<table>
<thead>
<tr>
<th>Title</th>
<th>The achievement and limitation of China's state capitalism in electricity reform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author(s)</td>
<td>Chan, Ka Yeung (陳家揚)</td>
</tr>
<tr>
<td>Citation</td>
<td>Chan, K. Y. (2017). The achievement and limitation of China's state capitalism in electricity reform (Outstanding Academic Papers by Students (OAPS), City University of Hong Kong).</td>
</tr>
<tr>
<td>Issue Date</td>
<td>2017</td>
</tr>
<tr>
<td>URL</td>
<td><a href="http://dspace.cityu.edu.hk/handle/2031/117">http://dspace.cityu.edu.hk/handle/2031/117</a></td>
</tr>
<tr>
<td>Rights</td>
<td>This work is protected by copyright. Reproduction or distribution of the work in any format is prohibited without written permission of the copyright owner. Access is unrestricted.</td>
</tr>
</tbody>
</table>
The achievement and limitation of China's state capitalism in electricity reform

CHAN Ka Yeung
Dec, 2017
Introduction

After 1949, China was totally governed by Communist Party. As the party followed the Russian style of central planning policy, the national economic development was planned by central government (Xu, 2004). And all asserts and production utilities were owned and produced collectively. The planned economy policy largely improved the national economy, particular in heavy industry in a short period of time by just using limited resource. However, the economy system was gradually unable to keep the growth of the economy and to supply necessities to people (Yang, 2006). Therefore, at the late 70s century, Chinese leader Deng Xiaoping launched the "reform and opening-up" policy to change its political and economic system. After that, China started to transform its planned economy system to more market-oriented. Foreign investment gradually allowed investing in China (Yang, 2006). Since then, The GDP of China rose astonishingly from 178 billion in 1979 to 11 trillion in 2016 (World Bank, 2017). Thus, many media called the achievement of China economic development as a “miracle” (BBC, 2012).

Although China generally undergoes open-door policy, some strategic industries, such as electricity, railway, aircraft, telecommunication and nuclear energy, still heavily controlled by state-owned enterprises. While World Bank experts suggested that open market is the best way to allocate the resource, state-led development is inefficiency to do that. Those sectors have not followed international experts’ advice to liberalize, deregulate and open-up (Yang, 2006; Ngan, 2010). Although those strategic industries underwent several times of reform after 1979, China government still heavily involved in those sectors. Private or international investment seldom allows entering those sectors. Surprisingly, those industries still improve remarkably. The electric power consumption per capita raise from 151 kWh in 1971 to 3927 kWh in 2014 (World Bank, 2017). Traditional knowledge of development is not easy to understand the practice of Chinese development. One of those examples is electricity industry which highly related to the development of the grand economic development in China since 1949. Although electricity utilities still mainly state-owned, its production, efficiency, and consumption of electricity still improve rapidly (Wang & Chen, 2012).

The study of electricity industry reform will help us to get more understanding of the practice, achievement and shortage of Chinese state capitalism, especially on those
strategic industries. Therefore, in the following paragraph, this article is going to study the reform detail of one of the most strategic sector – electricity industry. It includes the background of Chinese electricity development, some conventional theoretical reform suggestions, and different stage of electricity reform. It will help us have a better understanding of Chinese development.

**Background of china electricity sector**

Chinese communist party (CCP) had a very low starting point in the electricity industry, there were only very little places of China had been electrified in 1949. But CCP took electricity as a crucial component of its development. Electricity was not only essential for the targeted heavy industry development, but also serves as an accounting function for material balance plan (Yeh & Lewis, 2004). It served an important function for allocating resources and projecting the future needs for the local government by calculating the previous electricity demand. Therefore, the industrial development was prioritized as it was getting a dominant preference in the government's budget allocation (Wang & Chen, 2012).

