the size of China's agricultural sector. Therefore, a deep insight into on-farm transitions and on-farm labor distribution will help policy makers to introduce corresponding policies so as to implement rational and efficient on-farm labor allocation. For instance, the government may want to improve access to agricultural training programs in rural areas, improve the local road infrastructure, or facilitate the easy return of rural-to-urban migrants. Such measures should encourage on-farm transitions.

Appendix

Table A1

Index of 31 Provinces in China in 2012 for the Cluster Analysis

Province	Population	per Capita GDP (ten thousand yuan)	Agricultural Acreage (thousand hectare)	Proportion of Agricultural Acreage (%)	Proportion of Agricultural Population (%)	Proportion of Agricultural Production (%)
Beijing	2069	8.64	231.7	13.79	13.8	0.93
Tianjin	1413	9.12	441.1	39.03	18.45	1.52
Hebei	7288	3.65	6317.3	33.66	53.2	11.65
Shanxi	3611	3.35	4055.8	25.95	48.74	7.00
Inner Mongolia	2490	6.38	7147.2	6.04	42.26	7.38
Liaoning	4389	5.66	4085.3	28.00	34.35	6.20
Jilin	2750	4.34	5534.6	29.52	46.3	9.77
Heilongjiang	3834	3.57	11830.1	26.01	43.1	16.91
Shanghai	2380	8.48	244.0	38.72	10.7	0.85
Jiangsu	7920	6.83	4763.8	46.43	37	5.49
Zhejiang	5477	6.33	1920.9	18.83	36.8	3.55
Anhui	5988	2.87	5730.2	41.02	53.5	10.85
Fujian	3748	5.26	1330.1	10.97	40.4	6.41
Jiangxi	4504	2.88	2827.1	16.93	52.49	7.75
Shandong	9685	5.16	7515.3	48.86	47.57	7.92
Henan	9406	3.15	7926.4	47.46	57.57	13.38
Hubei	5779	3.85	4664.1	25.09	46.5	11.18
Hunan	6639	3.34	3789.4	17.89	53.35	11.97
Guangdong	10594	5.39	2830.7	15.73	32.6	3.91
Guangxi	4682	2.78	4217.5	17.87	56.47	13.23
Hainan	887	3.22	727.5	21.40	48.4	16.13
Chongqing	2945	3.87	2235.9	27.17	43.02	7.38
Sichuan	8076	2.96	5947.4	12.35	56.47	11.58
Guizhou	3484	1.97	4485.3	25.48	63.59	12.62
Yunnan	4659	2.21	6072.1	15.84	60.69	13.56
Tibet	308	2.28	361.6	0.29	77.25	7.62
Shaanxi	3753	3.85	4050.3	19.70	49.98	10.56
Gansu	2578	2.19	4658.8	10.25	61.25	17.42
Qinghai	573	3.30	542.7	0.75	52.56	6.18
Ningxia	647	3.62	1107.1	16.67	49.33	10.27
Xinjiang	2233	3.36	4124.6	2.48	56.02	22.32

