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Riding on food security: The rise of agrarian capital in China

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Shaohua Zhan

Abstract

This paper examines the interactions between the national strategy of food security and the rise of agrarian capital in China. To ensure food security, the Chinese state has issued a number of policies to stimulate grain production, particularly in major grain-producing areas. These policies, including grain crop subsidies, the incentive scheme for grain-producing areas, and the policy of nurturing new agricultural units, provide favorable conditions for agrarian capital to take root and expand in the Chinese countryside. In addition to an analysis of national statistics and policy documents, this paper will draw on my recent field research in Hunan, Inner Mongolia and Heilongjiang to illuminate how grain policy has fueled the expansion of agrarian capital in China.

1 Introduction

In November 1997, John Holden, the then chairman of Cargill China Ltd., remarked that Cargill was willing to make contributions to China's food security (Zhang 1997). As one of the largest global agribusiness corporations, Cargill established its China investments company in 1995, a time when there were few private agribusiness enterprises in China, not to speak of foreign agribusiness enterprises. In the mid-1990s, the majority of agriculture-related enterprises in China, such as food-processing enterprises and input suppliers, were small township and village enterprises, while a small number of large enterprises were owned by the state and created in the Maoist era (1949-1978). Nearly none of these enterprises engaged in agricultural production directly, and the land in the countryside was farmed by hundreds of millions of rural households. According to the 1996 rural census, 193 million households were farming land, with 30.3 percent farming less than 3 *mu* (0.2 ha.) and 50.1 percent between 3 *mu* and 9 *mu* (0.6 ha.) (MOA 1998, 3-5).

John Holden's remark came against the background that China was under intense scrutiny for its food security situation. In 1994, Lester Brown, the president of the World Watch institute, released a report entitled *Who Will Feed China*, triggering a firestorm of skepticism on China's ability to feed its population in the future. The Chinese government has thereafter repeatedly assured the world that China could produce sufficient food for itself. In October 1996, it released a white paper declaring that China would produce 95 percent of grain that it consumes (State Council of China 1996). The paper also laid out specific goals and means to boost domestic grain production. However, despite the apparent confidence exuded in the White Paper, the Chinese government was actually anxious and uncertain about its ability to meet the goal of grain self-sufficiency. For instance, it was revealed that Chinese top leaders including Jiang Zemin and Li Peng were deeply concerned about the problem of food security, particularly grain production (Wen 2016). In the key documents issued between 1996 and 1998 the problem of food security was given top priority, testifying the worry over its capability in grain production.[1] The uncertainty and concern over food security in the late 1990s created a window of opportunity for agribusiness (for example, Cargill) to lobby for favorable policies by demonstrating their willingness and importance in promoting China's grain production.

The growth of grain production from 1995 to 1998 had partly mitigated the fear of food shortages. In 1996, China's grain production reached a new height, exceeding 500 million tons. However, the production started to decline in 1999. By 2003, it decreased to only 431 million tons, down from the previously highest record of 512 million in 1998. The decline seemed to confirm Brown's prediction on the gloomy prospect of China's grain production, and quickly stirred up the fear over food security. Prompted by the decline of grain production, the Chinese government has issued a series of policies to boost grain production after 2003, and launched the program of "Building a New Socialist Countryside," which was widely considered a crucial turning point in China's policy making.

This paper examines major policies that the Chinese state employs to increase grain production. It argues that these policies, regardless of their intension, have created favorable conditions for agribusiness and large farms, and contributed to their rapid expansion in the recent decade. The paper will examine three such policies and their implementation: the grain crop subsidy program, the incentive scheme for grain-producing areas, and the policy of nurturing new agricultural units. The primary goal of all these policies is to increase grain production so that China can achieve food self-sufficiency, and some of the policies, for example, crop subsidies, are aimed to benefit rural households rather than agribusiness. However, the ultimate result is that the main beneficiary of these policies has been agribusiness and large farms rather than small farming households. Agribusiness enterprises and large farms took a lion's share of ballooning agricultural funds from the Chinese state, and exerted a great control over agricultural production through the acceleration of farmland consolidation and the transfer of land from peasants. As a result, the pursuit of food self-sufficiency in

[1] These documents include Ninth Five-Year Plan for National Economy and Social Development and the Long-Term Target for 2010 (March 5, 1996), Report of the 15th National Congress of CPC (September 12, 1997), CCP Central Committee's Decision on Major Issues Concerning Agriculture and Rural Areas (October 14, 1998).

China, as legitimate a goal as it appears, has fueled the rise of agrarian capital and undermined the livelihood prospect of small farms.

Scholars have paid much attention to both food security and the expansion of agrarian capitalism in China. However, the two literatures have been advancing in separate domains and rarely overlapped. Research on food security in China focuses on the contradictions between food supply and demand, particularly the issues of the limited and diminishing resources for grain production and rising demand for food in China. It continues and extends Brown's analysis on China's capability to produce food by taking into account available resources and technologies, its rising food demand from a swelling middle class, and its food trade and overseas agricultural investment (Chen 2007; Huang 2016; Khan, Hanjra and Mu 2009; Liu et al 2014; Nath et al 2015; Piao et al 2010; Tilman et al 2011; Weis 2013). As far as agrarian capitalism is concerned, there has been increasing consensus that agrarian capitalism has taken root and expanded rapidly in the Chinese countryside. Past research has examined dragonhead enterprises in contracting farming, ground-up capitalization by large farms, land transfer and concentration, and large agribusiness enterprises in the meat industry (Schneider 2016; Yan and Chen 2015; Ye 2015; Zhang 2012; Zhang and Donaldson 2008). A few studies have touched upon agrarian capital with regard to grain crops. For example, Gong and Zhang (2017) found that a county government in Hunan province relied on an agribusiness enterprise to promote double-cropping rice. Yan, Chen and Ku (2016) investigated the decline of soybean farming in China and the dominance of foreign agribusiness enterprises in the soybean industry (for example, soybean trade and oil crushing). However, there has been no study to examine the interactions between China's strategy of food security and the rise of agrarian capital.

The Chinese case also improves our understanding of food security and agrarian capitalism in general. Critical agrarian studies have long been interested in the relationship between food production and the expansion of agrarian capitalism. For instance, the food regime analysis, pioneered by Harriet Friedmann and Philip McMichael (1989), has shown how global agribusiness corporations, most of which originated from Western developed countries, controlled the global food trade and reduced the importance of the nation-state in the Global South in allocating food resources. This to some extent has perpetuated the dominance of the United States and Western Europe in the global economy and heightened the risk of food insecurity for the poor. In addition, large agrarian corporations and farms have received generous subsidies and funds from the state, which enable them to expand globally and drive small farms out of the market. However, China has been ostensibly absent from this critical analysis, though it has been one of the largest food producers and consumers. This is so probably for two reasons. First, the land tenure system in China has sustained a very large number of small farms and slowed the emergence of privately-owned large farms. Second, China adopts a policy of food self-sufficiency and gives domestic food production precedence over food imports, whereas the main argument in the food regime analysis is that the global food regime overrides the food self-sufficiency of the nation-states.

