

**Socio-economic drivers of agricultural
production in a transition economy:
A case study of Hu Village,
Sichuan Province, China**

by

ZHANPING HU

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In memory of my father, Chunwang Hu.

纪念我的父亲，呼春旺。

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Abstract

Zhanping Hu

Socio-economic drivers of agricultural production in a transition economy: a case study of Hu Village, Sichuan Province, China.

Contemporary global agriculture has been undergoing transition towards different pathways. In developed countries, a shift from productivist agriculture to multifunctional agriculture has begun since the 1980s (Wilson, 2007). In the developing world, agricultural modernisation is still the primary strategy for agricultural development, and driven by urbanisation and industrialisation, deagrarianisation of rural society has been widely identified (Bryceson, 1996; Rigg, 2006a). As the largest developing country in the world, China embarked on market reform three decades ago and has ever since experienced dramatic socio-economic transition towards modernisation, industrialisation and urbanisation. Significant levels of academic attention have focused on empirically identifying economic and policy drivers of Chinese agricultural production from a structuralist standpoint, largely neglecting the agency of smallholders and sociocultural factors. To address the resulting literature gap, this thesis adopts an approach that combines political economy and cultural analysis through an in-depth case study of a rural community in southwest China. A multi-methods approach is used to collect data, including questionnaires, in-depth interviews, focus groups, participant observation and the analysis of secondary data.

The results suggest that Chinese smallholder agriculture has been dramatically transformed by an array of socio-economic forces. The “intensive, sustainable, diverse” Chinese smallholder agriculture which Netting (1993) portrayed, has been progressively shifted towards extensive, unsustainable and less diverse pathways. It suggests that the “perfunctory agriculture” performed by Chinese smallholders is the outcome of interactions and negotiations between various political, socio-economic and institutional constraints and farmers’ agency. Another key finding is that moving out of agriculture is becoming the norm in Chinese rural society. Most smallholders show willingness to rent out agricultural land and to enter into a capitalist relationship

with employees, rather than primarily being cultivators of their land. Land transfer markets have become increasingly buoyant at the local level, and large-scale capitalist agriculture seems to be the desired future of Chinese smallholder agriculture for both the Chinese government and smallholders. Besides, based on the case of Hu Village, this thesis discusses the convergences and divergences between the road of Chinese agricultural development and that of developed countries and other emerging BRIC economies. Lastly, based on the findings of this research, four policy implications are proposed including sponsoring agricultural mutual aid groups, strengthening agricultural extension services, enhancing farmers' negotiation power through laws, and initiating comprehensive socio-economic reforms to facilitate farmers' pursuit of non-farm employments.

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List of Abbreviations

BRIC	<i>Brazil, Russia, India, China</i>
CASS	<i>Chinese Academy of Social Sciences</i>
CCTV	<i>China Central Television</i>
FAO STAT	<i>Food and Agriculture Organisation of the United Nations Statistics</i>
GDP	<i>Gross Domestic Product</i>
HRS	<i>Household Responsibility System</i>
HVCAR	<i>Hu Village Committee Annual Report</i>
IMF WEO	<i>International Monetary Fund World Economic Outlook</i>
MCI	<i>Multi-cropping Index</i>
NBSC	<i>National Bureau of Statistics of China</i>
NDRCC	<i>National Development and Reform Commission of China</i>
NGO	<i>Non-Governmental Organisations</i>
QY	<i>Qingshen Yearbook</i>
SSY	<i>Sichuan Statistical Yearbook</i>
TOT	<i>Terms of Trade</i>
WDI	<i>World Development Indicators</i>
WTO	<i>World Trade Organisation</i>

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Author's Declaration

At no time during the registration of the degree of Doctor of Philosophy has the author been registered for any other University award without prior agreement of the Graduate Committee.

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Presentations and institution visit

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Chapter 1 Introduction

1.1 Research background

Agriculture is the source of the most fundamental resource for the population of the planet: food. In recent decades agricultural production has grown much faster than the population, fuelled by modern plant breeding, improved agronomy and the development of chemical fertilizers and pesticides (Evans, 1998). Quantitatively, global agricultural production has risen considerably so that the entire world population can be fed with sufficient food at prices that have never been so low (Mitchell and Ingco, 1995; Hazell and Wood, 2008). Simultaneously, accompanied by comprehensive socio-economic transitions (e.g. Fordism to post-Fordism, demographic, technological and environmentalist transitions), global agriculture has been experiencing spatio-temporal, non-linear, heterogeneous and globally complex transitions (Wilson, 2007). Agriculture is driven by multi-faceted factors. At the global level, agricultural development can be driven by: economic growth; energy prices (von Braun, 2007; Hazell and Wood, 2008); international trade and the globalisation of markets; world prices for agricultural products; climate change; and the globalisation and privatisation of agricultural science (Hazell and Wood, 2008). At the local level, different agricultural patterns are also driven by diverse elements, and are shaped by various social, economic, and

political forces according to different social and geographical contexts (Marsden, 2003). Furthermore, the drivers do not function separately. Instead, they interact and are entangled with each other to push global agriculture in new directions.

In the contemporary world, the rising power of Brazil, Russia, India, and China has aroused increasing attention, noted in the international use of the buzzword, BRICs. With fast growing economic strength, the BRICs' role in the global economy is increasingly significant, as is the geopolitical importance of their regions in the world (Georgieva, 2006), particularly as these countries account for nearly half of the global population. Agricultural production from the BRICs is of vital importance to world food security (Haq and Meilke, 2009). Although with impressive economic growth, especially China and India in recent years, the BRIC countries have exhibited considerable differentials in the development of their agricultural sector, which has been driven by different forces in different countries (see for example: Schnepf *et al.*, 2001; Valdes, 2006 and Fuller *et al.*, 2000 for Brazilian agriculture; Brooks, 1991, 2004; Johnson, 1994; Wegren, 1998, 2005; Ioffe, 2005 for Russian agriculture; Landes and Gulati, 2003; Gulati *et al.*, 2005 for Indian agriculture). However, comparative studies of agricultural production between the BRICs can hardly be found at all in the literature. This study will situate the Chinese case within the international context of BRICs to shed light on broader debates of agrarian transition.

China initiated rural reform in 1978, with the implementation of the Household Responsibility System (HRS). The HRS is a two-tier land tenure system (Dong, 1996), which means that land is owned by the collective but use rights and production decisions are decentralised from the production teams to individual households. Farmers were at liberty to decide what to cultivate and had the autonomy to sell any surplus in the market after they met the state quotas, which were set at around 15–20% of output (Yao, 2007). As an important milestone for the Chinese agrarian transition, the HRS reform has greatly changed farmers' investment behaviour and all aspects of agricultural production (Lin, 1992; Yao, 1995, 1998; Wen, 1995; Li *et al.*, 1998; Brandt *et al.*, 2002). To date, the HRS has been a fundamental “structure” for Chinese agriculture.

Due to overwhelming levels of state-led urbanisation and industrialisation since the 1980s, agricultural demography has been dramatically altered. From the 1990s, rural-urban migration has become the most fundamental pathway for farmers to seek off-farm economic activities (de Brauw *et al.*, 2002). Large-scale rural-urban migration in China has progressively pushed the most agricultural productive labourers into other sectors, leaving women, the elderly and children behind in the countryside (Ye and Pan, 2008; Ye and He, 2008; Ye and Wu, 2008). According to the Sixth National Population Census in 2010, more than two hundred million migrants are shuttling between cities and original villages. In addition, the dual structure

of rural-urban and “Hukou¹” systems have hindered rural migrants’ capacity to become permanent residents in cities, as most of them have to return to their hometown yearly or quarterly. The seasonal migrants support original communities through remittance, which has become the largest share of rural family income. The relative absence of labour in rural communities, coupled with reliance on remittances from cities, has affected agricultural cultivation significantly and differentially. Both negative links, between migration and investment, and positive links, between migration and households’ consumption, have been found by researchers (for example Rozelle *et al.*, 1999; de Brauw and Rozelle, 2003). Rozelle *et al.* (1999) found the direct effect of migration on yields is significant and negative, as yields fall sharply when each family member leaves. However, positive correlations have also been found between migration and agricultural production (Taylor *et al.*, 2003). Evidently, rural-urban temporary migration has become another “structure” affecting China’s agriculture.

From 2004, with concerns about national food security, the central government of China began to cancel the longstanding policy of taxing farm household and instead began to provide farmers with subsidies to incentivise grain cultivation. Although a recent study found that there is no evidence that grain subsidies are effective in encouraging farmers’ cultivation incentives

1 As an instrument of social stability in planned economy, the Hukou system was established in cities in 1951 and extended to the rural areas in 1955 in China. In mainland China, all nationals’ personal Hukou status is classified by two related parts: one by residential location and one by socio-economic eligibility (often called “agricultural”/“non-agricultural”). By the classification, the state separates the society into two parts, and imposes huge barriers for people with agricultural Hukou to convert their Hukou status (Chan and Li, 1999).

(Huang *et al.*, 2011), farming without compulsory taxes from the state is a new “structure” of China’s agriculture.

Apart from state policies, agricultural markets have also made remarkable progress in the transition period. Especially since the 1990s, albeit that China’s leaders were employing a cautious and gradual approach to reform markets, agricultural commodity markets have become robust and agricultural production has been largely organised and integrated across space (Huang and Rozelle, 2006). Besides domestic markets, Chinese agriculture has been progressively integrated with international markets, and agricultural prices within China have been closely interconnected with those from international markets (Yang *et al.*, 2008; Huang *et al.*, 2010). The progress of international integration has been further strengthened by China’s accession to WTO in 2001 (Anderson *et al.*, 2004). In addition, although under the HRS agricultural land was not allowed to be traded among farmers, land transfer (or lease) markets have achieved impressive rates of development (Yao, 2000; Jin and Deininger, 2009). These have been especially driven by increasing rural off-farm employment and government promotions in recent years (Kung, 2002; Huang *et al.*, 2012). Moreover, various market players (corporations, cooperatives, local entrepreneurs and so forth) have participated in contemporary Chinese smallholder agriculture bringing about diverse forms of agricultural production, for instance, contract farming (Zhang, 2012). Thus, the market has been a fundamental force that shapes China’s smallholder

agriculture.

Alongside the course of modernisation, Chinese rural society has also undergone dramatic socio-cultural transformations at all levels of society: individual, family and community (Yan, 1997, 2006, 2010; He, 2010). The repercussions of the socio-cultural changes for agricultural production have however, been paid little academic attention. This project aims to investigate the socio-economic drivers of contemporary Chinese agriculture under the context of China's dramatic socio-economic and cultural transition by focusing on a rural community in southwest China.

1.2 The literature gap

Within the voluminous studies on factors which influence agricultural production, there are both convergences and divergences; however, it can be observed that most of them concentrate on one or two factors (e.g. technological improvements, land tenure system, infrastructure construction, rural-urban migration), neglecting some other important factors and possible interplays between them. For instance, de Brauw and Rozelle (2003) only examined the relationships between rural-urban migration and farmers' investment behaviours, and only used absence of labour and remittances to explain farmers' preferences in consumption instead of investment, without considering other influential factors of farmers' behaviours, such as livelihood changes, community cultural changes and so forth. Similar gaps can also be

found in other studies (e.g. McMillan *et al.* 1989 for agricultural production and HRS; Huang and Rozelle, 1996 for technological improvements; Rozelle *et al.*, 1999 for migration and agricultural production; Huang *et al.*, 2011 for subsidy policy and farmers' cultivation behaviour changes). Rural society is a complex entity, in which agriculture or farming is embedded, therefore, any sole driver can never explain agricultural change comprehensively. Furthermore, agriculture is a process organised socially (Ploeg, 2006), during which economic variables, social structure changes and farmers' agency interact with each other to create new possibilities. This project aims to explore multiple factors of agricultural production and the interactions between them in an attempt to explain how different forces function in respect of agricultural production.

Another research gap is that many studies try to explain and interpret the causality between factors of agricultural production according to a linear analysis and therefore produce homogeneous conclusions (e.g. Yao, 1995, 1998; Wen, 1995 for land tenure; Rozelle *et al.*, 1999; de Brauw and Rozelle, 2003 for migration and productive investment). For instance, by quantitatively analysing a national sample, de Brauw and Rozelle (2003) found no evidence of a link between migration and farmers' productive investment in China and in poorer areas migration increased consumptive investment by nearly 20%. Yao (1998) and Wen (1995) both found a negative relationship between land tenure and agricultural production, which they attribute to uncertainty of

land properties. Admittedly, these are indeed straightforward and strong conclusions; however, they lose sight of non-linear processes and the heterogeneous nature of reality. As other analysts show (e.g. Taylor *et al.*, 2003; Oseni and Winters, 2009), migration and remittances definitely can facilitate agricultural production through farmers' productive investment. Consequently, to more comprehensively interpret the effects of different socio-economic drivers on agricultural production, the pivotal issue is to explore the processes and mechanisms through which differential factors affect agricultural production. These are frequently temporal, non-linear and spatially heterogeneous, limiting the possibility to abstract simple conclusions. This project will particularly explore the underlying processes and mechanisms behind numerical data.

The third gap is about methodology. Many of the studies on agricultural production are quantitatively analysed with aggregate statistics or very big samples, and engage with high-level views or macro-level standpoints in terms of straightforward conclusions (e.g. McMillan *et al.*, 1989; Lin 1992; Huang and Rozelle, 1996; Rozelle *et al.*, 1999; de Brauw *et al.*, 2002; Huang *et al.*, 2011). First of all, this approach often neglects to note the inequality and heterogeneity of farmers in rural society. Besides, this approach is often unable to explain the "reasons" for questions. As Rigg (2007: 8) has argued: "Overarching perspectives and grand studies often shield from view the eddies of difference that are so central to building explanation", instead,

through micro-level study “we can shed light on many of the critically important ‘why’ questions”. Furthermore, “the social, environmental, political and economic micro-processes and micro-dynamics often provide not just a more finely detailed understanding of change, but a different view” (Rigg, 2007:8). Therefore, by using more micro-level studies and perspectives, we may become more capable of understanding and revealing hidden processes and mechanisms.

The final vacuum in respect of research on Chinese agricultural production is that many studies focus on factors (such as technological improvements, agricultural policies and institutions or migration), and conclude with general and structural judgments, while very little concern is shown for farmers’ agency (e.g. Lin 1992; Yao, 1995, 1998; Wen, 1995; Huang and Rozelle, 1996; Rozelle *et al.*, 1999; de Brauw *et al.*, 2002; de Brauw and Rozelle, 2003; Huang *et al.*, 2011). For instance, Rozelle *et al.* (1999) found a negative relationship between migration and agricultural production, but did not pay attention to farmers’ decision-making and agency. This is in essence a kind of “structuralist view”, as the underpinning assumptions of these structure-centred studies are that the data and reality are linear and consistent, and the general conclusions abstracted from all kinds of data can interpret the dynamic and heterogeneous rural reality. However, by accentuating external forces and institutions, this approach cannot fully explain the complicated social world. Admittedly, to merely

emphasise the agency and overlook social forces also weakens arguments. Therefore, we have to apply an alternative which can reconcile structure with agency. According to Giddens' structuration theory (1984), actors have the ability to alter structures, and meanwhile, these structures are actually the medium of people's action, thus providing a useful framework for understanding actors' agency. According to this perspective, social structures and human agency are connected in a cyclical relationship. Encouraged by this approach, this project, on the premise of exploring how socio-economic forces are influencing Chinese agriculture, will particularly pay attention to how farmers' agency is interacting with these external forces and thereby shaping their farming practices.

Overall, the literature of agricultural production in China is mainly constituted by agricultural economics and analysis of agricultural policies, such as institutional change (McMillan *et al.*, 1989; Lin, 1992), agricultural technological progresses (Huang and Rozelle, 1996), labour markets and rural-urban migration (Rozelle *et al.*, 1999; de Brauw *et al.*, 2002; Rozelle *et al.*, 2003), which emphasise the empirical evidence of how "structural" factors improve or impair agricultural production. Little attention has been paid to investigating agricultural production by combining macro-political economy with the analysis of local farmers' strategies. This research attempts to fill this lacuna.

1.3 Research questions and objectives

This research is to analyse the socio-economic drivers of agricultural production in a Chinese community. Using a case study of one village, the project attempts to assess how these drivers influence everyday farming practices. Although the study will take place at the micro-level, it will try to translate the main findings to the macro-level whilst equally paying considerable attention to overall macro-micro interactions (Schatzki *et al.*, 2001; Berard, 2005). This research will focus on elements and factors that motivate or demotivate farmers' farming practices, and will reveal the internal logic of farmers' behavioural activities under such drivers and constraints.

Based on the rationale stated above, the research questions of this project are as follows:

- What are the socio-economic and policy “structures” that Chinese smallholder agriculture is embedded in at present? Are they consistent at different administrative levels?
- Who is farming in contemporary China? What are the characteristics of the farming population?
- What economic factors are changing or influencing agricultural production in China? How do these factors function and what influences do they bring to agricultural production?
- What social and cultural factors are changing or influencing agricultural production in China? How do these factors function and what

influences do they bring to agricultural production?

Based on these research questions, this study will specifically achieve four objectives²:

- (a) To illustrate the fundamental “structures” that contemporary Chinese agriculture is facing through outlining the macro-socio-economic transformation and policy framework from the national level to the local level.
- (b) To demonstrate the demographic characteristics of the farmers involved in agricultural production under the transitional background and to reveal demographic changes taking place in rural communities, as well as the implications of demography for agricultural production.
- (c) To identify economic drivers of agricultural production in the research village and how farmers react to the drivers strategically, as well as the possible influences on agricultural production.
- (d) To reveal socio-cultural drivers of agricultural production in the research village and how farmers interact with these drivers, as well as the possible influences on agricultural production.

For Objective (a), the investigation embraces the general socio-economic transformation that has occurred throughout China since the reform, which sets the backdrop in which agricultural production in contemporary rural China is embedded. The investigation also introduces agricultural policies and

² It is worthy to mention here that political drivers cannot be investigated in this research due to methodological and ethical reasons.

development strategies that China and local regions have adopted. These policy frameworks at macro-level are the “structures” that define how farmers act at the micro-level.

With regard to Objective (b), with increasing rural-urban migration and rapid development of other off-farm economic activities, the rural Chinese population has changed greatly and so have the agricultural actors. First of all, the study will describe basic demographic characteristics of the village population (e.g. age, gender, family structures, family types, educational level, family labour division, migrant family or not, off-farm activities). Secondly, the study will reveal the demography of farming populations to analyse who is farming in the village. Lastly, the study will further investigate different farmer types based on amount of time spent on farming, for instance, full time, part-time and non-farming farmers.

With regard to Objective (c), the study will investigate economic drivers through three aspects that affect agricultural production at the local level. First, as economic diversification has become the most significant feature of transitional rural China, as well as other developing countries (Ellis, 1998), how the livelihood diversification of rural households affects agricultural production will be examined, including influences on agricultural productivity, agricultural structures, diversity, technology adoption and so on. Secondly, the study will investigate how the market exerts an impact on contemporary smallholder agriculture, including agricultural input and output markets, land

transfer markets and external market actors, like agricultural enterprises, contract farming and so on. Lastly, this section of the research will examine the effectiveness of various government policies and projects regarding agricultural production. The Chinese government has been issuing a number of policies to encourage farmers to undertake agricultural production, like grain subsidy, agricultural machinery subsidy, and micro-credit and so on. This research will examine the role of these policies to scrutinise whether these policies are encouraging farmers as the government claims or not.

To achieve Objective (d), three socio-cultural aspects of the village will be investigated. Firstly the mentality of rural residents towards agriculture will be examined, as studies often suggest that farmers view agriculture as a low status occupation (e.g. Croll and Huang, 1997). Secondly, this section will examine how the structure of rural family relations and intra-household labour divisions affect agricultural practices, including discussions about agricultural feminisation, geriatrification and so on. Lastly, community culture provides the cultural background for agricultural production, and this research will investigate how community values influence agricultural production, for example, modernity, consumerism, community cohesion and so forth.

1.4 Structure of the thesis

Chapter 2 provides a literature review, which includes a detailed discussion of theoretical approaches of human geography especially related with rural

studies and livelihood diversification. From the background of transitional economies in the Third World generally and Chinese smallholders particularly, agrarian changes of BRICs under the transition background and the theoretical socio-economic drivers of agricultural production are the focus of this review. Chapter 2 also discusses the socio-economic drivers in China's context and finally deepens and details the research gaps which merit the undertaking of this project.

Chapter 3 discusses the methodologies and specific techniques used for this research project. First of all, a discussion about general methodological approaches (quantitative, qualitative and multi-method approaches) is provided to justify multi-methods as the research approach for this study. Moreover, why the case-study is an important approach is particularly discussed, and Hu village as the study site is justified for several reasons. For the data-collection tools: questionnaires, semi-structured interviews, focus group interviews, participant observation methods and secondary data sources will be introduced. How these techniques are used in this study is discussed later in detail.

Chapter 4 addresses Objective (a) because this research takes as a starting point the understanding that human agency takes place in specific political, economic and social contexts, which act as a medium for individuals' actions. These various levels and contexts are of great importance to understanding the processes and changes taking place in Hu village.

Therefore, this chapter will begin with the basic backgrounds of agricultural development of China, and then Sichuan Province, Qingshen County and finally Hu village.

Chapter 5 mainly focuses on Objective (b). Through analysing the data from questionnaires, interviews and secondary data, the demographic features of Hu village can be identified. After presenting the population of Hu Village, the implications of this demography for agricultural production will be discussed in later chapters.

Chapter 6 focuses on Objective (c), the economic drivers of agricultural production in Hu village. Three broad aspects: economic diversification; agricultural markets and agricultural policies will be discussed. The analysis of economic diversification of rural households includes agricultural productivity, agricultural structures and levels of technology adoption. Agricultural markets embrace agricultural input and output markets, land transfer markets and newly emergent market actors. Agricultural policies include subsidy policies, development projects and rural infrastructure construction. In discussion of this chapter, farmers' agency is intertwined with various drivers, shaping contemporary Chinese smallholder agriculture into distinct forms. The data of Hu Village is extensively linked to macro-level national data and international studies, to broaden the finding of the case study.

Chapter 7 targets Objective (d), the socio-cultural drivers of agricultural production in Hu village. The mentality towards agriculture, emphasis on

education, family labour division and life course, community values, changes and cohesion will be analysed in this chapter. Farmers' agency will be particularly highlighted. It will show that various socio-cultural changes at the individual, family and community levels affect agricultural production often in indirect fashions, perhaps explaining the underlying reasons that agriculture has been marginalised in the livelihood structure of households in rural China.

Chapter 8 is the conclusion chapter for the whole study. Firstly, an extensive discussion links Chinese agricultural practices of Hu Village with broader global contexts: the global North and the BRIC countries. Through the comparison, a better understanding of contemporary Chinese smallholder agriculture will be gained. Secondly, the whole findings and analyses of this research will be summarised in a concise manner. Thirdly, this chapter will propose several policy implications based on the findings. Lastly, some recommendations for future research directions will be proposed.

Chapter 2 Literature Review

This chapter sets out the contextual literature for this research project. The first three sections discuss the theoretical approaches the research adopts, from philosophical debates in human geography research to specific theoretical approaches in agricultural or rural geography. The fourth section reviews livelihoods diversification in the Third World and in the Chinese context. The fifth section is about broad contexts of agrarian changes in BRICs, and the sixth section reviews differential drivers of agricultural production through the perspectives of classic theory and specific practices, particularly in the Chinese context. The last section concludes this chapter.

2.1 Philosophical approaches behind human geography research

Any academic research is grounded on specific philosophical assumptions or standpoints, as Graham (1997:8) commented, “philosophy is to research as grammar is to language, whether we immediately recognise it or not”. A number of philosophies have been developed in social sciences; however it is impractical to present them here at length. For human geography research specifically, three philosophical approaches can be identified: positivist, humanist, and structuralist approaches, and so these will be discussed. After

the brief discussion, the approach that this study will adopt will be outlined.

2.1.1 Positivist approaches

It is widely believed that positivism initially was developed by Auguste Comte, a French social philosopher in the nineteenth century. According to Johnston (1986), Comte believed in the supremacy of science as the unique method of research. “To him, the study of science led to the understanding of natural laws, and this understanding allowed society, guided by scientists, to modify nature” (Johnston, 1986: 11). This implies that:

First, natural laws can be developed in social sciences; second, these natural laws provide the basis for foresight – i.e. the basis for predictions; and third, the realization of these predictions can be modified by manipulating the casual variables, to change the nature of the society (Johnston, 1986: 11).

And Neuman (1999) commented,

Positivism sees social sciences as an organized method for combining deductive logic with precise empirical observations of individual behaviour in order to discover and confirm a set of probabilistic causal laws that can be used to predict general patterns of human activity (Neuman, 1999: 65).

For positivists, the conception of science is based on empirical hypotheses so that the core feature of science is to test the hypotheses through conducting experiments, which is methodologically named hypothetico-deductive (Johnston, 1986; David and Sutton, 2004). Kitchin and Tate (2000) commented that positivists believe, “by carefully and objectively collecting data regarding social phenomena, we can determine laws to predict and explain human behaviour in terms of cause and effect” (2000:7). Based on the

verification principle, positivism has a specific methodology which includes three procedures: classification of phenomena, the derivation of hypotheses and hypothesis-testing (Johnston, 1986). Initiated from theories, positivist research ends with revision of theories through a deductive process of collecting data and testing hypotheses (Johnston, 1986; Bryman, 2008). Methodologically, the deductive research is often associated with the application of a quantitative approach. Positivist research has been adapted in social science for a long time based on the premise of naturalism, which holds the standpoint that social research is in nature and is thus the same as that in natural sciences (Johnston, 1986; Graham, 1997).

Positivism has been criticised for a number of reasons. For example, according to Gregory (2004), the critique of positivism involves four aspects: empiricism (problematic relationship between observation statements and theoretical statements), exclusivity (extending objective method into social sciences), autonomy (science is assumed to be “neutral” and “value-free”), and universality (but knowledge is “context-dependent”) (Gregory, 2000a: 607-608).

2.1.2 Humanist approaches

Humanism emphasises the human awareness and human agency of individuals. As Graham (1997:23) argued, according to the humanist view, “people are capable of being creative (or destructive), reflective (or not) and,

above all, they are moral beings". Generally, consciousness and intentionality are core features of human behaviour, which is active agency rather than being determined by external structures (Graham, 1997). For humanists, the main subject of social sciences is "the subjectivity of both observer and observed" (Johnston, 1986: 55), as humans behave with meanings and values, resulting in the interpretation of meaning having been widely researched in social sciences. This is associated with another concept: hermeneutics, which refers to the study of interpretation and meaning (Kitchin and Tate, 2000; Hoggart *et al.*, 2002). Bryman (2008: 15) defined the term "interpretivism" as "a contrasting epistemology to positivism". In research practice, hermeneutic interpretation involves a researcher's reflection on his/her judgementalism and preconception, which is rightly explained by Duncan and Ley (1993:4):

Rather than setting up a model of a universal, value-neutral researcher whose task is to proceed in such a manner that s/he is converted into a cipher, this approach recognizes that interpretation is a dialogue between one's data—other places and other people—and the researcher who is embedded within a particular intellectual and institutional context.

In contrast to positivism, interpretive research is mostly exploratory and inductive. As Kitchin and Tate (2000: 19) commented, "at a basic level, using inductive reasoning means that the research comes before the theory". Generally the inductive research procedures include: perceptual experiences → unordered facts → definition, classification, measurements → ordered facts → inductive generalisation → laws and theory construction → explanation

(Kitchin and Tate, 2000: 23). Methodologically, inductive research involves a number of qualitative methods, such as in-depth interviewing, discourse analysis and ethnography (Hoggart *et al.*, 2002; David and Sutton, 2004).

Humanist (or interpretive) research has been criticised from various angles. For instance, some have sought to displace the “human subject” from the core position in social sciences. The two most prominent critiques come from structuralism and post-structuralism (Gregory, 2000b).

2.1.3 Structuralist approaches

The binary nature of “structure-agency” has been discussed for a long time across the whole of the social sciences. Different from a humanist approach, which emphasises human agency and meanings of human behaviour, structuralist approaches hold:

An axiom that explanations for observed phenomena must be sought in general structures which underpin all phenomena but are not identifiable within them; the explanation cannot be produced through empirical study of the phenomena alone (Johnston, 1986: 97).

The “structure” can refer to different social actualities according to different splits of “structuralism”. The most prominent one is Marxism’s historical materialism which takes material conditions of human existence as the starting point. According to Marxism, the basic structure of a society is the “mode of production” which is the “(organized) means that people employ to sustain and perpetuate themselves” (Graham, 1997:20), so all the dimensions of society are ultimately determined by the economic base. As for a historical

perspective, Marxism treats the structure of society as a process (Johnston, 1986), which indicates that:

In order to understand the current state of any society (and predict future states), we need detailed knowledge of the past stages of development of that society. The present can only be understood in terms of the past. Further, it is the transformations in modes of production which are the key to understanding all other aspects of social change and these transformations or revolutions result from internal contradictions in the economic base as the struggle between classes in a society is played out (Graham, 1997:21).

Apart from the structure as process, Johnston (1986) also argued for a perspective of structure as a “construct” which is “a belief that cultural phenomena are in fact transformations of a few basic structures which are universal to the human mind” (Johnston, 1986: 98). Structuralists contend that basic structures deeply underlie the presentational phenomena and behaviour, so that they need to be uncovered by researchers. Structuralism has been extensively critiqued on its ignoring human agency and structuralist research emphasises too much on the grand structures, without taking social life into account (Cloke *et al.* 1991).

2.1.4 Bridging the “structure-agency” dichotomy

As indicated above, whether using positivist, humanist or structuralist approaches, researchers have come to understand or approach the social world in extreme ways: emphasising either structure or agency. The binary of “structure-agency” has been reflected by human geographers. As summarised by Rigg (2007:25), structure-centred approaches frequently:

Tend towards determinism, place emphasis on the scientific and empirical, are often mechanistic and instrumentalist, overlook essential differences between societies and contexts, undervalue the subjective, focus on rules, and tend towards a static view of society.

Agency-centred approaches then,

Have no predictive power, eschew scientific explanation, place emphasis on the idiosyncratic, subjective and individualistic, tend towards atheoretical interpretations and ahistorical interpretations, overlook broader social forces, tend towards micro-level perspectives (Rigg, 2007:25).

Social scientists have dealt with how to bridge the dichotomy of “structure-agency”. One particularly prominent approach is the theory of structuration developed by Anthony Giddens (1979, 1984). Structuration theory emphasises that human agency takes place in structural contexts and that there is a:

Duality of structure, which relates to the fundamentally recursive character of social life, and expresses the mutual dependence of structure and agency... the structural properties of social systems are both the medium and the outcome of the practices that constitute those systems (Giddens, 1979: 69).

Therefore, according to Giddens, human agency and the structures within which such agency is played out are interactive and reciprocal. Human agents are constrained by social structure and meanwhile actively shape the outcome of the interaction between agency and structures. Methodologically, Giddens changed the extreme approaches and methods proposed by positivism, and especially by structuralism and humanism. As Johnston (1986: 114) commented, “the aim of Giddens’s work is to fuse structuralist approaches to society, with their focus on the constraints to behaviour, to humanistic approaches, whose foci are the intentional acts of human agency”.

As far as this research is concerned, the structure and agency will both be considered. Broader socio-economic contexts (economic policies and developments, social and cultural values, etc.) provide the structural background for farmers' agrarian behaviours. Moreover, macro-level forces such as industrialisation and urbanisation, which have been sweeping the whole of China for decades, have drastically transformed the nature of agricultural production in China as will be shown later in this chapter. At the micro-level, farmers' agency takes place in the matrix of macro-forces which at once provide constraint to and the medium for farmers' actions. Meanwhile, farmers' decision-making on farming arrangements cannot be overlooked because farmers' agency can change conditions of agricultural production at the level of family livelihoods or community economic development first, and these initiatives may be broadened to have an impact on regional development and national grain security later on. The consideration of both structural drivers and farmers' agency is the central principle of this research.

2.2 Research approaches in agrarian change

2.2.1 Political economy approach

Political economy is a prominent research approach for studying agrarian change (as well as agricultural geography), with its conceptual boundaries, however, loosely defined and broadly used (Marsden *et al.*, 1996; Robinson,

2004). Political economy of agrarian change initially concentrates on analysis of social relations based on capital and labour dynamics, focusing on: capitalism production and accumulation; commoditisation and the classical dynamics of agrarian societies, originating from Marxism (Bernstein, 2010). This approach has been constantly developed into different branches under different contexts (Marsden *et al.*, 1996). For instance, in the context of developed countries, Robinson (2004) has argued that political economy approaches initially stressed the role and importance of the state, which sets up the parameters for agricultural changes, and then expanded to the linkages between rural change and macro-level socio-economic transformations. Contemporary agriculture has been conditioned by wider forces locally and globally, including agri-commodity chains (Whatmore, 2002), the global food system (Goodman and Watts, 1994) and state policies (Marsden, 2003).

In the context of agrarian transitions in developing countries, political economy can be roughly divided into two strands, the Lenin and Chayanov schools (Bernstein, 2009). Leninists (e.g. H. Bernstein and T.J. Byres) propose that agrarian transition follows Prussian and American paths of capitalist agriculture through differentiating peasantry into capital and labour, thus remoulding small-scale farming into large-scale, industrialised capitalist agriculture (Bernstein, 2009). Studies of Leninists often adopt a structuralist approach, analysing macro-level forces. Chayanovianists (e.g. Teodor Shanin,

James Scott, Norman Long, van der Ploeg) assert that peasants have their own internal logics (demographic cycle and self-exploitation) and will reproduce themselves; therefore, in research they often take into account agency and heterogeneity of peasants and attempt to combine micro- and macro-level issues (see Scott, 1985; Ploeg, 2008). Similarly, in the context of discussing the rural restructuring of developed countries, a new political economy approach is proposed by Marsden (1998:16), which combines “actors *in situ* and their sets of relationships with non-local actors and agencies”.

Overall, in the perspective of political economy, agricultural production is never operated independently, but is embedded in the networks of “social, political and cultural processes and practices” (Marsden *et al.* 1996: 362). As similarly argued by Woods (2005), this approach provides a framework that connect micro-rural economies and societies with macro-level socio-economic processes, and highlights that “rural areas do not exist as isolated, discrete territories but rather are shaped and influenced by actors and events outside rural space” (Woods, 2005:23, see also Ploeg, 2006). In this respect, political economy provides a theoretical foundation for this research that agriculture is embedded in broader socio-economic and political processes, especially in the case of the Chinese political economy which has featured an overwhelming emphasis on state-led industrialisation, urbanisation and agricultural modernisation. What is occurring at the macro- levels (national

and international) sets the parameters or frameworks for the micro-level (regional and local). Therefore, general “structures” that Chinese agriculture is embedded in will provide an important context for the investigation.

Nonetheless, the political economy approach (often the Leninist approach) has been criticised for emphasising abstract structures and processes too heavily and downplaying social agency, dynamics and heterogeneity (Ploeg, 1993; Marsden *et al.*, 1994; Woods, 2005; da Corta, 2008). Its deterministic and uni-linear tendencies often simplify agriculture into a profit-chasing sector as any other form of capitalist production (Woods, 2005). This means they often “overlook farm and farm-household dynamics, and neglect key components of farm-based decision-making” (Robinson, 2004:42), as well as greatly relegating “the individual and household to the status of pawns on a structuralist chessboard” (Rigg, 2001:24). Bearing practical limitations in mind, this study will adopt a balanced approach, not only investigating the structural aspects, but also focusing on farmers’ diversity and agency, which is more in line with the Chayanovianist or new political economy approaches discussed above. For instance, there are multiple types of farmers at different standards (Ploeg, 1993), such as full-time farmers, part-time farmers, large-scale farmers, and smallholders, and the level of agricultural production of different farmers is also different. Their demands and decision-making (agency) are not (always) unanimous. This study will thus divide farmers into various analytical categories depending on

research objectives.

In addition, although focusing on a rural community of southwest China, this study attempts to link the local to the macro level, as “it is through a more sophisticated analysis of the ‘local’ that a broader comparative analysis of capitalism and globalisation can be built” (Marsden, 1998:27). The local community experiences the broader political economy. As Miller (1995:10) argued,

Our micro-studies of consumption are not a retreat from political economy because we are finding that the local has become the commanding heights of the political economy. It is in here that we can relate directly to questions of, for example the comparative experience of World Bank sponsored structural adjustment (Citing from Marsden, 1998:27).

2.2.2 The cultural turn

In recognizing the limitations of the political economy approach, human geographers have embarked on an intellectual shift towards more consideration of cultural processes since the 1990s, which has been termed the “cultural turn” (Crang, 2000). The cultural turn promotes the notion that:

Culture as the product of discourses through which people signify their identity and experiences and which are constantly contested and re-negotiated, and cultural geographers started to explore spatial relations and the meaning of place through issues of identity, representation and consumption (Woods, 2005:24).

This shift has aligned with broader philosophical debates of post-modernism and post-structuralism in social sciences (Cloke, 1997; Barnett, 1998; Philips, 1998). In some senses, with stressing meaning, discourse and difference, the

cultural turn has challenged the tradition of empiricist and particularly logical positivism in human geography (Philips, 1998). Rural geography has also been affected by the cultural turn with a resurgence of rural studies in the 1990s, especially studies of rurality (Cloke, 1997). Methodologically, cultural studies of the rural have been fascinated with qualitative approaches, such as participant observation (ethnographies), discourse analysis and focus groups (Cloke, 1997; Philips, 1998). Influenced by the cultural turn, a host of “excitements” in rural studies have emerged in the mid-1990s, including, as Cloke (1997) mentioned, nature-society relations, discourses of rural experience and imaginations, symbolic texts of rural cultures and movements.

Particularly agricultural geography has also started to emphasise “the ways in which farmers develop locally-based adaptive strategies reflective of local culture, agri-ecology and household resources” (Robinson, 2004:42). More clearly, Morris and Evans (2004) reviewed four research areas of agricultural geography stimulated by the cultural turn (an “agri-cultural turn”) during the 1990s: representations of agriculture, nature-society relations, heterogeneous agri-cultures and enculturing the agri-food economy. Especially, agriculture as representation has been approached through discourse analysis. As Morris and Evans further argued, “authors have been concerned to uncover the many competing discourses that exist to give meaning to specific agricultural phenomena and to explore the ways in which discourse structures experience and action” (2004:101). Therefore, agriculture

can be represented differently by different actors and the key lies in discourse construction and contestation. In this sense, discourses serve as a form of power that constructs agricultural knowledge and social practices (Liepins, 1996). In addition, in reviewing studies on enculturing the agri-food economy, Morris and Evans argued that agricultural economic processes were culturally embedded, and “in this context, embeddedness recognises that the social and the cultural cannot be disassociated from the economic aspects of food production and consumption” (2004:106). Therefore, cultural studies enrich agriculture with cultural attributes, through which agriculture is not merely an economic activity of food production, as political economy presumes, but rather carries an array of embedded socio-cultural meanings.

Cultural analysis provides fresh research approaches contrasting with the structuralist nature of political economy, while it is also exposed to critiques of the extent to which it relies on discourse (post-structuralist) analysis, and often ignores the “material” aspects (Philips, 1998; Crang, 1997; Morris and Evans, 2004). Therefore, a balanced approach is desirable as Morris and Evans (2004:101) have argued,

The situating of discourse-based explanations of agricultural change within the theoretical perspective of political economy... may be one way of addressing this difficulty, permitting a more balanced view of the interplay between cultural practices and the structural constraints which are configured by, and reconfigure, them.

As suggested above, this study adopts a balanced approach, combining political economy and cultural analysis approaches together, with inspiration from Morris and Evans’s argument, that “the juxtapositioning of cultural with

other approaches is possible and rewarding” (2004:107). As political economy can offer a theoretical guide for analysis of economic elements, cultural analysis can provide theoretical support for the analysis of socio-cultural factors that impact on contemporary Chinese agriculture. For smallholders generally, agriculture is not only a productive activity, but also a way of life (at least for some of them). It is thus important to shed light on the cultural meanings of agriculture in rural households and communities, how agriculture is situated in the meanings or morals of farmers and communities, and how agriculture as representation (the discourse of agriculture) is culturally constructed, contested and negotiated and such. Additionally, it is necessary to ask how rural residents see themselves, their identities and their next generations. What are socio-cultural expectations of young rural generations from family, community and broader society? All may have impacts on agricultural production as the cultural turn suggests.

2.3 Rural and agricultural change: a transition theory perspective

For the real world, the only constant principle is change, or in other words, transition (towards new states or directions). Having been debated largely in natural sciences for a long time, transition theory begins to gain increasing intellectual attention in social sciences in recent decades (Pickles and Smith, 1998; Chakrabarti and Cullenberg, 2003; Wilson, 2007, 2012). As Wilson

(2007:14) contended,

From a social science perspective, transition theory should be seen as a theoretical framework that attempts to understand and unravel socio-economic, political, cultural and environmental complexities of societal transitions (or sub-systems of society such as agriculture) from one state of organization to another.

There are different transition pathways in different circumstances. In contrast with what often occurs in the natural world where transition processes are often deterministic and non-anticipatory, transition in the social world is usually non-deterministic and anticipatory, as human systems have abilities of social learning and system memory (Wilson, 2007). After examining various transition pathways, Wilson further argued that transitional processes were inherently complex, with characteristics of “temporal non-linearity, spatial heterogeneity, global complexity and structure-agency inconsistency” (Wilson, 2007: 78). Various forms of transition have occurred at multi-level and multi-scale of human society, economy, population, and environments, including, for instance, transitions towards post-Fordism, post-modernism, post-socialism, post-colonialism and environmentalism.

Agriculture has also been in transition in the contemporary world, with different pathways in different countries. In developed countries, like UK and other West European countries, agriculture has been shifting from a productivist regime, which emphasises the quantity and standardisation of agricultural production, to a post-productivist regime (Potter, 1998; Marsden, 2003; Mather *et al.* 2006) or a multifunctional regime (Wilson, 2001, 2007), which greatly accentuates quality, diversity, flexibility, and the environmental,

and consumption aspects of agriculture. In developing countries like China, India, Southeast Asia, and Africa, agricultural production is still within the transition corridor from traditional peasant farming to agricultural modernisation and industrialisation (Woods, 2010). In common with past trends evidenced in developed countries, the agricultural sector in the developing world has been progressively de-populated due to increases in agricultural productivity, mechanisation, and overwhelming urbanisation and industrialisation. This readjustment of rural labour employment from agriculture to non-agriculture (or non-farm) has been widely identified and seen as the most noticeable transitional phenomenon occurring in developing countries (Ellis, 1998; Johnson, 2000; Rigg, 2001).

In line with agricultural transition in practice, rural communities have undergone different transitions in different socio-economic contexts, driven by various external and internal forces including globalisation, neo-liberal ideologies, climate change, population growth and so on (Wilson, 2012). For instance, driven by counter-urbanisation, rural communities in developed countries have increasingly transitioned from production to consumption locations (Marsden, 1999, 2003). Not specific to agriculture, multifunctionality has also expanded in the whole rural space in developed countries, producing a greater balance of economic, social-cultural and environmental aspects of rural communities (Wilson, 2010). In the developing world, driven by the overarching processes of urbanisation and industrialisation, rural communities

have experienced dramatic deagrarianisation, which are characterised by agricultural depopulation, rural out-migration, increasing non-farm employments and declining agricultural income as a proportion of total GDP (Bryceson, 1996; Rigg, 2001). In deagrarianisation, agriculture is no longer the main income source of rural households and communities (Rigg, 2006).

From the transition perspective, China has been undergoing multi-faceted transitions. First, and the most important, is the state-led transition from a planned economy to market economy, namely the post-socialism transition, originating from the landmark HRS reform in 1978. Unlike the sudden transition of the Soviet Union (Russia, Ukraine, Estonia, Georgia, etc.) post 1991, (Pickles and Smith, 1998) which required rapid socio-economic engineering in just a few years (so called “shock therapy”), the Chinese transition has been one of a more gradualist approach which has proved to be a more successful pathway (Lin, *et al.* 2003). Although in the market transition, the state power or multi-level of governments have long intervened in the sphere of economy (Nee, 1989; Oi, 1999), what is beyond doubt is that the market reform has gained remarkable progress, and the market has become the fundamental mechanism of resource and labour allocation in China (Huang and Rozelle, 2006). Nonetheless, the transition is still in progress, and many market institutions are still imperfect and need to be improved. The agricultural sector has been substantially liberalised in the market transition, and multi-dimension of agricultural markets, input and

output, domestic and international, have been greatly improved (Huang and Rozelle, 2006; Huang, 2010).

Another simultaneous transition in China is modernisation, which has been the all-embracing and overwhelming socio-economic force driving change in contemporary China. Under the umbrella of modernisation, there are several aspects of transition that have occurred in China, including industrialisation, urbanisation, and agricultural modernisation, which have been considered as the primary drivers and foci of Chinese policy makers (see various government documents, like Five-Year Master Plan). The origin of the industrialisation project was the Mao era in the 1950s, and after the 1978 reform, progress has been substantially accelerated. In 2010, the industry sector contributed 46.7% to the national GDP, with the agricultural sector contributing only 10% (NBSC, 2012). Commentators estimated that by 2010, Chinese industrialisation level had reached the later middle stage (Chen, *et al.* 2012), and some even predicted that China would accomplish the final stage of industrialisation at latest by 2028 (Wang, 2012). Urbanisation is closely linked to, or to put it another way, realised by, industrialisation (Chen, *et al.* 2012). It is reported that by 2011, the urban population of China has arrived 51.5% of total population, indicating for the first time, Chinese urban residents outnumbered rural residents (CASS, 2012). Moreover, Chinese governments take urbanisation as the primary development engine in the future (Chinese 12th Five-Year Master Plan).

Industrialisation and urbanisation have created massive opportunities for Chinese residents, particularly the rural peasants, providing them with non-farm employment in cities and towns, driving massive rural-urban migration (Long, *et al.* 2009). In addition, the state has kept promoting agricultural modernisation, which substantially improves the land productivity and mechanisation, and consequently creates a huge amount of rural surplus labour. Attracted by high income in urban areas, which is seen as the main “pull” driver, the surplus labour becomes the main body of rural-urban migration and other non-farm employment (Johnson, 2000). The readjustments of rural labour, in turn, cast great challenges for agricultural production in China. Under the political economy of contemporary China (e.g. the Hukou system and land tenure system), it is not a smooth process of transferring rural peasants into urban citizens, so that some members, especially the elderly and women, of rural households cannot migrate with other members, and thus are left behind to take care of housework and farming (Ye and Wu, 2008; He and Ye, 2013). To deal with the labour shortage in agriculture, the state has promoted a series of favourable policies and projects to perfect relevant institutions, improve rural infrastructures and enhance subsidies. Therefore, from the perspective of transition, the Chinese countryside and agriculture is now situated in a context where a few paralleling transitional processes including market transition, industrialisation, urbanisation, and agricultural modernisation converge. While fully

acknowledging the complexity, heterogeneity and non-linearity of transition trajectories, as contended by Wilson (2007), it is still safe to argue that the principal direction of Chinese transition has been a transformation from a traditional, agriculture-based, and planned economy and rural society towards a modern, industry-based, market economy and urban society. It is under this overarching transition of China that this research resides.

2.4 Smallholders and livelihood diversification

There have been at least a dozen terms to signify farmers in developing countries, such as petty commodity producer, smallholder and peasant.

Smallholder is a most appropriate term to refer to Chinese farmers. According to Netting (1993:2), smallholders are:

Rural cultivators practicing intensive, permanent, diversified agriculture on relatively small farms in areas of dense population. The family household is the major corporate social unit for mobilizing agricultural labour, managing productive resources, and organizing consumption.

In Netting's sense, based on various cross-cultural agricultural systems globally, smallholders own a set of distinctive features:

- The farm size is small-scale; the cultivation is intensive in areas of dense population.
- Smallholder agriculture serves both subsistence consumption and market demands.
- Household is both productive and consumptive unit of agricultural production.

- Intensive agriculture as the principal jobholding takes most work time of the family members. Off-farm work returns less than smallholding.
- The smallholding is environmentally sustainable with careful and sophisticated farming practices.
- The yields are relatively high; they produce in a more diversified and continuous way.
- The land tenure is long-term usufruct which can facilitate intensive cultivation.
- The households in communities are unequal, heterogeneous and dynamic.
- Agriculture collectivisation impedes tremendously land productivity which is best illustrated by the Chinese case (Netting, 1993: 321-323).

Netting takes Chinese agriculture (off course, excluding agriculture of collectivisation era) as an exemplar of intensive agriculture and smallholder model. He states:

China is the land par excellence of smallholder intensive cultivators. No other society on earth has the same unbroken history of a dense rural population practicing permanent, sustainable agriculture in the context of a great and enduring civilization (Netting, 1993: 232).

Although through the collectivisation period, from the 1950s to the end of the 1970s, smallholder agriculture had been greatly impeded due to the ossified unification of labour, land and management of agricultural production, Chinese farmers turned back to smallholder agricultural patterns after the HRS reform. Twenty years have passed since Netting interpreted Chinese

agriculture and farmers with smallholder patterns, during which time China's whole economy and society have experienced dramatic transitions. Smallholder agriculture has experienced no less dramatic transformations over time, driven by both socio-economic and political forces (Huang *et al.*, 2010). Thus, Netting's smallholder model becomes increasingly inadequate to conceptualise contemporary Chinese farmers. For instance, his model proposes that for smallholders, agriculture takes most work time and off-farm work returns less than smallholding. This assertion seems untenable for most contemporary Chinese farmers (Deininger *et al.*, 2012). Thus, this study will reveal a modified smallholder model based on the contemporary Chinese case.

Farmers' livelihood diversification is the most fundamental characteristic of agrarian transformation around the whole developing world (Bernstein, 1992; Ellis, 1998). Among multiple and diversified household strategies, off-farm activities at the local-level and migration have been identified by scholars as the two main paths for smallholders to cope with challenges and enrich their wellbeing (Ellis, 1998; de Haan, 1999). Since the 1980s, China has undergone massive progress of urbanisation and industrialisation, which have created great opportunities for smallholders to seek off-farm activities in local areas or by migrating to urban areas (Huang, 2010). Concurrently, agricultural production is embedded in the arrangements of livelihoods and has been influenced by this process to a significant degree. For instance, there has

been a tendency of “deagriculturalisation” which refers to a shift of employment from agricultural sectors to non-agricultural sectors in China (Lei and Lu, 2005).

Livelihood diversification can provide a useful lens for this study to link agricultural production at the household level with broader structural forces. As Rigg (1998) has argued in southeast Asia, contemporary agrarian change has to be understood through non-agriculture, non-farm activities. Relevant studies are very extensive both in China (e.g. Rozelle *et al.*, 1999; de Brauw *et al.*, 2002) and globally (e.g. Azam and Gubert, 2004 for Mali; Germenji and Swennen, 2002, and Miluka *et al.*, 2010 for Albania). Moreover, household livelihoods are situated within broader structural forces such as political economy and history, and are “conditioned by histories of places and peoples, and their wider interactions with colonialism, state-making and globalisation” (Scoones, 2009:186). Therefore, farmers’ livelihoods diversification “must look simultaneously at both structure and agency and the diverse micro- and macro-political processes that define opportunities and constraints” (Scoones, 2009:186).

2.5 Agrarian transition of the BRICs

With impressive economic growth, the BRICs are playing increasingly significant roles in the global politics and the global economy. In 2010, the GDP of the BRICs accounted for a quarter of the world’s gross income, and

they represent over a quarter of the world's land area and more than 40% of the world's population (World Bank, 2011). Their rapid economic growth has also exerted considerable impacts on global food markets, having the potential to change the global agri-food trade pattern in the future (Haq and Meilke, 2009). To various degrees, the BRICs are still in the process of industrialisation and modernisation and largely remain agrarian societies, especially in the case of China and India. Therefore, a review of the agrarian transition of the BRICs may well shed light on their potential to affect global food security issues. This section will briefly introduce agrarian changes in the BRICs, providing an international context for the Chinese agrarian transition.

In Brazil, agriculture contributes substantially to domestic economic growth and expanding export markets (Martinelli *et al.*, 2010). It has enabled Brazil to become a leading player in global agricultural markets (Matthey *et al.*, 2004). Economic reform, beginning in the early 1990s, which was designed to reduce or eliminate government control and interference, has helped to stabilise the economy and create a more liberal policy regime favourable to agricultural investment, production and exports (Schnepf *et al.*, 2001; Valdes, 2006). Brazilian agriculture is characterised by a stark division between large-scale agribusiness and small-scale family farming, with the former dominating the whole agricultural system. Although a series of agrarian reforms, attempting to enlarge the amount of land possessed by smallholders and improve social welfare, have been implemented since the late 1980s, the

fundamental structure and tension between the two agricultural forms has largely remained (Chaddad and Jank, 2006; Pacheco, 2009). Consequently, in Brazil a small number of large-scale agribusinesses cultivate the vast majority of fertile land and gain massive profits from both domestic and global markets, while millions of smallholders only own a small fraction of land and desperately struggle against poverty (Chaddad and Jank, 2006). Furthermore, there are still millions of landless families waiting for land. The dominant form of Brazilian agriculture has brought great challenges to environmental sustainability (Martinelli *et al.*, 2010), poverty and inequalities between large-scale export-oriented farming and family farming (Ploeg *et al.*, 2012). Therefore, the main task of Brazilian agriculture in the future will be to balance agricultural modernisation, environmental conservation and social justice (Martinelli *et al.*, 2010). Comparatively, China is in a dilemma, between sustaining peasant farming (Ploeg *et al.*, 2012) and transforming peasant farming into large-scale, industrialised, capitalist production as the primary way to realise agricultural modernisation. Whether the Brazilian agribusiness model will be the future of Chinese agriculture or not is highly controversial at present, and still remains to be seen, although the tendency towards scaling-up agricultural production has seemingly commenced in many regions of China (e.g. see Chen, 2012).

Russian agriculture experienced dramatic restructuring in the momentous transition from a planned economy to a market-oriented economy

in the beginning of the 1990s (Brooks, 1991). In the market transition, agricultural land has been largely transferred from large collective state farms to individuals (Lerman and Shagaida, 2007), so the market became the dominant force that drove Russian agricultural production. Contemporary Russian agriculture is constituted by three major types of farms: corporate farms, household plots and peasant farms (Lerman and Shagaida, 2007), with different types of farms specialising in different crops or livestock sectors (Liefert and Liefert, 2012). However, large corporate farms still dominate agricultural production in transition Russia and, especially in the 2000s, the growth of Russian agricultural outputs has been driven by large agro-holdings (Liefert and Liefert, 2012). Small-scale family farms have never prospered in Russia for various institutional, historical, socio-economic and political reasons (Wegren, 2008), and hence the agricultural development pathway of Russia refers primarily to the industrialisation and modernisation of large-scale corporate farms.

In this sense, Chinese agriculture which is predominated by small-scale peasant farms is overtly different from the case of Russian agriculture. This said, recent Chinese policies encouraging large agribusiness, fostering a land transfer market and new agricultural operators seem to have resonances with contemporary Russia that relies substantially on large modern agricultural enterprises (Wegren, 2005). Furthermore, the Chinese government has been particularly promoting agricultural land transfer markets to accompany the

massive outmigration of rural population, while land markets in Russia have been largely circumscribed by the inefficiencies of the administrative and technological infrastructure (Lerman and Shagaida, 2007), although most agricultural land has been privatised officially. As Wegren (2008) predicted, the difficult situation of land markets of Russia is likely to continue, which means that Russian agriculture in the future will continue to be dominated by large agribusinesses rather than thousands of individual peasant families. Lastly, with Russian accession to the WTO in 2012, Russian agriculture will face great challenges from global agro-food markets, similar to China.

India initiated its economic reform firstly from non-agricultural domains in the early 1990s, which has had extremely different repercussions on agricultural production compared to Chinese experiences (Gulati and Fan, 2008). As Gulati and Fan (2008) amply illustrated, agricultural growth has been substantially constrained by the urban-led reform. In the Chinese case however, surplus rural labour has been largely absorbed by the rapidly-developing urban economies, leading to the most spectacular rural-urban migration in the world, which also results in various consequences for agricultural production. In India, the prospering urban economies have only created limited opportunities for rural labourers, and thus rural-urban migration has never been so intensive (Binswanger-Mkhize, 2013). Consequently, the vast majority of rural labour in India is still dependent on agriculture or emerging rural non-farm sectors for their livelihood (Gulai and Fan, 2008;

Binswanger-Mkhize, 2013). Nonetheless, both India and China are dominated by smallholder agriculture (below two hectares) (Gulati and Fan, 2008), and in India, over 70% of farmers own less than one hectare at present, with less than 1% owning more than 10 hectares (Lerche, 2011). However, different to Chinese egalitarian land reform, unsuccessful Indian reform has led to a large number of landless agricultural workers (Gulati and Fan, 2008). The rural landless often largely remain unemployed or become part-time agricultural workers with meagre wages (Lerche, 2011), which is sharply different from the “capitalization without proletarianization” of Chinese smallholder agriculture (Huang, 2012). In addition, to relieve the severe agrarian crisis (evident in for example poverty and farmers’ suicides), agribusiness, especially in the form of contract farming, has gained impressive rates of development in some states of India (Singh, 2004; Kumar, 2006). This agribusiness-led development pathway has also been adopted by the Chinese state to connect smallholder agriculture with domestic and international markets (Zhang, 2012). Lastly, both countries have joined the WTO, which suggests that international markets and globalisation processes will increasingly influence agricultural development in both countries.

China is the biggest socialist country in the world, whose political system, policy-making, and development strategies exhibit particular characteristics. Especially with regard to the political system, in contrast with the other three BRIC countries, there is only one ruling party in China’s

political arena and this can provide a relatively peaceful and consistent environment for the reforms (Gulati *et al.*, 2005). China initiated rural reform in 1978, replacing collective farming with a household-based system, which is now known as the HRS. Compared with the weak authoritarian states of Latin America, China maintained its ability to rein in economic activity after reforms began (Oi, 1995). Different from Russia and other Eastern European and Former Soviet Union countries, China adopted a gradual, evolutionary approach to the transition towards a market economy and the results have been very successful (Lin *et al.*, 2003; Lin, 2004). China initiated reforms within agriculture instead of within the urban economy as India did, which ensured that the majority of the population benefited from the initial reforms and also provided the necessary conditions for the manufacturing and service sectors to reform and grow (Gulati *et al.*, 2005). Through the series of reforms (see Appendix A) in aid of vast technological progress and agricultural mechanisation, Chinese agriculture has not only basically realised self-sufficiency, but has also achieved great growth in quantities of production, being ranked first in the world for cereal production (FAOSTAT, 2009). Nonetheless, there are also many specific challenges for Chinese agriculture, for instance, accelerating growth, improving efficiency and at the same time ensuring that this growth is both equitable and sustainable (Gulati *et al.*, 2005).

Overall, agrarian transitional pathways in the four countries vary and

are context-based. After investigating the agricultural production of Hu Village and based on the findings, a comparative discussion of the four countries regarding agriculture will be presented in the conclusion chapter.

2.6 Socio-economic drivers of agricultural production

This section reviews various socio-economic factors that drive agricultural production globally, with a particular focus on China. Firstly, classic theories of agricultural production will be reviewed and discussed. Then, studies of specific socio-economic factors will be discussed, including economic reform, land tenure, rural-urban migration, subsidies and social factors. The relevant studies will offer great insights for the research in this study.

