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Urbanization and rural livelihoods: A case study from Jiangxi Province, China

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ABSTRACT

The livelihoods of Chinese rural households are undergoing a transformation amid urbanization. While participation in the urban economy has improved rural living standards, rural income has consistently lagged behind urban income, and a broader prosperity gap persists between urban and rural areas. How to increase rural income and reduce the rural-urban gap remains a major challenge for the Chinese government. This study examines rural livelihoods within the broader development context of China, paying particular attention to the interconnection between agricultural and industrial development. We further elaborate Arthur Lewis's insight about Unlimited Supply of Labor to illustrate the various social, economic, and institutional components that affect the two-sector development dynamics in the Chinese urbanization context. Through an in-depth case study of eight villages in Jiangxi Province, we analyze the complex processes that shape the livelihoods of rural households, which also provides the micro-socioeconomic foundations for the macro-level development dynamics. Our qualitative interviews and field observations enable us to develop a deeper understanding of the decision-making of rural households and the multifaceted constraints confronting them in developing viable livelihoods. We reflect from a systems perspective on how development, migration, and land policies may synergistically foster healthy rural-urban development dynamics. And this will help lift system-level constraints and facilitate rural households with different characteristics, situated in different local environmental settings, building robust livelihoods via different paths.

1. Introduction

China has been experiencing rapid urbanization which has profoundly transformed rural households' livelihoods (Peng, 2011; Siciliano, 2012; Liu et al., 2014; Long, 2014a). Participation in the urban economy and the overall economic growth in China have contributed to rural poverty reduction and improved rural living standards (De Janvry et al., 2005; Mukherjee and Zhang, 2007; Glauben et al., 2012). However, rural income has consistently lagged behind urban income, and a broader prosperity gap persists between urban and rural areas (Long et al., 2011; Liu et al., 2013, 2014; Long, 2014b; Li et al., 2015). The average net income for rural residents was 134CNY, 2,253CNY, and 9,892CNY in 1978, 2000, and 2014, compared to 343CNY, 6,280CNY, and 29,381CNY for urban residents (NSBC, 2015). The average expenditure of rural and urban households in 2014 was 8,744CNY and 25,449CNY respectively (NSBC, 2015). How to improve rural income and reduce the rural-urban gap has remained a major challenge and top priority of the Chinese government, as described in a series of No. 1 Policy Documents issued by the Central Committee of the Chinese Communist Party since 2004.

Rural livelihoods in China are affected by a variety of institutional factors and policy changes. From 1949 to the late 1970s, development policy in China focused on heavy industry under strong central planning (Lin, 2009). To increase agricultural productivity and ultimately to support industrial development, communal farming systems were in place from 1966 to 1978. Because heavy industries had no need for large amount of labor, rural-urban migration was not permitted, controlled by a household registration system which is called Hukou. As China launched economic reforms in the late 1970s, the communal systems were dismantled. Farmland was contracted out to farmer households (up

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to 30 years), shifting production decisions to individual households (Heerink et al., 2007; Long, 2014a). Rural income and agricultural production were marked by fast growth during the early period of economic reforms (Fan, 1991; Lin, 1992). The growth of the industrial sector resulting from economic reforms also created labor demand in urban areas, spurring rural-urban migration. However, rural income entered a stagnant period in the late 1980s, and the growth rate of grain production slowed down (Huang et al., 2010). A disparity in broader social and cultural development between urban and rural areas also grew and widened. These issues are grouped into and generally referred to as Three Issues of rural development, namely Agriculture, Farmers, and Rural Areas (Zhang et al., 2004; Zhang and Chen, 2005; Shi et al., 2006; Yu and Jensen, 2010).

To improve agriculture and raise farmers' income, beginning in 2004, the Chinese government initiated some new policies. Agriculture taxes were eliminated, and subsidies in the form of cash, high-quality seeds, and machinery have been made to households. China's agricultural subsidies have been rising significantly since 2008 (Gale, 2013). But these subsidies, in general, have limited impact on increasing agricultural output because farmers' agricultural production decisions are heavily influenced by nonfarm income (Gale et al., 2005; Heerink et al., 2007; Huang et al., 2011; Gale, 2013; Tian et al., 2016). In 2006 China launched another rural development program called “Building a New Countryside.” The program represents an integrated approach to rural development issues and aims to improve livelihoods, promote a civilized social atmosphere, develop clean and tidy villages and enhance efficient management (Long and Woods, 2011). Consequently public investments in rural infrastructure have been increased across rural China.

The Chinese government's recent approach to promoting rural development reflects its continued commitment to strengthening farmers' land rights and the use of land rental markets for farmland consolidation, in an attempt to improve land-use efficiency and agricultural income. Farming operations are typically small in China with an average cultivated land of about 0.6 ha per household, according to the country's 2007 agricultural census. In the past few years, China has stepped up its effort in farmland consolidation by providing a variety of special supports to large farms, ranging from cash subsidies to assistance in building facilities. At a rural reform workshop in the village of Xiaogang where eighteen farmer households first initiated individual household management of contracted farmland, President Xi reconfirmed that there will be no change in farmer households' land rights, according to People's Daily on June 06, 2016. China has also begun to relax the Hukou system, especially in smaller cities, allowing and encouraging rural households to settle in these cities (The Brookings Institution, 2015).