Data sources: China Statistical Yearbook 2013

Table A2

Variables Description Reported with Number of Sample Sizes and Proportion

Variables			Observations	Proportion	Variables			Observations	Proportion
Human capital	The number of active members of household		2704	100	Natural capital	Contracted farmland	<average	1475	54.55
	Gender distribution of household active members	female>male	419	15.50			≥average	1229	45.45
		female=male	1367	50.55		Actual Farmland	<contracted farmland	907	33.54
		female<male	918	33.95			=contracted farmland	1502	55.55
	Household active members' average education (of years)	≤9	1922	71.08			>contracted farmland	295	10.91
		≥10	782	28.92		Land quality	poor	328	12.13
	Training of agricultural technology	none	2284	84.47			average	1285	47.52
		yes	420	15.53			good	1091	40.34
	Entrepreneurial training	none	2424	89.64		Land fragmentation	<average	1494	55.25
		yes	280	10.36			≥average	1210	44.75
	Household members was migrate worker	none	2284	84.47		Productivity	poor	746	27.59
		yes	420	15.53			average	1678	62.06
	Off-farm employment of household members	none	522	19.30			good	280	10.36
		yes	2182	80.70	Political capital	Family members is or was village cadre	none	2039	75.41
	Off-farm self-employment of household members	none	2509	92.79			yes	665	24.59
		yes	195	7.21		Relatives or friends is village cadre	none	1636	60.50
Financial capital	Household total income(yuan)	<30,000	1348	49.85			yes	1068	39.50
		30,000-50,000	715	26.44		Family members is cadre outside the village	none	2571	95.08
		>50,000	641	23.71			yes	133	4.92
	Income level compared with 2013	lower	372	13.76		Relatives or friends is cadre outside the village	none	2125	78.59
		about the same	1497	55.36			yes	579	21.41
		higher	835	30.88		Family members join the CPC	none	2216	81.95
	Income level compared with other households	lower	525	19.41			yes	488	18.05
		about the same	1738	64.28	Additional control variables	Age of the household head		2704	100
		higher	441	16.31		Gender of the household head	male	1723	63.72
	Savings	no	653	24.15			female	981	36.28
		yes	2051	75.85		Educational level of the household head (of years)	≤9	1951	72.15
	Bank loan	hard to obtain	1702	62.94			≥10	753	27.85
		easy to obtain	1002	37.06		Household head's migrant work experience	no	1106	40.90
Social capital	Popular surname in the village	not popular	554	20.49			yes	1598	59.10
		average	797	29.47		Traffic condition in the village	poor	434	16.05
		popular	1353	50.04			average	1230	45.49
	Amount of relatives or friends	few	152	5.62			good	1040	38.46
		average	1315	48.63		Distance from home to town center (km)		2704	100
		many	1237	45.75					

Table A3

Whole Table of Multinomial Logit Regressions Reporting Marginal Effect

	Model 1			Model 2			Model 3		
	Y=1	**Y=2**	**Y=3**	**Y=1**	**Y=2**	**Y=3**	**Y=1**	**Y=2**	**Y=3**
Human capital									
The number of active members of household									
Gender distribution of active members of household	0.015***	-0.002	0.001	0.020***	-0.004	0.003	0.020***	-0.004	0.003
	(0.005)	(0.003)	(0.001)	(0.005)	(0.004)	(0.002)	(0.005)	(0.003)	(0.002)
more females than males	-0.012	-0.017	-0.004	-0.009	-0.013	-0.002	-0.007	-0.016	-0.002
	(0.019)	(0.013)	(0.006)	(0.020)	(0.013)	(0.006)	(0.019)	(0.013)	(0.006)
more males than females	-0.004	0.006	-0.007	-0.007	0.006	-0.009*	-0.007	0.004	-0.009*
	(0.015)	(0.008)	(0.005)	(0.015)	(0.008)	(0.005)	(0.015)	(0.008)	(0.005)
Household active members' education level	-0.014	0.004	-0.004	-0.014	0.013	-0.004	/	/	/
	(0.015)	(0.008)	(0.005)	(0.015)	(0.009)	(0.005)			
Training in agricultural technology	0.003	0.025***	0.010**	0.011	0.023***	0.010**	0.009	0.025***	0.010**
	(0.019)	(0.009)	(0.005)	(0.018)	(0.009)	(0.005)	(0.018)	(0.009)	(0.005)
Entrepreneurial training	0.043**	0.050***	0.016	0.049**	0.054	0.020	0.049**	0.054***	0.019***
	(0.021)	(0.009)	(0.005)	(0.020)	(0.009)	(0.005)	(0.020)	(0.009)	(0.005)
Household members was migrate worker	0.207***	-0.016	0.003	0.201***	-0.018*	0.002	0.200***	-0.017**	0.002
	(0.023)	(0.010)	(0.006)	(0.023)	(0.010)	(0.006)	(0.023)	(0.010)	(0.006)
Off-farm employment of household members	-0.280***	0.018	-0.007	-0.288***	0.019	-0.011*	-0.290***	0.018	-0.010*
	(0.022)	(0.012)	(0.006)	(0.022)	(0.012)	(0.006)	(0.022)	(0.012)	(0.006)
Off-farm self-employment of household members	-0.017	-0.032	-0.148	-0.017	-0.031	-0.148	-0.021	-0.030	-0.145
	(1.533)	(0.783)	(6.713)	(3.326)	(1.499)	(12.395)	(2.952)	(1.288)	(10.918)
Financial capital									
Household total income(yuan)									
30,000-50,000	0.033**	0.003	0.006	0.027*	0.002	0.004	0.027*	0.002	0.005
	(0.016)	(0.010)	(0.006)	(0.016)	(0.01)	(0.006)	(0.016)	(0.010)	(0.006)