2.6.1 Classical theories of agricultural drivers

There are a few classical theories considering agricultural driving forces. Chayanov (1966) argued that a peasant farm is not only a production unit, but it is also a consumption unit and the family life cycle is one primary factor in the organisation of a peasant farm. Based on empirical data, Chayanov developed an economic model, namely the labour-consumer balance, which means that agricultural production is determined by the divide between the intensity of annual family labour and the degree of satisfaction of its demands. Emphasising family dynamics, the Chayanovian model offers theoretical

insights for this study on how family life course and labour division change Chinese smallholder agriculture. From another angle, Boserup (1965) identified population growth as the autonomous and dominant force driving a steady intensification in agriculture. Her main concern is that primitive communities with sustained population growth have a better chance of getting into a process of genuine economic development than primitive communities with stagnant or declining populations. Boserup's analysis revealed causal links between population and labour power on one side and agricultural technologies, off-farm employment and various market factors on the other. Her model has been criticised for its simplicity, for not taking external elements into account (Brookfield, 2001). Yet, its emphasis on a demographic element provides valuable insights for this research, indicating that rural demography is an important parameter for agriculture.

Based on international comparisons, Hayami and Ruttan (1971) proposed a theory of an "induced development model" in the agricultural economic system, which contends that technological and institutional change is endogenous to agricultural development. This model suggests that agricultural technological change is induced by various factors, including the non-agricultural sector, the state, farmers, agribusiness and market conditions. Therefore, effective interaction between these elements is the key to agricultural development in developing countries. This model underlines the importance of integrating various socio-economic and political drivers of

agricultural development, which theoretically supports the present emphasis on comprehensive factors of agricultural production and the analysis of agricultural technological change.

Overall, these three classical theories suggest that rural demographic change, family life course (constitution), non-agricultural sectors, the state, market conditions and so forth are all drivers of agriculture production. Any single factor can never interpret agricultural change comprehensively.

2.6.2 Economic reform

A host of studies have focused on the effects of rural economic reform on agricultural growth, although they have often arrived at contradictory conclusions. McMillan *et al.* (1989) calculated that 78% of the increase in agricultural productivity between 1978 and 1984 could be attributed to the incentivising effects of HRS and 22% to the effects of higher prices. Lin (1992) assessed the contributions of agricultural decollectivisation, price adjustments and other institutional reforms to China's agricultural growth during the reform period by province-level panel data. This study revealed that decollectivisation (through the HRS) was to account for about half of the output growth during 1978-1984, while the effect of other market-related reforms on productivities and output growth is very small. After 1984, China's agricultural productivity experienced a slowdown, and Lin (1992) argued that the one-time discrete effect of the HRS reform had ended in 1984, and the rapid exodus of the

labour force from agriculture and the sharp decline in the growth rate of fertilizer usage were responsible for the stagnation. However, Huang and Rozelle (1996) identified technology adoption as the most important determinant of rice yield growth during 1978-1984, accounting for nearly 40% of the growth. In 1985-90, technology has accounted for all the increase in rice yields, suggesting that Lin's (1992) analysis may over-estimate the impact of decollectivisation. Similarly, Mao and Koo (1996) also found that technical progress had been the most important factor for Chinese agricultural productivity growth since 1984. Fan (1991) asserted that conventional approaches overestimated the impact of the rural reforms on both production and productivity growth, and he concluded that it was imperative for the government to increase investments in agriculture to promote the long-term production and productivity growth (see also Li and Liu, 2009).

Overall, scholarship on economic reform reaches differential conclusions indicating that various subsequent elements have also had an impact on agricultural production in China. These studies can provide important insights for this study regarding the economic factors that may drive agricultural production. However, a palpable limitation of these studies is that all of them adopt quantitative approaches, greatly ignoring farmers' agency at the micro-level, which is one of the research gaps that this study will attempt to address.

2.6.3 Land tenure

Another focus is to identify the characteristics of the Chinese HRS land tenure system (e.g. Wen, 1995; Yao, 1995, 1998; Li *et al.*, 1998; Brandt *et al.*, 2002).

Under the HRS tenure system, individual households only were assigned residual income rights of the land, leaving a variety of other use and land reallocation rights vested in the state and local collective authorities (Liu *et al.*, 1998), generating a highly complex property rights regime (see also Brandt *et al.*, 2002). This “two-tier” land tenure arrangement (Dong, 1996), namely farmers holding the use rights and the collective maintaining ownership, was criticised for its inefficiency and uncertainty. Wen (1995) and Yao (1995) both argued that uncertainty in land tenure dampened farmers’ incentives to invest in agriculture. Furthermore, Yao (1998) demonstrated that uncertain land tenure and restrictions on land trade rights negatively influenced agricultural output. Carter and Yao (1998) also found, from analysis of national data, that tenure security significantly affected farmers’ investment in agriculture. However, Kung (1995, 2000) found that the downsizing of farmers’ incentives due to uncertainty of land tenure under HRS did not affect inefficiency in agriculture so much as some scholars asserted. Especially, Kung and Liu (1997) found unexpected evidence from farmers’ perspectives that an overwhelming majority of the farmers did not hold a preference for private ownership of land, and they wanted to reallocate the land regularly due to egalitarian spirit and family size cycles. The contradicting conclusions above

suggest that arguments can be different according to the level at which data analysis is conducted.

Compared with private land tenure, Dong (1996) argued that the two-tier land tenure was more suitable in the Chinese context, because in the presence of multiple market distortions, land privatisation was unlikely to provide a solution to agricultural problems. It is widely realised that land markets can promote allocative efficiency and increasing agricultural productivity, by equalizing the marginal product of land and by facilitating transfers of land from less productive farmers to more productive ones (Carter and Yao, 2002; Deininger, 2003; Jin and Deininger, 2009; Feng *et al.*, 2010). Through examining heterogeneities at the village level, Brandt *et al.* (2002) also concluded that poorly developed land rental markets prevented households who have limited access to off-farm opportunities from fully utilizing their labour and earning more income through expanding the farm scale. Using a big national sample in China, Jin and Deininger (2009) found that transferring land from less able and richer households who joined the off-farm activities, to poorer households with sufficient reserves of family labour could significantly enhance agricultural output. Through a plot-level case study, Feng *et al.* (2010) found that households which rented additional land had higher rice yields per unit, and their land investment and input levels did not differ significantly from other households. Therefore, land rental markets have important implications for allocative efficiency and agricultural

productivity.

This strand of studies elaborates on the complex relationships between land tenure and agricultural production, offering an extensive range of perspectives for analysis of the land tenure system for this study. However, what they fail to address is the dynamism of the relationships. Conclusions are contextually based rather than universal, and the HRS tenure system might be a positive driver at first while it may become negative later. Another gap is the lack of linkage between land tenure and farmers' livelihoods with external political economic arrangements, which could be the cause of underlying dynamics. This study will deal with this gap based on the case of a rural community of China.

2.6.4 Rural-urban migration

Non-farm activities have increasingly become major sources of livelihood for farmers in the developing world (Reardon *et al.*, 2007; Davis *et al.*, 2010). Studies of the relationship between non-farm activities and agricultural production have primarily focused on how agricultural production facilitates or impedes non-farm activities (Davis *et al.*, 2009; Haggblade *et al.*, 2010). The other side, how non-farm activities of farmers affect agricultural production has just recently received academic efforts (e.g. Huang *et al.*, 2009 for China; Oseni and Winters, 2009 for Nigeria; Kilic *et al.*, 2009 for Albania; and Hertz 2009 for Bulgaria). Rural outmigration, as one of the most important non-farm

activities, however, has attracted considerable academic attention to its influences on agricultural production. In China, rural-urban migration has become the fundamental path for farmers to seek off-farm economic activities (de Brauw *et al.*, 2002). Because of institutional constraints (e.g. Hukou system), rural migrants cannot become legal residents in cities and have to commute between work cities and original villages, and send the wages back to their home communities. Absence of labourers in rural communities coupled with remittances from the outside, affect agricultural cultivation significantly and in a range of ways. Rozelle *et al.* (1999) found that migration had a significant and negative effect on yields, which fall sharply if a family member leaves the farm in China. They also attributed the slow-down in the growth of grain during the 1990s to rural outmigration. Similarly, de Brauw and Rozelle (2003) found no evidence of a link between migration and farmers' productive investment in China, and in poorer areas they found that migration increased consumptive investment by nearly 20%. The same conclusion of negative linkage between migration and investment, and positive linkage between migration and households' consumption has also been found in other countries (Taylor *et al.*, 1996 for Mexico; Azam and Gubert, 2004 for Mali; Germenji and Swennen, 2002, and Miluka *et al.*, 2010 for Albania). In contrast, some scholars have also found positive correlations between migration and agricultural production. Taylor *et al.* (2003) offered evidence from China that remittances partially compensate for a negative lost-labour

effect and stimulate crop production and possibly self-employment (see also Woodruff and Zenteno, 2001 for Mexico; Dustmann and Kirchkamp, 2001 for Turkey; Oseni and Winters, 2009 for Nigeria).

Besides, migration also influences agricultural restructuring. McKay (2005) found in the Philippines, women's migration caused the transition from subsistence to commercial agriculture, and in turn, this transition also strengthened women's migration. Miluka *et al.* (2010) found in Albania, remittances led to a structural transformation from labour intensive to capital intensive agriculture.

Overall, these studies are helpful for the analysis in this study on the effects of the economic diversification of rural households on agricultural production. However, analysis is generally confined within the economic domain in these studies, without shedding light on how diversification, and particularly outmigration, impacts on agriculture through social processes, for instance, family labour division or the family life cycle. This study will address this issue using more holistic perspectives.

2.6.5 Subsidy policy

From 2004, the Chinese central government began to prioritise national grain self-sufficiency and cancelled the longstanding tax policy on farmers, and began instead to subsidise them to encourage grain cultivation. Subsidy policy has been supposed to be a potential driver for agricultural production,

particularly for grain cultivation in China. Based on data from 421 households in Anhui Province of China, Wu and Cai (2010) found that grain subsidy policy has obvious positive effects on encouraging farmers to enlarge grain sown acreage, and exhibits an obvious excitation effect of “land-input”. However, other scholars have reached contrary conclusions. Based on analysis of a national dataset, Huang *et al.* (2011) found no evidence that grain subsidies are distorting producer decisions in terms of grain area or input use decisions, and they argue the main reason is that subsidies are mostly sent to land contractors instead of actual tillers (see also Ma and Yang, 2005). These conclusions are mostly drawn from quantitative data analysis, often neglecting farmers’ voices. This study will approach this issue from the perspectives of farmers, to explore the underlying reasons.

2.6.6 Social drivers of agricultural production

Social drivers here are broadly defined, referring to socio-cultural aspects of society, excluding economic, political and environmental factors. As discussed earlier, various socio-economic factors are often interwoven together, and it is sometimes difficult to split social and economic drivers. For instance, rural migration could be both an economic and socio-cultural driver for agriculture. This section briefly reviews how socio-cultural factors have changed the agricultural landscape in developed countries at first and then discusses the circumstances in developing countries, especially China.

Agriculture in the developed countries has been undergoing a regime restructuring from productivist agriculture towards multifunctional agriculture (Wilson, 2007; Woods, 2010). In a productivism regime, agriculture is considered as the core of rural communities, and at the individual level, to maximise land productivities is generally identified as the primary duty of farmers, the most significant standard to be “good farmers” (Burton, 2004). In multifunctional agricultural regime, socio-culturally, agriculture often loses the central position in society and rural communities (Wilson, 2007); and pluriactivity has become more the norm in rural economies (Ilbery and Bowler 1998; Wilson, 2007). Besides economic and political drivers, this transition has been socially driven by counter-urbanisation, environmental concerns and the shift from production to consumption of the countryside (Wilson and Rigg, 2003; Wilson, 2007). After long-term rural depopulation driven by urbanisation and industrialisation, the countryside of the developed world has experienced a population turnaround since the 1970s (Woods, 2005). The long-lasting trend of counter-urbanisation has projected a multiple portfolio of agricultural activities (Wilson, 2007).

In contrast, most developing countries are still in the process of urbanisation and industrialisation and rural society has been experiencing deagrarianisation (Bryceson 1996; Rigg 2001), which has triggered various agricultural changes, for instance, mechanised, feminised and geriatricised agriculture (Rigg, 1998; Rigg *et al.*, 2012). Quite similarly, driven by state-led

industrialisation and urbanisation, rural China has been also involved in a trend of deagriculturalisation (Lei and Lu, 2005). Huang and Peng (2007) argued that contemporary Chinese agriculture encounters three historical forces: declining population growth, massive and expanding non-farm employments and changes in food consumption patterns.

Researchers have revealed that the social relations and cultural roles of rural space have substantial repercussions on agricultural production under the context of agrarian transition. For instance, gender divisions within rural households in developing countries have widely led to agricultural feminisation (e.g. Fan, 2003, Zuo, 2004 for China; Lastarria-Cornhiel, 2006 for Latin America and Africa), and generational division has often resulted in agricultural geriatrification (e.g. Rigg *et al.*, 2012 for Asian countries; Lin and Deng, 2012 for China). The large-scale rural outmigration has changed the values and actions of migrants, farmers and rural society in China (Murphy, 2002). Agriculture has been constantly constructed and stigmatised by the social and cultural norms as a “low status”, “hopeless” occupation, pushing rural elites with physical strength and the best levels of education out of agriculture (e.g. Croll and Huang, 1997 for China; Rigg, 2001 for southeast Asia). Meanwhile, culturally, the countryside and agriculture have been constructed as “backward” and “traditional” under the overwhelming discourse of modernisation in China (Lei, 2003). All these socio-cultural factors may influence agriculture production, and this research will explore this issue at the

community level.

2.7 Conclusion

This chapter has set the literature context for this project. It firstly reviewed debates on three philosophical approaches underlying human geography research. Bridging the gap between structure and agency is the basic philosophical standpoint underlying this project. After reviewing two strands of research approaches in human geography, this study will combine political economy and cultural analysis, as suggested by the cultural turn. Through reviewing rural and agricultural change from the perspective of transition theory, the transitional contexts that this research resides are discussed. The discussion of smallholders and livelihoods diversification helps to understand Chinese smallholder agriculture under broader political and socio-economic contexts. It then discussed agrarian changes of the BRIC countries, providing an international context for Chinese agrarian transition. Based on the findings of the study, a further comparison will be discussed in the concluding chapter. Lastly, this chapter reviewed studies on socio-economic drivers of agricultural production, revealing the gaps of each strand of studies and also drawing theoretical and practical insights for this study.

Overall, as discussed in this chapter, in a rapid transition economy like that of China, understanding agricultural production comprehensively is challenging as so many forces and factors are involved in the process.

Emphasizing any one aspect cannot produce conclusions which will adequately provide an understanding of agricultural production. As reviewed in Section 2.5, socio-economic drivers of agricultural production in China, various factors are often studied separately to understand agricultural changes, which is the most prominent gap emerging in the literature and one this project aims to bridge.

Chapter 3 Research Methodology

3.1 Introduction

Based on a rural community in southwest China, the aim of this project is to investigate how various socio-economic forces impact agricultural production at the local level. This chapter sets out the methodology of the project. The approach adopted here is a multi-methods strategy, using both quantitative and qualitative methods. Section 3.2 briefly introduces methodological approaches in social sciences, mainly focusing on three different approaches: quantitative, qualitative and multi-methods approaches, and justifies the multi-methods approach as the research approach of this project. Section 3.3 rationalises the case study approach for this project and provides the rationale of Hu Village as the study site. Section 3.4 details the specific data collection methods for this project. Ethical issues for this project are discussed in section 3.5, after which the conclusion forms section 3.6.

3.2 Methodological approaches in social sciences

Methodological approaches in social sciences have been divided into two categories: quantitative approaches and qualitative approaches and the two approaches both have strengths and weaknesses. Their distinctions in practice and philosophy have been often exaggerated by academia, but as

David and Sutton (2004:43) proposed: “Real innovation in social research will come from those who seek to overcome the distinction, not merely to mechanically repeat the practices and beliefs of one side or the other”. To achieve the research objectives, a multi-methods approach will be utilised for data collection. This section firstly will introduce the two approaches in general, and then will detail the multi-methods approach in the third section.

3.2.1 Quantitative approach

The quantitative approach has been introduced and discussed in almost every methodological book. Bryman defined a quantitative approach as a research strategy:

That emphasizes quantification in the collection and analysis of data and that entails a deductive approach to the relationship between theory and research, in which the accent is placed on the testing of theories (Bryman, 2008:22).

With a belief in macro-patterns and social causation, quantitative researchers mainly use standardised methods of data collection and data analysis to reach generalisations of findings (David and Sutton, 2004). In practice, quantitative methods include surveys, questionnaires, experiments and observations. As Parfitt (1997) summarised, quantitative data collected by survey through questionnaires generally includes three types. The first is basic information which can classify people into simple categories. The second type is associated with the behaviour of people. The third one is information about attitudes, ideas and beliefs of people. Hence, quantitative data is generally

presented in numerical form, often as percentages.

The weakness of the quantitative approach has been critiqued for many years by social researchers based on its philosophical foundations and practical operations (eg. Neuman, 1999; David and Sutton, 2004; Bryman, 2008). As Bryman (2008) summarised, four criticisms of the quantitative approach can be identified. First, it is not able to distinguish human and social systems from those of the natural world. Second, the measurement process of quantitative research is designed artificially so that to some degree, it may be less precise and accurate. Third, the “standardised” research procedures omit the interaction and connection between research and everyday life. Fourth, artificial variables often provide a static view of social world, which downplays the dynamics of human life.

This study will largely draw on the advantages of quantitative approach, using questionnaire surveys to collect basic information of people and information about attitudes and ideas which will be further elaborated on using qualitative methods, as described in the following sections.

3.2.2 Qualitative approach

Qualitative approach includes an array of methods to understand

How the world is viewed, experienced and constructed by social actors. They provide access to the motives, aspirations and power relationships that account for how places, people, and events are made and represented (Smith, 2000:660).

A qualitative approach enables researchers to understand people’s attitudes,

and the actions and meanings behind their behaviours in concrete contexts. It can also help to understand the process and logic of social events and phenomena which are not easily identified. This is also the reason that qualitative research often answers “why” questions.

The qualitative approach includes a series of specific research methods such as in-depth interview, participant observation, discourse and text analysis and so on. Different from the quantitative approach of emphasising numbers, these methods stress meanings of human agency with a belief that human life is implicated by interconnected meanings that cannot be broken from their meaningful contexts (David and Sutton, 2004). In practice, qualitative research greatly relies on the experiences and wisdom of researchers because it takes place in the dynamic sphere of interaction between researchers and target populations.

Several weaknesses in qualitative approaches can be identified. For example, qualitative research is more subjective because findings and conclusions are often based on the personal relationship between researchers and people studied (Bryman, 2008). Another critique focuses on the scalability of the findings of qualitative research as they are often too limited to be generalised to wider scopes (David and Sutton, 2004; Bryman, 2008). However, this critique is often refuted by the belief that: “it is the quality of the theoretical inferences that are made out of qualitative data that is crucial to the assessment of generalization” (Bryman, 2008: 392), rather than statistical

criteria. This research will use a qualitative approach to collect data regarding reasons for the various underlying social phenomena as will be further discussed in following sections.

3.2.3 Applying multi-methods approach

As discussed above, quantitative and qualitative approaches are obviously distinct from one another. Nevertheless, any social research will inevitably involve both quantity (e.g. measurements) and quality (e.g. classification) (David and Sutton, 2004), so that it is unreasonable to entirely rely on any one approach. To cover these gaps, multi-methods approaches, combining both quantitative and qualitative methods, have been developed in social sciences (Neuman, 1999; Hoggart *et al.*, 2002; David and Sutton, 2004; Bryman, 2008). This approach will be used to inform the methodology of this study.

An obvious advantage of the multi-methods approach is triangulation, where quantitative and qualitative approaches are integrated to triangulate findings for mutual corroboration (Bryman, 2008). For example, in research it is quite common to use observations or interviews to triangulate the findings from questionnaires (David and Sutton, 2004). Consequently, multi-methods approach can greatly improve the validity of conclusions. Apart from triangulation, Hammersley (1996) also proposed another two merits: facilitation and complementarity. As is explained by Bryman (2008), facilitation refers to using one method to facilitate the other. For instance, researchers

use findings from questionnaire surveys to deepen the scope of in-depth interviews. Complementarity means that both quantitative and qualitative methods are employed to dovetail different aspects of the research project.

Encouraged by these advantages, this project applied a multi-methods approach to achieve the objectives set by this project. Therefore, this project collected both quantitative data and qualitative data according to different research questions, and these two types of data were then triangulated to complement each other, to deepen the enquiry and reinforce validity. Specifically in the case of this project, quantitative data is associated with rural demography, occupation information, land use and transfer, agricultural inputs and outputs, livestock cultivation, economic income and expenses, and impact of migration on farming. This part of the data was collected through questionnaire surveys, and the findings also helped to guide the collection of qualitative data.

The qualitative data includes different actors' viewpoints (e.g. different groups of farmers, migrants, government officials and marketers) on farming, agricultural policies, contract farming, land use and transfer, migration, rural cultural changes and so on. How the socio-cultural factors (e.g. family relationship, education, community values) impact agricultural production will be explained by data collected through observation and interview. Additionally, the "why" questions were also answered through interview and observation. For instance, why do farmers migrate rather than stay? Why do some migrate,

while others stay or come back to farming?

To sum up, this study starts from the assumption that not only macro-level forces influence agriculture, but also farmers' agency at the local-level shapes the outcome (Long and Ploeg, 1994). To study these connections comprehensively, a multi-methods approach is appropriate.

3.3 Case study

3.3.1 Case study approach

The case study has long represented a very important approach in social research. Yin (2003:13) gives a comprehensive definition of case study research which "is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident". A case study is often classified by social researchers as in the domain of qualitative research. Yet, as many scholars have indicated, the case study can involve any sort of research, whether quantitative, qualitative or multi-methods (Stake, 2000; Yin, 2003; David and Sutton, 2004). This has caused Yin (2003:14) to further comment that the case study "comprises an all-encompassing method—covering the logic of the design, data collection techniques, and specific approaches to data analyses". A case study can be based on any type of evidence as well, either quantitative or qualitative, or both. Regarding the

“case”, a case study can involve any specific “unit” of analysis, including individuals, organisations, events, social phenomena, periods of time and so on (David and Sutton, 2004). Additionally, the “case” can also geographically range in scale from being a country, a region, a district, to a local community or an even smaller group (Yin, 2003).

The rationale for the utilisation of the case study approach is associated with its advantages compared with other approaches. Briefly, the case study approach enables researchers to obtain the holistic and meaningful features of real-life events, for instance, individual life cycles, organisational and managerial processes, neighbourhood change, international relations and the maturation of industries (Yin 2003). Compared with a descriptive survey, a case study can not only describe a situation but also uncover the hidden causation. Therefore, a case study is usually initiated and organised through a couple of research questions which are almost always related with “how” and “why” (Stake, 2000; Yin, 2003).

In spite of that, there are still challenges to the case study approach, and one of the most mentioned is “how to generalize from a single case”. It actually depends on types of generalisation. Case study research is applicable to theoretical propositions rather than populations or universalities (Yin, 2003). Under these circumstances,

The case study, like the experiment, does not represent a ‘sample’, and in doing a case study, your goal will be to expand and generalize theories (analytical generalization) and not to enumerate frequencies (statistical generalization) (Yin, 2003:10).

Additionally, a case study demands another two conditions: the events are contemporary rather than historical and the investigator has little or no control on the events (Yin, 2003).

There are different types of case study according to different criteria. Stake (2000) classified case studies into three categories based on research aims. The first is the intrinsic case study, through which researchers want a better understanding of a particular case. The second is an instrumental case study, in which the particular case is mainly considered as a breakthrough point to discern a broader issue or revise a theory. The third is a collective case study, through which researchers jointly study multiple cases to investigate a special issue. Alternatively, case study is also categorised in terms of analysis types, “descriptive”, “explanatory” and “exploratory” case studies respectively (Yin, 2003; Gray 2009).

The process of case study design often includes five components: research questions, research propositions, units of analysis, linkages of data to propositions and criteria for interpreting the findings (Yin, 2003). Unit analysis or case selection may be the unique feature of the case study. The criteria of case selection have been variously discussed by writers (Stake, 2000; Yin, 2003). As Yin (2009) further argued, the definition of the unit of analysis, namely the case, is fundamentally determined by the initial research questions. Particularly for the current research, a local community was set as the “case” based on the type of the research questions, which primarily focus

on the “how” and “why” aspects of agricultural production in contemporary China.

3.3.2 Village studies

In rural geography, case studies at the village level have been used extensively by researchers to investigate both micro-level questions defined in a community and macro-level ones that concern phenomena beyond the local. A rural community is a group of socially interacting people living in a rural area and sharing one or more common ties. A rural village can generally be seen as a case of the local in scale which is not static but which is interactive with structural forces at broader scales, like regional, national and even global. As Murdoch and Marsden (1994:9) argued when they investigated processes of reconstructing the rural and rurality in the UK, “the rural is best regarded as the outcome of a variety of economic, social and political processes”. In this sense, rural localities can be considered as “meeting points” where particular sets of social relations intersect (Murdoch and Marsden, 1994:10). This view is echoed by another geographer, Jonathan Rigg (2007), who reviewed a number of case studies (most are related to rural communities) in the Global South under the background of modernisation and globalisation. Rigg (2007) argued that scale and the role of place are powerful and significant contextual axes. He also criticised aggregate statistics and broad trajectories which entirely emphasise macro-

structuralist views of the world, and called for an “everyday geography” which connects ordinary people’s everyday life with macro-forces like modernisation and globalisation, the processes of which are actually embedded in particular places. Drawing on this theoretical standpoint, a community-scale case study can provide a breakthrough point to investigate the process that shapes how different forces influence agricultural production at the local level.

For more than half a century, Chinese social scientists have investigated China’s transformation through village case studies (e.g. Fei, 1939; Yang, 1959; Hinton, 1966; Wang, 1997; Yu, 2001). As Fei (1998) remarked, “For many reasons, the unit of Chinese rural community is ‘village’, ranging from villages with only three or five households to villages with thousands of households”. The underlying message behind village studies is that a village or community has been seen to have independent economic, social and cultural borders. However, in the wake of modernisation, marketisation and globalisation permeating even the most remote corner of China, the rural village is not a closed and autonomous entity as previously recognised. Moreover, the rural Chinese village has been re-recognised as a particular bridge between the state and society (Oi, 1989). Villages record the processes of state power infiltrating rural society, so that the nature of state operation can be captured. In this sense, the village still can be recognised as one of the “meeting points” where different macro-level processes intersect. Methodologically, a village case study, with its merits of in-depth investigation

and interpretation, is a powerful tool to understand the complexity of rural China in such a rapidly changing period (Di, 2009). This argument is also echoed by other researchers in respect of researching agrarian change in the third world (see Rigg *et al.*, 2012). Given that this project focuses on how different socio-economic forces interact with local farmers' agency, a village as a unit of analysis is appropriate for this project.

3.3.3 The rationale of Hu Village as study site

According to Yin (2003), a rationale for a case study is that it is a representative or typical case. There are principles to follow in choosing a suitable case. As Stake (2000:447) reminds us, diversity is desirable but an "opportunity to learn is of primary importance". Specifically for village studies on agrarian change, Rigg and his co-authors (2012:5) have commented that it is quite impossible to find a typical village in Asia, but "there are trends or tendencies which can be drawn from one instance or example...and then used to speak to a wider context".

Concerning the present objectives and research questions, the primary criterion of choosing to study a specific village is that the village should be a "meeting place" for different forces and processes (e.g. migration, markets, state power, social and cultural changes and so on). Secondary criteria include representativeness of agricultural production, multiple landscapes, transport accessibility, and so on. So, for this project, comprehensive

coverage of these features is the key. The reasons why Hu Village was chosen as the study site for this project can be summarised by the following points:

1. The agricultural production of Hu Village is typical in southwest China. Rice, rape, corn, sweet potato are very typical and general crops in Southwest China. Moreover, cash crops (e.g. rape, orange trees and so on) are also quite pervasive in these areas. Both subsistence cultivation and market production exist in Hu Village, which can thus provide a comprehensive understanding of different agricultural types.
2. Geographically, the landscape of Hu Village is complex and multiple, including both flat and hilly areas. The diversity of landscape shapes agricultural production in a diverse way so that through investigating Hu Village, various and heterogeneous forms of agricultural production can be examined. Climatically, the subtropical humid climate covers not only a great part of Sichuan, but also some other parts of subtropical China.
3. Different forces and processes are acting on agricultural production of Hu Village, which can therefore be seen as a “meeting point” of various macro-level structures and the micro-level processes of farmers’ lives in the world. Due to rapid urbanisation and industrialisation, a mass of rural labour migrates to cities to seek cash, which has greatly transformed the demography and the socio-economic landscapes of

the community. This “mobility-stay” dualism of livelihood arrangements of smallholders is highly prevalent in transitional China (Fan, 2008; Ye and Pan, 2008; Ye and Wu, 2008; Ye and He, 2008). In this respect, Hu Village is particularly typical, with more than 60% of the population being migrant workers. Multiple job holding is the predominant livelihood arrangement or strategy for Hu Villagers. Additionally, in Hu Village, commercial farming, contract farming, land transfer between farmers, and governmental policies and projects are all coexisting in the arena of agricultural production.

4. Considering the linkage between local and state regulations, Hu Village is tightly embedded in the national context of rural reforms initiated from the central government, in the capital Beijing. The village history reveals that every major reform from the state has become engraved on the vicissitudes of Hu Village just as most villages from across China. Therefore, Hu Village is a window to link micro- to macro-level processes.
5. My previous research experiences in Hu Village can offer me privileged access to this community. The acquaintance between the researcher and the villagers also provides great convenience for participant observation since I am often treated as a common villager in the community.

3.4 Research methods

This section discusses the specific research methods for this project. Questionnaires, interviews, participant observation, focus groups and analysis of secondary data sources were the methods used in the research. These are introduced respectively in the following sections.

3.4.1 Questionnaire survey

Questionnaire survey and its advantages and disadvantages

Questionnaire surveys are a frequently used tool for collecting data from and about people in social research. In questionnaire surveys, people are asked to answer or respond to the same series of questions in a predetermined order (Gray, 2009). As Parfitt (1997) summarised, questionnaires can conveniently collect three types of data: “data which classifies people, their circumstances and their environment”, “data which relates to the behaviour of people”, and “data which relates to attitudes, opinions and beliefs” (Parfitt, 1997: 77). Compared with other research tools, questionnaire surveys have particular advantages and disadvantages as is shown in Figure 3.1.

Advantages	Disadvantages
<ul style="list-style-type: none"> • Low cost in terms of both time and money. • The inflow of data is quick and from many people. • Respondents can complete the questionnaire at a time and place that suits them. • Data analysis of closed questions is relatively simple, and questions can be coded quickly. • Respondents' anonymity can be assured. • There is a lack of interviewer bias. 	<ul style="list-style-type: none"> • Researchers cannot prompt the interviewees. • Researchers cannot probe the questions. • Researchers cannot ask many questions that are not salient to respondents. • Don't know who answers the questions. • Cannot collect additional data. • Not appropriate for some kind of respondents.

Figure 3.1 Advantages and Disadvantages of Questionnaires

Source: Adapted from Gilham, 2000, and Bryman, 2008.

The questionnaire survey is a very important data collection tool in this project. Using questionnaires, it is possible to collect a great deal of basic information for every respondent in a normative form. This information is of great importance to accomplish the objectives of the research. The data collected by questionnaires in this project mainly included the following contents:

- Demographic characteristics of respondents and their household members;
- Land use practice and willingness to land transfer/change;
- Inputs and outputs of agricultural production;
- Livestock raising information;
- Off-farm economic activities, income and expenditure ;
- Migration and agricultural production (for migrant households).

To seize opportunities to investigate the “why” questions, some open-ended

questions were also attached in the questionnaire (see Appendix B).

Before the formal survey is conducted, a pilot survey is essential. As Straits and Singleton (2011) recommended, a pilot survey can pretest whether the methodological instrument fits the purpose of the research and if a revision is needed, for example, with a smaller sample size. After a pilot survey, the researcher will know if the respondents can fully understand the survey questions, and if the questions are really appropriate for gaining requisite information (Straits and Singleton, 2011; Robson, 2011). In this project, a pilot survey with 20 respondents was conducted to test the questionnaire. This procedure showed that the pilot study was essential to fit the questions to the social reality of the case study site. For example, in the previous draft, questions about labour input were designed to estimate how much labour a farmer had invested in farming in 2011. However, the pilot study showed that in practice the labour inputs of farmers were so complicated and confused, it was impossible to be quantified accurately. To ask the questions was also very time-consuming. So these questions were cut away, and for the labour input issue, general information was collected during interviews with experienced farmers and village cadres. Besides, in the previous draft, several questions had been designed to ask about the farmers' participation with different agricultural policies. After the pilot survey, it was found that all the farmers surveyed were involved in the agricultural policies listed on the questionnaire, and the attitudes to the policies were very

similar. For example, all of the twenty respondents showed that the most favourable policy was the agricultural subsidy. Therefore, it was decided to collect qualitative information through in-depth interview and focus groups rather than quantitative data on rates of participation. Survey questions related to policies were also removed from questionnaires, to be explored through semi-structured interviews and focus groups.

Questionnaire survey using face-to-face interviews

According to implemental instruments, questionnaire survey is generally classified into various types including paper-and-pencil questionnaires, internet questionnaires, face-to-face interviews and telephone interviews (Czaja and Blair, 2005; Straits and Singleton, 2011). Each has its own advantages and disadvantages and is applied differently based on specific research conditions. The aim of the interview-based questionnaires is to give all interviewees the same context of questioning, which means that each interviewee receives the same interview stimulus as any other. Bryman (2008) argued that the goal of this type of interview was to aggregate the respondents' answers. One significant advantage of a face-to-face survey is a high response rate (Straits and Singleton, 2011). In addition, face-to-face interviews are more feasible when the research is geographically limited to a particular area (Robson, 2011). Another merit of the face-to-face interview is that some open-ended questions, as well as closed questions on the

questionnaire, can be approached during interviews (Robson, 2011). Furthermore, there is no time limit for interviews and so more complex questions can be added when interviewing (Straits and Singleton, 2011).

Nevertheless, there are also potential limitations associated with face-to-face questionnaire surveying. As Bryman (2008) commented, the characteristics of interviewers can exert effects on the interviewees' replies. For example, the ethnicity of interviewer may significantly influence the answers of respondents. In other words, the age, social background, gender, and prior experience of interviewers can be elements which limit the potential of the interview effect (David and Sutton, 2004). Another disadvantage of face-to-face interviews is the so called "response set" which implies that "people respond to the series of questions in a consistent way but one that is irrelevant to the concept being measured" (Bryman, 2008: 210).

For this research, face-to-face interviews were selected to be more appropriate than any other questionnaire survey types. The education level of the farmers in Hu Village is relatively low, many of them are illiterate, so that it is impractical to distribute questionnaires among them and collect later. In addition, the respondents in rural China cannot yet be comprehensively reached by email or telephone. Therefore, it is more feasible to interact with them and for the questionnaires to be completed there and then by the researcher.

Questionnaire sampling

Sampling is a particularly important aspect of social research, as generally people, places and events are understood based on fragmentary evidence from samples rather than research of all cases (Robson, 2011). In sampling, a sample is connected with a “population” which refers to all the cases, and sampling means selecting a segment of population for investigation (Bryman, 2008; Robson, 2011). According to Parfitt (1997), three attributes of the target population can be identified: a geographical boundary, a temporal boundary and a boundary defined by population characteristics. In this project, the land use and agricultural activities in China are still organised mutually by family members rather than individual farmers, so that the “household” is a more appropriate survey unit for agricultural production than individuals. Therefore, the “population” of this research can be defined as all the 886 households officially registered in contemporary Hu Village.

For the questionnaire survey in this project, interviewing every household of Hu Village would be extremely time-consuming; therefore, an appropriate sample can be helpful to make the research practical. According to whether the selection of each respondent is known or not, sampling is generally classified into two types: probability sampling and non-probability sampling (Parfitt, 1997; Sarantakos, 2005; Bryman, 2008; Robson, 2011). In probability sampling, the sample can be taken as representative of the population, while in non-probability sampling, statistical inferences are hardly

made but specific findings from the sample can be of great value. In practice, probability sampling needs a sampling frame, namely a list of all members of the population, whereas this is not essential for non-probability sampling. As two groups of sampling strategies, each of them has different sub-methods which are shown in Figure 3.2 and Figure 3.3.

Simple random sampling

With random sampling, each unit of the population has an equal probability of inclusion in the sample. All the population members are listed and numbered for random selection.

Systematic sampling

This sampling draws a probability sample from a sampling frame. The start point should be randomly selected by numbering the beginning section of the list and selecting a number using the random number generator on a calculator. The sampling interval is then added to the number of the randomly selected member to identify sample number two. The process is repeated until the required sample has been drawn.

Stratified sampling

The population is divided into homogeneous groups whose relative size is known and which must be mutually exclusive. A random sampling can be taken in each stratum, either proportionately or disproportionately.

Cluster sampling

Cluster sampling is a procedure in which the researcher chooses the study units progressively, beginning with clusters and moving to smaller groups within them, before the final sampling units are considered. This method is employed primarily when a sampling frame is either unsuitable or not available.

Figure 3.2 Probability Sampling

Source: Adapted from Parfitt, 1997:96, 97; Sarantakos, 2005:160,161; Bryman, 2008: 171.

Quota sampling

In quota sampling, the researcher sets a quota of sample to be selected from specific population groups, decides the criteria of choice and the size.

Convenience sampling

This sampling involves choosing the nearest and most convenient individuals as respondents. This process is continued until the required sample size has been reached. This method is widely used but least satisfactory.

Purposive sampling

The researcher chooses subjects with their own judgments. The sample is selected to satisfy the researcher's specific needs.

Snowball sampling

With snowball sampling, the research a few individuals from the population and then ask them to recommend more other respondents in the population. This is useful when it is difficult to identifying members of the population.

Figure 3.3 Non-Probability Sampling

Source: Adapted from Sarantakos, 2005: 164,165; Robson, 2011:274,275.

As presented in Figure 3.2, cluster sampling was utilised in this research to select respondents, primarily to avoid any geographical or socio-economic bias and to ensure the survey can cover the whole village. In practice, Hu Village has been officially divided into 8 individual groups according to landscapes and socio-economic characteristics. The numbers of residents of each group are also slightly different. For the sake of efficiency and convenience, each group is sampled in sequence and the sample size of each group was supposed to be 30 households, the minimum figure justified to represent the population statistically.

In addition, to improve the representative nature of the methods, 30 households were randomly chosen. The actual practice proved that to sample

group by group was of great necessity because the major livelihoods and forms of agricultural production are distinctive among groups. And this sampling strategy was well-suited to capture the diversity and heterogeneity of Hu Village. For instance, Group 1 and Group 8 occupy most sericulture³ households, while most fish farming households agglomerate in Group 2.

Regarding the wealth of households, although there are slight differences in terms of geographical situation and livelihoods, there is no striking difference among the 8 groups according to interviews with village cadres. All groups have wealthy households and poor households. For example, Group 3 has very convenient transportation links as many of its households live along the road and therefore has easy access to their place of business, while people from Group 8 can reach a similar level of wealth through rural-urban migration. Poor households, according to village cadre estimates, never crowd in any particular group or groups but are relatively equally dispersed across all 8 groups.

In terms of sample size, as Bryman (2008) has suggested, sampling error, time and cost, as well as the non-response rate can affect the sample size. For Hu Village in this research, the sample size was 30 households from each group, therefore 240 samples for the whole village were the target. Furthermore, a survey of 240 households was also affordable and appropriate for this project.

In practice, the survey was often interrupted by incidents, as farmers

³ Sericulture is silk farming, which is to raise silkworm for the production of silk.

have their own lives and schedules, and a complete interview was often a lucky coincidence. Once the questionnaire survey was interrupted, the procedure was halted immediately and another visit was requested for a later date. It might happen that upon revisit, the respondents provide different information from previous visits or forget the information provided before. To deal with this situation, the previous information was repeated to the respondents and was confirmed by them from the very beginning before the rest of the survey questions were completed. There were also some farmers who refused to be interviewed at the very start. The reasons why they refused can be identified through the frequent complaints from them: the interview was of no use to them, so they didn't want to waste time on it. Another reason given is also noteworthy. Some respondents regarded me as a cheater or a salesman (of fodder, fertilizer, pesticide, medicine, insurance and so on) because they had been previously cheated or knew someone else who had been cheated by someone who misrepresented themselves. Even though every effort was made to explain the focus of the current research to them, in some cases they were still reluctant to accept to be interviewed. According to the ethics informing this study (see Section 3.5), their choices were understood and respected. These cases were recorded as refused respondents. Having covered all 8 groups, 225 questionnaires were effectively accomplished, 10 were refused due to the reasons summarised above, 5 were invalid. Of the 5 invalid cases, 4 are uncompleted because of the

respondents migrating to cities for temporary work at the time of revisiting, which also indicated the mobility of farmers. The last case was unfinished because the respondent unfortunately passed away and all his family members moved out.

3.4.2 Semi-structured interviews

Different from a questionnaire survey, interviews are more unstructured or semi-structured and take a conversational and fluid form (Valentine, 1997). Generally, interviews are classified into three categories: structured, unstructured and semi-structured (Sarantakos, 2005). As discussed above, questionnaire surveys can use a face-to-face format to accomplish the investigation, which amounts to structured interviews. Semi-structured interviews lie between the structured and unstructured forms, and the degree to which interviews are structured relies on the research topics, purposes and so forth (Robson, 2011). Semi-structured interviews are widely used in flexible and multi-strategy studies.

As one of the most frequently used methods of data collection, interviews possess many advantages. For example, Valentine (1997) argued that a prominent strength of interviews is that they are more sensitive and people-oriented, giving more freedom to interviewees to organise their own opinions according to their specific experiences and interests. In addition, in contrast with questionnaires, semi-structured interviews are used to

understand how individual people experience and make sense of their own life, rather than to be representative. Valentine (1997) therefore proposed that in-depth interviews can be employed as part of multiple methods and are a good way to triangulate data. However, semi-structured or in-depth interviews can be problematic in some respects. The most significant point is interviewer bias, which implies that the respondents may give the answer that they think the interviewer wants (Denscombe, 2003). Therefore, to conduct a valid and reliable in-depth interview, as Bryman (2008) recommended, confidential, trustable and honest relationships between the researcher and interviewees need to be carefully built up. As for how to select the interviewees, semi-structured interviews often adopt purposive sampling techniques to select the interviewees. As introduced in Figure 3.3, purposive sampling is where researchers actively choose samples, so that the sample is selected to satisfy researchers' specific objectives.

For this project, semi-structured interviews were employed as a tool to collect various strands of qualitative data (see Appendix C). There are multiple and heterogeneous stakeholders in the agricultural arena of China, including farmers, government officials, agricultural experts, commercial marketers and so forth. All these actors actively participate in the process of agricultural production. Therefore, semi-structured interviews can be very appropriate to collect various voices from different groups of people. During fieldwork, interviewees were chosen by different approaches and conditions. For

farmers' interviews, respondents were selected through the questionnaire survey because this way a brief picture of the farmer household could be considered in terms of their utility to the research objectives. In practice, when encountering an interesting and typical case in survey, like sericulture household, pig breeding household or part-time farming household, a further in-depth interview was requested. Yet, this approach was not suitable for interviewing migrant farmers because generally, migrant farmers were not at home when the interview was conducted in their houses. Snowball sampling strategy was adopted here. As Ruane (2005) argued, snowball sampling refers to the fact that researchers first make contacts and build trustful relationships with contacts, and then asks the contact for other possible respondents or participants. Through personal connections with village cadres, who knew the villagers much better, the researcher was able to ask for migrant farmers to be introduced when they came back home. Migrants were selected with a view to maintaining diversity in different characteristics such as age, sex, migrant experiences and family backgrounds and so on. To avoid any socio-economic and geographical bias, the in-depth interviews in Hu Village covered all 8 groups. The list of all the in-depth interviews is presented in Table 3.2 as follows. To interview village cadres was relatively convenient because the contact person in the village is the village head, and she was able to introduce me to other cadres. Due to the Chinese special bureaucracy system, it was not easy to conduct interviews with government

officials who are generally reluctant to speak out in their own words and ideas to a stranger (a researcher studying in a foreign university).

Table 3.1 Stakeholder Interviews

Stakeholders	Interviewee Numbers	Information Acquired
Village cadres	3	Agricultural policies, governmental projects, contract farming, village socio-economic and cultural changes.
Different types of Farmers	15	Livelihoods arrangements, attitudes and strategies to agriculture, life or family biographies.
Migrant farmers (being in Hu Village when fieldwork was conducted)	10	Migrant experiences, attitudes and strategies to agricultural production, future plans.
Businessmen (conducting contract farming in Hu Village)	2	Contract farming, relationships with farmers, life biographies.
Township-level officials (one is agricultural official, another is forestry official)	2	Agricultural policies and forestry policies.
County-level agricultural bureau official	1	Information of the whole counties agriculture, contemporary policies, future directions.

Source: Author

Under these circumstances, connections must be utilised. Through the village head and a friend in the county, one interview was conducted successfully with a township official, and two with county-level agricultural bureau officers. An interview request was refused by two county-level officers,

and to acquire the information, I had to search the internet for information from their departments, which was obviously of weaker quality. Additionally, some important information providers (like village cadres and experienced farmers) were interviewed repeatedly.

3.4.3 Focus groups

Focus groups have been a well-established tool for collecting data in social research. This approach brings a group of people together to discuss a specific topic through open-ended questions (Barbour and Kitzinger, 1999; Sarantakos, 2005; Robson, 2011). Focus groups aim to provide a forum to facilitate group discussion, brainstorm solutions and eventually establish a mechanism of opinion formation rather than to analyse the group (Sarantakos, 2005). Therefore, this method can provide a communal atmosphere to stimulate different opinions and exchange different ideas. As identified by Robson (2011), focus groups have a number of advantages, for instance, it is very efficient to collect data from several people at the same time; group dynamics facilitate focus on the most important topics; participants are empowered and able to make comments in their own words and with stimulus from others. Nonetheless, several disadvantages can also be identified: the number of questions is limited; conflicts may arise between different personalities; the results are not easy to generalise; the facilitator needs more skills and experience to control and lead the discussion process and so on

(Robson, 2011).

Conducting focus groups is a complex process involving at least four procedures: planning, recruiting, moderating and analysing (Morgan, 1998; Hoggart *et al.*, 2002). As Sarantakos (2005) argued, three aspects need special attention in focus groups. The first is group selection, which greatly relies on the specific purpose of the research. The size of the group is also varied, but practically the proper size of a group is around five to ten individuals which can both provide a basis for sound discussion and allow for personal contracts among participants (Hoggart *et al.*, 2002). The second is introducing the goal-oriented discussion. A skilful facilitator is needed to present an appropriate introduction to the participants. The third is guiding the discussion. In this process, the skills of motivation, encouragement, stimulation and control are all vital to guiding the discussion towards the research goals.

For this project, focus groups were helpful in collecting data about different farmers' viewpoints and behaviour regarding a specific issue such as an agricultural policy. Rural residents are very heterogeneous groups in terms of age, gender, economic situation, family constitution, livelihoods and so on. Individuals' information can be collected through questionnaires and in-depth interviews, but how their ideas and decision-making come into formation is difficult to be obtained through the previous methods. Focus groups can provide farmers from different backgrounds with a chance to present and

exchange their ideas. The author was also able to get a better understanding of the underlying reasoning and logics behind of different farmers' actions. The choice of groups depended on specific topics. Farmers' daily lives in the countryside are fluid and free-running, often with little routine, and farmers' houses in Hu Village are widely dispersed. It is thus unrealistic to organise several farmers to sit together in a fixed place. Therefore, each focus group was organised at an open area between their locations where many people could easily access, and the discussion was started in the evening when the villagers are free from farming and other businesses. Before the discussion, participants were informed of the purpose of the discussion to ensure that they fully understood what they were going to do.

According to the research questions, 7 focus groups were conducted as shown in Table 3.2. To investigate if different genders have different opinions and behaviours regarding agricultural production, male farmers and female farmers were organised separately to make a comparison, as gender can be a factor that influences attitudes towards agricultural practices (Ye and Wu, 2008). A mixed gender group was organised to directly observe how farmers with different genders present and discuss their opinions, which also sheds light on the gender relationship and how it influences agricultural production. As suggested by Ye and He (2008), to examine the attitudes and opinions of farmers with different ages towards agricultural production and family livelihoods, a group of young farmers and an elderly group were

organised to make a comparison.

Table 3.2 Focus Group Interviews of Hu Village

Participants	Participant numbers	Focus issues
Male farmers (aged from 42 to 67)	6	Land use change, land transfer, migration, agricultural policies, social-cultural changes
Female farmers (aged from 35 to 70)	5	Labour division in family, land use change, migration, agricultural policies, social and cultural changes
Mixed with both male and female farmers	6	Land use change, land transfer, migration, agricultural policies, social-cultural changes
Young farmers (aged under 30)	8	Agricultural production, migration, family relationships, future life plans
Elderly farmers (aged from 60)	5	Land use change, land transfer, agricultural development, cultural changes, family relationships
Migrant farmers (who were back to the village at that time)	5	Migration, Hukou system, farming, social and cultural changes
Residents without land	5	Rural policies, agricultural development, livelihoods diversification
Village cadres	4	Agricultural policies, projects, land use and transfer, rural development

Source: Author

In addition, a group of migrant farmers was organised to examine how rural-urban migration changes farmers' attitudes and opinions towards agricultural production and rural development as suggested by Murphy (2002). Because the other groups are all non-migrant farmers, the comparison can be made between them so that no extra non-migrant group was organised. In Hu Village, there are quite a few residents who have no land for various reasons, and a focus group of them was organised to discuss and examine what the land means to them and other issues related to rural policies, agricultural development and so on. The last group is the village cadre group. There are four formal village cadres in Hu Village, and a group discussion was organised to examine their views on agricultural policies, projects and land use issues. To avoid geographical bias, these focus groups covered farmers from all the 8 groups of Hu Village.

3.4.4 Participant observation

Participant observation is one of the central techniques for qualitative researchers to collect data in social research. As Cook (1997: 127-128) defined, participant observation

Involves researchers moving between participating in a community—by deliberately immersing themselves in its everyday rhythms and routines, developing relationships with people who can show and tell them what is 'going on' there, and writing accounts of how these relationships developed and what was learned from them—and observing a community—by sitting back and watching activities which unfold in front of their eyes, recording their impressions of these activities in field notes, tallies, drawings, photographs and other forms of material evidence.

Participant observation is very useful in circumstances when researchers want to understand “events/processes that take a reasonably short time”, “frequent events”, “activities that are accessible to observers”, “when your prime motivation is to find out what is going on”, and “when you are not short of time” (Robson, 2011: 321). The core of this method is to generate data through observing and listening to people in their natural settings, and to uncover the social meanings and interpretations of their behaviours (Gray, 2009). Sarantakos (2005) summarised the most important characteristics of this method from other writers as in Figure 3.4 below. The most particular is that the observer attempts to be a member of the observed to communicate and interact with them (Robson, 2011).

Qualitative participant observation:

- Demonstrates a commitment to studying everyday events, which are studied in terms of the way they are experienced and understood by the participants.
- Is conducted in a natural environment. In this sense, observation remains natural and authentic.
- Observation is designed to study social events under all conditions, bringing data close to reality, the people living in it and the way they construct and experience it.

Figure 3.4 Main Characteristics of (Qualitative) Participant Observation

Source: Adapted from Sarantakos, 2005:231

Participant observation owns several distinct advantages. One of the

most prominent is directness, which means researchers directly watch what people do and listen to what they say (Robson, 2011). The directness can make it clear what people are doing rather than what they are saying. Other merits of participant observation include: providing data when respondents are unable to offer information; offering first-hand data; allowing the collection of a wide range of information (Sarantakos, 2005); effective at observing non-verbal behaviours; allowing for a more natural relationship between researcher and respondent (Gray, 2009). Nonetheless, participant observation is also open to the criticism of possible bias and subjectivity from the researcher (Robson, 2011).

Participant observation generally involves three steps: access, roles and writing up data (Cook, 1997). As for access, the best advice is that the researcher should try to make the most of contacts which he/she already has and prepare to be flexible with any others (Cook, 1997). For the roles of researchers, there are various relationships or positions that researchers may develop, which also influences the outcome of observations. As Straits and Singleton (2011) argued, the degree of participation of researchers can range from complete observer without any participation at one extreme, to the researcher being a complete participant as a fully accepted member of the community, at the other. Participant observation is located between the two extremes, and the researcher needs to balance roles of being both a scientific observer and a member of the observed. The generally appropriate position of

researchers is, as Cook (1997:140) suggested, as an “intelligent, sympathetic, and non-judgmental listener” to all other members.

A good way to construct research data from participant observation is in the form of a field diary, or field notes, which records what the observer has observed, heard, smelt or physically felt (Hoggart *et al.*, 2002). The field diary is very valuable to the whole research project, especially at the beginning “when interpretations of events and processes are more tentative” (Hoggart *et al.*, 2002: 279).

Participant observation is suitable for this project in many respects. This project attempts to investigate not only what farmers say but also what they do in real life. Participant observation can effectively achieve this goal. There are various processes and events taking place on the stage of agricultural production in Hu Village, like policies, projects, migration and so on, which can be observed and recorded through observation. In fieldwork, the researcher lived with an elderly couple in Hu Village for six months, which provided me an opportunity for full-time immersion in rural village life. Meanwhile, being a son of two farmers from another remote place in China, the researcher is well-placed for living in the countryside and understanding the joys and sorrows of farmers’ daily lives. As for the “role” played in this village, every attempt was made to be, as Cook (1997) recommended, a non-judgmental listener, or more specifically, an ordinary villager. It is common that in Chinese villages, if someone appears as a government official or expert or

rich businessman, the farmers generally act in a constrained manner so that any observation would be hardly true or valid. This situation was largely avoided in the current research through constantly informing villagers of the status of the researcher as a student here to do a PhD project on agricultural production in Hu Village. To avoid detaching from the villagers and to build a friendly relationship, I kept participating in their daily lives by means of greeting, chatting and farming with them. It showed that to work with them in the field and observe their farming and chatting was very favourable to build a relationship. Meanwhile, my contact, the village head, provided great help. She showed me around the village and introduced me to the villagers, informing them of my background and purpose. The introduction conveyed to villagers an important message: this researcher was one of them, and specifically was not a government official. As for the degree of participation, fieldwork is neither completely detached observation, nor fully involved participation (Straits and Singleton, 2011), so that a balance between an observer and a village young man was presented. To avoid full immersion, when I worked or did something with villagers, or just observed, I kept reminding myself that I am a researcher to investigate how agricultural production is going on here. To ensure accuracy and objectivity (see Section 3.5), I kept writing the field diary every day to avoid the problems incurred by fading memories making comments and feelings become inaccurate. One piece of the diary is shown in Figure 3.5.

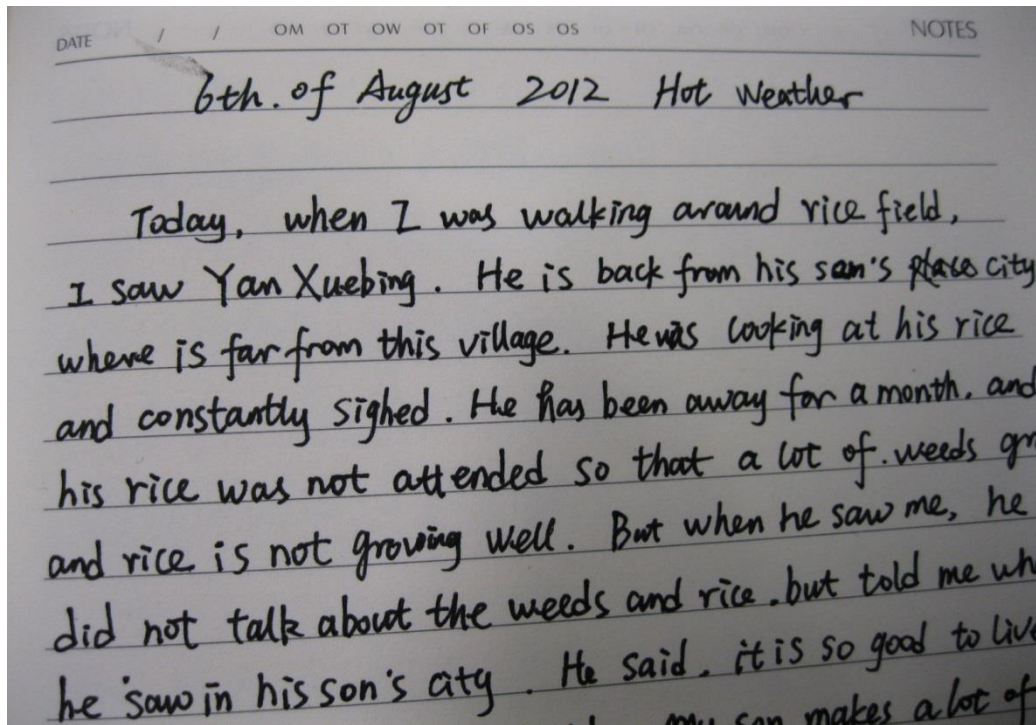


Figure 3.5 Research Dairy

Source: Author

3.4.5 Secondary data

Secondary data is information which has been collected by someone else and is available for other researchers to scrutinise. Secondary data is frequently collected by official public bodies, like governments, which provides “an authoritative air which can be both reassuring and beguiling” (Clark, 1997: 57). Official statistics are one of the most frequently used sources of secondary data, and other secondary data sources include business records, personal papers, academic research and so on (Bryman, 2008).

Human geographers have used secondary data for a long time, and the reasons are multiple as summarised by Clark (1997). Firstly, secondary data

provides an important guide to the geography of research topics, telling researchers what an area is like now and what it was like in the past. Secondly, secondary data provides a context (geographical, historical, social and economic) for the primary data which is being collected in a case study. Bryman (2008) has also added other advantages, for example, secondary data provides opportunities for longitudinal analysis and cross-cultural analysis.

There are also several limitations to the use of secondary data. As Clark (1997) argued, secondary data may be so inflexible that it cannot fit to your needs. Another is that the value behind data is different from a current approach, because “secondary data is a cultural artifact, produced by administrators with priorities and ways of seeing the world which may be different from those which underpin your dissertation” (Cook, 1997: 59). Particularly for official statistics, Hoggart *et al.* (2002) reminded us that accuracy could not be guaranteed and official statistics are often political outputs as they are important mechanisms of evaluating governments’ performance. Additionally, Bryman (2008) pointed out there is little or no control over the quality of secondary data. All the possible areas for bias mentioned above serves as a reminder for researchers to use secondary data carefully and cautiously.

Regarding this project, several secondary data sources provided a great deal of information to supplement the data from other methods. Several

sources of secondary data have been utilised as shown in Table 3.3.