Previous studies have used different lenses to examine various aspects of rural development in China, including the role of policy and institutions. An important institutional issue that has been a subject of debate is land tenure (Li and Li, 1989; Wei, 1989; Chi, 2000; Dong, 2008). Currently, farmer households have use rights for contracted farmland. Land in rural china is owned by “collectives,” which are not well defined (Liu et al., 2014). Some scholars argue that privatization of land is necessary to secure land rights of rural households and solve the Three Issues of rural development (Palomar, 2002; Zhang, 2002; Liu and Han, 2006). The current land tenure and Hukou system are also identified as barriers to rural-urban migration (Mullan et al., 2011; Ma and Lian, 2011; Deininger et al., 2014). Sociologists use the lens of “social exclusion” to examine past policies that placed an emphasis on urban development, and Hukou in particular, to explain the disadvantaged position of rural households and marginalized living conditions of migrant workers in cities (Wong et al., 2007; Yin, 2008). Agricultural economists study the development of farmland rental markets, arguing for the need to stimulate their growth (Yao, 2000; Deininger and Jin, 2005; Tu et al., 2006; Jin and Deininger, 2009). Geographers examine spatial patterns of rural development and the rural-urban gap, often using national data that are measured at the level of counties or provinces (Long et al., 2011; Liu et al., 2013; Li et al., 2015). Development studies based on surveys show that large household size, low education, and number of nonworking members are associated with household poverty (Glauben et al., 2012), and the location of a village closer to large cities is correlated with higher income (Veeck and Pannell, 1989).

These studies have generated important insights into rural development in China. However, research on how these social, economic, institutional, and geographic factors interact to affect the development of rural livelihoods is relatively lacking. And such research can offer additional insights into the root causes of rural development issues. This study uses a systems approach to examine the complex, interactive processes that shape the livelihood options of rural households, the choices they make and the outcomes of their choices. We examine rural development within the broader development context of China and pay particular attention to the interconnection between agricultural and industrial development. Indeed, researchers have increasingly recognized the importance of examining rural livelihoods beyond the agricultural sector in an urbanizing world (Rigg, 2006; Rigg et al., 2012; Henley, 2012; Dercon, 2013; Hazell and Rahman, 2014; Wilson and Burton, 2015; Rigg et al., 2016).

Lewis (1954) proposed the theory of Unlimited Supply of Labor to explain how the development dynamics of agricultural and industrial sectors can affect migrant workers' wages. He used a simple two-sector macroeconomic model to show that in the initial stage of development, the industrial sector only draws more labor from the agricultural sector, and migrant workers' wages do not rise with the growth of the industrial sector. The theory of Unlimited Supply of Labor has been used to explain slow wage growth for migrant workers in China (Cai, 2010; Yao and Zhang, 2010; Zhang et al., 2011). We build upon Lewis's insight to further elaborate the two-sector development dynamics in the Chinese urbanization context, centered on transfer of rural labor to the urban sector. Our analysis of the complex processes underlying rural livelihoods also provides the micro-socioeconomic foundations for the macro-level development dynamics.

The analysis was based on surveys, interviews, and field observations across eight villages in Jiangxi Province. The villages are located in the Poyang Lake Region (PLR), an important agricultural production area for Jiangxi and China more generally. The annual per capita net income of farmers in PLR was 5,789CNY in 2010 and below the national average of 5,919CNY (Yan et al., 2013). As with other rural areas in China, rural livelihoods in PLR have become progressively dependent upon nonfarm work. Based on our household surveys, on average, 65% of rural income was from nonfarm sources in 2006.

The interviews and field observations enabled us to develop a deeper understanding of the decision-making of rural households and the multifaceted constraints confronting them in developing viable livelihoods. We used the survey data to further strengthen our qualitative understanding. We reflect from a systems perspective on how development, migration, and land policies may synergistically foster healthy rural-urban development dynamics. And this will help lift system-level constraints and facilitate rural households building robust livelihoods via different paths.

We are aware of the danger of drawing general conclusions from a particular case. It is hoped that our policy discussion may draw more attention to the importance of placing the well-being of rural households at the center of urbanization. Successful urbanization must benefit rural households because the livelihoods of rural

households contribute importantly to a country's economy and affect its overall development level as well (see also Henley, 2012; Studwell, 2013).

2. Analysis framework

We used a livelihood framework to analyze the complex processes underlying rural livelihoods and to illustrate the various social, economic, and institutional components that affect the two-sector development dynamics. The livelihood framework (Ellis, 1998; Bebbington, 1999) takes households as basic analysis units to study the well-being of a household (e.g., Ulrich et al., 2012; Diniz et al., 2013; Lerner et al., 2013). Five types of capital provide resources and assets for a household to form livelihood strategies, giving capabilities to the household. They include human capital (labour capacity, education, skills), natural capital (land, common property resources), physical capital (water supply, housing, communication facilities), social capital (social status, social ties with family and friends), and financial capital (wages, access to credits). The transformation of a household's assets to capabilities involves markets and other societal processes. Fig. 1 shows the micro- and macro-level processes that affect the livelihoods of Chinese rural households in the context of urbanization.

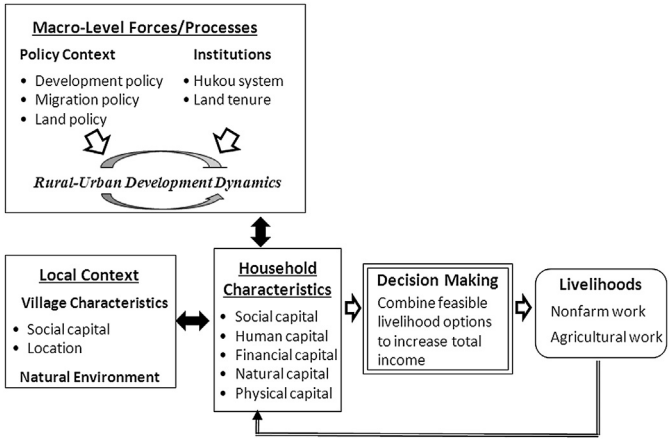

Fig. 1. Rural livelihoods in the context of urbanization: Local and macro-level processes.