As the electricity industry was the central part of the planned economy, private companies, foreign investors and even those local governments were banned to enter electricity sector (Du, Mao & Shi, 2009; Wang & Chen, 2012; Xu, 2017). All of the electricity assets, including generation, transmission and distribution were totally central government owned and vertically integrated. Ministry of Electricity and energy (MOEP) took in charge of the construction plan, management, resource allocation for those utilizes, electricity price and even appoint electricity plant managers (Du, Mao & Shi, 2009; Wang & Chen, 2012). However, when the development of electricity system was subordinated to the development of heavy industry, the majority of large-scale, modern electricity generation concentrated in the urban area. Rural area was under-electrified and heavily related to low-tech, the small scale of hydroelectric stations (Xu, 2004; Yang, 2006; Yeh & Lewis, 2004). At the same time, when there was lack of the large-scaled electricity networks, Chinese electricity actually worked vertically integrated, but horizontally separated. Apart from Beijing, Shanghai, and Guangzhou, most of the electricity assets were not linked together (Xu, 2017).
At the early time of New China establishment, the Chinese government heavily relied on Soviet's technological and financial support to develop the electricity sector at the beginning. Although the continuing political instability in China and the withdrawal of Soviet's assistance afterward, the electricity development was still remarkable and achieved nearly 12 percent of annual growth rate (Xu, 2004). After implementing open-door policy, CCP still wants to keep control on the strategic electricity industry. However, the magnificent increase of demand from rural areas and service sectors caused severe electricity shortage, even affected other large state-owned enterprises (Xu, 2004). Electricity shortage became the leading bottleneck in economic development, but central government does not have enough financial ability to relieve the problem (Wang & Chen, 2012). It pushed heavy pressure on electricity industry reform.

**Natural monopoly**

Traditionally, economists see electricity industry as a textbook example of natural monopoly. The massive investment of setup an electric grid network makes there is only small number of firm able to enter this market (Mou, 2014). Therefore, economists suggest that it is much more efficient to operate by one operator to make use of economies of scale. When numbers of companies enter the market and set up their own network, it will just duplicate the infrastructure which makes it become inefficiency. In the generation, people also argued that a large local generation plant is also much more efficient than a number of small-scale plants because of the transmission loss of electricity. Therefore, three core parts of electricity industry, including generation, transmission, and distribution, should operate by a single organization to maximize the efficiency.

Furthermore, the network characteristics of electricity industry make the industry is nearly impossible to operate without government involvement or support. Electric utilities were complicated as it always linked with the raw materials suppliers, generation plants, transmission grid, distribution network and consumers. Moreover, all electricity has to be generated when it is needed when electricity cannot be economically stored (Hunt, 2002). Those factors make the well-coordination among all parts is essential.
The great investment cost and network characteristic of electricity industry make the idea of natural monopoly is widely accepted. Moreover, when electricity plays a key role in the national economic development and public goods, the failure of electricity industry will hinder national development and affect people daily life (Borenstein & Bushnell, 2000; Williams & Ghanadan, 2006). The government should highly regulate the electricity market or directly owned and operate the industry. When government more able to impose socially desirable policy through state-own electricity entity rather than bargain with a private firm, nearly all countries own and exclusively operate its electricity industry (Laffont & Tirole, 1991). As a result, most of the countries, even developed countries owned and operated the electric utilities for many years.

**Neoliberal trend**

However, in the 1980s, some of the state-owned electricity systems suffered financially as the revenues was not enough to cover the cost. When the electricity sectors heavily depend on the tight state budget, it was becoming poorly-maintained, inconsistent, unreliable, and inability to improve the service coverage (Williams & Ghanadan, 2006). The state-owned and state-operated industry was being criticized as the inefficient monopoly. People started to argue that the natural monopoly nature of electricity is already changed because of the technology improvements. As the growth of nuclear power, the optimal scale of generation plants and distribution network was highly decreased. It makes the competition within the electricity generation and distribution possible (Borenstein & Bushnell, 2000). Economists stated that competition is the important way to enhance firms and market efficiency (Primeaux, 1977). Companies will work hard to reduce cost and increase their profit when they are facing competition. It makes market mechanism will provide a much cheaper product and better electricity service than monopoly state-owned sector.

The market-oriented electricity reform becomes a global trend, as World Bank and International Monetary Fund promoted vigorously privatization and deregulation of the electricity sector. World Bank (1993) launched a scorecard for neoliberal power reform and even makes ownership reform of electricity sector be the condition of aid (Xu, 2017). The scorecard forced on privatization, separation, and de-politicisation which aimed at “introduce private sector ownership and investment” and “induce competition”
A large number of countries, no matter developed countries, or developing countries underwent deregulation and privatization policy since 1990 (Williams & Ghanadan, 2006). World Bank (1993) argued that the vertically integrated state-owned electricity system is the core of the problem. Government is inefficiency to handle the pricing, provide service and develop the industry because of its bureaucracy, corruption, high regulation cost, and wrong pricing. While the government does not intervene and unbundle the generation, transmission, and distribution, a better competition will induce. The market is much more efficiency on resource allocation through reasonable pricing, to provide “better service”, and eventually “reducing the drain on the government budget” (Bacon et al, 1990, pp.5).