Table 3.3 Secondary Data Sources of this Research

Secondary data	Sources	Usage
Official statistics on agricultural production at different geographical levels	Chinese Statistical Yearbook Government websites Village committee	General political, socio-economic backgrounds for different geographical-levels
Policy posters	Village committee	Details of policies implemented in Hu Village
Newspapers(various newspapers focusing on this province, county)	Village committee	Government's views of rural development Stories from other places
Village pictures	Author	Village presentation Farmers daily life

Source: Author

The official statistics record various socio-economic characteristics about a whole region, from a country to a community. This type of statistics can be accessed in all kinds of yearbooks, and on government websites as well. They are very valuable for portraying the general socio-economic trends

of a region. The official household data of Hu Village was collected by the leaders of 8 groups, and the village head estimated that 90% of the data is precise. Policy posters and newspapers were obtained from the Hu Village committee. Policy posters present the contents of different agricultural policies. Local newspapers give a good presentation of levels of socio-economic development and policy implementation from the perspective of governments. Village pictures can vividly present village life, and this is a good source for illustrating the socio-economic and cultural aspects of the village. Some pieces of pictures are shown in Figure 3.6.



Figure3.6 Pictures of Hu Village

Source: Author

A summary of all research methods used is listed in Appendix D.

3.5 Ethical issues

3.5.1 Being ethical in social research

Values are inevitably implicated in any social research. “Research takes place within a context where certain interests and values often predominate to the exclusion of others” (May, 2001: 67); therefore, how researchers handle the relationship between the subjects and other stakeholders is relevant to the issue of ethics in social research. Ethics is concerned with principles about what is right or just in social research processes (May, 2001). In practice, ethics refers to conformity to a code or set of guidelines (Robson, 2011). Social research ethics focuses on the moral deliberation, choices and responsibilities of researchers (Homan, 1991; Mauthner *et al.*, 2002). One way to approach ethics in social research is deontology which instructs that:

Approaches to morality are associated with the work of Immanuel Kant. Quite simply, ethical judgments in social research would, from this point of view, follow a set of principles which guide the conduct of research itself (May, 2001: 60).

One principle related with deontology is “informed consent” which refers to a freely given agreement on the part of the researched to become a subject of the research. More specifically, four elements, constituting “informed” and “consent”, can be identified (Homan, 1991: 71):

Informed=

1. that all pertinent aspects of what is to occur and what might occur are disclosed to the subject;
2. that the subject should be able to comprehend this information.

Consent=

3. that the subject is competent to make a rational and mature judgment;
4. that the agreement to participate should be voluntary, free from coercion and undue influence.

To obtain participant consent in research, several steps have been suggested by researchers. As Robson (2011: 202) summarised, four steps can be identified:

1. To explain what the research is about to participants;
2. To let them know they can have time to think about participation;
3. To provide participants with a consent form;
4. To check and double-check with participants that they fully understand the research, their role in the study, and any implications it has for them.

In addition, the researcher needs also to consider any consequences of the data after it is published and open to the public. The identity of any participant should be protected in every research stage. The privacy of the participants is another important issue for social researchers. In an information society, people increasingly care about their privacy. It represents a great challenge for the researchers to persuade people to participate in

social research. However, if researchers grasp the opportunity and keep the promise of protecting privacy, then “this not only helps to prevent social research becoming a mouthpiece of powerful vested interests, but also assists in maintaining public cooperation and trust in social research” (May, 2001: 62).

A large number of participants were involved in this project, including various rural residents, government officials, commercial marketers and developers. Among those actors, different values, customs, religions, knowledge levels and power positions will be implicated in the research process. In addition, methodologically, multiple methods were adopted from both quantitative and qualitative approaches. Diverse participants and research methods make ethical issues a serious concern in every stage of this project.

First of all, to stay respectful towards every participant is the most fundamental basis for this research, without any bias and discrimination towards any participant from any background. In rural villages, various relationships regarding power, family, affinity, kin and religion are so ubiquitous that great attention has to be paid to how research affects these relations. For example, farmers and cadres in the communities hold unequal power positions, but all of them deserve equal respect. In addition, privacy is a basic right for everyone, so in the whole process of the current research, the privacy of every participant was respected and any intrusion of their privacy was minimised.

Maintaining confidentiality is an effective way to protect the identity of participants. Researchers have an obligation to protect confidential information from participants. In this research, many are not aware of the importance of taking care of their own confidential information. For example, some farmers sometimes were so sincere that they told lots of private information, but information for long-term use has been carefully selected. Anonymity of sources is helpful to protect confidential information. In reporting the project and in any further publication, personally identifiable information concerning participants of this project will not be disclosed.

All the participants deserve to know the research purpose and the interests behind it in order to decide to accept to be interviewed. The agreement of the participants was gained prior to conducting the research procedures. The researcher was also honestly open to any questions that participants proposed during the research project, giving opportunities for them to question any aspects of this research.

3.5.2 Reflexivity

Pursuit of truth is a fundamental feature of professional research and this is also the basic expectation of professional researchers by the public. Therefore, honesty to the truth is a cherished virtue for researchers (Homan, 1991). The values and beliefs of researchers will probably influence the pursuit of truth, as Homan (1991: 7) reminded us, “social researchers who feel

passionately about inequalities in respect of class, race and gender may be promoted by their concern to devote their energies to researching these problems". Bearing this in mind, I faithfully recorded what I found by research methods on one hand, and kept thinking about and reflecting on my values and my position in the whole process, in order to minimise the influence of personal values and biases. Another way to avoid subjectivity is to diversify the information sources, which can provide multiple discourses and avoid unilateralism in data collection (Homan, 1991). Moreover, the implementation of research methods can influence the validity and reliability of data. During fieldwork, I tried to accurately operate the research methods to ensure the procedures were as objective as possible.

Another important point is the position of the researcher in the field, especially for research adopting the methodology of participant observation. In this research, I had to balance the roles of a PhD student, researcher, friend, learner, young man and tenant of the elderly couple where I resided and so on. In addition, my previous experience in Hu Village in 2009 gave me great confidence to enter and live in this village. I knew a few villagers well, I visited them frequently and we became friends afterwards. To avoid any ethical deception, at the very beginning, I frankly and honestly informed people of my purpose. This informed understanding built a more trustful and honest relationship, and we could discuss various issues related to my project. In addition, to avoid distraction from personal relationships, the research agenda

included diverse other information sources to further promote objectivity. This did not influence the personal relationships, for I was fully aware that everyone has his/her own standpoints and owns different options for actions, which was totally understood and respected. For instance, the village head is a good friend of mine. She helped me a lot in the whole process, e.g. accessing the secondary data, introducing me to villagers, sharing viewpoints with me, inviting me to participate in various village events and so on. In spite of that, I still kept clear that she is the village leader, and her views may be different from those of other villagers, and in the interviews and observations I did find voices very different from hers. But this did not influence the relationship between us, it just gave me more complete understanding of some issues.

The last point is that having undertaken a 6-month fieldwork period, I have learnt that participating or experiencing in person is indeed an essential way to understand. Through participating in rice transplanting under the scorching sun, carrying buckets of manure to fields far away, threshing rape by hand, collecting mulberry leaves on rainy days, and feeding pigs in smelly pigsties, I really understand why so many rural youths don't want to farm, and really respect that farmers here are enduring such hard work in unfavourable environments to make a living for themselves and for the next generation. The fieldwork was both a research agenda and an unforgettable lesson for me.

3.6 Conclusion

This chapter discussed and set up the research methodology of this project. A general discussion on methodological approaches in social sciences was firstly reviewed. Then, multi-methods approach combining quantitative and qualitative approaches was justified for this research project. This chapter then explained the rationale of a case study as the core research approach for this project, and Hu Village as the study site was justified based on five reasons. A significant part was then given to discuss the specific research methods of data collection employed in this project. Questionnaires, semi-structured and focus group interviews, participant observation and secondary data were introduced in detail. Finally, an indispensable issue, ethics, in social research was discussed, and then several concrete ethical principles used in this project were discussed specifically. Data analysis will be presented and discussed in the following chapters.

Chapter 4 Chinese Agricultural Production at Different Geographical Levels: An Overview

4.1 Introduction

As discussed in Chapter 2, this thesis adopts the “new political economy” approach to bridge the gap between macro-level political economic structures/forces and micro-level individuals’ agency within rural studies. Agricultural production is not an isolated sector, but is embedded in the whole socio-economic, environmental, and political structures of the corresponding and broader regions (Ploeg, 2006). More particularly, in the context of transitional China, agricultural production has been intensely interconnected with other processes such as industrialisation, urbanisation, marketisation and so forth. This chapter provides the backdrop, or the “structures”, for agricultural production at different geographical levels, from national to community-level. Rather than merely focusing on agricultural production backgrounds, this chapter will firstly examine the position of agricultural production in the overall macro-economies at different geographical levels, and then, more deliberately focus on changes of the agricultural sector. The overview is following the scalar order from China, Sichuan Province,

Qingshen County, and finally to the local community, Hu Village.

This chapter will draw on official statistics issued by government agencies at various levels to portray a general picture of socio-economic conditions and patterns. Official statistics can give general trends and magnitudes at the macro-level which other sources of statistics rarely achieve. As Guthrie (2009:19) remarked, “Official statistics are a good baseline for giving us a sense of things like how large the economy is, how much the economy has grown, per capita income, urban/rural differences, and so forth.”

This chapter is organised as follows. Section 4.2 reviews the general situation of Chinese agricultural production under the grand backdrop of the BRIC countries. Section 4.3 zooms in to the general picture of Sichuan Province referring to broader development patterns in Western China. This section shows that parallel changes in terms of socio-economic indicators and more especially, the agricultural sector, have occurred at the provincial level. Section 4.4 scales down to the county level, introducing Qingshen County’s basic situation with reference to socio-economic development, with particular emphasis on agricultural production, development strategies, rural-urban migration and so on. Section 4.5 specifically focuses on the research community, Hu Village, mainly introducing its basic agricultural system, agricultural policies and projects which have been conducted and which are being conducted in Hu Village. Section 4.6 concludes the chapter.

4.2 Agricultural production in transitional China

The four largest emerging market economies, Brazil, Russia, India, and China, have achieved dramatic growth in recent years and have been experiencing socio-economic transition at varying paces. As Table 4.1 shows, the four countries show different features and stages of economic development, in which China is situated differentially according to different indicators. In terms of population and GDP, China was far ahead of the other three in 2010. Regarding the per capita GDP, Russia and Brazil led the BRICs, while India had the least but also had a considerable growth rate. The per capita GDP varies greatly in the four countries: Russia had the highest figure, US\$9910 in 2010, and India the smallest, US\$1340 in 2010. Although with the largest GDP, China's per capita was only in third place of the four in 2010 due to her huge population. From the composition of three sectors in the national economy, all the four countries have been increasingly moving from agriculture-based economies to industry- or tertiary-sector dominated economies, among which India still has held the largest share of the agricultural sector until 2010, while China is the largest industrial country in the four, and Brazil and Russia are more dominant in tertiary industries. As for urbanisation rates (as measured by the proportion of the population who is urban), Brazil is the most urbanised country in the four, India the least, and China holds the third place. For agricultural population, China had the most farmers in the four countries in 2010 and followed by India, while Russian

farmers only represented 8.1% of the total population.

Table 4.1 General Profile of BRIC Countries (2010)

Selected Indicators	Brazil	Russia	India	China
Population (10,000)	19495	14175	117094	133830
GDP (100 million dollar)	20879	14798	17290	58786
GDP growth rate compared with 2009 (%)	7.5	4.3	10.1	10.3
Per capita GDP (dollar)	9390	9910	1340	4260
Per capita GDP growth rate (%)	6.6	3.4	8.3	9.7
Primary sector as percentage of GDP (%)	6.0	4.7	16.2	9.5
Secondary sector as percentage of GDP (%)	26.0	32.8	28.4	44.6
Tertiary sector as percentage of GDP (%)	68.0	62.5	55.4	45.9
Urbanisation rate (%)	86.5	72.8	30.1	44.9
Agricultural population as percentage of total population (%)	11.0	8.1	48.9	62.1

Source: World Bank WDI Database; FAOSTAT; IMF WEO Database; NBSC, 2011.

BRIC countries have all been experiencing processes of industrialisation and urbanisation to different degrees, in which China is an

outstanding case for her fast-growing economy and huge agricultural population. The following sub-sections will introduce what have occurred in transitional China since the comprehensive socio-economic reforms of 1978, from the perspective of agricultural production.

4.2.1 Agricultural share in China's national economy

In the more than quarter-century-long transition process from planned economy to market system, China has already become one of the most rapidly-growing and largest economies on the planet in terms of GDP. The per capita income of both urban and rural residents has also grown substantially during the reform era. Industrialisation, urbanisation and marketisation are generally considered as the major engines of China's economic miracle, and in the foreseeable future, these forces will continue to dominate China's economy. Accompanied by remarkable economic growth and dramatic social transformation, Chinese agriculture has also experienced tremendous changes since more than thirty years ago. Although until now China has been considered as an agricultural country by and large, the composition of agriculture in the country's GDP has gradually declined from about 28% in 1978 to 10% in 2011. Other industries, most specifically the service sector, have substantially ascended over time as shown in Figure 4.1 (NBSC, 2012). Accordingly, China's economy has also evolved from an agricultural economy into an industrial economy, which is vividly interpreted by the famous address:

“world factory”.

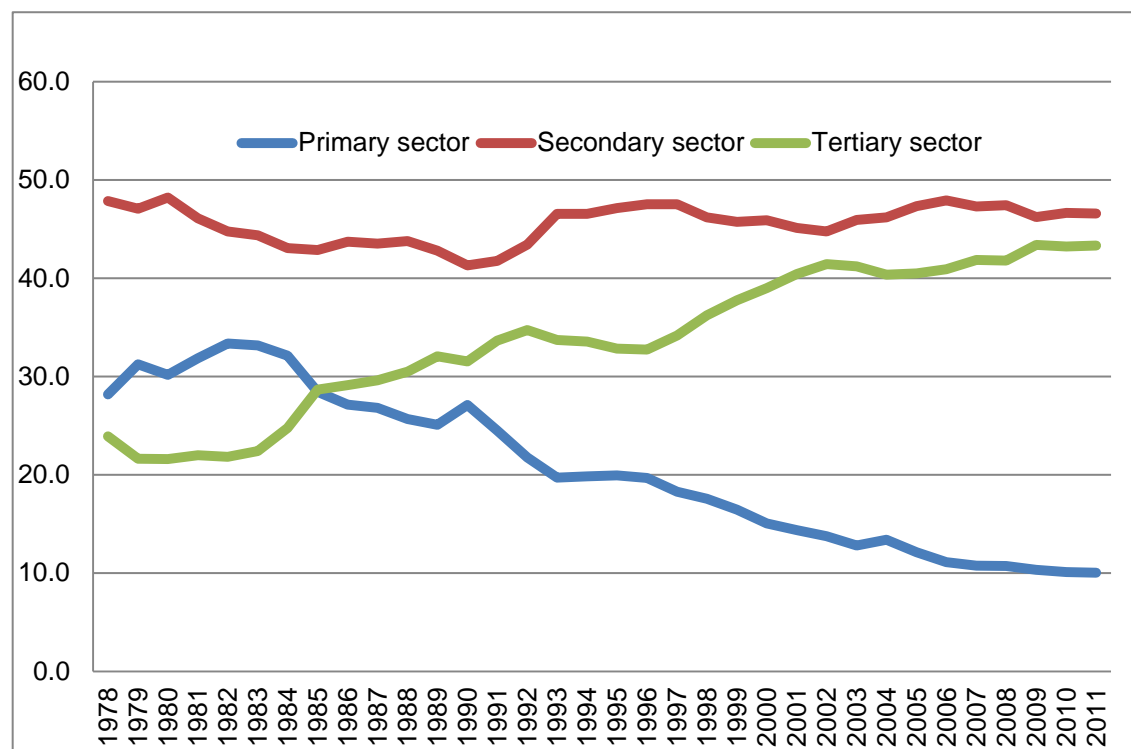


Figure 4.1 Changes in Composition of China’s GDP: 1978-2011 (%)

Source: NBSC (2012)

4.2.2 Agricultural policy transformation

At the initial stage of industrialisation, China’s agriculture was primarily subordinated to the primitive accumulation of industrial capital by means of price scissors of industrial and agricultural products and the unbalanced financial system (Huang and Ma, 1998; Anderson *et al.*, 2004). Consequently, China’s agriculture has been largely constrained by the uneven development strategy which prioritised heavy industry. Along with the agricultural share of the national economy diminishing and that of industry increasing, at the end of 1998, the Chinese central government made a momentous decision which

meant that China's agriculture entered into new stages. Since then, agriculture has been increasingly conditioned by new forms of resources and markets, so that agricultural and rural development strategies needed to be significantly adjusted. More recently, the national agricultural development strategies have also experienced dramatic transformations. On the fourth Plenary Session of the Sixteenth Central Committee in 2004, President Hu Jintao for the very first time propounded "industry-repaying-agriculture" as a strategic policy direction for the future, which became a prelude to a series of favourable agricultural policies. The investment in agriculture has steadily increased year on year from 2004, as is clearly illustrated in Figure 4.2.

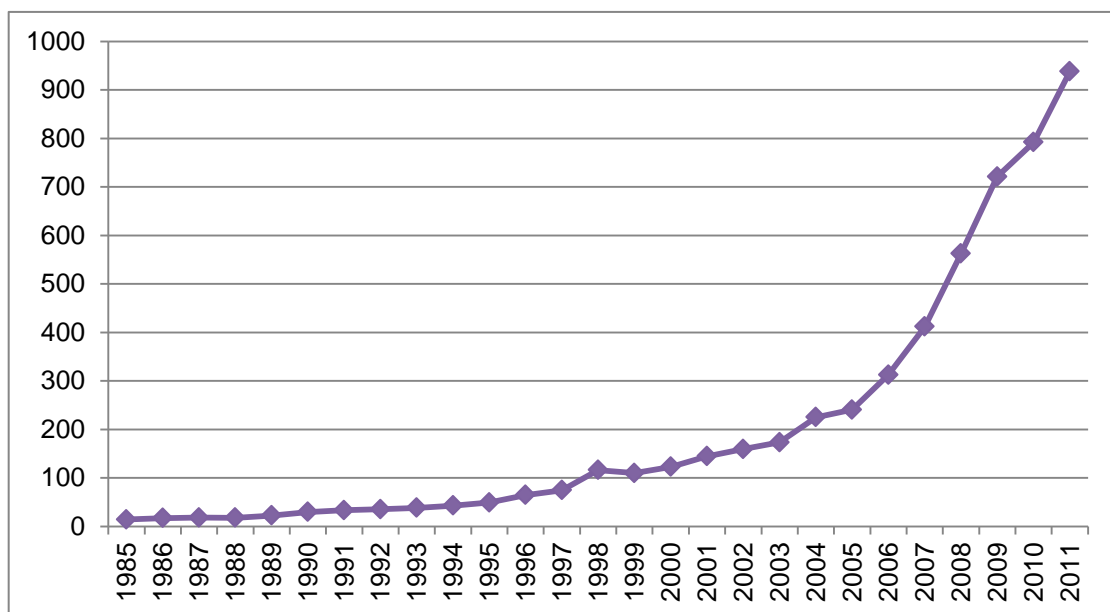


Figure 4.2 National Fiscal Fund for Agriculture from 1985-2011 (billion Yuan in constant price)

Source: NBSC (2012)

In the wake of declining agricultural shares of GDP and the regressive contribution of agricultural taxes to the central fiscal budget, all agricultural taxes and fees were gradually eliminated by 2006 and direct subsidies to

farmers have commenced on a national scale since 2004. The amount of the subsidies has continuously increased over recent years (see Table 4.2). The motivation of central government behind agricultural subsidies, especially the direct grain subsidy, is to encourage farmers to cultivate grain crops to guarantee national food supply and simultaneously enhance framers' income.

Table 4.2 Percentage Composition and Magnitude of the Agricultural Subsidy of China: 2004-2009

Year	Direct grain Subsidy (%)	Quality seeds Subsidy (%)	Equipment Subsidy (%)	Input Subsidy (%)	Total grain Subsidy (billion Yuan)	Share of agricultural Output (%)
2004	79.9	19.6	0.5	0	14.5	0.7
2005	76.7	21.5	1.7	0	17.2	0.8
2006	46.0	13.2	1.9	38.9	30.9	1.1
2007	30.9	10.3	2.5	56.4	48.9	1.7
2008	19.0	15.2	5.0	60.7	79.4	2.3
2009	12.3	18.9	1.6	58.2	123.1	3.5

Source: Lei (2012).

Agricultural production, more precisely grain production, has been considered as the primary base of food security for China, which is also one of the top priorities in Chinese political issues. For the foreseeable future, it is safe to say that agricultural subsidy policy will carry on at increasingly larger levels according to various master plans or reports from central government, for example, the Chinese National Economy and Social Development Twelfth

Five-Year Plan Outline (2010-2015).

In addition, China's agricultural policy has also changed by integration into the world. China succeeded in acceding to WTO in 2001 after 15 years of long-lasting negotiations. To fulfil WTO protocol to accession, China has been obligated to further adjust policy regulations in the agricultural field. Chinese agricultural policies have been geared to international trade rules and dynamics, mainly including cutting tariffs of agricultural products and eliminating all export subsidies. Since accession to the WTO, Chinese agriculture has been more and more open to the world market. For instance, exports and imports related to agriculture have increased by 170% and 225% respectively from 2001 to 2008 (Carter *et al.*, 2012). Trade patterns have also changed due to China's comparative advantage in agricultural resource endowments on the international market. China's comparative advantage is in labour-intensive agricultural production like horticulture, prepared foodstuffs, leather production, clothing and textiles and so on, while comparative disadvantage is land-intensive agricultural production such as edible oil, oilseeds, soybean and so on (Anderson *et al.*, 2004; Carter *et al.*, 2012). For instance, China's imports of soybean have increased rapidly from 1.1 million tons in 1996 to 54.8 million tons in 2010 (NBSC, 2011). In a broad sense, accession to the WTO has been an opportunity as well as a challenge for Chinese agriculture.

4.2.3 Structural changes of agricultural production

Various forces have driven structural changes to agricultural production in China to a dramatic degree. The fast-growing economy, urbanisation and modernisation have changed Chinese consumption patterns, leading to the adjustments of agricultural structure. Huang and Rozelle (2009) commented that income rises of urban and rural residents, rapid urbanisation and the fast-growing food markets have created further demand of meat, fruits and other non-staple foods in China. For instance, crop products have contributed decreasingly to agricultural gross produce, while livestock has continuously expanded from 15.5% in 1978 to 35.5% in 2008, as illustrated in Figure 4.3. According to national statistics, the output of fruits has increased from 6.6 million tons in 1978 to 214 million tons in 2010, thus more than 32 fold in 32 years. The output of meat in 2010 is 793 million tons, while it was only 106 million tons in 1979, an increase of almost 8 fold in 31 years. Fishery products have increased more than 10 fold between 1978 and 2010.

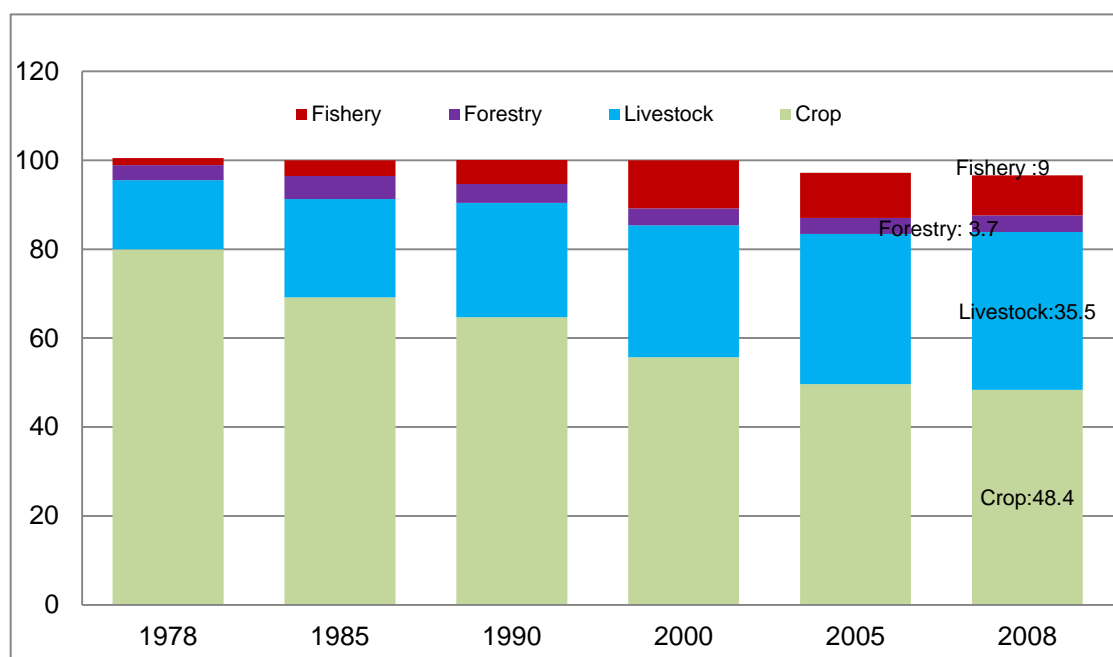


Figure 4.3 Changes in the Structure of China’s Agriculture (contribution of four agricultural sub-sectors) (%)

Source: NBSC (2009)

The structural changes to agricultural production have been consistent with the predominant dietary shift. In the developing world, a salient shift of dietary patterns from emphasis on cereal fibre and starch to animal protein and fat has occurred, which is often termed “nutrition transition” (Drewnowski and Popkin, 1997; Popkin, 2001, 2004). This shift seems to be faster in developing countries than in developed countries because of rapid urbanisation, rising incomes, changing occupational structures and the influences of modern mass media (Popkin, 2001). Particularly, Chinese dietary patterns have changed alongside the high-speed and dramatic socio-economic transformation (Popkin, 2004; Zhai *et al.*, 2009). In China, the consumption of grain and vegetables has gradually decreased on both rural and urban tables, while meat and fruits have been consumed in increasing

quantities, as Table 4.3 shows.

Table 4.3 Food Consumption of Chinese Residents per year (kg)

		1990	1995	2000	2005	2009	2010
Rural residents' food consumption	Grain	262	256	250	209	189	181
	Vegetables	134	105	107	102	98	93
	Meat	13	14	18	22	22	22
	Fruits	6	13	18	17	21	20
Urban residents' food consumption	Grain	131	97	82	77	81	82
	Vegetables	139	116	115	119	120	116
	Meat	25	24	26	33	35	35
	Fruits	41	45	57	57	57	54

Source: NBSC (2011)

The changes in the structure of Chinese agriculture imply an unremitting switch from low-value to high-value agriculture (Carter *et al.*, 2012). Particularly within the farming sub-sector, as Carter *et al.* (2012) observed through changes of sown area of different crops, agricultural production has been moving towards cash crops like vegetables, fruit and feed grain. For instance, the reported sown area of vegetables by official statistics has increased from 3.3 million hectares in 1978 to 19.6 million hectares in 2011, and fruit sown area has also experienced robust growth from 1.7 million hectares to 11.8 million hectares in the same period (NBSC, 2012).

4.2.4 Agricultural population changes

China's population also has long experienced a geographical shift from the

countryside to cities, and an occupational switch from agriculture to industry and the service sector. In terms of employment in all industries, as Figure 4.4 shows, the population of farmers has steadily declined.

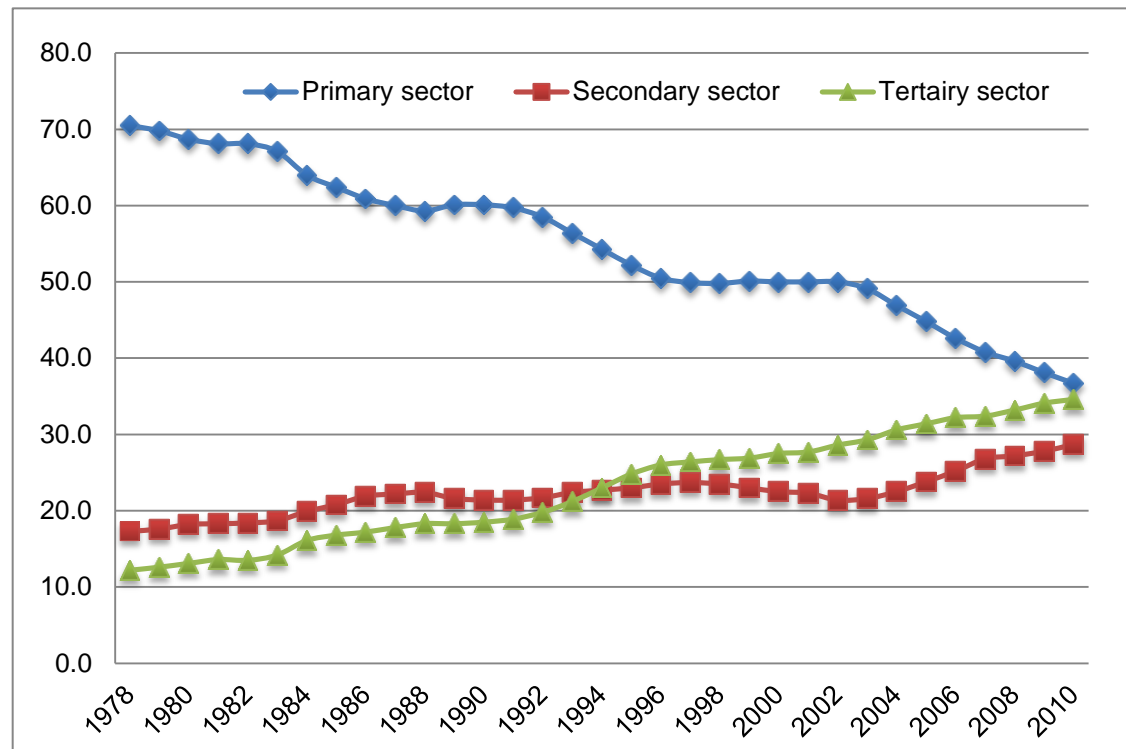


Figure 4.4 Changes in Employment Composition of China from 1978-2010 (%)

Source: NBSC (2011)

According to a latest report authorised by the Chinese Academy of Social Sciences (CASS), until 2011 the number of urban residents of China has risen to 691 million and the urbanisation rate has reached 51.3%, noting a historical change as numbers of urban residents have overtaken their rural counterparts for first time and China has begun to enter an urban era (CASS, 2012, also see Figure 4.5).

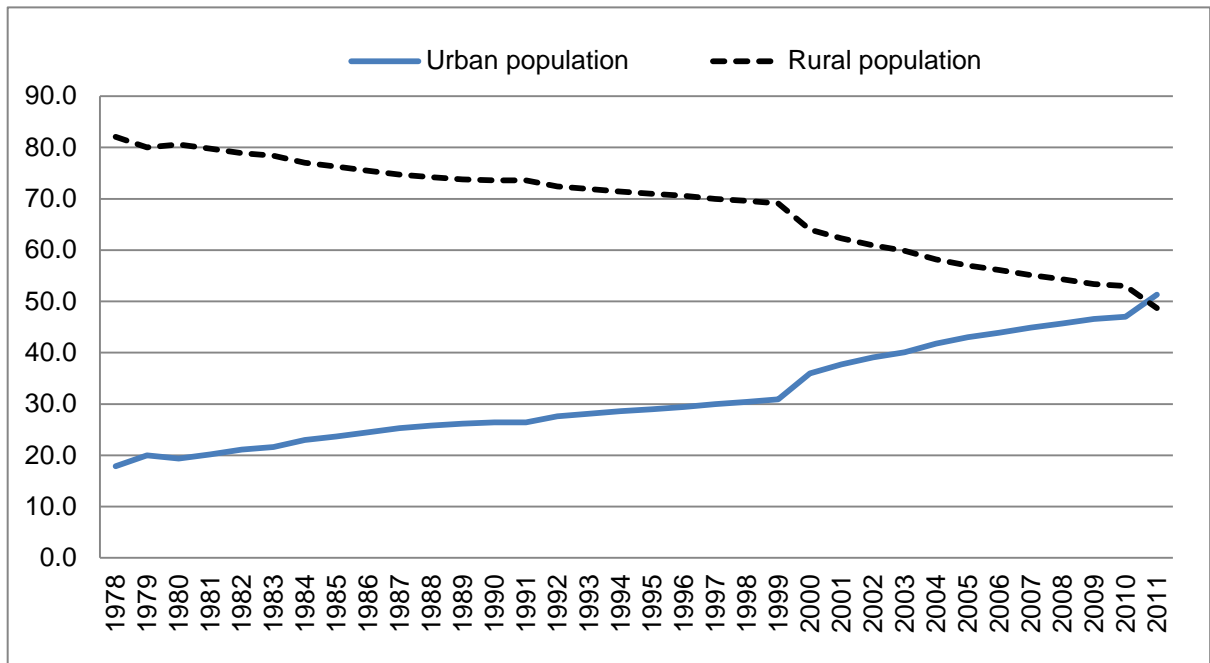


Figure 4.5 Urbanisation Rate of China: 1978-2011 (%)

Source: NBSC (2012)

Although it should be noted that residents CASS (2012) counted as “urban” in the report include the floating population or rural migrants who are still officially registered as rural residents ⁴, the trends of increasing urbanisation and of the rural population moving out of agriculture in China are undeniable and irresistible. According to the latest Chinese state figures, the overall non-farm employment population had reached 230 million by 2011 (NBSC, 2012), while in 2008 the figure was estimated at only 140 million (Chan, 2009). This means that the urban population in China has expanded by almost 100 million in four years. More particularly, the proportion of the population working in agriculture has declined sharply, from about 70% of the total Chinese labour force in 1978 to 38% in 2009 (Carter *et al.*, 2012).

⁴ The Hukou system as explained in Chapter 2 has impeded the identity transfer of migrants from rural areas to official urban residents, so that a great proportion of urban residents currently are still officially agricultural Hukou registration.

According to various government reports, a nationwide consensus has currently been reached that the social structure of Chinese rural society has fundamentally changed and the linkage of the rural and the urban has become increasingly tight (Ye and Pan, 2008; Ye and Wu, 2008; Ye and He, 2008). The constant factor of de-population occurring in the agricultural sector has momentous implications on agricultural development for China.

4.3 Agricultural production in Sichuan Province

This section introduces agricultural production of Sichuan Province (Figure 4.6) to set the background for the case-study community, Hu Village. In the context of the whole of China, although Sichuan contributes significantly to the total of agricultural production and GDP, being ranked fifth on grain output and eighth on GDP in 2011, it is situated below the national average level in terms of per capita GDP, rates of urbanisation and per capita incomes of urban and rural households as Table 4.4 shows. This is due to its huge population (the fourth largest of any province in China). In addition, higher agricultural proportion in GDP and lower urbanisation rate than national averages indicate that, compared with the well-developed provinces and regions in the east of China, like Beijing, Tianjin, Shanghai, Guangdong, and Zhejiang, Sichuan is at an earlier stage of industrialisation and urbanisation. Compared with the poorest provinces, like Tibet, Xinjiang, Qinghai, Guizhou, Gansu, and Ningxia, Sichuan has advantages regarding development opportunities and potentials

as will be shown in the following subsection. In brief, as a medium-stage developed province of China, Sichuan Province can provide an appropriate opportunity to observe agricultural production under the transition from traditional, rural, agricultural society to modern, urban and industrial society.

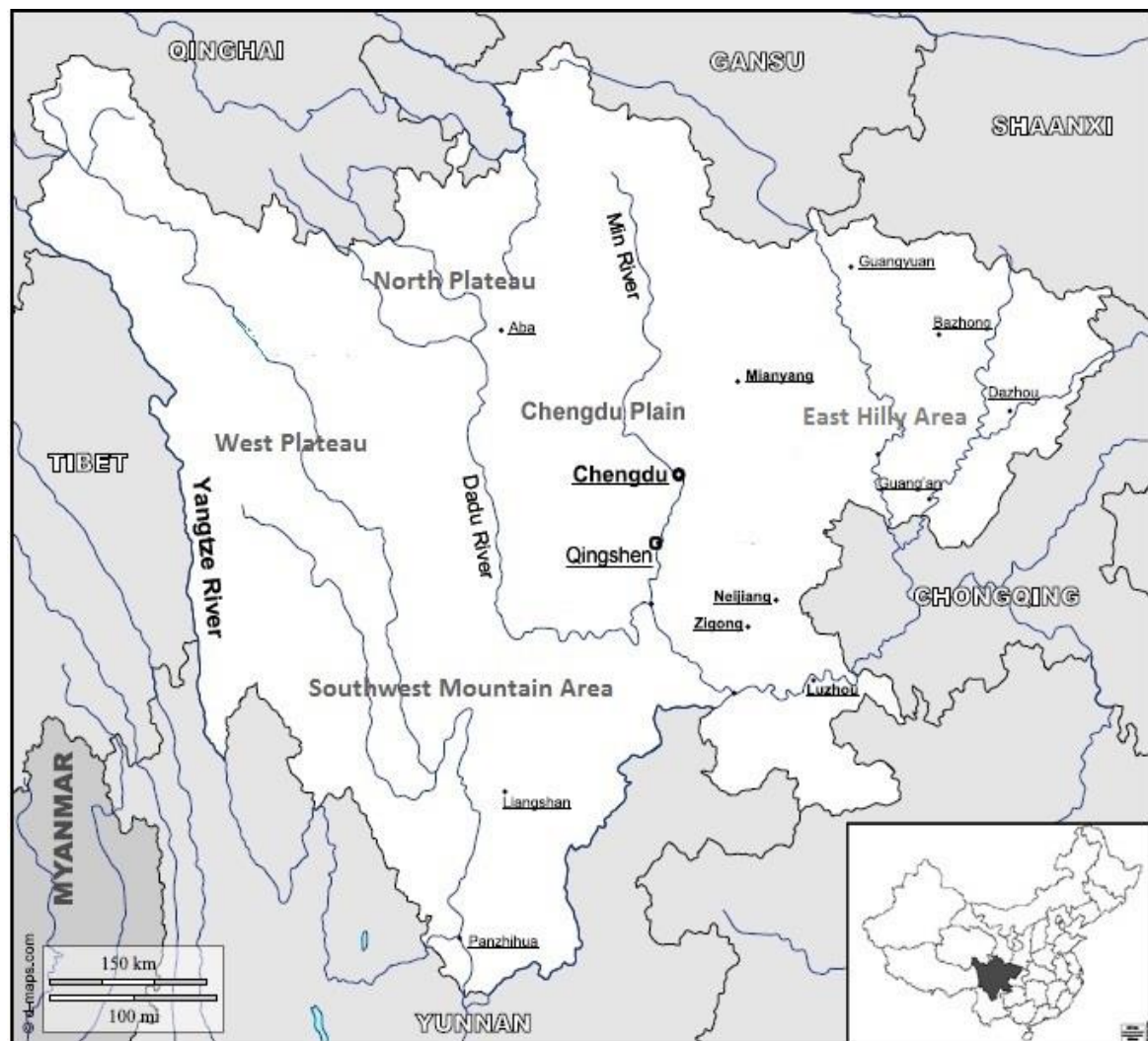


Figure 4.6 Sichuan Map

Source: Adapted from D-maps.

Table 4.4 General Socio-economic Profile of Sichuan Province in China (2011)

Region	Per capita GDP (Yuan)	population (10,000)	Per capita output of grain (kg)	Per capita net income of urban households (Yuan)	Per capita net income of rural households (Yuan)	Agricultural proportion in GDP (%)	Urbanisation Rate (%)
Nation	35181	134735	425.0	23979.2	6977.3	10.0	51.3
Tianjin	85213	1355.0	122.0	29916.0	12321.2	1.4	80.5
Shanghai	82560	2347.5	52.0	40532.3	16053.8	0.7	89.3
Beijing	81658	2018.6	61.0	37124.4	14735.7	0.8	86.2
Jiangsu	62290	7898.8	420.0	28972.0	10805.0	6.2	61.9
Zhejiang	59249	5463.0	143.0	34264.4	13070.7	4.9	62.3
Inner Mongolia	57974	2481.7	964.0	21890.2	6641.6	9.1	56.6
Guangdong	50807	10504.8	130.0	30218.8	9371.7	5.0	66.5
Liaoning	50760	4383.0	465.0	22879.8	8296.5	8.6	64.1
Fujian	47377	3720.0	182.0	27378.1	8778.6	9.2	58.1
Shandong	47335	9637.0	461.0	24889.8	8342.1	8.8	51.0
Jilin	38460	2749.4	1154.0	19211.7	7510.0	12.1	53.4
Chongqing	34500	2919.0	388.0	21794.3	6480.4	8.4	55.0
Hubei	34197	5757.5	416.0	20193.3	6897.9	13.1	51.8
Hebei	33969	7240.5	440.0	19591.9	7119.7	11.9	45.6
Shaanxi	33464	3742.6	320.0	20069.9	5027.9	9.8	47.3
Ningxia	33042	639.5	565.0	19654.6	5410.0	8.8	49.8
Heilongjiang	32819	3834.0	1453.0	17118.5	7590.7	13.5	56.5
Shanxi	31357	3593.0	333.0	19666.1	5601.4	5.7	49.7
Xinjiang	30087	2208.7	558.0	17631.2	5442.2	17.2	43.5
Hunan	29880	6595.6	447.0	20083.9	6567.1	14.1	45.1
Qinghai	29522	568.2	183.0	17795.0	4608.5	9.3	46.2
Hainan	28898	877.3	216.0	20094.2	6446.0	26.1	50.5
Henan	28661	9388.0	590.0	19526.9	6604.0	13.0	40.6
Jiangxi	26150	4488.4	459.0	18656.5	6891.6	11.9	45.7
Sichuan	26133	8050.0	409.0	19688.1	6128.6	14.2	41.8
Anhui	25659	5968.0	526.0	20751.1	6232.2	13.2	44.8
Guangxi	25326	4645.0	309.0	20846.1	5231.3	17.5	41.8
Tibet	20077	303.3	311.0	18115.8	4904.3	12.3	22.7
Gansu	19595	2564.2	396.0	16267.4	3909.4	13.5	37.2
Yunnan	19265	4630.8	363.0	20255.1	4722.0	15.9	36.8
Guizhou	16413	3468.7	253.0	17598.9	4145.4	12.7	35.0

Source: NBSC (2012)

4.3.1 Agricultural geography of Sichuan Province

Sichuan Province is located in southwest China, with a latitude from 25° 58' to 34° 19' and longitude from 97° 21' to 108° 32'. Sichuan is the fifth largest province in China, comprising 485,000 square km and is populated with 805 million inhabitants. The landscape of Sichuan is very complex, with plateaus and mountains in the west and basins and hills in the east. The province as a whole can be generally divided into three geographical categories: the Sichuan Basin, West Plateau and Southwest Mountain. The mountain area occupies 77.1% of the land, while the plain only holds 5.3%, which is mostly located in Sichuan Basin. The climate of Sichuan is no less complex because of its special location as the transitional zone from the Tibetan Plateau to the Eastern Plain. According to the Sichuan Government, the characteristics of Sichuan's climate can be summarised as follows:

- Clear monsoon climate with hot rainy season;
- Significant regional difference : in the east, warm winter, early spring, hot summer, rainy autumn, heavy cloud and fog, less sunshine and long growing season; in the west, long and cold winter, basically no summer, ample sunshine, concentrated rainfall. (Sichuan Government Website, 2012)

Particularly for agricultural geography, the most prominent area in this province is Chengdu Plain in the west of Sichuan Basin, which is one of the major grain and oilseed bases of China. Chengdu plain is extraordinarily well-

known as “Heavenly Land of Abundance”, because of its rich and fertile agricultural resources and appropriate climate. The main crops of this region are rice, wheat, corn, sweet potato, soybean and so on. With a large population and relatively scarce arable land, Sichuan is feeding 6.6% of national population with 4.7% of national arable land. Per capita cultivated land in Sichuan is 0.05 hectare, and cultivated land per person employed in agriculture is 0.19 hectare. In this sense, Sichuan farmers are authentic smallholders. Due to the restriction of natural conditions in West Plateau and Southwest Mountain areas, grain production is relatively poorly developed while livestock herding and forestry have thrived. Cash crops popularly cultivated in Sichuan include rape, peanut, fruits, tea, vegetables, silk, flowers, medicine herbs, tobacco and cotton.

4.3.2 Socio-economic development of Sichuan Province

Sichuan Province has been experiencing a general transformation from agricultural economy to industrial economy, from rural society to urban society alongside the broader transition occurring in the whole of China. The GDP of Sichuan Province has expanded more than 26 fold from 1978 to 2011, with the average annual growth rate exceeding 10% as Figure 4.7 shows. Under such a fast-growing economy, differential trends have occurred in three industries. According to the Sichuan Yearbook (2012), the contribution of agriculture to the whole of provincial GDP has declined from 44.5% in 1978 to

14.2% in 2011, while industry, contributing 35.5% in 1978, rose up to 52.4% in 2011. The service sectors have also expanded substantially from 20% in 1978 to 33.4% in 2011 (see Figure 4.8).

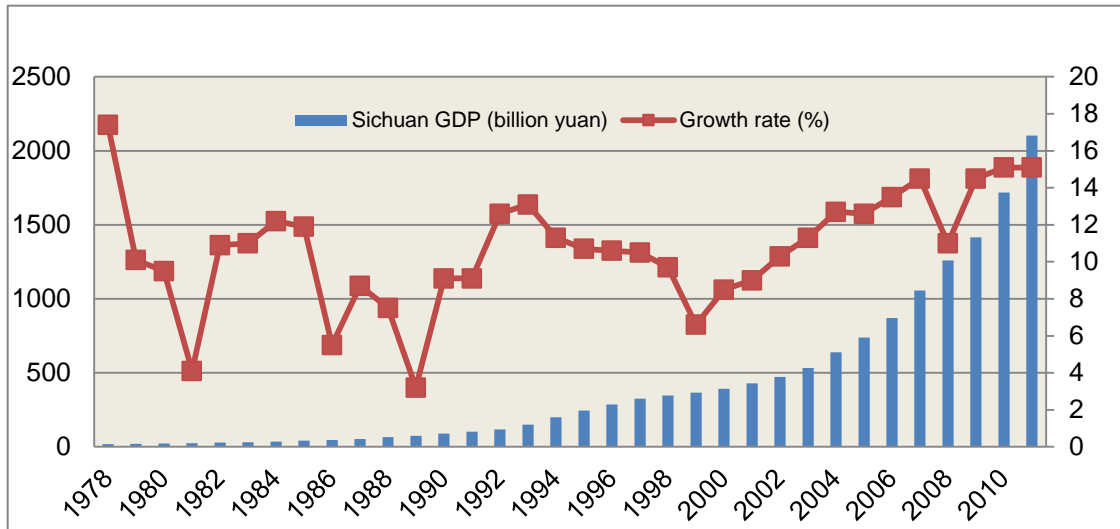


Figure 4.7 Sichuan GDP Growth from 1978-2011

Source: SSY (2012)

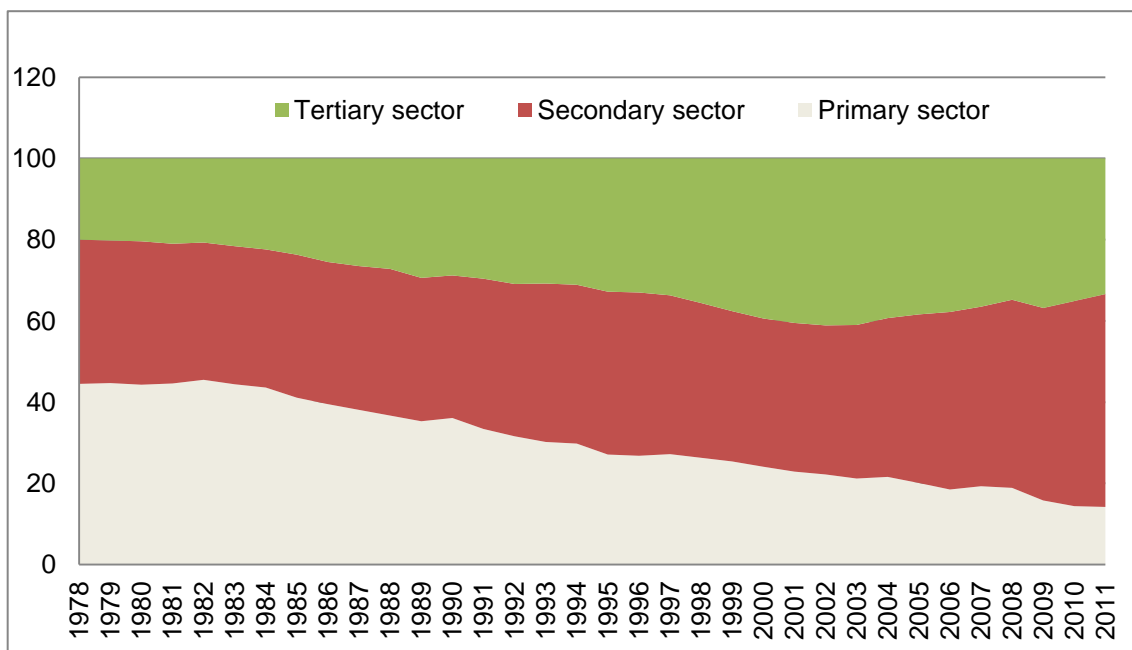


Figure 4.8 Changes in Composition of Sichuan's GDP from 1978-2011 (%)

Source: SSY (2012)

From these statistics, it is evident that Sichuan is entering into an industry-based economy, although with great regional disparities. Furthermore, Chengdu, as the provincial capital, is one of the most powerful and influential metropolises in southwest China. Its economy takes about one-third of the whole provincial GDP in 2011 (SSY, 2012), so that it is one place of strategic importance for driving the economic status of not only Sichuan Province, but also the whole of southwest China. However, in northeast and northwest Sichuan, the industrialisation and urbanisation have long been underdeveloped, evidently below the provincial average, due to poor natural conditions and other socio-historical reasons. Considering the regional development disparities, Qingshen County, the focus of this project, is situated in a region of moderate industrialisation in the context of Sichuan Province as will be shown.

Industrialisation and urbanisation, the two interconnected processes, have been the most significant drivers and development strategies in Sichuan. As the government claims in all the reports and plans, the overall development strategy is to “industrialise the province”, and the main efforts have been made in the areas of seven competitive industries, namely, electronic information, equipment manufacturing, oil and gas and chemical industry, beverages and food, modern Chinese medicine, vanadium steel and energy/power. The urbanisation rate of Sichuan has steadily climbed from 11.7% in 1978 to 41.8% in 2011 (SSY, 2012). However, despite this

impressive level of progress, Sichuan is still under the average level of industrialisation in China.

The fast-expanding economy of Sichuan cannot be fully understood without referring to broader political and economic backgrounds. The most fundamental one is the long-lasting national development strategy, “Go-West Campaign”. At the end of 1999, to balance sharp regional development inequalities, the Chinese central government launched a grand and comprehensive strategic development plan, called the “Go-West Campaign” (xi bu da kai fa), to give impetus to the socio-economic development and environmental conservation of Western provinces and regions. This plan covers 12 provinces and autonomous regions from northwest to southwest China, and Sichuan is included. This policy reorientation provided massive development chances for these western provinces and regions, as central government has made huge amounts of investment, particularly in five fields: major infrastructure, ecological environment, economic restructuring, science and education and further opening to the outside world since 2000 (Tian, 2004).

4.3.3 Agricultural production in Sichuan Province

Although Sichuan has gradually been switching to an increasingly industry-dominant economy, it is still an agricultural province in terms of agricultural contribution to GDP compared to the average level in China, as shown by

Figure 4.1 and Figure 4.8. Regarding grain production, Sichuan is one of China's 13 major grain producing areas. A pronounced feature of Sichuan agriculture is the diversity of crops, especially in terms of the varieties of cash crops as discussed above. The Sichuan government promotes the cultivation of diverse agricultural crops on the basis of specific geographical conditions, and basically formulates a spatial pattern of agricultural diversification. For instance, the west plain concentrates on high-quality rice cultivation and the tea areas are also mainly grouped in the west, south and east Sichuan. According to Sichuan Bureau of Agriculture, cash crop production contributes more than 50% to the crop industry of Sichuan in terms of production.

Another feature of Sichuan agriculture is high intensification due to its humid climate and complicated landscape. According to the government website, the multiple-cropping index⁵ (MCI) of land, an indicator of land utilisation rate, is 248.9%. However, the agricultural mechanisation of Sichuan is relatively low due to the geographical conditions again, 35.8% for the major crops according the government annual report of 2012. Hence, most farming work in Sichuan is done manually.

According to the government annual report of 2011 and the provincial Twelfth Five-Year Master Plan, agricultural policies of Sichuan Province over the most recent ten years have mainly included four aspects: investing in agricultural infrastructures, modernizing agriculture, developing agricultural

⁵ Multi-cropping index (MCI), the ratio of total sown area of crops to cultivated land area in the current year, is one of the most important indices to measure agricultural land use intensity and widely used in China, (Li and Wang, 2003).

industry and transferring rural labours. Additionally, under the national rural development strategies of reinforcing urban-rural integration and constructing socialism new countryside, Sichuan will continue to put “modernising agriculture” at the top of policy priorities. As the Master Plan proposes, the province will make efforts to promote agricultural sciences and technologies, research and development, to build various crop demonstration zones, like potato, vegetables, fruits, tea and so forth, and to invest more in agricultural infrastructures, especially irrigation works. An important pathway of modernising agriculture for Sichuan is to promote agricultural industrialisation, for which the government encourages modern agricultural companies to contract with farmers, the so-called “company + farmer” model. In 2010, there were 3223 agricultural enterprises above the designated size in Sichuan. In 2015, the target is to develop 1000 “dragon-head” agricultural enterprises with sale incomes of above 100 million Yuan, and 70% of rural households will be involved in this form of contract farming (Sichuan Master Plan, 2011-2015). Besides, under the umbrella of modernising agriculture, the province also promotes the modernisation of livestock and fishery sectors, especially pig breeding, mainly focusing on standardisation and modernisation of livestock production.

4.3.4 The migration economy of Sichuan Province

An outstanding characteristic of Sichuan in terms of agriculture and rural

development is the migration economy, the scale of which is so large and dynamic that this province attracts scholars' constant interest on the topic of Chinese internal migration (e.g. Zhao, 1999; Fan, 2004, 2008, 2009). According to China's Sixth Census in 2010, migrants of Sichuan, which are divided almost equally between flow-inside and flow-outside of province migrants, numbered nearly 22 million in 2011, or up to 26% of the whole population of the province and almost 10% of nationwide migrants. From 2011 to 2015, transferring 23 million rural labourers is listed as an important development target by the Sichuan government (Sichuan Master Plan, 2011-2015). Alongside the declining agricultural contribution of the province, employment in agriculture has also declined dramatically since the 1978 reform (see Figure, 4.9). In 2010, the rural-urban migration income reached 176 billion Yuan, with an annual growth rate of almost 20%. Labour transfer has been considered as the primary approach to improve farmers' income, as well as an important rural development strategy.

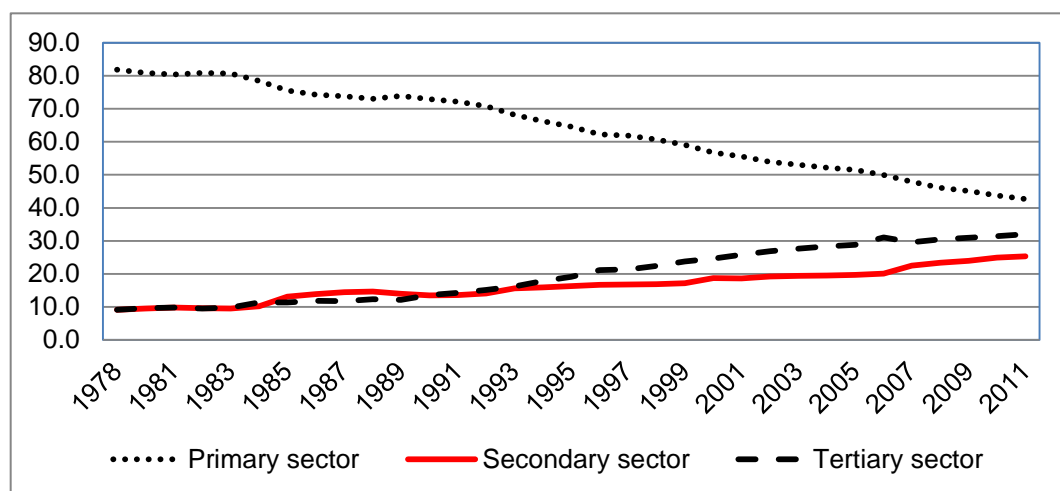


Figure 4.9 Changes in Employments Composition of Sichuan from 1978-2011(%)

Source: SSY (2012)

To fully implement the government-driven rural labour transfer, every county has established a labour transfer office (Li, 2012). Furthermore, an important approach for Sichuan to facilitate labour transfer has been to conduct various job and skills training projects for rural labour, covering both migrants and those left-behind. Moreover, some reforms loosening the Hukou system will be adopted to encourage the agriculturally-registered population, especially rural-urban migrants, to be converted to urban residents formally. The increasing amounts of labour moving out of rural areas and out of agriculture have also caused an important issue regarding land transfer. Sichuan has also attempted to deal with potential land abandonment by exploring various land transfer mechanisms. These processes discussed above will be reflected in the review of smaller regional scales, like the county or even the village, as will be shown in the following two sections.

4.4 Agricultural production in Qingshen County

This section introduces Qingshen County. An outline of Qingshen County's socio-economic profile in 2011, including a comparison relative to the whole province is given first, providing a general understanding of Qingshen's position in the broader background. As illustrated in Table 4.5, in 2011 the per capita GDP and per capita income of urban households of Qingshen were slightly below the average level of Sichuan Province, while per capita income of rural households of Qingshen was evidently higher than the average found

in Sichuan province. Referring to residents' living standards, the Engel coefficient of urban households in Qingshen was much higher than the average in Sichuan, but in rural areas Qingshen was slightly lower than the provincial average in 2011. As for the development of three industrial sectors, similar structures occurred in Qingshen and across the province, and the averages in 2011 are shown in Table 4.5.

Table 4.5 Qingshen County's Socio-economic Position in Sichuan Province (2011)

Indicators	Qingshen County	Sichuan Province
Per capita GDP (Yuan)	25401	26133
Per capita income of urban households (Yuan)	15513	17899
Per capita income of rural households (Yuan)	7061	6129
Engel coefficient of urban households (%)	48.6	40.7
Engel coefficient of rural household (%)	44.6	46.3
Per capita land (ha)	0.06	0.05
Agricultural population as a percentage of total population	82.4	72.8
Urbanisation rate (%)	31.9	41.8
Primary sectors proportion (%)	15.3	14.2
Secondary sectors proportion (%)	59.7	52.4
Tertiary sectors proportion (%)	25.0	33.4

Source: SSY(2012); Qingshen Statistical Bulletin (2012)

In 2011, the secondary sector contributed the highest proportion in both the County and the Province, and the agriculture-related sector contributed

the least, and the development of the tertiary sector of Qingshen was poorer than the average for Sichuan. As the following sub-sections show, Qingshen has also been experiencing a dramatic socio-economic transition and is thus an appropriate site for observing how different forces are influencing agricultural production at the community level.