This paper will show that, despite the small farm size and food self-sufficiency, the issue of food security and the development of agrarian capitalism has gone hand in hand in China, and that agrarian capital has been riding on food security to a rapid rise in the past two decades. In addition, the experience of China gives rise to a model of "security grab," which refers to agribusiness companies predating on the worry over food security and grabbing resources including land in the name of food security. Specifically, concerned about food security, the Chinese state has poured an enormous amount of resources to promote domestic food production. Agrarian capital, with its political influence and control of agricultural technology and market networks, has been able to channel these resources to their own pockets. In addition, agribusiness has pushed (or reinforced) the Chinese state to adopt a modernist approach toward food security, which emphasizes the large size of farms, agricultural technologies and a free-market doctrine. All the elements in this modernist approach work to the advantage of large agrarian capital.

The data in this paper derives from two sources. The first source is government statistics and documents on crop subsidies, crop investments, agricultural funds, and grain farming. The second

source is my fieldwork in several provinces including Hunan, Sichuan, Inner Mongolia and Heilongjiang, all of which are major grain producing areas. I conducted more than one hundred interviews with government officials, managers of agribusiness companies, ordinary households and large farm owners. The fieldwork revealed how central policies were implemented at the local levels and how various local actors organized and participated in grain production.

The rest of the paper is organized as follows. The next section reviews the literature on the relationship between agrarian capitalism and food security and locates the case of China in the global context. The following three sections examine three food policies respectively—grain crop subsidies, the incentive scheme for grain-producing areas and the policy of nurturing new agricultural operation units. The last section concludes.

2 Agrarian capitalism and food security: a review of the literature

Food security as a concept was developed in the World Food Conference in 1974 in response to the 1973/74 food crisis. It refers to "the availability at all times of adequate world food supplies of basic foodstuffs" (Mechlem 2004, 633). In the post-war period, national development as a dominant discourse and practice shaped food production and consumption. To feed a rapidly growing world population and provide food for industrial workers, national governments and international organizations had funded a large number of infrastructure projects (for example, irrigation) and promoted Green Revolution technologies. However, food production and consumption during this period was by no means limited within national boundaries. The US emerged as the world leader after WWII as well as the largest food producer. To find new markets/outlets for its grains such as wheat, the US used food aid as a strategy to dispense surplus grains as well as a geo-political weapon to fight communism. Food security as a notion of the national goal was thus linked to the Cold War international order under the US hegemony. Not only were the countries that received food aid carefully chosen but also technological assistance and project funds were first granted to the countries that were positioned at the forefront of anti-communism (Friedmann 1982; Friedmann and McMichael 1989). It is called the post-war international food order or the second food regime characterized by the flows of food from the United States to "post-colonial states on strategic perimeters of the Cold War" (McMichael 2009, 141). Against this background, although food security was raised and legitimized by the need to eradicate hunger and poverty, it also served the interest of agro-food industry in the US and facilitated the expansion of transnational agribusiness. Paradoxically, as the US dumped low-price staple food by food aid or export, agriculture in postcolonial countries was reshaped to grow commercial crops for export. This increased the risk of food insecurity and deepened their dependence upon food imports.

Nevertheless, agriculture was one of the most protected sectors under the state-led development in the 1950s-70s, and self-sufficiency was considered a key way to achieve food security. However, this national food system was further shattered in the 1980s as the neoliberal structural adjustment pushed to open the protected sector in less developed countries. The World Bank argued in a 1986 report that self-sufficiency could not lead to food security. Rather, nations and households should allocate their resources to sectors with comparative advantage and earned income to purchase food from the market (Otero, Pechlaner and Gurcan 2013, 267-8). The GATT Uruguay Round, which started in 1986 and laid groundwork for the 1994 WTO agreement on agriculture, pushed to liberate agriculture from state protection. It called to reduce trade protection, farm subsidies and state intervention. As a result, under the rules of WTO, structural adjustment and neo-liberal ideology and policies, a new international food order had risen to see food as a market good and food security to be achieved best through trade rather than self-reliance. Scholars called this new food order "neoliberal food regime" or "corporate food regime," under which transnational agribusiness corporations and major food exporters such as the United States wield tremendous power over small farmers and less-developed countries (McMichael 2003, 2012; Otero, Pechlaner and Gurcan 2013).

Under the neoliberal food regime, food security is turned into a discourse for transnational agribusiness to justify their expansion (McMichael 2003; Nally 2015). For example, the control of transgenic technology has elevated the power of transnational agribusiness to an unprecedented level since the late 1990s. A main assertion from transnational agribusiness is that transgenic technology can increase grain production and thus contributes to food security, though the technology has not significantly dented hunger and food insecurity. In 2008, the population suffering from malnutrition had reached one billion. In the meantime, small farmers had to pay a hefty price for transgenic seeds and give up traditional ways of seeding due to WTO rules and patent protection. In the recent decades, transnational agribusiness corporations have intensified land grabbing worldwide to exert further control over land resources and agricultural production. Food security has once again been employed to justify land grabbing by transnational agrarian capital. A World Bank report entitled *Rising Global Interest in Farmland*, suggests that there is a wide productivity gap for agricultural land in the Global South, particularly in Africa, which foreign investors can close with application of advanced technology and new methods of cultivation (Deininger and Byerlee 2011, xxviii-xxxix). Industry advocacy groups also justify land deals by arguing that it will increase productivity and the yield, and thus contribute to food security (Nally 2015, 343-45). In sum, food security, initially adopted as a goal to fight hunger and food shortages, has been turned into a tool for transnational agribusiness and its allies to remove the protection of national agriculture, promote the sale of transgenic seeds and grab farmland in the Global South.

The Chinese experience with food security has been related to this global process, but with salient differences. In the Cold War Era, the US embargo prevented China from access to the US food-aid system, forcing it to rely on domestic production for food supply. Although grain production had doubled from the 1950s to 1970s, a significant proportion of the population was living in poverty and at the risk of hunger and malnutrition. In the early 1980s, the rural reform unleased the productive force of small household-based farms and increased grain production substantially, turning China from previously a grain importer to an exporter. Food supply in China has been largely self-sufficient thereafter. Up to the mid-1990s, agricultural production in China was based on hundreds of millions of small farms, and the presence of agrarian capital was minimal.

