Controlling Corporate Power in China: Case Studies of Seed Companies and Water Distribution

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ABSTRACT. In the course of China's economic transition, the government set up a policy goal to gradually withdraw from the market, while, at the same time, increasing the intensity of anti-corruption actions. This article reviews the development of Chinese modern corporations and corresponding policy changes. The development and expansion of modern corporations as a result of reforms that occurred after 1978 reveals the government's decision not to fully withdraw from the market. When private companies are allowed to pursue maximum profits, especially in areas of public resources and services, society and the environment suffer severe negative consequences. Case studies of corporate control of seed companies and water utilities demonstrate in detail the damage caused by privatization. In order to protect the interests of society from corruption, government must concentrate on reducing the rent-seeking behavior of corporations and collusion between businesses and government officials. The Chinese government's fight against corruption in recent years has been based on its market involvement, as well as on its determination to confine the power of corporations, which is a tough game.

Introduction

Private corporations are powerful institutions that are designed to benefit their stockholders, not consumers or the public. The profit-maximizing purpose of corporations automatically puts their interests in potential

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conflict with government policy, which is supposed to serve the entire population. Nevertheless, corporations can be powerful engines of economic development, so governments allow them to operate.

Those conflicting forces are at work, even in China, where the government has adapted its Marxist ideology to allow certain features of private markets to function. As a result of reforms in China, modern corporations have developed in China. After 1978, government continued to maintain some involvement in key sectors of the economy, but decade by decade, the government has withdrawn from the market. The initial purpose of government involvement was to control rent seeking by private companies and to prevent collusion between business and government, both of which may be considered forms of corruption that have a negative impact on society, the natural environment, and government.

To examine how this process occurred over the past several decades, we shall consider two case studies: seed companies and water companies. Corporations involved in the sale of seeds and water are distinctive because their product comes from nature. They do not have to make their products in the same way that a company making clothing or electronics does. As a result, companies that sell products from nature are particularly prone to forms of corruption because they devote their attention to political influence rather than product development.

Before we examine these two specific types of companies, we first review the macro-historical development of China's policy toward corporations in general. This will provide some insight into the concerns of the Chinese government and policy tools available to it to control corruption.

Recent Government Efforts to Control Corruption

At the 2015 World Economic Forum in Davos, Chinese Premier Li Keqiang presented a "double engine" concept for boosting the economy, by building a new economic engine and upgrading the traditional one. The second goal, upgrading the traditional sources of economic growth entailed increasing the supply of public goods, which are necessary complements to goods and services produced for private consumption. The government proposed to use public-private partnerships, joint agreements with foreign corporations, and government purchase agreements. The overall emphasis would continue to be the expansion of the private sector, in keeping with three decades of promotion of the market economy. This reflects the government's policy goal of gradually withdrawing from the market as part of a long economic transition. It coincides with the trend toward developmentalism, which has featured deregulation and privatization since the 1970s.

By 2017, however, the winds of change were blowing in a different direction. Mr. Yang Xiaodu, head of the Ministry of Supervision and Deputy Secretary of the Central Commission for Discipline Inspection (which regulates the behavior of Communist Party officials), gave a warning to Chinese companies: "It is dangerous to think about seeking political power when grasping economic power." This statement clearly indicated a new relationship between government and corporations, one based on cooperation between the Party, the government, and the private sector, but with a clear boundary between capital and political power. In the recent past, the vague integration of public authority and private enterprise led to a dangerous situation in which private businesses run by local government officials had enormous power to engage in rent seeking, and corporate wealth was used to corrupt government officials. The Party was announcing that those types of corruption would no longer be tolerated.

Yang Xiaodu's speech represents the consensus of opinion among high-level Party and government officials about the level of corruption that had developed by 2017. It especially reflects their sensitivity to the expansion of corporate power into the political realm. After the 18th National Congress of the Chinese Communist Party (CPC) in 2012, which elected the party's Central Committee, the new leadership initiated the biggest anti-corruption campaign since reforms began in 1978. According to Zhang Guodong (2017):

> Twenty-two Central Committee members and alternate members have been investigated and punished for violation of regulations and laws. . . . The number has exceeded the total number of the central committee members and alternate members who were caught when they were members of the 14th, 15th, 16th and 17th Central Committees. A total of 1.143 million CCP cadres and political leaders at or below the level of

> township sections have received administrative punishments. In addition, 554,000 CCP members and cadres in rural areas have been punished.

One purpose of the action was to establish a new relationship between government and corporations. In the meantime, the top-level decision makers have realized that the full-scale marketization and privatization of the economy poses potential hazards. It is also the main reason for the policy request to strengthen the status and function of state-owned enterprises, which the high-level commission known as SASAC (2017) intends as a method to

> fully implement the CCP's responsibility for setting high standards of self-discipline. The aim is to fully discharge the Party's organizational role in providing core political leadership in corporations and integrating the Party into the articles of association of corporations in order to guarantee its legal status in corporation management. Also, there should be constant efforts to develop the Party's capacity to conduct campaigns to eliminate corruption and to create honest and clean government. The Party needs an institutional mechanism so that all leaders "dare not, are unable, and have no desire to be corrupted" in order to establish an honest political environment in corporations.

These recent efforts to crack down on corruption only make sense in the context of the policy changes that have taken place in the last two centuries, which accelerated rapidly during the period of reform and opening up China to external trade and influence.

The Modern History of Chinese Policies Toward Corporations

How did China reach a point that necessitated a national campaign to fight business corruption? In order to understand recent events, we must first go back to the origins of private corporations in China, which will reveal some of the problems the government hopes to prevent before they reach unmanageable proportions.