4.4.1 Geography of Qingshen County

Qingshen County is located in southwest of Chengdu Plain. Qingshen covers 387 square kilometres, and is populated by 206 thousand inhabitants. The landscape of Qingshen is dominated by shallow hills, with a small proportion of flat land. Qingshen is well-known for two honorary titles, respectively, the “Chinese Town of Bamboo Weaving Art” and the “Chinese Town of Citrus”. This county is especially distinctive for bamboo weaving, which has a two-thousand-year long history. Bamboo cultivation weighs significantly in the agricultural development of Qingshen. Qingshen is 100 kilometres away from Chengdu and 67 kilometres from Meishan. The climate is affected by the Sichuan Basin sub-tropical humidity, with clear four seasons, moderate temperature and abundant rainfall, which is suitable for many plants. Main grain crops which thrive under these climatic conditions include, rice, wheat, corn, rape, sweet potato and cash crops include citrus, tea, vegetables.

4.4.2 Socio-economic development of Qingshen

The overall development level of Qingshen is below the average of Sichuan Province. Per capita net income of urban residents in 2010 was 12.6 thousand Yuan and rural residents 5.7 thousand Yuan (QY, 2011), both slightly less than the provincial level per capita, where net income for urban residents was 17.9 thousand Yuan and for rural residents was 6.1 thousand Yuan (SSY, 2011). According to Qingshen Yearbook 2011, the urbanisation rate of Qingshen County in 2010 was 28.8%, and in terms of the Hukou system, the agriculturally-registered population is 160 thousand and the non-agriculturally-registered population was 45 thousand. Therefore, Qingshen is largely an agriculturally-based or rural county. The overall development strategy held by the Qingshen government is the “three-isations”: industrialisation, urbanisation, and agricultural modernisation.

In 2010, the GDP of Qingshen was 3.4 billion Yuan with the composition of GDP in terms of three industry sectors (primary, secondary and tertiary) 17.6:53.5:28.9. Qingshen has focused on industry development as the dominant development strategy, especially focusing on machinery industry, chemical medicine, textile industry, and bamboo paper manufacture. Industry development is enthusiastically considered as the backbone of the whole county development process.

Under the national slogan of urban-rural integration, Qingshen has taken measures to bridge the urban-rural gap, with major focuses on

promoting the real estate industry, transferring rural residents to township and county communities, facilitating farmers' non-farm activities and investing in town infrastructures. According to the county's planning for 2011-2015, improvement of the urbanisation rate is one of the top priorities.

4.4.3 Agricultural development of Qingshen

As one of the fundamental development strategies, agricultural modernisation has been listed as the priority for agricultural development in Qingshen. Grain crops like rice and corn; and cash crops like rape, citrus, tea and mulberry; and livestock like pigs, chickens and silkworms constitute the main crop patterns in this county. The main indicators of agricultural development in 2010 as reported by the county government are shown in Table 4.6.

Table 4.6 Agricultural Production of Qingshen in 2010

Indicators	Scale	Changes compared with 2009(%)
Grain sown area (ha)	17,239	0.05
Oilseeds sown area (ha)	4,086	–
Vegetable sown area (ha)	2,779	0.5
Grain output (1000kg)	96,301	0.7
Rape output (1000kg)	5,930	0.2
Fruit output (1000kg)	53,412	8.7
Vegetable output (1000kg)	81,938	-4.3
Pork output (1000kg)	17,099	-2.4

Source: QY (2011)

Agricultural development of Qingshen adopts a top-down approach, in which the government sets up and implements the framework and planning of agricultural development. As a part of Sichuan province, Qingshen has taken measures on agriculture which are consistent with provincial policies. For instance, the county has focused on investments in infrastructure, especially irrigation works, agricultural technology promotion, contract farming, agricultural industrialisation, land use regulation and agricultural subsidies distribution. An important strategy for Qingshen to develop agriculture is agricultural industrialisation, which includes constructing a modernised agricultural demonstration zone, which would feature citrus production, bamboo planting and weaving, modernising livestock cultivation and fisheries. One important approach is to build agricultural bases with specific characteristics, as is implied in the specification of, “one town one industry, one village one specialty” (yi xiang yi ye; yi cun yi pin). As is shown below, Hu Village is planned as citrus and sericulture village.

Regarding land use policy, the county insists on the basic national policy of arable land protection for food security. In 2010, Qingshen invested 58 million Yuan to restructure rural land (transforming hills into flat land), and Hu Village is within the area of project coverage. Qingshen also encourages land transfer to enhance agricultural productivity, because rural-urban migration is very pronounced in Qingshen and this factor influences agricultural production to a significant degree. In 2010, 1.2 thousand hectares

of land was transferred into larger scale cultivation (QY, 2011).

As discussed above, the migration economy is a characteristic of Sichuan, and this is also reflected in Qingshen County. As the government figures show, 67 thousand rural labourers participated in migration in 2010, and the income from migrants was 464 million Yuan in 2010 (QY, 2011). A specific institute was created to identify job opportunities and provide skills training for rural labourers, both migrants and the left-behind. The training covers specific skills like service skills, cooking, hairdressing and so on for migrants, and agricultural management technologies, like pesticides application, sericulture technologies and so on for the remaining rural population. During fieldwork, I twice encountered training sessions organised in Hu Village. In addition, due to the pronounced rural out-migration, Qingshen was nominated as the only county where education protection was offered to left-behind children by Sichuan in 2006, and as the national demonstration county of rural left-behind and migrant children working in 2009. There have been several projects targeting left-behind children and women in Hu Village.

4.5 Hu Village as the study site

The village is at the grass-roots level in the whole Chinese administration system. The state policy and regulations stand “as a key structural boundary within which political, social and economic decisions are taken that, in turn ‘trickle down’ to community level” (Wilson, 2013: 299). Therefore, the study

community, Hu Village, is embedded in the policy arrangements of the county, the province and the whole of China. This section introduces the basic socio-economic aspects of Hu Village.

4.5.1 Geography of Hu Village

Hu Village is a huge administrative village, with about 4.5 square kilometres, and is populated by 882 households with 2938 residents in 2010. The landscape of Hu village is no less complex than the whole province, with many hills, some flat land, and a few mountains. Hu Village owns 173 ha of agricultural land area, of which 142 ha is cultivated land. The cultivated land includes 135 ha of paddy field and 8 ha of dry land. The per capita paddy field is 0.05 ha and per capita dry land is 0.003 ha, meaning 0.053 ha in total, which is slightly more than the per capita cultivated land of Sichuan Province, 0.05 ha. In terms of the amount of land individuals are entitled to, Hu Village farmers are real smallholders. Geographically and administratively, this village is divided into 8 groups, with slightly differences in population, land area, landscape, crop patterns and livelihoods. The map of Hu Village is shown by Figure 4.10.

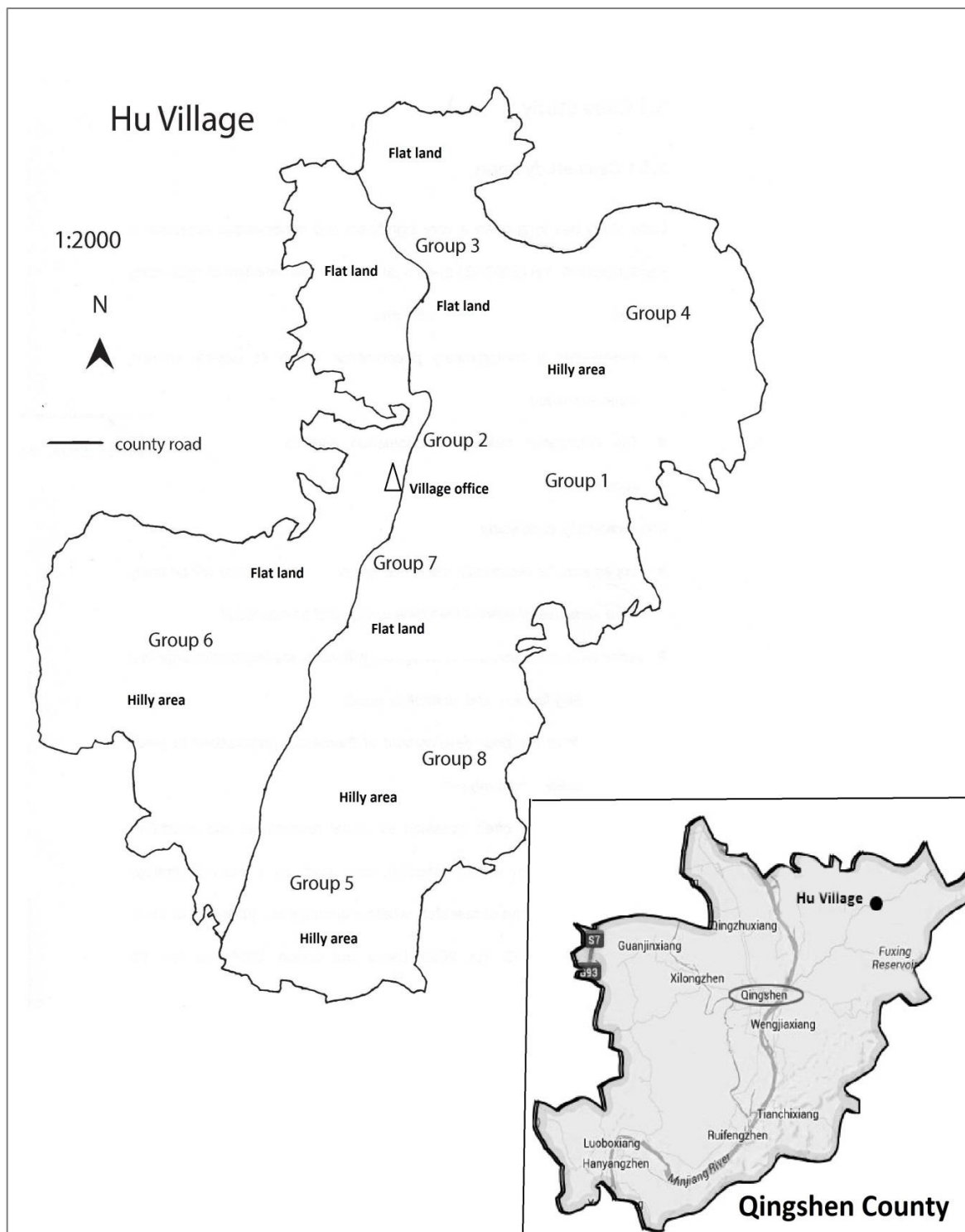


Figure 4.10 Map of Hu Village

Source: Hu Village map from Hu Village Committee and Qingshen Map adapted from Google Maps.

As the only available village report reveals, the per capita net income of Hu Village households was 5700 Yuan in 2009 (HVCAR, 2010), while the per

capita income of rural households of Qingshen in that year was 5070 Yuan (QY, 2010), and that of Sichuan Province 4462 Yuan (SSY, 2010). From this perspective, the overall level of wealth in Hu Village is situated above the average of the County and the Province. Main income sources for Hu Village residents include agriculture, livestock, migration, local enterprises and a range of self-employed enterprises. Hu Village is 10 kilometres away from the town of Qingshen County. There is a county-level road through the village. All the households have telephones, and there are more than 100 computers in the village, which makes communication very convenient.

4.5.2 Agricultural production of Hu Village

Hu Village agriculture is a hodgepodge of various forms of farming styles driven by various forces across the local, provincial and national scales. The following section provides an overview first, and more specific details will be presented and discussed in following chapters.

Agricultural system of Hu Village

Hu village has long practiced two growing seasons within the sub-tropical humid climate. In the first season (generally from April to September), major crops are rice, corn, sweet potato, soybean and vegetables. The second season (generally from October to March) grows rape, fava bean, green peas and wheat. Rice and rape are the two predominant crops in the two growing seasons. Due to the high demand for labour input and low-level of

mechanisation, wheat cultivation has been almost abandoned by Hu villagers, to the extent that during fieldwork the author only saw two plots of wheat in the whole village. In addition, every household has different but similarly small amounts of bamboo, which generally surrounds the house. The mode of intercropping is widely used, sweet potatoes are intercropped with corn, or corn with fruit trees or mulberry. Sericulture has been a most important sideline for Hu Village for several decades, however, fewer and fewer villagers are willing to conduct sericulture due to the low payoff and high technological requirements. Most sericulture farmers are the elderly and household wives who cannot migrate or conduct other off-farm activities. In addition, Hu Village is planned as a citrus base through the County's policy of "one village one specialty". In recent years, farmers, if not always at a loss, have not made any profit, but citrus planting is still encouraged by the government.

The general agricultural technologies here include hybrid varieties of rice, corn and other crops, chemical fertilizers supplemented by a small amount of farmyard manure, and chemical pesticides and herbicides. Agricultural mechanisation includes harvesting rice and ploughing land. Mechanised ploughing has totally replaced ploughing with cattle for several years. Most farming work remains manual work. No tillage has been adopted here, except some traditional or so-called "stubborn" farmers are still ploughing the land every year. Regarding agricultural facilities, 80% of the farming land in Hu Village has been connected with a cement road, which has been realised

through a project conducted in 2010 as is shown in Table 4.7. Irrigation works have been renewed since 2009 and irrigation water is drained from a reservoir about five kilometres away.

Livestock cultivation is widespread in Hu Village, mainly pigs, chickens, rabbits and ducks. Most livestock farming is undertaken by farmers' family at a relatively small scale. According to the village annual report, in 2009, 600 pig breeding farmers sold 3,008 pigs. Most households keep a few chickens and ducks for home consumption. About two hundred households raise rabbits, with three households raising more than two hundred. It is very common here that every household cultivates several breeding pigs for cash, several chickens and ducks for their own consumption.

Briefly, the agricultural production of Hu Village can be considered typical and representative in the whole province, without specialising on any particular area of production. The cultivation of grain crops, cash crops, livestock, fisheries and sericulture in Hu Village are all important and typical throughout the province.

Agricultural policies and projects in Hu Village

Many agricultural policies have been implemented in Hu Village, including various agricultural subsidies, agricultural insurance and so on. Hu Village farmers now do not submit any agricultural taxes and fees to upper levels of government, but instead receive various subsidies, like direct grain subsidy, agricultural input subsidy, seeds subsidy and so on. The amount is varied

every year, generally about 1500 Yuan per ha. Agricultural insurances are implemented here to cope with natural disasters and livestock diseases, giving farmers at least a minimum level of security for their farming and livestock cultivation. These insurances cover rice, corn, pigs and so on, however, the effectiveness is poor because of the miscellaneous procedures. To protect arable land, a restricted land protection policy is operated in Hu Village, under which any action of transferring agricultural land-use into other types of land-use, like building workshops or houses, is strictly controlled. This policy means that farmers have to cultivate crops on their land or leave it idle, without any option for land-use changes.

Apart from these policies, there are also many projects related to agricultural production in Hu Village as is summarised in Table 4.7. It can be seen that the stakeholders of these projects are diverse and complex. The county government, village cadres, farmers, businessmen and so on are all involved. The projects implemented in Hu Village can be roughly categorised into two types: infrastructure construction and contract farming, which is also consistent with the agricultural development strategies set by the county government as discussed above. One point which deserves to be mentioned is that these projects are initiated by the government or commercial companies, following a government-dominated and market-dominated pathway. What these projects have meant for agricultural production in Hu Village will be discussed in the following chapters. Overall, as Chapter 3

argued, Hu Village can be seen to be an ideal case study community for this research.

Table 4.7 Agriculture-related Projects in Hu Village 2008-2012

Projects	Time	Stakeholders	Details
Land levelling project	2011	County Agriculture Bureau, village cadres, farmers, construction company.	To increase arable land through flattening hills due to the arable land decrease caused by urbanisation and industrialisation.
Road construction and irrigation works	2011	County Agriculture Bureau, village cadres, farmers, construction company.	To improve the rural infrastructure under the umbrella of “constructing socialism new countryside”, many cement roads and cement irrigation channels were constructed.
Rape seedling contract farming	2009-2012	Seeding company, rape farmers, village cadres	To enhance farmers’ income, village cadre introduced a seedling company to contract farming land, a part of farmers have been involved.
Modernizing livestock cultivation	2010	County Animal Husbandry Bureau, village cadres, livestock farmers	Under the grander project of modernizing agriculture, the government subsidises pig breeding farmers for hoggery construction.
Sericulture contract farming	From 1990s	County silk company, sericulture farmers, village cadres	This project is contract farming between the county silk company and sericulture farmers in a monopolistic way for almost twenty years.
Cash tree planting: (red toona)	2008-2012	County forestry Bureau, farmers, village cadres	To improve forest coverage rate and farmers’ income, fast-growing economic tree, red toona was introduced to farmers.
Land transfer and Chinese medicine herb planting	2009-2012	Farmers, village cadre, medicine company	One village cadre contracted 13 ha land from farmers to plant Chinese medicine herb in collaboration with external medicine company.
Labour transfer training project	2008-2012	County Agriculture Bureau, farmers, village cadres	To train farmers about essential skills related with migration, and farming skills.

Source: Author’s interviews with village head and village account, 2012

4.6 Conclusion

This chapter has provided an overview of the background for this research at different geographical levels. In accordance with the theoretical approach this research adopts, this chapter targeted the overall framework and structure of agricultural production at the community level through a top-down approach, highlighting the coherence of the socio-economic transition occurring at the national, provincial, county and community level. Three characteristics can be identified through the discussion above. Firstly, irrespective of whether it is the nation, the province or the county which is examined, a similar transition from an agriculture-based economy and rural society to an industry-based economy and urban society has been underway. Secondly, industrialisation and urbanisation have been set as the development priorities by both the whole country and the local governments. Thirdly, despite an overwhelming emphasis on industrial development, all levels of governments, with considerations for political justice and balanced development, have made arduous efforts to focus on agricultural and rural development, and the most prominent pathway is agricultural modernisation.

Furthermore, attention has been paid to the transition occurring in the agricultural sector and agricultural policies, indicating that agricultural structures have begun to change driven by various forces, and agricultural policies have seemed to be greatly favourable to farmers in recent years. However, a common feature can be identified which is that the governments

at all levels adopt a top-down approach to promote agricultural development.

Finally, it can be observed from the presentation above that the national policies and regulations in China have established parameters for regional, local and community agency, and vice-versa, that local actors have to cope with these regulations and will thereby influence how the “structure” is implemented. These points will be discussed further in the following chapters.

Chapter 5 Who is farming?— Demography of Hu Village

5.1 Introduction

This chapter attempts to fulfill the first objective of this research: to investigate the demography of Hu Village more specifically from a village-level perspective, to portray a clear picture of the people who are living in the rural area and what people are farming. As demonstrated in previous chapters, Chinese rural communities have tightly interacted with broader socio-economic transformations and national political reforms, thus, as the protagonist, the rural population has also kept evolving, as has been identified in other cases in both developed and developing countries (Woods, 2005). As demonstrated in Chapter 4, booming levels of urbanisation and industrialisation in China have long drawn a significant proportion of rural population to seek work opportunities in the cities. This has driven Chinese economic prosperity, but at the same time has caused a dramatic but steady decline in agricultural population. Thus, a fundamental question has come to the fore, especially from the policymakers' perspective, about how to guarantee food security, most particularly sufficient grain supply given this scenario. The paradox between continual urbanisation and sufficient agricultural production has drawn heated debate among scholars (Huang and Peng, 2007; Chen, 2007). Thus, given this academic debate, to examine what

kind of farmers are currently farming in China and what kind of influence this agricultural population has on agricultural production is of great importance. This chapter will put Hu Village under the microscope as a specimen, to examine the demographic characteristics of the village and further to shed light on the implications this demography may have for land-use changes and agricultural production. This chapter will elaborate on various aspects of the demography of Hu Village.

Section 5.2 describes the basic demographic profile of Hu Village, drawing on secondary data from the village committee which covers the whole village population, giving an overall picture of the age and gender of the Hu Village population. Section 5.3, using the survey data, firstly illustrates the sample population by more specific characteristics, like age, gender, education, marriage and then presents the employment status of sample respondents, farming time of different residents and finally focuses on migrants. Section 5.4 concludes the whole chapter.

5.2 Basic demographic profile of Hu Village

This section provides an overall profile of the whole population of Hu Village based on a set of secondary data collected in 2011. This data was collected by village cadres for implementation of various rural policies relating to every village resident, so its accuracy can be largely assumed. One limitation of this data is that it only includes the gender and age of the population.

According to the data, there are 2680 residents in Hu Village in 2011 of which, 1353 (50.5%) are male and 1327 (49.5%) are female, so there is a gender ratio of 102 (female=100). Compared with gender ratios of Sichuan Province (103.1) and China (104.9) in 2010 (China's Sixth Population Census, 2010), Hu Village's is relatively moderate. Seeing gender ratios as correlated with age groups more specifically (Table 5.1), a distinction can be clearly observed that for the adult age groups of 31-45 and 46-60, males are more than females with 0.5 % and 1.2% respectively, while for the other age groups, the gender ratios are the other way around, in which females are more than males, though with slight percentages all below 0.5%. More surprisingly, the gender ratio of male to female in the youth category (aged below 30) is lower than 100 (female =100). However, for China, the gender ratio of male to female in the early ages (0-29) is the highest (109) among all the other age groups because of the One-Child policy⁶ since the 1970s (Hesketh *et al.*, 2005) and the long-term dominance of patriarchal mentality in China (Wen, 1993; Murphy, 2003; Wang, 2005). An explanation is that the social customs and cultural values related to male-preference are relatively weak in Hu Village and even in other regions of Sichuan. During fieldwork, the

⁶ Chinese One Child policy, also referred as Family Planning policy, was issued by central government in 1979 to control the overpopulation of China. Under this policy, urban couples are strictly regulated to have only one child and are allowed more than one child only in a few cases, including twins, if the first child is disabled, couples who are in dangerous jobs and couples who are both only children themselves. Rural couples are allowed to have a second child if their first-born is a daughter or if the child has physical disabilities or mental illnesses (see Hesketh *et al.*, 2005).

author quite often captured discussions by Hu villagers on opinions regarding gender preference. It was common to get a strong feeling of gender equality or even a preference for females. In addition, judging from the gender ratio of new births in the most recent five years, there is no strong tendency of preference for sons here, indicating that the gender discrimination in this region is not as strong as other regions.

Table 5.1 Age and Gender of Hu Village Population 2011 (% in Total)

Age ranges	Gender		Total
	male	female	
0-15	4.1	4.5	8.6
16-30	9.1	9.3	18.4
31-45	15.2	14.7	29.9
46-60	11.6	10.4	22
60+	10.5	10.6	21.1
Total	50.5	49.5	100

Source: Hu Village Committee (2012)

Seeing from the population pyramid (Figure 5.1), the age structure of the population is quite clear. The age group of 31-45 holds the largest proportion (29.9%) and the smallest group is the youngest group (aged 0-15) representing only 8.6%. The labour group aged between 16 to 60 accounts for 70.3% of the whole population, which is roughly consistent with the wider demographic patterns in China (age group 15-59, 70.1%) and Sichuan province (age group 15-64, 72.1%) in 2010. In addition, the small youngest group is also part of the similarities, with this accounting for similar proportions in China (16.6%) and Sichuan (16.1%). Especially if ten years of Chinese demographic history are reviewed, a trend of a shrinking lowest age group can be observed since 2000, when the proportion of youth aged between 0

and 14 accounted for 22.9% of the total. This phenomenon can be explained by the long-term low natural growth rate of Chinese population because of Chinese One Child policy, under which the natural population growth rate of China has continually decreased.

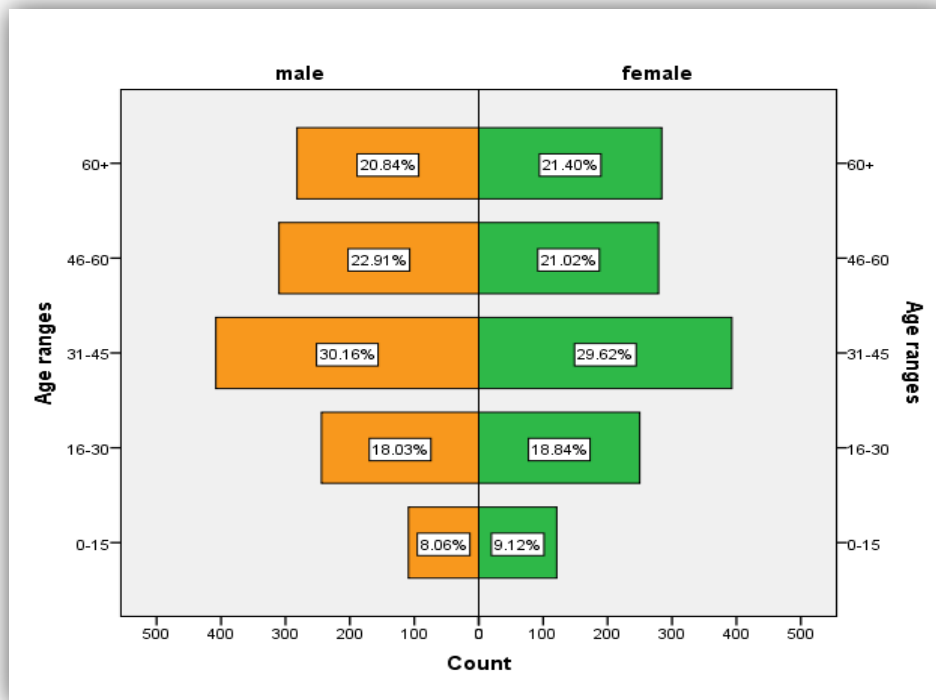


Figure 5.1 Population Pyramid of Hu Village in 2011

Source: Hu Village Committee (2012)

Another significant observation is that people aged above 60 represent a substantial part of the population, 21.1%. There is an aging tendency in Chinese society, and the population aged above 60 of China in 2010 makes up 13.3% of the whole national population. Narrowing down to Sichuan Province, the proportion of the aging category is 16.1% in 2010, substantially above the national average, ranking the second of the whole country. Furthermore, the figure of Qingshen County in 2010 is 19.7%, higher than the

provincial average by 3.6%. To explain the high aging proportion of Sichuan, several possible explanations can be advanced. First, under the restrictive implementation of One-Child policy, the natural growth rate of population in Sichuan has long been low, and substantially lower than the national average. Second, due to the significant improvements in economic development, per capita income and social medical care, the average life expectancy in Sichuan (also for the whole of China) has risen greatly to 74.8 years old in 2010. Third, the high number of out-province migrants from Sichuan, who are mainly constituted by the middle-aged, may considerably influence the aging ratio if the calculation was based on the resident population rather than the Hukou registered population. In addition, the relatively higher aging ratio of rural areas like Hu Village may be accelerated by the increasing rural-urban migration undertaken mainly by young adults who may then manage to permanently reside in urban areas and never return to source rural communities. It can thus be predicted that the aging tendency of rural areas may continue speeding up, driven by the long-lasting net out-flows of young adults in the near future.

According to the data, the family/household scale of Hu Village in 2011 is 3.02 persons, with the provincial family average of 2.95 persons and the national family average of 3.1 persons in 2010 (China's Sixth Population Census, 2010). As is widely known, family scale in China has been greatly miniaturised, driven by the family planning policy and modernisation and

urbanisation processes, and featuring increasingly nuclear families (Hussain, 2002). The family scale in Sichuan is even smaller, partly due to the same reasons discussed above. But there is another interesting cause, as the government has explained, in that there are some compensation policies which are implemented at the level of the household rather than to individuals and these encourage the division of households (Sichuan Government, 2011). This is also evidenced by Hu Village case. As noted by the village head, the number of households in Hu Village before 2008 was around 700, but after 2008 and the Sichuan Earthquake, central government distributed a great deal of compensation money to households in Sichuan. This meant that a number of extended families were broken into smaller households, although they may still live together as a cohesive household/family⁷.

In terms of Hukou, there are 45 non-agricultural Hukou residents in Hu Village, although this is a small proportion of 1.7%, it indicates the diversity of rural residents. The non-agricultural residents include government officials employed in higher level government sectors, formal teachers, formal workers employed in state-owned factories, and young adults who successfully shifted their agricultural Hukou registrations to non-agricultural ones through higher education and then by formally working in cities. Because they have got social

⁷ Therefore, it is noteworthy that the officially registered Hu Village households after 2008 may be different with (more than) the real household number. In this research, to be closer to the real situation, the household membership in the sample are based on the number reported by the interviewees, which may cause the average family size in the sample to be higher than 3.02, as will be discussed in following sections.

insurance from their occupations, there is no land entitlement for these individuals.

5.3 Agricultural demography of Hu Village

Having examined the overall demographic profile of Hu Village, this section presents the data collected by a survey in 2012 to portray more specific characteristics of the Hu Village population, with more emphasis on the agricultural population.

5.3.1 General demographic characteristics of the sample

Age, gender and education

Table 5.2 shows that 53.4% of the survey respondents are males and 46.6 % are females, and the gender ratio is thus slightly higher than the village gender ratio. However, the overall structure in terms of age and gender of survey respondent families is consistent with the whole village. As Table 5.2 shows, the youngest age group remains the smallest (14.9%), while the labourer group aged between 16 and 60 is 64.4%, and the elderly group, aged above 60, still occupies a substantial part, 20.7%. Table 5.3 shows that the average age of all family members surveyed is 40.6, the median age is 41. The average age of the sample household heads is 51.3, with median age 49. From the comparison, we can see that the household heads are the relatively

aged member in the family.

Table 5.2 Age Groups and Gender of Sample Respondents of Hu Village (% in total)

		Gender		Total
		male	female	
age range	0-15	8.9	6.0	14.9
	16-30	9.5	8.5	18.0
	31-45	13.9	12.9	26.8
	46-60	9.3	10.3	19.6
	60+	11.8	8.9	20.7
Total		53.4	46.6	100.0

Source: Author's Questionnaire

Table 5.3 Age of Sample Respondents and Sample Household Heads of Hu Village

	N	Minimum	Maximum	Mean	Median	Std. Deviation
All family members	854	1	94	40.6	41	20.89
Household Heads	225	30	81	51.3	49	11.98

Source: Author's Questionnaire

Table 5.4 shows the education and age groups of sample respondents. 49.4% of the sample respondents have primary education, 30.8% have education from secondary school. 12.5% are illiterate, but if children under 15 are excluded, the illiteracy rate is 7.2% (compared with Sichuan where it is 5.44% and the whole of China where it is 4.08%). High school respondents are 6.2% and those with undergraduate education represent the least proportion at only 1.1%, which may reflect the under-development of Sichuan's education systems. Seeing education according to age groups, the illiteracy rate of the age group 60 and above is the highest among adult

groups. In the category of primary education, no obvious disparities appear among the age groups of 31-45, 46-60 and 60 above. It is noted that very few of the lowest adult age group 16-30, only 2.6%, have received primary education, which indicates that the education of younger generations has been enhanced compared with older ones. Furthermore, in high school education, young people aged under 30 make up the majority of total high school participants (62.3%), and at the same time, all the undergraduates of sample respondents are aged between 16 and 30. In addition, more than half of young adults (aged between 16 and 30) have received high school education (59.4%). More than half the individuals aged between 31 and 45 have received primary education (53.5%), but in this age group, a substantial proportion have also received a secondary education (44.2%). While in the age group 46-60 and 60 or above, a primary level of education is held by the majority, 63.3% and 65.2% respectively. Overall, higher education (high school and undergraduate level) is dominated by young adults aged under 30 (67.1%), secondary school by adults aged between 16 and 45 (72.1%), primary school by adults aged above 30, (80.6%), illiterate mainly by the elderly aged above 60 (72.6%). This reveals that there are education disparities between different age groups, in which elderly people are severely disadvantaged.

Table 5.4 Education⁸ and Age Group of Sample Respondents of Hu Village (% in total)

	Age range					Total
	0-15	16-30	31-45	46-60	60+	
Illiterate	5.3	0.1	0.1	1.8	5.3	12.5
Primary school	7	2.6	13.9	12.4	13.5	49.4
Secondary school	2.3	10.7	11.5	4.8	1.5	30.8
High school	0.2	3.6	1.3	0.6	0.5	6.2
Undergraduate	0	1.1	0	0	0	1.1
Total	14.9	18	26.8	19.6	20.7	100

Source: Author's Questionnaire

Figure 5.2 clearly shows the educational situation of Hu Village, and places this data in the context of Sichuan and China. Hu Village and also Sichuan have fallen behind the national average on education above secondary school, which indicates the relatively backward nature of education in Sichuan. Furthermore, the primary school and illiteracy rates in Hu Village are considerably higher than Sichuan and national averages, suggesting a poorer level of education in Hu Village. It may be inappropriate to overstate the gap between Hu Village and the provincial and national averages because of the small sample, but these factors can help to sketch an outline of the context of Hu Village. Figure 5.3 clearly shows the results of sample respondents' education cross-correlated by gender. For high school education (above secondary school), male success rates are higher than female, while in respect of primary education and illiteracy, females rate more highly than

⁸ Secondary school is also called primary middle school in China, and the students generally are aged between 12 and 15. High school is for students aged between 16-18 before university level education.

males. Therefore, the educational levels of males, on the whole, are higher than for females. This observation may indicate gender disparities on education. Indeed, gender disparity in education in transitional China has long been recognised as a problematic social issue, which the Chinese education department has made great efforts to alleviate (Hannum, 2005).

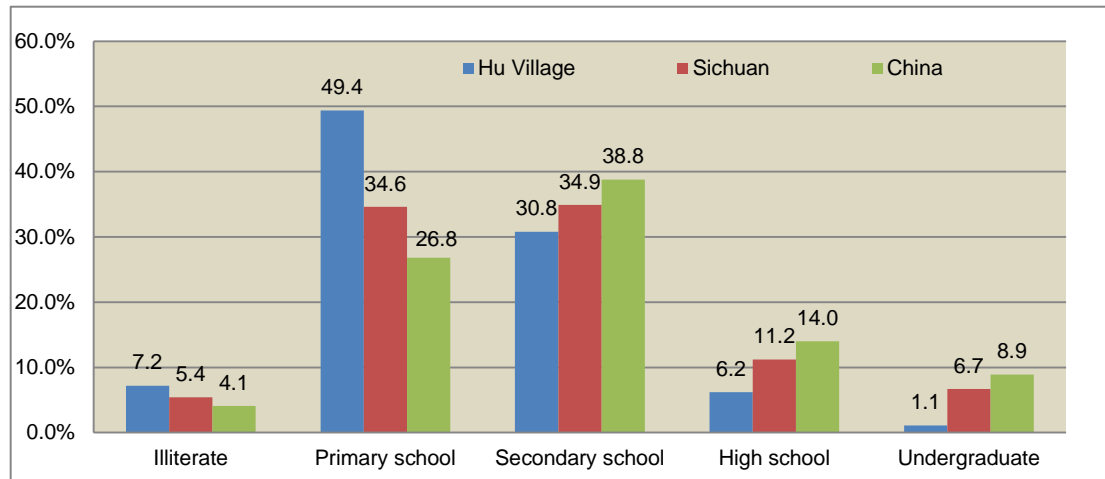


Figure 5.2 The Education Situation of Hu Village in Sichuan and China

Source: Author's Questionnaire; China Sixth Census, 2010.

Note: The illiteracy rate of Hu Village only calculates the respondents aged above 15 to conform to national statistical standards. The three sets of data are from different years: Hu Village is 2011; Sichuan and China are 2010.

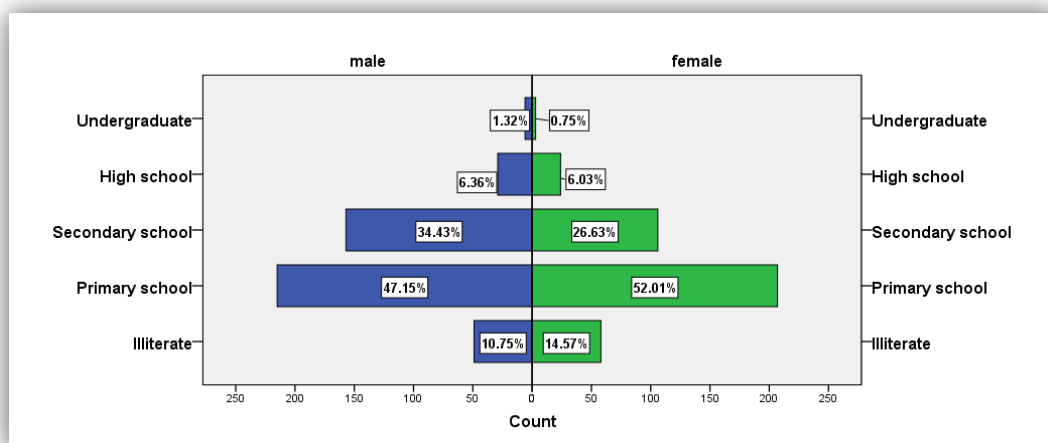


Figure 5.3 Education and Gender of Sample Respondents of Hu Village (% in total)

Source: Author's Questionnaire

Marriage and family types

Regarding the marital status of sample respondents, as Table 5.5 illustrates, 71.1% of all the respondents are married, 24.9% unmarried, 0.5% (4 respondents) divorced and 3.5% (30 respondents) widowed. What is more interesting is that, grouping marital status through age ranges, in age group 16-30, 51.9% are married (including the divorced), 48.1% unmarried, which may indicate that the marriage age is pretty young. The divorce rate is 0.5%, consistent with Sichuan in 2011 where the divorce rate was 0.47% (SSY, 2012). 13.6% of the elderly (aged above 60) are widowed, and there are more widowed females than widowed males by 1.4% (4 respondents), and it should be noted that these elderly single people, especially females, may face great issues in everyday life due to the lack of support from spouses. The single elderly people without family in rural areas have been an increasingly serious social concern in China due to long-lasting and increasing patterns of migration (Ye and He, 2008).

Table 5.5 Marital Status and Age Groups of Sample Respondents of Hu Village (% within age group)

Marital status	Age range					Total
	0-15	16-30	31-45	46-60	60+	
Married		50.6	97.8	93.4	84.2	71.1
Unmarried	100	48.1	1.7	2.4	2.3	24.9
Divorced		1.3	0.4	0.6		0.5
Widowed				3.6	13.6	3.5

Source: Author's Questionnaire

Alongside the dramatic rural transformation of China, rural families have experienced tremendous changes. As Figure 5.4 clearly shows, for the

225 sample households, two family types⁹ are the mainstay of Hu Village, nuclear family (46.7%) and the linear family (44.4%). This figure is also to some degree consistent with China's basic rural family pattern: dominant nuclear family and secondary linear family (Wang 2006). It has been largely accepted that Chinese family structures have become increasingly nuclear family-oriented, featuring small scale, simple structures and considerable autonomy. Particularly for rural China, nuclearisation of rural families, the process by which the nuclear family becomes dominant, has been occurring since the 1960s (Wang, 2007). Along with the implementation of family planning policy since the 1970s, the situation of fewer children in families had caused a moderate decline of nuclear family by 2000 (Wang, 2007). For instance, the prevalence of the nuclear family in Sichuan was 71.23% in 1990, while by 2000 the rate had dropped to 57.8%, showing the largest decline in the whole country (Wang, 2007). Although the latest data of 2010 has not been analysed yet, the trend towards a decreasing frequency of rural nuclear

⁹ Based on different standards, there are different family types. The classification used in this research is based on the concrete situation of rural China and roughly outlines five major family categories (Wang, 2006).

Nuclear family is a family group consisting of a couple and their children. Nuclear family includes standard nuclear family and couple nuclear family (a couple without children).

Linear family is a family group comprised of three generations, parents, married children and grandchildren.

Joint family is comprised of parents, married children, unmarried children, grandchildren, great grandchildren and so forth.

One-parent family is a family group consisting of divorced, widowed or unmarried single father or mother and children.

Single family is a family consisted with only a single adult who is not married and has no children.

families may still remain.

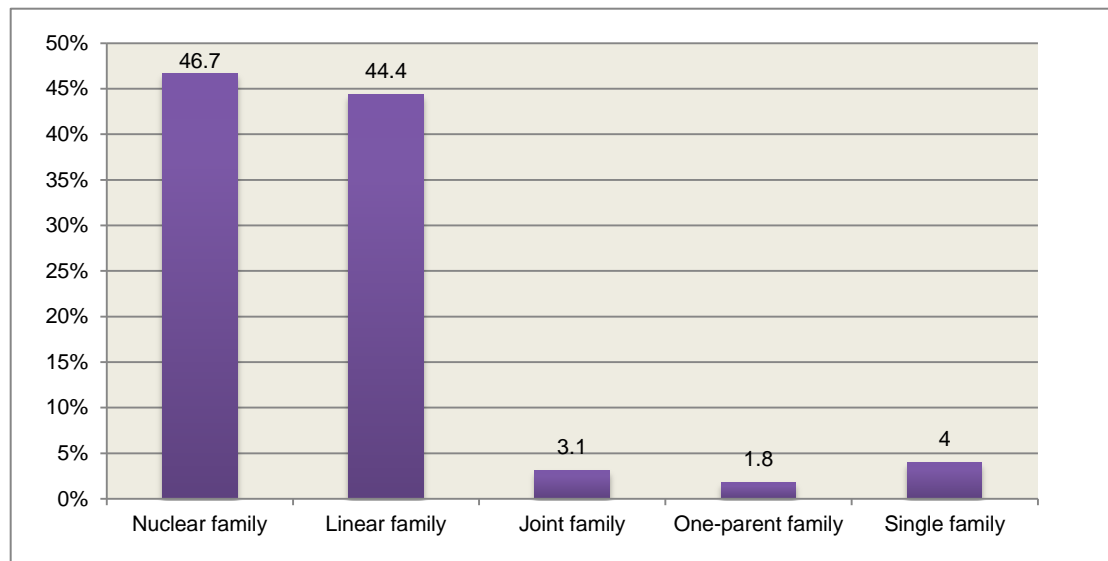


Figure 5.4 Family Types of Sample Families of Hu Village (%)

Source: Author's questionnaire

At the same time, the occurrence of the linear family, especially three-generation linear family, has remained relatively stable (Wang, 2006). One explanation is that under the One-Child policy, more and more one-child-families emerged, and they have chosen to remain close to their nuclear family for close family support (Wang, 2006). On top of that, the long-term rural-urban migration has also contributed to the rising popularity of the linear family household (Wang, 2009; Ye and He, 2008). Through crossing family types and migrant statuses of sample households, it is found that 77% of linear families are migrant families, but only 23% are non-migrant, while for nuclear families, the proportions of migrant and non-migrant families are fairly similar, 46.7% and 53.3 respectively. Furthermore, through a Chi-Square test on family types and the migrant status of households, as shown in Table 5.6, $p=0.000$; therefore, it can be concluded that there exists a dependent

relationship between migration and linear family arrangements. As Wang (2007) contended, married migrant couples often rely on linear family relationships which can provide invaluable help with the custody of children when they are absent. This conclusion can also be supported by fieldwork observations. Many young migrants choose to stay with their parents as a household for support around child custody and farming management when they are away.

Table 5.6 Family Type and Migrant Status of Sample Households of Hu Village in 2011 (%)

	Migrant status (% within family type group)		Total
	No	Yes	
Nuclear family	53.3	46.7	46.7
Linear family	23	77	44.4
Joint family	28.6	71.4	3.1
One-parent family	75	25.0	1.8
Single family	88.9	11.1	4
Total	40.9	59.1	100
Pearson Chi-Square=30.912			df=4
			p=0.000

Source: Author's questionnaire

Note: significant level at 0.05.

Behind the increasing popularity of linear family structures are institutional reasons. Due to the restriction of the Hukou system, young migrant couples cannot permanently reside in urban areas, so they have to rely on their rural community, and more specifically on rural family members. In addition, linear family living arrangements are also related to current conditions of Chinese land tenure. Rural migrants who move to cities are still entitled land, so that migrants have multiple choices for security. These

institutions also rationalise the choice of leaving children with aging parents, who are unable to participate in migration. As scholars have predicted, as long as the institutional constraints on migration remain, rural linear families will continue to thrive (Wang, 2009). Thus in linear families, the left-behind elderly stay with left-behind children while migrant couples work outside of rural communities, forming a very prominent family pattern in contemporary rural China (Ye and Pan, 2008; Ye and He, 2008). However, the migrant linear family greatly increases the labour burden for the left-behind elderly, in terms of farming work and everyday attendance of grand-children, which has in many cases proved to be a great challenge (Ye and He, 2008). This type of family at the same time highlights the fact that land is still of great importance to migrant families, although the income from migration is far higher than that from land (Fan, 2009). Therefore, within the context of transitional China, the high proportion of rural linear families can also be seen as a striking representation of rural transition.

Combined, the other three family types are in an absolute minority, 8.9% of the total, which reflects China's overall situation. As scholars noted from the 2000 population census, the rates of single family, joint family and one-parent family are 8.57%, 0.57% and 6.35% respectively, giving a total percentage of 15.5% (Wang, 2006).

5.3.2 Occupations, farmer types and migration population

Occupations

Table 5.7 presents the occupations of sample respondents cross-correlated with gender. For the whole sample, dedicated farmers make up the highest proportion, 32.3%, followed by migrants, 25.8%, unemployed people (including students, retirees, and kids), 23.1%, and the other minor occupations.

Table 5.7 Occupations and Gender of Sample Respondents of Hu Village (% in total)

	Gender		Total
	Male	Female	
Dedicated farmer	12.1	20.3	32.3
Part-time agricultural worker	4	1.2	5.2
Employee in local enterprise	2.6	2.2	4.8
Self-employed enterprise	3.9	2.1	6
Government official	0.8	0.1	0.9
Household wife	0	2	2
Migrant	17.8	8	25.8
Retiree	1.9	3.3	5.2
Student	7	5.6	12.6
Kid	3.4	1.9	5.3
Total	53.4	46.6	100

Source: Author's Questionnaire

Note: Dedicated farmer refers to the rural resident who works full time on agriculture without other occupations. Part-time agricultural worker refers to the rural resident who works partly on farming work and partly on other agriculture-related paid work, generally around the resident community.

Carter *et al.* (2012) conducted a rural survey covering 5 populous

provinces including Sichuan, 121 counties, 203 villages, 7317 households, and 28021 individuals, and they found that dedicated farmers represented 34% of the total rural labour forces (aged above 15). Compared with their figures, if only rural labour forces aged above 15 were counted from this sample, the rate of dedicated farmers in Hu Village is 38%, slightly higher than that found by Carter et al., indicating that Hu Village is a more agricultural village than the 203 villages in their study.

The difference among age groups is significant. As Table 5.8 shows, the level of dedicated farmers in the age group 16-30 is only 1.1%, only one fifth of the number found in age group 31-45 (5.4%), one tenth of the age group 46-60 (11.4%), and roughly one fourteenth of the elder group, 60 above. Thus, most of the farming population currently in Hu Village is people aged above 45, especially people aged above 60. This indicates a status of aging in agricultural production. By contrast, age groups 16-30 and 31-45 constitute the majority of migrants, while the people aged above 45 have only a very slight probability of taking part in migration. Interestingly, there are no people aged under 30 doing part-time agricultural work, and no people aged above 45 being employed in local enterprise. Furthermore, the middle aged people (30-60) take the most varieties of jobs, which may be due to their responsibilities to family.

Table 5.8 Occupations and Age groups of Sample Respondents of Hu Village (% in total)

	0-15	16-30	31-45	46-60	60+	Total
Dedicated farmer	0.2	1.1	5.4	11.4	14.3	32.3
Part-time agricultural worker			0.9	2.6	1.6	5.2
Employee in local enterprise		1.3	2.9	0.6		4.8
Self-employed enterprise		0.6	3.9	1.1	0.5	6
Government official			0.7	0.2		0.9
Household wife		0.7	0.6	0.6	0.1	2
Migrant		10.4	12.1	2.7	0.6	25.8
Retiree		0.7	0.4	0.5	3.6	5.2
Student	9.5	3.2				12.6
Kid	5.3					5.3
Total	15	17.9	26.8	19.6	20.7	100

Source: Author's Questionnaire

Table 5.9 clearly shows that villagers with different levels of education hold different jobs. Most of the dedicated farmers have primary education (67.4%). Most of the part-time agricultural workers are also educated to primary level (63.6%). However, most employees in local enterprise have secondary education (56.1%), and the same is found with self-employed enterprise. More than half the migrants hold secondary education (50.9%). Therefore, respondents doing agriculture-related work (full-time and part-time) are mostly limited to primary education, while respondents doing more non-farming work, like migration, working in local or self-employed enterprise, are more likely to have secondary education. The low-education of agricultural practitioners may be an obstacle to the successful promotion of new

agricultural technologies.

Table 5.9 Occupations and Education Levels of Sample Respondents of Hu Village (% within job groups)

	Education Level				
	Illiterate	Primary school	Secondary school	High school	Undergraduate
Dedicated farmer	15.2	67.4	16.3	1.1	
Part-time agricultural worker	9.1	63.6	22.7	4.5	
Employee in local enterprise		34.4	56.1	9.8	
Self-employed enterprise		35.3	56.9	7.8	
Government official		37.5	62.5		
Household wife	11.8	58.8	29.4		
Migrant	0.5	37.3	50.9	10	1.4
Retiree	31.8	45.5	15.9	6.8	
Student	1.9	53.7	25	13.9	5.6
Kid	100				

Source: Author's Questionnaire

Farmer types by farming time

It is obvious that rural residents in the case study community often do various and multiple jobs simultaneously. For instance, some migrants return at peak times for agriculture and then return to cities. The temporal dynamics of farming work has given residents great flexibility for allocating their working time and thus maximising the payoff in terms of their everyday life. According to farming time in 2011, the respondents are divided into three categories: full-time (dedicated farmer, working on farming for 12 months without

distractions from other jobs), part-time (multiple job holding farmers working partly on farming, ranging from 1 month to 11 months), non-farming (respondents did not work on farming in last 12 months). As Table 5.10 shows, it is found that, the highest proportion of the sample is the non-farming population at 45.6%, while full-time farmers are only 32.9%, and those who participated in farming for varying periods in 2011 stood at 21.5%. In total, the population who did at least some farming work only comprises 54.4% of all respondents. Further to this, of the labour force aged above 15, 38.7% had worked 12 months on farming work in 2011, while 25.3% had done some farming work, indicating that 64% of this age group undertook at least some farming in 2011. 36% of the sample labour forces had done no farming work in 2011. The overall demographic structure in terms of farming time of Hu Village accords with national averages. According to the 2012 Blue Book of China's Society, 46.6% of agricultural population has been conducting completely non-agricultural work, while only 40% are dedicated farmers without doing any other non-agricultural jobs and 13.4% are conducting part-time farming (CASS, 2011). It seems that both nationally and locally the tendency of deagriculturalisation of rural residents has occurred and has become more and more overwhelming, although most are still connected with land. A substantial proportion of rural residents cannot completely leave their land, indicating that in contemporary rural China, for most rural families, land and agricultural production are still of strategic importance for livelihoods.

Table 5.10 Farming Time of Sample Respondents of Hu Village and National Averages in 2011

	As a percentage of all sample respondents (%)	As a percentage of sample respondents aged above 15 (%)	As a percentage of national agricultural population (%)
Full-time	32.9	38.7	40
Part-time	21.5	25.3	13.4
Non-farming	45.6	36.0	46.6

Source: Author's Questionnaire; CASS, 2011.

In addition, as Figure 5.5 shows, there are differences among different age groups. In the youngest adult group 16-30, 83.1% are non-farming residents, while only 3.9% work on farming for 12 months and 13% work partly on farming, making 16.9% in total working on farming. This may be related to the finding that most of this age group are migrants as shown above. 40.2% of age group 31-45 partly worked in farming in 2011, the highest part-time farming proportion among all the groups. This is consistent with the finding that this age group is the most diversified in terms of occupations as discussed above. 61.1% of age group 46-60 worked full-time on farming in 2011 and 27.5% partly, indicating that 88.6% of this group worked on farming in 2011, almost 5 times the proportion of the youngest adult group 16-30. Lastly, 69.5% of age group 60 above did full-time farming work, while 15.8% of them did not farm at all, which is slightly higher than that of age group 46-60. This may be possibly explained by the fact that some of the elderly group, 60 and above, are retirees who are not able to do any farming work. Nonetheless, the trend is roughly clear that as residents get

older there is more likelihood for them to undertake farming work, while the younger rural residents are, the more possibility there is of them doing off-farm jobs. This finding is not contradictory with other studies about Chinese rural demography. Along with increasing industrialisation and urbanisation, increasing rural-urban migration has driven the youngest rural adults off the land to towns, cities, factories and so forth, leaving the elderly to farm.

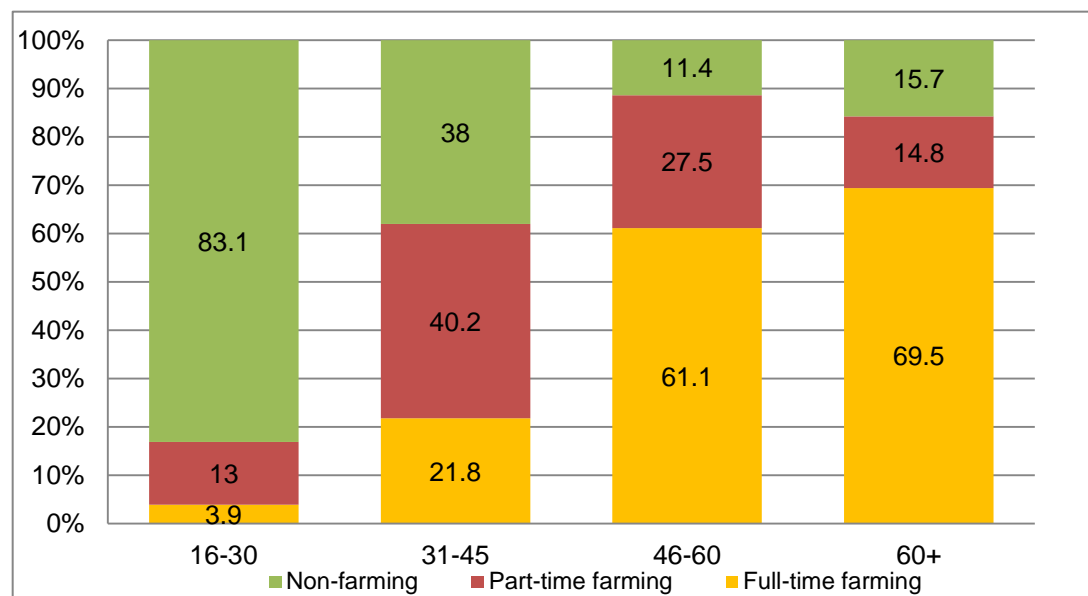


Figure 5.5 Farming Time Distribution on Different Age Groups in Hu Village in 2011

Source: Author's Questionnaire

Examining the gender division, as shown by Figure 5.6, a difference in amounts of time spent farming exists between males and females, although not in a striking way. More females than males worked full-time on agriculture in 2011 (44.7%). However, more males than females did part-time farming (29.8%) and non-farming work (47.6%), and this is probably due to more males being involved in migration and other non-farm activities as Table 5.8 shows. This may indicate an increasing feminisation in farming in which, more

and more females are undertaking most of the farming work with perhaps some assistance from males during peak times. Nonetheless, the overall proportions of both genders working on farming are fairly close, with 56.8% of females and 52.4% of males. In addition, the absolute farming male population in the sample is 239, slightly higher than females, 226. This may indicate that, although there exists a tendency of farming feminisation, the pace of the change is not so dramatic in terms of farming time. Most males did not drop farming completely, but chose a more flexible schedule to cope with livelihood diversification. Besides, if Figure 5.5 and Figure 5.6 are examined more closely, most full-time farming is concentrated in age groups 46-60 and 60 and above, and in the female group. Indeed, it appears that middle-aged females (aged 46 and above) are most likely to be dedicated to full-time farming. For the youngest age group, both genders have tended to move out of agriculture.

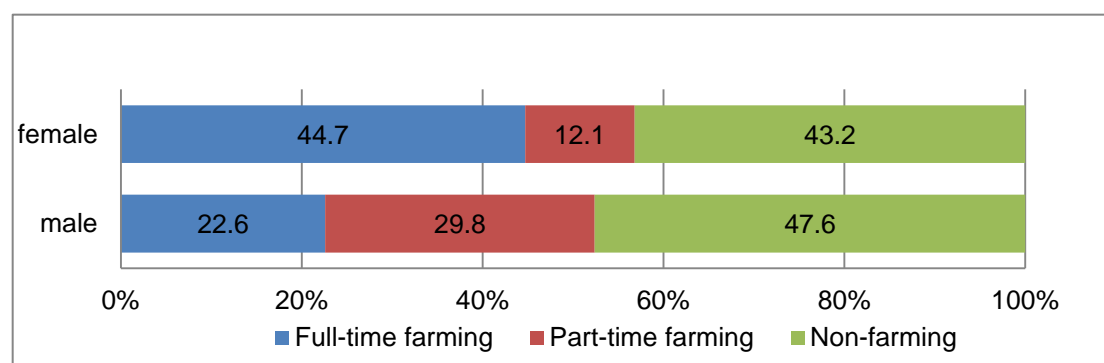


Figure 5.6 Farming Time and Gender Division of Sample Respondents of Hu Village in 2011

Source: Author's Questionnaire

Migrant population

Outmigration, which is fuelled by modernisation and urbanisation, has long driven changes to the demographic profile of rural areas around the developing world (Lynch, 2005). As demonstrated in previous chapters, rural-urban migration in China has been no less dramatic. The characteristics of rural demography may have significant implications for land-use patterns and agricultural production, as many empirical studies have shown (e.g. Taylor *et al.*, 2003; de Brauw and Rozelle, 2003). Rural-urban migrants have become such an important issue in contemporary rural China that to understand who they are is of great importance to understand the comprehensive profile of rural demography. As Table 5.11 clearly shows, migrants of Hu Village are dominated by males (68.4%), mainly aged between 16 and 45 (87%). The majority of migrants (88.4%) have secondary (51.6%) and primary school education (36.8%), and only 0.4% are illiterate. Compared with the non-migrants, it appears that rural migrants are generally from the elite of rural residents, with higher education and good physical health. These characteristics of rural migrants in Hu Village are similar to provincial trends. According to the latest National Agricultural Census in 2006, 44.8% of Sichuan rural migrants are under 30 years old. 61.7% are males and 38.3% are females. Only 0.8% are illiterate, and more than four-fifths have a primary-level education or above (Lu, 2011). Compared with national averages, according to a nationally representative survey covering 16 provinces in 2006,

it was found that 64.7% of rural migrants are males, with a mean age of 29, and 61.4% are married. Only 2.3% are illiterate, and 83.8% of the sample have a primary school or higher level of education (Hu *et al.*, 2011). These characteristics of rural migrants described above are also similar to the findings of more previous studies on China's rural migrants (for example, Zhao, 1999; Lei and Lu, 2005; Maëlys *et al.*, 2009).

Table 5.11 General Characteristics of Migrants of Sample Respondents of Hu Village in 2011 (%)

	Migrant status (% in each group)		Total
	no	yes	
Gender			
Male	48	68.6	53.4
Female	52	31.4	46.6
Age ranges			
0-15	20	0.4	14.9
16-30	10	40.8	18
31-45	20	46.2	26.8
46-60	22.8	10.3	19.6
60+	27.3	2.2	20.7
Education			
Illiterate	16.8	0.4	12.5
Primary school	53.9	36.8	49.4
Secondary school	23.5	51.6	30.8
High school	4.9	9.9	6.2
Undergraduate	1.0	1.3	1.1
Marital status			
Married	68.6	78	71.1
Unmarried	26.8	19.7	24.9
Divorced	0.2	1.3	0.5
Widowed	4.4	0.9	3.5
Farming participation			
Full-time farming	44.5	0	32.9
Part-time farming	19	26.9	21.5
Non-farming	36.5	73.1	45.6
Total	73.9	26.1	100

Source: Author's questionnaire

For the sample migrants, most of them (73.1%) did not take part in farming work in 2011, which may indicate that they stay almost all the time on jobs in remote cities, though they may return Hu Village for festival or other occasions. Although as Table 5.11 shows, 26.9% of Hu Village sample migrants still did part-time farming in 2011, so it is undeniable that the more physically capable and educated rural residents are migrating between villages and cities, which may have considerable influence on land use or agricultural production in villages of origin.