However, Brown's report created enormous pressure on the Chinese government to increase grain production. This provided a good opportunity for agrarian capital, which had already started to muster its force in the early 1990s as China pushed in full swing for privatization and marketization. Anxious about its capacity to produce sufficient grains, the Chinese government decided in the late 1990s to involve agrarian capital in grain production to a much greater degree than previously, on the belief that agribusiness enterprises could produce grains more efficiently and use farmland more productively than small household farms. This is a belief that agribusiness has long been promoting, as noted above. The government promoted the integration of agrarian capital into the production process (*nongye chanyehua*) and the extension of agribusiness companies to rural producers (the model of "company +household"). In addition, it encouraged land transfer between rural households to scale up agriculture. The government also granted permission to foreign agribusiness companies to run business in China, and as a result, besides Cargill, major global agribusiness corporations such as Bunge and Monsanto started investment in China.

The process of neoliberal globalization was also at work. After the market-oriented reform, China was eager to enter GATT and WTO after 1994. To be accepted as a member, the Chinese state policy had liberalized its economy at a much faster pace in the 1990s than the preceding decade. In addition, it made great efforts to attract foreign capital, and had become the largest FDI receiver among developing countries in 1992 and thereafter. To facilitate the acceptance to WTO, China had voluntarily eased restrictions on the investment of foreign agribusiness companies in the mid-1990s. In 1999, it had made significant concessions over agriculture in the negotiation with the United States.

Paradoxically, while other countries in the Global South had to give up national food self-sufficiency after access to WTO and regional trade agreements or pressed by structural adjustment, China must repeatedly assure the world that it is able to feed itself. As a result, the strategy of food self-sufficiency

and the liberation of international trade and foreign investment had coexisted for the Chinese agriculture. However, food self-sufficiency has not hindered but facilitated the rise and expansion of agrarian capital. Agribusiness enterprises, which are called dragonhead enterprises in China, have been expanding rapidly, and its number reached 129,000 in 2015.[2] This figure only included "dragonhead enterprises" that received official recognition. To qualify as a dragonhead, an enterprise must meet a set of "operational, financial and farm integration criteria," and apply to the government in the region where it is located for the title (Schneider 2016, 6; Ye 2015, 314-337). In addition, foreign agribusiness enterprises have gained a growing market share in Chinese market. Large transnational agribusiness corporations such as ADM, Bunge, Cargill, Kouis Dreyfus and Monsanto have exerted an increasing degree of control over agricultural inputs (such as seeds, fertilizers and pesticide), food processing and international food trade (Wang 2011; Yan, Chen and Ku 2016).

As agrarian capital rises, the scale of farm size in China has expanded with more and more rural households voluntarily or involuntarily stopping farming their own land. By 2014, 403 million *mu* (26.9 million ha.) of farmland had been transferred, accounting for 30.3 percent of all land that rural households received from village collectives in China. Of the transferred farmland, 39 million *mu* (2.6 million ha.) was transferred to agribusiness enterprises, making up 9.7 percent. The rest was transferred to other rural households (58.3 percent), rural cooperatives (21.8 percent) and others (10.2 percent).[3] Although agribusiness companies received only approximately 10 percent of the farmland, their share has been growing rapidly in recent years. In the three years of 2011-14, the land transferred to agribusiness companies increased from 1.4 million to 2.6 million hectares, nearly doubled (Yan and Chen 2015, 376).

However, China has not forgone food self-sufficiency. To the contrary, the Chinese government has repeatedly made food self-sufficiency as a top policy goal. If soybeans were excluded, China has been largely self-sufficient on grains such as cereals in the past three decades, and the rate of self-sufficiency has been more than 95 percent in recent years. If soybeans were included, the rate of grain self-sufficiency would decline to 84 percent in 2015, still higher than 80 percent, a threshold for food self-sufficiency. How do we explain the relationship between food self-sufficiency and the rise of agrarian capital in China? As noted above, past research has mainly focused on how the neoliberal food regime had undermined the system of food self-sufficiency for the global expansion of transnational agribusiness.

The rest of this paper will demonstrate that the concern about food security, specifically the efforts to promote grain self-sufficiency, has played a crucial role in facilitating the rise of agrarian capital in China. As the Chinese state allocated enormous financial resources to boost grain production, agribusiness enterprises have reaped the bulk of the benefits. In addition, agribusiness has been able to convince the Chinese government that the best ways to increase grain production is to apply biotechnology, scale up agriculture and build large agribusiness enterprises, all of which serve to fuel the expansion of agrarian capital. The following two sections will examine how the three policies that aim to boost domestic grain production— grain crop subsidies, the incentive scheme for grain-producing areas and nurturing new agricultural units—have played into the advantage of agribusiness in China.

[2] The Ministry of Agriculture, "The Bright Spots of Agricultural Integration," July 20, 2016: http://news.xinhuanet.com/politics/2016-07/20/c_129163509.htm.

[3] Qunli Zhou, "Woguo nongye guimo jingji fazhan jiqi wenti (Agricultural scaling-up and its problems in our country)," China Economic Times, May 30, 2016: Page 10. The transferred farmland was increased to 447 million mu in 2015, 33.3 percent of the farmland contracted to rural households (Zhongxin Wang, "Ministry of Agriculture").

3 Crop subsidy program: subsidizing farmers, benefiting agribusiness

Agricultural subsidies have been employed in many countries as a measure to increase production and encourage agricultural exports, often under the sign of poverty reduction and food security (Dorward and Morrison 2015). However, agricultural subsidy programs have been criticized for their negative impacts on small farms and less-developed countries. The dumping of heavily subsidized commodity grain crops from developed countries in the world market depresses food prices and bankrupts small farms in less-developed countries. In addition, agricultural subsidies are usually concentrated on large corporate farms or given to agribusiness, thus rendering small farms and peasants vulnerable to the vicissitude of market forces (Babcock 2015; McMichael 2003, 175; Wender 2011). However, while agricultural subsidies in many countries enhance the power of large farms and agribusiness at the expense of small farms, it is not at all clear whether this is the case in China. This is because China provides direct subsidies for hundreds of millions of farming households and remit payments directly to their bank accounts. The program has thus drawn significant attention from scholars because it appears to reduce rural poverty and increase household income for peasants, as the government has claimed (Ahlers and Schubert 2009; Gale, Lohmar and Tuan 2005; Yu and Jensen 2010).