Before 1949

Business corporations, in the modern sense of that term, first appeared in China during the late Qing Dynasty. The first major transition took place after the Qing government signed the Nanjing Treaty in 1842 with

Britain to open Guangzhou, Xiamen, Fuzhou, Ningbo, and Shanghai as trading ports. As a result, joint-stock companies with foreign investments and attached shares from wealthy Chinese gradually took shape.

From the beginning, foreign investment in China was a major source of corruption because it was so closely associated with the drug trade. From the middle of the 18th century to the middle of the 19th century, British trading companies smuggled thousands of tons of opium into China each year, providing 15–20 percent of the British Empire's external revenues, causing opium addiction of around 4 percent of the Chinese population, and siphoning off 11 percent of the Chinese money supply (Braswell 2015; Bradley 2015). It stands to reason that the massive bribery associated with this illicit trade also corrupted generations of port officials in China. The effects of this drug trade were devastating for China, but when the Chinese government tried to put an end to it, the British fought the Chinese in a series of "opium wars," forcing China to back down and accept the drug trade as well as many other humiliating concessions. Although the East India Company and other British trading companies were the primary importers of opium into China, American companies also entered the market in the 19th century, providing fortunes that endowed famous American universities and created dynastic family legacies (Meyer 1997; Bradley 2015). Those endowed with drug money included universities (Yale and Harvard) and family dynasties with famous names like Astor, Forbes (John Kerry's family), Delano (Franklin Delano Roosevelt's), Perkins, and Russell (founder of the Yale's Skull and Bones Club, from which many CIA leaders have been drawn). Subsequent history suggests that high-level British and American involvement in the drug trade never ceased, and that it continues to corrupt politics in the United States (Scott and Marshall 1998).

In China, a number of legitimate enterprises also began during the 19th century, building upon centuries of proto-industrialization. Social elites with an ambition to save the country with indigenous industrial development created quasi-corporations that were jointly managed by government and merchants. Some corporations were managed by merchants and supervised by government. In 1904, the government allowed family-owned companies to be established. In the 1920s, multi-industry and cross-sector holding companies emerged. After the Anti-Japanese War, the government of Republican China took over the corporations and industries that had been owned by the puppet regime under Japanese control. A number of private corporations were also established, mostly as subsidiaries of foreign companies. Along with state-owned enterprises, they were the main types of companies that existed before the Communist Party took power in 1949 (Wu and Wu 2012: 16).

Early Years After Liberation (1949–1956)

In the first eight years of the new regime, under the guidance of New Democratic policies, the government regulated foreign-owned enterprises in such a way that the latter subsidized the Chinese economy. Foreign companies were never formally nationalized. Instead, high taxes were imposed on them, and they were required to pay wages to a workforce larger than they could usefully employ. Because foreign companies generated negative profits as a result of those policies, they eventually negotiated the transfer of their property to the Chinese government, without compensation (Shai 2003). Thus, after more than a century of being exploited by foreign companies, the Chinese government was finally able to turn the tables without ever formally expropriating any property by force.

The state initially encouraged the development of "national bourgeois businesses," even as the state was building up its own socialist enterprises through reconstructive measures, including creating a state monopoly as purchaser of essential commodities and establishing joint ownership of private companies. Those policies were followed until 1956, when the state declared that the socialist reconstruction of capitalist industry and commerce had been completed. In that year, state-owned businesses produced 67.5 percent of the gross value of industrial output, compared to only 32.5 percent produced by joint ventures with private businesses. Privately owned businesses had almost disappeared (Zhuang 2010: 137). In 1957, the Chinese government launched an even more radical policy to reform the private sector. It canceled the market economy and private enterprise. All private business was transformed into either public enterprise or collective ownership (communes). Private business was virtually eliminated throughout China until 1978. Only two types of enterprise remained: the state-owned enterprise and collectively owned operations, or communes.

After the Reforms of 1978

After two decades of collective ownership and economic difficulties, the Chinese Communist Party (CCP) changed direction and decided to create "socialism with Chinese characteristics" or market socialism. The aim was to combine the incentive effects of private markets with the social benefits of public and collective ownership. On that basis, the CCP permitted markets in China, but under the supervision of the government.

In the Third Plenary Session of the 11th National Congress of the CCP in 1978, a decision was made to abandon the radical economic policy, starting with the reform of ownership and incentives in agriculture. The household responsibility system permitted farmers to rent land from their production team or commune to grow crops and to keep revenue from sale of any output that exceeded quotas. Entrepreneurial ventures were encouraged by the policy and became the "subsidiary and supplement of the socialist public ownership economy" (Cheng 1997). Rural enterprises rapidly became an important force in increasing farmers' income and pushing forward China's rural modernization. The success of economic incentives in agriculture also laid a solid ground for the thriving of the private sector later. According to Wang (2007: 65):

> From 1984 to 1988, the annual increase in the value of output by township enterprises was 39.6 percent. In 1988, the total value of the output of township enterprises reached 649.57 billion CNY, and the total number of enterprises was 18.88 million, with 95.46 million employees.

The development of self-employment also aroused an argument over policy and theory, mainly about whether "hired labor was permitted and the number of the workers who could be hired" (Rou 2007). The argument grew stronger as the private economy thrived, and there was a fight for the legal status of private business, which required breaking through ideological barriers. A 1982 amendment to the Constitution gave legal status to individual enterprises.