＞50,000	0.046***	0.008	0.014**	0.032*	0.002	0.013	0.032*	0.003	0.013**
	(0.017)	(0.010)	(0.006)	(0.017)	(0.010)	(0.006)	(0.017)	(0.010)	(0.006)
Income level compared with 2013									
lower	-0.048**	0.017	0.006	-0.043	0.013	0.005	-0.043*	0.014	0.005
	(0.023)	(0.012)	(0.006)	(0.023)	(0.012)	(0.006)	(0.023)	(0.012)	(0.006)
higher	0.000	-0.013	-0.003	0.002	-0.011	-0.002	0.002	-0.011	-0.003
	(0.015)	(0.009)	(0.005)	(0.015)	(0.009)	(0.005)	(0.015)	(0.009)	(0.005)
Income level compared with other households									
lower	0.003	-0.018	0.006	0.001	-0.016	0.007	0.001	-0.017	0.006
	(0.018)	(0.013)	(0.006)	(0.018)	(0.013)	(0.006)	(0.018)	(0.013)	(0.006)
higher	-0.005	0.031***	0.000	-0.007	0.032***	-0.002	-0.008	0.033***	-0.001
	(0.019)	(0.009)	(0.006)	(0.019)	(0.009)	(0.005)	(0.019)	(0.009)	(0.005)
Savings	-0.027*	0.012	-0.003	-0.032**	0.010	-0.001	-0.030*	0.010	-0.002
	(0.016)	(0.011)	(0.005)	(0.016)	(0.011)	(0.005)	(0.016)	(0.011)	(0.005)
Bank loan	0.024*	0.007	-0.001	0.014	0.004	-0.004	/	/	/
	(0.013)	(0.008)	(0.004)	(0.013)	(0.008)	(0.004)			
Natural capital									
Contracted farmland	0.041****	0.002	0.000	0.033**	0.007	-0.006	0.027*	0.010	-0.003
	(0.015)	(0.009)	(0.005)	(0.015)	(0.009)	(0.005)	(0.015)	(0.008)	(0.005)
Actual farmland									
less than contracted	-0.014	0.005	0.004	-0.011	0.008	0.002	-0.010	0.008	0.003
	(0.015)	(0.009)	(0.005)	(0.015)	(0.009)	(0.005)	(0.015)	(0.009)	(0.005)
more than contracted	0.002	0.027***	0.017***	0.010	0.031	0.016	0.009	0.031***	0.016***
	(0.021)	(0.010)	(0.005)	(0.021)	(0.011)	(0.005)	(0.021)	(0.011)	(0.005)
Land quality									
poor	-0.007	-0.002	-0.001	-0.007	0.000	-0.003	-0.010	0.000	-0.003
	(0.023)	(0.015)	(0.009)	(0.022)	(0.015)	(0.009)	(0.022)	(0.015)	(0.009)
good	0.037***	0.016*	0.01**	0.030**	0.016*	0.010*	0.031**	0.017*	0.010*
	(0.014)	(0.008)	(0.005)	(0.014)	(0.009)	(0.005)	(0.014)	(0.009)	(0.005)