However, this section will demonstrate that the real beneficiary of these subsidies is agribusiness enterprises that supply agricultural inputs such as seeds, fertilizers and pesticides. Although farming households have received payments from the government to grow grain crops, the benefit is nearly offset by the rising expenses of agricultural inputs. In addition, the subsidy for agricultural machinery is paid to producers who purchase agricultural machines. However, it is usually large farms and agribusiness-backed farms that can afford machineries. As a result, although China's subsidy program subsidizes small household farms directly, it has largely benefited agribusiness enterprises that supply agricultural inputs. It also contributes to the concentration of farmland as the use of agricultural machines spreads.

The decline of grain production between 1999 and 2003 stirred up worry again over grain self-sufficiency in China. To increase grain production, the Chinese government decided to provide subsidies for farming households in 2004 and thereafter. This is seen as a critical turning point in Chinese agricultural policy, which previously provided nearly no subsidies but taxed farming households to finance local public expenditures. By 2015, the subsidy program had offered four subsidy payments: direct grain subsidy (*liangshi zhijie butie*), inputs subsidy (*nongzi zonghe butie*), quality seed subsidy (*liangzhong butie*) and agricultural machinery subsidy (*nongji butie*) (Huang, Wang and Rozelle 2013). In 2015, total subsidies amounted to 165.2 billion yuan (25.8 billion US dollars), of which the four subsidies accounted for 8.5 percent, 64.8 percent, 12.3 percent and 14.3 percent respectively. The first three subsidies are paid to farming households' bank accounts directly while the agricultural machinery subsidy is paid after the actual purchase of machineries. The first three subsidies are distributed based on the size of farmland that a household cultivates. In theory, a farming plot must be planted with grain crops to be qualified for the payment, but in reality a lot of farms that grow non-grain crops are also subsidized (Huang, Wang and Rozelle 2013). It is estimated that one *mu* of land (one fifteenth of a hectare) received about 80 yuan (12 US dollars) for subsidies in 2014.[4] An average household that cultivates seven *mu* could thus receive 560 yuan.

The subsidy program, along with the abolition of agricultural taxes, has been widely acclaimed a benevolent policy benefiting Chinese peasants. Peasants have expressed the same view. In 2006, I was involved in a study on rural poverty in China, which conducted fieldwork in 12 villages of six provinces and produced more than 300 interviews with peasants. It was found that peasants held a very positive view on the subsidy program, though the impact of the subsidies on household income

[4] The Chinese government reported a subsidy payment of 49 yuan for one mu of farmland in 2008 when total annual subsidy payment was 103.0 billion yuan. I thus estimated the payment to be 80 yuan per mu in 2014 as the total subsidies had increased to 170 billion yuan. National Development and Reform Commission, 2009(annual). *National Agricultural Production Cost and Return Collection*. China Statistics Press, Beijing (in Chinese). China Rural Statistical Yearbook 2013-2014.

and poverty was not significant since the payment to each household was small relative to household expenditure. In 2013, my interviews with peasants in Inner Mongolia and Hunan province continued to show that they approved the subsidy program.

However, close scrutiny shows that the benefits that rural households received from the subsidy program had been largely eliminated by rising costs of agricultural inputs. Between 2004 and 2014, the total costs of agricultural inputs including seeds, fertilizers pesticides and use of agricultural machinery for one mu of grain crop had increased from 136 yuan to 352 yuan, up 216 yuan or 158.8 percent (Figure 1). As noted above, the subsidy payment was only 80 yuan per mu in 2014, far less than the increase in the cost of inputs. Figure 1 shows that fertilizers and the use of machineries makes up the lion share of the total cost, 75.7 percent. The cost of machinery had grown most rapidly with a four-fold increase in the 11 years, testifying that Chinese agriculture has been quickly mechanized. However, the costs of seeds and pesticides/herbicides had also been growing and more than doubled over the period. In 2014, the cost of seeds accounted for 16.4 percent of the total cost.

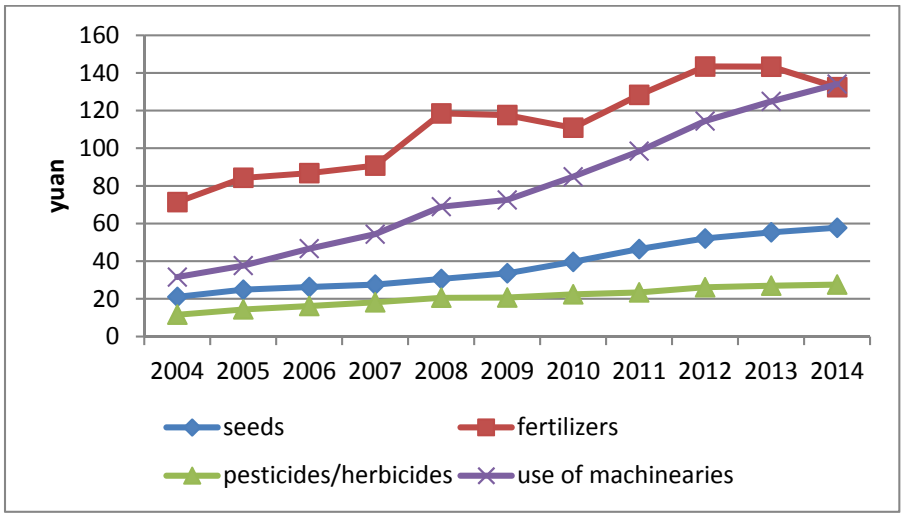

Figure 1 Costs of agricultural inputs for one mu of grain crop in China: 2004-2014[5]

Peasants had lamented the rising cost of agricultural inputs when I conducted fieldwork in Chifeng in Inner Mongolia in 2006. Mr. Liu, 41 at the time of interview, commented on the subsidy program, "Agricultural subsidies are no doubt a good policy, but the prices of fertilizers and pesticides are growing too fast. At the end of the day, it is like that the government only helped me buy three bags of chemical fertilizers."[6] Rising costs of agricultural inputs have reduced rural households' incentive in farming. It is particularly so in areas where the size of landholding is small. According to my field research in Tranquil County near Changsha in Hunan province in 2013, a household of four members farmed about five mu of land, provided that the household did not rent any land from others. Due to growing costs of agricultural inputs, one mu of rice could generate 600 yuan (94 US dollars) at most, including farmers' labor contribution. That is, the household could only receive an income of 3,000 yuan a year from the land, which was about a month of wage income from a local off-farm job. Mr. Zeng, who was 63 years old and just widowed at the time of interview, farmed 5.4 mu of rice.[7] He complained to me that the cost of farming land including agricultural inputs and the rental of agricultural machineries was so high that he could only earn 500 yuan from one much of rice. "This is

[5] National Development and Reform Commission, 2005–2015 (annual). *National Agricultural Production Cost and Return Collection*. China Statistics Press, Beijing (in Chinese)

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[6] Date of Interview: March 23, 2006.