In 1984, the focus of China's economic reform shifted from the countryside to urban areas. A hybrid urban economy was proposed in which planned production of commodities would continue alongside the development of a regulated market economy. The South Jiangsu Model of urban development encouraged farmers to work together to form collectively owned township enterprises to produce nonagricultural goods. Under the Wenzhou Model, the family was the focus of enterprise development. The aim was to produce small goods for a large market. "Small" referred to goods that had low technical requirements and transportation costs and that could be produced on a small scale. The most distinctive feature of the Wenzhou Model was the development of a national market for local products. Both models supported the idea that urban private business would enter a period of rapid development of manufacturing and high-tech industries. Yet, during the 1980s, state-owned enterprises and collective production continued to dominate the economy. That was soon to change.

On his inspection tour in the south of China at the beginning of 1992, Deng Xiaoping made a famous speech on the development of the private sector of the economy. It was a significant turning point. In the report of the 14th National Congress of the CPC, the importance of the private sector was fully recognized and the idea of "long-term development of various economic components" was officially brought up (Jiang 1992). In the following years, the private sector had explosive growth.

> Chinese private enterprises experienced rapid growth from 1992 to 1995: 58.3 percent annual increase in the number of firms and and 53 percent growth in the number of investors. (Zhang Houyi 2005: 226)

For the first time since 1949, private corporations were welcome in China.

Private enterprise increased in both number and scale, and a number of giant corporations stood out, such as Taikang Life Insurance, Fosun Group, and Vantone Real Estate. In order to help private companies cope with the impact of the 1997 Asian economic crisis, the Chinese government adopted supportive policies and regulations. In 1999, the adoption of the Securities Act also created a favorable environment for the private sector with respect to finance, mergers, and reorganization. In December 2001, China officially joined the World Trade Organization, setting the stage for a new series of reforms. The government now focused on how Chinese private companies could take part in international market competition. The report of the 16th CPC National Congress emphasized that new concern: “We must unswervingly encourage, support, and guide the development of the non-public sector of the economy.” It also reevaluated the identity and role of private entrepreneurs and recognized them as “the creators of socialism with Chinese characteristics” and put forward the need to “complete the legal system to protect personal wealth” (Jiang 2002).

To authorize the new direction for the economy, the State Council (2010), the top government agency in China, which implements decisions of the CCP, issued a document that expressed official opinions about how the economy should be guided to encourage the healthy development of private investment. It emphasized the need to:

> encourage private capital to enter six areas, including basic industries and infrastructure, municipal utilities and public housing, social, financial, and business services, commodity circulation, and science and technology for national defense.

That document marked a fundamental improvement in the policy environment for the development of the private sector in China. It guaranteed that innovative mechanisms, such as public-private partnerships (PPP), would be developed. Premier Li Keqiang (2016) said in his Government Working Report that the central government would:

> continue to promote decentralization, to combine powers of delegation, and to optimize regulations and services; to keep improving government efficiency; to reduce government intervention in the market and to allow the market to determine its business; and to enhance vitality of the main body of the market and its innovative ability.

Summary of China’s Historical Treatment of Private Corporations

As we have now seen, private enterprise in China has faced serious obstacles for at least two centuries, with the exception of a few years of flourishing. During the last six decades, in which the Communist Party of China (CCP) has governed the nation, the state initially restrained and eliminated private enterprise and then decided to encourage it. The private sector in China is gradually becoming a significant component of the socialist market economy. However, its survival and development relies entirely on the policy environment and access to resources provided by the government.

Historically, private corporations have focused exclusively on the accumulation of profits for stockholders. Thus, it is not surprising that the Communist Party chose to eliminate them in China after 1957. It was unclear how corporations could serve the needs of common people, which was the aim of the Party. In 1978, however, the Party decided to invite the participation of private corporations in China once again, but this time on a conditional basis. Although those conditions have been relaxed in the years following reform, the recent crackdown on corruption indicates that the Party is still very concerned about the potential for corporations to become a political force that undermines efforts to serve the public.

Rent Seeking by Private Corporations in China

The recent signals from the CCP that private corporations should be wary of political involvement and that corruption will not be tolerated are indications that those companies are now under close scrutiny. In order to understand the kinds of corporations that are most likely to engage in corrupt practices and will therefore be most closely watched, we first examine the root cause of corruption in this section. In the following sections, we will consider two categories of enterprise that are examples of corruption-prone activity.

The main type of economic corruption involving corporations in China is economic, and most of it takes the form of rent seeking. By "rent seeking," we mean the use of political influence to gain control over resources, such as land and water, that have market value but no cost of production. In other words, the potential for corporate rent seeking and abuse of power are greatest when the product being managed or sold comes from nature, not from labor. When a corporation gains ownership or control of a natural asset, such as land or water, it can sell or lease that asset for what accountants call a "profit": the difference between price and cost. But in economics, the differential is called "rent," a term that originally applied only to the yield from leasing land, but later to gains from all natural resources. Since ownership of those resources yields such a high return, corporations are willing to use political power to gain control of them. That is why there is a strong tendency for transactions involving those natural assets to be tainted by corruption, such as bribing the officials who sell or manage the relevant locations, contracts, or resource revenues. Bribery or other persuasive actions taken to gain control of a valuable, rent-yielding resource is called "rent-seeking" behavior.

The term "rent seeking" originated with Krueger (1974), but the concept can be traced to Tullock (1967), who argued that the true social cost of monopolies and tariffs lay in the wasteful use of resources by interest groups to gain political influence in order to raise protective tariffs or to create a monopoly in particular markets. Thus, the term "rent seeking" in the Western economic literature is largely limited to political activities by which groups seek to persuade government artificially to create quasi-rents. But the "public choice" school of thought, based in Virginia in the United States, ignores another type of rent seeking that is far more common and much larger in scale: the use of political influence to gain control over natural resources that yield a rent. Buchanan (1980) explicitly ignores those rents by asserting that "rent is receipt in excess of opportunity cost." This simple phrase is a linguistically clever way of denying the relevance of all rents that come from nature and asserting, instead, that all rents derive from inappropriate government action. In other words, Buchanan's definition contains a hidden bias against all government involvement in private markets. Since possibly trillions of Chinese Yuan Renminbi (CNY) in rents from natural assets have been transferred into private hands since 1992 in China, Buchanan's anti-government bias ignores the entire problem of corporate corruption that China is facing.