Land fragmentation	-0.028*	-0.001	0.006	-0.023	0.011	0.008	/	/	/
	(0.015)	(0.009)	(0.005)	(0.018)	(0.010)	(0.006)			
Productivity									
low	-0.011	0.012	-0.009	-0.013	0.010	-0.009	-0.014	0.011	-0.009
	(0.016)	(0.009)	(0.006)	(0.015)	(0.009)	(0.006)	(0.015)	(0.009)	(0.005)
high	0.041*	0.021*	0.006	0.037*	0.020	0.006	0.038*	0.020	0.006
	(0.021)	(0.012)	(0.006)	(0.021)	(0.012)	(0.006)	(0.021)	(0.012)	(0.006)
Social capital									
Popular surname in the village									
not popular surname	-0.05***	0.016	-0.004	-0.046**	0.016	-0.003	-0.045**	0.017	-0.003
	(0.019)	(0.011)	(0.005)	(0.018)	(0.011)	(0.005)	(0.018)	(0.011)	(0.005)
popular surname	-0.041***	0.018*	-0.011**	-0.037**	0.018*	-0.010**	-0.037**	0.017	-0.009*
	(0.015)	(0.01)	(0.005)	(0.015)	(0.010)	(0.005)	(0.015)	(0.010)	(0.005)
Amount of relatives or friends									
few	-0.054*	-0.014	0.002	-0.053*	-0.013	0.006	-0.055*	-0.012	0.008
	(0.032)	(0.021)	(0.009)	(0.032)	(0.021)	(0.009)	(0.032)	(0.021)	(0.009)
many	-0.044***	-0.004	0.004	-0.040***	-0.001	0.003	-0.041***	0.000	0.004
	(0.014)	(0.008)	(0.005)	(0.014)	(0.008)	(0.005)	(0.014)	(0.008)	(0.005)
Political capital									
Family members is or was village cadre	0.039**	0.026***	0.001	0.042***	0.024***	0.001	0.042***	0.025***	0.001
	(0.016)	(0.009)	(0.005)	(0.016)	(0.009)	(0.005)	(0.016)	(0.009)	(0.005)
Relatives or friends is village cadre	0.015	0.000	0.008*	0.017	-0.003	0.010**	0.017	-0.001	0.011***
	(0.015)	(0.008)	(0.005)	(0.014)	(0.008)	(0.005)	(0.014)	(0.008)	(0.005)
Family members is cadre outside the village	0.000	0.009	0.007	-0.004	0.002	0.008	/	/	/
	(0.031)	(0.015)	(0.007)	(0.030)	(0.015)	(0.007)			
Relatives or friends is cadre outside the village	0.012	0.002	0.001	0.002	0.004	0.002	/	/	/
	(0.017)	(0.009)	(0.005)	(0.016)	(0.009)	(0.005)			
Family members join the CPC	-0.034*	-0.008	0.001	-0.030	-0.006	0.002	-0.030	-0.005	0.002
	(0.019)	(0.01)	(0.005)	(0.019)	(0.010)	(0.005)	(0.019)	(0.010)	(0.005)

Control variable									
Province fixed effects	NO	NO	NO	YES	YES	YES	YES	YES	YES
Age of the household head	/	/	/	0.008***	-0.001	0.002*	0.007***	-0.001	0.002**
				(0.003)	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)
Age square	/	/	/	0.000	0.000	0.000	0.000***	0.000	0.000*
				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Gender	/	/	/	-0.016	-0.003	-0.006	-0.016	-0.003	-0.006
				(0.014)	(0.008)	(0.005)	(0.014)	(0.008)	(0.005)
Educational level of the household head	/	/	/	0.009	-0.020	-0.001	0.003	-0.015	-0.001
				(0.018)	(0.011)	(0.006)	(0.017)	(0.01)	(0.005)
Migrate working experience of the household head	/	/	/	0.034	0.001	0.003	0.034**	0.002	0.002
				(0.014)	(0.008)	(0.004)	(0.014)	(0.008)	(0.004)
Traffic condition in the village	/	/	/						
poor	/	/	/	-0.055	-0.008	-0.005	-0.054**	-0.009	-0.006
				(0.021)	(0.013)	(0.008)	(0.021)	(0.013)	(0.008)
good	/	/	/	0.019	0.012	-0.003	0.019	0.011	-0.003
				(0.014)	(0.009)	(0.005)	(0.014)	(0.008)	(0.005)
Distance from home to town	/	/	/	0.001	0.000	0.000	0.001	0.000	0.000
				(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)
Observations		2704			2704			2704	