Chinese rural households each have a set of feasible livelihood options and allocate their labor according to the relative returns of these options in a way that increases total income (Tian, 2011; Tian et al., 2015). At the local level, environmental factors, most importantly the endowments of farmland and natural resources, and village characteristics, especially location relative to urban centers and social capital, can affect the livelihoods of farmer households in the village. These local social and environmental factors interact with household characteristics to produce variations in livelihood strategies and income levels among rural households, which we will illustrate in Section 4. Institutional arrangements can directly affect and constrain the livelihood options of rural households, the choices they make, and their income levels, which we will discuss in Section 4.2 (see Fig. 4). National policy and institutions also affect rural livelihoods through influencing rural-urban development dynamics, which is the focus of our discussion in Section 5 (see Fig. 5).

3. Data and methods

3.1. Surveys and interviews

Surveys were conducted in 2007 after being field tested first in the summer of 2006. The surveyed villages were chosen to represent geographical and environmental variability in PLR (Table 1). Further details on survey data collection can be found in Tian (2011) and Tian et al. (2015). The surveys produced a comprehensive dataset about livelihoods and socio-demographic information for 192 households (Table 1; Figs. 2 and 3; Appendix A – Table A.1; Appendix A – Table A.2). Data on crop cultivation and production were collected at the plot level. Demographic information, farmland endowment, education, social connections (in terms of government contacts), and income sources were collected or summarized at the household level. All continuous variables were mean-centered for statistical analyses.

To develop an in-depth understanding of the decision-making processes of rural households and how various factors affect or constrain their livelihoods, the first author, accompanied by a local assistant, re-visited surveyed villages in 2008 and conducted formal and informal interviews of farmer households, village leaders, and local government officials (Table 1). We stayed with a household in ZJ, TJK, and HXL, spending five to seven days with each, observing the daily life of villagers and engaging in informal

Table 1
Basic characteristics of surveyed villages.

Category	Variable description	Village							
		ZJ	TJK	FJ	SZT	ZJYM	ZJQ	DWP	HXL
Village ID		34	41	22	13	15	26	47	48
Surveys and interviews	Number of households surveyed	23	20	23	19	21	19	35	33
	Number of households interviewed	13 (3)	15 (2)	2	3	5 (1)	3 (1)	3 (1)	15 (2)
Location	Close to county capital	N	N	Y	Y	Y	Y	N	N
Income	Per capita income (in CNY)	4,280.9	4,972.2	4,673.7	3,238.2	5,476.7	5,989.8	3,978.4	3,612.2
	Pct. nonfarm Income	47.62	89.58	72.42	51.37	82.83	48.84	57.72	76.58
Loans	Avg. amount of loans	7,217.4	15,375	8,217.4	4,394.7	857.1	1,947.4	6,314.3	7,348.5
	Pct. bank loans	0.60	32.51	35.18	0.00	0.00	13.52	1.81	5.57
	Pct. loans used for business	0.60	65.02	2.64	0.00	0.00	0.00	0.00	8.25
Demographics	Avg. number of laborers	3.0	3.3	4.0	3.7	4.3	3.5	3.5	3.6
	Avg. number of members	4.7	5.0	5.0	4.8	5.6	4.7	4.5	5.3
Land resources	Avg. farmland area per capita (mu)	2.9	0.6	1.4	1.9	1.7	1.2	0.9	0.6
	Avg. plot size (mu)	1.2	0.9	0.8	0.8	0.6	1	0.7	0.5
	Pct. flat area	100	83	100	100	76	100	100	67
Education	Pct. households with elementary (or below) education	10.00	8.70	26.32	4.76	15.79	17.14	33.33	10.00
	Pct. households with high school (or above) education	25.00	43.48	31.58	57.14	47.37	48.57	24.24	25.00
Social connection	Pct. households with government contacts	34.78	35.00	21.74	5.26	14.29	47.37	17.14	21.21

Note: Based on the difference tests of mean per capita income among households with five levels of education from original data collection (Appendix A – Table A.1), we re-categorized education into three levels: elementary (or below), middle school, and high school (or above).

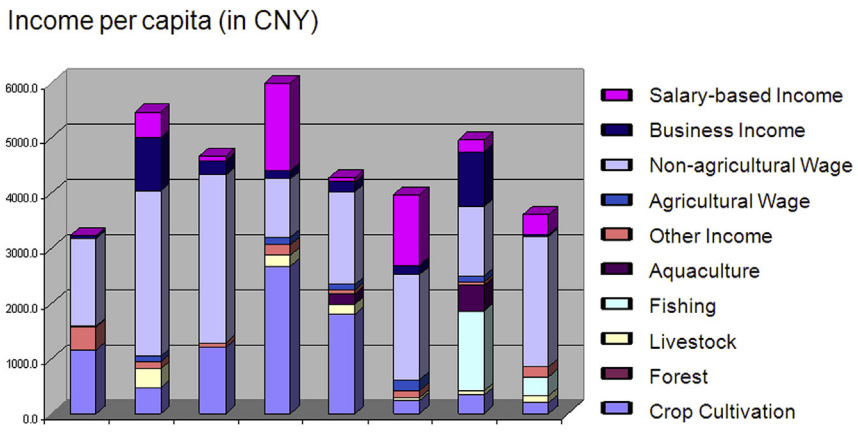

Fig. 2. Livelihoods and income composition in surveyed villages.

conversations. We spent a half to a full day in each of the other five villages. In each village, we visited the fields in the company of a farmer or village leader to familiarize ourselves with the natural environment.

We designed a set of questions for formal interviews based on a preliminary analysis of the survey data which showed that certain factors (e.g., education and government contacts) were associated with household income. During interviews, we asked farmers for their perceptions on how these factors affect their livelihoods specifically. Staying with farmer households in the villages offered us many opportunities for informal conversations and observations, helping us gain additional insights into the decision-making of rural households and the multifaceted constraints on rural livelihoods.

3.2. Data analysis

We first looked at households with relatively high income and identified four major livelihood profiles among high-income households. These households had per capita income greater than 10,000CNY, a threshold chosen based on the distribution of income among surveyed households (Fig. 3). We examined the characteristics of these high-income households and sought to explain how household characteristics interact with village characteristics and local environmental factors to make a success of each of these livelihood profiles.