As long as the productive use of rent-yielding natural assets remains entirely in the hands of the government and their management is transparent, the potential for abuse and rent seeking is reduced. But if there is any possibility of private gain from the control or management of those resources, corruption will appear.

Although the Chinese government is actively fighting corruption, some recent policies may actually increase the amount of corruption associated with rent seeking by corporations as they are allowed to take over resources that were previously owned and controlled by the government. For that reason, the government is now faced with questions about how to transfer natural assets to corporations and allow them to be commercialized.

In the following sections, we examine how transferring ownership of seeds and water illustrates the problems associated with treating goods from nature as market commodities. Doing so is a recipe for added rent seeking and other forms of corruption.

Seed Supply: A Case Study of Potential Corporate Corruption

China is a big agricultural producer. It has the world's second largest seed market, next to the United States. There are 240 million rural households and smallholders, each managing less than 0.6 hectares of land, on average.

The Chinese government is very protective of the seed business in China because food security is a high priority. There are any number of potential threats to food security, and the government is seeking to prevent them proactively.

In previous centuries, seed production was carried out by village farmers, who selected seeds for certain characteristics that matched local growing conditions. Once advantageous varieties were planted, the genetic information became a public good that was shared by all farmers in a village through natural dispersal: the wind or pollinating species.

Seed Variety as a Public Good

From the 1960s onward, the Chinese government sought to provide the benefits of intelligent seed selection to all farmers in China. The government recognized that strong seed varieties are public goods because they can, in theory, be widely shared without reducing the benefit to the farmers who developed them. For that reason, the government invested heavily in genetic research to produce optimal seed varieties in order to benefit the nation and promote food security for all. The

Chinese government treated seed production as a public good that was intended to help all members of society. By doing so, the government limited the chances of rent seeking by private corporations.

Seed production also has social ramifications beyond purely economic effects. The source of the public good in seed production is the knowledge of farmers that permits a diversity of seed strains to be developed through constant field testing under varying soil and weather conditions. As long as research and distribution of seeds was largely carried out by the government, farmers with small plots of land were still able to cooperate with each other in maintaining that diversity. No seed variety was able to gain market dominance and threaten the public good of seed variety until corporate seed producers entered the market with a single variety of hybrid seed. The concentrated power of corporate production and marketing gave them a virtual monopoly in many local markets. This problem was heightened by government licensing policies that were designed to favor the most productive seed producers. Monopolistic seed production has imposed new economic burdens on smallholders and threatened the viability of seed variations that formerly constituted a public good. That situation directly affects the sustainability of agricultural development and the social stability of the countryside. Thus, the food security of the nation and other significant strategic issues are at stake in the seed business. So, we now turn to the history of the seed management system in China over the past 40 years. That will help to show the meaning of the emerging seed corporations for social health and the viability of smallholders.

How Modern Corporations Subvert the Public Good

In the past century, the development of genetic hybrids and the transplantation of genes from one species into another (genetic engineering) have become big business, and the older methods of sharing genetic information have been eclipsed by commercial processes. The Chinese government has been ambivalent about this change because it has three major social effects: 1) new seed hybrids have increased crop yields, at least in laboratory studies and limited field tests, but 2) they have displaced local knowledge of seed varieties, which was a form of social capital built up over centuries, and 3) the benefits of new varieties are now privatized by the companies that develop the seeds, and those companies are often multinational corporations Thus, the economic rent captured by companies with seed monopolies is often transferred outside of China.

For example, in 2016, Origin Agritech Limited and DuPont Pioneer (2016) announced that they would team up to produce new seed varieties in China. Origin Agritech is a Chinese company that has already created new varieties of corn with genetic protection against insects and tolerance of herbicides. The Chinese government is trying to limit the effects of privatization by preventing the patenting of new hybrids. However, a partnership with an American-based corporation could gradually erode that policy, leading to a further shift away from treating seeds as a public good.

In addition, since DuPont has been actively involved in the production of genetically modified organisms (GMOs), it is hard to reconcile this partnership with the government rule that prohibits all foreign investment in the production of genetically modified seeds. However, the *Catalogue for the Guidance of Foreign Investment Industries* (published by the central government's National Development and Reform Commission) opened the door in 2014 to foreign investment in GMO research.

Recent History of the Seed Management System in China

In the initial stages of reform, the China State Council (1978) issued a new policy about seed production that aimed at creating a national system that was responsive to local variables in achieving four goals: "production of local seed varieties, specialization by some farmers in seed production, mechanization of seed processing, standardization of seed quality." State-owned seed companies were established at all levels of government: central, provincial, municipal, and county. The government organized seed breeding and scientific research, and the research achievements belonged to the public. Seed marketing was greatly simplified.

While the state was developing its own seed companies, commercial seeds were also developed by county-level companies that were public-private partnerships. The government issued regulations on seed management by these private corporations in 1989 and 2008 and licensed them to engage in commercial operations. Seed management was transformed from central government control of local public seed agencies to regulation of independent operations. Some of those new entities were private corporations that were sponsored by local government. That shift isolated research from operations. It also released county-level seed companies from centralized supervision, which enabled them to increase their income dramatically. That high income stimulated the development of seed companies at the county level throughout China. County agencies served two roles: one as a quasi-private corporation with a monopoly in the production and distribution of seeds, and the other as the regulator of the seeds distributed by that company. Conflicts of interest were blatant and hard to overlook. Structural reform of the seed system, from the central government to the local producer, became necessary.