Both conventional theories focus on ownership and market structure of electricity industry, as they have a quite different view on them. The theory of natural monopoly suggests government own and operate electricity industry is the most effective to provide electricity service and induce positive externalization via scale of economies. On the other hand, neoliberalists believe the government should separate with business when the government is bureaucratic and inefficiency. The free market mechanism will induce a much better service to the public.

Reform

At the early stage of the People’s Republic of China, electricity entity underwent a number of administrative reforms to restructure the reporting line, but no structural reform occurred till Deng’s era. Chinese electricity sector was completely state-owned and operated vertically integrated, but horizontally separated for a long period. Due to the massive Increase of electricity demand after implementing open-door policy, serious electricity shortage pushed a number of structural electricity reform. When the conventional theories mainly focus on ownership and market structure, China has not totally followed the World Bank’s suggestion.

1. Decentralisation

In 1985, National Council encouraged local government, domestic private enterprises, and foreign investors to invest in generators sector in order to attract more investment
to relieve the power shortage problem. However, the Chinese government still forbid others to invest in distribution and transmission sectors (Du, Mao & Shi, 2009; Wang & Chen, 2012; Mou, 2014).

For the electricity generation open-up policy, the government issued three specific measures. Firstly, the policy of 'who invests, who benefits' was launched. The local government obtained more jurisdictions and incentive on developing its own local electricity plants (Wang & Chen, 2012; Xu, 2017). It leads common financing generation plants (CFGPs) increased rapidly to more than 50% of generating capacity at the end of the 1990s (Du, Mao & Shi, 2009). Secondly, China also allowed multilateral financial institutions to form joint ventures with local companies to boost power generation development (Xu, 2017). Lastly, it was the dual pricing system. The National Development and Reform Commission (NDRC) guaranteed investors able to gain profit in setup new power plants in around 10 years by adjusting the electricity tariffs by calculating the investment, profit, loan interest, fuel cost and transport cost (Wang & Chen, 2012; Mou, 2014; Xu, 2017). Those policies had significant impacts on the electricity sector. It not only helped to relieve the generation shortage problem, but also diversify the ownership structure of power generation sector. It made the electricity sector gradually decentralize the central government control through the delegation of authority to provincial government (Yeh & Lewis, 2004).

2. Recentralisation and enterprising

When the growth of electricity generation was carry up the growth of economic development, government re-centralized all state electricity utility in 1997, and formed a new independent enterprise, the State Power Corporation (SPC). The fully state-owned corporation monopolized the electricity market as it operated all vertically and horizontally integrated state-owned electricity utility (Xu, 2017). Some subsidiaries started to list in Hong Kong and London stock market for raising fund for build new high-tech generation plants. The former responsible department, the Ministry of electricity industry was dismantled. The new State Economic and Trade Committee (SETC) was formed and take up the administrative and decision-making functions. Those arrangements formally separated the government from the daily operation of the business (Du, Mao & Shi, 2009; Wang & Chen, 2012).
3. Restructuring

In 2002, State Council of China announced the reform proposal of electricity industry which based on the international advice of deregulation (Du, Mao & Shi, 2009). The 2002 proposal outlined the gradual electricity separation reform plan: "Government and business separation, generation and transmission separation, main and auxiliary separation, transmission and distribution separation, electricity bidding mechanism". The reform plan aimed at “Break the stated monopoly, introduce competition, and improve efficiency” and establishes a fair, open, orderly and healthy electricity market system under the government supervision (China GOV, 2002).

The state-owned vertically integrated monopoly electricity entity, SPC was dismantled quickly into several parts to implement “generation and transmission separation”. Most of the generation assets were separated into five equal shares generation corporations, and its transmission and distribution assets were separated into two, State Grid Corporation of China (SGCC) and China Southern Power Grid Co. Ltd (Mou, 2014). And all newly formed corporations were still state-owned and under directly supervision of The State-owned Assets Supervision and Administration Commission of the State Council (SASAC) shortly. Following the SPC separation, a new electricity regulator, the State Electricity Regulatory Commission (SERC) was formed to keep supervising the electricity markets and implement ongoing reforms (Du, Mao & Shi, 2009; Wang & Chen, 2012).

Although government planned to create market competition gradually by partially vertically and horizontally separation, the biggest player, SGCC resisted and even forced go backward. SGCC expanded into generation and built ultra-high voltage (UHV) transmission lines to restore the vertically and horizontally monopoly. It also developed quickly in different sector, including electric equipment manufacturing, construction, financial service and media which obviously contradict the plan of main and auxiliary separation (Xu, 2017).

