BRILL

Rural China: An International Journal of History and Social Science 14 (2017) 405-432

Rural China
中国乡村研究
brill.com/rchs

From "Involution" to "Capitalization": The "New Agriculture" and the "New Peasant"—A Case Study of Tobacco Growers in a Chinese Township

Changquan Jiao
The China Academy of Social Management/School of Sociology,
Beijing Normal University
jiaochangan@163.com

Yingjiao Chen
Department of Sociology, Peking University
chenyingjiao5875@163.com

从"过密化"到"资本化":"新农业"与"新农民"——以湖北省恩施市烟叶种植农户为例的讨论

焦长权、陈莹骄

Abstract
With the acceleration of the urbanization process and the transformation of the population structure, China's small peasant economy is breaking away from involutionary growth. At the same time, capital investment in family farms is increasing, leading to the capitalization of family farms and the rise of "new agriculture." Based on a case study of tobacco growers in a Chinese township, this article demonstrates how capital investment contributes to specialization and scale production in tobacco production and how a capitalized family farm operates, depending mainly on family labor and partly on rented land. As a typical new agriculture, tobacco production achieves the dual intensification of both capital and labor and manages to get out from the involution trap. This article argues that the capitalized family farm is not only a new type of economic subject but that it also shapes a new type of social subject. As the "new peasant," the holder of a capitalized family farm is a member of a social elite in villages and serves as the crucial social force in the transformation of village society.

Keywords
tobacco production, capitalized family farm, new agriculture, new peasant

DOI: 10.1163/22136746-01402006

摘要
伴随城市化的快速发展和农村人口结构的转型，中国的小农经济正逐渐摆脱“过密化”陷阱。同时，农业生产中的资本投入日益增长，家庭农场日益“资本化”，“新农业”获得了空前的发展。文章以中国恩施地区烟叶生产为例，阐述了资本投入对烟叶专业化、规模化生产的关键作用，分析了资本化家庭农场的经营方式：其主要依赖家庭劳动力（少部分季节性雇佣劳动力），并通过土地流转实现适度规模经营。烟叶生产是一种典型的“新农业”，它在家庭农场中实现了资本和劳动的“双密集”，摆脱了“过密化”陷阱。作者认为，资本化的家庭农场不仅形成了一种“新农业”（新型经济主体），更塑造了一群“新农民”（新型社会主体），他们是村庄中的精英群体，对村庄社会转型具有重要意义。

关键词
烟叶种植、资本化的家庭农场、新农业、新农民

China's small peasant economy has recently arrived at a crossroads for several reasons, including substantial changes in the structure of domestic consumption, frequent adjustments to agricultural policies, significant urbanization, and a rapid transformation of the rural population in both size and structure.

Three models are used to explain the development of the Chinese small peasant economy. The first is "agribusiness plus peasant" 公司+农户, which is espoused by those who believe that "dragon-head enterprises" 龙头企业 act as an engine to realize socialization and industrialization in agricultural production. The second is "specialty co-ops." Researchers who hold this view argue that the "agribusiness plus peasant" model is not sufficient to promote specialization and intensification in agricultural production. This situation is because in the planting process and in subsequent transactions, the peasant takes the major risks, while the company gains most of the profit. These scholars argue that "specialty co-ops" can overcome the weaknesses of the former model by promoting specialization in the planting process as well as by reducing transaction costs. Thus, peasants will be in a better position and profit more from transactions. The third is the "capital-down-to-countryside" 资本下乡 model, which, through "scale-management of agriculture," can transform traditional small peasant agriculture into a modern form.

In fact, these three models are all based on the same premise, namely that family farms are still in the form of the traditional small peasant economy. In other words, the farms' production models have not changed at all. Furthermore, there is little possibility of evolution occurring from within. Instead, outside forces would be needed to bring about transformation. However, these arguments all neglect the circumstance that family farms may have already gone through a great change in the new era; this consideration is important in any study of the evolution of family farms. Several researchers have discovered significant differences within the small peasant economy. For example, there is a group of farmers called "new middle peasants" 新中农, who realize moderate-scale management by renting land and achieving relatively satisfactory incomes. In addition, they play an important role in village governance (He Xuefeng, 2011; Chen Baifeng, 2009). Nevertheless, these

scholars have only outlined the significance of "new middle peasants" in terms of social stratification and village governance, largely ignoring the management form of these farmers, which is quite different from the traditional family farm.

This study examines the family farm from an internal perspective, carefully analyzing some of the important changes that have occurred in the small peasant economy in the new era. More specifically, we discuss "capitalized" family farms, as differentiated from the traditional small peasant economy.

This paper consists of six sections. The first section reviews the theoretical origin and evolutionary path of the involutionary small peasant economy. The second section introduces tobacco production in a Chinese township and describes the characteristics of a typical capitalized family tobacco farm. The third section analyzes the influence of capitalization on tobacco production. The fourth section focuses on the interaction between capital, land, and labor input, and the fifth section discusses the significance of capitalized family farms as a new social subject 社会主体 in the course of social transformation. The final section concludes the paper.

Theoretical Origin and Evolutionary Path: Small Peasant Economy in the Modernization Process

The Lenin–Chayanov Debate

The transformation of traditional agriculture and rural society during the course of modernization has generated much research.

Karl Marx analyzed agricultural transformation based on British history during the Industrial Revolution. He found that the changes in agricultural production were similar to the process producing class divisions in capitalist industry. Rural society was gradually becoming differentiated into two groups of people. Land ownership was becoming increasingly concentrated within a minority group of farmers who owned the majority of the land, leaving a large group of proletarian agricultural workers totally without land (Marx, 2008: 774–802, 833, 823–42, 851–53). Karl Kautsky elaborated on Marx's argument. In his view, the modern rural economy had all the characteristics of capitalism, and scaled production in agriculture had significant advantages (Kautsky, 1955: 72, 116–59, 200–232, 346–56).

In addition to the studies of Marx and Kautsky, Lenin systematically elaborated on the relationship between the differences of the small peasant economy and the formation of a capitalist domestic market. In his opinion, the main changes in the Russian rural economy after the emancipation of the serfs in 1861 were several. First, the traditional peasantry split rapidly into a small group of agricultural bourgeoisie, with a stable economic status, and a large rural proletariat, which had no land. The agricultural bourgeoisie scaled up their farms by purchasing or renting land and by hiring local wage labor. The rural proletariat lost its land and had to sell its labor for a living. Although in this process middle peasants 中等农民

emerged, Lenin argued that their status was characterized by great instability and transience. Second, rural production relations were transformed from personal bondage to a capitalist form based on free labor. The introduction of agricultural machinery in particular accelerated this process. Third, market-oriented agriculture and a processing industry developed, further promoting the formation of the agricultural bourgeoisie. As a result, the differentiation in the peasantry contributed to an enlargment in the domestic market of both the means of production and the means of livelihood. In addition, the large number of proletarian peasants provided a free labor market, enabling the development of capitalism. Lenin believed that it was both inevitable and necessary for the Russian rural economy to go through this transformation process (Lenin, 1957: II, III, IV, especially 274–81). His arguments prompted a famous debate, called the Lenin–Chayanov Debate (Bernstein, 2009; Banaji, 1976).

Alexander V. Chayanov was the main representative of the so-called Russian "neo-populist" economists, as well as the leading figure in the Russian Organization and Production School. He believed that the family is the production subject of peasant farms and that it had very different properties from capitalist agricultural enterprises. On the one hand, family farms were not free to lay off labor according to the principle of marginal efficiency, as capitalist enterprises were able to do. Furthermore, the possible scale of their labor input was largely determined by the family life cycle. On the other hand, in contrast to capitalist agricultural enterprises, family farms were not entirely concerned about profit maximization, instead focusing on a labor–consumer balance. The so-called principle of labor-consumer balance means that in agricultural production, family farms searched for equilibrium between the drudgery of labor (or the extent of self-exploitation) and the subjective satisfaction of consumption needs. It was the difference in the equilibrium that determined whether the family would further intensify its labor input (Chayanov, 1996). Because of their different theoretical positions, Lenin and Chayanov drew different conclusions, even though their ideas were based on comparable (though not identical) references to the statistics collected by the zemstvo (local and provincial self-government councils).