There was also corruption at the county level because private companies were inadequately regulated, which allowed some of them to sell fake seeds and create havoc in local markets. As Karplus and Deng (2006: 84–85) explain:

> Starting in the late 1990s, the seed industry has been undergoing privatization and consolidation, with competition in local markets varying significantly by locality and crop. With growing numbers and rapid turnover of seed sellers, farmers are left to guess seed origin and quality, especially as officials often cannot prevent lawbreakers from reinventing themselves and reentering the market. When Bt cotton was first introduced into China's market, fake seed spread quickly and undermined the integrity of the seed supply as well as developers' profit margins. Only recently has enforcement of developers' and breeders' rights reportedly improved, but it remains weak and patchy. However, poor enforcement of these rights may discourage domestic as well as international companies from marketing transgenic seed in China.

China's seed law, adopted in 2000, is supposed to separate seed production and operations from regulation, particularly within companies operating at the county level. In the past, a branch of county government might have been both the local seed producer and the regulator of seed quality. That was an obvious conflict of interest, and it allowed a deterioration of seed quality. Previous regulations in 1997 and 1999 were adopted to bring China into compliance with international rules for seed production and marketing. In 2001, China joined the World Trade Organization (WTO), which meant that Chinese seed companies were brought into direct competition with foreign companies. These policies promoted the emergence of seed companies. Throughout China, seed markets were set up, and a number of competitive modern corporations were established in the seed industry.

In 2011, the State Council identified the modern seed industry as an important component in the state's strategy to achieve food security. Soon after that, seed companies rapidly increased their investment in fixed assets, research, and development, and all of them tried to expand their volume of production. Production and research unions were established, such as the Seed Industry Technology Innovation Alliance, the Maize Varieties Research and Development Union, and the Seed Industry Equipment Industry Alliance. According to the Ministry of Agriculture, there were more than 8,700 seed companies in China in 2011, while in 2014, the number was reduced to 5,064.

China developed a market-oriented seed industry while it was establishing a public system to conduct scientific research on seed breeding. Seed marketing has developed into a thriving part of the economy, but it is characterized by a high degree of concentration in local markets. On a national basis, the market concentration was 30 percent (using the Herfindahl Index), which indicates a moderate to high degree of oligopoly power of the dominant firms (Xia 2014: 148).

The emergence of seed-marketing companies strengthens efficiency by promoting intensive use of germ plasm resources. With allocations made by the market rather than bureaucratic procedures, the needs of different seed users are more fully satisfied. By separating seed marketing and management from basic research, the government has allowed private seed companies to thrive in areas that were once considered public goods, but the government still needs to monitor the ownership of seed varieties to ensure that the genetic information in seeds that is part of the public domain is not being used for private profit.

Problems of Privatization of Seed Information

As corporations have become dominant in the commercialization of the seed industry, a series of problems have arisen in seed quality, economic pressures on farmers, and ecological risks. Private seed companies in China, in partnership with foreign corporations, are ignoring the natural features of seeds that give them the attributes of public goods. As a result, these companies are inevitably causing a series of severe social problems

The Shandong Denghai Pioneer Seed Industry Co., Ltd is an example of how these problems arise. Denghai began in 1999 as a public scientific research institution, established by some scientists interested in plant breeding, but it has evolved quickly into a giant for-profit enterprise.

In 2002, Pioneer Overseas Corporation, a subsidiary of DuPont USA, established a joint venture with Denghai Seed Industry. DuPont and Denghai held 51 percent and 49 percent of shares, respectively (Wang 2003: 17). This was the first joint venture between a Chinese seed company and foreign company since the launch of the Seed Law. The joint venture symbolized a strong union between the biggest corn seed company in China and the largest one in the world. Pioneer owned high-yielding hybrid corn varieties, and Denghai had extensive market coverage. In 2008, their joint venture increased annual profits by more than 500 percent (Correspondent 2008: 16).

Its profitability came mostly from its ownership of a new corn (maize) hybrid, the Xianyu 335 or XY335, which dominated the Chinese market for several years after 2003. The cultivated area of this variety in the national spring corn planting once reached 1.6 million hectares, the second largest sales volume among corn varieties in China. However, Denghai Pioneer has taken a disproportionate risk to gain its profits. The social problems it has caused include:

Problem 1: Variability of seed quality. In early 2011, according to the spring seed market selective examination published by the Ministry of Agriculture, seeds from four listed seed companies were found to include unqualified varieties. Xianyu 335, the variety produced by Shangdong Denghai Pioneer Seed Industry, was one of the seeds the government no longer recommended for planting. The government stopped recommending XY335 because of widespread reports that pigs were failing to give birth after eating that variety of corn. But by 2011, XY335 was the second most popular corn seed in China, and farmers were committed to using it. Thus, anecdotal reports continued for several years of pigs dying after being fed XY335 corn. (It is doubtful that XY335 was responsible for the death of the pigs dumped into rivers in 2013, which caused a national scandal.) A controlled study has also shown that chickens fed XY335 corn lay only one-third as many eggs as chickens fed traditional corn varieties. Thus, the problems with XY335 affect more than one species of animal (Ho 2013).