Note: Model 1 is original model and Model 2 and Model 3 serve as robustness checks with additional control variables; Dependent variable: Y=1: Household member is an on-farm worker; Y=2: Household member is an agribusiness owner; Y=3: Household members are both on-farm workers and agribusiness owners. Significant level: *p<0.1 **p<0.05 ***p<0.01

Table A4

Whole Table of Multinomial Logit Regressions Reporting Relative-Risk Ratio Outcomes

	Model 1			Model 2			Model 3		
	Y=1	**Y=2**	**Y=3**	**Y=1**	**Y=2**	**Y=3**	**Y=1**	**Y=2**	**Y=3**
Human capital									
The number of active members of household	1.142***	0.960	1.110	1.209***	0.929	1.388*	1.211***	0.933	1.349
	(0.0545)	(0.0894)	(0.157)	(0.0605)	(0.0902)	(0.253)	(0.0602)	(0.0893)	(0.263)
Gender distribution of active members of household									
more females than males	0.860	0.616	0.598	0.889	0.682	0.749	0.904	0.639	0.756
	(0.151)	(0.212)	(0.336)	(0.165)	(0.240)	(0.465)	(0.166)	(0.222)	(0.465)
more males than females	0.956	1.132	0.510	0.917	1.120	0.379*	0.923	1.062	0.411*
	(0.129)	(0.256)	(0.242)	(0.128)	(0.260)	(0.204)	(0.128)	(0.244)	(0.212)
Household active members' education level	0.880	1.075	0.642	0.882	1.387	0.704	/	/	/
	(0.119)	(0.236)	(0.282)	(0.129)	(0.330)	(0.359)			
Training in agricultural technology	1.095	2.018***	2.737**	1.187	2.023***	3.302**	1.172	2.077***	3.124**
	(0.188)	(0.468)	(1.175)	(0.208)	(0.486)	(1.578)	(0.204)	(0.496)	(1.457)
Entrepreneurial training	1.664***	4.328***	6.249***	1.848***	5.169***	11.11***	1.858***	5.176***	9.973***
	(0.321)	(1.034)	(2.771)	(0.367)	(1.297)	(5.417)	(0.368)	(1.300)	(4.712)
Household members was migrate worker	6.558***	0.924	2.077	6.668***	0.862	1.959	6.637***	0.889	2.039
	(1.404)	(0.244)	(1.185)	(1.485)	(0.238)	(1.187)	(1.477)	(0.244)	(1.221)
Off-farm employment of household members	0.583**	0.246***	6.62e-07	0.0633***	0.985	0.164***	0.0629***	0.945	0.166***
	(0.156)	(0.133)	(0.000418)	(0.0142)	(0.340)	(0.0995)	(0.0141)	(0.324)	(0.100)
Off-farm self-employment of household members	0.0777***	1.017	0.290**	0.533**	0.237***	2.21e-07	0.519**	0.246**	3.29e-07
	(0.0164)	(0.336)	(0.169)	(0.150)	(0.130)	(0.000278)	(0.145)	(0.135)	(0.000361)
Financial capital									
Household total income(yuan)									
30,000-50,000	1.381**	1.168	1.886	1.319*	1.129	1.724	1.317*	1.118	1.758
	(0.200)	(0.302)	(1.006)	(0.198)	(0.300)	(0.987)	(0.197)	(0.297)	(0.994)
＞50,000	1.596***	1.394	4.188***	1.418**	1.191	4.321**	1.408**	1.205	3.939**

