State capacity and leadership: Why did China take off?

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Abstract

For a large economy trying to achieve industrialization, it needs to develop indigenous technological capacities to make growth sustainable. Industrialization can be challenging to achieve because it might be difficult to develop technologies without changing culture and political institutions which are useful to maintain ruling. Rulers in ancient China choose institutions to prevent internal rebellions. Industrialization was a new goal for the Qing government in the 19th century, and previous institutions were not designed to handle this issue. China's high growth rates after 1978 resulted from internal reforms to increase efficiency and external openness to absorb foreign capital, knowledge, and technologies. China's state capacity and leadership supported developing technological capacities in the catch-up process.

Keywords: China, economic development, technological capacity, political economy, state capacity

JEL Classification Numbers: O14, O53, N95

1. Introduction

China was the world's largest economy for centuries. With the emergence of the Industrial Revolution in Britain, China's share of world GDP declined significantly. Beginning in the 19th century, China faced the challenge to achieve industrialization. Pioneering attempts in the Qing dynasty (1644-1911) and under Mao Zedong's leadership between 1949 to 1976 left much to be desired. However, China's growth rates after 1978 are high. In terms of GDP, China is the second largest economy in the world today. Relatedly, with the sum of import and export exceeding six trillion dollars, China was also the largest trading nation in 2021. The rerise of China is an interesting issue to policy makers and scholars around the world (Zhu, 2012; Wan, 2014; Wen, 2016). While high percentages of Chinese still have low levels of income today, China has taken off if the takeoff stage is a stage of economic growth with increased degrees of urbanization and technological breakthroughs.

Technical progress plays the essential role of sustained per capita output growth in the Solow model, and it is emphasized in endogenous growth models. Industrialization and sustained growth rely on the development of technology capacities (Lall, 1992; Zhou, 2018b). Technology capacity refers to abilities to adopt technologies and to develop new technologies. Lall (1992)

differentiates firm technological capacity from national technological capacity, and he emphasizes the interaction among incentives, capabilities, and institutions in affecting a country's performance. While the importance of technological capacity in economic development is recognized, developing technological capabilities is usually difficult for a developing country. With the presence of increasing returns in production, developing technologies needs large amounts of capital. A traditional society with low per capita output may have low saving rates and could not naturally generate large amounts of capital. In addition, it might be difficult to develop new technologies without changing culture and institutions. To mobilize capital and train workers to develop new technologies, culture and institutions may need to be changed. How to maintain political stability when culture and institutions used to support the current political regime are changing?

In this paper, we argue that the development of technological capacities makes China's rapid industrialization since 1978 possible and China's development of technological capacities is helped by strong state capacity and leadership. State capacity initially refers to tax capacity, but now is frequently used in a broad way.[1] For the development of technologies, both supply and demand factors matter. State capacity can affect both demand and supply of technologies, which are affected by factors such as market size and the supply of human and physical capital. For example, a government can increase market size of domestic firms through trade negotiations with other countries. A strong government can help maintain political stability and can increase the supply of technologies by mobilizing domestic capital (frequently through forced savings) and by concentrating resources on absorbing technologies directly. Formal institutions are incomplete, and leaders can play important roles in the development process. In developing countries such as China institutions are not as established as developed countries, leaders can have even more important roles to play.

The argument that a strong state helps developing technological capacities can be understood by comparing China with some other states (cross-sectional comparison). China's development of technological capabilities since 1978 can be compared with Latin American

[1] The usage of state capacity in this paper follows Besley and Persson (2010, p. 1) who state that "a good part of investing in state effectiveness comes from improving the state's ability to implement a range of policies, something which we refer to as state capacity" and "state capacity originally referred to the power of the state to raise revenue. Here we broaden it to capture the wider range of competencies that the state acquires in the development process, which includes the power to enforce contracts and support markets through regulation or otherwise."

countries, such as Argentina. Many Latin American countries have limited state capacities. Government, the Catholic Church, labor unions, and multinational firms share power. Even during the days when Argentina was one of the richest countries in the world in the 19th century, Argentina's wealth relied on the export of agricultural goods. Argentina has not developed strong technology capabilities to sustain growth (Zhou, 2018b).