The Lenin–Chayanov debate became a continuous theoretical theme in peasant studies. David Lehmann commented:

> If Lenin offers a theory of capitalist development in which social classes are exclusively constituted by relations of production without reference to market relations, Chayanov's theory is one of peasant enterprises and market relations in which the internal technical relations of production at the level of the unit of production are given pride of place. What for Lenin is central, for Chayanov is an afterthought, and vice versa. . . . These differing conclusions reflect contrasting theoretical frameworks as much as different empirical evidence and methodology. (Lehmann, 1982a: 135, 141)

For example, data used by Lenin also showed, in part, the correlation between economic growth and family size, but he had not pursued this relationship. Moreover,

Lenin and Chayanov agreed on the idea that peasant farms differed from capitalist agricultural enterprises and, thus, the latter's theoretical framework did not apply to the ideas of the former. Chayanov put this difference at the center of his theory, and focused on the durability of family farms. However, Lenin based his theory mainly on the belief that peasant farms would be completely dissolved. In addition, though they agreed that inequality and differentiation existed among family farms, Chayanov attributed this circumstance to the family life cycle, whereas Lenin believed it to result from the penetration of the commodity economy into the natural economy. And while both believed that capitalism would bring about the process of proletarianization and capitalist relations of production in villages, Lenin believed that this unavoidable process had already taken place, while Chayanov argued that it was only an illusion, and had not yet widely occurred, especially in the context of Russian rural society (Lenin, 1957; Chayanov, 1996).

After a systematic review of the Lenin–Chayanov debate, Lehmann outlined two evolutionary models of peasant economies, based on data from his fieldwork in Latin America: the "capitalized family farm," and the "dualistic model of involution." These two models demonstrated the polarized possibilities of pathways of agricultural change (Lehmann, 1982a: 158; 1986a, 607). The distinction between the two models cannot be simply reduced to different management modes of large-scale farms or capitalized family farms. Instead, they should be seen as the main determinants of the dominant forms in the history of agrarian structure and class relations within different areas, and not the result of a particular government policy or world trading model (Lehmann, 1982a: 158–60; 1986a: 607–08).

The model of capitalized family farms was proposed in contrast with traditional smallholder farms. The former refers to a family production unit in which capital investment is much higher than that of traditional smallholder farms. In addition, their production is often highly specialized and market-oriented. With regard to labor, they depend mainly on family labor but also hire temporary labor in busy seasons, such as harvests. Compared with the peasant farms described by Chayanov, capitalized family farms not only focus on the reproduction of family labor but also pursue the reproduction of capital. They are not dominated by the principle of labor–consumer balance or by suffering from declining agricultural prices and rising land rent. Though relying mostly on family labor, just as traditional peasant farms do, capitalized family farms have no way of obtaining labor from a nonmonetary exchange and, thus, have to calculate labor costs carefully, especially those of wage labor (Lehmann, 1982a: 152–54; 1986a: 607). Therefore, capitalized family farms that evolved from smallholder farms are a new and highly specialized, capitalized, and commercialized type of production subject in agriculture. Lehmann outlined two factors that promote the development of capitalized family farms: a stable labor supply for seasonal employment and the sharecropping system between landholders (Lehmann, 1986a; 622–24; 1986b).

The dualistic model of involution refers to an agricultural structure in which large- and small-scale units of production coexist but act in opposition, with the modernization of the former and a rapid proliferation of the latter. In this

process, large-scale units preserve their leading position using various means, whereas neighboring smallholders cannot make a living with their limited land and therefore have to sell their labor to the larger farms. With this model goes a concomitant model of migration to cities, frontier areas, and other rural areas (Lehmann, 1986a: 607, 612–15; 1986b). Lehmann found this model to be common in central Mexico, the Peruvian plateau, and northeastern Brazil, where such partly independent capitalized family farms as do exist do so in a subsidiary position (Lehmann, 1982a: 155–58).

The two paths of agricultural transformation shape two distinct rural social structures: "peasantization" and "proletarianization" (Lehmann, 1982b: 255–60; Kay, 2000: 122–38). The so-called peasantization stems mainly from capitalization in agriculture, where capitalized family farms bring about a commercialized, capitalized, and specialized new type of agriculture, changing the traditional peasantry. Furthermore, the owners of these capitalized family farms become the dominant social groups in rural society and are referred to by some scholars as the "new peasants" or the "post-peasant class" (van der Ploeg, 2008). On the other hand, in the process of proletarianization, agricultural workers lose their security of employment and rural residence and become increasingly isolated individuals in the labor market. The proletarianization process observed by Lehmann is not simply equivalent to the concept used by Kautsky. It not only refers to agricultural workers who have lost access to the means of production but also means that they lose some of the stable social ties that used to contribute to class solidarity (Lehmann, 1982b: 256).

Apparently, Lehmann aimed for a compromise between the theories of Chayanov and those of Lenin. He argued that agricultural evolution did not follow an "inevitable" path. Different paths of evolution were born in different regions of various historical agricultural structures and class relations (Lehmann, 1986a: 607). The theory of two models of agricultural evolution, especially the concept of a capitalized family farm, is of great significance when it comes to observing the transformation of the Chinese small peasant economy.

The Model of Agricultural Involution

The morphology of China's agricultural production has undergone several major changes in history (Fang Xing, 2000), eventually taking the shape of a small peasant economy during the Ming and Qing Dynasties, when the family farm was the main production subject.

Under the academic influence of Chayanov, Philip C. C. Huang conducted pioneering research on the transformation of the small peasant economy of North China and the Yangzi Delta since the Ming-Qing period. He found that North China's small peasant economy was divided into two groups: a small number of managerial farms, operating on relatively large tracts of land, and family farms—the overwhelming majority—operating on relatively limited land. Under the dual

pressures of population growth and social stratification, family farms with limited land were faced with the difficulty of survival. As a result, they had to increase their multiple cropping indexes, turn to labor-intensive commercial crops, such as cotton, and input as much labor as possible in order to maximize output, but at the cost of diminishing marginal returns to labor. This is referred to as the typical "involution" model (Huang, 1985). Using a similar approach, Huang analyzed the small peasant economy in the Yangzi Delta from the late Ming dynasty to the early 1980s. Here too he found that the small peasant economy was characterized as involutionary but that it included families using their auxiliary labor for household handicraft production to supplement family income. In general, China's small peasant economy was trapped in a state of chronic "involutionary growth," or "growth without development" (Huang, 1990).

In China itself, from 1949 to 1980, Lenin and Stalin's theory dominated thinking on agricultural transformation, and scale-management in the form of collectivization was considered as the only way to realize the modernization of Chinese agriculture. However, collectivization in agricultural production did not manage to break away from the involutionary growth model. Not only was the extremely high ratio between rural population and farmland not alleviated, but a significant extraction of agricultural surplus had also occurred to support long-term heavy industrial construction. As a result, the agricultural economy trapped peasants' living standards at a low level.

The turning point did not emerge until the late period of collectivization. It was only with the coming of village industries in 1980 and the vigorous development of township and village enterprises 乡镇企业 that large numbers of villagers were finally diverted from overcrowded agriculture, a movement that paved the way for the small peasant economy to get out of the "involution" trap (Huang, 1990). Moreover, around 2000, China's large-scale export-oriented economy developed rapidly. The labor-intensive industry blossoming in the southeast coastal area began to absorb the largest migrant population in world history. The intergenerational division of labor was a common strategy for peasant families. With the transfer of some surplus labor to the coastal industrial zone, the institutionalized "part worker part cultivator" system of involutionary agriculture 半工半耕的过密化农业 emerged in the central and western regions of China (Huang Zongzhi, 2006).

Although Huang's study generated controversy in the field of economic history, objectively, his analysis of the Chinese small peasant economy as involutionary is based on solid research, including the Mantetsu Surveys, archival material, and field interviews. Thus, his study is accurate and provides valuable observations on the Chinese small peasant economy and its evolution.

Presently, China is confronting the confluence of three historical social changes: large-scale nonfarm employment, decreasing population growth, and a structural transformation of agriculture. Huang regards these changes as historic opportunities. He and his co-author Peng Yusheng believe that with proper measures provided by the government, the current hidden unemployment in agriculture could

be alleviated within the next 10 years, and the low-income problem in agriculture could be resolved within 25 years[1] (Huang Zongzhi and Peng Yusheng, 2007). They also point out that the food consumption model of the Chinese population has changed dramatically over the past 30 years. Grain consumption has gradually decreased, while the consumption of protein and other nonstaple foods, especially fruit and vegetables, has increased significantly. Thus, the "new agriculture"—and specifically livestock–poultry–fish farming and vegetable–fruit cultivation, which have a higher output value than traditional grain crops—has a huge market and significant possibilities for development. In fact, over the past 30 years, the growth in the output value of the new agriculture not only exceeded that of its predecessor significantly, but also is larger than the growth brought about by several agricultural revolutions in world history. This is why Huang regards it as China's ongoing "hidden agricultural revolution"[2] (Huang Zongzhi, 2010, 2014, 2016).