4. Distribution reform
Because of the strong resistance from SGCC, most reform plan of 2002 proposal has never been applying in the following ten years. In 2015, the central government announced the new electricity reform proposal (National Development and Reform Commission, 2015). It abandoned the separation of transmission and distribution, but reformed the transmission and distribution tariff and introduced further open up the retail electricity market. It opened up the distribution sector and allowed consumer purchase electricity from generators directly. However, Liu and Kong (2016) doubted that when the state-owned grid companies still in charge of transmissions and distribution, a market is hard to develop.

**State capitalism**

According to the conventional understanding, ownership and market structure are two most important factors of industry performance. Although China gradually opens up its electricity market, there is no obvious ownership reform in the last three decades as big five generation companies produce more than 60% of electricity generation, transmission and contribution are still totally controlled by two SOEs. Yeh & Lewis, (2004) claimed that CCP is not willing to allow the private commercial actor to develop into a strong political force within strategy sectors. As electricity is highly related to national security and public goods, CCP never wants to give up the ownership of electricity industry. However, in order to solve the problem of state-owned monopoly, China reformed its central planning policy to build a free, but orderly socialist market economy by preserving controlling power over the national economy through the central SOEs (Xu, 2017). Those strong state-owned actors in electricity market make government still able to implement state policy in the market system. Yeh & Lewis (2004) also noticed that SOEs act as an irreplaceable actor in China’s economy as SOEs is the largest employer in China. Also, different level of government heavily depends on the fiscal revenue of SOEs. Speedy privatization may lead huge social and financial instability like other transition countries. Hence, China is not going to give up its ownership in the foreseeing future.

Although China has not privatized its electric utilities during reform, the electricity generation, accessibility, efficiency still improved astonishingly (Wang & Chen, 2012; World Bank, 2017). Laffont & Tirole (1991) stated that the efficiency of institution is not
related to ownership, but highly related to its institutional arrangements and incentives. When private firms naturally work for profit, but public enterprise has another objective, for example, introduce positive externalities, implement government policies, prevent monopoly pricing and control service quality. The objective of public enterprise is extensive and sometimes inconsistent, it undermines the efficiency of the public enterprise. Moreover, the private firm’s manager is highly mobilized by huge money reward. However, when the enterprise is fully state-owned, the managerial incentives is always not that obvious and efficiency. Those factors lead private companies usually have better performance.

As Chinese government does not want to privatize the Chinese electricity industry, they go beyond the ownership problem to improve performance by creating orderly markets, incentives and regulation. In the first stage of reform, the central government encouraged investors to build generation plants by ensuring its profit and allowed local government to keep the profit. Forming a joint venture with the foreign organization even improve local generation plants performance by learning their administration and operation style. Those policies strongly relieved the electricity shortage. After corporatization in 1997, SOE further gains more autonomy on daily operation, including staff’s salary adjustment. Their wages and bonus become more related to its ability and corporation performance. When corporation performance was continuously examined by private investors in the stock market, it pushes manager aggressively to improve companies’ performance.

Apart from positive encouragement, the central government also introduced the market mechanism to induce competition for enhancing SEOs’ performance. During the separation of SPC, central government carefully split electricity generation into five equal share power companies. It ensures that there are no one will have a monopoly power in any regions and any sectors, so the balanced and orderly competition will occur among big five (Xu, 2017). The extensive competition urges those big power companies to improve their service, investment quality, and reduce the electricity tariff (Ngan, 2010). On the other hand, the government also ensure those SEOs are big enough to achieve international standard by using economies of scale to keep investing and research for better service. Scholars argued free competition is too
idealistic. The intensive competition among numerous small companies will waste a lot of resources, as small companies will not have enough resource to improve (Schumpeter, 1947). Destructive behavior and market failure will occur in a certain period of time. Therefore, Chang (2003) concluded that an orderly competition is much more efficient and constructive than the free market competition in developing countries by taking advantage of economies of scale to improve service.

Although government gets away from corporations’ day-to-day operation, the state agency, SASAC plays an important role to boost SEOs’ performance (Naughton, 2006; Norris, 2016). SASAC is the only government agency accountable directly to the State Council, which acts as the owner and investor of SOEs, including big five generation corporations and two grid companies. As the former chief of SASAC stated clearly that SASAC aim at strengthen large SOEs and help to build a global champion, the performance of the SOEs tied to its survival and interests (Xu, 2017). SASAC, on one hand, facilitates the development of SEOs by pursuing top party leaders to cooperate with their development plans and help to reduce the social burdens which inherited from the old economic system. On the other hand, SASAC enforces those weak SEOs get out of market by merging with other successful competitors. The management team of failing SEOs will gradually fade out in the most strategic sector (Xu, 2017). Those managerial arrangements somehow further induce improvement and competition among SEOs.