5.4 Conclusion

To fulfill the first objective of this research, this chapter presents the demographic profile of the case study village through locating it within both national and regional transitional contexts. The demography of Hu Village has both similarities to national and regional averages, and specialties due to its specific geography, socio-economy and history. Through examining Hu Village's demography based on official village population data and the survey data collected by this project, several general demographic characteristics of Hu Village can be identified:

- Consistent with regional and national demographic changes, Hu Village faces an aging tendency amongst the population with a substantial proportion of elderly people compared to that of young people.

- The gender ratio of Hu Village is fairly balanced compared with both regional and national high imbalance in this regard.
- Within a region which is recognised for under performance in terms of education, the overall educational levels of Hu Village are even lower. Generally, the youngest males are more likely to possess higher education, whereas elderly females are more likely to have lower levels of education, or to be illiterate.
- Regarding marital status, there is a high proportion of married people in Hu Village, but marriage amongst young people is less prevalent and adult males are more likely to be unmarried than females.
- Hu Village families are dominated by the nuclear and linear family structures. The existence of massive linear families is driven by land requirements, population changes, institutional initiatives and high levels of rural-urban migration.
- As for occupations, migration and dedicated farmers are the two major job holdings for Hu Village residents, with other small proportions going to massive varieties of non-farm activities. The young and males, those with high education, are more likely to take part in migration and other non-farm jobs. The elderly and females with poorer education are more likely to do farming work.
- Although there is a tendency of deagriculturalisation judging from the occupations, land and agricultural production is still strategically

important to most rural families. Part-time farming may increase since the multiple-job holding tendency of rural residents continues expanding in the future.

- Most migrants are younger people with good physical health and higher education, leaving the elderly, females and children behind in the village. This type of farming population may influence land-use patterns.

Broadly, it is found that the population of Hu Village is not solely an agricultural population but is more mixed, with both agricultural and non-agricultural residents. Obviously, the static Hukou registration deters accurate representations of rural demography at a highly mobile time. Under the dramatic transformation of the Chinese economy and society, rural space has been opened to the outside at an unprecedented scale, leading to high mobility patterns for rural residents. More and more rural residents scatter all around the county, the province or the whole country. The village can never be the boundary for residents. In addition to the spatial heterogeneity of rural residents, temporal dynamics is another important characteristic of contemporary rural populations. More and more rural residents are commuting between urban destinations and rural hometowns, between factories or modern services and agricultural production.

These demographic characteristics of Hu Village are tightly interconnected with macro socio-economic transformations. Transitional China

has long prioritised industrialisation and urbanisation, providing massive opportunities for rural residents and leading to an overwhelming trend of deagriculturalisation, pushing the most energetic and ambitious people out of land, agriculture and villages. The farming population has been dramatically changed. At the same time, as an ongoing transition society, many relevant institutions and policies on land tenure and social security are still incomplete, so that most rural residents still greatly rely on land. When highlighting the side of deagriculturalisation, migration and urbanisation, the other side of strong attachment to land cannot be underestimated. To better understand the real situation of agricultural production in contemporary China, both sides need to be carefully and fairly examined. Therefore, as long as the institutional barriers for migration remain, the part-time farming population will continue to exist, or even to expand with increasing young people joining in migration or other non-farm jobs.

Chapter 6 Economic Drivers of Agricultural Production in Transitional China: the Case of Hu Village

6.1 Introduction

The last chapter has demonstrated the demographic characteristics of contemporary Hu Village, which to a certain degree also represent an epitome of rural China. To fulfill the second objective of this project, the ensuing chapter will explore the economic drivers of agricultural production, or more specifically, identifying underlying economic factors and showing how they are influencing agricultural production at the micro-level of the household. Fundamentally, the process of agricultural production is constituted by both physical elements (e.g. climate conditions, soil characteristics, biotic resources and pollutants) and anthropogenic factors (e.g. socio-economic and political factors). Either part can influence the performance of agricultural production significantly (Hoang, 2013). With respect to economic factors, as many researchers have revealed, agricultural production has been driven by international trade and globalising agricultural markets at the global level, and at the national level by per capita income growth, urbanisation and commercialisation/market chains (Hazell and Wood, 2008). Agricultural land-use has also been influenced by drivers like urbanisation, market

development and so on (Lambin *et al.*, 2001). China's agriculture has been primarily driven by economic growth, urbanisation, agricultural markets, transportation infrastructure and irrigation, and subsidy incentives (Huang *et al.*, 2010), as well as non-agricultural sector development, per capita income growth and consumption pattern changes (Huang, 2010), all of which together have significantly changed various aspects of China's agriculture (e.g. output growth, crop pattern, organisation and operation mode). If translating these macro-level economic forces into the local level, into rural communities, rural households or even individual farmers, key characteristics can be identified in terms of: the changing agricultural demographic structure (driven by increasing industrialisation and urbanisation in China's case as detailed in Chapter 5); economic diversification of rural households (non-farm economic opportunities); and rural community infrastructure and market access (including agricultural input and output markets). These can be seen as local economic drivers for agricultural production in a global assessment (Hazell and Wood, 2008), or more particularly for developing countries (Rigg, 1998; Reardon, 2000; Davis *et al.*, 2009; Haggblade *et al.*, 2010).

For transitional China, the dramatic socio-economic transformation of the rural space has primarily surrounded the process of agricultural adjustments (namely the substantial reduction in employment in agriculture) as experienced by many other developing countries (Johnson, 2000). Furthermore, China's agricultural adjustment has synchronised with the

process of rural economic diversification, reflecting at the household level namely in the diversification of livelihoods. Rural income sources have greatly expanded and become more varied, propelled by a huge amount of non-farm, especially migrant, opportunities (Huang, 2010). As the previous chapter revealed, the continuous de-population of the agricultural sector may be just a representation of the changing Chinese rural economy. Besides, rural markets, like agricultural input and output markets have been greatly developed to optimise the allocation of agricultural resources. Farmers obtain agricultural technological inputs (e.g. seeds, chemical fertilizers and pesticides, and machines) from input markets, and sell agricultural products to markets. Additionally, to assist agricultural development and enhance rural households' income, the Chinese government has also initiated numerous economic projects and policies. Therefore, as discussed above, the drivers that affect agricultural production at the local level are all prominent and prevailing in rural China, and this chapter, based on the case of Hu Village, examines economic diversification of rural households, agricultural markets and government rural economic policies and projects specifically.

There are five sections in this chapter. Section 6.2 examines how economic diversification of rural households changes or influences agricultural production on aspects of productivity, agricultural structure and technology use. Section 6.3 investigates agricultural markets, including how both agricultural input and output markets are functioning on agricultural production

in Hu Village. Section 6.4 analyses influences on government economic policies, like agricultural subsidies and modern agricultural development projects, and considers what effect these may have on Hu Village agriculture. Section 6.5 concludes this chapter.

6.2 Economic diversification and agricultural production

It has been widely accepted that rural households, whether in developed or in developing countries, have long been economically diversified. As many researchers have revealed, livelihood diversification has been the most notable characteristic of rural economies in developing countries (Bernstein, 1992; Ellis, 1998; Rigg *et al.*, 2012). For rural households in China, diversification has been no less dramatic, as various terminologies for contemporary Chinese rural households or farmers keep emerging, for instance, “semi-worker, semi-cultivator” by Philip Huang (2006), “multiple job holdings” by Ploeg and Ye (2010), and “part-time farmer” by Xiang and Han (2005). The increasingly diversified livelihoods mean re-allocation of labour forces spatially and temporally (Jonson, 2000), which inevitably would influence the labour inputs and arrangements in respect of agriculture. This section will first present the current state of household economic diversification in Hu Village, and then further explore the effects of diversified rural livelihoods on the performance of agricultural production, as measured

by agricultural productivity, agricultural structure and agricultural technology usage.

6.2.1 Household income structure

Chapter 5 has shown that the residents of Hu Village are undertaking diverse occupations, but how these varied jobs contribute to rural households economically in terms of income has not been discussed. To remain consistent with national statistics, two sets of household income are calculated as Table 6.1 shows. For Hu Village in 2011, the per capita total household income is 11042 Yuan, substantially higher than the provincial average and also higher than the national average. However, in comparison with eastern advanced regions of China like Shandong Province, with 12146 Yuan per capita, Hu Village is in a medium position. The per capita household cash income of sample households in 2011 is 9978 Yuan, comparing with Sichuan province, 7249 Yuan, China, 8639 Yuan (NBSC, 2012). Thus, Hu Village is well above the national and regional average in terms of household income.

Table 6.1 Household Income Distribution of Sample Households of Hu Village in 2011

	Total Household Income (Yuan)	% of Total Household Income	Household Cash Income (Yuan)	% of Total Household Cash Income
Agricultural income	16323	38.9	11097	29.3
<i>Crops</i>	5665	13.5	1591	4.2
Rice	2602	6.2	379	1.0
Rape	1175	2.8	568	1.5
Corn	420	1.0	-	-
Sweet potato	672	1.6	-	-
Citrus	797	1.9	644	1.7
<i>Livestock</i>	10658	25.4	9506	25.1
Pig	8057	19.2	7726	20.4
Cattle	42	0.1	76	0.2
Rabbit	210	0.5	114	0.3
Chicken	462	1.1	38	0.1
Duck	336	0.8	-	-
Silkworm	1301	3.1	1326	3.5
Fish	252	0.6	227	0.6
Non-agricultural income	25638	61.1	26777	70.7
Local non-farm business and employment	8518	20.3	9241	24.6
Migration remittance	17120	40.8	17460	46.1
Total	41961	100	37874	100
Per capita of Hu Village in 2011	11042		9967	
Per capita of Sichuan in 2011	8656		7249	
Per capita of China in 2011	-		8639	

Source: Author questionnaire and NBSC (2012)

Note: Agricultural income (or farm income) refers to all the income inflows derived from the production of crops, livestock, forest or fish products from natural resources. Non-agriculture income (or non-farm income) refers to all the income inflows derived from all the other income sources, part-time local labouring, wage or self-employed works, governmental jobs and migration and other non-farm work. Total household income includes all the agricultural output (calculated by multiplying output by market price of the year) and all non-agricultural income. Total household cash income includes all the cash made from selling agricultural output by sample households and all the non-agricultural income. There is also a small amount of subsidy income (about 1500 Yuan per ha) from government for every household, which is not included here.

Examining further the income structure for Hu Village in 2011, agricultural income occupies 38.9% of total household income, with 61.1% non-agricultural income. Comparing globally, Reardon and his colleagues calculated from 54 rural income surveys from the 1990s and 2000s and found that for the whole developing world the non-farm share of rural income occupies about 35 - 50% in various continents, with Asia (not including China) holding the largest proportion, 51% (Reardon *et al.*, 2007). Therefore, in broader contexts, Hu Village is quite a non-farm-dominated community. More strikingly, with regard to cash income of Hu Village households, only 29.3% comes from agriculture while non-agricultural sources contribute up to 70.7%.

Within the high non-farm income share of Hu Village, migration remittance contributes most heavily, 40.8% out of 61.1%, or 46.1% out of 70.7%. Local non-farm business and employment only take a minor proportion, 20.3% of total household income or 24.6% of total household cash income. Clearly, migration is the most significant income generating activity for Hu Village households, which explains why Hu Village has a much higher non-farm share of rural income in comparison with the average for the whole developing world. In contrast to Hu Village, transfers and remittances only contribute 11% of Asian rural income on average, with local non-farm business and employment being up to 40% (Reardon *et al.*, 2007). Rural-urban migration features heavily in Hu Village, as revealed in previous chapters, and a large proportion of migrants (70%) from Hu Village undertake

construction work, driven by the soaring Chinese real estate industry in recent years. The wage of construction workers is about 150 Yuan to 200 Yuan per day, and for skilled ones, even up to 300 Yuan to 400 Yuan per day, so that the monthly income of migrant construction workers may be 3000 Yuan with only 20 working days. This is substantially higher than national average migrant monthly wage, which was 2049 Yuan in 2011 (NBSC, 2012). Attracted by these high wages, many young people, many even under 18 and dropping out of school, follow their fathers to conduct construction work around Chengdu or other cities and hope to become skilled workers.

Another substantial non-agricultural income source in Hu Village is self-employed enterprises, contributing 13% to total household cash income. This can be explained by various small private businesses in Hu Village: 5 retail departments, 2 barbershops, 4 chemical fertilizer retail shops, 2 seeds and pesticides shops, 3 commercial feedstuff shops and 5 tea bars.

Within agricultural production of Hu Village, cash earned from crops only contributes 4.2% to the total household cash income, while livestock cash income represents 25.1%, almost six times the amount from crops. From these two sets of data, it is clear that since cash income from sold agricultural produce only represents a small part of total agricultural output (1591 Yuan out of 5665 Yuan, namely, 27.4%), farming in Hu Village is still largely for subsistence. The primary reason lies in the small farm land size per capita. In Hu Village, each resident is distributed roughly 0.046-0.053 ha paddy land

(with slight differences among 8 groups), and if all is cultivated by rice, only about 400kg rice is produced for one person for a whole year and almost no surplus is left. Additionally, due to the land tenure system, new births and married-in wives after 1998¹⁰ were not entitled to land, which makes population/land pressure more serious. As many farmers said in interview, if all their family members stay home, the grain produced from their own land could not sustain themselves. Therefore, the land tenure and population pressure in this region is the main cause for the dominance of subsistence agriculture.

Citrus, as the most important cash crop in Hu Village, and in Qingshen County, used to be a major source of household income, but the prices in recent years have been so low that most citrus farmers have stopped attending and managing their citrus trees. And within the livestock cash income sector, pig farming is the most prominent activity contributing most of the livestock income (20.4%). One thing worthy to mention here is that pig farming is very risky in China, given very unstable pig prices and various swine diseases. In 2011, the pig price was very favourable and most pig farmers made a good profit from pig raising. In normal years, the proportion of pig income may be less. Chicken and ducks in Hu Village are primarily for self-consumption so that they only occupy a very small part of household income.

¹⁰ From 1998, central government issued the second land readjustment, making farmers' land tenure unchanged for 30 years.

Seeing household income among sample households as Figure 6.1 shows, 127 households (56.4%) receive most of their income from non-agricultural sources (located on the right side of the dotted line), and this is modestly more than the share of households dominated by agricultural income (located in left side of the dotted line), 98 out of 225, namely 43.6%. Furthermore, 34 households have no non-agricultural income, while only 3 households did not undertake agricultural production in 2011, indicating that 98.7% of sample households still conduct agricultural production and 85% participate in non-farm occupations. It also clearly implies that although most rural households progressively rely on non-agricultural income, agriculture does remain critically important to rural livelihoods in China. 188 households (83.6%) receive incomes both from agricultural and non-agricultural sources. In another words, they are economically diversified households. Comparatively, in another hilly village in northern China, Ploeg and Ye (2010) observed that in a sample of 52 households, 77% obtained most income from non-agrarian activities in 2008, which is probably due to the much less fertile land and hostile agroclimatic conditions in that area. Similarly, in their observation, 81% households are engaged in multiple job holding. Nonetheless, the nature of diversified households slightly varies in different locations of China, as Deininger *et al.* (2012) observed from a national sample (including Sichuan) in 2008, 64% are economically diversified households, with slight differences among sample provinces, for instance, Sichuan, 67.5%,

Hebei, 62.4%, Shaanxi, 71%. Behind these figures, it is evident that for Chinese rural households, diversification has become a prevailing and dominant strategy. This is also echoed by studies in other developing countries. Using data from 16 developing countries (not including China), Davis *et al.* (2010) found that more than 80% of sample households are engaged in at least one non-farm activity.

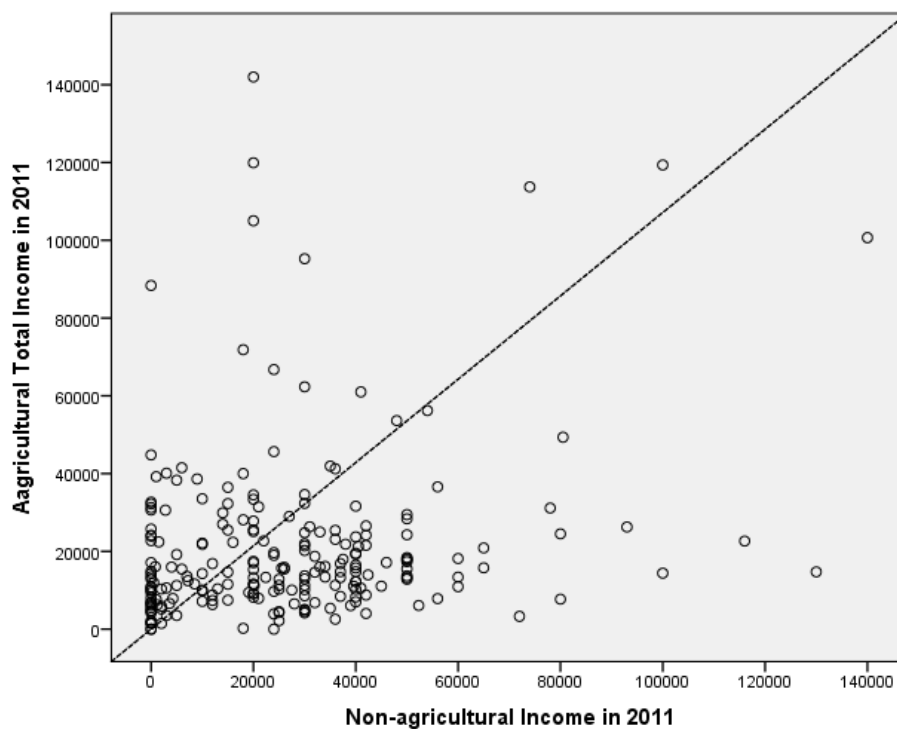


Figure 6.1 Household Income Sources of Sample Households in 2011 (Yuan)

Source: Author questionnaire

With respect to income quantity, most households' non-agricultural income averages between 20,000 Yuan and 50,000 Yuan (117 households, 52%), with agricultural income of under 20,000 Yuan (146 households, 65%), indicating that non-agricultural occupations are more lucrative and stable than agriculture. For the cash income source distribution as Figure 6.2 shows, cash

earning from agriculture is strikingly minor compared with the substantially higher proportion of non-agricultural income. This gives the notion of comparatively low benefits from agricultural production. Nonetheless, referring back to Figure 6.1, 9 households obtain non-agricultural income above 80,000 Yuan and, notably, 8 households have agricultural income above 80,000 Yuan, while only 3 households have both high non-agricultural income and high agricultural income, which may imply two conclusions. Firstly, agricultural production can make as much profit as non-agricultural activities do. Second, most high income households (14 out of 17) tend to specialise on agricultural production or non-agricultural occupations, rather than diversifying evenly within both. This also partly accords with the cross-country analysis of Davis *et al.* (2010), which concluded that rich households tend to specialise, but they are “more likely to specialise in non-agricultural wages and less likely to specialise in farming” (Davis *et al.*, 2010:57). Another explanation could be that 8 higher agricultural income households of Hu Village all specialise in pig farming and, as discussed earlier, pig prices were very favourable in 2011.

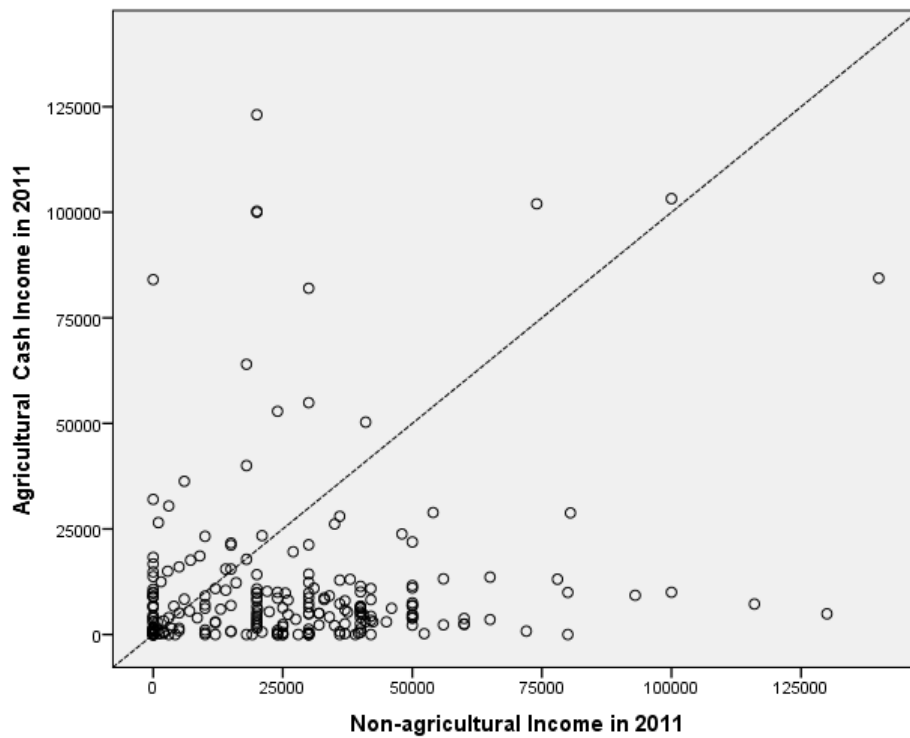


Figure 6.2 household Cash Income Sources of Sample Households in 2011 (Yuan)

Source: Author questionnaire

More specifically, rural households are often classified into several subcategories according to different perspectives on diversification. For instance, Démurger *et al.* (2010) grouped rural households by their diversification strategies into four types: no diversification, on-farm diversification, local off-farm diversification and migration. To measure the diversification (and specialisation) degree of rural households in 16 developing countries, Davis *et al.* (2010:56) defined “a household as specialised if it receives more than 75% of its income from a single source and diversified if no single source is greater than that amount”. As they further pointed out, the threshold of how much percentage of income from a single source is changeable, but the broad patterns remain. Joining together non-agricultural jobs as an indicator of specialisation is also possible, and this

would increase the share of households defined as specialised. Bearing these comments in mind, and considering the purpose of this research, the sample households of Hu Village in terms of economic diversification can be basically grouped into four categories:

- dedicated farming households where agricultural income accounts for more than 80% of total household income;
- I Part-time households: with agricultural income constituting between 50% and 80%;
- II Part-time households: with agricultural income constituting between 20% and 50%;
- Non-farming households: defined as rural households with agricultural income lower than 20%.

The threshold of specialisation used here is 80% and all the non-agricultural income sources are joined together to fit the research purpose. The degree of part-time farming among households is further differentiated by the middle line of 50% agricultural income. This criterion is consistent with that of China's national statistics, and is thus convenient for purposes of comparison (see Table 6.2). Furthermore, to explore the relationship between household part-time farming, household total income, and household job holding situation, the household total income quartile and household job diversification types are listed in Table 6.2.

Table 6.2 Household Types Classified by Household Income Diversification of Sample Households in Hu Village

	Dedicated farming households	I Part-time farming households	II Part-time farming households	Non-farming households
% of sample households	21.3	21.3	39.2	18.2
Sichuan in 2008 (%)	17.9	21.7	49.8	10.6
Sichuan in 2000 (%)	22.6	36.4	38.7	2.3
Sichuan in 1996 (%)	28.8	51.7	18.4	1.1
Mean of household Income (Yuan)	27168	52075	54032	54671
Household total income quartile (%)				
Quartile I	66.0	25.0	10.2	8.5
Quartile II	14.9	16.7	28.6	40.6
Quartile III	10.6	29.2	31.6	21.9
Quartile IV	8.5	29.2	29.6	29.0
Household job diversification (%)				
No diversification	70.2	0	0	0
Only local non-farm activities	25.5	37.5	22.4	30.6
Only migration	4.3	35.4	46.9	37.5
Both local non-farm and migration	0	27.1	30.6	31.9

Source: Author Questionnaire and Sichuan data from Liao (2012).

Note: For household job diversification, “no diversification” refers to households without any non-farm jobs. “Only local non-farm activities” refers to households exclusively undertaking non-farm jobs in local area. “Only migration” includes households with only migrant members. “Both local non-farm and migration” refers to households with members undertaking both local non-farm and migration activities.

As Table 6.2 shows, for the 225 sample households, only 21.3% are dedicated farming households. Most are part-time farming households

(60.5%), out of which most are households with non-agricultural income of more than 50%. 41 households (18.2%) specialise in non-agricultural income. Regardless of the specific definition threshold, the overall pattern of Hu Village households can also be found in many other developing countries as Davis *et al.* (2010) argued. It is more striking to note the income gaps among the four household types, as part-time farming and non-farming households receive around two times more income than dedicated farming households do, with non-farming households earning the most. The correlation between higher household income and higher specialisation in non-agricultural occupations has been confirmed in other parts of China (Ploeg and Ye, 2010; Démurger *et al.*, 2010) and also in other parts of the developing world (Ellis and Freeman, 2004; Davis *et al.*, 2010).

Table 6.2 shows that the basic structure of Hu Village household types is roughly consistent with the average across Sichuan. Historically, a trend has been identified at the provincial level that numbers of dedicated farming households and I part-time farming households have kept declining, with II part-time farming and non-farming households increasing in prevalence. This indicates that in terms of income sources, rural households have kept moving towards further reliance on non-farm activities. Therefore, non-farm jobs have been and may continue to be of great importance to the economic status of rural households (Liao, 2012). Nonetheless, seeing the share of part-time farming households as a whole, it has largely remained above 70% during the

twelve years from 1996 to 2008, although the shares of specialised households have varied. Therefore, economic diversification of rural households in Sichuan has become predominant, which is a process also greatly echoed in other developing countries. Davis *et al.* (2010:61) concluded after reviewing 16 countries' data, "diversification, not specialisation, is the norm, although most countries show significant levels of household specialisation in non-agricultural activities as well". As most non-farm jobs are found in urban areas, in industries and service sectors, the fortunes of more and more rural households have become tightly bound with macro-economic conditions. It is safe to predict that non-farm income has become established as the engine for increasing rural incomes, whether for China or more particularly for Sichuan.

Considering household income levels and employment conditions, the picture is a little more complex. Not surprisingly, dedicated farming households mostly feature in the lowest income quartile (66%) and are mostly without any non-farm jobs (70.2%). More than half of diversified households (I part-time and II part-time households) belong to income quartile III and IV, and their occupations rely on local non-farm activities or migration or both. Especially, migration is significant for both types of diversified households, II part-time (77.5%) and I part-time (62.5%). Nonetheless, local non-farm activities also play a significant role, especially for I part-time farming (64.6%). Interestingly, non-farming households occupy the least percentage of quartile I

(8.5%), with many belonging to income quartile II (40%) and only 29% to quartile IV. Given that non-farming households have the highest average household total income, this indicates a considerable income gap within non-farming households. This is understandable in Hu Village, as some non-farming households receive very high income (often more than 20 thousand Yuan) for doing businesses. The complex relationships between income and household specialisation have also been found in other countries (Davis *et al.*, 2010). In terms of occupations, non-farming households seem to specialise equally in local non-farm activities, migration or both, implying that local non-farm activities can also provide good opportunities for households to make considerable income. Overall, crosstabulations among the three household classifications indicate that with such diverse and dynamic rural households, any single classification is not able to capture the complex picture.

So far it can be seen that rural households are not only taking advantage of non-agricultural activities, but that they are also increasingly relying on them. In China, the fundamental reality of a very large population with relatively small amounts of land, abundant surpluses of rural labour forces, a fast pace of industrialisation and urbanisation and the land tenure system all contribute to the tremendous phenomenon of diversification of rural households (Xiang and Han, 2005). Additionally, as argued by researchers, the economic diversification of rural households virtually signifies a kind of integration between the specialisation of labour at the individual level and the

professional diversification of livelihoods at the household level (Xiang and Han, 2005; Tong and Wen, 2010). Therefore, with removing more and more adults into various non-farm sectors and greatly enhancing labour efficiency in terms of income, the amount of labour and time left for farming may have reduced considerably. The spatial and temporal labour restructuring driven by economic diversification of rural households may bring substantial implications for agricultural production as many researchers have argued (Jonson, 2000; van den Berg, 2007). The following three subsections will specifically explore the linkages between economic diversification and agricultural production in terms of agricultural productivity, agricultural structure and technology usage.

6.2.2 Economic diversification and agricultural productivity

As reviewed in Chapter 2, literature on the linkages between economic diversification of rural households and agriculture has been primarily focused on the side of agriculture as a determinant of livelihood diversification, while the impacts of non-farm activities on agricultural production has received little attention (Davis *et al.*, 2009). Even within the literature on the later issue, efforts have been made in respect of selected aspects of agriculture, especially on whether non-farm income enhances agricultural output value or income through, for example, releasing farmers' credit constraints (Evans and Ngau (1991) for Kenya; de Janvery *et al.* (2005) and Huang *et al.* (2009) for China; Oseni and Winters (2009) for Nigeria; Kilic *et al.* (2009) for Albania and

Hertz (2009) for Bulgaria. This research argues that the simplified model of “non-farm income raising farming capital input and thus increasing farm revenue” exclusively focuses on cash flows between the two sectors and cannot capture the complex picture of the interactions between economic diversification of rural households and various aspects of agriculture. Therefore, this research, drawing on quantitative and qualitative data of Hu Village, will present a more comprehensive picture on the impacts of economic diversification of rural households on agriculture through breaking agricultural production down into three aspects: agricultural productivity, agricultural structure (crop pattern, diversification and so on), and the production process (technology input and labour). Some researchers have analysed one or two of them (e.g. Ellis and Freeman, 2004 on crop productivity in four African countries; Huang *et al.*, 2009 on fruit cultivation in China). This section will first examine how the progressive economic diversification of China’s rural households influences agricultural productivity.

Before specifically exploring crop productivity variation in different levels of economically diversified households, it is essential to examine what position Hu Village crop productivities hold in broader backgrounds through a simple comparison with provincial and national averages for 2011. It can be seen from Table 6.3 that all the crop productivities of Hu Village are well between provincial and national averages, with different crops holding different specific positions. Rice productivity is almost equal to the national

average, but is well below the provincial average, while rape productivity is much higher than the national average but slightly lower than the provincial average. The weather and soil type of Sichuan are not perfect for corn, so the productivity for this crop is well below the national average.

Most studies on linkages between rural economic diversification and crop productivity at the household level group households primarily by household income. For example, Evans and Ngau (1991) and Ellis and Freeman (2004) compared crop productivities according only to household income quartiles, which is only one indicator of household economic conditions and may easily omit other important aspects of households. This research adopts a multiple classification strategy to compare crop productivity variations among households. Davis *et al.* (2009), Evan and Ngau (1991) and Reardon *et al.* (1994) argued that the degree of rural household diversification, household total income magnitude, non-agricultural income magnitude, and labour diversification all may influence agriculture production. Although these four aspects often correlate with each other, the relationships are varied and not straightforward. For instance, diversified households are not necessarily richer than specialised households (Davis *et al.*, 2009). Therefore to comprehensively understand the productivity variation among rural households, four different group standards are used here. To compare the difference among multiple groups, the Kruskal Wallis test was run to test statistical significance to a level of 0.05 as Table 6.3 shows.

Table 6.3 Crop Productivity Variation in Different Household Types in 2011

	Rice (kg/ha)	Rape (kg/ha)	Corn (kg/ha)	Citrus (kg/ha)	Gross value of crops (Yuan/ha)
Productivity of Hu Village in 2011	6750	2160	5445	26235	14955
Productivity of Sichuan in 2011	7605	2220	5145	-	-
Productivity of China in 2011	6690	1830	5745	-	-
<i>Household income diversification level</i>					
Dedicated farming	6720	2100	5190	31470	14460
I part-time farming	6795	2190	5565	27630	15555
II part-time farming	6765	2160	5430	25230	14325
Non-farming	6615	2175	5700	24990	15885
<i>p</i> -value	0.973	0.892	0.739	0.322	0.237
<i>Household by job diversification</i>					
No diversification	6765	2115	5340	30465	13905
Only local non-farm activities	6900	2160	5490	26085	16035
Only migration	6660	2145	5535	24690	14520
Both local non-farm and migration	6705	2145	5460	29955	15150
<i>p</i> -value	0.512	0.557	0.974	0.123	0.638
<i>Household total income quartile</i>					
Quartile I	6555	2070	4860	29010	14025
Quartile II	6615	2160	5415	25845	15465
Quartile III	6810	2085	5805	22125	15750
Quartile IV	7005	2190	5655	27900	15840
<i>p</i> -value	0.017	0.262	0.107	0.370	0.103
<i>Household non-agricultural income quartile</i>					
Quartile I	6735	2055	5250	29820	14460
Quartile II	6615	2205	5175	24495	15015
Quartile III	6765	2115	5760	27735	15165
Quartile IV	6900	2130	5655	26505	15195
<i>p</i> -value	0.296	0.469	0.379	0.670	0.685

Source: Author questionnaire and national and provincial data calculated from NBSC (2012).

Note: One-way ANOVA is a sound test to compare group means but it requires normal

distribution of data. Through normality test, most data in this research was found not to have normal distribution patterns. Therefore, the Kruskal Wallis test is used here which does not require normal distribution. Gross value of crops is calculated by all the agricultural output value, divided by land sown area.

Table 6.3 shows that different crops perform differently for different groups of households. For the two most important crops, rice and rape, there are no significant yield gaps in all four classification groups, with the largest gap being 450 kg/ha of rice between household total income quartile I and IV. Especially for rape, the largest gap is only 150 kg/ha between household non-agricultural income quartile I and quartile II. Interestingly, for both rice and rape, households specialised on farming (whether by income level or job diversification) are less productive than diversified households. With respect to income magnitude, it seems that generally households with higher total income and non-agricultural income are more productive than households with the lower two types of incomes. However, there is no statistical significance of group differences between rice and rape productivity among all groups, except rice productivity by household total income quartile ($p=0.017$), indicating that wealthier households are consistently more productive than poorer households. This is understandable in the case of Hu Village, because rice is the staple food for most households, and richer households may invest more material inputs to guarantee the production of rice.

For corn and citrus, the yield gaps among households are relatively larger than rice and rape, with the largest corn yield gap of 795 kg/ha between household total income quartile I and IV, and the largest citrus yield gap of

6885 kg/ha, between household total income quartile I and III. This probably can be explained by the fact that their cultivation is more casual than rice and rape in Hu Village. For example, corn is often cultivated in different conditions, some in dry upland, some in fertile paddy field and some intercropped with fruit trees. As mentioned in previous chapters, due to very unfavourable prices in recent years, citrus has been less intensively managed by Hu villagers, and the input intensity varies greatly among households. Table 6.3 shows, for corn production, households specialised in farming (whether by income level or job diversification) again are not as productive as diversified households, and households with a larger magnitude of total household income and non-agricultural income seem to be more productive than households with smaller magnitudes of the two types of incomes. While citrus productivity does not follow the route of the other three crops, with households specialised on farming and less income producing more citrus than diversified and richer households doing. This can be explained by the fact that farming-based, and often poor, households usually keep attending citrus trees even in these unfavourable years, as they have relatively enough labour and time. This is also echoed by the research of Huang *et al.* (2009) regarding off-farm employment and fruit production in Shandong Province of China, and the finding that households with off-farm working labourers tend to have a lower likelihood and intensity of fruit production compared with households without off-farm income streams. Be that as it may, there is still no statistically

significant difference between corn and citrus among all types of household groups (all the p-values >0.05).

So far, for individual crop productivities in Hu Village, two main observations can be drawn. First for rice and rape, there is no significant productivity gap among households grouped by various standards, and the productivity levels of most households are statistically close. Second, although without significant variational disparity, occupationally diversified and richer households tend to be slightly more productive than households predominated by farming and with less income. This may be related to the fact that dedicated farming and poor households are mostly old families, or old singles who own small areas of land. Such households produce mainly for self-consumption and in the producing process often invest less inputs than other households do. This is to some degree consistent with the findings of de Janvry *et al.* (2005) in China that participation in non-farm activities has a positive spillover effect on household farm production.

To further examine the overall crop productivity in terms of value as many researchers have done (Evans and Ngau, 1991; Ellis and Freeman, 2004; Lin and Deng, 2012), gross crop revenue per ha is also calculated as the last column of Table 6.3 shows. Without a significant gap, diversified households again tended to be more productive than households specialised on farming. Research on crop productivity in Hubei Province of China by Xia and Luo (2012) presents similar findings, namely that land productivities

among households with different degrees of income diversification are quite close and without statistically significant differences. Furthermore, households with higher total income tend to have higher gross crop productivity which seems consistent with an observation from four African countries (Ellis and Freeman 2004), although in the African cases, the productivity gaps among different quartiles (the highest and the lowest ratio more than 3) are much higher than that of Hu Village (highest and lowest ratio only 1.1), indicating that in Hu Village, the overall productivity level is relatively close among different income quartiles. The non-agricultural income quartile household group shows a similar trend, that households with higher non-agricultural income tend to be more productive in terms of gross crop revenue per unit. Through statistical testing, again, gross crop revenue per land unit of Hu Village is not significantly different among various households.

Ultimately, whether measured by individual crops or for gross crop revenue, agricultural productivity of Hu Village households, diversified or specialised, rich or poor, does not differ to the extent of statistical significance. This indicates that although economic diversification of rural households diverts a great deal of household labour into non-agricultural occupations, it also, instead of negatively influencing agricultural productivity, has actually maintained statistically equal farming productivity to that of households solely specialised on land. Although agricultural performance is greatly influenced by natural conditions, in a region with common climatic and geographical

features, it is human management that often plays a deterministic role in levels of productivity. Given no statistically significant variance in farm productivity levels in Hu Village, it is necessary to consider if this is due to similar management approaches or input levels among various households. Taking rice and rape, the two most important crops, as examples, farming inputs among different types of households are compared and shown in Table 6.4 and Table 6.5 may give an explanation about these relationships. The input variables mainly include two aspects, farming labour characteristics and material inputs per unit of land. To accurately record the amount of labour input per unit of land is unrealistic in actual research, so the comparison uses two qualitative features (age and education) of full-time farming labourers within every household as the indicator of labour input. Additionally during fieldwork, the author found that many Hu Village farmers used manure to fertilize their land and the usage intensity of different households varied based on labour conditions and manure accessibility. Local farmers use “rounds” to measure manure usage intensity, for which one round means carrying manure to apply on the target land once. Therefore, manure usage intensity to some degree implies both material and labour input. Lastly, irrigation of Hu Village (given the fact that it is the most hilly area of southwest China) is provided for all households and controlled by government, farmers just need to hand in 30 Yuan per capita in irrigation fees, so irrigation is not listed in the comparison. To examine the statistical significance of mean difference, the Kruskal Wallis

test was run at the significance level of 0.05.

Table 6.4 Farming Labour and Material Inputs among Rice Households of Hu Village in 2011

Rice households	Age of full-time farming labour (year)	Education of full-time farming labour (year)	Seed (Yuan/ha)	Chemical fertilizers (Yuan/ha)	Pesticides and herbicides (Yuan/ha)	Manure usage (frequency)
Total	52.2	4.3	519	1500	852	0.52
Household income diversification level						
Dedicated farming	57.8	4.4	563	1313	917	0.73
I part-time	50.0	4.1	495	1500	782	0.64
II part-time	52.4	4.5	495	1596	797	0.57
Non-farming	44.7	3.7	588	1530	1114	0.43
<i>p</i> -value	0.003	0.759	0.089	0.035	0.017	0.023
Household job diversification						
No diversification	57.7	4.2	578	1271	971	0.68
Only local non-farm activities	51.5	3.8	495	1404	815	0.69
Only migration	52.2	4.5	534	1625	885	0.37
Both local non-farm and migration	48.8	4.6	476	1593	746	0.43
<i>p</i> -value	0.000	0.269	0.240	0.013	0.086	0.021
Household total income quartile						
Quartile I	56.4	3.9	584	1598	927	0.38
Quartile II	49.0	4.4	546	1512	944	0.43
Quartile III	52.0	4.5	501	1470	797	0.61
Quartile IV	52.0	4.3	452	1437	753	0.62
<i>p</i> -value	0.004	0.636	0.221	0.680	0.031	0.241
Household non-agricultural income quartile						
Quartile I	56.4	3.8	567	1445	908	0.66
Quartile II	49.1	4.9	498	1506	785	0.38
Quartile III	49.7	4.2	540	1524	944	0.52
Quartile IV	53.7	4.2	473	1526	774	0.51
<i>p</i> -value	0.000	0.118	0.379	0.523	0.453	0.253

Source: Author questionnaire

Firstly, Table 6.4 shows that the overall gaps among these variables are not substantial compared to the total average, with only a few variables showing significant differences. Specifically for household types of income

diversification, non-farming rice households have significant advantages in terms of farming labour age over dedicated farming rice households ($p=0.003$). Furthermore, it is statistically significant that farming labourers from households without job diversification and with the least income are significantly more aged than other households (all p values <0.05). If chemical fertilizer and manure usage intensity are considered together, there exists an obvious substitution effect between chemical fertilizer cost and manure usage intensity, as dedicated farming households use significantly less chemical fertilizers and a significantly higher ratio of manure to rice than II part-time and non-farming households, and with the oldest farming labourers. Through this offset, the fertilization of rice fields is balanced among these households. Furthermore, it shows that II part-time and non-farming households indeed tend to spend more cash on purchasing commercial fertilizers ($p=0.035$) to substitute labour-intensive inputs, like manure usage, indicating a technological usage difference driven by economic diversification. The question remains: why do dedicated farming households still use manure so intensively when chemical fertilizers can be easily obtained? Based on qualitative data from Hu Village, only a few farmers expressed that they couldn't afford commercial fertilizers. Some farmers, especially the more aged, use manure because they are concerned about land preservation, while some use manure due to its convenience or accessibility. Referring back to Table 6.4, in respect of household job diversification types, it is evident that

households with only migration, or both local non-farm and migration, tend to use more chemical fertilizers ($p=0.013$) and less manure ($p=0.021$) than households with only local non-farm activities and households without job diversification. This indicates that migration causes labour shortages and forces the left-behind (often old) people to use more convenient modern inputs rather than carrying manure to fields, which are often far away from their houses. Interestingly, household income level does not have a significant influence on farming inputs, except that households with the highest total income tend to spend more money on rice seeds than the poorest households. This can be explained by the observation that rich people often tend to plant fragrant rice varieties which are more expensive, about 50 Yuan per 500g compared with normal hybrid rice seeds at about 30 Yuan per 500g. The more expensive types have better taste but the productivity is roughly the same.

For rape households, as Table 6.5 shows, the overall pattern is very similar to that found with rice, that is without significant input gaps within various household groups. Similarly, the substitution relationship between chemical fertilizers ($p=0.036$) and manure usage ($p=0.025$) occurs in rape cultivation between non-farming households and other households, especially dedicated farming households. For pesticide and herbicide costs, non-farming households spend more on average than II part-time households do ($p=0.014$).

Table 6.5 Farming Labour and Material Inputs among Rape Households of Hu Village in 2011

Rape households	Age of full-time farming labour (year)	Education of full-time farming labour (year)	Seed (Yuan/ha)	Chemical fertilizers (Yuan/ha)	Pesticides and herbicides (Yuan/ha)	Manure usage (frequency)
Total	52.4	4.3	209	1353	521	1.18
Household income diversification level						
Dedicated farming	58.1	4.3	200	1200	551	1.41
I part-time	50.3	4.1	204	1286	494	1.41
II part-time	52.3	4.5	207	1451	492	1.02
Non-farming	45.3	3.5	249	1434	651	0.9
<i>p</i> -value	0.008	0.477	0.835	0.036	0.014	0.025
Household job diversification						
No diversification	57.6	4.2	198	1160	593	1.24
Only local non-farm activities	51.3	3.8	215	1260	491	1.49
Only migration	52.9	4.5	224	1460	540	1.01
Both local non-farm and migration	48.6	4.5	188	1427	464	1.02
<i>p</i> -value	0.017	0.590	0.562	0.031	0.113	0.025
Household total income quartile						
Quartile I	56.6	3.8	209	1367	438	1.00
Quartile II	50.0	4.4	234	1418	564	1.12
Quartile III	52.1	4.5	210	1410	491	1.31
Quartile IV	51.5	4.3	185	1212	446	1.29
<i>p</i> -value	0.031	0.617	0.425	0.228	0.045	0.337
Household non-agricultural income quartile						
Quartile I	56.7	3.8	198	1289	585	1.29
Quartile II	49.3	4.9	209	1379	498	1.13
Quartile III	50.0	4.2	230	1341	537	1.20
Quartile IV	53.5	4.2	216	1400	464	1.10
<i>p</i> -value	0.006	0.155	0.081	0.869	0.137	0.688

Source: Author questionnaire

Again, households with only migrants tend to use more chemical fertilizers than other households, especially those without any job diversification ($p=0.031$), which may offset their lower manure usage intensity compared with households participating in only local non-farm activities

($p=0.025$). This seems to confirm once again that household income (whether total income or non-agricultural income) does not significantly affect the input level for rape production. Combining the substitution effect between chemical fertilizers and manure usage in Hu Village, it seems that the labour loss (especially driven by migration) causes less intensive manure usage and this is supplemented by more cash input in the form of commercial fertilizers. However, households with higher income do not necessarily spend more on commercial fertilizers or use less manure.

Overall, as can be seen with respect to the two most important crops, with similar productivities, many aspects of qualitative farming labour characteristics and main material inputs among households are very close as well. Nonetheless, there indeed exists an obvious substitution effect of capital and labour on land fertilization procedures driven by migration-caused labour shortage. In addition, neither household total income nor non-agricultural income has a significant influence on farming material inputs. In other words, richer people do not invest significantly more capital on land than poorer people do, which is not entirely consistent with observations from various other countries, where it has been shown that economic diversification or non-farm employments of rural households could help farmers overcome credit constraints and enhance farming investments and thus improve land productivity (e.g. Ellis and Freeman, 2004 for four African countries; de Janvry *et al.*, 2005 for China; Oseni and Winters, 2009 for Nigeria; Hertz, 2009 for

Bulgaria; Stampini and Davis, 2009 for Vietnam). According to the situation of Hu Village, the model indicating “non-farm employments release farming credit constraints and improve productivity” does not seem feasible. More specifically, although non-farming employments indeed provide more cash for chemical fertilizers and pesticides for some households, this need is created by labour shortages or other reasons, rather than on the reduction of farming credit constraints. In other words, households investing more cash per unit of land do so because they could not carry more non-cash inputs, as they have less or older farming labourers, rather than because they have more income. The farming credit constraints assumption as used in other studies is not a prominent issue in Hu Village. Many people, especially richer people, even tend to reduce the intensity of pesticides usage for the sake of health. Furthermore, given the smallholder-scale production in Hu Village agriculture (even in the whole of China) with only 0.16 ha rice land and 0.12 ha rape land per household, the overall cost of material input per ha rice is about 2850 Yuan and for rape 2100 Yuan, which means that every household’s cash input on rice could be about 450 Yuan and rape about 260 Yuan, so 710 Yuan in total. This amount of cash would not be a big problem for contemporary Hu Village farmers, given that their per capita cash income is nearly ten thousand Yuan. As revealed in the qualitative interviews, very few farmers think that they could not afford inputs, with the exception of three extremely poor households. What they are really concerned about is the constantly shrinking

number of farming labourers, and who will do farming in the future. Compared with the fact that about 43.9% of rural households could not afford agricultural inputs in Nigeria (Oseni and Winters, 2009), the situation in Hu Village is much better. It is not surprising that in African countries, non-farm employments often facilitate farming investments through cash inputs. Another important reason for the close levels of productivity in Hu Village is that, as farmers often commented, the farming procedures have been stylised or standardised among all village households. Namely, how much seed is sown, how much fertilizer is used and what pesticides to use has become common knowledge to most farmers and farming is more like a routine labouring procedure rather than a sophisticated and complex process requiring experience and intelligence. It was often heard expressed by farmers in Hu Village that they were conducting “simpleton agriculture” or “lazy agriculture”. This phenomenon has also occurred in other regions of China and as Lin and Deng (2012) observed in Zhejiang Province, the farming labourer age and level of education have no significant influence on land productivity, likely due to the standardised agricultural practices.

Hence, a conclusion can be drawn regarding the effects of economic diversification on agricultural productivity based on Hu Village that economic diversification has not significantly influenced the performance of crop production in terms of productivity. Nonetheless, it has indeed exerted influences on farming fertilization processes, driven more by labour loss than

by credit constraints. The case of Hu Village to some degree interrogates the farming credit constraint thesis on this issue, and presents another possibility that under the conditions of China's smallholder agriculture and the fast-growing non-farm cash income of rural households, farming credit is probably not a major constraint on farming anymore, rather the labour shortage driven by migration is becoming an increasing threat to levels of agricultural production.

6.2.3 Economic diversification and agricultural structure

Researchers have argued that rural non-farm employment may facilitate agricultural diversification through encouraging the farming of higher-value crops, thus changing the basic agricultural structure (Davis *et al.*, 2009). This subsection examines the impacts of economic diversification of rural households on agricultural structure based on the circumstances of Hu Village. Many relevant studies in developing countries mostly focus on farming investments and technological usage, with little specific examination of impacts on agricultural structure or crop patterns, although some researchers have observed some qualitative changes on crop patterns and land-use driven by migration or other non-farm activities in developing countries (e.g. Rigg, 2001 for crop patterns and land-use changes in the whole Southeast Asia; McKay, 2005 for the remittances landscape of the Philippines; Radel and Schmook, 2008 for linkages of migration and land-use change in Mexico).

This section will first investigate agricultural structural changes at the village level, driven by economic diversification of rural households, and then further examine the variance of land-use intensity, crop diversity and agricultural diversity at the household level.

Overall changes to the smallholder crop/livestock system

Essentially, the overall pattern of China's agriculture, as also prevailing in many other developing countries like India, is largely a mixed crop/livestock smallholder system, which is characterised by "all smallholders with farm sizes of a couple of hectares or less in which family labour is used to grow crops and keep livestock" and "these integrated systems make efficient use of natural resources; animals often provide dung that is used to fertilize crops, while crop residues are fed to livestock "(Wright *et al.*, 2012:1010). Hu Village agricultural patterns have reflected the mixed smallholder system until some changes have arisen recently driven by various factors, in which economic diversification of rural households has played a critical role as will be shown below. As Table 6.6 shows, for the constitution of crop land in Hu Village, rice takes the largest part (66.4%), followed by rape (50.6%). Corn, sweet potato and vegetables are marginally cultivated in Hu Village. The above five crops are primarily for home consumption and only the surplus is sold to markets. The following three crops: citrus, cash forest tree and mulberry are the main commercial crops, with citrus being the most important (21.1%).

Table 6.6 Basic Agricultural Structure of Hu Village Households in 2011

	Mean value	% of household land	Household participation (%)	Changing trend
Total land (ha)	0.24			
Crop				
Rice	0.16	66.4	91.1	-
Rape	0.12	50.6	87.5	-
Corn	0.04	15.3	78.7	-
Sweet potato	0.02	9.7	65.8	-
Vegetable	0.01	7.2	96.4	-
Citrus	0.05	21.1	85.8	-
Cash forest tree	0.03	11.4	62.7	+
Mulberry	0.04	14.2	41.8	-
Livestock				
Pig	15.4		77.3	-
Chicken	7.2		83.6	-
Duck	2.7		48.4	-
Rabbit	6.0		6.2	+
Sericulture	1.8		36.9	-

Source: Author questionnaire and interviews

Note: - refers to decrease and + refers to increase in overall tendency during the most recent 10 years.

With respect to participation rate, subsistence-oriented crops have been cultivated by more households than commercial crops. However, according to interviews with farmers, except cash forest trees, all the crops have actually been less and less cultivated in the last 10 years. The reasons underlying this phenomenon vary among farmers. For instance, some wealthier people have stopped farming and have started to buy rice and vegetables completely from markets. Some households entirely rely on non-farm activities and withdraw most labourers from agriculture, dropping some crops like sweet potato and corn, which also reserves great room for fast acceptance of cash forest trees. As revealed in other Asian countries, to replace conventional crops like rice with cash forest trees is a popular alternative to deal with a lack of agricultural labour (Rigg, 2001). In Hu Village,

cash forest trees, mostly Toon trees, with a small proportion of gardening trees, like Osmanthus Fragrans tree or the Maidenhair tree, have been quickly and widely accepted by Hu villagers and there has shown a great tendency to expand in the cultivation of these crops in the near future. As Toon trees provide the raw materials for the papermaking industry, and other gardening trees are required for fast expanding urban landscape development, the emergence of trees as cash crops is primarily driven by the rapid industrialisation and urbanisation of China. Furthermore, these perennial trees ought to be planted in upland or hilly areas, leaving paddy fields and flat land for main crops like rice and rape. However, in recent years many households have been planting them in the best soil in the paddy field, and this is reflective of the labour shortages associated with economically diversified households. This is illustrated by Mr Z as shown in Box 6.1.

Box 6.1 Shifting Rice Land into Cash Tree: the Case of Mr Z

Mr Z's household is highly diversified with his wife operating a small shop and raising 50 pigs; his father having a fertilizer and commercial fodder business; his mother undertaking most of the farming work; and he himself with a transportation business and sometimes undertaking some factory work in the county. His family has suffered from a lack of labour for a long time, and in 2012 he decided to shift 0.07 ha rice land into Maidenhair trees as he heard that Maidenhair was very popular in the horticulture market.

Source: Author interviews

In Hu Village, when asking why cash trees are planted even in paddy

fields, the most prevalent answer is that there is not enough labour or not enough time for attending intensive crops. Furthermore, citrus has been less and less intensively managed because of unfavourable prices, and many farmers have planted Toon trees in citrus fields, and have decided to cut down citrus trees when Toon trees grow up. The fate of citrus also happens to mulberry as sericulture has dramatically declined, which will be further explained in the following parts. Another point worthy of mention here is that the emergence and popularity of cash forest trees in Hu Village is brought about not only by farmers' motivated agency but also by encouragement from governments. Toon tree planting is a pertinent example, targeting dual objectives for the government: enhancing forest cover and farmers' income, both of which are considered politically and economically important by the current Chinese government. A Toon tree planting project was initiated by Qingshen Forest Bureau in 2008 and farmers just could not wait to accept this alternative. The cooperation between farmers' incentives and governmental planning is the most important reason for the fast promotion of cash tree planting in Hu Village as well as other places in this county, as an official told the author. The government-dominated agricultural development approach with Chinese characteristics has dramatically and quickly changed the crop pattern and land-use pattern in Hu Village, and in Qingshen County.

In terms of livestock, pigs produce the most, and other animals like chicken, duck, rabbit and sericulture are all raised but on much smaller scales.

However, most traditional livestock sidelines have shown a decreasing tendency. Farmers often recalled that at the beginning of the 1990s, before villagers started to seek non-farm activities, almost every household husbanded pig, chicken, duck and sericulture. With more and more people undertaking other activities since then, and especially with rates of rural-urban migration, less and less households undertake these sidelines. 77.3% (174) households undertook pig farming in 2011 and of the remaining 51 households, only 15 did not undertake any non-farm activities, indicating that diversified households seem to be more likely to exit pig production probably due to labour shortages. Furthermore, with respect to pig farm scale as Table 6.7 shows, most pig households are veritable smallholders with 66.7 % raising less than 10 pigs, and 87.4% less than 30 pigs. Nonetheless, there have emerged several relatively large scale households with more than 100 heads in recent years. As village head calculated, there have been about 20 households that are specialised on pig farming with specific and modernised piggery facilities. Additionally, there are 3 specialised chicken households and 2 large commercial duck enterprises with scales of more than 20,000, which were all established in recent years. Rabbit breeding is a relatively new sideline for Hu Village, which has been initiated by an NGO project to encourage the left-behind women to participate in more cash-generating activities.

Table 6.7 Livestock Scale Distribution of Sample Households in 2011

Items	Scale range				
		1-10	11-30	30-100	101-300
Pig	0	1-10	11-30	30-100	101-300
No. of households	51	116	36	12	7
Chicken	0	1-10	11-30	31-50	50+
No. of households	37	140	45	3	0
Duck	0	1-10	11-30	31-50	50+
No. of households	116	102	5	2	0
Sericulture	0	0.5-5	5.5-8	8.5+	
No. of households	142	54	22	4	
Rabbit	0	5-50	51-100	101-300	
No. of households	211	8	2	4	

Source: Author questionnaire

More interestingly, for the specialised pig farming households, their livelihoods are also highly diversified as the case of Mr S shows (Box 6.2). Mr S's case is not special among the specialised pig farming households in Hu Village, as the other three specialised pig households are all undertaking other non-farm activities, whether at local bases or in remote cities. Given the unstable market conditions of rural China, no households would entirely rely on this risky sector, and it demonstrates again that diversification, not specialisation, is the norm. Furthermore, a complex, and often seemingly conflicting, picture of economic diversification and livestock emerges which indicates that the impacts are both negative and positive. On the negative side, increasing non-farm opportunities create competition with the livestock sector for labour resources, with the former being generally more attractive. On the positive side, diversified household livelihoods can reduce risk and provide certain amount of capital to subsidise livestock where necessary, as

Kilic *et al.* (2009) found in Albania and Hertz (2009) in Bulgaria.

Box 6.2 A Diversified Pig Farming Household: Mr S

Mr S is operating the largest pig farm in Hu Village with 400 heads of pigs and about 10,000 Yuan income in 2011. His wife is working in a chemical factory in Meishan City. His 17-year-old son is working in a restaurant in the same city. His father is a migrant construction worker in Jiangsu Province in east China, with his mother primarily working on land. His family shows a very clear and distinct labour division within the household. When asking why his family members don't work together on such a large pig farm, the answer from him is that pig production is a highly risky sector, with very unstable pig prices, and rising grain prices keep lifting the feed cost and squeezing the profit, therefore, other family members working separately reduces the risk, and also sometimes subsidises pig production with cash when necessary. He also expressed that he was thinking of exiting pig farming and going for migration as a construction worker for the high wage of 300 Yuan per day if pig prices kept shaky in the near future.

Source: Author interview

Linking to the macro-level, the tendency towards livestock farming in Hu Village is actually an epitome of contemporary China's livestock sector, which has been experiencing structural changes under the context of "livestock revolution"¹¹ affecting all developing countries. Researchers clearly commented, "A feature of China's livestock sector is rapid structural change toward larger, more commercial and more intensively productive systems. As specialisation has developed over the last two decades, the share of backyard

¹¹ Livestock revolution refers to the unprecedented growth of livestock products in developing countries, driven by population growth, increasing urbanisation and rising incomes (Delgado *et al.*, 1999).

livestock production has declined and the shares of specialised households and commercial enterprises have increased” (Rae *et al.*, 2006:681). The structural changes to livestock production in China have seen a downward trend in the proportion of rural households that husband livestock (Zhang, 2006; Rae and Zhang, 2009). Drawing on a national sample, Rae and Zhang found that compared with 1995, 39.2% households have exited livestock farming, with the least exit proportion in southwest China (12.9%), probably due to relatively less off-farm opportunities in these backward regions. What is happening in patterns of livestock farming in Hu Village is to a great degree consistent with their findings. As non-farm diversification in Hu Village or in Sichuan is no less pronounced than any other regions of China, probably more smallholder pig farming households will cease to operate and then specialised pig farming households, also more commercial livestock farms may continue to scale up.