With regard to the influence of new agriculture on family farms, Philip C. C. Huang, Yuan Gao, and Yusheng Peng (2012) found that "capitalization without proletarianization" is the main feature of China's agricultural development in the new era. On the one hand, capital investment in family farms has increased significantly, and the extent of agricultural modernization has been enhanced. On the other hand, compared with the massive "proletarianization" of the peasantry in Western countries and in India during agricultural modernization, wage labor in China plays a secondary role in agricultural development. This means that massive proletarianization has not occurred in China, showing the resilience of family farms (Huang, Gao, and Peng, 2012). The authors also conducted a quantitative analysis of the main sources of capitalization of Chinese family farms. They found that invested capital comes mainly from peasant families themselves as they rely particularly on recycling migrant workers' income. In contrast, the state and agricultural firms play a very limited role in the capitalization of family farms. Therefore, they hold that state investment should tilt toward family farms rather than focusing on the "dragon head enterprises" 龙头企业, as it currently does (Huang and Gao, 2013).

Huang and other scholars espouse the theory of "China's hidden revolution," especially the capitalization of family farms in the new era. They have contributed valuable analyses from macroscopic and quantitative perspectives and have

[1] Since the paper cited here was written in 2005, Huang and Peng's prediction is based on 2005.

[2] Under the confluence of the "three historic trends," China's agriculture is undergoing a transformation that never has been experienced in the past six centuries. The new agriculture (that is, the production of vegetables, fish, meat, eggs, and milk with a high output value) brings with it significant growth in output value. Combined with the decreasing birth rate and increasing transfer of rural surplus labor, it leads to an increase in labor productivity, along with a rise in land area per capita and output value per unit area of land. Huang refers to these changes as the "hidden agricultural revolution," which differs from the typical agricultural revolutions of the past, such as that in England during the eighteenth century or the "Green Revolution" during the 1960s and 1970s. These revolutionary changes are not caused by factor input or reflected in the output growth of grain crops, but instead show in the change in the overall agricultural structure, in which an increasing proportion of output value is contributed by the new agriculture. The new agriculture is characterized by the dual intensification of capital and labor and thus needs both capital investment and greater labor input.

described the capitalization of family farms from overall and external viewpoints. However, a cogent microanalysis is still lacking. Details on the management of family farms can only be obtained from an internal perspective by means of in-depth observations. Moreover, previous studies regard capitalized family farms only as new economic subjects, neglecting their significance as new social subjects and ignoring their possible influence on social structures.

A Capitalized Family Tobacco Farm

The classic theory of small peasants, represented by Lenin and Chayanov, analyzed the internal mechanism of traditional agriculture mainly in terms of the use of land and labor. Since the middle of the twentieth century, farm chemicals, fertilizers, machinery, and improved seeds have set off a "green revolution" in agricultural production. At the same time, capital investment is becoming increasingly important in traditional agriculture. As early as the 1930s, scholars were advocating transforming the traditional small peasant economy by increasing capital investment (Research Association of Chinese Rural Economics, 1935). The capitalized family farm referred to in this study is closely related to the new agriculture, which includes fruit, vegetable, poultry, and egg production, as well as parts of the livestock industry (Huang Zongzhi and Peng Yusheng, 2007). In contrast, the old agriculture is defined narrowly as grain production. Today, with the changes taking place in the structure of consumption, the Chinese people are demanding far more fruit, vegetables, eggs, and other foods than they have in the past. Consequently, the new agriculture has an unprecedented opportunity to flourish. For the old agriculture, fertilizers, farm chemicals, and seeds are the most important items in terms of capital investment, while for the new agriculture, capital investment is needed for many other processes, replacing labor and land as the major factors of production. Admittedly, in different types of new agriculture, the specific proportions of capital, land, and labor vary, and their interrelationship can be complex. Therefore, conclusions on specific agricultural production should be based on case-by-case analyses.

Enshi, an autonomous prefecture in Hubei province in China, has a subtropical monsoonal humid climate and is suitable for a variety of crops. In Enshi, there are six mainstays to the agricultural industry. With the exception of grain production, the other five (tea, tobacco, fruits, herbs, and vegetables) can be classified as new agriculture.

Tobacco is a typical commercial crop. China's tobacco industry falls under the national monopoly system, the production and sale of which is mainly based on a contract between farmers and the State Tobacco Monopoly Bureau. In Enshi, tobacco production has a history of more than 40 years. Flue-cured tobacco is planted in eight counties in the prefecture, four of which also plant burley tobacco. In recent years, the burley yield in Enshi has ranked first in China. Every year, around 600,000 mu of tobacco are planted in Enshi, of which 420,000 mu are flue-cured and 180,000 mu are burley. Enshi's yield of flue-cured tobacco accounts for more than 65 percent, and burley more than 70 percent of the respective national out-

put. Enshi is one of the 31 key areas producing high-quality tobacco supported by the State Tobacco Monopoly Bureau and is currently ranked sixth. At present, 60 of Enshi's 88 townships plant tobacco; 25 of these plant more than 10,000 mu, and 18 sell more than 30,000 dan[3] per annum. Enshi county[4] has 1,217 tobacco-growing villages, 185 of which plant more than 1000 mu. The yield of flue-cured tobacco in Shengjiaba ranks first in Enshi county and second in Enshi prefecture. It has 11 tobacco-growing villages, cultivating around 200,000 mu in total and producing about 45,000 dan of tobacco a year.

Tobacco planting is typical of the new agriculture, in which capital investment plays a crucial part in production input. According to the Ministry of Agriculture's survey of 68,000 households in 1,533 counties nationwide, production input of tobacco consists of three main parts: the cost of materials and services, the cost of labor, and the cost of land (see Table 1).

The composition of the cost of materials and services is the most complex of the three (see Table 2), and includes the cost of production materials (farm chemicals, fertilizers, fuel, depreciation of fixed assets, and the like) and the cost of services (machinery leasing and after-curing processing expenses). Among the costs of production materials, depreciation of fixed assets refers mainly to the depreciation of

Table 1. National Statistics on Tobacco Production Costs.

	2006	2007	2008	2009	2010	2011	2012	2013
Yield per mu (kilogram)	137.40	134.70	147.90	151.70	143.76	144.04	151.56	141.40
Total cost (yuan per mu)	1320.96	1454.39	1720.81	1922.23	2099.42	2491.35	3315.74	3414.01
Cost of materials and services (yuan per mu)	567.62	606.84	759.70	841.97	821.58	925.34	1029.45	1034.28
Percentage of total cost (%)	43	42	44	44	39	37	31	30
Labor cost (yuan per mu)	657.07	730.23	818.86	919.09	1086.21	1352.74	1825.39	2139.42
Percentage of total cost (%)	50	50	48	48	52	54	55	63
Land cost (yuan per mu)	96.27	117.32	142.25	161.17	191.63	213.27	236.45	277.61
Percentage of total cost (%)	7	8	8	8	9	9	7	8
Net profit (yuan per mu)	60.30	36.48	319.23	269.18	13.28	59.37	73.89	-13.17

Note: Total cost = Cost of materials and services + Cost of labor + Cost of land.
Source: Price Agency of the State Development Planning Commission, 2014.

[3] Dan is a unit of weight, common in tobacco production in China; 1 dan = 50kg.
[4] One of the counties of Enshi prefecture.

Table 2. National Statistics on the Major Cost of Materials and Services for Tobacco Production.