	(0.251)	(0.365)	(2.217)	(0.231)	(0.324)	(2.518)	(0.228)	(0.326)	(2.257)
Income level compared with 2013									
lower	0.672*	1.490	1.681	0.689*	1.353	1.498	0.691*	1.390	1.582
	(0.140)	(0.469)	(0.939)	(0.148)	(0.438)	(0.922)	(0.148)	(0.447)	(0.967)
higher	0.971	0.693	0.693	0.993	0.735	0.772	0.994	0.733	0.723
	(0.131)	(0.165)	(0.323)	(0.138)	(0.178)	(0.377)	(0.138)	(0.177)	(0.349)
Income level compared with other households									
lower	1.015	0.638	1.652	1.000	0.657	1.841	1.000	0.646	1.715
	(0.167)	(0.217)	(0.876)	(0.169)	(0.227)	(1.078)	(0.168)	(0.223)	(0.996)
higher	1.003	2.260***	1.139	0.980	2.393***	0.926	0.976	2.453***	1.005
	(0.172)	(0.558)	(0.599)	(0.173)	(0.609)	(0.504)	(0.173)	(0.620)	(0.537)
Savings	0.793	1.296	0.756	0.749*	1.257	0.817	0.757*	1.243	0.789
	(0.112)	(0.369)	(0.379)	(0.112)	(0.374)	(0.435)	(0.113)	(0.368)	(0.413)
Bank loan	1.256*	1.248	0.963	1.136	1.114	0.674	/	/	/
	(0.150)	(0.256)	(0.382)	(0.143)	(0.239)	(0.292)			
Natural capital									
Contracted farmland	1.458***	1.125	1.150	1.368**	1.253	0.631	1.310*	1.362	0.843
	(0.198)	(0.266)	(0.515)	(0.200)	(0.311)	(0.339)	(0.181)	(0.315)	(0.412)
Actual farmland									
less than contracted	0.898	1.140	1.474	0.921	1.241	1.260	0.926	1.234	1.313
	(0.122)	(0.269)	(0.732)	(0.130)	(0.302)	(0.671)	(0.130)	(0.299)	(0.691)
more than contracted	1.107	2.191***	5.327***	1.210	2.563***	5.912***	1.203	2.562***	6.123***
	(0.214)	(0.602)	(2.494)	(0.243)	(0.742)	(3.105)	(0.241)	(0.738)	(3.115)
Land quality									
poor	0.930	0.930	0.911	0.923	0.962	0.706	0.899	0.962	0.715
	(0.191)	(0.368)	(0.764)	(0.196)	(0.389)	(0.624)	(0.190)	(0.387)	(0.624)
good	1.469***	1.688**	3.031**	1.411**	1.712**	3.278**	1.421**	1.729**	3.103**
	(0.188)	(0.368)	(1.376)	(0.193)	(0.400)	(1.778)	(0.194)	(0.403)	(1.664)
Land fragmentation	0.783*	0.943	1.687	0.839	1.343	2.305	/	/	/