This means that the traditional smallholder crops and livestock mixed system may be progressively replaced by a more specialised, modernised, large-scale and market-oriented livestock industry. It has been revealed by researchers globally that smallholder mixed crop and livestock systems are more productive and more environmentally-friendly (Wilson, 2007; Wright *et al.*, 2011), so the structural change to livestock production occurring in China thus seems to be directed in an unsustainable manner. In this process, rural household non-farm diversification indeed plays an important role (Rae and

Zhang, 2009; Delgado *et al.*, 2008). In addition, favourable livestock markets and government policies certainly are key elements driving livestock sector development, but given highly unstable livestock markets, recurrent disease outbreaks and other unexpected risks, Chinese smallholders would probably tend to exit livestock production and join other more lucrative and more stable non-farm occupations. People who are more skilled and knowledgeable, and who have sufficient access to credit will undertake livestock farming in a specialised way.

Through an examination of the agricultural patterns of Hu Village households, several observations emerge. For crop patterns, subsistence-oriented crops still outweigh cash crops in terms of cultivation area in Hu Village, indicating that Hu Village agriculture is largely subsistence farming. Traditional cash crops (citrus and mulberry) have been going downhill due to losses of labour and unfavourable prices, while new forest trees are becoming preferable alternatives, suggesting a labour-loss effect on crop pattern change. Generally, livestock sidelines have experienced a decline, but there has also been an emergence of more specialised livestock households, which to some degree may represent the future direction of smallholder livestock production, as researchers have found both in China (Rae and Zhang, 2009) and in other countries (Delgado *et al.*, 2008). Finally, the overall changes to agricultural patterns at the village level may vary for different households.

Land-use intensity, Crop diversity, and Agricultural diversity

At the household level, because of labour shortages, land may be extensively used and crop diversity may be reduced by farmers as Rigg (2001) has shown in many Southeast Asian countries. Households with different labour and other economic conditions may have different strategies for agricultural pattern adjustments. Given the dramatic economic diversification of Hu Village households, land-use intensity, crop diversity and overall agricultural diversity may have changed across different households. Three variables reflect agricultural structural changes at the household-level. MCI (see Chapter 4) is calculated to reflect land-use intensity variance among different households. Two diversification indicators: crop diversification, the total variety of crops cultivated by every household in 2011; and agricultural diversification, referring to how many varieties of occupations related with agriculture (including farming, pig, cow, chicken, duck, rabbit, sericulture, and fish and so on) every household undertook in 2011, are calculated to represent the diversification degree of different households. In addition, the Kruskal Wallis test was run to find the statistical significance of the differences among groups at a significance level of 0.05. As Table 6.8 clearly shows, the average MCI of Hu Village is 2.20 with different levels of variance among different households. The MCI of non-farming households is significantly lower than other three household types ($p=0.005$), suggesting that non-farming households tend to have less land-use intensity compared with other three household types. The

MCI of households with only migration is significantly less than households without any job diversification ($p=0.012$), indicating that migration households probably leave less labour to attend land thus reducing the land-use intensity. Interestingly, the household income factor has no statistically significant association with land-use intensity, implying that it is labour rather than income that more evidently impacts land-use intensity.

Table 6.8 Land-use Intensity, Crop Diversity, and Agricultural Diversity among Different Households in 2011

	MCI	Crop diversity	Agricultural diversity
Total	2.20	6.38	3.59
<i>Household income diversification level</i>			
Dedicated farming	2.42	6.53	3.66
I part-time	2.02	6.69	3.88
II part-time	1.99	6.48	3.71
Non-farming	1.79	5.17	2.62
<i>p</i> -value	0.005	0.002	000
<i>Household job diversification</i>			
No diversification	2.31	6.52	3.55
Only local non-farm activities	1.99	6.30	3.87
Only migration	1.78	5.82	3.52
Both local non-farm and migration	1.88	6.47	3.76
<i>p</i> -value	0.012	0.018	0.421
<i>Household total income quartile</i>			
Quartile I	1.85	5.82	3.21
Quartile II	1.86	6.37	3.65
Quartile III	1.94	6.65	3.81
Quartile IV	1.94	6.62	3.71
<i>p</i> -value	0.894	0.031	0.011
<i>Household non-agricultural income quartile</i>			
Quartile I	1.95	6.29	3.59
Quartile II	1.87	6.25	3.61
Quartile III	1.85	6.39	3.48
Quartile IV	1.92	6.54	3.70
<i>p</i> -value	0.711	0.870	0.722

Source: Author questionnaire

The average crop diversity of sample households is 6.38, meaning that

the sample households cultivated 6.38 different crops in 2011 on average. Non-farming households cultivated significantly less crops than other three household groups in 2011 ($p=0.002$), and households with only migration cultivated significantly less crops than other households, especially those without job diversification ($p=0.018$), which once again confirms the potential labour shortage effect caused by migration. Furthermore, households with higher income tend to cultivate significantly more crops ($p=0.031$) which is probably because more crop varieties also increase household income. Non-agricultural income has no significant impact on crop diversity.

The agricultural diversity of sample households is 3.59 which refers to the fact that the sample households undertook 3.59 different agricultural enterprises in 2011. Non-farming households again undertook significantly less agricultural sidelines than the other three households ($p=0.000$). There is no significant difference among households with different job statuses, although households with only migration conducted on average less agricultural sidelines than other household groups. This is probably because in Hu Village, as long as some family members are left behind for farming, it is a prevailing trend that they always conduct some sidelines, although mostly in very small scale, like five chickens and three ducks for home-consumption and so on. Furthermore, richer households tend to undertake more agricultural sidelines ($p=0.011$) probably because more agricultural sidelines increase household income. Non-agricultural income has no significant

impacts on agricultural diversity.

Another two observations from Table 6.8 are worthy of mention here. There is no significant difference in MCI, crop diversity and agricultural diversity among dedicated farming households and I part-time and II part-time households. This probably indicates that most households tend to conduct similar agricultural patterns and only the non-farming households, which almost tend to move out of farming, use land significantly less intensively and conduct fewer sidelines. Another observation is that no significant difference occurs among households with local non-farm activities, households with both local non-farm and migration, and households without job diversification as well, probably because non-farm activities at the local base do not significantly impact labour available for agriculture, as the labourers are easily accessible. This further confirms the labour loss effects exerted by migration.

Overall, the case of Hu Village suggests that the impacts of economic diversification on land-use intensity, crop diversity and agricultural diversity are complex. Basically, most households remain within a similar mode of agriculture, while only the highly specialised non-farming households tend to significantly reduce land-use intensity, crop diversity and agricultural diversity. Besides, caused by the obvious labour-loss effects, only-migration households significantly reduce land-use intensity and agricultural diversification. Echoing other studies (e.g. Rigg, 2001), the findings here show that the labour shortage effect significantly affects agricultural land use and

diversification in Hu Village. Nonetheless, economic diversification of rural households does not necessarily mean labour shortage, and as this research shows, in that households with local non-farm activities tend to be more productive, use land more intensively, and undertake more agricultural sidelines.

6.2.4 Economic diversification and agricultural technologies changes

With changes in agricultural patterns as discussed above, agricultural technologies have experienced even more dramatic transformations driven by the economic diversification of rural households, as has been widely found in many other countries. The most prominent technological tendency on the agricultural stage identified globally is a shift from traditional technologies to modernised labour-saving, and often capital-intensive, technologies to deal with labour loss and with relatively more cash-investments available from various non-farm employments. This trend has been identified by Rigg (2001) in most southeast Asian countries; Qin (2010) in Chongqing of China; Pfeiffer *et al.* (2009) in Mexico and Takahashi and Otsuka (2009) in the Philippines. As has been discussed above, the obvious substitution effect between modernised chemical fertilizers and labour-intensive manure use among migration households in the Hu Village case is just part of the picture. This subsection will further investigate the impacts of economic diversification on

use of agricultural technologies.

Overall technological changes in Hu Village

As Table 6.9 shows, since the 1970s, modernised agricultural technologies have begun to embrace Hu Village agriculture in all dimensions, from seeds and pesticides to various forms of mechanization.

Table 6.9 Main Agricultural Technology Changes in Hu Village

Alternative technologies	Time	Adoption rate (2011)	Characteristics	Traditional technologies
Hybrid varieties	1970s	100%	Land-saving	Traditional and home selected seed varieties
Chemical fertilizers	1970s	95%	Land-saving	Manure, oil cake and other organic fertilizers
Pesticides	1980s	100%	Land-saving	Physical methods
Herbicides	1990s	100%	Labour-saving	Weeding manually
No tillage	1990s	70%	Labour-saving	Cattle tillage
Tractor tillage	1990s	23.2%	Labour-saving	Cattle tillage
Commercial fodder	1990s	100%	Labour-saving	Weeds, grain, and kitchen leftovers
Combine harvester	2005	45.4%	Labour-saving	Harvest manually and later small threshing machine
Rice seedling-throwing¹²	2010s	25.6%	Labour-saving	Traditional transplanting

Source: Author questionnaire and interviews with village cadres and farmers

¹² Rice seedling-throwing is a simplified technology of rice transplanting, which just requires farmers to stand and throw the rice seedling in the paddy field without squatting down and inserting seedling in every single hole as traditional transplanting does. As farmers estimated, this new technology saves about 50 % labouring and is less physically painful and operationally simpler than traditional transplanting.

Certainly, the emergence of many new technologies was primarily driven by government promotion and market development, while diffusion and adoption rates vary among different households. Labour loss driven by increasing economic diversification has played a vitally important role as will be further investigated later. It is useful to review the overall technological changes of Hu Village agriculture first.

Hybrid rice, chemical fertilizers and pesticides were the three first innovations in Hu Village, dating back to the 1970s even before the rural reform was launched. Their adoption substantially improved crop productivity to a level which shocked Hu Village farmers. The traditional seeds varieties have been gradually abandoned, and currently 100% farmers purchase all crops seeds from markets, except a few farmers who reserve sweet potato seed for the next year. Before chemical fertilizers, livestock manure was intensively used on Hu Village land, and this was an important task of all the males of every household. Although it is still widely but disproportionately used by Hu Village farmers as shown by Table 6.10, manure has undoubtedly become secondary to chemical fertilizers for land fertilization, with only intensive application on small plots of vegetable garden. In the 1990s, many labour-saving technologies including herbicides, no tillage technology, tractor tillage and commercial fodder for livestock, appeared one after another, at the time when rural labourers begun migrating to seek non-farm activities. In this period, technologies, like no tillage, were promoted by the government as they

have appreciated the importance of facilitating the move of rural labour away from agriculture and the rural area to enhance farmers' income and the prosperity of the local economy. In spite of great doubts regarding no tillage methods at the beginning, as many farmers recalled, Hu Village quickly accepted this convenient and labour and capital saving technology, since they saw the same productivity as long as enough fertilizers and herbicides are put in the soil. Currently, most farmers have not tilled their land for years (70% in 2011), and only a few farmers till every few years by tractor (23.2% in 2011).

Table 6.10 Manure Usage of Different Crops of Sample Households in 2011 (%)

Manure usage frequency	Rice	Rape	Corn	Sweet potato	Vegetables	Citrus
0	62.2	37.3	32.4	43.1	9.8	61.8
1	29.3	27.6	17.3	31.1	6.7	24.4
2	7.6	30.2	33.3	22.2	16.4	12.0
3	0.9	4.9	15.6	3.6	65.8	1.8
4	0	0	1.3	0	1.3	0

Source: Author questionnaire

The combine harvester has brought about another farming revolution for Hu Village farmers. With conditions of the bumpy and terraced landform in this area of Sichuan, giant machines, like combine harvesters, are actually impractical (Tilt, 2008). While practically all the farmers could not wait to embrace the combine harvester because of labour shortages and the widespread and obvious unwillingness to undertake labourious rice harvest in the hot sun. Although the current combine harvester adoption rate is barely half in 2011 (45.4%), it is already substantially higher than the Sichuan average rice combine harvester adoption rate of 27.9% in 2011 (Farmers'

Daily, 28th March, 2012). Moreover, almost all the farmers that haven't used a combine harvester expressed with strong willingness that they would use if it were possible and available. The general price of a combine harvester is about 1200 Yuan to 1500 Yuan per ha. For the smaller land plots, the price could be 2250 Yuan per ha, but farmers are still willing to use it. The irrational usage of the combine harvester in Hu Village is partly due to the increasing agricultural wage rate driven by prosperous non-farm employments. Many farmers said that even the price of combine harvester at 2250 Yuan per ha is still much cheaper than hired labour, at the price of 4500 to 6000 Yuan per ha. The combine harvester as a labour-saving technology, is an exceptional instance of labour-shortage induced technological change as predicted by induced innovation theory (Hayami, 2001), as Rigg (2001) has similarly revealed in Southeast Asia.

Researchers have widely observed in other countries that the entry of the combine harvester often triggers uneven consequences for different people, especially in traditional poorer communities. For instance, displacing on-farm employment opportunities of the poor as Scott says, the combine harvester is the "machine that eats work" (Scott,1985:154), marginalising women in farming and thus leading to a "masculinised" agriculture (Rigg, 2001:113). However, the observation from Hu Village does not seem consistent with previous findings, and even the poorest people in Hu Village strongly hope to use combine harvesters. The overwhelming preference

towards the combine harvester in Hu Village is particularly driven by ample non-farm opportunities, an increasingly aged farming population and looser farming credit constraints subsidised by various income sources. As farmers most frequently commented, with the help of the combine harvester, migrants do not need to return home to assist at harvest time, as in many cases, the travel cost is even more than that of using the combine harvester, letting alone the missed working payments.

Another recently emerging technology, encouraged by government and demonstrated by experienced farmers, is rice seedling-throwing. One essential condition of this technology is ample water for several weeks from initial transplanting. This will potentially put more pressure on the increasingly poor water resources of Sichuan, due to frequent droughts in recent years in southwest China. As a new technology, the adoption rate of rice seedling-throwing is already 25.6%, and despite most farmers waiting to see how it performs, an increasing adoption rate can be safely predicted in the future. Furthermore, as seedling planting and transplanting are highly labour-intensive procedures in rice cultivation (Zeng, 2005), a far less labour-intensive rice direct seeding technology has been widely adopted in some other rice countries, driven by labour shortages (see Rigg, 2001 for southeast Asia; Jie Fang Daily, 26th October, 2012 for other parts of China; and Sichuan Daily, 4th September, 2012 for other parts of Sichuan). Although, Hu Village has not gone that far yet, the shift from intensive traditional transplanting to

seedling throwing can be seen as a transition step to further labour-saving technology as China's government has been promoting this new technology nationwide.

Although agricultural technologies have been advanced substantially, there are still some agricultural procedures that have not been facilitated or replaced by modern technologies, and for these points, farmers have to mobilise various potential resources to cope with labour shortages during peak agricultural times. Table 6.11 shows that in the three typical peak times, almost half households lack sufficient labour and need supplementation. This is mainly achieved through family migrants returning and mutual help with others, which is evidence of widespread labour shortages for farming. Besides, of almost 60% migrant households, only about 20% returned to help with farming work in 2011, indicating the low and undervalued status of agriculture in migrant households. Hired labour is poorly utilised by Hu Village farmers for two reasons. First, there are actually not enough labourers ready to hire in the village, as ordinary labourers have already engaged in non-farm activities. Secondly, driven by prosperous non-farm labour markets, the labour wage has been lifted unexpectedly higher than the threshold that farmers can afford for agriculture, which already produces only low-levels of remuneration. Similar situations have been identified in other countries (e.g. Rigg, 2001 for southeast Asia; Takahashi and Otsuka, 2009 for the Philippines).

Table 6.11 Hu Village Farmers' Strategies of Labour Provision in Agricultural Peak Times in 2011 (%)

	Rice transplanting (n=205)	Rice harvest (n=161)	Rape harvest (n=197)
Own family members at home	53.3	54.0	60.0
With migrants returning back	20.1	22.4	23.5
Labour exchange with relatives or villagers	23.5	17.4	14.5
Hiring labour from other villagers	3.1	6.2	2.0

Source: Author questionnaire

Note: Farmers harvested rice in 2011 totally manually or partly manually, with some parts of rice land using a combine harvester, so n=161, excluding the 44 farmers that only used a combine harvester.

High-levels of hired labour wages are also an important driving force towards the use of labour-saving technologies, as farmers have to calculate which one is more worthwhile in deciding to use hired labour or modernised technologies, as Table 6.12 roughly shows. Taking the scarcity of hired labour into account, it is not difficult to understand why combine harvesters are so desirable to Hu Village farmers. A minimal amount of hired labour is a characteristic of contemporary China's agriculture and this is contrary to many other developing countries like India, where hired labour contributes about 45% of the agricultural workforce (Rawal, 2008; Huang *et al.*, 2012). The primary reason in the contemporary context, as explained by Huang *et al.* (2012), is the fundamental "semi-worker-semi-cultivator" mode of rural households, most of whom rely on both subsistence farming and non-farm employments, often leaving women and the elderly to farm. This greatly reduces the necessity of hiring labourers. In addition to fundamentally

exemplifying the household dual livelihood mode, the case of Hu Village provides another perspective, that it is not because farmers have sufficient labour that hired labour is so minimal in contemporary rural China but because of the disadvantages of hired labour compared with the use of modern technologies and the poor availability of hired labour. Labour shortages, especially in peak agricultural times, do exist.

Table 6.12 Selected Cost Comparisons between Hired Labour and Modern Technologies in Hu Village

	Option1: hiring labour (Yuan/ha)	Option 2: using modern technologies (Yuan/ha)
Rice harvest	4500-6000	1200-2200
Tillage	1200-1800	450 ¹³
Fertilization	1500	1200-1500

Source: Interviews with Hu Village farmers

To sum up, through qualitatively examining the overall technological changes to agriculture in Hu Village, it becomes clear that, as has occurred in other countries and in other regions of China, the trend is for agricultural technologies to be shifting away from traditional, labour-intensive, and often environmentally-friendly technologies to more modernised, capital-intensive, labour-saving and often environmentally unfavourable ones. The traditional sustainable intensive smallholder agricultural system of China as Netting (1993) has encouragingly demonstrated (see Chapter 2), has begun to be disintegrated driven by increasing labour losses from agriculture. It is being replaced by a mixed and even seemingly paradoxical smallholder agricultural

¹³ 450 is calculated by the herbicides cost in case of no tillage.

form, which is technologically modernised, increasingly capitalised but without proletarianisation (Huang *et al.*, 2012), and largely subsistence-orientated.

Technological usage variance at the household-level

This part explores technological usage differences among different households groups, to further examine if economic diversification affects technological usage at household level. Previous studies primarily use expenditure on farming inputs (often chemical inputs) per unit of land as the main independent technology variable, to estimate if there is a statistically significant difference among differently diversified households (e.g. Kilic *et al.*, 2009; Oseni and Winters, 2009; Takahashi and Otsuka, 2009; Pfeiffer *et al.*, 2009; Miluka *et al.*, 2010). However, this single variable cannot comprehensively represent the technological practices of farmers. Therefore, this research uses four variables to present data on the overall technological usage patterns of farmers: expenditure on farming chemical inputs (chemical fertilizers, pesticides and herbicides) per ha and expenditure of machinery per ha, to represent the usage intensity of farmers on modern labour-saving technologies; and the number of traditional farming practices applications¹⁴ and the frequency of manure application to represent usage intensity of labour-intensive technologies. The Kruskal Wallis test was used to test the statistical significances among household groups at the level of 0.05 as Table

¹⁴ Here based on the concrete status of Hu Village, only calculating 5 main traditional farming technologies: 1. Tillage; 2. Intercropping; 3. Multiple cropping; 4. Manure; 5. Traditional transplanting)

6.13 shows.

Table 6.13 Technological Usage Difference among Different Household Groups in 2011

	Chemical input (Yuan/ha)	Machinery input (Yuan/ha)	Traditional technology usage	Manure frequency
Total	4265	1179	3.67	7.23
<i>Household income diversification level</i>				
Dedicated farming	4389	1131	3.68	8.23
I part-time	4496	1299	3.87	8.50
II part-time	4074	1103	3.67	6.65
Non-farming	4338	1344	3.24	5.14
<i>p</i> -value	0.919	0.766	0.016	0.000
<i>Household job diversification</i>				
No diversification	4500	1261	3.54	7.82
Only local non-farm activities	4209	951	3.68	8.05
Only migration	4152	1319	3.76	6.54
Both local non-farm and migration	4337	1131	3.60	6.76
<i>p</i> -value	0.879	0.548	0.576	0.038
<i>Household total income quartile</i>				
Quartile I	4947	1194	3.50	6.53
Quartile II	4139	1340	3.64	6.55
Quartile III	4056	1082	3.91	8.04
Quartile IV	3935	1122	3.60	7.70
<i>p</i> -value	0.245	0.564	0.181	0.072
<i>Household non-agricultural income quartile</i>				
Quartile I	4536	1113	3.65	7.52
Quartile II	4266	1379	3.72	7.21
Quartile III	4100	1175	3.70	7.00
Quartile IV	4161	1046	3.61	7.19
<i>p</i> -value	0.973	0.993	0.918	0.769

Source: Author questionnaire

Table 6.13 shows that there is no statistically significant difference on chemical inputs and levels of machinery input per unit of land among various household groups, which is to some degree consistent with the finding from Qin (2010) in four villages of Chongqing Municipality, located just east of Sichuan. This indicates that modern labour-saving technologies, as long as

they are available, are desirable to all farming households, which also confirms the discussion of the overall technological changes at the village level. With respect to traditional technology usage, non-farming households significantly applied less than full-time farming households do ($p=0.016$), and this may be because, as revealed in previous sections, non-farming households cultivate less crops, use land less intensively, and tend to move out of agriculture. For other household groups, traditional technologies are still evenly and widely adopted.

This echoes the previous discussion of “standardised” farming, or the notion that most farming practices have become routinised and seen as fixed procedures for most households, except non-farming households. As for manure usage, the labour shortage effect is manifested obviously. Full-time farming and non-farming households used significantly less manure, less intensively than other two household groups did ($p=0.000$), and households with only migratory income used significantly less than those without job diversification and those with only local non-farm activities ($p=0.038$). Household income factors have no significant impact on manure usage, although households with less total income tend to use less manure on land, which is probably because of aging farming labourers or poor manure availability. Manure application is a significant means that can qualitatively and sustainably enhance soil fertility, and as Brookfield (2001) notes, it belongs to “landesque capital”. Therefore, with the significant reduction on

manure usage driven by labour shortages, the environmental repercussions also deserve grave concern (Qin, 2010).

Finally, through an investigation of technological use differences among households, it becomes clear that in the “standardised” forms of farming adopted in Hu Village (and also other parts of China, see Lin and Deng, 2012), modernised and traditional technologies have largely coexisted and are utilised dynamically by farmers based on specific household socio-economic conditions. Driven by dramatic economic diversification, farming labour shortages are substantial and prevalent, with the likelihood of experiencing labour shortages likely to increase in the future. For households such as this, the substitution between modernised labour-saving technologies and traditional labour-intensive technologies will inevitably occur, leading China’s agriculture to deeper levels of modernisation and capitalisation. Overall, through the dual processes of intensification of modernised technologies and capital, and the reduction of traditional “organisational skills” (Brookfield, 2001) and labour, as Rigg (1998) also found in Southeast Asia, land yields have roughly been sustained but agricultural diversity has been significantly degraded, in which economic diversification of rural households has played a substantial role.

6.3 Market and agricultural production

Since the epochal rural reform of the late 1970s, Chinese leaders have begun to initiate market-oriented policies firstly from agricultural products and this trend has continued in more than thirty years of subsequent reforms afterwards. Rural markets have been steadily liberalised and they have flourished, although in a gradual and tentative way, while agricultural commercialisation has been constantly deepened (Huang and Rozelle, 2007). During the market transition process, rural households have obtained substantial autonomy and flexibility to react to market signals (de Brauw *et al.*, 2000). The dynamic interactions between market forces and actors' various agencies have driven China's agricultural changes in all dimensions, for instance, the expansion of cash crops, easy access to agricultural inputs, emerging land rental markets and so on. There are various forms of rural markets based on the Hu Village case, including the agricultural product market, input market, land market and contract farming, which will be further investigated in this section.

6.3.1 Agricultural product and input markets

Globally, driven by remarkable increases in agricultural productivity, international trade, the globalisation of markets and global organisational support programs, world agricultural product prices have undergone long-term decline for decades (Hazell and Wood, 2008). As a landmark of integrating the

domestic economy with international markets, China's WTO accession in 2001 has to a great degree evened up domestic and international agricultural prices, and has bound the fortunes of myriads of Chinese farmers together with fluctuations of global markets, which has significant repercussions for China's smallholder agriculture in both positive and negative ways (Huang *et al.*, 2007; Carter *et al.*, 2012). As Huang *et al.* (2007) have argued, agricultural trade liberalisation brought by WTO accession lowers domestic prices of many crops like wheat, coarse grains, oil crops and soybean, but raise those of some labour-intensive crops like rice, vegetables, fruits, meats and aquaculture commodities in which China has comparative advantages. Thus, it can be reasonably assumed, farmer households that primarily cultivate negatively-impacted crops will be at loss and those that primarily cultivate positively-impacted crops will benefit from prices rise (Huang *et al.*, 2007). However, even the limited gain from increased prices could be offset if the costs of agricultural production keep increasing, driven by high and rising energy prices (Hazell and Wood, 2008; Trostle, 2008; Timmer, 2008). Indeed, in China the increase of prices of agricultural inputs has often overtaken the increase of some products' prices in recent years, as is continually reported by national media¹⁵. China's smallholders, as well as many other smallholders in other developing countries (Hazell and Wood, 2008), are facing a persistent decline in agricultural revenue, squeezed by both long-term decline of food

¹⁵ For instances, Shanghai Securities News, 25th April, 2008; International Herald Leader, 23th May 2011; Farmers' Daily, 29th March, 2013.

prices and continual increases in the cost, and the revenue squeeze is a fatal disincentive for Chinese smallholders.

Squeeze of agricultural product and input markets

With the overall tendencies of agricultural product and input markets globally and nationally, Hu Village agriculture represents a similar scenario to that which Table 6.14 summarises. Although rice prices in recent years have risen slightly, rice farmers could not gain cash income from it as rice is predominantly a subsistence crop for Hu villagers, with only a 12.6% commercialisation rate in 2011. For rape, every household obtained only 355 Yuan on average, excluding that for home-consumption. Although citrus comparatively contributed the most net cash income among all crops, this figure, 416 Yuan, is much less than it used to be as citrus prices in recent years have been terribly low. Almost 80% of citrus farmers cannot make any profit.

Table 6.14 Main Crops Market Conditions of Sample Households in Hu Village in 2011

	Total output (kg)	Market price in 2011 (Yuan/kg)	Sold quantity (kg)	Commercialisation level (%)	Cash inputs (Yuan)	Net Revenue (Yuan)	Net cash income (Yuan)
Rice	1085	2.4	137	12.6	657	1947	-328
Rape	258	6.8	94	36.4	281	1473	355
Corn	190	2.3	5	2.6	121	437	-110
Citrus	1104	0.7	887	80.1	205	568	416

Source: Author Questionnaire

Through interviews, almost all the respondents complained of the low

cash income from agriculture and increasing prices of material inputs and machinery, often at the beginning of conversations. Although historical data is not available, according to interviews with fertilizer and pesticide sellers in the village, the prices of fertilizers in recent years have risen up at a rate of about 10%, pesticides about 5-10%. For some farmers, generally the middle-aged farmers, they actually want to focus on farming but the squeeze of high costs discourages them. Many also reported that if the prices of rice reached 10 Yuan/kg, most farmers would come back to farming.

Therefore, from the standpoint of farmers, the comparatively low agricultural income is the primary driver that forces them to seek non-farm activities. This is illustrated by the case of Mr Y in Box 6.3. People who entirely left the land, as Mr Y did, constitute only about one third or less of those in Hu Village as will be shown in the following sections. Nonetheless, his mode of calculation and comparison is very prevalent amongst farmers in the village and the author was often given this kind of calculation on rice output and input by farmers. Interestingly, China's official CCTV channel 1 broadcasted a program on 29th December 2011, titled "who will farm today?" A farmer from Guangdong in the program calculated the capital cost of one ha rice is 10320 Yuan while the net income is 9000 Yuan.

Box 6.3 Leaving the Land: Mr Y

Mr Y and his wife have been working in Chengdu since 2010, and he is doing two jobs, building cleaning and gatekeeping, and his wife is working in a restaurant. He left all his land to his brother at home. He was disappointed by farming, as working all year round could not make much cash. He made a calculation for the author to compare the incomes between farming and jobs he is doing now.

Assuming he cultivates 1 ha rice in first season with productivity 7500kg/ha and 2.8 Yuan/kg, then He makes 21000 Yuan/ha. The costs/ha include: seeds 750 +fertilizers 1800 + pesticides 600 +combine harvester 1500=4650 Yuan/ha, and he makes net income from rice about 16350 Yuan in total. He cultivates 1 ha rape in the second season, with 2250 kg/ha and 4.4 Yuan/kg, then he makes 9900 Yuan from rice. The costs/ha include: seeds 225+fertilizers1800+pesticides300=2325 Yuan/ha, and he makes net income from rape about 7575 Yuan. Therefore, in total, he makes **23925** Yuan from both.

Now he and his wife are working in Chengdu, they earn: for cleaning work, 1440Yuan/month; for gatekeeping, 1000Yuan/month; for restaurant work, 1800Yuan/month; and in total, 4240 Yuan/month, and **50880** Yuan a year. For living costs they need about 20000 Yuan for the whole year, and then they can still save about **30000** uan safely. Furthermore, the work environment for him is much more comfortable than that of doing farming. In that case, why should he and others do farming?

Source: Author interviews

One noticeable point is that the cost calculation above does not include labour inputs, and if included, as farmers told, current farming practices are definitely running at a loss. Given high labour wages in non-farm sectors, farmers often have a strong feeling of being “at a loss” to farm, which also

leads to more labour-saving technologies inputs as discussed earlier. Thus, prosperous non-farm opportunities and unfavourable agricultural market conditions jointly contribute to the tendency for Chinese smallholders to move out of agriculture.

Market accessibility

With regard to market accessibility, which is identified by many researchers as a significant issue for rural development in developing countries, in contemporary Hu Village market conditions have been substantially enhanced due to infrastructure, especially transportation improvements, in recent years. Cement roads have been built to connect even the most remote households and the county road passes through Hu Village, with shuttle buses which provide great convenience in access to local markets, for instance, it is approximately 30 minutes to Qingshen County and 15 minutes to the nearest two towns.

Moreover, market conditions have also been substantially improved within the village. For agricultural inputs, 3 fertilizer and pesticides shops and 5 commercial fodder sellers can adequately satisfy the farming demand of Hu Village. What is more favourable for farmers is that all the fertilizer sellers allow farmers several months credit if they are not able to pay immediately and all provide free delivery services. What farmers need to do is to call the sellers and tell them what they want, and then they can wait at home or in the

field, which greatly facilitates access for aged and female farmers who are often not able to carry heavy fertilizers home. The easy access to input markets leads to “lazy farming” as farmers often termed, and also facilitates a more capital-oriented agriculture driven by labour shortages.

For product markets, besides formal purchase markets in town and county, hordes of private traders and middlemen, as “flowing markets”, greatly facilitate farmers to market various agricultural products. For instance, there are tens of pig middlemen in Hu Village who connect large pig commercial enterprises and individual pig farmers. If farmers want to buy or sell pigs, they can contact these middlemen who will take workers and tools to load pigs and pay farmers on the spot. These pig middlemen connect demanders and suppliers not only within Sichuan, but also between Sichuan and other regions, like Yunan, Qinghai and Guizhou and so on, greatly facilitating pig farmers of Hu Village to integrate with broader domestic markets.

For small scale livestock, like rabbits, farmers do not need to carry them to town or county markets, but just contact private traders and make an appointment, often simply carrying the rabbits for sale to the cement road and waiting for the traders. All these operations are manageable, especially to the increasingly aged farming population. For surplus farming products, like rice or rapeseeds, small-scale grain traders constantly visit or pass through the village, or farmers can sell to local markets if they have got enough labourers to do so.

Overall, regardless of the profit issue, accessibility and integration to markets has been substantially improved, and the almost zero market distance binds farmers tightly to market fluctuations. Combining the squeeze of two sides of agricultural markets on farmers, it is safe to conclude that without obstacles to participate in markets, the changes to agricultural factor prices, which are determined and connected by broader domestic and international markets, will directly stimulate or discourage farmers' incentives on agricultural production.

6.3.2 Land transfer market

Driven by increasing de-population of agricultural sectors and massive shifts towards non-farm employments since the 1990s, the land rental market has to varying degrees developed across regions as induced institutional theory predicted (Yao, 2000; Kung, 2002). However, with rural households constantly deepening economic diversification, the incidence of land leases in rural China has been unexpectedly low as extensively found by researchers (Turner *et al.*, 1998; Liu *et al.*, 1998; Yao, 2000). This may be due to the “semi-worker-semi-cultivator” and “male-work-female-farm” modes of Chinese rural households (Qian, 2008). From the perspective of policy-makers, Chinese governments have long, but more enthusiastically in recent years, encouraged land transfer for land consolidation. The latest No.1 document of 2013 by the Central Committee of the Communist Party of China particularly

focused on encouraging land transfer and developing family farms to deal with the decreasing farming population. Regionally in Southwest China, where non-farm activities, especially inter-provincial migration, are highly prevalent, land rental participation is higher than in Central China, although it is also a bit lower than Eastern China (Jin and Deininger, 2009).

Until 2012, the land transfer area of China had reached 18 million ha, 21.5% of the total rural household land area (People's Daily, 5th March, 2013). And Sichuan has been one of the experimental provinces in terms of agricultural land transfer, due to the vast magnitude of its migration economy. By the end of 2012, Sichuan province had transferred 0.8 million ha, 20.5% of total household arable land area (Sichuan Rural Daily, 26th February, 2013). In line with the broader trends, Qingshen County in 2010 transferred 3.6 thousand ha, 20.7% of total household farming land (QY, 2011). It seems that in recent years, the incidence of land transfer has dramatically increased compared with that of about 15 years ago when only 3-4% of the land was leased, as Turner *et al.* (1998) found in a survey of eight provinces. As will be shown below, land transfer in Hu Village presents similar and also different patterns compared to that of broader regions.

There are two forms of land transfer which have occurred in Hu Village. One form is the commercial contract. In Hu Village, one farmer rented about 13.3 ha flat land from villagers to cultivate medicine herbs and rice. Taking advantage of a favourable policy with a large grain cultivator, he made

contracts with about 100 households, with rent fees at 12000 Yuan per ha per year or 6000 Yuan per ha per half year. This is the only case that land is transferred with cash.

Another form is informal land giving or receiving inter-households for free. As Table 6.15 shows, nearly one third of households received land from relatives or friends, and the receiving land occupies almost 20% of total farming land of sample households. Almost the only reason given for receiving land is that the giver had diverted all their labour to migration (32% out of 32.9%), suggesting that migration does trigger land transfer participation (Kung, 2002). The magnitude of land giving in the sample is substantially less than land receiving, partly because the households surveyed are still doing farming while those who had totally abandoned farming were unavailable for research.

Table 6.15 Informal Land Transfer Inter-household of Hu Village in 2011

	% of sample households	Size (ha)	% of cropping land	From relatives (%)	From friends (%)	For migration (%)	For farmer illness (%)
Land Receiving	32.9	0.05	18.9	20.4	12.5	32	0.9
	% of sample households	Size (ha)	% of cropping land	To relatives	To friends	For migration	For too old
Land Giving	10.3	0.03	8.2	8.1	2.2	3.5	6.8

Source: Author questionnaire

For the surveyed households who have given some or all their land to others, the primary reason was that they were too old to farm, indicating that the geriatrification of farming caused by household economic diversification has indeed brought about labour shortages in respect of farming. Seeing from

another angle, the fact that 32.9% households received extra farming land in 2011 also demonstrates that land is still attractive to some households. And this desire also to some degree guarantees that minimal land is abandoned or left idle in Hu Village, and this in a sense can mitigate the negative impacts exerted by labour shortages in farming.

Based on the land scale that the sample households farmed in 2011, the survey further asked about the willingness of farmers to cultivate more land or to rent out some or all their land. Interestingly, as Table 6.16 and Table 6.17 show, most farmers (70.7%) do not want to cultivate extra land anymore, and even more (72.5%) want to rent out some land, implying that there is a large potential for land rental markets on the supply side. While seeing from the reverse angle again, still a rather modest number of households desire to cultivate more land, an obvious representation of the heterogeneity of different households in terms of land-demands.

Table 6.16 Willingness of Cultivating More Land of Sample Respondents in 2011(%)

Willing to cultivate more land	29.3
Reasons	
Can increase income	21.3
Have enough labour	13.6
Don't want to waste land	12.7
Can get enough grain	12.2
Unwilling to cultivate more land	70.7
Reasons	
Labour shortage on farming	56.5
Low payoff of farming	19.8
Hate farming	10.7

Source: Author questionnaire

Note: Respondents often give one more reasons so that the total of the percentages given for reasons exceed 100%.

Table 6.17 Willingness of Land Rent-out of Sample Respondents in 2011(%)

Willing to rent out land	72.5
Reasons	
Labour shortage on farming	49.3
Want to do other non-farm activities	36.9
Too old to farm	20.8
Want more leisure time	19.6
Rent fee is enough and attractive	4.9
Farming is not profitable	1.8
Hate farming	0.9
Not depending on agriculture anymore	0.4
Unwilling to rent out land	27.5
Reasons	
Self-farming gains more than rent fees	20.4
Freedom of farming on own land	10.2
Have enough labour at home	6.5

Source: Author questionnaire

Note: Respondents often give one or more reasons, so that the total of the percentages given for reasons exceed 100%.

Furthermore, to investigate whether households with different job statuses have different attitudes to extra land-cultivation and land transfer, crosstabulations with Chi-square tests were run as Table 6.18 shows. Although it seems that households without job diversification tend to be more willing to cultivate extra land and less willing to rent out through comparing the observed and the expected counts, there is no statistically significant association between households' attitudes to land and household job statuses (both p-values > 0.05). In addition, crosstabulations between land attitudes and other three household types have been also operated, without statistical significance. These analyses reveal an interesting finding that economic diversification does not necessarily lead households to rent out land and that

households concentrating on farming also do not necessarily want to cultivate more land. The key probably lies in the specific household socio-economic conditions. For instance, according to observations and interviews, the households that do not want to rent out land and who desire extra land are often those with adequate labour at hand, often middle-aged family members who due to various reasons could not manage to migrate or undertake other local non-farm activities with higher levels of remuneration. Households with older farming members, or those in which a young wife is staying at home while the husband is migrating out, are generally more willing to rent out land.

Table 6.18 Crosstabulations between Willingness of Cultivating Extra and Renting Out Land and Household Job Diversification Status in 2011

		Household without job diversification	Household with only local non-farm activities	Household with only migration	Household with both local non-farm and migration	Total
Willingness to cultivate extra land	No	35 (29.7)	40 (42.4)	53 (54.4)	31 (32.5)	159
	Yes	7 (12.3)	20 (17.6)	24 (22.6)	15 (13.5)	66
	Total	42	60	77	46	225
		Chi-square=4.077		df=3	p-value= 0.253	
Willingness to rent out land	No	9 (11.5)	16 (15.2)	25 (21.2)	12 (12.6)	62
	Yes	33 (30.4)	44 (43.5)	52 (55.8)	34 (33.3)	163
	Total	42	60	77	46	225
		Chi-square= 12.198		df=9	p-value=0.202	

Source: Author questionnaire

Note: the expected count is in parentheses.

Thus, overall, non-farm employments of rural households do not consequentially lead to land transfer which also greatly accords with the theoretical analysis of Qian (2008). Taking the modest amount of inter-

household land transfer in 2011 into account and given the huge magnitude of non-farm employments in both Hu Village and other parts of China, it can be concluded that to maintain or reduce current land size through land transfer (rent or giving freely) is the dominant practice for most rural households. Agriculture plays an irreplaceable social security role for most Chinese rural households at present (Wang *et al.*, 2013), and this advantage makes “don’t want to cultivate extra land but could not totally quit” (Qian, 2008:20) a rational choice for most rural households.

Hu Village has shown a buoyant land transfer markets in recent years, and the attitudes of the sample households have projected a huge market potential on the supply side. The demand side nonetheless is not that optimistic. Actually, except the largest land tenant, in the sample households, only 5 households (2.2%) rented land from other farmers, all at a small-scale ranging from 0.3 to 1.3 ha. The chief reason of such low incidence of land renting is the low benefits of farming. Another cause is that the rugged land and highly scattered land plots greatly enhance the transaction costs of land renting and impede improvement to land scale. As a county official recognised, “it is impossible for Qingshen County to materialize scale economy of land through land transfer because of its landscape limitations, and the smallholder family farm will still be the mainstay of future farming” (Interview with Mr Z, 2012). Thus, land transfer will primarily occur through the informal form of small scale and flexible receiving and giving inter-households

in Hu Village, and other places which are geographically similar to Hu Village.

What deserves more concern is the land productive performance after transfer in whatever forms. Longitudinal observations and data may be more appropriate to investigate this issue, while qualitative data from interviews and observations could provide a tentative evaluation. The largest rented farm performed much poorer than expected by the villagers, for instance, the rice productivity was only about 4500 kg/ha, substantially lower than the village average. The poor land performance was caused primarily by poor management of the farmer, for instance, not applying pesticides and herbicides properly and timely, no manure usage, and cheating by using hired labourers. In addition, the high material inputs and hired labour costs almost squeezed all the potential profits from the land, and the contract farmer said he experienced a great loss in 2011, and possibly will return the land back to individual farmers in very near future.

In respect of informal land transfer, one potential concern may be the unequal treatments of farmers to own land and to be given land. Interviews reveal that this concern is unnecessary at present in the Hu Village case. Farmers who received land from others actually tend to enhance revenue from farming, and most will treat the land fairly as they agreed. Therefore, informal land transfer has more positive effects on current agricultural production, as it on one hand greatly reduces the likelihoods of land abandonment, and on the other hand, can sustain land fertility while the land

contractors pursue other non-farm activities. Most importantly, the informal land transfer sustains the flexibility and resilience of current household livelihoods, and guarantees that when the farmers return they still have fertile land to farm. With current political economic conditions in rural China, the flexibility and resilience that is endowed by informal land transfer are of strategic importance to rural households and levels of rural agricultural production.

6.3.3 Contract farming

Contract farming, an important pathway to integrate small family farms with international agricultural markets, has been extensively researched worldwide (Glover and Kusterer, 1990; Little and Watts, 1994; Key and Runsten, 1999). In the process of the market-based economic transition in developing countries like China, smallholders often face various limitations in participating in markets and commodity production, like information asymmetry, high risks and high transaction costs. “Therefore, small producers often depend on outside actors to bring them much-needed skills, capital and market access”, and “contract farming, in this perspective, is but one of the possible ways in which peasant households can shift from subsistence agriculture to commoditised agriculture of higher-value products” (Zhang,2012:464). With increasingly deepening marketisation in China, contract farming has been developed in various forms.

However, different from other developing countries, contract farming in China is mostly operated by small domestic commercial companies and primarily caters to domestic markets (Zhang, 2012), for China has huge domestic agro-food demand driven by increasing urbanisation and consumption pattern changes (Huang, 2010). Although contract farming is supposed to be linked to market behaviour, in China the state has played a dominant role (Zhang, 2012). As discussed in Chapter 4, local governments, both provincial and prefectural, have placed agricultural industrialisation as the top strategy of agricultural development, and contract farming organised by the “enterprise + farmer” model is the most popular mode of agricultural industrialisation (Huang, 2010; Zhang, 2012). In line with macro trends, Hu Village farmers have also long participated in contract farming, contract sericulture and contract rape seeding, so the following section will further examine how these two projects exert influence on agricultural production in Hu Village.

Contract Sericulture

The contract between sericulture farmers and Qingshen County Sericulture Company has been established since the 1980s, when most farmers in Hu Village undertook sericulture. The contract basically denotes that the company provides silkworm eggs, technological guidance and markets, and farmers buy silkworm eggs from the company and sell the silkworm cocoon to the

company. Village cadres often participate in the process as an agent of the company, to distribute silkworm eggs or transmit some information. The product prices are set by the company, and farmers cannot bargain. Because the company produces for both domestic and international markets, the prices also fluctuate with constantly changing domestic and global demand and supply levels. As a profit-chasing actor, to guarantee the profits of the company is the precondition for the prices provided to individual farmers.

Therefore, although this contract does facilitate individual farmers to connect with markets, risks still remain and profits cannot be ensured. For instance, during the fieldwork, the first season of sericulture was disastrous due to unfavourable weather (too wet), and the harvest was poor and of low quality. The company set restricted standards for this season's products, and substantially reduced the purchase price from farmers, so that many farmers only got tens of Yuan, or a hundred Yuan per piece whereas in normal years they can earn about 800 Yuan. This instance suggests the relationship and barriers between the two contract sides, and farmers are most often on the subordinate side. Furthermore, there are no formal signed contracts between the company and farmers, only oral informal agreements, thus, farmers' rights and interests cannot be protected legally. Without guaranteed profits, many farmers would rather go after more lucrative jobs so there has been a steady decline of sericulture in Hu Village. However, for some farmers that have to stay in the village and who want to make some money, participation in this

contract farming may be the only option.

Contract rape seed production

Since 2009, some Hu Village farmers have engaged in contracts with a rape seed company, which was introduced initially by a government official. In 2011, due to unfavourable market demand, the company stopped for one year and continued again in 2012, with 186 participant households. In the contract, the company provides rape seeds, technological guidance and markets. The purchased prices are set at three times the normal rapeseed market price for that year. This price scheme seems very attractive to farmers. What farmers ought to do in this contact is to strictly follow the technological requirements established by the company, otherwise the productivity cannot be guaranteed.

Due to very complicated technological procedures and higher labour input requirements, the benefits of this contract are selective. Younger and educated farmers have more advantages and thus got higher productivity, while older and more poorly educated farmers often failed to implement the requirements in a timely and effective manner, and thus had poor productivity. Theoretically, participant farmers can earn about 15000 Yuan/ha, much more than normal rape production does, although this is materialised by investing additional cash (about 1500 Yuan/ha) and labour (generally 8 additional working days) because the technological procedures of seed production require more fertilizers, often expensive varieties, pesticides and large

amounts of labouring work on land preparation and eliminating foreign plants.

Therefore, if taking the additional investments into account, the profits are actually acquired through high inputs, and the net income to a large degree remains the same as with normal rape production. Moreover, this contract deepens commercialisation of rape production as most of the productivity is marketed, leaving a small proportion of product (the rapeseeds from male plants which are not seeds, generally 600 kg/ha) for home-consumption. Some households even have to purchase rapeseed oil from markets. Even so, as Guo *et al.* (2007) found in a national survey, most farmers still are willing to engage in contract farming, especially for those with relatively sufficient levels of labour and with modest education, because at least it provides an opportunity to make more cash. Government officials and village cadres serve as coordinators between the company and individual farmers, which also give farmers certain credits for this project.

The two contract farming projects in Hu Village have shown that the market-oriented agricultural development approach has brought various market agents into agriculture and has led to deeper agricultural commercialisation and industrialisation. In this process, smallholders, even in remote areas like Hu Village, have become tightly connected with domestic markets and even global markets. Nonetheless, given the limitations of rural markets and governance structures, contract farmers are often located in subordinate positions in this game and risks in most cases still remain. It is

hard to say whether the impacts of contract farming on agriculture are positive or negative, as many have found both effects in other developing countries. For instance, Little and Watts (1994) and Reynolds (2000) stress the negative side of the “exploitive” relationship between farmers and companies, while Key and Runsten (1999) focus on the positive side of income-generation. Even based on the two contract farming projects of Hu Village, both impacts have emerged, with the coexistence of a subordinate power position and increasing income. Without other alternatives, Hu Village farmers have no choices but to participate in contract farming if they expect to increase agricultural income. Given China’s special government-dominated development strategy, more efforts need to be taken to foster various alternatives of agricultural marketisation other than contract farming, and grant farmers more choices when those left-behind try to increase income from agriculture.

6.4 Economic policies of agricultural production

In transitional China, the state still plays vital roles in agricultural development through agricultural development schemes, policies and projects. As discussed in Chapter 4, governments at all levels have made a great effort to modernise agriculture and enhance farmers’ income through various subsidies, investing on infrastructure and other agriculture-related projects. This section will then, based on the case of Hu Village, investigate how

different agricultural policies drive agricultural production at the local level.

6.4.1 Agricultural subsidies

Agricultural subsidies have been a landmark agriculture support policy since the early 2000s, as it terminated the thousands-of-years' taxation on Chinese farmers (Yu and Jensen, 2010; Huang *et al.*, 2011). The subsidy quantity from central finance has increased annually as Chapter 4 has shown. There are basically four types of subsidy payments: grain direct subsidy, input subsidy, quality seed subsidy and agricultural machinery subsidy, and the latter three are usually termed "agricultural material comprehensive subsidy". Thus common farmers literally receive two subsidies: grain direct subsidy and agricultural material comprehensive subsidy. To guarantee the effectiveness of the subsidy, the payments should be distributed to individual farmers according to the actual sown area of plants (Yu and Jensen, 2010), while local governments often distribute the payments according to the registered land area of households rather than actual sown area (Huang *et al.*, 2011). Qingshen County also followed this rule and distributed 140 million Yuan for agricultural subsidy in 2010 (QY, 2011). With very slight changes in recent years, Hu Village farmers received subsidy at 1470 Yuan/ha for all agricultural subsidies, with grain direct subsidy 420 Yuan and the other 1050 Yuan in 2011.

To what degree agricultural subsidy has distorted farmers' decisions on

farming has been discussed with varying conclusions, as reviewed in Chapter 2. Qualitative data from Hu Village seems to follow the findings of Huang *et al.* (2011). When asking farmers their opinions on agricultural subsidies, the most prevalent response is emotional gratitude to governments for not only eliminating many of the burdens of farmers but also in turn subsidising them. With regard to effects on farming decisions, the answers are mostly “nothing” or negative. Many respondents mentioned that the distribution method is problematic, for whether cultivating grain crops or not, all farmers can unexceptionally receive the subsidy. Farmers who plant trees in paddy fields can also receive the payments. In addition, for the more than 30% informal land transfer, households receive extra land without subsidy, which means those who give land out keep the subsidy for themselves, even though their whole family may have migrated out. The mismatch in land cultivators and contractors driven by land transfer obviously will lead to the conclusion that the subsidy distributed by that method cannot stimulate farmers’ farming incentives.

Another associated issue identified by Hu Village farmers is the minimal amount of the subsidy, 1500Yuan/ha, with every household cultivating about 0.24 ha, so that is only 360 Yuan in total. This is already much higher than the rate of 2008 when Huang *et al.* (2011) found that the national average subsidy for a typical household is 327 Yuan in total. To the great majority of current households in Hu Village, this amount of cash means too

little. As farmers often commented, it can only buy some kitchen sauces. Many farmers often forget to withdraw the subsidy when they buy fertilizers and pesticides. No migrant-farmers will return back to farming because of agricultural subsidy, neither will some farmers stop shifting rice land to cash forest trees. Nonetheless, the subsidy at least can to some degree cover the price increase of agricultural inputs and sustain farmers' farming revenue. Instead of driving farmers to undertake grain cultivation actively, the agricultural subsidy is more like a bonus to farmers. As Huang *et al.* (2011: 69, emphasis is added) finally concluded,

The subsidy programme in China is becoming a big deal. It is very popular in the countryside and, therefore, it is likely to be a fixture of China's agriculture for a while. However, this programme, so far, is mainly ***an income transfer programme***. And so far, it is being accomplished with few distortions to grain sown area or input use.

6.4.2 Governmental agricultural development projects

Various development projects are very common pathways for governments to directly intervene in modernisation processes, especially for developing countries (Scott, 1998). In China, the range and magnitude of government-led development projects are tremendous, as is the state-dominated development strategy. As has been argued by Scott (1998), however, many state-led development projects which are initiated with good intentions end as tragedies or disasters because the ossified bureaucracy and linear implementation systems cannot deal with diverse local situations. In transitional China, there

have been, especially in recent years, many favourable policies which have been launched to develop modern agriculture.

In sharp contrast with the frustration on the farmers' side, governments enthusiastically participate in agricultural development through planning and initiating various projects. As agricultural modernisation is the dominant development strategy of transitional China, governments from the central to the local levels, especially in recent years, have been endeavouring to design and implement multifarious development projects to modernise agriculture. For Sichuan, modern agriculture is a project package, including various aspects, like crops, land and livestock. Based on recent project experiences in Hu Village, an overview of two of the most influential projects, the autumn potato project and the modern pig farming project may provide the basis for an overall evaluation of the effectiveness of government-led agricultural development projects.

Autumn potato project

The autumn potato project was promoted by Qingshen County Agricultural Bureau in 2009, targeting adjustment of the agricultural structure to enhance farmers' income. The content of the project includes the government providing free potato seeds and free management inputs (mainly pesticides), while participant farmers provide land, labour, fertilizers and other normal management inputs. This seems to be a well-meaning project at the

beginning.

In practice however, the distribution of potato seeds was delayed for two weeks due to bureaucratic delays and this meant that farmers missed the appropriate time for planting potato according to the local weather conditions. Many farmers took the seeds back home and did not plant them but cooked them as food. For the planted potatoes, more than 80% of plants caught diseases afterwards because of delayed seeding. The bureau then organised people to apply pesticides. On that day, the bureau director took many reporters to propagate their project activities, while the effectiveness of the pesticides application was actually minimal. And soon, many farmers decided to remove the plants, and prepare the land for next season crops. For those who did not remove the plants, the harvest was very poor. The bureau did not care about the outcome, as they have various methods and strategies to cope with project inspection and finally the project was reported as a big success.

What the project implementers seem to be really concerned about is that there is a place and people to take part in the project, but the outcome is not the priority. Most ironically, as many experienced farmers noted, the soil type in Hu Village is actually not suitable for potato as many of them have learned before the project. Finally, the autumn potato project ended with a disappointing, if not disastrous, outcome.

Modern pig hoggery project

To promote modern livestock production in Qingshen and to enhance farmers' income, Qingshen County Animal Husbandry Bureau introduced a modern pig farming project in 2010. The main content of this project is to subsidise farmers building a modern hoggery, to encourage farmers to undertake pig farming. In this project, a small hoggery for 50 pigs can receive 3000 Yuan subsidy, a modest one for 100 pigs 5000 Yuan, a large one for 150 pigs or more 10000 Yuan. Attracted by the amount of subsidy, about 100 households in Hu Village participated in this project, and about 70% constructed small hoggeries, while modest and large hoggeries only occupied a minor proportion.

From the standpoint of farmers, this is a good project for them as it did release credit constraints on livestock production. However, out of the 100 participant households, only about 30 undertook pig farming afterwards while the majority of them continued to migrate out or undertook other non-farm activities, leaving the hoggeries empty. As a village cadre told, about 60% of participant farmers had no experience of pig breeding and built hoggeries only for the subsidy. In addition, about 100 project hoggeries cover more than 1 ha paddy field, and the empty ones cover about 0.67 ha. It is hard to judge the effectiveness of this project, because for some pig farmers, the subsidy indeed provided them an opportunity to undertake scale pig farming, while for some who actually did not intend to farm pig at home, it was a waste of

resources, both in terms of capital and land. For the implementer, this project undoubtedly is another successful step to modernised agriculture and will be reported and propagated on at various government conferences.

Except those two, there are many other different government-led agricultural development projects participated in by Hu Village farmers currently, just to name a few: the female pig subsidy, agricultural insurances, forest tree project and so forth. But the implementation of all of these follows similar patterns to the two described above. The village head reported that,

With the favourable agricultural and rural policies, in the future there will be more government projects, while on the side of farmers, their farming incentives kept decreasing, and less and less farmers are willing to undertake agriculture diligently and attentively .

What the cadre said actually points to the overall status of contemporary Chinese agriculture: “enthusiastic governments” and “dejected farmers”. Due to discontinuities of project targets, as the above two projects show, many government-led projects often in the end frustrate or distort farmers’ initiatives.

6.4.3 Infrastructure investment

Many researchers have found that rural infrastructure construction (e.g. roads, irrigation facilities) could trigger all-wave rural developments in developing countries, for instance, enhancing both agricultural and non-farm productivities (Fan and Zhang, 2004), integrating the rural population with markets and facilitating rural mobility (Rigg, 2001), and changing land use patterns and livelihood strategies (Hazell and Wood, 2008). In China, for a

long period, rural infrastructure, especially transportation, has been greatly overlooked by national development strategy compared with the rapid growth of urban infrastructure.

Since the 2000s, Chinese central government has strengthened rural infrastructure construction, including transportation, irrigation, drinking water security, education, health and cultural facilities. In 2011, the central finance office invested more than 1000 billion Yuan in rural development, and budgeted 160 billion Yuan for rural infrastructure, representing a 15% growth rate from 2010 to 2011 (Ministry of Finance, 2011). At the provincial level in 2011, Sichuan repaired 29000 km rural cement roads, transferred 0.09 million ha hilly area into arable land, increased 0.16 million ha of irrigated land, and constructed 15000 km rural cement roads (Sichuan Government Annual Report, 2012). At the county level, Qingshen repaired 300 km rural cement roads and transferred 573 ha into arable land, while in 2006, the amount of newly constructed cement road was 116 km (QY, 2007, 2011). Based on recent central policies regarding agriculture and rural development, it is safe to say that the intensity and range of investments in rural infrastructure from the central to the local level have kept increasing in last several years and will continue to expand in the future. Infrastructure at community level has also been accordingly improved recently as Hu Village shows.

As a result of two main government infrastructure projects, by 2012, all the 8 groups of Hu Village have become accessible by cement roads,

which now connect about 90% of households, and more than half of the paddy field area was also paved through. One county road passing through Hu Village was also rebuilt, further shortening the time from village to county and other townships. The advanced roads benefit agricultural production in various ways. The impact most stressed by farmers is that these changes significantly increase opportunities for mechanisation, as cement roads substantially enhance the range of combine harvester operation. Many old farmers clearly expressed that without combine harvesters they might have quitted farming and given their land to others. Newly built roads enable them to manage more land and thus to some degree reduce the degree of their households' dependence on non-farm income. In addition, the free delivery service provided by fertilizer and commercial fodder sellers also benefits from cement roads. A seller, Mr S told, "Without hardened roads, it is impossible to deliver hundreds of kg fertilizers to remote and hilly paddy field by small motor vehicles, and the remote land might have been left idle".

Not only for machines and chemical fertilizers, but also manure can be more easily and effectively transported from farmers' houses to remote land plots, as farmers can use pushcarts to convey manure on cement roads which is much faster than carrying on their shoulders. With cement roads, agricultural products can make easy and timely access to markets as is discussed earlier. Overall, the improved transportation reduces farmers' labour intensity, better integrates farmers and agriculture with markets, and in

a sense, improves agricultural attractiveness.

From the perspective of political economy, rural roads could make the countryside more proximate to central authorities and hinder farmers' autonomy (Scott, 1998), which may lead "to an undermining of fragile livelihoods and dispossession of resources" (Wilson, 2004: 527) and could be an engine of economic stratification and social exclusion (Rigg, 2002). Nonetheless, for Chinese agriculture, limitations and threats mostly come from agricultural de-population and resource scarcities, so roads and the associated market integration they bring could play a more meritorious role.