Item (yuan per mu)	2006	2007	2008	2009	2010	2011	2012	2013
Fertilizers	182.96	182.17	217.68	286.53	235.42	267.64	307.61	277.82
Fuel and power	184.18	196.89	274.43	268.87	271.53	319.30	338.74	328.72
Agricultural medicals	27.86	27.47	31.08	33.99	36.57	40.28	44.16	47.36
Agricultural film	30.93	32.70	37.48	33.42	33.00	35.04	37.51	39.22
Machinery operation	18.51	24.13	32.21	38.45	48.88	57.14	64.36	77.22
Depreciation of fixed assets	25.62	33.12	36.69	35.01	36.32	37.74	43.81	52.25
Total of the above six items	470.06	496.48	629.57	696.27	661.72	757.14	836.19	822.59
Percentage of total cost of materials and services (%)	83	82	83	83	81	82	81	80
Percentage of total cost (%)	36	34	37	36	32	30	25	24

Source: Price Agency of the State Development Planning Commission, 2014.

flue-curing barns and ancillary equipment because they have a limited lifespan. Farmers must spend a large amount of money to construct a flue-curing barn. In Shengjiaba, a standard flue-curing barn costs at least 8,000–10,000 yuan, even with stoves and other ancillary facilities provided free by the Tobacco Agency[5] in Shengjiaba. In addition, a barn has a lifespan of, at best, 8 to 10 years, during which time it requires ongoing maintenance. The cost of services is divided mainly into two parts: expenses related to leasing machinery from the Tobacco Agency for plowing and ridging, and expenses incurred after the curing processes, such as classifying, grading, bundling, and transporting products to the Tobacco Agency. Most of the material and service costs are typical capital input. For instance, the six typical capital costs (fertilizer, fuels, pesticide, plastic film, machinery, and depreciation of fixed assets) account for more than 80 percent of the material and service cost, and more than 30 percent of the total cost of production (see Table 2).

In Shengjiaba, tobacco is planted by typical capitalized family farms with two main characteristics. First, most management units are small-scale family farms. Second, capital is the main input in production and plays an increasingly important role in the intensification of production.

In 2013, 1,214 households in Shengjiaba planted tobacco, with an average of 18.03 mu per household. In addition, 418 households planted 5–10 mu, accounting

[5] The Tobacco Agency in Shengjiaba is a branch of the State Tobacco Monopoly Bureau (cigarette company) of Enshi.

Table 3. Statistics on Tobacco Planting Area of Family Farms in Shengjiaba (2013).

Planting area (mu)	Household (N)	Percentage (%)	Cumulative percentage (%)
5	82	6.75	6.75
6–10	336	27.68	34.43
11–15	256	21.09	55.52
16–20	203	16.72	72.24
21–25	144	11.86	84.10
26–30	84	6.92	91.02
31–35	29	2.39	93.41
36–50	52	4.28	97.69
>50	28	2.31	100
Total	1,214	100	100

for 34.43 percent of all households; 256 planted 11–15 mu (21.09 percent); and 203 planted 16–20 mu (16.72 percent). Thus, 72.24 percent of all households planted between 5 and 20 mu. In addition, 144 households planted 21–25 mu (11.86 percent), and 84 planted 26–30 mu (6.92 percent). Consequently, households planting less than 30 mu accounted for 91.02 percent of the total, the overwhelming majority. Only 28 households planted more than 50 mu (2.31 percent), 18 planted 51-100 mu, and 10 planted more than 100 mu, the highest being 215 mu. Thus, a minority of farmers planted more than 50 mu. Therefore, small-scale family farms are the mainstream of tobacco growers (see Table 3).

The scale of tobacco planting has its own inherent law. Many factors determine the size of a farm, one of the main ones being the capacity of the flue-curing barn. Other basic factors include the family's capital capacity and labor and the size of the land.

Capitalization and Transformation of Tobacco Planting

It was increasing capital investment that provided the most important condition for the recent transformation of the tobacco planting model. Shengjiaba, for example, has witnessed specialization and scale production in tobacco planting in the last 10 years. Prior to that time, there were twice as many tobacco farmers, but the average plantation area was only 5–6 mu. In those days, a family farm that planted over 10 mu would have been known as a big producer 大户, and very few farmers planted more than 20 mu. Today's average plantation has reached 18–20 mu, and the largest is over 200 mu.

Next, we examine the factors that have contributed to this trend of specialization and scale production. The first factor is mechanization. As indicated in Table 2, over the past eight years, growth in the cost of machinery leasing has been the fastest increasing of all items and is now more than four times what it was prior to

that date. The same trend is evident in Shengjiaba. Over the past 10 years, all kinds of machines for deep digging, ridging, and transplanting have been introduced into the cultivation process, saving on labor and reducing labor intensity, but also improving efficiency significantly. The Tobacco Agency in Shengjiaba established agricultural machinery cooperatives and service teams. By the end of 2011, the agency was equipped with 782 machines, including 153 rotary tiller-ridgers, 420 sets of power sprayers, 95 leaf-cutting machines, 8 field management vehicles, and 20 sets of tobacco humidifiers, amounting to a total power of 2,179.61 kW, or 12.6 kW per 100 mu. Of these machines, the rotary tiller-ridgers have had a significant impact on tobacco cultivation. In the past, ridging was the most arduous task for tobacco growers. At least three laborers were needed for an entire day to ridge one mu of land. What is more, tobacco planting is limited by the season, making the timing of this task critical. As a result, farmers had to do ridging work relatively hastily at certain times, making ridging work the major obstacle to successful scale production. Rotary tiller-ridgers are popular among farmers for their efficiency and low cost. At present, in addition to the machines provided by the Tobacco Agency, some farmers have their own machines, such as small tractors and tricycles, which have replaced the labor required to transport the tobacco from fields to flue-curing barns. These are now indispensable to those relying on centralized flue-curing plants, because many tobacco farms are located a long way from the barns. Consequently, mechanical transport is critical to a tobacco plantation.

The second factor is high-tech farm chemicals. An important task in the latter stages of tobacco growing is "bud topping," where farmers cut off the stem top and wipe away the buds between the main leaves and the shoots to ensure the best quality tobacco leaves. Failing this step, tobacco leaves would grow poorly and would suffer from pests. Since tobacco grows in the hot rainy season, the buds grow so quickly that farmers have to perform this task often. Fortunately, "bud-killer" 灭芽灵, a high-tech farm chemical, has solved this problem. In the first process of "topping a bud," the chemical is applied to those parts that are ready for new buds, thus slowing the growth of buds tremendously. Therefore, bud-killer solves a crucial difficulty in planting and promotes scale production. Without bud-killer, a family farm over 50 mu would not be manageable.

The third factor is nursery plants and flue-curing plants. A decade ago, tobacco growers raised seedlings in small plastic sheds, naturally limiting the number of seedlings they could grow. Moreover, traditional seedling nurseries were not only labor intensive (managing the seedling culture, making nutritional clods, transplanting into fields), but they also prevented the seedlings from receiving the nutrition they required over a short period, causing inconsistencies when they were transplanted into fields. Recently, the Tobacco Agency constructed several centralized nursery plants in villages to solve this problem. A single nursery plant can provide seedlings for more than 3,000 mu of land, within a radius of 5 km. Four centralized nursery plants have been built, covering 45,672 square m and 17,300 mu of seedlings. The nursery plants are equipped with a disinfection pool, shade

netting, plate planters, leaf-cutting machines, and other facilities. Since the seedlings from nursery plants are of good quality and lower cost, farmers have stopped using the traditional seeding methods, and now buy seedlings from the nursery plants.

Another important and recent aspect of the infrastructure, implemented synergistically by the Tobacco Agency and farmers, is the creation of centralized flue-curing plants and upgrades to ordinary barns, an innovation that promotes scale plantation. Most households own just one standard flue-curing barn for a plantation of 8–10 mu. Since one such barn costs at least 8,000–10,000 yuan, constructing a barn is a major obstacle to scale plantation. For instance, it is not affordable for a farmer with a 50-mu plantation to construct four or five barns. This problem was solved by the Tobacco Agency. It constructed several centralized high-standard barns that tobacco farmers can rent at a one-off cost of 100 yuan, a cost that is much cheaper and more convenient than the expense of building such barns themselves. Since 2006, more than 500 centralized curing barns have been built. Most of the barns are distributed among tobacco planting villages in clusters of more than five. Of these, 110 newly built barns are concentrated in two villages, meeting the demands of scale plantation in these regions. Along with the centralized barns comes the increasing demand for power. The Tobacco Agency and the Electricity Company added 37 sets of customized transformers to supply power of 1,110 kVA and to maintain the power lines up to 112 km away. Previous barns relied on coal and wood, while the new barns, with electricity-based heating equipment, help to ensure the stability, security, and controllability of temperature. In addition, the new barns have greatly reduced the labor intensity of farmers.

Along with the construction of a large number of centralized flue-curing plants, the Tobacco Agency also upgraded existing ordinary barns (Table 4) and provided free equipment, including the installation of exhaust fans, new stoves, and other equipment. However, the installation of new equipment did not cover all villages because the power supply was not available in some remote sites. Therefore, some tobacco farmers still rely on old barns that have only been updated. Even then, this effort greatly improves working conditions and the quality of products, as well as reducing labor intensity.