If a strong state helps China to develop technological capabilities from the late 1970s, did China have a strong state historically? If so, why did not China industrialize earlier? To answer this question, we illustrate the reasons behind China's rapid industrialization since 1978 from a long run (time series) perspective. Rulers in ancient China used culture and political institutions such as the imperial examination system to prevent internal rebellions. Those institutions might function well for a traditional economy. Industrialization was a new task for the Qing government during the Self-Strengthening Movement in the 19th century, and institutions at that time were not designed to achieve this goal. For example, the imperial examination system was valuable in selecting officials with general skills. However, a modern society based on high levels of division of labor needs officials with specialized skills. The Self-Strengthening Movement was not successful because many Chinese did not think dramatic change was necessary and China did not have adequate human and physical capital to develop technological capabilities at that time. The Qing government tried to establish commercial laws and opened cities under foreign pressure. With its potentially disruptive effect on a subsistence economy in mind, the Qing government did not value international trade highly even though tariffs contributed to about one quarter of government revenue. With the example of Egypt in debt in mind, China hesitated to borrow foreign money (Wright, 1957). Reform measures such as the elimination of the imperial examination system contributed to the fall of Qing.

China's Communist Party (CCP) under Mao Zedong was better at concentrating resources on winning the civil war against the Nationalist Party (Gao, 2010, p. 354). That is, in a country with a long tradition of a strong state over society, the party winning the civil war is likely to have a high concentration of power in the state. Military competition is thus a mechanism for the persistence of strong state in China. With this tested strong state capacity, it was natural that industrialization effort under Mao Zedong was comprehensive. Society was mobilized in events such as building large irrigation projects. However, with a closed planned economy, China could

not develop technological capabilities enough under Mao because China lacked foreign knowledge, technologies, and capital as inputs to improve productivity fast enough.

For China's economic development started from the late 1970s, economic development is the top priority of leaders. China was eager to borrow foreign money and to participate in international trade (Chen, 2008). China volunteered to open coastal cities and introduced new laws to attract foreign capital in the 1980s. Compared with the industrialization effort under Mao, the reform since 1978 is more efficient because it uses domestic resources through market reforms and international resources through openness more efficiently. While countries such as Turkey in 1980 also tried to reform and open, a strong state helps China's industrialization by concentrating resources in developing technological capabilities. During China's industrialization, tax revenue as a percentage of GDP became higher.[2] With the development of higher state capacity, the government can handle more complex issues. A strong state helps to maintain political stability. Table 1 shows that China has increased spending on research and development over time. China's growth will be sustainable when it is based on continuous development of indigenous technological capabilities (Wei, Xie, and Zhang, 2017; Zhou, 2018b).

Table 1: China's annual expenditure on R&D in 100 million yuan

Year	2000	2005	2010	2015	2020
Expenditure	896.00	2449.97	7063.00	14169.88	24393.11

Data source: https://data.stats.gov.cn

While we argue that a strong state helped China's development of technological capabilities, a strong state can lead to various problems. Development of technological capacities can be a result of "technological innovation", which may not be entirely driven by the state, or could even be harmed by the presence of a strong state. China's catch up process is different from the industrialization process of Britain because technological uncertainties in the catch-up process are relatively smaller. With lower levels of technological uncertainties, the costs from the presence of a strong state could be smaller.

[2] In a traditional society, tax is mainly land tax. With the development of industries and the broadening of the tax base such as the introduction of income tax, tax revenue as a percent of GDP can increase with the process of industrialization (Besley and Persson, 2014).

China's industrialization has been studied by various scholars, such as Xu (2011), Huang (2012), Zhu (2012), Brandt, Ma, and Rawski (2014), and Wen (2016). Xu (2011) argues that informal institutions and competition among local governments may work to protect property rights in China. He does not elaborate historical roots of China's economic booms. Huang (2012) emphasizes the role of markets in China's growth. Zhu (2012) conducts a growth accounting on China's growth, and he shows that China's growth after 1978 relies mainly on productivity growth rather than factor accumulation. Our emphasis on developing technological capabilities is consistent with the role of productivity growth in Zhu (2012). This paper differs from Huang (2012) and Zhu (2012) by addressing China's industrialization from a long-run perspective. Brandt, Ma, and Rawski (2014) also take a historical perspective in analyzing China's economic growth. They suggest a unified approach highlighting the role of institutions rather than resource constraints in explaining China's lack of industrialization before 1949 and China's economic boom from the late 1970s. This paper complements theirs by emphasizing the role of technological capacities in industrialization. In his comprehensive and stimulating study, Wen (2016) has examined the Self-Strengthening Movement and industrialization under Mao Zedong and compared China's industrialization experience with Britain's industrialization. He emphasizes the importance of large-scale production in the process of industrialization. One significant difference between his research and this one is that he focuses on economic factors while this one complements his research by also addressing China's industrialization from the perspectives of culture and institutions.