	(0.108)	(0.220)	(0.742)	(0.143)	(0.361)	(1.383)			
Productivity									
low	0.906	1.323	0.445	0.877	1.244	0.397*	0.872	1.281	0.418
	(0.128)	(0.302)	(0.232)	(0.128)	(0.293)	(0.221)	(0.127)	(0.299)	(0.228)
high	1.527**	1.907**	2.122	1.505**	1.896*	2.249	1.510**	1.885*	2.130
	(0.297)	(0.625)	(1.293)	(0.300)	(0.631)	(1.482)	(0.299)	(0.624)	(1.366)
Social capital									
Popular surname in the village									
not popular surname	0.646***	1.421	0.663	0.658**	1.440	0.685	0.663**	1.440	0.672
	(0.109)	(0.431)	(0.345)	(0.115)	(0.449)	(0.378)	(0.115)	(0.447)	(0.367)
popular surname	0.689***	1.480	0.353**	0.702**	1.488	0.331**	0.707**	1.449	0.374*
	(0.0960)	(0.398)	(0.170)	(0.103)	(0.413)	(0.171)	(0.104)	(0.400)	(0.189)
Amount of relatives or friends									
few	0.599*	0.633	1.038	0.598*	0.653	1.597	0.591*	0.667	1.762
	(0.174)	(0.351)	(0.895)	(0.181)	(0.368)	(1.475)	(0.178)	(0.374)	(1.619)
many	0.670***	0.857	1.269	0.684***	0.920	1.256	0.682***	0.934	1.362
	(0.0877)	(0.194)	(0.567)	(0.0916)	(0.213)	(0.600)	(0.0905)	(0.214)	(0.646)
Political capital									
Family members is or was village cadre	1.491***	2.171***	1.355	1.555***	2.092***	1.311	1.571***	2.132***	1.414
	(0.222)	(0.508)	(0.624)	(0.237)	(0.501)	(0.669)	(0.237)	(0.507)	(0.702)
Relatives or friends is village cadre	1.168	1.051	2.249*	1.202	0.988	2.838**	1.207	1.038	3.045**
	(0.156)	(0.238)	(0.941)	(0.165)	(0.230)	(1.295)	(0.161)	(0.234)	(1.338)
Family members is cadre outside the village	1.034	1.315	1.966	0.984	1.094	2.219	/	/	/
	(0.291)	(0.527)	(1.286)	(0.280)	(0.449)	(1.534)			
Relatives or friends is cadre outside the village	1.126	1.093	1.183	1.037	1.146	1.313	/	/	/
	(0.170)	(0.267)	(0.527)	(0.162)	(0.286)	(0.639)			
Family members join the CPC	0.723*	0.773	0.996	0.747*	0.819	1.070	0.745*	0.841	1.055
	(0.124)	(0.207)	(0.490)	(0.132)	(0.226)	(0.589)	(0.131)	(0.230)	(0.557)
Control variable									

Province fixed effects	NO	NO	NO	YES	YES	YES	YES	YES	YES
Age of the household head	/	/	/	1.079***	0.989	1.209**	1.073***	0.992	1.209**
				(0.0281)	(0.0383)	(0.115)	(0.0276)	(0.0384)	(0.114)
Age square	/	/	/	0.999***	1.000	0.998**	0.999***	1.000	0.998**
				(0.000296)	(0.000418)	(0.00108)	(0.000293)	(0.000419)	(0.00106)
Gender	/	/	/	0.837	0.864	0.505	0.838	0.872	0.504
				(0.113)	(0.196)	(0.247)	(0.112)	(0.197)	(0.243)
Educational level of the household head	/	/	/	1.053	0.578*	0.837	1.000	0.666	0.862
				(0.179)	(0.170)	(0.488)	(0.160)	(0.185)	(0.479)
Migrate working experience of the household head	/	/	/	1.393**	1.105	1.483	1.402**	1.117	1.406
				(0.185)	(0.241)	(0.672)	(0.185)	(0.243)	(0.623)
Traffic condition in the village									
poor	/	/	/	0.575***	0.711	0.487	0.580***	0.690	0.460
				(0.114)	(0.244)	(0.374)	(0.114)	(0.236)	(0.352)
good	/	/	/	1.210	1.411	0.832	1.217	1.400	0.821
				(0.165)	(0.328)	(0.415)	(0.165)	(0.324)	(0.405)
Distance from home to town	/	/	/	1.013	0.997	0.968	1.013	0.997	0.972
				(0.01000)	(0.0222)	(0.0463)	(0.00996)	(0.0220)	(0.0452)
Constant	0.0139***	0.000259***	9.28e-06***	0.00356***	0.000595***	3.98e-08***	0.00356***	0.00122***	1.11e-07***
	(0.00888)	(0.000261)	(1.78e-05)	(0.00346)	(0.000920)	(1.39e-07)	(0.00321)	(0.00176)	(3.77e-07)
Pseudo R2		0.1595			0.2037			0.2004	
LR chi2		566.38***			722.98***			711.26***	
Log likelihood		-1491.7946			-1413.4946			-1419.3526	
Observations		2704			2704			2704	

Note: Model 1 is original model and Model 2 and Model 3 serve as robustness checks with additional control variables; Dependent variable: Y=1: Household member is an on-farm worker; Y=2: Household member is an agribusiness owner; Y=3: Household members are both on-farm workers and agribusiness owners. Significant level: *p<0.1 **p<0.05 ***p<0.01

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