The fourth factor is land renovation. Recently, the Tobacco Agency has integrated relevant projects and resources from the Water Conservancy Bureau, Land Bureau, Agriculture Bureau, and other departments to carry out land renovation and to construct infrastructure. In Shengjiaba, 49 tracts of land are planned as tobacco farmland, amounting to 46,000 mu, of which one tract of farmland amounts to 350 mu, 31 tracts range from 500 to 999 mu (24,300 mu total), and 17 tracts range from 1,000 to 2,000 mu (21,350 mu total). Since rotation is required on tobacco plantations, the total area of available land should be around 20,000 mu. In order to use machinery, many tobacco fields had to be renovated. Between 2010 and 2013, Shengjiaba completed land renovation on nearly 7,000 mu. Renovated land makes using machinery possible, making land renovation one of the fundamental conditions for scale plantation.

Table 4. Statistics on the Capacities of Barns in Shengjiaba.

Name of village	Standard centralized plants (dan)	Updated family barns (dan)	Total (dan)
Anletun	5460	1950	7410
Xiayunba	4800	1170	5970
Cheliaoba	4440	3270	7710
Weiganba	6360	3090	9450
Machagou	2400	2970	5370
Shilan	3000	3150	6150
Erguanzhai	2040	750	2790
Longdonghe	1800	570	2370
Daji	720	1050	1770
Shimenba	600	300	900
Dashuzi	1200	150	1350
Total	32820	18420	51240

At the same time, the infrastructure has improved. The most important aspect of this change is the construction of irrigation networks and roads. From 2005 to 2013, with the cooperation of relevant government departments, the Tobacco Agency constructed irrigation pools amounting to 85,371 cubic m, 705 km of pipe networks, 14 km of ditches, two small reservoirs (total volume 230,000 cubic m), 51.56 km of field trunk roads, and 37.93 km of branch roads. As a result, most tobacco land is equipped with irrigation facilities and roads, which aid the use of machinery, specialization, scale plantation, and resistance to agricultural disasters.

In addition, the Tobacco Agency and relevant government agencies have gradually improved other facilities for disaster relief, including the construction of hail suppression sites. As a result, the tobacco plantation in Shengjiaba is protected against heavy losses from hail.

In the past 10 years, the Tobacco Agency, local governments, and farmers have made substantial capital investments in tobacco production. As a result, production conditions have improved significantly. Tobacco plantations are becoming increasingly specialized and intensely used.

Capital, Land, and Labor

In general, the costs of materials and services, land, and labor respectively reflect the capital, land, and labor input in tobacco planting. Capital input, especially the large capital investment in infrastructure construction provided by the Tobacco Agency and local governments, has changed the model of tobacco plantations. However, capital investment does not work independently. Agriculture is a typical organic system. Only by interacting with factors of land and labor will capital input lead to favorable changes in tobacco planting.

Capital and Land

Specialization and scale plantations resulting from capitalization not only benefit from land renovation and infrastructure construction but are also closely related to land rent.

In China, tobacco is mainly planted by family households on responsibility land,[6] while rented land only accounts for 10–15 percent of farmland (see Table 5). Furthermore, this percentage has remained relatively stable. Similarly, 10 years ago in Shengjiaba, households cultivated their own responsibility land, so the average planting area was small, and specialization and intensification of production were relatively limited. Today, with the increasing area of family farms, the proportion of land rented for tobacco planting has gradually increased.

Since the beginning of the household contract responsibility system in the 1980s, there has been no reallocation and adjustment of farmland in Shengjiaba. Thus, responsibility land changed little for every household. In 2013, 9,511 households held responsibility land, with an average area of only 6 mu. Furthermore, as Table 6 shows, 15 percent of households had responsibility land of less than 2.5 mu; 36 percent of households had between 2.5 and 5 mu; 24 percent of households held between 5 and 7 mu; and 13 percent of households farmed between 7.5 and 10 mu. Thus, households whose responsibility land was less than 5 mu accounted for 51 percent, and those with land between 5 and 10 mu accounted for 36 percent. Together, 87 percent of the households had responsibility land less than 10 mu in size, and only 9 percent had responsibility land between 10 and 15 mu. Thus, the majority of households had a limited area of responsibility land.

In fact, the actual area of households' cultivated farmland is larger than the statistics in Table 6 show because the figures do not include land reclaimed by

Table 5. Statistics on Land Cost for Tobacco Production Nationally.

Items (yuan per mu)	2006	2007	2008	2009	2010	2011	2012	2013
Total cost of land	96.27	117.32	142.25	161.17	191.63	213.27	236.45	277.61
Cost of responsibility land	84.42	103.84	125.40	142.93	170.93	189.98	203.80	241.89
Rent of rented land	11.85	13.48	16.85	18.24	20.70	23.29	32.65	35.72
Percentage of the rent in land cost (%)	12	11	12	11	11	11	14	13

Source: Price Agency of the State Development Planning Commission, 2014.

[6] Land over which a family is given tenure for a specified period, as determined by the village collective.

Table 6. Distribution of the Responsibility Land of All Households in Shengjiaba (2013).

Area (mu)	households (N)	Percentage (%)	Cumulative percentage (%)
0–2.49	1,375	14.46	14.46
2.5–4.99	3,442	36.19	50.65
5–7.49	2,269	23.86	74.50
7.5–9.99	1,215	12.77	87.28
10–12.49	563	5.92	93.20
12.5–14.99	306	3.22	96.41
15–19.99	223	2.34	98.76
20–24.99	77	0.81	99.57
25–29.99	21	0.22	99.79
30–34.99	13	0.14	99.93
35–39.99	3	0.03	99.96
≥40	4	0.04	100.00

farmers.[7] It is estimated that reclaimed land amounts to approximately 20–30 percent of the total area of responsibility land. Therefore, the actual area of farmland is 20–30 percent larger than the statistics show. However, not all farmland is suitable for tobacco plantations. Two types of land have to be excluded. The first is paddy fields, where farmers prefer to plant rice. Although some paddy fields have been used to plant tobacco, the total area is not significant. The second is land that is too barren or remote, is too steeply sloped, or relies on poor infrastructure. Thus, only 70–80 percent of farmland is suitable for tobacco planting. Taking into consideration the extra land from reclamation and excluding land unsuitable for tobacco planting, the area of responsibility land is approximately equal to that suitable for tobacco. Using the data on responsibility land and the statistics on tobacco plantations, we can investigate costs.

First, the majority of tobacco farmers consist of households that have more responsibility land than ordinary households do. Compared with all households in Shengjiaba, the tobacco farmers have an average of 8 mu of responsibility land, which is 2 mu larger than the average for all households. As shown in Tables 6 and 7, households with land under 2.5 mu account for 14.46 percent of all households, but account for only 4.5 percent of tobacco plantation households. In contrast, households with land larger than 10 mu account for 12.72 percent overall but include 25.4 percent of tobacco farmers. These figures are in line with farmers' planting choices and strategies. In recent years, experienced tobacco growers with relatively more land, flat and fertile fields, convenient irrigation, and better transportation often choose to expand their farms. They input all their capital and labor into tobacco plantations in order to improve the degree of specialization and

[7] The reclaimed land is artificially built up by farmers in the countryside.

Table 7. Distribution of the Responsibility Land of Tobacco Growers in Shengjiaba (2013).

Area (mu)	Households (N)	Percentage (%)	Cumulative percentage (%)
0–2.49	41	4.5	4.5
2.5–4.99	241	26.3	30.8
5–7.49	239	26.1	56.9
7.5–9.99	162	17.7	74.6
10–12.49	87	9.5	84.2
12.5–14.99	58	6.3	90.5
15–19.99	50	5.5	96
20–24.99	23	2.5	98.5
25–29.99	9	1	99.5
30–34.99	2	0.2	99.7
≥35	3	0.3	100

to realize appropriate scales. As a result, they earn a greater income and increase their degree of specialization. Households with relatively poor quality land, cultivation techniques, and family labor are gradually quitting tobacco growing and choosing to be migrant workers.