[7] Date of interview: May 16, 2013.

why people who farm the land are all old folks. It is not economic for young people to stay home farming." Mr. Zeng has three children, two sons and one daughter. The elder son joined the military and worked in the Changsha city. The younger son found work in an oil field in Daqing, Heilongjiang province while his daughter was working in a factory in Guangdong province.

The rising cost of agricultural inputs undercut the profit of grain farming. According to national statistics, if the costs of land and labor were taken into account, the profit from one mu of grain crop had declined from 196.5 yuan in 2004 to 124.8 yuan in 2014, down 36.5 percent. Ironically, the decline in profitability had occurred along with the increase in agricultural subsidies from the government and the rising grain prices in the period.

While high costs of inputs and machinery hurt the interest of farming households, it benefited agribusiness companies. Agricultural input suppliers had experienced rapid growth. Between 2004 and 2014, the sales of seeds in China had increased from about 20 billion to 79.4 billion yuan, nearly quadrupled. Due to high profits of the seed industry, the number of seed suppliers had grown from about 2,700 in 2004 to 8,700 in 2010. After that, the Chinese government pushed for the merging of seed suppliers, and the number was down to 5,064 in 2014. In the meantime, the scale of seed enterprises had expanded. In 2003, only seven seed suppliers made sales in excess of 100 million yuan, but the number rose to 136 in 2014, of which seven made sales of more than 1 billion yuan (Zhu 2005; MOA 2015). [8] The chemical fertilizer industry experienced similarly rapid growth. The consumption of chemical fertilizers for one mu of land had increased from 19.1 kilograms in 2004 to 24.1 kilograms in 2014, up 26.2 percent. However, due to the increase in fertilizer prices, the cost of chemical fertilizers for one mu of farmland had grown from 71.4 yuan to 132.4 yuan, up 85.4 percent. The price hike of chemical fertilizers coincided with the implementation of agricultural subsidies in 2004. Concerned over its negative effect on grain production, the central government started to provide the input subsidy in 2006 to offset the price increase (Wang 2011, 162-164).[9] The subsidy payment had quickly become the largest among the four subsidies. It amounted to 107.1 billion yuan in 2015, 64.8 percent of the total subsidies. The subsidies bolstered the price hike of chemical fertilizers, and became an indirect way to finance fertilizer enterprises. A study shows that fertilizers suppliers have captured 70 percent of the input subsidy (Li et al 2014). The industry of pesticides/herbicides had grown rapidly, too. Between 2004 and 2014, the sales of the industry had increased from 46.9 billion to 300.8 billion yuan while the amount of enterprise profits had grown from 1.9 billion to 22.6 billion yuan. [10]

Although the rising prices of agricultural inputs as well as ballooning enterprise profits should be partly attributed to general economic growth and rising market demand, it also had much to do with the growing power of agribusiness under the strategy of grain self-sufficiency. In the late 1990s and early 2000s, the Chinese state marketized agricultural input industries based on the conviction that the market can better regulate production and distribution. Theoretically, price should be determined by supply and demand in the market. In reality, however, the market reform gave agribusiness more power in influencing prices. As the Chinese government calls to produce more grains, it raises the expectation in the market that the consumption of agricultural inputs such as fertilizer and pesticide will increase, thus lending the suppliers an excuse to raise the prices. In addition, input suppliers hold more power relative to Chinese farmers in the market, which are hundreds of millions in number and much less organized than the former. The desire to increase crop yield through technology (biotechnology) also enhanced the power of agribusiness. With the backing of the government and the existence of a subsidy program, the enterprises that supply quality seeds and powerful fertilizers and pesticides can raise the prices at their will.

[8]朱洲，中国种子产业发展研究(Studies on the Development of Seed Industry in China)，华中农业大学，博士论文，2005. 农业部，2015 年中国种业发展报告(2015 Annual Report of Crop Seed Industry Development in China), 北京，中国农业出版社。

[9] 王祖力，中国化肥市场与政策研究。2011，中国农业出版社

[10] 中国农药工业年鉴 2005-2015.

In addition, the strategy of food self-sufficiency has led to the expansion of domestic agribusiness. The Chinese state attaches strategic importance to agricultural inputs due to their important role in achieving grain self-sufficiency. With accession to WTO, however, China is worried that large foreign corporations would drive domestic enterprises out of market and take control of input supply, food processing and agricultural trade, thereby undermining its food security. The worry is justified by the growing market share of transnational agribusiness in China. The soybean industry is a case in point. Under international competition and the power of large transnational corporation, China has completely lost control of the industry. Domestic production has nearly wiped out by imports, and imports are under the control of transnational agribusiness corporations, though China is the largest importer of soybeans in the world. In addition, transnational agribusiness has taken over domestic processing enterprises and controlled oil-crushing business (Yan, Chen and Ku 2016). To avoid the fate of the soybean industry falling onto agricultural inputs, the Chinese state has decided to shore up domestic enterprises. It has offered research funds, bank credits and tax exemptions for these enterprises, making them increasingly powerful in the market.

In short, under the strategy of grain self-sufficiency, the power of agribusiness has been greatly enhanced. The subsidies that are paid to farmers are converted into the profits of agribusiness, while farmers must shoulder the growing cost of agricultural inputs. However, as noted above, the growing cost has undermined farmers' incentive in agriculture, grain production in particular due to low returns. The solution to this contradiction is to scale up agriculture and allow agrarian capital to engage directly in grain production. This leads to the other two policies to be examined in the next section.

4 Grain self-sufficiency and land concentration

Crop farming under the land tenure system is arguably the last sector that the Chinese state wants to open for the influx of large capital because that the sector provided livelihoods for hundreds of millions of rural residents. Any policy that undermines the livelihood of such a large population would create a tinder box for social upheavals, which the communist party fears most. Farmland in the Chinese countryside is collectively owned by villages but distributed to rural households on a relatively equal basis. Thus farming is carried out by hundreds of millions of households. In the late 1990s, the Chinese government promoted the involvement of agribusiness in agriculture in the form of contract farming. The ideal model is "company + households." That is, agribusiness enterprises, called dragonhead enterprises (*longtou qiye*) in China, enter contracts with farmers. The enterprises supply farming households with agricultural inputs and purchase farm produce from them based on contracts signed before the farming season.