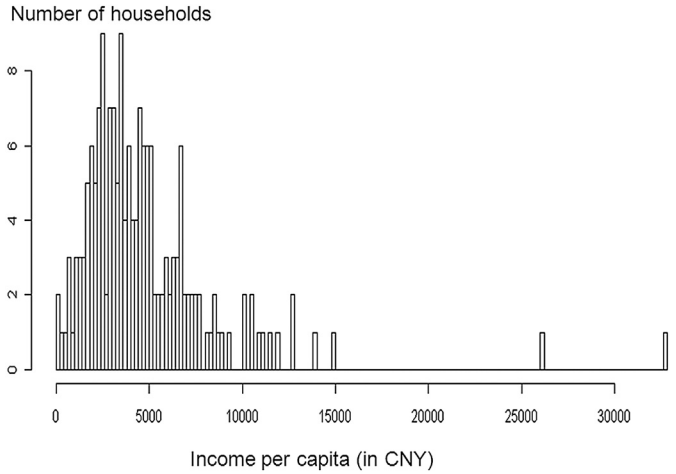

Fig. 3. Income distribution among surveyed households.

We then turned to the majority of the households to illustrate various constraints they face in developing their livelihoods, with an emphasis on institutional factors. We also used statistical tests and regression models to identify which household characteristics, village characteristics, and local environmental factors were associated with per capita income for most households. To enhance robustness of the analysis, two sets of statistical tests and linear regression models were performed separately that excluded (i) all high-income households and (ii) top two households with extremely high income. The statistical test results were also used to exclude variables that were not significantly associated with per capita income in the regression models, to increase the models' degrees of freedom (Appendix A – Table A.3). Though 192 households represent a small sample, the statistical analysis provides quantitative evidence that supports our understanding that was developed from qualitative interviews and field observations.

Finally, we integrate the findings from the analysis of high-income households and that of most households to understand the social and environmental processes that led to the variations in livelihood strategies and their outcomes among rural households.

4. Results

In this section, we first present the results from the analysis of high-income households (Section 4.1) and then the results from the analysis of most households (Section 4.2). We discuss the social and environmental processes underlying the variations of rural livelihoods in Section 4.3.

4.1. High-income households and successful livelihoods

The top two households with extremely high income both had significant income from business (Table 2). Other high-income households however had diverse livelihood profiles (Table 3). The success of these households suggest that each of the following livelihood strategies can generate high income: (i) business-oriented high-return livelihoods, (ii) diversified near-home livelihoods, (iii) farming-based livelihoods, and (iv) farming and nonfarm work combined livelihoods.

Among the wealthiest households were those that had success in business (Table 2). These households were few and appeared to have a special kind of capability. A common characteristic was that they were willing to take risk. All interviewed farmers seemed to understand that high economic returns involved high risks, and some farmers shared success stories of risk takers. But very few of them were willing or able to take such

Table 2
Households with extremely high per capita income.

Variable	H9	H10
Village ID	41	15
Close2City	0	1
Per capita income	32,625	26,163
Total income	130,500	104,650
Nonfarm income	84,500	103,000
Farming income	46,000	1650
Agricultural wage	0	0
Non-agricultural wage	0	0
Business income	80,000	75,000
Salary-based income	4500	28,000
Motorcycle number	1	0
Refrigerator number	1	1
Air conditioner number	1	0
Computer number	0	1
Cell phone number	1	3
House structure	3	3
Farmland area (mu)	11.00	3.80
Number of household members	4	4
Number of laborers	1	4
Education5Levels	2	4
Number of government contacts	5	0
Bank loans (CNY)	100,000	0

Note: House Structure is defined as follows. 1: mud, 2: brick, 3: concrete-steel, 4: others (with mixed material).

risks. Social connections are important for finding business opportunities and obtaining investment capital. In interviews, farmers often referred to the Chinese term “Men Lu.” “Men” means door and “Lu” means road in Chinese. They explained their bad situations as a result of lack of Men Lu and attributed the success of some other households to their possessing Men Lu. Men Lu can be best understood in English as options made available by social connections. Business-oriented households did not necessarily have investment capital initially. Many borrowed money from friends, relatives or banks to start a business. As a special form of social connections, government contacts can provide better access to information, help obtain bank loans and sometimes offer business opportunities directly. Larger proportions of surveyed households that had business income and bank loans had government contacts than those that did not have business income or bank loans (Appendix A – TableA.5). Business-oriented households did not necessarily have very high levels of education (Table 2), and there was no significant difference in business income among three education levels (Appendix A – TableA.6). Business-oriented households did not necessarily have large amount of labor either (Table 2) because they could hire and often hired laborers.

There were two common types of households successful in creating a diversified near-home livelihood profile: those in villages near urban centers and those whose members were village leaders (Table 3). Being located near urban centers, like ZJQ and ZJYM, provides accessibility to high-return options, such as livestock and commercial vegetable production, as well as opportunities for seasonal nonfarm work. Households located near urban centers can combine these options to make a good income without having to leave their homes. Village leaders usually have better connections with local government officials. These connections and their status in the village are important for them to acquire use-right contracts on special resources that are often scarce in a village, such as fish ponds. Village leaders are also better informed about the outside world and therefore more aware of business opportunities.

Households that had a farming-based profile achieved high income through vegetable production or larger-scale rice cultivation (Table 3). These households were commonly hard working in the sense that farmers had to use great physical strength and tolerate bad weather conditions. Farming in the surveyed villages was mostly accomplished using human labor

Table 3
Households with high per capita income.