Second, rented land is becoming increasingly important to tobacco farmers. The area of land rented by tobacco farmers can be calculated by subtracting the area of responsibility land (suitable for tobacco planting) from the actual tobacco growing area, which appears in the contracts signed between the farmers and the Tobacco Agency. In 2013, 17.7 percent of tobacco growers did not rent land, while the rest rented land measuring an average of 12.95 mu per household. As shown in Table 8, farmers who rented land under 2.5 mu accounted for 14 percent of the total, those under 10 mu accounted for 53 percent, and those under 20 mu accounted for 85.5 percent. Therefore, most tobacco growers rented land under 20 mu. Certainly, those households planting more than 100 mu relied heavily on rented land. More specifically, in 2013, an average of 56.7 percent of tobacco land per household was rented: 17.7 percent of the growers did not rent land; 7.8 percent rented less than 20 percent of their land; 14.1 percent rented 21–40 percent of their land; 19.4 percent rented 41–60 percent; 27.6 percent rented 61–80 percent; and 13.4 percent rented more than 81 percent of their land (see Table 9). Thus, only about a quarter of the growers rented no land or less than 20 percent of the farmland, relying mainly on their own responsibility land. And 41 percent of all growers relied on rented land, accounting for more than 60 percent of their tobacco plantation area. Compared to 10 years ago, rented land is becoming increasingly important to tobacco farmers.

Third, land rent is relatively low. According to the survey on the costs of agricultural products conducted by the Ministry of Agriculture (Table 5), the average cost of land for tobacco growers nationally is around 250 yuan per mu. And in

Table 8. Distribution of Land Rented by Tobacco Growers in Shengjiaba (2013).

Area (mu)	Percentage (%)	Cumulative percentage (%)
0–2.49	14.1	14.1
2.5–4.99	15.4	29.5
5–7.49	12.6	42.1
7.5–9.99	10.9	53
10–12.49	8.6	61.6
12.5–14.99	10.6	72.2
15–19.99	13.3	85.5
20–24.99	6.3	91.8
25–29.99	1.7	93.5
30–34.99	2	95.5
35–39.99	1.4	96.9
≥40	3.1	100

Table 9. Distribution of Percentages of Rented Land in Tobacco Fields in Shengjiaba (2013).

Percentage of rented land (%)	Percentage in total households (%)	Cumulative percentage (%)
None	17.7	17.7
0–20	7.8	25.5
21–40	14.1	39.6
41–60	19.4	59
61–80	27.6	86.6
81–100	13.4	100

Note: percentage of rented land = area of land rented by tobacco growers / area of tobacco field.

Shengjiaba, the land rent is roughly between 150 and 300 yuan per mu, although it fluctuates, based on production conditions such as flatness, remoteness, and transportation conditions. In general, the rent is relatively low, for several reasons. First, the majority of young workers have gone out as migrant workers, and as a result, the elderly and women who were left behind were unable to cultivate all the farmland, sometimes even leaving the entire property uncultivated. Second, renting land is usually a short-term transaction, typically for one year, because the successive planting of tobacco would damage the soil, owing to the excessive use of chemicals and fertilizers. Therefore, tobacco should be grown in rotation with corn or other crops. Farmers often have a good harvest of corn in alternate years as a result of the deep plowing and residue fertilizers after one year of tobacco planting. Third, because tobacco growers often rent land from relatives or neighbors, they can rent land at a relatively low price.

Capital and Labor

Table 1 illustrates the fact that nationally between 2006 and 2013, the total *cost* of tobacco planting rose from 1,300 to 3,400 yuan per mu, more than doubling. The costs of materials and services rose from 500 to 1,000 yuan; labor costs rose from 600 to 2,100 yuan; and land costs rose from 100 to nearly 300 yuan. The cost of materials and services as a proportion of the total cost remained above 40 percent during 2006–2009 and between 30 and 40 percent during 2010–2013. The proportion of labor costs remained stable at 50 percent for several years, although it has recently increased, surpassing 60 percent in 2013. The proportion of land costs is stable, at about 8 percent.

These statistics show that the biggest change to planting input has been labor costs, which have increased as a proportion of total costs, causing the proportion of capital input to decline to some extent. However, an in-depth analysis of the composition of labor costs is required. Although there is a significant decline in the labor force per mu (Table 10), the total cost of labor rose sharply, for two reasons.

First, the price of labor rose too rapidly. During 2006–2013, the price of labor of family members rose from 16.9 yuan to 68 yuan per day, and the price of hired workers rose from 24.88 yuan to 73.28 yuan per day. The increase in daily wages increased the cost of labor directly. As shown in Table 10, the cost of family labor rose from 612.29 yuan to 1,824.92 yuan during 2006–2013, and its proportion of total cost rose from 46 to 53 percent. However, part-time labor among family members participating in tobacco cultivation has a relatively low opportunity cost. If we estimate the price of such labor by referring to the market price, we would exaggerate the change in labor costs. In fact, from 2006 to 2013, the number of hired workers decreased from 38 to 31 per mu (Table 10), mainly because of the use of machinery and high-tech chemicals. This change is also reflected in the rapid growth of the cost of machinery leasing and agricultural chemicals, which increased more rapidly than the totality of capital input (Table 2). In particular, mechanical input increased more than 3.5 times. Thus, it is clear that capital input, typically machinery and high-tech chemicals, was substituted for part of the labor force and plays an increasingly important role in the production process.

In addition to farmers, the local government and the Tobacco Agency invest significant amounts of money in infrastructure and social services to improve production conditions. Since this capital investment is not included in the national survey cited above, capital input should account for a greater proportion of the total cost than is shown in the statistics.

The second reason is the increase in wage labor. From 2006 to 2013, the average number of wage laborers increased from 1.8 to 4.29 per mu, and the proportion of their wages in the total cost of labor rose from 7 percent to 15 percent. The average cost of wages rose from 44.78 to 314.5 yuan per mu, which is close to the sum of the cost of farm chemicals and fertilizers, and equal to the cost of fuel, which used to be one of the largest aspects of capital input in tobacco production. Clearly, the higher cost of hired workers has affected tobacco planting in recent years.

Shengjiaba, as an example, witnessed a trend similar to that of the country as a whole. On the one hand, with the development of capitalization and

Table 10. Statistics on Labor Costs in Tobacco Production Nationally.

Items	2006	2007	2008	2009	2010	2011	2012	2013
Quantity of labor (days per mu)	38.03	37.33	35.83	35.13	33.19	32.38	31.78	31.13
Total cost of labor (yuan per mu)	657.07	730.23	818.86	919.09	1086.21	1352.74	1825.39	2139.42
Working days of family members	36.23	34.78	33.45	32.58	30.48	29.38	28.22	26.84
Cost of family members (yuan per mu)	612.29	650.39	722.52	807.98	954.12	1175.12	1580.43	1824.92
Daily cost of family members (yuan per day)	16.90	18.70	21.60	24.80	31.30	40.00	56.00	68.00
Working days of hired workers (days per mu)	1.80	2.55	2.38	2.55	2.70	3.00	3.56	4.29
Cost of hired workers (yuan per mu)	44.78	79.84	96.34	111.11	132.09	177.62	244.96	314.50
Percentage of cost of hired workers in total labor cost (%)	7	11	12	12	12	13	13	15
Daily wage of hired worker (yuan per mu)	24.88	31.31	40.48	43.63	48.94	59.17	68.87	73.28

Source: Price Agency of the State Development Planning Commission, 2014.

mechanization, the average quantity of labor declined by 8–10 units per mu. Ten years previously, farmers had to invest 32–35 units of labor per mu in a tobacco plantation. However, the use of labor has since declined in several areas: the use of centralized nursery plants (reduced by 2–3 units), mechanical plowing and ridging (reduced 3–4 units), professional plant protection and bud inhibition (reduced about 2 units) and centralized flue-curing plants (reduced about 1 unit). As a result, the use of labor declined to about 25 units per mu.

On the other hand, with the increase in the planting area per household, the cost of wage labor is increasing rapidly. For example, a typical specialized family farm usually has two full-time family workers 整劳动力 (an adult couple) and around two auxiliary workers (the elderly or children). Assuming, then, the equivalent of three full-time workers, with more than five months for tobacco production, this

family can afford 360–400 working days of labor (estimated according to 80 percent of all available days). Provided that 25 days of labor are needed per mu, this family can plant 15 mu of tobacco using their own labor force. This estimation is consistent with the actual situation. Usually, a family farm with three workers is able to plant one "barn" of tobacco (around 10–15 mu) without hiring any additional labor, because they can maintain one flue-curing barn, operating normally, in the busy season. If planting two "barns" (above 16 mu), they would need to hire casual workers in the busy season. If growing more than three "barns," the family must hire a stable team of workers. In Shengjiaba, in 2013, about 50 percent of households planted one "barn" of tobacco,[8] 25–30 percent planted two "barns," 10–15 percent planted three "barns," and the rest (about 10 percent) planted more than three "barns." Therefore, 50 percent of households do not need to hire additional labor, about 25–30 percent of households need to hire casual labor, and the other 20–25 percent of households need to hire a stable team of laborers. The labor price is 60–70 yuan per laborer per day. Relying completely on hired labor would cost more than 1,500 yuan per mu.