Contract farming in China does not appear very different from that in other countries. The literature of contract farming shows that agribusiness can exploit farmers and maximize profits by setting the terms of input supply and produce purchase even though it does not control agricultural production (Key and Runsten 1999; Little 1994). However, two factors may distinguish contract farming in China from others. One is the land tenure system, under which land cannot be traded and farming households hold the use rights of land. The other is the availability of off-farm opportunities which compete with the farm sector for rural labor. If agribusiness cannot meet the terms that farmers expect, the latter can withdraw from contract farming and opt for labor migration or nonfarm business (Zhang 2012). As a result, farming households in China not only holds some power vis-a-vis agribusiness but also is able to disrupt agribusiness by withdrawing from farm contracts.

To take more control of agricultural production, agrarian capital including agribusiness desires to rent farmland from households or work with large farms that mainly derive income from agriculture rather than nonfarm employment. However, the Chinese government has been very cautious to change the land tenure system for fear that it would cause social disruptions. In the late 1990s and early 2000s, it only allowed land transfer between farming households. In the mid-2000s, it had resisted repeated calls from agribusiness and scholars to privatize farmland in the countryside. However, the issue of

food security has given agribusiness companies a legitimate and powerful cause to lobby for a change in land policy. The main argument is that small household farms are inefficient and unproductive in farming and cannot meet the challenge of producing sufficient grains to ensure food security. In the following I will examine how the incentive scheme for grain-producing areas and the policy of nurturing new agricultural units push farming households out of agriculture.

The incentive scheme for grain-producing areas

A major challenge to grain self-sufficiency in China is that decades of industrialization and urbanization have led to a significant contraction of farmland for grain production. In coastal provinces such as Zhejiang and Guangdong, large tracts of farmland are converted into industrial and urban land. These provinces have changed from grain exporters to importers in the past three decades. To produce sufficient grains, the Chinese government identifies major grain-producing areas, which are mainly located in the north and hinterland and less affected by industrial and urban expansion, and provide more funds and supportive policies for these areas to maintain and even increase grain production. This paper calls these policies *the incentive scheme for grain-producing areas*, which includes two major policies: the supportive policy for major grain-producing provinces (liangshi zhuchanqu zhichi zhengce, 粮食主产区支持政策) and the policy of awarding major grain-producing counties (chanliang daxian jiangli zhengce 产粮大县奖励政策).

Figure 2 Major grain production areas in China

In a 2008 guideline document on grain security, the Chinese government identified 13 provinces as main grain-producing areas (*liangshi zhuchanqu)*, out of a total 31 provinces in the mainland.[11] In 2014, the 13 provinces accounted for 75.8 percent of grain production. These provinces are concentrated in the Northeast (Heilongjiang, Jilin, Liaoning and Inner Mongolia), North China Plain (Hebei, Henan and Shandong), the Middle Yangtze Region (Anhui, Jiangsu, Hunan and Hubei), in

[11] The guideline document is entitled "Guojia liangshi anquan zhongchangqi guihua gangyao 2008-2020 (Medium and Long-term Plan for *National* Grain *Security* 2008-2020)," which is accessible at http://www.gov.cn/jrzg/2008-11/13/content_1148414.htm.

addition to Jiangsu and Sichuan province (Figure 2). To further target grain-producing areas, the Chinese government identifies 800 counties, out of a national total of 2,860, as grain-producing counties. Of these, 680 are located in the 13 provinces and 120 in the others. In addition, the government has selected about 200 counties as major grain-producing counties (*chanliang daxian*), of which the top 100 counties are designated as super grain-producing counties (chaoji chanliang daxian). These counties are concentrated in the northeast, the North China Plain and the Middle Yangtze Region.

The policies that support grain-producing areas include the following.

- Allocate central funds to improve agricultural infrastructure in major grain producing provinces and countries.
- Offer no-strings-attached financial awards to major grain-producing countries. To enhance the incentive of grain-producing counties, the central government has increased the amount of award funds every year since 2005 when the award was set up. In 2016, it reached 39.4 billion yuan (about USD 6 billion). Between 2005 and 2016, the funds awarded to grain-producing counties totaled 270.5 billion yuan.[12]
- Provide financial and technological assistances for grain-producing areas to develop the local economy.
- Offer tax exemptions and bank credits to grain-producing areas.
- Establish floor prices to purchase grains.

However, the benefits deriving from the incentive scheme have mostly been captured by local governments and construction companies that built infrastructure projects. Farming households have benefited to a much less degree from the incentive scheme. One component of the incentive scheme that benefits farming households most is the floor grain prices. However, the rising prices of agricultural inputs have largely eliminated the effect of the policy, as noted above. This is particularly the case in areas where the size of landholding is small, such as the Middle Yangtze Region, Sichuan province and Jiangsu province.

Tranquil county in Hunan province is a good example. The county has been recognized as a major grain-producing county since 2006. In some other years, it was also recognized as a super grain-producing county. The total area of farmland in the county is 76 thousand hectares, of which 72 thousand are rice paddies. According to official statistics, its grain production has remained stable over the past decade, about 850 thousand tons. With a population of 1.4 million, the county could export a surplus of 290 thousand tons of grains a year, 30 percent of the total.

According to my fieldwork in the county in 2013, the title as a super grain-producing county has brought enormous benefits to the local government. The county was awarded 60 million yuan in 2012. In addition, it was given priority when it applied for other development and infrastructure funds. According to my interviews with local officials, the recognition had brought the county at least 400 million yuan in 2012. Thus the local government has a strong incentive to maintain the title.

However, the title has brought relatively little benefits to farming households. As noted above, one mu of rice could generate only 500 yuan, much less than the income from nonfarm employment. The monthly rate of wages near the county was approximately 2,500 yuan on average in 2013. Thus farmers are unwilling to devote much effort to rice farming. Tranquil county is a place where farmers have practiced double-cropping rice for centuries. However, as economic returns declined, more and more farming households switched from double-cropping to single cropping. The single cropping rice is intended for self-consumption rather than the sale in the market for income, which is mainly derived

[12] According to the report released by the Ministry of Finance, the award funds had totaled 158.9 billion yuan between 2005 and 20013 (China Financial and Economic News, http://www.cfen.com.cn/old_7392/paper/1/201309/t20130902_1736107.html). The Ministry of Agriculture policy briefs show that the award funds in 2014, 2015 and 2016 were 35.1 billion, 37.1 billion and 39.4 billion respectively.

from nonfarm activities. The switch from double- to single-cropping rice would significantly reduce grain production in the county. To counter the trend, the local government provides subsidies for farmers to keep growing double-cropping rice. However, our research found that this had little effect on farming households because the subsidy was only 50 yuan per *mu* while the daily wage in the county was 150 yuan.[13] Thus it makes much more economic sense for farmers to work as wage labor than to grow double-cropping rice.