Limitations

China improved the performance of electricity industry through managing the incentive and market structure, but there are also some obvious limitations. As state capitalism expected strong at implementing state policy via the heavy involvement of SOEs in the market, some SOEs are actually out of state control, especially those large SEOs (Xu, 2017). According to Norris’ theory (2016), in generally speaking, state-owned enterprises are expected strongly controlled by the government because of its ownership. But, he argued that the ability of the state to control economic interaction related to different factors, including state unity, market structure, goal divergent, reporting relationship and resource endowments.
Norris (2017) suggested that state unity and market structure are the most important factors. In the case of China electricity industry, SASAC and State council have a quite different view on reforming the electricity sectors. As state council keen to gradual unbundle electricity utilities to create competitive market, SASAC wants to keep SGCC large enough to expand its grid network, ensure the stability of electricity supply and compete with international players. As the government is divided and the goal of for-profit corporatized SGCC relatively matches the mission of SASAC, SGCC usually hid behind SASAC to resist separation and market reform (Xu, 2017). Moreover, there are only two corporations to provide transmission and distribution, and SGCC takes the majority share of market. The duopolistic market structure helps SGCC gain more autonomy and strong enough to bargain with government, or even resist government order. Although SGCC is owned by government, and have a legal direct reporting line to government, Norris (2017) noticed that in such highly technical areas, state often lacks sufficient capacity to monitor the behaviour of the dominant actor. Furthermore, the concentrated technical expertise and economic power of SGCC makes government have no other alternative agents to conduct its policy. Those factors make SGCC are more able to resist state influence, and even reverse the plan of vertical separation.

Other than out of control, the partial reforms of electricity introduced some alternative mechanisms of coordination, refer than market mechanisms (Hellman, 1998). When the political power is usually much important than its performace and ability, It leads corruption and in control of elite families continuosly. The family of former Premier, Li Peng is still heavily linked with electricity sector. When Li’s son was the deputy general manager of SPCC before the separation, his son became the head of the largest of the big five new generation corporation after the separation. In addition, Li Peng’s daughter also was named as the vice president of another big five generation corporation. Other than the industry, the independent regulatory department, SERC is also being criticized as its strong linage with Li’s family. Its independence was being doubted as the first leader is a long-time supporter of Li Peng (Yeh & Lewis, 2004). Those problems make the further reform of electricity become much harder.
Conclusion

When the conventional understanding is heavily focused on ownership and market structure, it is not enough to understand the current development of China’s electricity industry. As SOEs still highly involve in the electricity market, and generally block the foreign investors to engage in this market, the electricity supply and efficiency are still largely improved. It proved that ownership is not a crucial central issue in achieving performance improvement, especially in the sector require continued state involvement (Xu, 2004).

After adopting open-door policy, China kept finding the best reform way by "Crossing River by Feeling the Stones". It gradually opens up the generation market and reformed its state capitalist practice from directly top-down department supervision to establishment of different market and incentive structures (Norris, 2016). China government strongly release the firm's autonomy by reforming the reporting line, corporatization, and listed in the stock market. On the other hand, the central government also exercised different external and internal controls of the firm through regulation of investment, price, market structure, competition and the management of SASAC to shape those SOEs to certain development direction. It strongly pushed those electricity SEOs forward. SGCC even became the first runner up in global 500 (Fortune, 2017).

However, the market reform just likes a Pandora's Box. Once SOEs have the autonomy in operation and its management, they act more like a proactive modern commercial player than a traditional state agency (Xu, 2017). The remarkable operational improvement in the partial market competition makes those large SEOs gradually get more and more power to resist state's influence. The things get even worse when the government does not have a consistent and coherent idea of regulating electricity industry. Even though China does not privatize those large electricity SEOs, China is gradually losing its ability to manipulate this strategic industry (Yeh & Lewis, 2004). It makes the further reform become much more difficult than before. Hence, Chinese premier Li Keqiang stated that: "The reform has already entered a crucial period and deep water zone" (People's Daily Online, 2014).
References


Xu, Yi-chong (2004). *Electricity Reform in China, India and Russia.* Northamton: Edward Elgar