It might seem at first glance that the problems with this seed are specific and can be remedied by developing better seed varieties. That view misses a crucial point. A large-scale corporation gains its power by control of a market. In the case of seeds, that requires the sale of a uniform product over a wide area that encompasses hundreds of ecological zones. Whereas traditional seed varieties were designed to optimize production under specific environmental conditions, hybrid seeds are intended to be planted everywhere, without regard to rainfall, altitude, or local varieties of insects or disease. Corporate seeds have to have this generic quality because they could not compete directly with the local wisdom of farmers regarding the best seeds for each particular location. Corporate involvement in agriculture is thus intrinsically tied to a philosophy that views nature as a machine that can be managed with uniform, standardized inputs. Even if the problem of XY335 can be overcome with a seed that does not interfere with animal reproduction, any seeds developed for uniform nationwide use will face problems as they are applied in diverse situations. Corporations cannot work with nature because corporations must standardize products in order to create a mass market, but nature is inherently diverse. Thus, the underlying conflict between farming and corporate seed production will not go away.

Problem 2: Corporate giants squeeze out competition. In theory, competition in unregulated markets is supposed to favor companies that produce high-quality products at a price that fully recovers costs. But concentrated ownership can easily interfere with that process, enabling the biggest corporations to drive out competitors, based solely on tactics conferred by size, even if the smaller companies offer better quality, service, and price. The scale of corporations permits them to engage in aggressive practices to limit competition. Denghai Pioneer

Joint Venture has used its dominance in the seed market and connections with government to raise the prices of its seeds, knowing that its past practices have diminished the capacity of competitors. Once enough farmers in a village have been enticed to give up conventional varieties of a grain and adopt a modern hybrid with the promise of higher yields, the informal seed exchange that formerly provided farmers with seeds no longer functions. In addition, the companies that control the marketing of grain buy mostly standardized varieties, except for a few specialty markets. Under pressure from both sellers and buyers, farmers have become dependent on seed dealers offering only hybrid grains. Once they fall into that trap, the corporate seed dealers can charge a premium price since they control the hybrids. Thus, after a few years of operation, Denghai Pioneer was able to charge twice as much for its hybrid grains as traditional varieties.

The biggest advantage of corporations in gaining a larger share of the seed market is their control over information. Education systems around the world have followed the path of the United States in denigrating local knowledge based on direct experience and praising abstract, general knowledge derived from laboratory research. Corporations are part of that modern knowledge system, since they work alongside universities to produce a stream of information that confirms the superiority of their products. Farmers with knowledge of local growing conditions and of seed varieties that are adapted to them are regarded as parochial and backward if they cling to that knowledge against the universal knowledge represented by the corporation. Even if the corporate seeds are damaging their livestock, it is hard for farmers to resist the pressure to become more "modern." That sort of social pressure is important in explaining how problematic corporate seeds can gain such a high market share.

Problem 3: Ecological damage. The introduction of hybrid grains has accelerated the disappearance of the traditional varieties and threatens the biodiversity needed to produce resilient crops that do not depend on heavy doses of pesticides and chemical fertilizers. When the marketing practices of Denghai Pioneer, in collaboration with government officials, enabled that company to gain dominance of the corn seed market, the XY335 seed largely displaced traditional varieties of corn from the market. The other varieties were developed from decades of experience by farmers who selected for resistance to diseases or insect infestations or differences in climate. The substitution of a one-size-fits-all seed has created an extreme vulnerability for China and places the nation at risk of a famine. In 1970, the United States lost around 15 percent of its corn crop to a leaf blight as a result of widespread planting of single type of hybrid variety. Although corn was traditionally safe from catastrophic losses, the introduction of hybrids changed that. As Tatum (1971: 1114) explains: "Loss of buffering against pests is part of the price paid for narrowing the germ plasm base and achieving greater uniformity of the crop." But uniformity is a necessary consequence of corporate dominance in the seed business. A corn blight in China in 2003 affected about 20 percent of the corn-growing area, so China has already had some experience with the potential for catastrophic loss that could happen in the future (McBeath and McBeath 2010: 139).

Case Study #2: Fight Over Water and its Price

Like the germ plasm in seeds that comes from nature and should benefit everyone, water is another natural resource that should be treated as a common benefit. The problem of sharing water equitably is of little consequence in regions with an abundance of water. But that is not true in much of China.

China's growing water shortage reinforces the idea that water should be regarded as a common pool resource. China has the 13th most severe water shortage in the world. As Qian and Zhang (2001: 27) have forecast:

> By around 2030, when China's population has increased to 1.6 billion, water consumption will peak and per capita use will have to decline from 2200 to 1760 cubic meters per year. By then, the actual available water resource in China will be 800 billion to 950 billion cubic meters. That means the water demand would push to the limit of its availability.

As water shortages and the problem of water pollution grow more acute, monopoly power over water systems is threatening to create a severe crisis. The difficulties of managing municipal water systems are becoming more obvious. Local governments in all provinces are facing great challenges from rapid urban development, insufficient funds for urban infrastructure construction, and the need for reform of public utilities. Water management is a highly capital-intensive industry. If a local government lacks the means of raising capital for investments in modern water treatment and distribution, then either setting a price for delivered water as a business or privatizing the system seem like simple and fast options for local government.

History of Water Policy Reform in China

China's reform of water policy began in the late 1980s. At that time, foreign capital was offered to China for construction of water projects in big cities. The flow of capital was made possible through indirect and direct guarantees of loans from international finance institutions and foreign governments. In China, the central government was still the only operational body on water policy. Under centralized control, there were a number of long-standing problems: the aging of facilities, their low efficiency, the mixing of the functions of government and private enterprise.

In this context, the State Council adopted Regulations to Transform the Operation of Public Enterprises. The purpose was to allow enterprises to become autonomous agents and to make adjustments in response to market conditions. Subsequently, the Ministry of Construction issued similar regulations in 1993 to clarify the decision-making rights and authority of municipal public utilities regarding production, operations, and investment, so as to lay the groundwork to attract foreign capital. These measures encouraged the construction of water facilities throughout the whole country (Xue 2014).