Although labor input has decreased in recent years compared with other crops, tobacco plantations are still typically labor intensive, with about 25 units of labor per mu. According to farmers interviewed, "it is so laborious that the tobacco leaves do not make you profits until the twentieth time of touching your hands!" The increasing capital investment can only help to replace certain procedures in the planting process, such as deep plowing, ridging, bud inhibiting, and so on. The other labor-intensive procedures, such as collecting, grading, and bundling, are irreplaceable, for these procedures require the skill and experience of the farmer. At the same time, tobacco production is also capital intensive, and capital input is becoming increasingly important. We find that the quantity of labor input per unit area is slowly decreasing, while capital input is increasing. As a result, capital input is increasing in terms of both unit labor and unit area, which is the concept of capitalization referred to earlier. The capitalization of tobacco production has not excluded large parts of the labor force. On the contrary, this is a new type of agriculture that is "capital and labor dual intensifying."

New Agriculture and the New Peasant

The next question is how the current "new agriculture," characterized by intensified capital and labor, differs from the "involutionary" model that was in place beginning with the Ming–Qing period. In addition, we investigate the extent to which the current situation can really be considered a new "de-involutionary" type of agriculture.

Capitalization and the New Agriculture

The involution in the context of the small peasant economy refers to the problem of limited land unable to accommodate all rural labor. With few opportunities

[8] As mentioned, 55.5 percent of households planted less than 15 mu of tobacco.

of jobs outside farming, villagers suffer from "hidden unemployment," and the opportunity cost of labor drops to nearly zero. As a result, they have to increase their labor input into limited land until the marginal returns approach zero. Thus, when agricultural growth is accompanied by decreasing productivity per unit labor, the peasant economy slips into involution (Huang, 1985). The essence of an involutionary peasant economy is the involution of the labor force. Nevertheless, tobacco production, which features dual intensification of both capital and labor, has already managed to break away from the "involution trap." Ordinary growers who plant one "barn" of tobacco usually have to input all family labor in order to get the farm work done and, thus, have reached full employment. Those who grow tobacco on larger farms have to hire wage labor during the busy season, particularly in the case of those who run farms over 50 mu. These farmers actually act as agricultural entrepreneurs, taking marginal revenue into account and seeking to maximize profit.

In this case, where will the new "de-involutionary" agriculture lead?

We can estimate the cost of tobacco production in Shengjiaba. An ordinary family farm without hired workers or rented land invests mainly in fuel, fertilizers, machinery rental, farm chemicals, plastic film, and nursery costs, totaling an average of 1,000 yuan per mu. This is similar to the national level. With regard to income, the average output of tobacco in 2014 was about 150 kg per mu. At the 2014 price of 22 yuan per kilogram, this amounts to a gross income of 3,000–3,500 yuan per mu and a net income of about 2,000–2,500 yuan. Thus, the average output of a unit of labor is about 80 yuan per day. Next, we subtract the cost of rented land and hired workers from the estimated net income. Land rental is between 150 and 300 yuan per mu, and the cost of wage labor is about 1,500 yuan on farms that rely completely on hired workers. After deducting these two items, net income falls to 400–800 yuan per mu. Therefore, the highest net profit margin is obtained, not by large-scale growers who plant over 50 mu, but by those who produce on a moderate scale, referred to as "core tobacco farmers" 基本烟农 by the Tobacco Agency. These farmers control farms of about 20 mu that rely mainly on family labor and hire casual labor during the busy season. With low-priced land rented from relatives or neighbors, they manage to reach optimum economies of scale and obtain higher net profits per unit than the profits gained by larger producers. Given a family tobacco farm of 20 mu, the net profit could reach 40,000–50,000 yuan per year.

Larger tobacco farms are faced with various drawbacks. The first is the one-time investment of a large amount of capital. Given an average cost of at least 1,500 yuan per mu, large growers have to input 70,000–80,000 yuan and may even invest more than 100,000 yuan. Lower profit margins constitute a second barrier. Compared with the core tobacco farms, large tobacco farms have higher costs of labor and land per mu. The third drawback is high risk. The risks of tobacco production lie in various agricultural disasters, but they also come from market fluctuations, even in a national monopoly system. In addition, owing to the needs of crop rotation, renting land from different villages each year is not an insignificant task. As noted, it was the core tobacco farms that stabilized tobacco production between

2008 and 2013. These farms maintained a stable annual planting area and served as the backbone of tobacco production. In contrast, larger tobacco farms show interannual fluctuations in production. As a result, some farmers of larger undertakings withdraw after one year of planting, while others might suffer from losses and debts. In order to stabilize the overall production of tobacco, the Tobacco Agency focused particularly on the core tobacco farmers.

Therefore, given the current land system and technical conditions, the core tobacco farmer serves as the most stable production subject and as a developmental orientation for other small-scale farms. In Shengjiaba, the core tobacco farmer can earn an average profit of 40,000 yuan per year by hiring some seasonal labor and renting land at lower prices. Although there is no obvious advantage in terms of income compared with migrant workers working in the cities, these tobacco farmers manage to maintain a decent life in rural society and, more importantly, maintain the integrity of the family. Compared with the exile-like lives of migrant workers, they can not only take care of the elderly and children but also remain attached to their homeland and enjoy the leisure of the half-year-long slack season. In fact, based on cost-effective and risk-control considerations, core tobacco farmers do not have much incentive to scale up their plantation area, unless the land system and agricultural techniques change. Compared with core tobacco farmers, those with smaller areas of land also have to input all family labor into agricultural production, but their net profit is too limited for a decent life. Thus, the difference emerges in this group. Some of its members may remain as tobacco growers and gradually become core tobacco farmers, while others will quit and become migrant workers or take up other forms of work. Over the past ten years, about half the households have stopped growing tobacco. This is a clear demonstration of the differentiation among the tobacco growers, and this process is continuing today.

Apparently, the differentiation process of tobacco growers does not conform to the classic Marxist–Leninist theory of factory-like capitalist farms/enterprises and the proletarianization of the peasant class. However, to some extent it does conform to Chayanov's theory of the stability of family production 农民家庭生产的稳固性学说 (Marx, 2008; Lenin, 1957; Chayanov, 1996). Chayanov argued that peasant families as production units maintain a robust resilience. Instead of developing toward a horizontal integration model of capitalist farms, they produce by the labor of family members, connect to the market through cooperative organization, and reach vertical integration. In Shengjiaba, growers connect to the market through the national monopoly system rather than through farmer co-ops. In fact, tobacco farmer co-ops have not followed the path presumed by Chayanov. The current operation of co-ops for tobacco and other crop growers seems to deviate from the original policy intention, which shared insights similar to Chayanov's. More precisely, tobacco production actually went along the path of "capitalized family farms" (Lehmann, 1982a; Lehmann, 1986a). This is a new type of agriculture that has been "de-involuted."

"New Agriculture" and the "New Peasant"

The capitalization of family farms has brought great changes to village society, forming a "new peasant class" or "post-peasant class" (van der Ploeg, 2008) in villages. This group of people has the following characteristics.

First of all, as a result of the outflow of young adults, capitalized family farms are predominantly managed by middle-aged farmers (Table 11). The average age of tobacco growers is 46. The 21–30 age group accounts for only 2.6 percent of tobacco farmers, indicating that the majority of young unmarried people are not farming. The 31–40 age group accounts for 20.2 percent, and the 41–50 age group accounts for 45.5 percent, which is close to half the total, and apparently the major age group of tobacco producers. In addition, the 51–55 age group accounts for 11.5 percent. Thus, farmers under the age of 55 account for 79.8 percent of the total. Those aged 56–60 account for 10 percent, and those over 61 account for 10.2 percent. Admittedly, few of the elderly are in sufficiently good health to be able to plant tobacco. Most of this group are members of undivided families and sign contracts on behalf of their sons. Among the holders of farms over 15 mu, 92 percent are younger than 55, and more than 97 percent are younger than 60. Among the holders of farms over 40 mu, 98 percent are younger than 55, and none is older than 60. In Shengjiaba, more than 1,100 households plant tobacco, accounting for about one-eighth of all rural households. Undoubtedly, middle-aged tobacco growers are the essential social group in villages today.