Mr. Cui, 49 years old at the time of interview, had worked as an agricultural technician for 29 years in the county. He remarked,

> "Peasants do not pay much attention to farming because it cannot generate economic returns. For example, the switch from double-cropping to single-cropping rice is a very serious problem in Tranquil County. In the past, all farms were planted with double-cropping rice. In recent years, single-cropping rice has expanded rapidly. I estimate that it accounts for 50 percent of the farmland. I attended county-level agricultural meetings every year and a lot of methods were discussed and tried. One method is that the government provides extra subsidies for double-cropping rice, but peasants are not very interested. Some townships ploughed peasants' farmland for free, but peasants were not moved, either. This year the government bought rice seedlings and gave peasants for free, but many peasants threw these seedlings away."[14]

To promote double-cropping rice and maintain the title of "super grain-producing county," the local government of Tranquil county started to transfer farmland from farming households to large producers including agribusiness. In addition, it provides more subsidies for large farms in hopes that these farms will grow double-cropping rice. The rationale behind this policy is easy to understand. As the size of farm increases, the return to farm owner will also increase even though the return for per unit of farmland is low. For instance, a household that cultivates six mu of land can only make 3,600 yuan a year given the return for each mu is 600 yuan. However, a large farm that cultivates 100 mu (6.67 hectares) can earn 60,000 yuan (about 9,400 US dollars), a decent income for a household. If a company cultivates 3,000 mu (200 hectares), it could make a profit of 1.2 million yuan, given that one mu generates a profit of 400 yuan (the enterprise must cover labor cost). In 2014, there were 19 farms larger than 1,000 mu and 35 farms between 400 and 999 mu. In the past two years, the government has pushed in full force for land transfer and the scaling-up of farms. It is anticipated that most farming households will be pushed out of farming in the next 10 years.

Two sources of agrarian capital are involved in running large farms in the county. One is specialized rural households that have accumulated enough capital, and thus are able to rent farmland, purchase large amounts of agricultural inputs, and invest in agricultural machineries. Our fieldwork shows that it is rare that farming households can accumulate enough capital to run a large farm because of the low returns of farming. Most of specialized households come from those that have accumulated capital by running nonfarm business or working as migrant workers. These households are usually from local communities and have social and political connections in the county. They represent what Yan and Chen (2015) calls "capitalism from below," but capital is not accumulated through farming but from nonfarm sources. The other source of agrarian capital is agribusiness. As late as 2008, the Chinese government discouraged land transfer to agribusiness for fear that it would lead to land concentration and social disturbance. However, the concern for food security has overridden the fear of land concentration. The central government permitted and now encouraged agribusiness to engage in agricultural production directly. In Tranquil county, a rice enterprise, which was recognized as a national dragonhead enterprise, has rented more than 10,000 mu of farmland from rural households within a township in 2009 for 18 years and hired dozens of rural laborers to work on the land. As a result, 2,278 households transferred land rights to the enterprise. The enterprise grew double-cropping rice and received substantial government support in land transfer and marketing.

[13] One mu equals a fifteenth of a hectare.
[14] Date of interview: May 10, 2013.

In summary, the government of Tranquil county has been replacing farming households with large farms in an effort to maintain the area of double-cropping rice. The goal is to maintain the title of "super grain-producing county" and receive large sums of central funds and other forms of support. That is to say, under the strategy of grain self-sufficiency, the need to produce more grains has led the government to deprive peasants of land rights as well as their flexibility to allocate resources between farm and nonfarm activities. The result is that the farmland is concentrated on large-scale farms and agribusiness. Farmers, particularly those aged between 40 and 65, have to migrate to the city or remain unemployed in the countryside due to the loss of land rights.

Nurturing new agricultural units

What is occurring in Tranquil County is not an exception but a national trend. Gong and Zhang (2017) shows that promoting double-cropping rice is a major factor in the expansion of agrarian capital in another Hunan county. Studies also find that local governments have pushed to scale up agriculture and concentrate farmland on large farms or agribusiness (Andreas and Zhan 2015; Ye 2015; Zhan forthcoming). In the recent years, the central government sanctioned the concentration of land on large farms, and called to nurture new agricultural operation units (*xinxing nongye jingying zhuti*) (henceforth *new agricultural units* or *new units*).

The new agricultural units are defined in contrast with average farming households, which the Chinese state view as traditional and inefficient in grain production. First, a new unit cultivates farmland on a large scale, as opposed to the traditional household that only farms small plots of land. Second, a new unit must employ modern technology and agricultural machineries, as opposed to the traditional household that is considered backward in the application of technologies and machineries. Third, a new unit specializes in a single crop, as opposed to the traditional household that mixes different types of crops and nonfarm activities. Last, a new unit farms for the market with a high degree of commercialization, as opposed to the traditional household that farm for both self-consumption and the market.

The new agricultural units that the Chinese government promotes include family farms, specialized large-scale households, agricultural cooperatives and agribusiness enterprises. There are no substantive differences between family farms and specialized households. The term of "family farm" reveals that the Chinese state hopes to follow the American model that a family can run a very large farm. The second term describes a model of highly commercialized monoculture, in which a household specializes in a single crop and produces for the market. Agricultural cooperatives are designed to be a middle way that preserves small farms but cultivates farmland on a large scale. The number of registered agricultural cooperatives in China reached 1.53 million at the end of 2015 (Fang 2016). However, it is often used by large farms and agribusiness as a disguise to receive government funds and benefits. For example, the rice company in Tranquil County has registered rural households that it rented land from as an agricultural cooperative.

The promotion of the new units by the Chinese government creates a favorable platform for agrarian capital to expand. As noted previously, the Chinese state has allocated substantial funds to support agriculture in the last decade, including agricultural subsidies, infrastructure funds, general development funds, and technological assistance funds. Most of the benefits arising from these funds have been captured by large farms and agribusiness, though some funds such as subsidies were allocated directly to common households. In recent years, the central government declared explicitly that it will favor the new agricultural units in fund allocation. The reason is that the new units will produce more grains than traditional households. The slogan reads, "The government supports whoever produces more grains." In 2015, it started in a few provinces a new subsidy policy, which takes 20 percent of the existing subsidies as extra bonus for the new units. In 2016, it made it a national policy. In addition, the central government will further increase subsidies, but traditional households will be excluded from this increase. Under the new policy, it is anticipated that traditional households would be further forced out of agriculture as the subsidies for them are reduced. The central government has also abandoned the cautious attitude in land transfer, and now encouraged

local governments to transfer farmland from households to the new units including agribusiness enterprises.