The convening of the 16th CCP National Congress and the Third Plenary Session of the 16th CCP Central Committee made a significant adjustment to enterprise management structures and management systems of state-owned assets. In 2002, the State Council issued regulations that encouraged foreign investment in urban water systems, stipulating also that the scope of such businesses could be expanded. Introducing foreign capital into urban water affairs permitted a diversification of property rights. There were intense debates on whether it was proper to commercialize the facilities of urban utilities.

In 2002, the Ministry of Construction put an end to the debate with a formal statement. Local governments were to continue as the operational agent in control of urban water affairs. However, under the mandate to transform local utilities into commercially viable operations and the pressure to attract investors, the reform of property rights in those utilities was part of the scope of water policy reform. The Ministry of Construction issued a series of documents to achieve those goals (Xue 2014). By attracting foreign capital and introducing a franchise system, water utilities became commercialized, and the retail distribution of urban water became profitable. However, transforming water into a commercial commodity created some problems. To understand those problems in depth, we examine the role of the French Veolia Group in Chinese water management as a case study.

Privatizing Water Through the French Veolia Group

In 1997, the city of Tianjin (near Beijing), with an approximate population of 15 million, contracted with the Veolia Group, which is based in France, to provide water services to the city. The corporation received the water treatment plant and agreed to reconstruct it in accordance with modern standards at a cost of US $30 million. In return, Veolia was guaranteed operating rights for 20 years and granted a 55 percent ownership share of the utility.

That was the first contract between the Veolia Group and a Chinese utility. Over time, it became the most influential foreign group in the management of Chinese municipal water systems. As one of the three biggest water groups in the world, the Veolia Group has 161 years of history and is one of the global top 500 enterprises. In 2002, it expanded its international strategic center to Asia with a focus on China. Veolia now has 15 water supply and sewage treatment projects in 12 cities in China.

For example, in 2007, the Lanzhou municipal government sold a 45 percent share of the Lanzhou Water Supply Group to Veolia for 1.71 billion CNY (around US $250 million) and transformed the utility in Lanzhou City into a public-private partnership. (Lanzhou, the capital of Gansu province, is located on the Yellow River.) In 2013, Veolia became the first foreign company in China to obtain a contract to provide full service content for a public utility. According to the contract, Veolia invested 266 million Euros for a 50 percent share of Pudong Water Supply Company and established a joint venture called the "Shanghai Pudong Veolia Water Corporation."

By the end of 2013, Veolia China Company's overall water treatment capacity was about 13.22 million tons/day, which made Veolia the second largest water company in China, and it continues to expand its operations. Two other companies have projects totaling over 10 million tons/day of treatment capacity.

In each case, the sale of a controlling interest in a water utility in China was supposed to solve an immediate problem by improving sewage treatment and water quality to a level that local governments could not have attained on their own. But it also meant that a valuable natural resource—water—had been effectively given away to a foreign company. The transfer of that public asset has posed problems:

Problem 1: An increase in the price does not necessarily translate into an improvement in water service. The local governments that have negotiated agreements with water companies and transferred managerial authority to them have lacked experience in the key issues involved in establishing public-private partnerships. Once private corporations have gained effective operational control of a water utility, one of their first actions is to raise the retail price of water service. The sale of a minority ownership share of the Lanzhou Water Supply Group to Veolia is a good example of how this works. Since the city of Lanzhou retained majority ownership, it might seem that it would be in control. But that is not the case. Veolia was willing to pay an extraordinary price—four times higher than other bidders—for its share of the company in return for concessions on several key articles concerning company decision making. 1) The price of water in Lanzhou was based on local incomes rather than the cost of providing water services. 2) The price would increase with the consumer price index. 3) Veolia had a veto over any action taken by the joint venture. These provisions were written into the company's articles of association. As a consequence, the price of water price has changed seven times in seven years. In 2005, before the joint venture agreement, the residential water price was 0.9CNY/ton. By 2009, the price reached 1.45CNY/ton, a

60 percent rise, and most of the increase occurred suddenly in 2009. Another 21 percent increase was planned for later in 2009 (Ma 2009; Li and Lee 2010: 19). Veolia has made a great profit from the higher price, but as of 2014, it still had not rebuilt the water treatment facility, which it promised to do in 2007, when it formed the partnership (Li 2014). Since the partnership is both public and private, the citizens of Lanzhou have little leverage to change the policies of the water company. Thus, citizens bear the negative consequences if a large share of a local water company is transferred to a private corporation.

Problem 2: Declining water quality and increased environmental pollution. The transfer of ownership of a natural resource to a private corporation also undermines the state's ability to serve the public interest by protecting the environment. If the city operates a water facility and it contaminates the water, there is a high probability that the city officials will be directly affected. The same is not true of corporate shareholders, many of whom may live on a different continent, far out of harm's way. Thus, privatization changes the balance of risks and rewards by separating owners and users in ways that increase risks to ordinary people.

Veolia's negligent actions in China are representative of the kinds of risks to which corporations expose citizens in host countries. Veolia has consequently been responsible for 13 incidents since 2007 that have endangered public health in China (Wang and Aubié 2015).

The most disturbing incident took place in Lanzhou. On April 11, 2014, newspapers in that city reported that the level of benzene in the city water supply was far above the amount permitted by health standards. For eight days—April 6 to April 14—the level was 20 times higher than China's national standard. The contamination occurred because the city water supply became polluted by a leak by the Lanzhou Petrochemical Company, a subsidiary of the state-owned China National Petroleum Company (CNPC). Li (2015) reported that a year after the spill, the CNPC subsidiary agreed to pay a fine of 100 million CNY, which was used to upgrade facilities to prevent future spills.