The plan of the paper is as follows. Section 2 illustrates institutions used by rulers in ancient China to maintain political stability. Section 3 analyzes China's pioneering effort of industrialization under the Self-Strengthening Movement, showing that it could be difficult to separate developing technological capabilities from cultural and institutional changes. Section 4 illustrates China's industrialization effort under Mao Zedong. Section 5 addresses China's growth after 1978 and this section is the main component of this paper. First, internal reforms are discussed. Second, the role of openness to the foreign world is illustrated. Third, institutions and political factors such as Deng Xiaoping's leadership are illustrated. Reform and openness help China's effort to develop technological capabilities. Section 6 discusses implications and the future of China's economic boom. Section 7 concludes.

2. Institutions to maintain political stability in ancient China

China's economic performance is affected by the presence of a strong state over society, which has a historical root. Understanding institutions in ancient China will be useful to understand China's economic growth after 1978 (Brandt, Ma, and Rawski, 2014).

Qin Shihuang unified China in 221 BC (Zhou, 2021) and he tried to unify measure, language, and behavioral standard. Rulers in ancient China employed culture and institutions to reduce rebellions from government officials and from peasants. First, China adopted the county system nationwide in the Qin dynasty (221 BC-207 BC) under which government officials were appointed by the central government (Zhou, 2012). Second, the adoption of the imperial examination system in the Sui dynasty increased the power of the central government when the central government centralized the power to select officials. This system cultivated the coalition between peasants and the government (Deng, 1999). It was highly competitive, and no family could keep gaining government positions through exams for several successive generations.[3] Thus high-rank officials were continuously reshuffled and social mobilities were high. Because there was no stable noble class to challenge rulers in China, the Ming dynasty (1368-1644) and the Qing dynasty could maintain rule for hundreds of years. Third, rulers also used the division of authority among government officials to reduce rebellions. This means the separation of military, financial, and administrative authorities among officials in the central government and local governments. Also, each type of authority can be divided among individuals or agencies (Zhou, 2018a).

Rulers also employed culture to maintain rule. Legalism was the national philosophy in the Qin dynasty. The main objective of this school was to maximize agricultural output and to concentrate resources so that the ruler can win wars in the Warring States period. China adopted Confucianism as the national philosophy in the Western Han dynasty (202 BC- 8). Confucianism discourages military spending and expenses in building palaces because those will increase tax rates in a traditional society. To reduce the possibility of peasant rebellions, tax rates in ancient China such as in the Ming dynasty were low (Huang, 1974, chap. 3). Emperor Kangxi in the Qing dynasty promised never to increase the tax rate (Brandt, Ma, and Rawski, 2014). Official tax rates in ancient China were low if compared with Europe (Rosenthal and Wong, 2011, p. 184; Brandt, Ma, and Rawski, 2014; Ma and Rubin, 2019). Deng (1999, chap. 3) states that China's tax rate

[3] The practice of sharing property among all sons in ancient China decreased the possibility of the concentration of land ownership and thus the possibility of relying on land property as an independent source of political power.

was around 5% to 10% of national output (see Table 2 for land tax rates in various periods in ancient China) while tax rates in Britain in the 18th century was higher than 10%.[4] O' Brien (1988, p. 15) shows that the tax rate in Britain in 1780 was 23%. Low tax rates are consistent with Confucianism philosophy which believes that rulers should treat citizens in a benevolent way.[5] Commercial activities were not encouraged in ancient China by the government because this may distract resources from the highly valued agricultural sector.

Table 2: Land tax rates in ancient China

Period	Eastern Han	Eastern Jin	Northern Dynasty	Tang
Rate (%)	1.4-2.1	0.7-1.0	0.9-1.3	2.1-3.1

Data source: Deng (1999, p. 162).

Lin (1995), Deng (1999), Pomeranz (2000), Zhou (2009), and Brandt, Ma, and Rawski (2014) have discussed reasons for ancient China's lack of industrialization. Lack of industrialization does not mean institutions in ancient China were illogical because institutions in ancient China were not designed to achieve industrialization. Governments in ancient China had some economic policies, such as arbitrages of price differences among regions and government monopolies of salt and iron. Monopoly of salt and iron happened under Emperor Liu Che in the Western Han dynasty and the main purpose was to increase revenues when Liu Che engaged in wars with Xiongnu. Those measures also reduced the possibility of the rise of powerful merchants challenging the government. For ancient China before the Qing dynasty, industrialization had not even happened, and developing technological capabilities could not be a goal of the ruler. Using government policies to mobilize resources to achieve sustained technical progress was not conceivable in ancient China.