Variable	H11	H12	H13	H14	H15	H16	H17	H18	H19	H20	H21	H22
Village ID	47	48	26	26	47	26	15	15	26	22	34	34
Flood Risk	1	5	4	4	1	4	4	4	4	3	2	2
Close2City	0	0	1	1	0	1	1	1	1	1	0	0
Per Capita Income	12,650	12,625	15,000	14,000	11,810	11,520	11,061	10,805	10,500	10,418	10,175	10,050
Total Income	50,600	50,500	60,000	42,000	47,240	57,600	66,364	75,634	42,000	41,670	40,700	40,200
Nonfarm Income	46,000	48,000	0	20,000	46,000	57,600	56,400	65,200	12,000	36,000	15,600	0
Farming Income	4,600	2,500	60,000	22,000	1,240	0	9,964	10,434	30,000	5,670	25,100	40,200
Agricultural Wage	0	0	0	0	0	0	0	0	0	0	0	7,000
Non-agricultural Wage	10,000	0	0	20,000	15,000	9,600	56,400	29,200	0	36,000	0	0
Business Income	0	0	0	0	0	0	0	36,000	0	0	15,600	0
Salary-based Income	36,000	48,000	0	0	31,000	48,000	0	0	12,000	0	0	0
Motorcycle Number	0	1	1	3	1	0	0	2	1	1	1	1
Refrigerator Number	1	0	1	1	0	1	0	0	1	0	0	0
Air conditioner Number	0	0	0	0	0	0	0	0	0	0	0	0
Computer Number	0	0	0	0	0	2	0	0	2	0	0	0
Cell phone Number	2	3	0	1	2	5	3	3	3	1	1	0
House Structure	3	3	3	3	3	3	3	4	3	2	3	2
Farmland Area (mu)	5.70	3.87	8.00	3.60	3.50	0.00	10.40	13.50	10.7	4.80	6.30	32.60
Number of Members	4	4	4	3	4	5	6	7	4	4	4	4
Number of Laborers	4	4	2	2	4	5	5	7	3	4	2	2
Education5Levels	3	4	3	2	4	4	4	3	3	2	4	2
Number of Government Contacts	0	0	0	1	2	1	0	0	1	0	2	1

Note: House Structure is defined as follows. 1: mud, 2: brick, 3: concrete-steel, 4: others (with mixed material).

except that rice harvesting by machines was widely adopted in relatively flat areas. While location near an urban center provides local market accessibility, facilitating vegetable production, living in an area with rich farmland makes it relative easy to acquire farmland, facilitating rice cultivation at larger scales. There were success stories of commercial vegetable production in places far from urban centers, but this scenario took extraordinary leadership and collective action. To form a scale of production large enough, farmland over large areas, often including a whole village, town, or even county, would need to be converted to vegetable fields. Sales channels and transportation would have to be arranged and coordinated for all the producers. Social connections were, in general, useful for farmers to obtain land rental contracts. Some farmers managed to contract large areas of farmland for rice cultivation in villages other than their own, and for these farmers, social connections were more important.

Education and labor amount were most important for the success of farming and nonfarm work combined livelihoods (Table 3). Education played a large role in influencing nonfarm income. Migrant workers usually earned higher income from salary-based jobs than wage-based migratory work, but salary-based jobs required higher levels of education. Migrant workers with low levels of education often did temporary wage-based jobs that involved hard laboring or poor working environments. Households with high school (or above) education levels on average had higher salary-based income, whereas households with elementary (or below) education levels had lower income from migratory work (Appendix A – TableA.6). Wages for migratory work did not vary significantly, and more nonfarm income was accrued if more members participated in migratory work.

4.2. Most households and constraints on rural livelihoods

For the majority of surveyed households, per capita income was significantly associated with farmland area, demographic composition, education, number of members participating in wage-based migratory work, and if a household had salary-based income or government contacts (Table 4). The fact that farmland area per capita was a significant factor suggests that farming was still an important component of the livelihoods for most households, and farmland resources contributed to some between-household variations in per capita income. Having children but no elderly people in the household was negatively correlated with per capita income. In such cases, parents sometimes had to stay on the farm, though they could have done migratory work in cities to make more money. Government contacts can help secure salary-based jobs, in addition to helping with access to information, bank loans, and business opportunities, as discussed in Section 4.1. A larger proportion of surveyed households that had salary-based income had government contacts (Appendix A – TableA.5). These findings are in general consistent with our analysis of high-income households. Those high-income households were able to earn higher income than other households because they had advantages in some of these factors.

Our interviews and field observations suggest that farmer households in PLR were well informed about possible land-use and livelihood options and were able to articulate the costs and benefits associated with them, though they did not always have the assets or capabilities to implement them (Tian, 2011; Tian et al., 2015). The majority of surveyed households were constrained in feasible options, and their livelihoods depended on combining migratory work with farming (Fig. 4). Most of the surveyed households did not live near urban centers or in villages endowed with special types of natural resources that could be cashed in quickly. Villagers in TJK did make good money from sand mining before the government began to regulate sand mining in the Poyang Lake area. However, villages that have special types of natural resources, like TJK, are few. Most of the surveyed households did not have government contacts or investment capital for high-return livelihoods, such as business; nor could they take the associated risk. And constrained by their relatively low levels of education, most migrant workers found low paying jobs in the urban sector.

The small farmland area constrains rural livelihoods in a variety of ways (Fig. 4). In addition to the direct consequence of low agricultural income, small farms cannot alter traditional crop types to higher-value crops. In a free market economy, farmer households face difficulty finding sales channels for their alternative small-scale production. The small farmland area also discourages farmer households from investing in agriculture, further preventing increase in agricultural output (see also Tan et al., 2010). Across surveyed villages except ZJ which has rich farmland, we observed that only older people, children and some women were present on the farm with other adults doing migratory work away from home. The overall effort in crop cultivation was low. Though households can acquire additional farmland in land rental markets, most land rental contracts are privately negotiated, signed for short terms and

Table 4
Linear regression results.