Although Veolia may not have been directly responsible for the contamination, it was responsible for failing to protect public health. At a minimum, Veolia should have alerted the media as soon as it became aware of the problem through its monitors. In addition, its operations violate a regulation that all water companies must have two sources from which drinking water is drawn (Zhou 2014). Finally, Veolia also fought against transparency to the public. Lawsuits against Veolia were blocked for eight months until the Supreme People's Court instructed lower courts to hear the cases. But even if those cases had succeeded, they were only symbolic gestures. Wang and Aubié (2015) indicate that litigants mostly hoped to inspire citizens to become involved in protecting public health. Nevertheless, the case demonstrates the difference between public and private corporations in China. In Lanzhou, the public energy corporation accepted responsibility and paid a fine. By contrast, the private corporation turned its back on the public. It refused to accept any responsibility. Corporate power far exceeds citizen power, especially when companies like Veolia use their market power to impose contracts that make them largely immune to public pressure.

The 2014 benzene incident in Lanzhou was not the only one in which Veolia has evaded responsibility for the liabilities it has imposed through its operations. For example, a second distribution of tainted water took place in Lanzhou in 2014, when water with high concentrations of ammonia was provided to residences (Zhou 2014). Other contamination cases involving Veolia include:

- In July 2007, Qingdao Veolia Water Operation (Shandong Province) was accused of contaminating drinking water with the discharge of wastewater. However, it still managed to get the support for a sailing race in the 2008 Beijing Olympic Games.
- In March 2014, the same operation was found in violation of fecal coliform standards, one of its repeated violations of related rules and regulations.
- In September 2012, Veolia's hazardous waste management site was found to exceed emission standards for dioxin, by a factor of 3; for mercury and its compounds, by a factor of 1.4 times the standard; and for arsenic, nickel, and their compounds, by a factor of 1.8.
- In 2013, Shanghai Pudong Veolia Water Supply Company was fined for violation of water pollution prevention regulations on

> January 8 and again on February 18 for violations of pollution discharge standards (People's Daily 2014).

Since most pollution violations receive warnings rather than official notices or fines, we can assume that incidents happened more often than they were reported by the media.

The general problem that these particular cases illustrate is the great difficulty governments and citizens have in holding corporations accountable for their actions. Noncompliance with regulations, lack of financial transparency, and efforts to extract economic rents (excessive charges) from households are just three of the ways in which corporations like Veolia pose problems for civil society. The public-private partnership allows a utility to be controlled by a monopolist with a profit motive. That situation alone is guaranteed to cause endless problems. Once a municipality turns over effective control of a utility to a private corporation, it can no longer protect water quality or guarantee high quality of service.

Because private corporations are unresponsive to the public, there is a global effort to restore public ownership of water companies. From 2000 to 2014, there were at least 180 cases in which water management was wrested from private control and returned to public management: 136 in developed countries and 44 in developing countries (Lobina et al. 2014: 3).

The experience in China with Veolia, which is similar to the problems experienced in other countries, points to a general conclusion about public owernship. Private corporations are not appropriate vehicles for delivering a public service, particularly one that involves a common pool resource. Because a limited supply of local water will yield its owner an economic surplus, that benefit should be shared with the public, not privatized. Veolia's expansion in China and its behavior there show that the government should never abandon the management of a naturally limited resource such as water in order to gain a short-term benefit. Veolia's frequent public health violations also indicate that privatizing the water industry creates a situation in which companies will elude regulators in order to maximize profits, and they will let their social costs become a burden to the public and the government.

Conclusion

Over the past several decades, the Communist Party of China has adopted policies that have caused the government to withdraw from areas of the economy that were formerly managed by public enterprises. Private corporations have benefited from the new policy environment. In some cases, the transition may have been suitable, but when the activity involves management of a resource monopoly, the transfer of that power to a private company creates an imbalance. The government has viewed privatization as a means of fostering rapid development. However, based on the cases in this article involving seed distribution and water management, we can see that government withdrawal is not always wise. This is particularly true for products or services that involve either public goods or common pool resources (monopolies of natural resources). In those situations, once private corporations are allowed to gain control, they will pursue a profit despite the costs they impose on others. Local governments might gain a temporary benefit from the infusion of capital, but those short-term gains are less than the long-term social and ecological costs of transferring public authority to private companies.

A crucial issue has been raised by the transfer of rent-producing resources to corporations. How is it possible to eliminate rent seeking and collusion between government officials and businessmen when claims on unearned income are being transferred? At present, the government and the Communist Party are working diligently to control the problem of corruption in China. The efforts of individuals and corporations to gain control of rent-yielding resources is a major source of that corruption. Officials are therefore looking at a variety of methods to limit this problem. The Party is seeking ways to fighting intra-party corruption. The top leadership of the Party has realized that letting private corporations operate without restraint will give rise to corruption. They are trying to cut the collusion between government officials and businessmen by strengthening regulations and supervision.

China is also struggling to determine how to confine the power of modern corporations. The government and concerned citizens are trying to understand how it is possible to extract a benefit from corporations for the national economy while controlling the potential harm they do. The

Party and the government remain committed to cooperating with private companies to develop the economy, but it is becoming clear that the government cannot entirely withdraw from areas of monopolized resources. The key to reform and development in China is to fully use the market and private enterprise but also to make use of state political power to restrain them. This is a difficult balance to maintain, as the case studies of seeds and water policy in this article have shown. Nevertheless, it should be possible to give full play to the role of the private sector in market exchange where appropriate, but at the same time, private corporations must not be allowed to gain unlimited power to dominate society.

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