Besides, the land levelling and irrigation improvement projects in recent years have also to different extents improved the agricultural infrastructure. For instance, the land levelling project shifted about 6.7 ha hilly area into flat arable land. The irrigation project reinforced irrigating channels with cement from reservoir to individual paddy field, which increases the irrigation efficiency and reduces water loss in water convey. These government projects are imperative indeed in an era of farming being increasingly marginalised and despised by farmers. Combining the discussion on government development project above, it seems that for contemporary Chinese agriculture, the government can exert more positive influences through improvements in agricultural infrastructure than through development projects.

6.5 Conclusion

This chapter has addressed the roles of various economic factors which affect contemporary Chinese smallholder agriculture. Through investigation into the impacts of rural household economic diversification, agricultural markets and government economic policies and projects related with agriculture, three strands of conclusion can be drawn respectively.

Firstly, given the long-lasting and dramatic economic diversification of rural households, agriculture has to be understood through non-agricultural activities in China as similarly found in other developing countries (Rigg, 1998). Massive engagements in non-farm activities have diversified and stratified rural households economically in a decisive way, and substantially reduced the share of agriculture in rural households. Economic diversification of rural households influences agricultural production in various ways. First of all, agricultural productivities have largely remained due to modern material inputs and the standardisation of farming practices. While agricultural structure has been to varying degrees changed, due to the readjustments of family labour by non-farm employments, most crop production and livestock sidelines have experienced gradual decline due to overall labour withdrawal. Migration seems to affect agricultural production more prominently than other forms of non-farm employments, and tends to de-intensify land use and reduce agricultural diversity. Technologically, substitutions between labour and modern technologies, like fertilizers and machines, evidently exist, particularly

for migrant households. Increasing capital input and minimal hired labour leads Chinese smallholder agriculture to “capitalization without proletarianization” (Huang *et al.*, 2012).

All the changes lead to a special form of agriculture, not traditional agriculture characterised by intensive and sustainable land-use, nor purely modern agriculture. Taking the context of increasing economic diversification of rural households into account, the smallholder agriculture can be seen as “**perfunctory agriculture**” as farmers themselves and the director of the County Agricultural Bureau have noted. Perfunctory agriculture is characterised by extensive management alongside preferences for labour-saving modern technologies.

For a long time, a great clamour has arisen in the media and in academia in China regarding the question of agricultural crisis driven by massive withdrawals of rural labour from agriculture, and this chapter may respond to these concerns with a simplified argument: the overall agricultural outputs in the near future could largely be sustained, while the production process has been changing qualitatively, and presumably in an unsustainable way. It is agricultural sustainability, rather than outputs, that really deserves concern. As Rigg has similarly observed in Southeast Asia, “most of the major transformations in agriculture in the region are adaptations brought about—at least in part—by labour loss.” (Rigg, 1998:508).

Secondly, agricultural markets of both products and inputs have been

substantially developed. They have greatly promoted agricultural commercialisation and integrated farmers with domestic and international markets. The rising input prices and declining or slowly rising product prices are squeezing agricultural revenues, and greatly discourage farmers' incentives for farming. On the other hand, the market-oriented agricultural development approach has enlivened various fashions of agricultural operation such as contract farming and large-scale land contracts, as Hu Village has recently experienced. What these market forces may bring to farmers and agriculture varies according to different conditions. While, given the increasing deagriculturalisation of Chinese smallholders, the participation of various market actors in agriculture may well bring positive impacts, how to ensure the legitimate interests of farmers are protected deserves more attention, especially in a transitional economy where market imperfections and regulation limitations are widespread like rural China. Strong willingness for land transfer on the supply side and weak demands indicates the low comparative advantages of agriculture and also shows the imperfection of land transfer markets. The quite substantial magnitude of informal land transfer is a strategy for farmers to sustain livelihood flexibility and resilience under the specific conditions of Chinese political economy for farmers and migrants.

Thirdly, the Chinese government has played an important role in agricultural development, especially in recent years. Under the favourable

conditions of agriculture-supportive political economy, various agricultural subsidies, modern agriculture and infrastructure projects have been enthusiastically launched and implemented to facilitate agricultural modernisation and to enhance farmers' income. The influence of the agricultural subsidy on farming is insignificant, whether in the case of Hu Village or in the broader regions (Huang *et al.*, 2011). It is more like a bonus to farmers. Agricultural development projects can provide farmers with various opportunities to undertake high-value farming activities, while given the context of Chinese ossified bureaucracy, these projects with originally good intentions in many cases end up with disappointing consequences. It suggests that for contemporary rural China, agricultural infrastructure construction is especially desirable, as this can make agriculture more manageable for the increasingly aged farming population and may effectively reduce the likelihood of land abandonment.

Finally, it is an overall tendency in rural China that agriculture has been playing a decreasing role in household livelihoods economically, and thus being progressively marginalised by most rural households. This chapter has focused on the economic factors that may exert influences on agriculture, while how the social and cultural changes of transitional China affect agricultural production are also important. As Rigg (2001:121) has argued in respect of agricultural changes in Southeast Asian countries: "... along with the importance of locality,... is the necessity of looking beyond the economic.

Important cultural and social changes are influencing the decisions that rural people are taking...” The next chapter will explore this issue in detail.

Chapter 7 Socio-cultural Drivers of Chinese Smallholder Agriculture: the Case of Hu Village

7.1 Introduction

This chapter explores what socio-cultural forces are influencing contemporary Chinese smallholder agriculture, and how. In effect, economic and socio-cultural factors are not independent from each other, but they affect agricultural production in various ways in contemporary rural China. Merely accentuating the economic drivers on agricultural production, as most studies have done, and simplifying agricultural production into an economic behaviour may omit more profound socio-cultural factors, based on how farmers think and exert agency in their production activities. When conceptualising the overall agrarian transition of Asian countries, Rigg and his associates (2012) casted a critical view of the “economic tendency” in rural studies that sees “outcomes as manifestations, primarily, of economic forces and incentives” (Rigg *et al.*, 2012:2), suggesting that focusing on any particular aspect of rural society fails to capture the whole picture and often leads to misconstruing the nature and direction of agrarian transformation. Previous reviews (Chapter 2, Section 2.5.6) suggest at least two points. First, agricultural patterns indeed change in the wake of socio-cultural changes. Second, farmers, rather than being merely economically rational individuals as many studies have

assumed, are virtually **social actors** who exert agency according to specifically situated social relations and cultural rules (Long and Ploeg, 1994), so socio-cultural factors are of great significance to farmers' livelihood strategies. This chapter, then, based on the specific circumstance of Hu Village, reveals the underlying socio-cultural forces with regard to agricultural production in the context of the Chinese agrarian transition.

Besides striking economic transformations, the rural space of China has been undergoing dramatic socio-cultural changes as well since market reforms. If classifying rural society roughly into three levels: the individual level, the household/family level, and the community level, ample evidence has shown that transformations have occurred at all three levels. At the individual level, a tendency of individualisation has gradually come into form, featured by increasing individual mobility, boosting individual rights awareness and rise of personal lifestyles as the whole country pursues modernity (Yan, 2010). At the household level, driven by livelihood diversification, especially rural-urban migration, a form of "split" household has widely emerged in rural China (Fan, 2009). In addition, the power of young women has kept rising up within household, accompanied by the decline of parental authorities and power (Yan, 2006; He, 2010). Gender relations seemingly have meliorated as gender division of labour is increasingly perceived as a collective strategy to improve the household economy rather than as oppression of females (Zuo, 2004; He, 2010). This said, rural women indeed undertake more intra-

household work and thus often have high workloads (Fan, 2003; Ye and Wu, 2008). Inter-generational relations have drastically reversed as the status of the young has been greatly enhanced and that of the older generation substantially weakened as they have been marginalised, leading to a severe decline of filial piety (Ikels, 2006) and an “exploitive” relationship between generations (He, 2010).

At the community level, long-term market penetration and dramatic migration have greatly disintegrated the Chinese village as a community (Mao, 2010), leading to the degradation of community values and social cohesion. Culturally, through discursive practices of rural/urban difference, rural space and rural residents have been constructed as “backward”, “traditional”, “lagging behind times” (Lei, 2003: 637), inferior to urban residents who are associated with that which is modern, progressive, promising. That is also why most rural young people desperately swarm to cities to embrace “modernity”. In addition, brought about by modernisation, the consumerism culture has penetrated into rural society and obliges farmers to make as much cash as possible (He, 2010). The brief sketch of China’s rural socio-cultural changes under the overarching process of the quest for modernity is also echoed by researchers in other countries. For instance, Rigg *et al.* (2012) outlined the overall agrarian change in Asian countries into three strands: delocalisation of life and living, dis-embedding of households and families and dissociation of the village community.

Informed by the literature regarding rural socio-cultural changes and combining the specific circumstance of Hu Village, several aspects can be identified which have influenced agricultural production in various manners, such as: villagers' overwhelming emphasis on children's education which drives the young out of agriculture; the labour division within rural households leads to current labour pattern in farming; cultural changes within the community push farmers to make more cash to satisfy their everyday needs. The following sections further investigate how these different factors directly or indirectly affect agricultural production in detail, and the final section concludes the chapter.

7.2 Moving out of agriculture and the emphasis on education

7.2.1 Agriculture: a low status, futile and shameful occupation

In the process of the quest for modernity in the developing countries, agriculture has been widely downplayed not only by outsiders of the rural but also by rural residents themselves. More than a decade ago, Croll and Huang found in eight Chinese villages that "it was the desire to leave agriculture which was cited as the most important trend, with out-migration perceived as one means of achieving this move" (Croll and Huang, 1997:134). Agriculture is held "in such low esteem that the villagers would not even consider it as a

proper 'work' (gong zuo) as the latter term is reserved for permanent, stable and income-generating employment in the non-agricultural sector" (Lei and Lu, 2005: 25). The foremost reason for agriculture being considered as a low status, futile and shameful occupation is that agriculture cannot produce sufficient cash to satisfy the ever-increasing monetary demands of rural households in modern society, especially in countries dominated by smallholder agriculture like China.

This mentality towards agriculture is also prevalent in Hu Village. At the beginning of almost every conversation, disappointments from agriculture were always expressed by farmers, such as "farming is annoying (nao huo)", "agriculture is a useless work now, and we cultivate crops only for our consumption", "farmers are labourious and hopeless, working hard for a whole year without much return". When I introduced myself as a PhD student studying agriculture, many farmers teased me about the "boring" subject, like "there is nothing worthwhile to study about agriculture now, and no one wants to do farming except the elderly". From the despondent language, the message is clearly delivered that agriculture is futile and people that undertake agriculture deem themselves inferior to others. Agriculture, which used to be the mainstay of household livelihoods, has affirmatively become a sideline of household economy for the vast majority of Hu Village households, except several specialist households who focus on livestock farming or cash crops. The inversion of the significance of agricultural and non-agricultural

activities in rural spaces has been widely identified in developing countries, and agriculture thus has been increasingly perceived as a low status occupation, leading to a strong willingness to move out of agriculture.

As Table 7.1 shows, dedicated farmer is ranked as a low status of occupation by Hu villagers, while governmental official and successful businessman are the most admired jobs, as they represent wealth, security, power and respect in the eyes of farmers. This is consistent with other studies which have found that farmers gained more satisfaction from non-farm employment than from farming in China (Parish *et al.*, 1995; Croll and Huang, 1997). Interestingly, Table 7.1 also indicates that migration and other prevalent off-farm activities are not most valued by farmers, as in the eyes of farmers, working as a migration worker or in other wage employments is often seen as “working for others” (*ti bie ren da gong*), a relationship of subordination. Unless the migrants succeed in making a fortune, they are just “employed workers”, entailing “a palpable loss of status” (Lei and Lu, 2005: 31). In spite of that, no one denies the positive side of migration in terms of “broadening one’s horizons”, especially for the rural youth who are so keen to know the outside world. Local businessmen, often with more political capital, find it easier to earn respect (Lei and Lu, 2005). In Hu Village, there are several successful businessmen who initially were migrant workers but gradually established their own companies. These businessmen also invest in village development, like road construction, offer pecuniary aid to the poorest and so

on, thus earning the villagers' respect.

Table 7.1 Hu Village Farmers' Attitudes towards Different Occupations

Ranking	Occupations	Reasons
High status	Governmental official, "boss" of a big company or successful businessman	Powerful, wealthy, respectful, providing children with best life and education conditions, mental labourer.
Medium status	Self-employed enterpriser, school teacher, migrant, local factory worker, livestock middle man	Having other income sources for household expenditure, stable income, living an normal life, doing manual work and management work
Low status	Dedicated farmer, non-skilled labour work within village	No skills, poor income, poor life, powerless

Source: Author Focus Groups

Besides, agriculture as a low status occupation in China has been culturally aggravated through rural-urban (traditional-modern) discourse construction. Lei (2003:637) has analysed that in contemporary China, due to the rural-urban divide in the modernising process:

Cities are seen as civilizing centres; a land of leisure, consumption, and proper femininity; and China's window on a progressive West. Villages are depicted as agricultural fields, a land of hard labour, and a place lagging behind times.

Apart from the national discourse practices, at the individual level, in the process of school and parental education, China's rural children have been constantly told that agriculture and the countryside have little future and the only fate for them is to try their best to jump out of agriculture and out of the villages (tiao chu nong cun). To be a modern person becomes the only fate of rural young generations, endowed by both socio-cultural discourse and

childhood education. Therefore, moving out agriculture for the rural people is a cultural norm, and the detrimental discourse regarding agriculture has served as a push power for moving out of agriculture. However, practically only a fraction of them have successfully left agriculture to permanently reside in cities. Most have to split their families between cities and rural villages due to institutional barriers (namely the Hukou system). In reference to the next generation, all the farmers would endeavour to assist their children in moving out of agriculture.

The pathways for rural people permanently out of agriculture are limited in China, such as obtaining an urban formal job through education, making a fortune in cities through doing business, marrying urban citizens and so forth. So far, only 25 households of Hu Village have successfully moved out of the village and permanently reside in cities, comprising of 17 households which have done business in cities starting as migration workers and the remaining 8 households succeeded because some family members have acquired formal jobs in cities through higher education.

Although young people moving out of village and agriculture does not influence the land area of the community, it potentially affects the farming practices as the old parents often have difficulties to deal with land management when their adult children cannot return to help. For all that, rural parents still entrust their hope and proudness to their children and do their utmost to push them out of agriculture. The primary pathway is education as

will be further explored in next subsection.

Another illustration of farmers' mentality towards moving out of agriculture is the dominant perspective towards where the future of agriculture lies for Hu Village. When asking farmers what they think the future of agricultural production will be, almost without exception, the answer was that they hoped in the future external businessmen with higher and professional education came to rent all the land, and villagers were employed on the land for some cash. This viewpoint reflects the strong reluctance of farmers to continue farming and a clear disbelief of that the next generation will conduct farming in the future.

7.2.2 Education: the way out of agriculture

It has been widely and constantly found that there exists a positive relationship between education and non-farm employments in rural developing countries (Ellis, 1998; Reardon *et al.*, 2000; Davis, 2003). Researchers have shown, according to quantitative analysis, that education indeed plays a significant role in providing access to non-farm working opportunities (Parish *et al.*, 1995; Zhang *et al.*, 2002; Lei and Lu 2005; Mohapatra *et al.*, 2007), and can lead to higher returns in terms of non-farm employment wages. As de Brauw and Rozelle (2008) estimated, one year of education can bring an average of 6.4% higher non-farm wages and 7.8% higher migration wages in China.

Education is widely perceived by rural parents as the ladder leading to a better way of life and the primary way out of agriculture. Chapter 5 has shown that the non-farm employment, especially migratory, population of Hu Village has higher education. Parents generously invest in their children's education, especially as most rural households have only one child. In Hu Village, most children usually go to local primary and secondary schools in nearby towns. However, in recent years, about 50 households, as the village head estimated, have begun to send their children directly to Qingshen County for a better education, as the case of Mrs S particularly shows (Box 7.1).

Box 7.1 Giving My Daughter Urban-level Education: Mrs S

Mrs S has an 8-year-old daughter. To create the best study environment for her daughter, she sent her little daughter directly to the county school which possesses the best teaching facilities in Qingshen. She bought a new car for taking and picking up her daughter. To explore her daughters' best potential, she enrolled on various small sessions for her daughter, like writing, singing, dancing and English sessions. About 20,000 Yuan, almost one third of her household income, is spent on education including student fees, extra sessions, transport costs and so on. She tries to give her daughter the same education as urban students, and not let her daughter lose at the beginning. As she said, "my daughter is the top priority of my life, and I will try my best to realise her dream as a professional dancer".

Source: Author Interview

20,000 Yuan, which could be the whole household income for many households, is often invested in education, which just indicates the priority of the next generation's education in the household. Due to the longstanding urban/rural divide, rural education conditions have been seriously lagging behind, so giving their children urban-level education and better integrating

them into urban life are the main concerns of many rural parents like Mrs S. In addition, the convenient transportation links facilitate this lifestyle, as students can take a bus to County in only about 20 minutes if their parents cannot afford a car as Mrs S did.

Rural parents may move out of, or return to, agriculture for their children's education as the cases of Mrs P (Box 7.2) and Mrs Y (Box 7.3) illustrate. In both cases, agriculture is never the first consideration of their decisions; instead, the education or the future of their households comes to be the top priority.

Box 7.2 Moving out of Agriculture for Son's Education: Mrs P

Mrs P and her husband used to concentrate on farming when three years ago they contracted a large citrus orchard with 2.7 ha area. Her husband received education from polytechnic school about agricultural production and is proficient at farming work. However due to unfavourable market prices in recent years, they stopped the contract and her husband migrated to Shanxi Province as a construction worker in 2010. She stays at home, conducts farming and takes care of their only son.

In 2012, her son succeeded in entering a high school in Qingshen County. To give him a better living environment, Mrs P decided to move to the county and accompany his son during his study from September of 2012, and their land will have to be given to other relatives. During the three-year high school education of her son, Mrs P will find a wage job in the county to provide for their living. Her husband's earning from migration will be used as the house rent and tuition fee. She said that her son is the only hope of their family, and they will strain every muscle to assist him out of the village. After her son goes to other cities for university education, she will come back and undertake farming again. During the fieldwork, she has been trying to find a proper house or room for her future stay in the county.

Source: Author interview

Box 7.3 Coming Back for Son's Education: Mrs Y

Mrs Y, 28 year old, had worked in Ningbo, Zhejiang Province together with her husband for 8 years and came back in 2009. With the saving, they built a new house. As young migrants, they originally intended to continue working in that city, but considering their only son's education, they had to return to Hu Village because China's education policy regulates that college entrance examinations must be undertaken by residents with local Hukou registration. Their son would not be eligible to take college entrance examination in their working city, although he can receive earlier education there. Therefore, they decided to come back and let their son go to local school in Qingshen. As she said, all they had done was for her son's education. Now, her husband is working in a local factory with a lower salary, coming back every week and she is predominantly a household wife, taking care of her son. They have a very small plot land with less than 0.13 ha, and most farming work is undertaken by her parents. As a young, modernised, woman, she never wants to do farming work, and she does not have much agricultural knowledge or skills either. What she hopes now is that she can get a part-time job or factory wage job nearby, so that she can attend to her son and simultaneously make some cash.

Source: Author interview

Agricultural production has been marginalised within household arrangements and land is never a constraint for farmers' mobility anymore. Furthermore, the random retreat to and exit of agriculture to some degree activates the informal land transfer patterns among farmers, and in the future, the shift of land cultivators will probably occur more at a greater rate but what impacts will be brought to agriculture are still uncertain.

As Mrs P's case shows, a considerable number of parents, mostly household women, drop farming in the village and rent houses or rooms in Qingshen County to accompany their children during their education to provide better food and accommodation conditions. The expenditure of accompanying in the county is much higher than that of non-accompanying.

Renting a house for a year is about 3000-8000 Yuan, plus purchasing food, 5000-8000 Yuan, and about 8000-15,000 Yuan per year in total is a considerable amount for most rural households in Hu Village. As Mrs P stated, another reason for accompanying a child is that parents have been aware that the three-year high school is a key period both for their children's education and their growth, and to stay with them can exert adequate guardianship to ensure their children behave in appropriate ways. In addition, Mrs Y's case tells a typical story in rural China, that due to the Chinese education policy and Hukou system, migrants' children have to participate in a college entrance examination in the place of their Hukou registration so that when migrants have children in cities, they have to return to original communities for their children's education. Although there have been some informal schools in cities, particularly established for migrants' children and often in poor conditions, many migrants would rather return for better education conditions.

The story of Mrs Y, similar to thousands of other Chinese migrants, delivers at least two messages. First, the national education policy and Hukou system are unequal and unfavourable to rural migrants. Second, many migrants would rather drop their jobs and change their work locations for their children's education. Beneath Mrs Y's decision is the keen expectation that education can change the fate of her son and her family.

In the village, young people do very little farming work, without almost any agricultural knowledge or skills. Although this research did not target or

conduct interviews with children, according to observation and parents' interviews, it is still safe to argue that the dreams of rural young generations definitely lie outside of agriculture, and in the future, who will farm or who can farm will be an inevitable issue faced by Chinese policy makers.

Lastly, China's smallholder agriculture can never provide sufficient cash for the ever-increasing education expenditure. For 98 households (out of the 225 sample households) that have children in education, only 3 have no other non-farm jobs but farming, and within the remaining 95 households, 71 are migrant-households. Thus, education has become a significant driver for rural non-farm job diversification, especially migration, which brings about a cyclical effect for rural households, in that the elder generation searches for non-farm jobs in order to afford their children's education, and further to send the next generation out of agriculture towards gaining better non-farm employments, and ultimately out of rural communities altogether. In Hu Village, to educate children as much as possible has become the foremost responsibility of parents, and also an element of "good farmers". As informants told, in the past, good farmers referred to those who had more farming knowledge and experience, while at present, it is not important for farmers to own farming wisdom which has been largely supplanted by modern technologies. To be a good farmer, or even to be "qualified" parents, they have to enhance their children's education, lifting them out of agriculture and rural homes. Just as Rigg remarked in his analysis of education in rural southeast Asia,

Educating children takes them away from the fields... one consequence of

this emphasis upon education is that some families are, apparently willing to 'sacrifice' their land in order to achieve a higher educational status for their children. This, more than anything, illustrates the shift in priorities **from farm to non-farm** (2001:56, emphasis added).

His remarks also precisely suit contemporary rural China, where farmers' stress on education and attitudes towards the future of the next generation act as the socio-cultural bedding for moving out of agriculture.

7.3 Changing rural households

As reviewed in previous chapters, smallholder agriculture, in which the family/household serves as the major **corporate social unit** of the farming process (Netting, 1993), still dominates the majority of rural China. This type of small family farm is also the major agricultural form in many other developing countries, especially in east and south Asia and Sub-Saharan Africa (Lipton, 2005). Since family/household is the operating unit for organising farming labour, agricultural production is bound to be affected by socio-cultural changes within rural families. For instance, the emerging trends of agricultural feminisation and geriatrification under the context of agrarian transition in the developing world are interrelated with the gender and inter-generational labour divisions, and family lifestyle of rural households (see also Rigg, 2001). Therefore, investigating socio-cultural changes to rural households can provide a more comprehensive understanding of how and why agriculture is being increasingly operated by specific groups of the population.

In the wake of decollectivisation since 1978, the household has become the primary organisational unit of agricultural production in China once again. Rural families have been re-activated to adapt to the subsequent dramatic socio-economic transformation. For instance, as Whyte (1992) argued, the enthusiastic participation of the family youths in non-farm activities, particularly in rural-urban migration, may well enhance the power position of the younger generation within families and weaken structures of parental authority. The following studies have mostly emphasised the modernising trend of Chinese rural family changes. As Yan's long-term research on Chinese rural family and social changes has revealed, within the household, the importance of conjugal relationships, the power of youths generally and young women particularly have all kept rising, with the importance of the traditional parent-son relationship falling since the 1990s (Yan, 1997, 2006, 2010). He (2010) also observed similar phenomena in a wide range of villages that the traditional side of rural families has been dramatically weakened in the encounter with and the long-term penetration of modernity, characterised by increasingly rationalised family relations, an emphasis on material interests rather than family bonds, and the decadent filial piety and fraternal duty of young generations to parents and so forth.

In addition, the massive rural-urban migration has also induced particular family patterns of the "left-behind household" (Ye and Wu, 2008; Ye and He, 2008), or "split household" (Fan, 2008). The split household pattern,

as Fan (2009) further argued, is the outcome not only of structural restraints, but also of farmers' strategic agency to achieve flexible arrangements and household security. This particular household pattern manifests the gender and inter-generational divisions within current rural families. Similar changes to rural families have also occurred in other countries. As Rigg *et al.* (2012) argued within the context of Asian agrarian change, with life and living being increasingly delocalised, a sharp generational labour divide has emerged with a trend of geriatrification in farming. In addition, rural households have been dis-embedded from families as increasingly family members are stretched across space, which is greatly consistent with the "left-behind" or "split" household patterns of rural China. Previous studies provide the outline of the changing rural family/household in the context of transitional societies, indicating that family divisions and relations indeed exert implications on agricultural production. The following subsections will, based on the case of Hu Village, further investigate the interactions between family/household changes and agriculture in transitional China.

7.3.1 Gender division: towards agricultural feminisation?

Agricultural feminisation of Hu Village

As has been observed worldwide, women in rural China are more likely to remain in agriculture than men (Jacka, 1997; Song and Jiggins, 2000; Fan,

2003; Mohapatra *et al.*, 2007). As presented in Chapter 5 (Table 5.7), the tendency has also occurred in Hu Village that the category of dedicated farmers is dominated by females. The increasingly feminised agricultural population reveals that the traditional intra-household gender division mode of “male-outside, female-inside” (*nan zhu wai, nv zhu nei*), which derives from Chinese Confucian culture, still dominates rural families in contemporary transitional China (Fan, 2003). With increasing migration opportunities, women are more likely than men to stay in the village to take care of children, the elderly and agricultural production, and thus become “left-behind” women (Ye and Wu, 2008). Nonetheless, some groups are more likely to become left-behind women, as young women are much more likely to migrate or undertake other non-farm activities locally than middle-aged and old women. Chapter 5 demonstrates that in Hu Village, rural young women have similar possibilities to migrate out as young men. This is also supported by the observation that there are only a few young women under 30 years old staying in Hu Village to take care of kids, and many of them will migrate out again in the near future, leaving the children to their parents or particularly with mothers-in-law.

Agricultural production is primarily undertaken by women in the left-behind women households, but it is actually not because of agricultural production that women are left behind. Taking care of children, especially when they are in education, and supporting elderly family members are the

foremost reasons. Within the 64 migrant households with women left behind in the sample households, 27 have children in education, 15 have aged people to support and 22 have both children and aged people to take care of. Many interviewees mentioned that, “if there are no old people to support, I definitely will go out with my husband” and “I stay for my son’s education, otherwise I would also go out work”. Therefore, women stay home mainly to fulfill family obligations, and agriculture has been substantially marginalised in farmers’ work decisions. One pertinent illustration is that many left-behind women always try to seek other income-generating activities locally. As the following two cases indicate (Box 7.4 and Box 7.5), agriculture is never the reason for women to stay and never the only means for left-behind women to live. Rather, left-behind women have shown initiative in creating diverse and buoyant livelihood diversification on a local basis. Moreover, the status of left-behind women is often provisional as Mrs X shows. As long as conditions permit, left-behind women may well join their husbands and migrate to cities, leaving land to older generations. Despite the fact that there is a trend of agricultural feminisation in terms of the constitution of the farming population, agriculture is still marginal even in the work profile of the female agricultural population.

Box 7.4 Wanting to Stay in the Village: Mrs H

Mrs H is 38 years old. She used to migrate with her husband in other provinces. 5 years ago, she returned as she had a new child and her father was not well, and her husband remained working outside alone. She has a high school education, and really wants to develop her livelihood based on this village as she cannot migrate again. She tried many agricultural sidelines, like planting mushrooms and raising rabbits, but all failed because of unfavourable market prices. Now she is learning bamboo weaving, and hopes to make some cash through it. She said, now she knows that agriculture can never make a profit and can only be for subsistence. She really hopes there will be a factory in the village that can recruit people like her.

Source: Author Interview

Box 7.5 Never Stop Seeking Other Jobs: Mrs X

Mrs X, 43 years old, really wanted to work with her husband in Jiangsu Province. But she had to stay home for her 15-year-old son. Besides farming work, she never stopped seeking other jobs locally, and as she calculated, she has tried no less than 10 short-term local jobs, like wage worker in house construction, bamboo weaving, and so forth. She thinks it is a waste to stay home but she has to. In 2012, her son passed the exam to high school and would go to Qingshen High School for three years. Then, Mrs X decides to migrate out with her husband, leaving land to their parents.

Source: Author Interview

As mentioned above, the power of rural young women in rural China has been considerably enhanced, which also has implications for agricultural feminisation. Most young women in Hu Village, who may just get married, or who are ready to get married, do farming rarely even though they have to stay home. These women often have migration experience, with middle-school or higher school education, and they yearn for urban, modern lifestyles. When they return to villages, they cannot bear dirty and tough farming work and often consider farming to be the job of older people. In addition, having spent most of their lifetime in schools and cities, they have little knowledge or skills

regarding farming. As the following two cases show (Box 7.6 and Box 7.7), many young women retreat to households as the “princess of the house” (Rigg, 2006b), or undertake other local non-farm jobs, leaving the dirty, drudgery work of farming to their parents-in-law. Besides, taking care of kids sometimes becomes their bargaining chip as the one-child policy encourages rural households to greatly value their only child.

Box 7.6 I Hate Farming: Mrs Z

Mrs Z is 24 years old and gave birth to a child one year ago. She used to work in a shopping mall in Chengdu before she got married two years ago. After marriage, she stayed home and prepared to give birth. Her husband is still working in Chengdu. All the farming work of her household is done by her parents-in-law. What she does every day is to take care of her kid and surf the internet. Sometimes, she also does some housework, like cooking or laundry, especially on agricultural peak times. But she never goes to the field. She hates farming, as she reported and would rather do housework. When her kid grows up a bit, she will go to work outside again, leaving the kid to her parents-in-law.

Source: Author Interview

Box 7.7 Eating “the Communist Party”: Mrs J

Mrs J is 28 years old, and her husband works in Qingshen County, coming back every day. Her parents-in-law take care of their kid. Her household land is taken care of by her parents-in-law as well. What she and her husband do is to make money to raise their child. She does farming very rarely, and their foodstuff comes from parents-in-law, eating “the Communist Party” as she named her situation. The Communist Party here refers to her parents-in-law. In the future, she maybe has to do farming when the old people cannot farm, but currently, she hopes to stay out of agriculture as long as possible.

Source: Author Interview

To support their new married adult children to get along, older people have to undertake household farming work. As Mrs J explained, young women

will stay out of agriculture until the older generation cannot farm anymore. In fieldwork, the author heard many times the saying “Eating the Communist Party”¹⁶, suggesting that this phenomenon has become a social norm. If dividing women’s time-use roughly into three patterns: full-time farming (without other off-farm activities), part-time farming (with other off-farm activities) and non-farming, according to the survey and as Table 7.2 shows, the most majority of young women under 30 years old did not participate in agriculture (86.3%). In stark contrast, the majority of middle-aged women aged between 46-60 work exclusively on agriculture (87.5%). Therefore, discussing agricultural feminisation has to exclude the group of rural young women. In other words, as de Brauw *et al.* (2008) similarly found in China, agricultural feminisation, if any, predominantly centres on middle-aged women, and in the case of Hu Village, on women aged 46-60. Overall, due to intra-household gender and generational divisions, young women’s migration, and subsequently left-behind young women’s rejection of farming, means that middle-aged women are perpetuated as the primary farming population.

Table 7.2 Different Age Groups of Females’ Time-use Pattern on Farming of Hu Village in 2011 (%)

	Full-time farming	Part-time farming	Non-farming	Total
16-30	6.8	6.9	86.3	100
31-45	38.2	25.4	36.4	100
46-60	87.5	8.0	4.5	100
60+	56.1	10.5	33.4	100
Total	44.7	12.1	43.2	100

Source: Author questionnaire

¹⁶ Communist Party here is a metaphor that Hu villagers use to refer the parent (older) generation in a household. “Eating the Communist Party” means that younger generation relies on older generation for food as they are reluctant to do farming themselves.

The performance of feminised agriculture

Another important issue regarding agricultural feminisation is the productive performance. As revealed by other research worldwide, female-dominated agriculture is generally less productive than male-dominated agriculture due to women's constraints on access to inputs, resources and services (World Bank, 2001; Andre *et al.*, 2013). However in China, researchers recently found that women are as productive in agriculture as men, with approximately equal access to inputs and resources (de Brauw *et al.*, 2012). According to gender participation differences in farming, the sample households of this research can be divided into two categories: female-farming households and non-female farming households. Female-farming household refers to households for which women provide the principal farming labour on a full-time basis, with men only partly participating in farming or not at all. Non-female farming household refers to households in which men are the principal source of farming labour, with women only partly participating in farming or not at all. In Hu Village, women dominating farming in a household is mainly due to men's migration, although there are also some other reasons like men's illness or death. In non-female farming households, generally men, sometimes men and women together, dominate farming work. As Table 7.3 shows, in the sample households, one-third are female-farming households (75, 33.3%), with most being non-female farming household (150, 66.7%). For farming labour, there is a significant difference in respect of age and education between two

household groups as the first two rows of Table 7.3 shows. Females who dominate farming (47.3 years old) are significantly younger than men or women from non-female farming households (60.3 years old).

Table 7.3 Comparison of Agricultural Production between Female-farming Households and Non-female Farming Households of Hu Village in 2011

	Female farming household	Non-female farming household	M-W U Test (p)
Age of farming labour (year)	47.3	60.3	0.000
Education of farming labour (year)	5.2	4.6	0.049
Rice productivity (kg/ha)	6702	6780	0.123
Rape productivity (kg/ha)	2124	2132	0.198
Crop gross productivity (Yuan/ha)	15194	14556	0.178
Crop diversity	6.36	6.37	0.660
Agricultural diversity	3.61	3.59	0.240
MCI	1.91	1.94	0.517
Agricultural income (Yuan)	24748	19340	0.036
Chemical input (Yuan/ha)	4266	4343	0.569
Machinery input (Yuan/ha)	1190	1271	0.182
Traditional technology	3.67	3.72	0.275
Manure intensity	7.29	7.26	0.970
No. of cases*	75	150	

Source: Author questionnaire

Note: * the numbers of cases here cover the whole 225 sample households. In calculating different items above, the case number may vary according to specific cultivation patterns. For instance, rice households and rape households are slightly different.

This is consistent with the finding discussed above that feminised agriculture particularly centres on the middle-aged women cohort. The education of women working on agriculture is also evidently higher than that of men and women from non-female farming households, indicating a human capital advantage of feminised agriculture. One explanation can be that middle-aged women are more likely to take over agriculture because the majority of middle-aged men (the husbands) tend to migrate out or undertake other non-farm activities.

With regard to agricultural performance, female operated agriculture performs almost the same as non-female operated agriculture in terms of crop productivities, crop diversity, agricultural diversity and land-use intensity, as well as producing significantly more income than non-female agriculture ($p=0.036$). In addition, there is no significant difference between the two groups on agricultural inputs, indicating that females have equal access to agricultural inputs. These findings confirm the positive side of agricultural feminisation of Chinese agriculture, roughly consistent with the analysis of de Brauw *et al.* (2012). Based on the specific circumstances of Hu Village, this is not difficult to explain. As discussed in Chapter 6 the agricultural input market has been well developed, so access to agricultural inputs for rural women is equally convenient and cannot be an obstacle to agricultural production. In addition, the human capital advantages in terms of age and education of female farmers probably help to maintain and even enhance agricultural

productivity (see also Croll and Huang, 1997; de Brauw *et al.*, 2012).

Although this research, together with other studies, reveals that agricultural feminisation in China is not affecting agricultural production in negative fashions, the hard and tough works included in farming, raising children, caregiving to the elderly and housework, has brought considerable workloads to middle-aged women (Murphy, 2004; Ye and Wu, 2008). In addition, as agriculture has been increasingly perceived as a low status occupation, women's long-term engagement in agriculture may cause intra-household inequalities and injustice towards themselves in future discursive practices. Constrained by institutional regulations like the Hukou and land tenure systems (Mu and van der Walle, 2011); labour market failure, like gendered labour markets (Fan, 2003); the phenomenon of left-behind women and agricultural feminisation by middle-aged women will probably continue in rural China.

Nonetheless, many left-behind women in Hu Village subjectively don't think the division mode of 'male-outside, female-inside' is unfair or unjust, but instead, they think it is a collective household strategy cooperated jointly by them and their husbands. This same perspective has also been found in another village in Guangxi Province (Zuo, 2004). They understand the hardship of their husbands outside, and they think that they are also undertaking important family jobs, without which the family cannot maintain itself. In this sense, the issue of feminised agriculture and spilt households

can be seen as the outcome of interactions between farmers' agency and external structures. Lastly, the potential negative aspects that agricultural feminisation may bring to rural women deserve additional research.

7.3.2 Inter-generational labour division: geriatrification of farming?

The geriatrification of farming in Hu Village

Apart from gender, another important dimension within households is inter-generational divisions and relations. As similarly found in other countries (e.g. Rigg *et al.*, 2012 for Asian countries), a tendency towards an increasingly aged farming population in China has recently been identified by researchers (Mao and Liu, 2009; Huang, 2012). The dramatic economic diversification, especially rural-urban migration, has given rise to not only a large scale of left-behind women, but also on a similar or even larger scale of left-behind elderly. As estimated by Ye and his research team, there are more than 20 million left-behind elderly in China (Ye and He, 2008). Regarding Hu Village, as Chapter 5 has demonstrated, individually, almost 70% of old residents (60 years old above) are the principal farmers in their households. Additionally, if dividing the sample according to the age of full-time farming labour into three household groups: 16-40, 41-60 and 60 above, there are only 30 households with farming labour aged 16-40, 107 households with farming labour aged 41-

60, and 77 with farming labour aged 60 above. If excluding the 11 households that did not undertake farming in 2011 from the sample, the three household groups occupy 14%, 50% and 36% of the 214 sample households respectively, indicating that almost four out of ten households' agriculture is principally undertaken by people aged 60 years above. This pronounced phenomenon points to the sharp inter-generational division within rural households, with younger generations more likely to migrate or undertake other non-farm activities and the older generation being more likely to retreat home for caregiving to children and agricultural production. This form of generational division is a collective and rational household strategy for maximising household social security and labour efficiency. As an old farmer typically commented,

For us, this arrangement (adult children work out and the elderly stay behind) is the best option. We are too old to migrate or do other non-farm jobs, and have to return to agriculture, and take care of children. They are young (adult children), and they **should** and also **have to** work in more lucrative sectors because the whole family is dependent on their income. We do farming to provide essential food for the whole family. We take care of grandchildren to release the young women to migrate or do other jobs. Both sides are important, not dispensable.

His words also point to the structural constraints that rural migrant families have to face. The imperfect rural labour market in transitional China is unfavourable to aged people. Farmers aged over 60 are very unlikely to find non-farm jobs whether locally or in cities. As they explained,

They don't want to take risks on employing old people because old people are weak and easy to get hurt or ill. We have to retreat to agriculture and stay home to take care of our grandchildren, releasing our adult children to work outside.

Therefore, the phenomenon of an increasingly aged workforce in agriculture is also an outcome of family division strategy and structural constraints.

Table 7.4 shows the intra-household division of ten households with old family members in Hu Village. It shows that besides the migrant households, even for households with adult children working locally, the same intra-generational division mode applies. For households specialised on pig farming, generally the young household head exclusively concentrates on the livestock sector, leaving crop cultivation to old people as Households 5 and 10 show. In addition, the household division of the ten cases also manifests the distinct gender division within elderly agriculture, that male elderly (aged above 60) take more agricultural responsibility and female elderly more housework. Referring to the 75 female-farming households with women predominantly aged 40-60 discussed in last section, so far the basic demographic structure of Hu Village agriculture has been roughly identified from the lens of gender and generational division. For contemporary Hu Village farming households, those dominated by middle-aged women and aged men constitute the largest majority (36.1% and 36% respectively, and 72.1% in total), with the remainder (27.9%) constituted by young age farmers or middle aged male farming households. This pattern of Hu Village farming households is also roughly consistent with the national pattern as Mao and Liu (2009) concluded through analysing a set of national data.

Table 7.4 Ten Cases of Household Division in Hu Village in 2011

Household Head	Husband		Wife		Male elderly		Female elderly	
	Age	Job	Age	Job	Age	Job	Age	Job
H1:Mr Z	44	M	42	M	67	F G	65	H G
H2:Mr S	36	S	33	S C	61	S F	60	H F
H3: Mr W	25	M	26	M	-	-	65	H F
H4: Mr J	31	M	-	-	70	F H	68	H F
H5: Mr H	40	P	38	P C	-	-	65	H F
H6:Mr I	46	M	45	M	73	F G	71	H F
H7:Mr P	44	M	40	L	78	F G	65	H F
H8: Mr S	38	L	40	L	63	M	65	H F
H9:Mr J	35	M	35	M	64	F G	68	H F G
H10:Mr S	43	P	38	M	-	-	67	H F

Source: Author Interview

* M=Migration; H=Housework; C= Children caregiving; F=Farming work; G= Grandchildren care; L=Local factory employment; P=Pig farming; S=Self-employed enterprise.

The performance of geriatrified agriculture

Another important issue of concern about geriatrified agriculture is whether the aged farming population affects agricultural production in negative ways. Within the relevant studies, the conclusion is often contradictory (see Li and Zhao, 2009; Lin and Deng, 2012; Nie and Yang, 2013). Regarding Hu Village, through comparing agricultural performance among households with different age groups of principal farming labourers as Table 7.5 shows, it is found that old farmers are equally productive as younger farmers, and they undertake significantly more agricultural sidelines than young farmers aged under 40 do ($p=0.005$), although with significantly lower levels of education ($p=0.000$). As for agricultural inputs, old farmers invest at almost the same level as young farmers, and particularly, they use manure significantly more intensely

($p=0.006$), suggesting that geriatricized agriculture tends to use more environmentally-friendly inputs. Therefore, it seems that instead of influencing agricultural production in negative ways in Hu Village, which is consistent with Lin and Deng (2012) and Nie and Yang (2013), old farmers' inclination to use organic fertilizers can be seen as a potential advantage in terms of agricultural sustainability in the long run.

Table 7.5 Comparison among Households with Different Age Groups of Principal Farming Labours of Hu Village, 2011

	Household 16-40	Household 41-60	Household 60+	K-W Test (p)
Average education (year)	5.48	5.10	3.39	0.000
Rice productivity (kg/ha)	6770	6767	6726	0.764
Rape productivity (kg/ha)	2066	2085	2217	0.202
Crop gross productivity (Yuan/ha)	15060	15015	14820	0.849
Crop diversity	5.71	6.41	6.62	0.125
Agricultural diversity	3.05	3.63	3.82	0.005
MCI	1.91	1.98	1.95	0.835
Agricultural income (Yuan)	20567	24039	22307	0.264
Chemical input (Yuan/ha)	4535	4313	4517	0.378
Machinery input (Yuan/ha)	1140	1223	1145	0.974
Traditional technology	3.55	3.69	3.70	0.868
Manure intensity	6.08	6.86	7.38	0.006
No. of cases	30	107	77	

Source: Author Questionnaire

These explanations are multi-faceted. The well-developed agricultural input markets, standardised farming practices and increasing mechanisation

all enable old farmers to operate farming more easily than before. From another angle, the low pay-off of agriculture greatly discourages young farmers' incentives, so that many of them don't take agriculture seriously, keeping production at a low level. As the village head, who is a young farmer aged 33, commented, "If young people devote to farming, we will definitely do better than old people. But even though we do well on farming, we still cannot get much profit. That is why young farmers never take agriculture seriously." Her words also echo with the observation in Hu Village that even for those who are the principal farming labourer for their household, they still keep attempting to find other paid jobs locally, rather than exclusively focusing on land.

Therefore, behind the similar production performance among all households is the overall tendency of agricultural "deactivation" as Ploeg (2008) puts it, which is a process in which "levels of agricultural production are actively contained or reduced" (2008:7). In Hu Village, most farmers tend to keep agricultural production at the level of subsistence, given the absence of incentives to invest more labour or capital.

Although old farmers can basically handle farming work at a decent productivity level as discussed above, this does not mean that there are no negative impacts on aged people. After adult children migrating out, the elderly have to shoulder all the family responsibilities, including grandchildren caregiving, agricultural production and other community issues, all of which

bring them substantial workloads and physiological stress (Ye and He, 2008). This uneven generational division, and the older generation's dedication to their family, has developed into an "exploitive generational relationship" within the household as He (2010) argued, with particular disadvantages for the elderly. Nonetheless, from the perspective of the elderly, they often view their dedication as a family obligation, and to give more space to their adult children to pursue non-farm employments is one of the obligations. To fulfill family obligations is also one of the local moral norms to be "good farmers" as discussed earlier. Besides education, good farmers must work as long as possible and take family responsibilities to reduce the burden of their children. Therefore, instead of deeming as this to be "exploitation", the elderly subjectively accept and comply with the mode of generational division, viewing it as an essential procedure for family reproduction. Furthermore, this confirms again that the increasingly geriatrified form of agriculture is a collective family strategy with constant coordination and cooperation between generations within the household. In this sense, a household as a social unit does exist in contemporary China (see also Chen and Korinek, 2010).

7.3.3 Family life course and agriculture

In the context of the market imperfections of developing countries, to adapt to uncertain markets, rural households often act collectively rather than individually (Stark, 1991). The life course of rural families, namely, the

demographic and structural transitions of family, is an important determining force on household livelihood diversification as has been revealed widely (e.g. Rigg, 2001 for southeast Asia and 2006 for the Rural South generally; Chen and Korinek 2010 for China). As discussed above, the allocation of family farming labour to middle-aged women and aged family members in Hu Village and other parts of China has manifested that households at different life stages have different labour availability, economic demands and thus different labour division strategies for economic diversification.

Typically, as Table 7.6 demonstrates, the majority of the young generation, who are generally aged under 30 and may just get married, yearn for development, modernity, or specifically urban lifestyles. They also practically bear great family responsibilities, including family economic accumulation, children's education and so forth. A consensus is reached within family that the young generation, both men and women, ought to pursue development, which definitely lies outside of agriculture and rural communities. The parents of the young generation are basically aged around 40-60 and still well within labour age. To support the development of the younger generation, the middle-aged generation often has to adjust their labour allocation and leave one family member to take care of the younger generation's children as well as the elderly dependents, if any, to emancipate the young couple, especially, the young woman from family care. Most frequently, middle-aged women are left behind, with their husbands working in

non-farm sectors, locally or in cities. It is in this case that agricultural feminisation by middle-aged women occurs. If the elderly are in a healthy condition, the middle-aged couple may well both seek non-farm employments and leave the elderly for housekeeping, agricultural production, and caregiving to grandchildren, then leading to a geriatrification of farming. Over time, the young generation becomes the middle-aged generation, and the middle-aged generation becomes the elderly, and the cooperation and collaboration among family members continue to stretch across the cycle of family life. Furthermore, it is manifest that the pursuit of development for the young generation is treated as a family priority and family arrangements centring on this priority, indicating a one-way mode of household cooperation. In other words, the general mode of family arrangements across life courses is based on the dedication of the older generation towards the younger generation. This general family life course mode is abstracted from Hu Village, but has been similarly revealed in other parts of China in the context of dramatic socio-economic transformation (Ye and Wu, 2008; Ye and He, 2008; He, 2010).

Table 7.6 Different Situations of Different Family Life Stages in Hu Village

	Young generation	Middle-aged generation	Elderly generation
Life situation	Aged under 30, unmarried or married recently, on education, having little kids.	Aged between 40-60; have married or schooling younger generation; some have grandchildren; elderly dependents to support	Aged above 60; grandchildren have been married or still on education; physically weak
Family ideals	Development, modernity, urban life	Ensure family get along; support young generations	Hope family get along; decent and peaceful elderly life
Family obligations	Accumulate for family development like education, personal career, modernity acquirement	Family expenditure, children's education, support elderly; plan own elderly life; ensure family get long	Support younger generations, taking care of responsibilities of grandchildren caregiving; do farming, or completely leisure get support from adult children.
Labour allocation	Both male and female on non-farm employments in cities or specialised livestock farming in rural communities	Male working in non-farm sector; female work together or stay for housekeeping, taking care of children or grandchildren and agriculture	Leaving simple lives, or male working on agriculture, females on housekeeping, both taking care of grandchildren
Future	Urban or rural communities	Rural communities	Rural communities

Source: Author Interview

Additionally, cooperation across the family life course does not necessarily occur in one exactly-defined family, but often stretches across different families. In many cases, younger generations have divided from the extended family with independent family budgets. Family division is an

important landmark in the process of family life cycle in China as the younger generation splits from the extended family and young adult couples live individually (Cohen, 1992). As Yan (1997, 2003, 2006) argued, driven by modernisation and the market economy, private life, the risen conjugal relation and the power of the young have been potential drivers of family division. However, given livelihood diversification, especially rural-urban migration, this becomes a norm in contemporary rural China, splitting the family between the rural and the urban has been a major ordering factor in family arrangements (Fan, 2008). Even having divided from their parental families actually or nominally, the younger generation still rely on their parental generation to fulfill the family responsibility of caregiving to children, leading to a special family form—"left-behind" families. In addition, the strong values of family obligation and loyalty borne in the mind of the middle-aged and elderly generations mobilise and motivate the dedication of older generations towards younger generations, as similarly found in other parts of China by He (2010), although they often live independently with separate budgets. One instance of this in Hu Village is that in many cases the older generation takes care of grandchildren with their own budgets, and the young generation often doesn't remit back fees on children's living and education. In addition, in Hu Village, many migrant families still live together under the same roof with their parents because they only return occasionally or for important festivals, although they have been divided economically which is a form of "division without division"

as He (2010:97) termed. Therefore, it seems increasingly difficult to define the inclusion of family division and family structure, particularly as the line between household and family is also blurry, leading to a “disembedding of households and families” as similarly revealed by Rigg *et al.* (2012) in other Asian countries.

Besides, the external structural constraints that rural families face in contemporary China are also important forces that mould the special family arrangements. For instance, the Hukou system impedes rural residents’ ability to migrate to cities with their whole families as well as creating shortages in the rural old-age insurance system which is still dominated by family support. These are important institutional constraints that induce rural migrants to adopt “split” or “left-behind” family patterns to achieve security and fulfill family responsibilities. As Xiang (2007:187) concluded,

Being left behind in China is not only a family matter of practical consideration for the migrants and their family members, but is also related to fundamental institutional arrangements and unequal social relations.

Thus, under the contemporary political-economic environments of transitional China, rural families are adopting these family divisions to achieve household resilience, flexibility and livelihood security as a result of structuration between rural actors’ agency and structural constraints (Fan, 2008). As long as the structural constraints are not altered, the trends of agricultural gentrification as well as feminisation may well continue in the future.

Lastly, apart from the typical life course mode for migrant households

which dominates Hu Village, others rural families take another route that all the family generations are based on local communities. As presented in Chapter 5, about 30% of the sample is non-migrant households. These households build their family livelihoods on a local basis and often attach more importance to agriculture than migrant households do. As one farmer stated, “For us who don’t go out, we lay stress on both non-farm jobs and agriculture. We take root in the village”. The young generation of these households mainly work in local factories or operate their own private enterprises and come back every day or every several days, with smaller wages than those working in big cities. The young women often take care of their children at home or leave them to their parents and work together with their husbands. They often help do farming work in peak times, like harvesting and transplanting, leaving nonetheless the major farming management work to their parents.

The middle-aged generation of these households is dominant in terms of household agricultural production, often without a sharp gender division on farm and non-farm activities. Although men are more likely to spend more time on local non-farm activities and women more on housekeeping and land, men also do almost an equivalent amount or even more agricultural work than women, especially the heavy agricultural work, like manure carrying, land preparation and so on. The elderly in these households are more relaxed than their counterparts in migrant households, as they don’t have such heavy

farming and family care burdens. This mode of family course is greatly determined by local economic opportunities as Chen and Korinek (2010) similarly revealed. As Qingshen is still under-developed in terms of industrialisation and urbanisation, local employment and business opportunities for rural residents are fewer than those in coastal provinces of China, so that only a small proportion of households can arrange their household livelihoods locally. Evidently, locally-based rural households are more conducive to agricultural and rural sustainability; therefore, to promote local economic development rather than exclusively concentrate on large cities should be a favourable development strategy for contemporary China (see also Kirkby *et al.*, 2006).

7.4 Community socio-cultural changes and agriculture

This section will examine at community level how community cultural factors affect agriculture. Chinese rural communities have experienced no less dramatic a transformation in terms of socio-cultural aspects than in economic aspects in the proceeding of “China’s state-sponsored quest for modernity” (Yan, 2010). Socio-cultural changes in rural communities are multi-faceted and this research primarily explores those that are related with agriculture directly or indirectly, based on observation in Hu Village.

7.4.1 Modernity quest: rural community as “backward” space

There is a consensus that the predominant driver for the socio-cultural transformation of rural China is the penetration of modernity brought by a market economy. However, China’s quest for modernity is not making neutral or even progress, but is based on a comprehensive and substantial divide between the rural and the urban (Knight and Song, 1999; Griffiths *et al.* 2010; Riley, 2013). Regardless of the huge economic disparities, rural villages have been constructed as backward geographical space that bestows less modernisation than the urban does through cultural practices. As Ngai has written, the “Rural world has come to be imagined as a deficient reality that cannot give birth to complete human beings or modern subjects” (2003:487, see also Lei, 2003). Just recently, Riley also argued, “Material differences between rural and urban are pronounced but they are bolstered and deepened by an ideological divide that sees rural as lesser: backward, unenlightened, and incapable of contributing to China’s position in the modern world” (2013:11). Better job opportunities, modern environments and cultural progresses signified by the urban are very attractive to rural individuals, as since the 1980s, mobility of rural farmers has been permitted and has kept thriving so far. Especially the rural youth yearn for the modernised life of cities, viewing the “urban as paradise” (Riley, 2013) and despising the backward, hopeless world of their home towns. The uneven development of rural and urban has caused the one-way mobility of rural individuals: from rural to

urban, instead of the opposite. As Xiang (2007) concluded, “far more important than being physically left behind by migrants, rural communities as a whole have been left behind economically and socially” (2007:187). This cultural construction towards rural communities in the process of the Chinese modernity quest lays down the ideological foundation for rural residents’ attitudes and actions towards agriculture and rural community.

In Hu Village, most respondents expressed aspirations to participate in urban life, especially the youth who often have migration experience and have to come back for marriage, giving birth or other reasons. But their hopes, dreams and imagined future lie in cities rather than in the remote agricultural village. Their repudiation is not just towards agriculture as discussed earlier, but towards the whole rural space. As a 26-years old lady reported,

There are no better opportunities for us to develop in villages, even in the county. The local salaries are low, infrastructures are poor, and people are traditional. I feel kind of left behind from my friends who is working in Shanghai. After a while, I will go out again. There is no hope in villages.

She returned from Beijing in 2008 because she was going to give birth. Now her little son is about 4 years old and her parents-in-law can take care of him, which enables the young lady to go to cities again. Her story just echoes the argument of Ngai (2003:480) when she told a similar story of a rural migrant and notes: “What arrests us in this story is that Chinese migrant workers do not feel ‘at home’ as long as they remain at home. Rather, they desire to leave ‘home’ to become wage-workers”.

In addition, what many young people are thinking is to buy an

apartment in the city, whether in county or in municipality, suggesting a strong desire to move out of the village. Especially, if rural young men have an apartment in cities, he also has substantial advantages on the marriage market, as more and more young women would like their spouses to enable them to live in cities. In Hu Village, as the village head estimated, about 20 households have bought commercial apartments in Qingshen County or Meishan City and some even have apartments in Chengdu City.

The cultural construction of rural communities may have profound repercussions on agriculture, although mainly in indirect ways. Firstly, as discussed in Section 7.2, agriculture will be further marginalised in the livelihood development of the rural youth. Secondly, without continuities from the youth, when the current farmers are too aged to farm, the issue of who will farm will become urgent as there is a need to provide for domestic food security. Various market actors, like entrepreneurs, businessmen, companies and so forth probably will take part in village agriculture as they have already emerged in Hu Village.

7.4.2 Consumerism: “we have to go out”

Along with the long-term penetration of modernity and the market economy, consumerist culture has also become increasingly prevalent in transitional rural China (Ngai, 2003; He, 2010; Fan, 2010; Chen and Huang, 2012). More importantly, consumption enthusiasm is also sponsored by the state in the

name of national development, including various national policies on stimulating domestic demands and peasants' consumption rates, the "holiday economy" and so on (Npai,2003). In addition, long-term economic diversification has substantially enhanced the wealth level and living conditions of rural residents, and the massive propagation of an urban life style, with a modernised western culture through TV and other mass media has immensely stimulated farmers' consumption desires. Conspicuous consumption and unrealistic comparisons of consumption patterns between people have been widely observed in rural China (He, 2010; Fan, 2010). Undoubtedly, these consumption motivations bring substantial cash pressure to rural families.

In Hu Village, the phenomenon of conspicuous consumption is no less dramatic. One most telling example is the enthusiasm for house construction. Since the 1990s, Hu villagers have begun to build houses in modern styles rather than in traditional ways. So far, walking around Hu Village and looking at the beautiful, stylish, modern houses, one may well think that Hu Village is a very rich community. As one village cadre estimated, to build a house nowadays will cost about 300,000 Yuan while ten years ago, a new house only cost about 100,000 to 150,000 Yuan. As the author often had chances to enter farmers' houses, many houses were built and decorated almost in the same fashions as city houses or apartments, with modern floor boards, fully-equipped with appliances, modern lighting and a decorated bathroom.

Regardless of the increased prices of building materials, competition among farmers is one important factor underlying the ever-increasing house building cost. As this researcher was often told, “When others’ houses are beautiful, you want to build a better one, otherwise, you may lose face”, “everyone wants to build better houses than others, even on debt”. Another interesting phenomenon about houses is that many houses in Hu Village were only built and decorated on the outside, with a bland inside or dirty with firewood because the owners have migrated to cities and rarely return. They just built the house and made it look beautiful from the outside, leaving the inside empty for their later usage.

Another example is that due to increasing income, many households have bought cars as a means of conveyance as well as “to be conspicuous”. There are about 30 cars in Hu Village, with various models and brands, ranging from 20,000 Yuan Alto to more than one million Yuan BMW or Mercedes-Benz. Farmer Mr L who bought a 200,000 Yuan car still doesn’t think that he is successful enough because “those who have BMW are really successful”, and in the future, he will try hard to make money and change to a more expensive car. Other instances of ever-increasing consumption enthusiasm in Hu Village include excessive consumptions on weddings and funerals, fast-increasing cash gifts for various ceremonies and so on.

All of these consumptions bring huge cash pressure to Hu Village families, and income deriving from land can hardly satisfy the cash demands.

This is how most respondents explained the dramatic non-farm diversification, especially migration, “If you don’t go outside to make money, your family cannot get along”. By “get along”, they did not refer that without non-farm employments they couldn’t survive or subsist but that they could not maintain an acceptable socio-cultural living standard. As well as middle-aged farmers, the rural young have also been driven by “desires to consume” within modernity and desperately hope to embrace urban life. As Ngai (2003: 482) has written about rural young migrant women,

In rural China, the desire for the commodity is what drives these women to leave their homes to become exploited labour. The desiring machine of consumption rolls along so smoothly because a social lack produced by an unfathomable rural-urban divide has already provided a rail for it to run on.