Second, these new peasants are typically local elites. They are often expert farmers and have accumulated capital, which is why they are able to continue farming when others are not. In particular, core tobacco farmers are the best at planting and management. Further, the holders of larger farms are not only the village elite but are also holders of capital and "entrepreneurs" in rural society.

Moreover, the new peasants of capitalized family farms are crucial to the integration of village society. By comparison, migrant workers often suffer from family separation and increasing alienation from social networks in the village. Although once rooted in village life, their intrinsic social networks gradually weaken. In particular, the new generation of migrant workers move away from the villages

Table 11. Age Distribution of Tobacco Growers in Shengjiaba.

Age (years)	Percentage (%)	Cumulative Percentage (%)
21–30	2.6	2.6
31–40	20.2	22.8
41–45	23.2	46.0
46–50	22.3	68.3
51–55	11.5	79.8
56–60	10.0	89.8
≥61	10.2	100

after leaving school and never really become rooted in their hometowns, making the villages seem like societies of strangers. In contrast, the tobacco growers not only enjoy life within the family, more importantly, they can continuously reweave their social networks in the villages. In the context of the massive evacuation of the population, the social networks of many villagers are weakening, and rural society is confronting dangers of social disorganization and disintegration. In this case, essential social groups such as tobacco growers choose to remain in their villages, serving as the backbone of their society. In fact, they become a significant source of stability in the transformation of villages.

Lastly, the new peasants pay great attention to the governance of the village, because it is in their best interests to do so. As we have seen, tobacco growers need seasonal labor as well as land from fellow villagers. They also rely on public goods and services in the village. Of course, they also make up the main group that benefits from the various supportive policies provided by the state. Therefore, they inevitably become concerned about the governance of the village and often have high expectations in this regard. Thus, they are the most dependable social force in terms of good governance in the countryside, both at present and in the future.

In a word, the capitalized family farm not only is a new type of economic subject but also shapes a new type of social subject that is very important in the transformation and regeneration of rural society.

Conclusion: From Economic Morphology to Social Morphology

With the acceleration of the urbanization process and the transformation of the population structure, the involutionary small peasant economy has begun to change. As a result of the massive outflow of the rural population, the average area of farmland per capita has increased, the severe pressure on the land has been significantly relieved, and full employment within families is gradually being achieved.

At the same time, capital investment in family farms is increasing. The capital invested in every unit of labor has been increasing, leading to the capitalization of family farms and to a typical new agriculture. Rather than factory-like capitalist farms/enterprises 资本主义大农场, the capitalized family farm is an appropriate-scale farm based mainly on family labor. These farms hire some casual workers in the busy season and rent land to achieve modest scales of production. As a result, farmers have achieved full employment and broken away from the trap of involution.

These capitalized family farms are a new type of economic subject. In addition, along with the large-scale outflow of village populations, they are also the village elite, those who remain in the villages, serving as a new type of social subject and a crucial social force in the transformation of village society.

References

Banaji, Jairus (1976) "Chayanov, Kautsky, Lenin: considerations towards a synthesis." Economic and Political Weekly 11, 40 (Oct. 2): 1594–1607.

Bernstein, Henry (2009) "V.I. Lenin and A.V. Chayanov: looking back, looking forward." J. of Peasant Studies 36, 1: 55–81.

Chayanov, A. V. 恰亚诺夫 (1996) 农民经济组织 (Peasant farm organization). 萧正洪译. 北京：中央编译局.

Chen Baifeng 陈柏峰 (2009) "土地流转对农民阶层分化的影响" (The impact of farmland circulation on peasant class differentiation). 中国农村观察 (China Rural Survey) no. 4: 57–64, 97.

Fang Xing 方行 (2000) "中国封建经济发展阶段述" (Review of the developmental stages of China's feudal economy). 中国经济史研究 (Researches in Chinese Economic History) no. 4: 14–26.

He Xuefeng 贺雪峰 (2011) "取消农业税后农村的阶层及其分析" (Analysis of rural social classes after the abolition of agricultural taxes). 社会科学 (Journal of Social Sciences) 3: 70–79.

Huang, Philip C. C. (1985) The Peasant Economy and Social Change in North China. Stanford, CA: Stanford Univ. Press.

Huang, Philip C. C. (1990) The Peasant Family and Rural Development in the Yangzi Delta, 1350-1988. Stanford, CA: Stanford Univ. Press.

Huang, Philip C. C. and Yuan Gao (2013) "The dynamics of capitalization in Chinese agriculture: private firms, the state, or peasant households?" Rural China 10, 1: 36–65.

Huang, Philip C. C., Yuan Gao, and Yusheng Peng (2012) "Capitalization without proletarianization in China's agricultural development." Modern China 38, 2 (Mar.): 139–73.

Huang Zongzhi 黄宗智 [Philip C. C. Huang] (2006) "制度化了的'半工半耕'过密型农业" (The institutionalized "part worker part cultivator" system of involutionary agriculture). 读书 (Dushu) no. 2: 30–37; no. 3: 72–80.

Huang Zongzhi 黄宗智 [Philip C. C. Huang] (2010) 中国的隐性农业革命 (China's hidden agricultural revolution). Beijing: Falü chubanshe.

Huang Zongzhi 黄宗智 [Philip C. C. Huang] (2014) 超越左右：从实践历史探寻中国农村发展出路 (Beyond the left and the right: searching for a path of development for rural China from the history of practice). Vol. 3 of 明清以来的乡村社会经济变迁：历史、理论、与现实 (Rural social-economic change from the Ming and Qing: history, theory, and the present). Beijing: Falü chubanshe.

Huang Zongzhi 黄宗智 [Philip C. C. Huang] (2016) "中国的隐性农业革命（1980–2010）——一个历史和比较的视野" (China's hidden agricultural revolution, 1980–2010, in historical and comparative perspective) 开放时代 (Open Times) 2: 11–35.

Huang Zongzhi 黄宗智 [Philip C. C. Huang] and Peng Yusheng 彭玉生 (2007) "三大历史性变迁的交汇与中国小规模农业的前景" (The confluence of three historic tendencies and the prospects for China's small farming in the future). 中国社会科学 (Social Sciences in China) 4: 74–88.

Kautsky, Karl 考茨基 (1955) 土地问题 (On the agrarian question) 梁琳译. 上海：商务印书馆.

Kay, Cristóbal (2000) "Latin America's agrarian transformation: peasantization and proletarianization." Pp. 123–38 in Deborah Bryceson, Cristóbal Kay, and Jos Mooij (eds.), Disappearing Peasantries? Rural Labour in Africa, Asia and Latin America. London: ITDG Publications.

Lehmann, David (1982a) "After Lenin and Chayanov." J. of Development Economics 11: 133–61.

Lehmann, David (1982b) "Peasantisation and proletarianisation in Brazil and Mexico." In Steve Jones et al. (eds.), Rural Poverty and Agrarian Reform. New Delhi: Allied Publishers.

Lehmann, David (1986a) "Two paths of agrarian capitalism, or a critique of Chayanovian Marxism." Comparative Studies in Society and History 28, 4: 601–27.

Lehmann, David (1986b) "Sharecropping and the capitalist transition in agriculture." J. of Development Economic 23: 333–54.

Lenin, V. I. 列宁 (1957) 俄国资本主义的发展 (The development of capitalism in Russia). 曹葆华译. 北京：人民出版社.

Marx, Karl 马克思 (2008) 资本论（第一卷）(Capital, Vol.1). 中共中央马克思恩格斯列宁斯大林著作编译局译. 北京：人民出版社.

Price Agency of the State Development Planning Commission 国家发展计划委员会价格司 (2014) 全国农产品成本收益资料汇编 (Compilation of costs and profits of national agricultural products). 北京：中国物价出版社.

Research Association of Chinese Rural Economics 中国农村经济研究会 (1935) 中国农村社会性质论战 (The debates on the nature of Chinese rural society). 上海：新知书店.
van der Ploeg, Jan Douwe (2008) The New Peasantries: Struggles for Autonomy and Sustainability in an Era of Empire and Globalization. London: Sterling, Earthscan.

Changquan Jiao is Assistant Professor at the China Academy of Social Management/School of Sociology, Beijing Normal University, China. He is the author of "资本下乡与村庄的再造" (Capital to the countryside and rural reconstruction), published in 中国社会科学 (Social Sciences in China) (2016). His current research focuses on the public expenditure system of the local government in China.

Yingjiao Chen is a graduate student in the Department of Sociology, Peking University, China. Her current research focuses on the transformation of family relationships in rural China.