Category	Independent variable	Excluding all high-income households		Excluding top two households	
		Coefficient	*p*-value	Coefficient	*p*-value
Education	Education3Levels 2	651.95	0.14	1233.29	0.03*
	Education3Levels 3	1110.34	0.018 *	2056.44	0.0006***
Demographics	HouseholdType 2	−476.69	0.47	−236.10	0.77
	HouseholdType 3	−701.27	0.12	−1043.69	0.06@
	DependenceRatio	0.23	0.98	−10.52	0.34
	PctLabor	8.91	0.19	9.99	0.23
Land resources	Farmland area per capita	266.35	0.06 @	272.18	0.14
	AvgPlotSize	−401.16	0.26	−105.82	0.82
Income sources	Number of wage-based migratory jobs	551.63	0.0005***	601.23	0.002**
	HaveSalaryIncome	1232.55	0.04*	2536.09	0.0004***
Social connection	WithGovContacts	597.11	0.099@	920.62	0.04*
Intercept		2062.31	0.0005***	1434.70	0.05@
Adjusted R-squared		0.1987		0.2819	

Significant levels: *** p-value ≤ 0.001, ** p-value ≤ 0.01, * p-value ≤ 0.05, @ p-value ≤ 0.1.
DependenceRatio is measured by percentage of the number of children and senior citizens. Household type is defined as follows. 1: household has no children who are 6 years (or younger), 2: household has children who are 6 years (or younger) and senior citizens who are 60 years (or older), 3: household has children but no senior citizens.

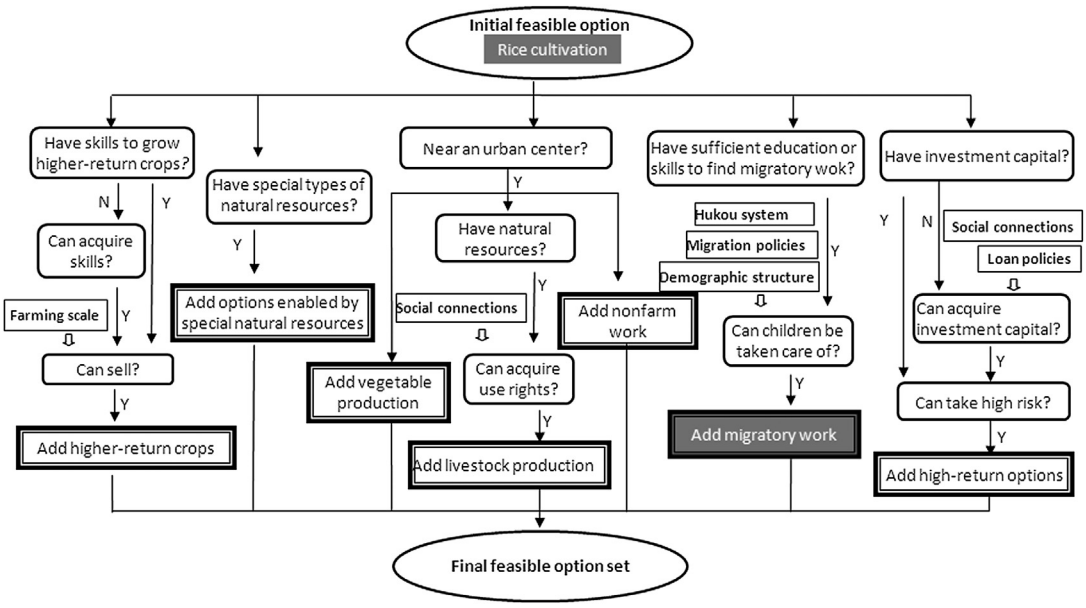

Fig. 4. Option evaluation and constraints on rural livelihoods.

usually renewed yearly. The insecurity inherent in such short-term informal contracts discourages land exchanges. In the field, we met farmers who would like to rent large areas of farmland and specialize in agriculture, but were worried that the households, to which farmland was initially assigned, may take back the rental land out of jealousy, once they improve the productivity of land.

The Hukou registration system not only affects the welfare of migrant workers in cities (Wong et al., 2007; Yin, 2008), but can also constrain livelihood options for some households. As we discussed above, when parents cannot find means to take care of their young children, they cannot do migratory work in cities (Fig. 4). Additionally, because of the differentiation of urban and rural Hukou, migrant workers do not have the same social security and benefits as urban populations and therefore regard farmland in the countryside as their social safety net (see also Liu et al., 2014). This prevents those households that do well in cities from permanently settling in cities, exiting agriculture and releasing farmland to other households that intend to specialize in agriculture. Across surveyed villages, we saw many new houses that were unoccupied because their owners were away from home doing migratory work but intended to come back and live in the village later.

4.3. Local processes and variations in rural livelihoods

The variations in livelihood options, strategies, and income levels among rural households have mostly resulted from the interactions between household characteristics, village characteristics, and local environmental factors (Fig. 1). The natural environment provides farmer households natural capital and can enable certain high-return livelihoods or affect their farmland resources. But the characteristics of the natural environment are largely fixed, based on the geographic location.

Human capital, especially education and labor, and social capital, in terms of social connections, are most important among a household's five types of capital. Human capital and social capital shape a household's feasible options and determine the outcomes of its livelihood strategy. They also affect how successfully the household can acquire additional farmland and accumulate financial capital. The different types of capital further interact with each other to reinforce a household's livelihood strategy and characteristics over time. We met some households in the villages that had accumulated investment capital during the initial period of economic reforms and were now more capable of taking risks to further diversify their economic activities. We also met poor households and found that they tended to be more cautious about borrowing money to invest in high-return livelihoods and were less likely to obtain loans and more likely to maintain traditional low-return livelihoods, thus falling into a poverty trap. Without external interventions, it is difficult for these households to climb out of poverty.