Therefore, farmers seem to be situated on a consumption spiral and constantly pushed to seek cash outside. The ever-increasing cash pressure brought about by popular consumerism explains why farmers have to migrate or seek other non-farm jobs, which also can be seen as a fundamental driving force for farmers’ inclination to move out of agriculture.

7.4.3 Dissociating community cohesion and diminishing mutual help

It is widely accepted in Chinese rural scholarship that the traditional rural village is an “acquaintance society” (Fei, 1998), where villagers are tightly interconnected within networks of family ties and geographical relations, with

strong community cohesion and frequent forms of reciprocity. With the long-term penetration of modernity and a market economy, the village community has been gradually dissociated into a “semi-acquaintance society” (He, 2000; 2010), an “atomised society” (Chen and Guo, 2007; He, 2011), or a society characterised by increasing individualism (Yan, 2010), where personal connections, interaction and trust have greatly diminished. Similar rural changes have also been identified in other countries. For instance, Rigg *et al.* (2012) conceptualised the tendency of rural Asian communities as “dissociation of the village community”, suggesting increasingly weakening community cohesion driven by the dramatic economic diversification of rural Asia. Dissociated community cohesion has substantial repercussions on various aspects of village life, including influences on village governance (He, 2002), cultural life (He, 2010), family relationships and moral degradation (Yan, 2010). With respects to agriculture, one significant repercussion is the diminishment of mutual help among villagers.

In Hu Village, villagers have strong perceptions of the diminishment of mutual help and increasingly “strange” personal relations. As the village head relayed,

Now, the villagers are more and more like strangers with each other. Many migrants don't return for so long time that when we meet, we don't know how to chat, just with a simple greeting. In addition, in the past, we helped each other a lot. For example, this family wanted to build a house, then many villagers, relatives, and friends came here to help for free. And then another who wanted to build a house, or do other things could also receive voluntary help from villagers. This mutual help was very common. But now, it is rare. Everyone is thinking about economy, money, development; no one is willing to help others for free. Everything

is coupled with money.

Her words clearly imply that there has been a dramatic decline of community cohesion and reciprocity; and that community relations have been more and more built on market rules. The deep penetration of the market economy as well as villagers' integration with outside forms of development have greatly dissociated their personal relations. Because everything is referred to as an economic calculation, when encountering labour shortages in agricultural production, mutual help among villagers is now very rare in Hu Village. As a respondent explained, "No one will help you for free. Nothing is free in current society. I don't want to ask help. If it can be solved by money, I would rather spend more money than ask help from others." To avoid embarrassment, many farmers are reluctant to ask for help from others, as they are aware that if someone comes to help, he/she must do it because of face-saving rather than willingness, which has become a consensus in Hu Village. Most mutual help in Hu Village is primarily offered by relatives. In Chapter 6, Table 6.11 has shown the pathways that Hu Village farmers used to deal with labour shortages in agricultural production in 2011. It is found that about 20% of the sample farmers gained labour from others. Here, as Hu villagers explained, labour exchange is different from mutual help, as the former requests labour inputs from both sides and the latter does not necessarily. Particularly for the elderly farmers, their physical condition is so poor that no younger farmers want to exchange labour with them and the ways for them to deal with labour shortage is to call the migrants back or ask help from their relatives, like

married daughters. Furthermore, due to the dramatic economic diversification, most adult relatives of the elderly also have often migrated out or conduct other non-farm occupations and are therefore unavailable for help. This is also why the elderly farmers are so eager to use agricultural machines, although calculating strictly, a combine harvester, for instance, is overly expensive for some farmers or some plots of land. Therefore, it is reasonable to conclude that in a sense, the loosening of community cohesion promotes agricultural capitalisation and commercialisation as almost every step of agricultural production has to be accomplished using cash.

7.5 Conclusion

This chapter has investigated the socio-cultural drivers of agricultural production in contemporary China based on the case of Hu Village. It argues that agriculture is not solely an economic activity for farmers, but that it also is interwoven with multi-faceted socio-cultural elements of rural space, especially in such a dramatically transformative era like that of rural China.

Firstly, it has become evident that agriculture is spurned unexceptionally by Chinese rural residents. Agriculture is a thankless occupation, in which, “blood and sweat are not a metaphor, but reality” to farmers (Fei, 2006:111). Especially in mountain or hilly areas where mechanisation is substantially constrained by the geography, as in most parts of Hu Village, farming is backbreaking work. Given the smallholder style of

agriculture found in China, one can never make much profit from land especially compared with prosperous opportunities in non-farm employment. Agriculture, thus, is often despised by farmers themselves. For contemporary farmers, to move out of agriculture is a norm, a responsibility of parents towards their children, and the fate of next rural generation. Education is the primary pathway in China to realise the dream of “deagrification”. Rural parents desperately attempt to provide their children with the best education, which has become the priority among priorities of rural families. It seems very unlikely that the next generation of rural Chinese in the future will conduct agricultural production.

Secondly, since agriculture is thankless and rewardless, who farms in a family is never a neutral issue, but involves complex socio-cultural arrangements within households, including gender and generational divisions, and family life course. It is found that in Hu Village, due to family division as well as macro political-economic environments, a form of “left-behind” agriculture has emerged in Hu Village as well as in other parts of China, in which, middle-aged women and the elderly are mostly likely to undertake agriculture. The performances of feminised agriculture and geriatric agriculture have basically maintained yields and in some cases, with feminised agriculture have been even more productive, suggesting once again that in an era of increasingly capitalised, commercialised, standardised agriculture, who farms has little difference on productivity any more.

Nonetheless, the physical and psychological wellbeing of the two groups deserve serious concern. In addition, the general life course of rural families projects an unfavourable future for the middle-aged women and the elderly. Overall, the “left-behind” agriculture is actually the best strategy that rural households can adopt to maximise households revenue and security with various structural constraints towards their urbanisation in contemporary China. Land, in this sense, bestows rural households a strategic security net.

Lastly, changes of community socio-cultural norms and rules driven by the penetration of modernity and the market economy also have repercussions for agricultural production. Given the overwhelming national quest for modernity, rural community has been constructed and perceived by rural residents themselves as “backward” space, especially by the rural youth. To embrace the urban and the modern life is the primary pursuit of all rural residents, which lays the socio-cultural foundation for moving out of agriculture.

In addition, consumerism brought about by market economy and the state development strategy has constantly driven farmers to pursue cash to satisfy the ever increasing consumption targets. Furthermore, community cohesion has substantially diminished, leading to an increasingly “dissociated community”, where frameworks of mutual help among villagers have been substantially weakened. Given the physically-constrained farming population, weak community cohesion can be a driver for “irrational” agriculture as many

farmers, especially elderly farmers, have to pay unusually high price for mechanisation, for example.

Chapter 8: Discussion and Conclusion

8.1 Introduction

This chapter will conclude the whole research project. Through investigating the case of an agricultural village in southwest China, this research has elaborated the fundamental socio-economic forces that are underpinning contemporary Chinese smallholder agriculture. As has been noted throughout the thesis, the case of Hu Village, to a great degree, represents the overall state of affairs of Chinese agriculture. In addition, under China's centralised political system and dominant top-down rural development approach (Long and Woods, 2011), Hu Village can be largely seen as an epitome or a window on the Chinese countryside. Based on the findings in Hu Village, this chapter will broaden the discussion into global scope and anchor the position of contemporary Chinese agriculture within the broader picture of world agricultural development, seeking to answer the following questions: How is it possible to understand contemporary Chinese agriculture internationally? How is Chinese agriculture distinctive and what aspects of Chinese agriculture are similarly found or have occurred in other countries, especially BRIC countries? Then, this chapter will summarise the findings of the research, and propose policy suggestions and further research directions.

Specifically, Section 8.2 discusses the Chinese case within global backgrounds, to connect the findings of this research with international

literature. As briefly mentioned in Chapter 1, world agricultural development has been rather heterogeneous, and agriculture in the industrialised economies and agriculture in the transition countries has varied temporally and geographically (Wilson, 2007; Woods, 2010). This section will first discuss how to understand Chinese agriculture within the agricultural restructuring of the developed countries. Then, the discussion will turn to other transitional countries, specifically BRICs, to explore the convergence and divergence between China and other developing countries. Section 8.3 summarises the key findings of the research through listing the four research objectives and answers. Building on Section 8.3, Section 8.4 presents some reflections regarding the approaches and the future of Chinese smallholder agriculture. Section 8.4 proposes relevant policy suggestions. Lastly, Section 8.5 points out several recommendations for further research based on the findings of this research.

8.2 Discussion

This discussion will first link the Chinese case that Hu Village has represented to that of the developed countries which have experienced dramatic transformations in agricultural and rural arenas. The experiences of the global North echo with the Chinese case in some ways but also differ substantially in other ways. Then, the discussion will put China into the context of the BRICs, to reveal what convergences and divergences the four countries have

experienced in terms of agricultural development.

8.2.1 Agricultural and rural restructuring of the global North and the Chinese road

From productivism to a multifunctional agricultural regime

Since the mid-twentieth century (after World War II), agriculture in the advanced economies, especially the UK and other Western European countries has entered the era of “productivism”, as termed by rural researchers (Marsden *et al.*, 1993; Ilbery and Bowler, 1998; Wilson, 2001, 2007). As Wilson (2007) amply illustrated, productivist agriculture as an overarching development regime involved an array of inter-related political, socio-economic, cultural and environmental dimensions. With regard to the organisational forms of agricultural production, industrialisation, commercialisation, intensification, specialisation and concentration are all prominent characteristics of productivist agriculture (Ilbery and Bowler, 1998; Wilson, 2001, 2007). Over about four decades, productivist agriculture has boosted the production capacity and successfully achieved the goal of national self-sufficiency in developed countries, and by the end of the 1970s, agricultural produce in the global North had outstripped the market demands which eventually resulted in increased agricultural over-production (Wilson, 2001; Robinson, 2004; Woods, 2010). Subsequently, pressed by surplus

production and fiscal restraints in state expenditure on agricultural subsidies, as well as increasing public concerns about the environment (Woods, 2010), a transition or a reorientation towards a new agricultural regime has been embarked upon since the 1990s across the global North.

From the beginning of the 1990s, the “post-productivist transition” has been identified as a new direction that moves away from the productivist agricultural regime (Marsden *et al.*, 1993; Ilbery and Bowler, 1998). However, the notion of a post-productivist transition has caused intensive academic debate as the concept of “post-productivism” was “theoretically weak” and “poorly defined” (Woods, 2010:79). Multifunctional agriculture was introduced as an alternative to post-productivism to conceptualise the multi-stranded rural and agricultural change (Wilson, 2001; 2007). Although varied in different localities, there is little doubt that multifunctional agriculture has gained increasing socio-economic ground in the global North, representing an alternative logic to productivist agriculture. Rather than singularly dominated by one form of production as productivism represented, a new multifunctional agriculture regime in the global North accommodates the coexistence of multi-faceted logics of agricultural production, including productivist, environmental, residential, leisure and so forth (Wilson, 2007; Woods, 2010).

Moreover, as a part of the rural economy, agricultural development has also been embedded in the general rural development strategies and the transition towards a multifunctional agriculture regime in the global North,

which to a great degree has been paralleled by the reorientation of rural development strategies from the modernisation paradigm towards the integrated rural development paradigm since the 1990s (Ploeg *et al.*, 2000; Woods, 2010). Before the 1980s, rural development of the developed world had been dominated by modernisation paradigm which generally involved four inter-linked processes (Woods, 2010): agricultural modernisation, which included agricultural commercialisation, mechanisation, industrialisation, specialisation and integration within the agri-food sector; economic modernisation, which transformed traditional rural industries to modernised ones; infrastructure modernisation, including electrification and water supply, road and telecommunication networks construction; and social modernisation, which “challenged the superstition and traditional folk cultures of rural societies...instead promoted modern rationality and aesthetics, education and social emancipation...” (2010:133). By the 1980s, the limitations of modernisation paradigm had been critiqued by researchers for “over-production, environmental degradation and spatial inequality” (Woods, 2010:139), and a “new rural development paradigm” eventually emerged (Ploeg *et al.*, 2000). As Ploeg *et al.*(2000) argued, rural development is a multi-level, multi-actor and multi-faceted process, within which, the development approach has been shifted from top-down planning to a bottom-up model. Woods (2010) argued the new rural development paradigm discursively suggests that the rural also have distinctive social, cultural and

environmental resources which can trigger particular development paths, rather than relying on external support and guidance.

The Chinese road of agricultural and rural development

Admittedly, the concepts of productivism, post-productivism, and multifunctionality have been largely built on the circumstances of advanced economies, especially the UK and some other Western European countries. But as Wilson and Rigg (2003:681) amply illustrated, “post-productivism and the developing world are not necessarily ‘discordant concepts’” and similarities can be found between situations occurring in developing countries and what used to occur or what is occurring in the global North. Regarding China, irrespective of her special socio-economic and political institutions, Chinese agricultural production is fundamentally productivist (see Wilson and Rigg, 2003), and agricultural modernisation has been the most steadfast principle of agricultural development strategies since 1978 (Long and Woods, 2011). Until the present, the promotion of modernised agriculture has still been listed as the priority among priorities in terms of both agricultural and rural development by the central government (see Chapter 2). Furthermore, political concern for national food security has endowed Chinese agriculture with unparalleled strategic importance, which is especially clear as the state has begun to subsidise farmers since 2005. In addition, agricultural industrialisation, specialisation, and commercialisation have been

enthusiastically promoted by the state as a principle strategy to realise agricultural modernisation (see Chapter 4). At the individual level, as Hu Village shows, farmers have been endeavouring to maximise agricultural productivity through applying various external commercial inputs like biotechnologies, mechanisation and commercial fodders, but they are facing a “growing squeeze on agriculture” (Ploeg *et al.*, 2000:395) and are caught in an agricultural “treadmill” (Ward, 1993). It can be seen that many aspects of contemporary Chinese agriculture to a great extent resonate with the productivist agricultural regime that once dominated the global North.

In addition, contemporary Chinese rural development strategy has also been dominated by the modernisation paradigm through a top-down approach. As Woods (2010:133) has similarly argued, “the modernisation paradigm...remains significant in guiding rural development in several (developing) countries, including Brazil, China and India”. Since the reform, Chinese rural development has been principally driven by an over-arching focus on the modernisation paradigm, including agricultural modernisation, rural industrialisation, infrastructure and rural market development, education modernisation and so on. The National Rural Economic Development Twelfth Five-Year Master Plan (2010-2015) continues to position “developing modern agriculture” as the top priority of rural development, and by 2015, China plans to add 2.5 million hectares of irrigated farmland, maintain grain output above 540 million tons, enhance mechanisation rates to above 60%, steadily

strengthen agricultural specialisation, standardisation, intensification, large-scale production and informatisation, solve water supply problems for 300 million people, fully electrify the rural areas and build 1 million km rural roads (NDRCC, 2011). It is worth mentioning that the road construction and irrigation facility restoration of Hu Village in recent years are just parts of national development projects initiated by the Plan. Contemporary Chinese rural development is overtly in line with the modernisation paradigm which used to be the dominant approach in the global North. Under the modernisation paradigm, Chinese rural areas have been discursively constructed as a backward, traditional and unattractive space, and rural residents, especially young generations, cannot wait to move out of agriculture, out of the countryside, to embrace a modern, urban life.

However, although there are many similarities with the productivism regime and the rural modernisation paradigm developed originally in the context of western countries, Chinese agriculture and rural development have also exhibited distinctive features which seemingly do not entirely fit the western models. For most Chinese farmers, agricultural production is not the core of their income but a supplement to their livelihoods. Driven by the overarching national progresses of modernisation, industrialisation and urbanisation, the rural population has been attracted by off-farm opportunities in the urban or industrial sectors, substantially marginalising agriculture within household arrangements and the rural economy. This scenario is different

from that which used to be found in western countries where the productivist regime in agriculture was often the mainstay of farmers' livelihoods and of the rural economy. Due to an array of institutional barriers like the Hukou system, Chinese rural migrants can hardly settle in urban areas as legal citizens and thus have to dwell on the characterised model of "semi-worker, semi-farmer", in a sense leading to the persistence of smallholder agriculture. In the global North, productivist agriculture caused substantial declines in agricultural labour inputs (Wilson, 2007), leading to a dominant trend of depopulation of rural communities (Woods, 2010). Although with dramatic outmigration, depopulation of rural communities has not occurred in China as most rural migrants remain agricultural and with rural status officially, as their livelihoods still rely on the combination of migration to the urban and agriculture in the rural (Huang, 2010). On the other hand, the persistence of smallholder agriculture has increasingly become an obstacle to further agricultural modernisation, specialisation and scale production as frequently claimed by governments. As observed in Hu Village, even farmers themselves are eager to transfer their land for large-scale production. Small scale land cultivation can only enable agriculture to be maintained at subsistence level for most households, and with ever-increasing input costs, the profit potential of smallholder agriculture is further squeezed. Therefore, whether from the case of Hu Village or other regions of China, it can be seen that Chinese smallholder agriculture has arrived at the threshold of capitalist agriculture

which requires free land transfer markets and capitalisation of agricultural production. This scenario directly urged an array of national policies encouraging land transfer market development, fostering new forms of agricultural organisation, like professional entrepreneurs, farm cooperatives and newly proposed “family farms”, which are based on family labour to conduct agricultural large scale production, intensification and commercialisation, with agriculture being the primary family income source (No. One Document of PRC, 2013).

Another important issue is related to livelihood diversification. Rural-urban migration and other buoyant off-farm economies have enabled Chinese peasants to diversify their livelihood portfolios to an unprecedented extent, which apparently coincides with the diversification and pluriactivity of rural families in contemporary western countries (Wilson and Rigg, 2003; Wilson, 2007). Nevertheless, they are driven by completely different forces. The livelihood diversification of Chinese farmers is primarily driven by the overarching modernisation process, embracing industrialisation, urbanisation and marketisation, while the pluriactive farm household pathways in western countries are more associated with the consumption of the countryside which has been largely propelled by counter-urbanisation and environmental concerns (Marsden, 2003). The economic diversification of rural China (as well as other Southern countries) often indicates further marginalisation of farming within the household, leading to a tendency towards deagrarianisation

(see also Bryceson 1996 for Africa and Rigg 2001 for Asia), while Ploeg (2008) observed in Europe that rural pluriactivity could be supportive to farming, witnessing a repeasantisation of agriculture. In other words, the diversification of rural China is oriented towards the urban, the industrial, and the modern, mostly external to the rural, which is “a transition towards the thorough-going restructuring of farming and rural areas” (Wilson and Rigg, 2003:698). In a European context, the diversification represents a localisation or “re-grounding” process of agricultural production based on growing niche markets (Ploeg *et al.*, 2012). Therefore, diversification in China, as Wilson and Rigg (2003) recommend, is more appropriate to be understood in the context of the process of deagrarianisation rather than the post-productivist agriculture regime.

In addition, the newly launched rural development campaign by the Chinese government since 2006, “Building a New Countryside” not only continues to stress the priority of developing modern agriculture, but also relates to social, economic and environmental improvements, adopting a more holistic approach to enhance the attractiveness of rural areas. This new rural development strategy “contains elements that resonate with aspects of the ‘new rural development paradigm’ in Europe and elsewhere” (Long and Woods, 2011:75; see also Ploeg *et al.*, 2012). However, the effectiveness of this government-dominated rural development strategy still remains to be seen. Lastly, as argued above, agricultural and rural development in China

have exhibited both similar and distinctive experiences and contemporary scenarios as the global North, which is associated with the character of Chinese socio-economic patterns, political institutions and specific socio-cultural norms and history.

8.2.2 Agricultural development of the BRICs: How China is special?

It is unrealistic to portray the agricultural sector of every southern country and make a comparison with China here. While acknowledging the heterogeneity of southern countries, the following discussion will be particularly based on the experiences of BRIC countries to further understand contemporary Chinese agriculture within the context of the global South. Acknowledging that multi-dimensional differences including social, economic, political and historical aspects exist among BRIC countries, this discussion only focuses on some broad aspects of agricultural development of the referred countries. As a background, a brief review of agrarian changes of the BRICs was discussed in Chapter 2.

Putting four countries together, there are convergences and divergences in terms of the agricultural development pathways that can be identified. The first fundamental common ground of BRIC countries is that all are dominated by an agricultural modernisation regime (Woods, 2010), whether through the agribusiness model or by embracing smallholder farming.

All four countries are still on the pathway towards productivist agriculture, with maximisation of productivity and output as the primary goal. Second, historically, all four countries have embarked on market-led (or neo-liberal) economic domestic reform roughly from the 1980s, and agriculture has been progressively embedded in a market-based system and transformed dramatically by increasing liberalisation and globalisation. Although the concrete transition trajectories in different countries differ significantly, agriculture in the four countries has been increasingly integrated into both domestic and international markets. Especially with accession to WTO, all four countries are facing challenges and opportunities from globalisation processes. Third, due to uncompleted reform agendas, agriculture of all four countries faces institutional obstacles. For instance, insecure land property rights exist in all four countries to varying degrees, which greatly hinders the development of land markets. Lastly, the dynamic tension between the agribusiness model and the smallholder family farming model forms the most fundamental agricultural development scenario in all four countries. As illustrated above, although the four countries are dominated by different agricultural organisations, the interaction between industrialised large-scale agricultural production and small-scale peasant family farming will determine the direction of agriculture in the future.

Several divergences of agricultural development in the four countries can also be identified, which are not commonly shared by all due to

differences in socio-economic, political and historical contexts. First, agribusiness gains different development features and powers in the four countries. Particularly agriculture in Brazil and Russia is primarily driven by large-scale commercial agribusiness, especially Brazilian agriculture which is export-oriented and plays an important role in global agrifood markets. Peasant farming in the two countries represents a minor portion of agriculture and largely produces for subsistence. India and China are both dominated by smallholder agriculture, which has increasingly been in crisis in the transition to an industrialised and urbanised society.

Since urban economies absorb rural labourers inadequately, the rural-urban migration in India is much less dramatic than in China, and hence Indian rural labour is mostly employed in rural areas rather than in cities, which is fundamentally different from the situation found in rural China. Regarding rural outmigration, Russia faces similar issues to China, as researchers have observed that rural communities in Russia are severely short on young, educated populations due to outmigration (Wegren, 2008).

Second, numbers of landless farmers in Brazil and India are considerable, which has triggered long-lasting social movements towards land rights in the countries. This phenomenon is not stark in Russia and China. Interestingly, peasants in Russia and China are even reluctant to expand their land property as in Russia, unfavourable market conditions and social institutions regarding small scale farming is widespread, and in China, as this

thesis has discussed, dramatic non-farm employment opportunities and the market squeeze on agriculture has greatly frustrated smallholders' farming incentives. Third, the primary challenges that the four countries' agriculture faces in the future are different. As argued above, Brazil is concerned primarily about environmental sustainability and social inequality; Russia about further institutional reforms and rural depopulation, India about smallholder agriculture and rural poverty, China about agricultural labour decline and institutional reforms on land and agriculture. It can be seen that the differences in future challenges are certainly based on their specific contexts. Further examination of the differences constitutes another research agenda.

Lastly, through the comparison of BRIC countries, we gain a better understanding of contemporary Chinese agriculture in the international context. It can be argued that the most pronounced scenario of contemporary Chinese agriculture is that driven by dramatic livelihood diversification and market squeeze, smallholder agriculture seemingly is approaching its limits and is progressively deserted by peasants themselves, to such an extent that the vast majority of farmers are eager to hand their land over to emerging agricultural enterprises or other market operators. In this sense, Chinese agriculture is arguably coming to a historic crossroads, where agriculture as the implicit and natural occupation of peasants which has lasted thousands of years is being reconsidered, and the options of agricultural pathways between

smallholder agriculture and large-scale, productivist agriculture are urgently awaited to be chosen by Chinese policy makers.

8.3 Key findings

Through focusing on the agricultural production of a rural community in southwest China as a case study, this thesis has investigated the “structures” and “agencies” that are framing and shaping contemporary Chinese smallholder agriculture, and addressed a research gap on Chinese smallholder agriculture research, as well as providing an understanding of Chinese experiences within global contexts. Four objectives were set to achieve the research aim, and the key findings of this research are summarised below.

Objective one: *To reveal the macro socio-economic “structures” in which Hu Village agriculture is embedded in contemporary China, embracing both overall socio-economic development, agricultural changes and development policies at different geographical levels.*

It was found that the agricultural production of Hu Village is embedded in the over-arching socio-economic transformation of China (see Chapter 4). Irrespective of a focus on the nation, the province or the county, a similar transition from agriculture-based economy and rural society to industry-based economy and urban society has been underway. Industrialisation and urbanisation have been set as the development priorities by both the whole

country and local governments. Agricultural modernisation is the dominant paradigm that all-level governments are enthusiastically propelling. Numerous relevant policies and projects are designed and implemented from national to local levels, primarily through a top-down approach, and these policies and projects set the parameters for local farmers' agency.

Objective two: *To demonstrate the demographic characteristics of the farmers in agricultural production under the transitional background, and to reveal the demographic changes taking place in rural communities and the implication of the demography for agricultural production.*

The findings revealed that, consistent with rural demographic tendencies at the regional and national levels, farming and the farming population were being marginalised in Hu Village, as the full-time farmers, who consisted mainly of the elderly and females, often with lower education, only makes up a small proportion of the whole population (see Chapter 5). Rural residents are differentiated by occupation. Migrants and dedicated farmers are the two major forms of employment for Hu Village farmers. The young and males, often those with higher education, are more likely to take part in migration and other off-farm jobs, while the elderly and females with poorer education are more likely to do farming work. However, different from impressions delivered by the mass media, this analysis has revealed that although there is a tendency of deagriculturalisation in terms of occupations,

land/agricultural production was still strategically important to most rural families, as relevant institutions and policies on land tenure and social security were still incomplete in transition China (see Chapter 5).

Objective three: *To reveal economic drivers for agricultural production of the research village, and to identify which drivers are promoting or encumbering farmers' initiatives to undertake agricultural production and how.*

Analysis revealed that economic diversification of rural households had become the most pronounced driving force of Chinese smallholder agriculture as similarly found in other developing countries (see Chapter 6). Different from the findings from other regions, like Africa, agricultural productivities in China have largely remained stable due to ample access to modern material inputs and the standardisation of farming practices. This said, most crop production and livestock sidelines have experienced gradual decline due to overall labour withdrawal. As similarly found in other countries, migration seems to affect agricultural production more prominently than other forms of non-farm employments, and tends to de-intensify land use and reduce agricultural diversity. Technologically, substitutions between labour and modern technologies, like fertilizers and machines, evidently exist, particularly for migrant households (see Chapter 6).

Research also revealed that in Hu Village, agricultural markets of both products and inputs had been substantially extended and greatly promoted agricultural commercialisation, as well as integrating farmers with domestic

and international markets (see Chapter 6). However, the rising input prices and declining or slowly rising product prices are squeezing agricultural revenue and greatly reduce farmers' incentive to farm, a trait which has been witnessed extensively at global scale. The dominant market-oriented agricultural development approach has catalysed various fashions of agricultural operation, for instance, contract farming and large-scale land contracting. However, the interests of farmers involved in these new agricultural forms are often not well protected due to imperfect institutions and poor implementation of projects. Farmers in Hu Village have a strong willingness to transfer out their land to release labour demand intensity, but a poorly developed land transfer market has rather encouraged informal transfers among farmers.

It was found that economic policies have also been an important variable for Hu Village agriculture (see Chapter 6). Various agricultural subsidies, as well as modern agriculture and infrastructure projects have been launched and implemented to facilitate agricultural modernisation and to enhance farmers' income. It was found that the effects of agricultural subsidies were insignificant to encourage agricultural production as similarly found by researchers in other parts of China. In the context of the Chinese ossified bureaucracy, various agricultural development projects with originally good intentions in many cases end up with disappointing consequences.

Objective four: *To reveal social drivers for the agricultural production of the*

research village, and to identify which drivers are promoting or encumbering farmers' initiatives to undertake agricultural production and how.

It was revealed that agriculture was not merely an economic activity for farmers, but was also interwoven with multi-faceted socio-cultural elements of rural space as Ploeg (2006) similarly argued, especially in such a dramatically transforming era like in rural China (see Chapter 7). For contemporary farmers, to move out of agriculture is a cultural norm and education is widely utilised as the primary pathway to realise the movement. Rural young generations are unlikely to conduct agricultural production in the future. A similar mentality has also been widely observed in other countries and throughout southeast Asia (Rigg, 2001). It was also found that the labour division of rural households had resulted in the tendencies of feminised and geriatrified agriculture, or “left-behind” agriculture. At the community level, changes of community socio-cultural norms and rules driven by the penetration of modernity and the market economy have also contributed to the contemporary agricultural situation in Hu Village (see Chapter 7).

8.4 Research reflections: some thoughts regarding Chinese smallholder agriculture

Through conducting this research project, the author has an excellent opportunity to observe and discuss the state of contemporary Chinese smallholder agriculture. The following provides some reflections regarding the

contemporary situation and the future development of Chinese smallholder agriculture deriving from the fieldwork of this project.

Regarding Chinese agricultural production, or more broadly, “Sannong” problem, the state has set two principal goals: to ensure food security of the country and, simultaneously, to enhance the economic incomes of rural households (see the central government No.1 documents from 2004 to 2013). The first goal requires sound farming practices from farmers (e.g. ensuring adequate labour and material inputs), while the second goal often forces the state to diversify their income streams, which more often than not leads to massive labour withdrawal from agriculture. The low earnings from agriculture also push farmers to leave their home villages. It is under this mismatch of the two different tendencies that contemporary Chinese smallholder agriculture is situated. On the one hand, the state keeps strengthening investments in agriculture and more broadly, rural communities in the name of agricultural modernisation. On the other hand, however, even with all the favourable policies and projects, this still cannot keep the farmers farming, and thus cannot address the labour shortage in agriculture. As this research has argued, a compromised strategy is the so called “left-behind” agriculture, or “perfunctory agriculture”, in which land is not treated as carefully and diligently as before. Although with high inputs of modern technologies, the productivity can be maintained, the socio-cultural norms regarding “valuing land” and environmental aspects regarding long-term land preservation have been

largely eroded. This can be viewed then as the characteristic modernisation pathway of Chinese smallholder agriculture, or sometimes referred to “capitalization without proletarianization” (Huang, *et al.* 2012).

One prescription made by the state, to deal with the circumstances of contemporary smallholder agriculture, is to promote large-scale, market-based, capitalist agri-business, or so called, “modern agriculture”. This is illustrated at the local level, as Hu Village presents, in the encouragement to develop various forms of contract farming. There is no denying that contract farming can bridge the gap between farmers and external markets, and some contract farming indeed creates more profit from contemporary Chinese smallholder agriculture and brings economic benefits to farmers. Moreover, during the fieldwork, almost all the farmers expressed their eager demands for contract farming, suggesting that farmers still hope that they can make more return from their small areas of land. However, on the one hand, market imperfections regarding contract farming in China are still widespread, farmers do not have a say in the whole process so that farmers’ rights and interests cannot be formally secured. On the other, contract farming is still largely based on the existing “left-behind” agriculture. It has very limited potential to attract the most knowledgeable and competent farmers, who often have gone outside for non-farm employments. Therefore, how far contract farming can contribute to the contemporary smallholder agriculture deserves serious consideration.

Another treatment from the state is large-scale land transfer based on the existing land tenure system. Now that smallholder agriculture faces labour shortages and rural youth does not want to farm, to transfer the land from those who do not want to farm to those who do, seems reasonable and appropriate. However, as long as social insurance for farmers is still absent in contemporary China, land serves as the security net for most rural households. Once land is transferred, the landless farmers will rely entirely on market and cash, which undoubtedly will expose them to more risks. Hence, the implementation of land transfer requires matched social reforms, for instance, social insurance and the reform of the Hukou system, to safeguard the wellbeing of landless farmers. So, this is not just an agricultural or land issue, but has implications in the entire socio-economic sphere, for which China is not yet ready. In addition, as the Hu Village case has illustrated, the agricultural production of large-scale land transfer often does not perform as well as smallholder agriculture due to managerial and other reasons. The monoculture brought by large-scale farming may cause environmental harm and land degradation in the long run. That said, most farmers are still willing to hand their land over to large-scale farming contractors, which suggests that most households are not dependent on land any more but on non-farm employment. Nonetheless, there is still a small proportion of farmers (around 30% according to the Hu Village case) who want to continue their smallholder agriculture, and are unwilling to hand their land over. This group of farmer,

often termed ‘the middle farmer class’ (He, 2010), has become an important “stabiliser” of contemporary rural China. In this group, the husband and wife often stay in the village for various reasons, and build their livelihoods on the land and around the community. They often receive some land from relatives, neighbours, or friends, and expand their land to a medium scale, although still around one hectare, allowing them to acquire a greater profit from their farming. As He (2010) has argued, the new middle farmer class is of vital importance to the rural community and agriculture, as most of them are in middle-age, and have sufficient capabilities to build their livelihoods locally as well as participating in community governance, which is so necessary in the context of massive rural out-migration in China. However, the large-scale land transfer campaign is bound to threaten the survival of the middle farmer class, as their land scale will be reduced due to the favoured land transfer to large-scale external actors. How to deal with the relationship between large-scale farming and the middle farmer class presents interesting challenges for future Chinese agriculture.

Peasant farming or large-scale modernised farming: what will the future be?

There have been heated debates surrounding what Chinese smallholder agriculture should be in the future, polarised into two camps: either favouring peasant farming or large-scale modernised farming. Both sides have their

justifications. Peasant farming can provide farmers more autonomy, and is more environment-friendly, more labour intensive, more diverse, and more productive. Large-scale modernised farming can liberalise rural population from land, and propel urbanisation progress, and it is more standardised, more efficient, more profitable, and more market-oriented. Off course, both have advantages and disadvantages for contemporary China. On the one hand, there are arguments that one should not romanticise peasant or smallholder agriculture when agricultural production has been closely connected with the domestic and international capital economies. The smallholder agriculture seen today is not the 'smallholder agriculture' in the writing of Netting (1993), where land was the centre of rural households and rural community, and the future for all rural generations. Now to leave the land, or move out of agriculture has become the behavioural ideology of most rural residents. In this sense, there is an urgent need for large-scale land transfer. However, for farmers that still want to build their livelihood in the village and want to live a peasant-style life, this freedom should be available to them. Off course, both approaches can only come to reality alongside matched socio-economic reforms which guarantee that landless farmers can live a proper life afterwards. Under the political economy of contemporary China, it is safe to say that in the near future, neither side can be dominant, but rather they will represent a jigsaw of mixed and diverse forms of agricultural production. It will be a challenge for the policy makers to

coordinate the diverse forms of farming. Whether this jigsaw is just a transition state towards a unified shape, or a permanent characteristic to satisfy the multi-faceted needs of stakeholders is beyond this discussion, but what is sure is that it depends on the comprehensive socio-economic reforms of China in the context of both domestic and global economies.

8.5 Policy implications

Based on the findings of this research, several policy suggestions can be proposed to address the unfavourable future that contemporary Chinese smallholder agriculture and farmers are facing.

First, since the main body of agricultural labour is middle-aged females and the elderly whose physical and educational conditions are poor, facing increasing challenges with normal farming work, relevant public services should be promoted to maintain the performance of “left-behind” agriculture. For instance, as illustrated in previous chapters, labour shortages do exist in contemporary smallholder agriculture, and the spontaneous frameworks of mutual help among farmers have been dramatically weakened, so organisations like agricultural mutual aid groups could be sponsored by government or other formal institutions to release labour shortages for farming.

Second, and linked to the above, due to poor education levels and lack of knowledge, many farmers are excessively applying various agricultural

inputs, especially chemicals, in many cases because they don't have directions on quantities to stick to. The excessive use of chemical inputs not only damages the environment and farmers' health, but also greatly raises farming costs, making agriculture less desirable. Since the trend of using modern inputs is irreversible at present, public services from government or other authoritative organisations regarding usage criteria of farming inputs (e.g. fertilizers, pesticides, herbicides) to guide farmers to scientifically use modern inputs should be considered as a key policy agenda in the future.

Third, as demonstrated before, various external actors have become actively engaged in contemporary smallholder agriculture, like contract farming, government modernisation projects, with more often than not disappointing effects to farmers themselves. The top-down approach utilised in these forms of agricultural production deprives farmers' say in the process, and thus as similarly recommended by Gulati and Fan (2008) when comparing Chinese agriculture with Indian agriculture, a more participatory approach should be promoted to improve the status of smallholders in the process of market integration and government project implementation. In addition, agricultural enterprises own the competence and opportunities to connect with governments who also would like to collaborate with these enterprises to implement development projects. Consequently, large agricultural companies or entrepreneurs benefit most from various subsidy policies, while smallholders who occupy the vast majority of agricultural

population are easily bypassed. Hence, more balanced policy strategies should be adopted to protect the incentives of smallholder farmers. Relevant laws (e.g. contract law) should be further consummated and strictly implemented to protect smallholders' interests when they deal with large agricultural enterprises.

Lastly, judging from the contemporary situation in Hu Village, the out-migration or non-farm diversification of rural households will be further strengthened in the future, not only by farmers themselves but also by the state. At the same time, agricultural production faces challenges in terms of labour availability and farmers will continue to dwell on the "semi-worker semi farmer" mode for the foreseeable future. The state faces a policy paradox regarding agricultural development. On the one hand, the state is enthusiastically promoting modernised, large scale agriculture, facilitating land consolidation and fostering new agricultural entrepreneurs, while on the other hand, the smallholders still greatly rely on their small plots as an important portion of their livelihoods. Rigg *et al.* (2008) used to suggest that the best pathway forward for rural residents in the global South is to endow them with skills so that they can escape from land and the countryside. Yet with formidable institutional barriers in contemporary China, merely skills cannot enable farmers successfully to move out of agriculture. Since industrialisation and urbanisation will continue to be the national development strategies of China, rural populations will be further driven to migrate or diversify into non-

farm sectors. Most importantly, to move out of agriculture is also what farmers themselves firmly persist in propelling themselves towards, therefore, an array of comprehensive socio-economic reforms embracing the Hukou system, land tenure, social welfare, education and so forth need to be taken account of, rather than focusing on one singular aspect. Only through comprehensive social reforms can the form of “left-behind” agriculture be terminated.

8.6 Further research directions

As highlighted by this thesis, agricultural production is not merely an economic activity for smallholders, but it is also associated with complete social and natural systems, more specifically, embracing socio-economic, political and environmental dimensions. Based on a case study, this thesis particularly highlighted the socio-economic processes framing smallholder agriculture in the context of contemporary transitional China. This also leaves many subjects for future research agendas. For instance, the roles of the state in agriculture were only selectively taken into account in this thesis, mainly in terms of economic policies and development projects, but there are clearly more concrete processes that the state and related sources of political power influence regarding agricultural production and these still remain unknown. In the following sections, I suggest four future research themes.

First, what political factors influence smallholder agriculture in China, and how? This thesis has shown that political power plays a substantial part

in smallholder agriculture through the effects of agricultural policies and development projects. The political status of farmers in the community (e.g. whether they are party members or not), the role of village cadres and the policy and projects implementation process deserve deeper and more detailed exploration. Especially in the Chinese political system, politics decides everything and government makes substantial interventions in the economy and society. The political forces probably exert more influence on agriculture than any others. Due to methodological barriers and ethical challenges, this project restricts its research objectives within socio-economic domains.

Second, the dynamics between the environment and rural livelihoods has attracted increasing research interests, for instance, the relationship between migration and the environment (Bilsborrow, 2002; Carr, 2009; Qin, 2010). As presented in this thesis, Chinese smallholder agriculture is persistently capitalised, which may well have serious environmental repercussions. In turn, environmental degradation can become a force driving farmers out of agriculture, off the land and ultimately away from rural communities. In addition, the relationship between the environment and livelihood diversification is also an interesting research topic, which could investigate how environmental factors influence farmers' livelihoods and how farmers' livelihoods in turn impact the environment.

Third, longitudinal studies are needed in the future to better interpret the tendencies and processes identified in this thesis. This research draws

largely on the cross-sectional data of Hu Village in 2011, which is limited for interpreting the social changes and tendencies. Hence, more dynamic, longitudinal data is needed, and for this reason, a follow-up study of Hu Village is going to be one of my research priorities in the future. In addition, in the future, the ethnography of Hu Village through an anthropological perspective can be favourable to understand the changes occurring in the agricultural arena. For instance, Rigg *et al.* (2012) conducted a longitudinal study of two villages to present the long-term changes and tendencies in the agriculture and rural society of southeast Asia.

Fourth, comparative studies among transitional BRIC countries deserve more research efforts, in order to provide a better understanding of the agrarian transition taking place in individual countries through an international context. As briefly illustrated in Section 8.2, the agrarian transition trajectories of the four BRIC countries have both divergences and convergences. A policy that represents a failure in one country can be a success in another. Through comparisons, the experiences and academic debates within Chinese agriculture can be finely articulated in the context of global experiences and debates, and may thus provide useful reform options for China. Comparative studies can involve various geographical scales, from national and regional level to community level, which all can provide valuable insights.

Appendices

Appendix A: Chronological Stages of China's Rural Transition

Time	Reform Policies	Components and Consequences
1949~1952	Land Reform: People's Republic of China National Land Reform Act in 1950	Land was confiscated by the government after 1949 revolution, and redistributed equally among the farmers, which realised 'land to the tiller' and ended the feudal pattern of land tenure.(Gulati <i>et al.</i> ,2005)
1952~1957	The Socialist Transformation of Agriculture	From 1952, the government adopted the collective mode of production along the lines of the Soviet model which encouraged farmers to "voluntarily" pool their land and other resources into larger production units called "cooperatives" (Gulati <i>et al.</i> , 2005), and which, thus, transformed the individual ownership of land tenure to socialist collective ownership. In 1953, government created state-monopolies for the purchase and marketing of grain, and agricultural produce was subject to the fulfillment of compulsory quotas at fixed procurement prices (Gulati <i>et al.</i> , 2005).
1957-1960	Great Leap Forward and Communalisation	In 1958, China's leaders proposed the guide line of The Great Leap Forward: "Going all out, aiming high and achieving greater, faster, better, and more economical results in building socialism", and put forward a series of unrealistic tasks and targets. Simultaneously, government embarked on an even larger scale of production in agriculture. Advanced cooperatives were merged into "communes," where peasants worked and dined together in collective halls. Worsened by droughts and floods in most of China in 1959, nearly 30 million people died of starvation (Becker 1996; Lin 1990; Lin and Yang 2000). This was one of the largest human tragedies in history that resulted from a combination of policy and natural failures (Gulati <i>et al.</i> , 2005).

1961~1977	Economic Adjustments and Cultural Revolution	After 1961, gigantic-scale agriculture was reorganised into smaller units called “production teams,” which were subunits of the commune and consisted of only 20 to 30 neighboring families. During the decade of the Cultural Revolution (1966–76) agricultural production and productivity growth were again depressed by policy failures (Gulati <i>et al.</i> , 2005). No market transactions of major agricultural products were allowed outside the procurement system, and market exchanges of land between different production units in the commune system were outlawed (Gulati <i>et al.</i> , 2005).
1978~1984	Implementation of Household Responsibility System(HRS)	At the end of 1978, central government initiated rural reform, and the change from the collective system to the individual household-based farming system, now called the household-responsibility system, began in 1979 and was essentially completed by the end of 1983 (Lin, 1992). HRS is “Two-Tier” land tenure, which means that land was owned by the collective but use rights and production decisions were decentralised from the production teams to individual households. Farmers were free to decide what to cultivate and could sell the surplus in the market after they had met the state quotas, which were set at around 15–20 % of output (Yao, 2007). HRS promoted agricultural production greatly, accounting for half the output improvements from 1979 to 1984 (Lin, 1992). Another major step taken during this phase was the government decision to increase grain procurement prices (Gulati <i>et al.</i> , 2005). In addition, this period also saw the implementation of a series of far-reaching market reforms aimed at reducing the scope of government planning and procurement while gradually expanding the role of free markets in the allocation of resources (Gulati <i>et al.</i> , 2005).
1985~1996	Consolidation and Improvement of Agricultural and Rural Reforms	The procurement system was changed from a mandatory quota to a contract system in 1985, and as state procurement was steadily abandoned, the share of all farm produce sold at market prices soared (Gulati <i>et al.</i> , 2005). During this period, central government encouraged the development of “village and township enterprises” (VTEs), whose rapid development contributed to the rural economy and farmers’ incomes (Oi, 1999). After 1992, the state has begun to establish and develop the socialist market economic system, and correspondingly, the state eased control of agricultural markets, reduced control of the prices of agricultural products and distribution channels (Duan, 2009).

1997~2001	Entry into the WTO	China was officially admitted into the WTO in December 2001. Exchanges of most agricultural commodities have gradually been removed from the monopoly of state agencies except for strategic crops such as grains and edible oils. Trade liberalisation benefited those engaged in the production of labour-intensive products, favouring the diversification of agricultural output away from grains. On the other hand, less-developed areas in particular were penalised as they depended overwhelmingly on grain production (Gulati <i>et al.</i> , 2005).
2002~2011	Support Policies for 'San Nong'(Agriculture, Rural Area, Farmer)	In 2002, the Rural Land Contract Act was enacted, which entitled farmers to long-term and guaranteed land use rights. From 2004 to 2006, central government gradually abolished agricultural taxes and began to increase grain subsidies too, emancipating farmers entirely from the tax burden. In 2006, the state proposed a grand goal of Socialism New Countryside Construction which encompasses "developed production, affluent life, civilised countryside custom, clean village, democratic management". In 2007, the First Document of central government gave priority to the development of modern agriculture, and emphasised construction of agricultural water conservancy, improvement of land quality, the development of rural clean energy and so on. In 2008, the First Document focused on construction of agricultural infrastructure and improvements to farmer income. In the same year, the third Plenum of the 17 th Communist Party of China Central Committee encouraged farmers to transfer their land rights freely in order to develop scale agriculture. In 2009, the First Document emphasised an increase in the intensity of agricultural support and protection by investment and subsidies. In 2010, the First Document enlarged the scale of subsidies for forests, grazing, anti-drought and save-water machines, and also proposed bank services for "San Nong". Most recently, in 2011, the First Document focused on the construction of agricultural water conservancy, and 10% of land transfer capital of local governments will be invested in water conservation (First Documents of China from 2004 to 2011; Document of the third Plenum of the 17 th Communist Party of China Central Committee, 2008)

Source: Various studies

Appendix B: Household Survey Questionnaire

Introduction:

Good morning /afternoon, my name is Zhanping Hu. I am a PhD student from Plymouth University, UK. I am conducting a research project about the way how differential socio-economic factors affect agricultural production in contemporary rural China. I am also interested in how farmers cope with these socio-economic forces in everyday life. I will greatly appreciate it if you can spare some time for an interview. This interview will last about one hour to one hour and a half.

I can guarantee that your responses to this questionnaire will be strictly confidential. Your personal identification will never appear in any published material. You can refuse or stop the interview at any stage without claiming any reason.

Survey Information

Sample ID:	_____
Household Head Name:	_____
Interviewer Name:	_____
Interview Time:	_____
Interview Location:	_____

Zhanping Hu
University of Plymouth
UK
Mobile: 07514296542; +8613810106075
Email: zhanping.hu@plymouth.ac.uk

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1. Household Structure

1.Name code	2.Sex (1.Male 2.Female)	3.Age (Years)	4.Educational level(years)	5.Family member	6.Position in household	7.Marital Status	8.Job holdings	9.Migrant family or not (1 Yes 2 No)	10.Time duration of migrant work in the last year
01									
02									
03									
04									
05									
06									
07									

*Household refers to all the individuals living in the same dwelling house.All the individuals in a household share food, accommodation and other common resource.

*Migrant family refers to at least one family member working in urban area at least 3 months in the last year.

6. Position in the household	7 Marital Status	8 Job holdings	10 Time Duration
1 Household Head	8Sister	1 Married	1 Less than three months
2 Wife/Husband	9 Daughter in-law	2 Unmarried	2 Three to six months
3 Son	10Grandmother	3 Divorced	3 Six to nine months
4 Daughter	11 Grandfather	4 Widowed	4 Nine to twelve months
5 Farther	12 Grandmother in-law	5 Other (Specify)	5 Governmental officials (including village cadres)
6 Mother	13 Grandfather in-law	6 Housewife	
7 Brother	14 Other (specify)	7 Other (specify)	

2. Household Land

11. How much land in total did your household cultivate in the last year: _____ (if you cultivated others' land, please specify how much _____ and why _____).

12. For all your land, the land types and areas:

paddy field _____; upland field _____; forest land _____; pond land _____; mulberry field _____; other _____.

13. Did you rent any land from other villages in the last year?

1. Yes, why _____;

2. No, why _____.

14. Do you have a plan to lease your land to other villagers?

1, Yes, why _____;

2 No.

15. Do you want to cultivate more land if possible?

1. Yes why _____;

2.No, why _____.

3. Land Tenure and Agricultural Production

16. Since you contracted the land, have your land area changed in scale?

1. Yes, how _____.

2. No.

3. No idea.

17. Do you want to enlarge your farming land?

1. Yes, why _____.

2. No, why _____.

3. No idea.

18. If you want to enlarge your farming land, what will you cultivate on your enlarged land?

1. Cultivating rice 2. Cultivating cash crops 3. Planting trees 4. Doing other activities, specify _____.

19. If you want to enlarge your farming land, through which way do you think you can achieve it?

1. Renting from other villagers 2. Cultivating others' land for free 3. Renting village collective land 4. Transforming maintain land into farming land. 5. No idea 6

Others, specify _____.

20. If some come to rent your land, are you willing to rent out your land?

1. Yes 2. No 3. No idea

21. Please explain why you are willing or aren't willing to rent out your land ?

22. If you are willing to rent out your land, how much rent per ha do you accept? And why?

23. If you are willing to rent out your land, how much land do you want to rent out?

1. All the land 2. Some part of the land 3. No idea 4 Other, specify_____.

24. If you are willing to rent out your land, how long would you like to rent out?

1. One year 2 More than one year and less than three year 3 More than three year 4 Forever 5 Depending on the lessee 6 No idea 7 Other, specify_____.

25. If you are willing to rent out your land, how do you think will renting out your land benefit your household?

4. Crop Production

For the last year, what did you cultivate on your land?

Crops Items	Rice	Rape	Maize	Sweet potato	Vegetables	Fruit trees	Others
Cultivation Area (mu)							
Total Production (kg)							
Self -Consumption (kg)							
Livestock Fodder (kg)							
Sold (kg)							
Price for the sold (Yuan/kg)							
In Store (kg)							

5. Technology and Agricultural Cultivation

5.1 Machinery inputs

Crops Farming Process	Rice		Rape		Maize		Sweet potato		Vegetables		Fruit trees		Others	
	O	C	O	C	O	C	O	C	O	C	O	C	O	C
Machinery Inputs														
Land preparation														
Transplanting														
Harvesting														
Carrying														
Threshing														
Others														

*O refers to ownership; C refers to cost (in Yuan)

**Ownership refers to: 1. Own; 2 Hired. Payment refers to the money paid to hired machinery work.

5.2 Material inputs

Crops Farming Materials		Rice		Rape		Maize		Sweet Potato		Vegetables		Fruit Trees		Others	
		Q	C	Q	C	Q	C	Q	C	Q	C	Q	C	Q	C
Material inputs	Purch ased														
	Own														
Manure															
Chemical Fertilizers															
Insecticide															
Herbicide															
Others															

*Q refers to quantity (kg/mu); C refers to cost (in Yuan).

4.3 Machinery Possession

26. Do you have tractors?

1 Yes, quantity _____ usage _____;

2. No.

27. Do you have farming buffaloes?

1. Yes, quantity _____ usage _____;

2. No.

28. Do you have rice threshers?

1. Yes, quantity _____ usage _____;

2.No.

29. Do you harvest rice with combine harvester?

1. Yes;

2. No. why _____.

30. Who, do you think in your household, is the most skillful and experienced for farming?

1. Household head; 2. Housewife; 3. The male elderly; 4. The female elderly; 5. The male youth.6 the female youth; 7 Others, specify _____.

31. How long did the most skilful and experienced person work on agricultural production last year?

1. All the time; 2. More than six month; 3. Less than six month; 4. Occasionally; 5. Not at all.

32. What do you think are traditional agricultural technologies?

33. Is your household still using traditional agricultural technologies?

1. Yes, specify _____ and why _____

2. No, why _____

34. What do you think will agricultural production become if you don't use modern agricultural technologies?

6. Livestock

Livestock of your household in the last year

	Pig	Buffalo	Sheep	Chicken	Duck	Rabbit	Silkworm	Fish	Others
Number									
Purpose									
Cash Investment									
Cash Income									
Cash Income Distribution									
Manure Usage									

*Purpose refers to the principle aims of raising livestock: 1. For sale; 2. For self-consumption; 3; Both 1 and 2; 4. For farming land; 5, Others, specify.

**Cash Investment refers to all the cash input in raising the livestock in the last year, including purchasing, veterinary inputs, water, dip fees, drugs, feed supplements and so on. Capital income refers to all the cash obtained from the sale of the livestock. Cash income distribution refers to which aspect was the cash earned from livestock primarily spent in the last year? 1. Investment in farming; 2. Investment in livestock; 2. Education; 3. Food and Clothes; 4. Purchasing domestic appliances; 5. Medical care; 6. Others, Specify.

***Manure usage refers to how did the household dispose the manure of the livestock in the last year? 1. Fertilized the land; 2. Sold them; 3. In store; 4. Giving to others; 5. Others, specify.

7. Off-Farm Economic Activities

Basic information about off-farm economic activities of your household in the last year

	Agricultural worker	Employees in local sector	Self-employed enterprise	Governmental official	Migrant Remittance	Others
Income						
Working place						

*Working place refers to the geographical place where household members work, including: 1 Hu Village; 2. Other villages in BaiGuo township; 3 BaiGuo town 4 Nearby Township; 5. Qing Shen County; 6; Meishan City; 7 Chengdu City; 8 Other cities in Sichuan Province; 89 Other province; 10Overseas; 11. Others, specify.

With the income from various sources, how did you distribute your income in everyday life in the last year?

Consumption items	Framing Input	Education	Medical Care	Living Fee	Wedding and Funeral Gifts	Investment in off-farming economic activities	Entertainment	Saving	Others
Quantity									

35. Will you change your household job holding this year or later? And why?

8. Migration and Agricultural Production (for migrant family)

36. Did the migrant family member remit back last year?

1. Yes;

2 No, why _____.

37. If your household received remittance from the migrant family members, what was the remittance frequency?

1. Every month; 2. Every season; 3. One year; 4. No fixed date; 5 Others

38. What was the return frequency of your migrant family members in the last year?

1. Every month; 2. Every season; 3. One year ; 4 No fixed date; 5 Others

39. Why did the migrant members return home in the last year?

_____.

40. Will they return more frequently or less frequently this year? And why?

_____.

41. How did your household deal with the migrants' land?

1. Cultivated by other family member 2. Cultivated by other family members; 3. Leave it to other villagers; 4. Leave it idle; 5 No idea; 6 Other, specify _____.

42. With the remittance from migrant members, how did you spend them?

1. Farming input; 2. Education; 3. Medical care; 4. Consumption and entertainment; 5. Other, specify _____.

43. What is the plan of the migrant members?

1. Will come back to village after several years; 2. Will settle down in working areas and permanently reside there; 3. Keep current status; 4. No plan; 5. Other, specify_____.

44. Please explain why do they have the above choice?

45. What do you think about how migration influences agricultural production?

9. Commercial Projects

46. Have you participated any commercial projects on agricultural production?

1. Yes, specify _____ .2. No. .3 No idea

47. Are you participating any commercial projects currently?

1. Yes, specify _____ .2. No. 3 No idea

48. How do you benefit from the projects?

49. How do you evaluate the effectiveness of the projects that you have participated?

50. Do you want more projects from outside companies? Why?

51. List some projects that you want to participate in the future?

Appendix C: Guidelines for Interviews

For farmers

- Can you please describe the bibliography of your family (demographic information of family members, livelihoods, relevant changes and so on)?
- What do you think is the biggest change that has happened on agricultural production of this village in the past decade? What factors have driven this change? Why?
- What do you think about the changes on agricultural technologies in the past decade? What factors have impacted the changes? Why?
- Do you still use traditional skills or techniques to farm? What are they? And why are you still using them?
- What do you think about changes on agricultural labour in the past decade? What factors have impacted the changes? Why?
- What do you think about changes on agricultural market in the past decade? What factors have impacted the changes? Why?
- What do you think about changes on agricultural policies in the past decades? Have they been good or bad to farmers' agricultural production?
- What do you think about land transfer market? Do you want to rent out your land? Why?
- What is your opinion to contemporary agriculture?
- What people do you think are "good" farmers? Are you a good farmer? Why?
- What do you think the challenges/opportunities for agricultural production of the village?

- What do you think how agriculture will develop in the future? Why?

For migrants

- Can you please describe the bibliography of your migration experiences?
- Why do you migrate or return?
- How often do you return your hometown?
- How do you take care of your land in the village?
- What do you think did your migration influence the agriculture of your family? Why?
- Do you remit to your parents or other family members? What do you expect to them how to spend the remittance?
- What do you think are “good” farmers? Are you a good farmer? Why?
- What is your opinion to contemporary agriculture?
- What do you think about land transfer? Do you want to rent out your land? Why?
- What do think about agricultural production of the village? The challenges, problems, and opportunities?
- Are you going to go back the village? Why? What is your plan of your future? Why?

For village cadres

- What is your opinion to contemporary village agriculture? Is it still important to rural households? Why?
- What has happened on agricultural production of this village since you worked as a village cadre? Which one mostly impressed you? And why?

- What do you think are influencing contemporary agriculture? What is the most pronounced factor? Why?
- Can you describe the basic agricultural policies that are implemented on village agriculture? How about the effectiveness of these policies to agricultural production? Why?
- What agricultural projects have been implemented in the village since you worked as village cadre? How about the effect of these projects? Why?
- What do you think about land transfer market development recently in the village? Is it conducive to agricultural production? Why? What is your opinion of land transfer in the future?
- What socio-cultural changes has the village experienced in recent years? What implications of these changes may bring to agricultural production?
- What do you think about the challenges/opportunities agricultural production of this village?
- In the future, which direction do you think agricultural production of the village will develop into? Why?

For government officials

- What policies and project has been implemented on agricultural production in recent years?
- What about the effect of these policies and projects on agricultural production? Why?
- How do you implement these policies and projects?
- What has changed on agricultural production since you began to work in the township?
- What do you think the challenges/opportunities of agricultural production currently?

- What do you think how agricultural production will develop in the future? Why?

For businessmen

- Can you describe the bibliography of your business on agriculture please?
- Why do you conduct this project in this village?
- How do you cooperate with farmers? How does your business benefit farmers?
- In your opinion, what is influencing agriculture most pronouncedly? Why?
- What is your opinion of contemporary agriculture?
- In the future, what do you think will agriculture become?

Appendix D: Summary of Data Collection

Methods	Number
Questionnaires	225
In-depth interviews	33
Focus groups	7
Participant observation	Two dairy notebooks
Secondary data	More than 200 village pictures; 30 piece of new papers; 5 policy posters; 1 village report; 1 village map.

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