As a result, the pace of land concentration has accelerated in the past few years. The central government stresses that land concentration should be modest, with the optimal size of new farms to be 10 to 15 times that of a traditional household. However, my fieldwork reveals that local governments have shown little interest in reining in the expansion of farm size. This can be seen from the fact that the concentration of land not only takes place in the Middle Yangtze Region where the size of landholding is small but also in the northeast where it is relatively large.

Prosperity County, which is located in the northeast of Heilongjiang province, has a population of about 250,000, of which 70 percent is rural residents. The average size of landholding in the county is three hectares per household, six times of the national average. Unlike most of areas in the North China Plain where water shortage is a major factor constraining agricultural development, the irrigation system in the county is in great conditions, thanks to two dozens of rivers running through the county and generous irrigation funds from the central government in the past decade. Thus the county is an ideal place for grain production. The major grain crops grown in the county are rice and corn. It used to grow soybeans in the 1990s, but the area of soybeans has declined precipitously in the 2000s due to large imports.

Land in the county was farmed by traditional households, with each household cultivating three hectares on average. In recent years, however, the local government has started to push for the concentration of land on large farms. By the end of 2015, the proportion of farmland that was transferred rose to 28 percent, about 32,000 hectares. And the local government plan to increase land transfer 10 percent a year over the next five years. The policy to support the new agricultural units has given an edge to agribusiness, which seizes the opportunity and extends its control over agricultural production. A case study of an agribusiness enterprise reveals how agribusiness has taken advantage of the policy.

The Golden Rice Company in Prosperity County was established in 2006, and its main business is to purchase grains from rural households and sell them to the state-owned storage house or the market after processing. The company is a subsidiary of a large national dragonhead company headquartered in Harbin, the capital of Heilongjiang province. The dragonhead owns 51 percent of its shares. Up to 2013, the Golden Rice Company had only engaged in grain purchasing and processing. It entered contracts with rural households but did not engaged in agricultural production directly. In 2013, the company started to rent land from households and farmed it directly. By June 2016 when I visited the company, the company had rented 960 hectares from two townships in the county. In each township, it established a grain-crop cooperative and an agricultural machinery cooperative under the names of local villagers. The company then hired the key members of the cooperatives as the employees who are responsible for farming. By this way, the company is eligible to receive all funds from the government that are aimed for rural cooperatives. Figure 3 shows the operational structure of the company.

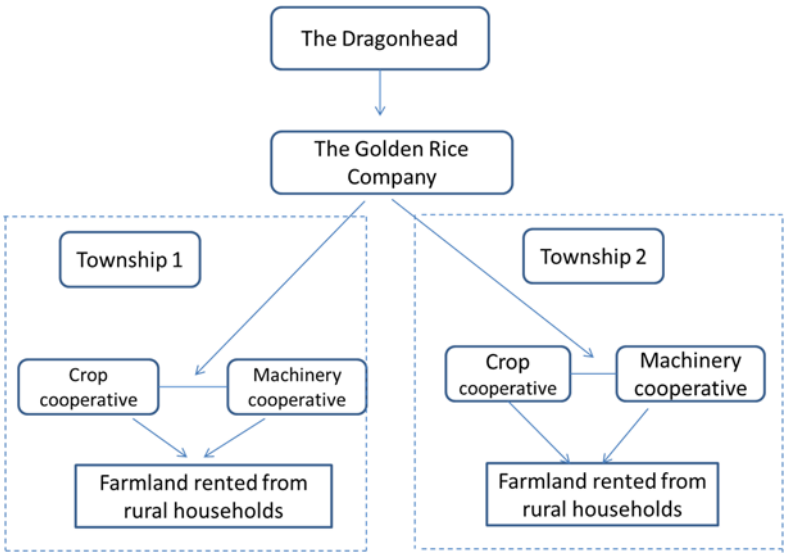

Figure 3 The Operational Structure of the Golden Rice Company

The Rice Company hired approximately 10 full-time rural workers to work on the farm in each township (in addition to two dozens of seasonal laborers), and these workers are all the members of the rural cooperatives. The size of each farm is about 500 hectares, and thus farming must rely on the use of large agricultural machines. The cooperative of agricultural machinery was established in 2014 to receive machinery subsidies from the state. The total cost of the machineries is 8 million yuan, of which 4.8 million yuan was paid by state subsidiaries. In addition, the company received millions of government funds to consolidate farmland into a large farm as well as millions of infrastructure funds on irrigation and other agricultural facilities. In total, it was estimate that the company has received no less than 20 million yuan from the government. At the time of fieldwork, the company was applying for another large government fund to promote internet-based marketing.

The company and the cooperatives it established have been promoted as a model of the new agricultural units in Prosperity County. With strong support from the government, it is anticipated that the company would rent in more land in the future and further expand the scale of grain production.

5 Conclusion

Food security appears a legitimate development goal for China. As Brown warns, whether China can feed itself matters not only for food supply and development in China but also for food security in the world. Under international as well as domestic pressure, the Chinese government has promoted grain production since the mid-1990s, particularly after the 1999-2003 decline of grain production. The policy of food self-sufficiency has created an opportunity for agrarian capital to expand as the latter presents itself as the most important agent to increase grain production with application of modern technology and large-scale farming. As a consequence, the policies of promoting grain production have all worked to the advantage of agribusiness or large farms. The crop subsidy program provides direct subsidies for farming households, but the benefits are mostly reaped by agribusiness enterprises that supply agricultural inputs such as seeds, fertilizers and pesticides. The incentive scheme for grain producing areas aims to motivate local actors to produce more grains, but it deprives rural households of flexibility in making livelihood decisions and facilitates the transfer of land from small farms to large farms and agribusiness. The policy of nurturing new agricultural units in recent years has pushed to replace traditional farming households with large farms and agribusiness in agricultural production.

However, there is no certainty that replacing farming households with large farms and agribusiness will improve food security. Worldwide, large agribusiness corporations, whose power has grown in a

neoliberal era, have not improved but exacerbated food security. As far as China is concerned, rapid increase in grain production in the 1980s and 1990s was achieved by mobilizing millions of farming households. In the most recent decade, farming households continued to demonstrate their adaptability to modern technology and changing market conditions, and played a major role in grain production. As farming households are replaced by large farms and agribusiness, it is predictable that a growing number of poor and low-income families will have to depend on the market for food supply, which is controlled by agrarian capital, and this would increase their vulnerability to food insecurity. Furthermore, there are various signs that the current level of grain production in China has reached the environmental limit and should be scaled back. The Chinese government is aware of this problem and recently issued policies to restore the conditions of soil and water by reducing the use of fertilizers and pesticides. Therefore, the further push to increase grain production does not appear to be a desirable goal. Instead, priority should be given to household-based, small-scale and environmentally sustainable grain farming.

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