The location of a village near urban centers facilitates the development of successful diversified livelihoods through combining vegetable cultivation, livestock production, and near-home nonfarm work. Additionally, a village's social capital, especially leadership and overall quality of social connections with the outside world, has a significant impact on the livelihoods of all households in that village. Most villagers found migratory work through other farmers in their village (some through relatives). Therefore, the kind of migratory work they did, which largely determined their wages, depended on the overall social connections between the village and the outside world. Even when government agencies chose villages for special development projects, they looked at villagers' initiative because past experiences showed that a project was more likely to succeed if villagers demonstrated initiative and had the capacity to carry out the project. Strong leadership could enhance the social capital of a village, and in almost every successful story, there was a visionary and capable leader who took the interests of the village to heart and pulled the villagers together (Zhang and Chen, 2005). However, such leadership was commonly lacking in the villages we visited.

5. Discussion and reflections on policy

Our case study has demonstrated that rural households respond differently to broader development dynamics based on their own characteristics and local contexts. There are multiple paths to successful livelihoods, and in the future, we expect that rural households with different characteristics situated in different local

contexts will continue to develop their livelihoods along different paths. While some households may eventually exit agriculture or specialize in agriculture, others are likely to maintain rural and urban mixed livelihoods. The state of urbanization can be measured by the proportions of rural households that perform urban work, agricultural work, and both types of work, and their respective incomes (Fig. 5). As urbanization progresses, the proportion of households that perform urban work will increase. At the end of this process, if urbanization is successful, income for all types of households should be similar and comparable to urban household income. Such a systems perspective allows us to assess where we are at any given time during urbanization and can provide useful insights into how to steer urbanization toward this desired final state.

through simultaneous growth of both sectors: As the industrial sector grows, more rural labor will be employed in the urban sector with rising wages, and households in the countryside can then enlarge their farming operations improving agricultural income (Fig. 5). Development, migration, and land policies should be designed to synergistically foster such healthy urban-rural development dynamics. This will help lift system-level constraints for the majority of rural households and facilitate rural households building robust livelihoods via different paths.

While continuing to promote growth of the industrial sector to facilitate rural labor transfer and increase migrant workers' wages, appropriate migration policies are needed to attract those rural households that do well in cities to permanently settle in cities so that they can release farmland to other households (Fig. 5). Training

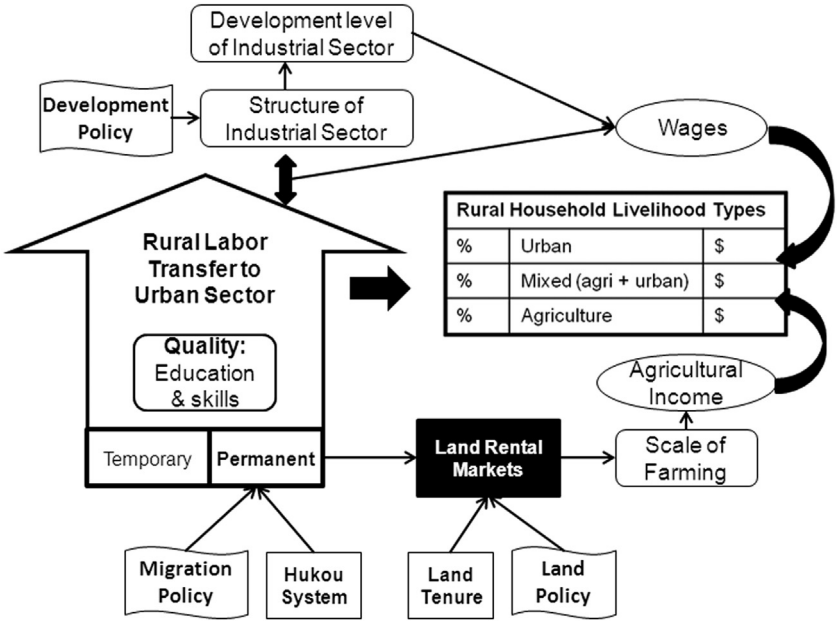

Fig. 5. Policy, institutions, and rural-urban development dynamics.

Given limited farmland resources and large rural populations in China, it is not difficult to understand, and most scholars agree, that resolving the challenges for rural development will be highly dependent on the transfer of rural labor to the urban sector, and that the industrial sector is the engine that drives overall economic growth (Huang and Peng, 2007; Tian et al., 2016). While the amount of rural labor transfer needs to suit the development level of the urban sector, policies that aim to promote industrial development need to consider the quality and quantity of rural labor to facilitate rural labor transfer (Fig. 5). This will likely promote simultaneous growth of the urban and rural sectors, which is essential for all rural households to increase income regardless of their livelihood types. In their seminal paper, Johnston and Mellor (1961) also argued that economic development, especially in the early stages, is dependent on the simultaneous progress of both agricultural and industrial sectors. The lag of rural development prior to policy reforms was due to a mismatch of labor demand in the industrial sector and rural labor supply, created by development policies that focused on heavy industry (Lin, 2009). The slow growth of rural income in the later period of policy reforms was also associated with the two-sector development dynamics (Cai, 2010; Yao and Zhang, 2010; Zhang et al., 2011). And the slow growth of rural income can only be resolved gradually and steadily

and education programs that aim to improve migrant workers' competitiveness are necessary in helping migrant workers secure better-paid jobs. This would also help keep the workforce up with the development of the industrial sector, as the Chinese economy will inevitably evolve toward more service and information based industry. In the agricultural sector, land policies should continue to facilitate larger farming operations in accord with the development and growth of the urban sector. The Chinese government's policy guidelines on farmland consolidation through exchanges in land rental markets are sound in principle, and providing special support to large farms is a timely move.

Near-farm high-return livelihood options could be expanded to more farmer households by promoting local industries. Local industries may focus on activities that suit and take advantage of the natural environment and integrate agriculture and local culture. Government assistance in identifying options, organizing people and providing financial support at the initial period are helpful. In the field, we learned that the government agencies in PLR have been actively working with farmer households to create Farmer Household Associations. These associations help farmers to adopt new agricultural or nonfarm livelihoods. Households in a farmer household association can also provide credit for each other to obtain bank loans. Such projects may place an emphasis on

building leadership to enhance collective action among rural households, as some recent rural poverty reduction programs have been trying to accomplish. Local industrialization is important for China's rural development because Chinese cities, especially large cities, face various social and environmental problems from further growth and have limited capacities to absorb rural labor. Given the large quantity and diversity of rural populations, rural-urban migration, large-scale farming, and local industrialization are all important for future rural development in China.

Though the Hukou system negatively affects the well-being of rural households, completely eliminating Hukou now may not be an effective way to promote the well-being of rural households. It might lead to an overflow of migrant workers to large cities, which does not suit the current development level of the urban sector and disturbs the overall development dynamics (Fig. 5). This could also result in rural poor becoming urban poor, which has been observed in some other developing countries (Dandekar, 1997; Jellinek, 1997; Anjaria, 2006; Davis, 2006). The negative effects of the Hukou system can be mitigated by appropriate migration policies as discussed above. Building a New Countryside has already produced observable effects on improving infrastructure and the cultural environments in some of the villages we visited. As the economy grows, the government may broaden the benefits of the current health care and social welfare system in rural areas. Relaxing Hukou in smaller cities is an appropriate approach because this can potentially encourage economic growth in smaller cities and create nonfarm work opportunities for rural households. Additionally, farmers may find it relatively easy to adapt to and settle in urban areas near their villages.

Similarly, privatization of land could introduce a sudden change to the overall development dynamics and may not necessarily best benefit farmer households (Fig. 5). Under a private property regime, households that do well in cities can hire labor to manage their farmland and may not release farmland to other households. Poor households that do not have other viable livelihoods may sell their land for short-term gain, ending up becoming urban poor or agricultural laborers. This would increase inequality. After all, it may not be a viable option for the majority of households to use farmland as collateral to obtain bank loans for high-return livelihoods because very few of them can take such risks as discussed in Section 4.1, and their farmland holdings are too small.

Empirical evidence from the developing world shows that property right titling is not a panacea for development, has in general failed to deliver the benefits claimed by its proponents (e.g., De Soto, 2000) and sometimes harms the poor (Gilbert, 2002; Cousins et al., 2005; Payne et al., 2009; Sjaastad and Cousins, 2009; Domeher and Abdulai, 2012). For example, many smallholder farmers in Latin American countries, where more complete neoliberal policies have been implemented, are poor, and deep inequality is largely the reason why economic growth has not led to substantial rural poverty reduction there (Berdegué and Fuentealba, 2011). A major problem associated with the current land tenure in China is land requisition by local governments. This can cause rural households to lose their land-based livelihoods, and in some cases, rural households are not compensated appropriately (Liu et al., 2014). Laws that specify and protect rural households' land rights are in place (Liu et al., 2014). The government must strengthen the enforcement of these laws. The insecurity of rental land can be remedied by long-term formal contracts.

China has been adapting and will need to continue to adapt its development policy to promote healthy rural-urban development dynamics throughout the course of urbanization (Fig. 5). There is no quick, easy solution to the many issues of rural development, and the rural-urban income gap can only be resolved gradually and steadily through simultaneous growth of both sectors, facilitated by multiple social and economic policies and programs that place the well-being of rural households at the center of urbanization. Focusing only on one (any) factor is not likely effective and may produce unintended consequences due to the interactions of a variety of factors that contribute to the overall two-sector dynamics.

While this policy discussion may be overly generalized, considering the small scope of the case study, our reflections on policy are in line with the recommendations of the World Bank (2008) on how to strengthen rural livelihoods through farming, agricultural wages, and migration.

6. Conclusions

The livelihoods of rural households in China are undergoing a transformation amid urbanization. However, rural income has consistently lagged behind urban income, and a broader prosperity gap persists between urban and rural areas. This study examines rural livelihoods within the broader development context of China and emphasizes the interconnection between agricultural and industrial development. We further elaborate Arthur Lewis's insight about Unlimited Supply of Labor to illustrate the various components that affect the two-sector development dynamics in the Chinese urbanization context. Through an in-depth case study of eight villages in Jiangxi Province, we analyze the complex processes that shape the livelihoods of rural households. The analysis provides the micro-socioeconomic foundations for the macro-level development dynamics and sheds light on how policy may guide urbanization to benefit rural households.

Our case study suggests that the variations in livelihood strategies and income levels among rural households are mainly the result of interactions between household characteristics, especially human and social capital, and local social and environmental factors, including location and social capital of villages, and natural resources. Diversified near-home livelihoods, business-oriented livelihoods, farming-based livelihoods, and nonfarm and farm work combined livelihoods all can generate high income. The success of these livelihood strategies requires certain household characteristics, and some are facilitated by location near urban centers or rich farmland resources. The majority of rural households have very limited feasible options, rely on income from combining migratory work with farming and carry out this livelihood strategy to different degrees of success. The small farmland area constrains rural livelihoods in several important ways. The Hukou system and the insecure land rights inherent in informal short-term rental contracts further discourage land exchanges, limiting the potential for rural households to raise income through larger farming operations.

To achieve successful urbanization and thereby reduce the rural-urban income gap needs simultaneous growth of both sectors: As the industrial sector grows, more rural labor will be employed in the urban sector with rising wages, and households in the countryside can then enlarge their farming operations improving agricultural income. It is important that development, migration, and land policies synergistically foster such healthy rural-urban development dynamics throughout the course of urbanization. And this will help lift system-level constraints and facilitate rural households with different characteristics, situated in different local environmental contexts, developing robust livelihoods via different paths – focusing on urban work, specializing in agriculture, or maintaining rural and urban mixed livelihoods.

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Appendix A. Supplementary data

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