3. Pioneering industrialization effort in the Qing dynasty

[4] In China's history, the actual tax rate (including land tax, poll tax, and corvee) in a time period could be significantly higher than the tax rate claimed by the government. Also, tax rates fluctuated over time (Deng, 1999).

[5] Ma and Rubin (2019) argue that absolutist regimes may choose not to invest in administrative capacity to commit to a low level of tax extraction.

With a long history of success, China was slow in reforming political institutions to industrialize.[6] With the defeat from the Opium Wars, Chinese gradually recognized the importance of strong technological capacities in developing weapons to defend the country and making the country rich. China felt pains and urgencies to reform sharply after losing the first Sino-Japan war (Liu, 2003; Brandt, Ma, and Rawski, 2014).

Faced with a shock not experienced for centuries, China tried to industrialize during the Self-Strengthening Movement (Yangwu Movement) in the Qing dynasty which lasted from the 1860s to early 1890s. Under Prince Gong and Wen Xiang in the central government and capable regional officials such as Zeng Guofan, Zuo Zongtang, Li Hongzhang, and Zhang Zhidong, China established military-related industries such as ship-building and steel industries. For example, Zhang Zhidong established a steel company in Hubei province, which was the largest in Asia at that time. Some firms established at that time, such as Jiangnan Shipbuilding Factory, are still in operation today. Foreign books were translated into Chinese, new schools were established, and children were sent overseas to study (Wright, 1957).

Modernization is a complicated process with changes not only in production technologies, but also in cultural and political institutions. The leaders of the Movement were first interested in mastering the technologies to produce weapons, to make the country strong. As modern weapons are costly, leaders also recognized the importance of making the country rich (Xia, 1992). Initially officials were mainly interested in things directly related to developing technological capabilities such as sciences and technologies. "Ti" (essence) was separated from "yong" (function): developing China's technological capabilities without changing culture and institutions. Over time, there were arguments that sciences and technologies could not be separated from culture and institutions (Wright, 1957; Schwartz, 1964). One example of how culture affects economic activities is the following. Fear of destroying *fengshui*, construction of railways was delayed (Wright, 1957; Xia 1992). There was rethinking about Chinese culture and institutions. Confucianism was heavily criticized with charges such as discouraging independent thinking which was believed to be essential for the prosperity of scientific research. The eight-legged essays used in the imperial examination system were criticized for cultivating useless skills. The clash between traditional values and modernization needs can be seen from the debates on the reform of

[6] This is clear if compared with Japan with a long history of learning from other countries. When Japan faced foreign threats in the 19th century, the country reformed swiftly.

the legal system in late Qing which laid the foundation of China's modernization of the legal system (Wu, 2004, chap. 6).

Kwong (1984) argues that the central government was not under strong leadership at that time even though Empress Dowager Cixi should not be wholly blamed.[7] The Self-Strengthening Movement was conducted in a fragmentary way: it was engaged mainly by local officials in a limited set of industries (Liu, 2003). Those government supervised commercial enterprises (*guan du shan ban*) were initiated by local leaders, rather than by the central government. With traditional culture and ruling philosophy still playing important roles in people's minds, China was not ready for a comprehensive reconstruction at that time (Wright, 1957; Liu, 2003). The textile industry played an important role in Britain's industrialization. While Zuo Zongtang, a highly respected general and statesman, tried to establish a textile firm in Gansu, overall the textile industry was not well developed under the Self-Strengthening Movement (Xia, 1992). One reason for this lack of development in the textile industry was self-reliance of peasants, which reduced demand for textile goods. With China's defeat in the first Sino-Japan War, it is believed that the pioneering Self-Strengthening Movement was not very successful.[8]

There are various discussions on the experiences of the Self-Strengthening Movement. For example, Wen (2016) argues that it was not successful because it was implemented from top to bottom and most activities were concentrated in cities. Many problems encountered in the Self-Strengthening Movement are typical in economic development. First, capital is needed for the development of technological capacities. How to mobilize resources to achieve capital accumulation? Without a central bank, the Qing government did not have monetary policy tools. With treaties signed with foreign countries, China did not have tariff autonomy and tariff protection could not be used to develop domestic industries. Actually, China did not gain tariff autonomy until the 1930s. Chinese firms faced significant competition from foreign firms. Lack of tariff protection of domestic industries could be remedied by government subsidies. However, Rawski (1989) argues that tax rates in China were low. With significant military expenditure and payments to other countries, the Qing government could not afford to subsidize domestic industries. This explained the failure of large-scale industrialization in China and Japan's success.

[7] Kwong (1984) argues that collective leadership existed after the death of Emperor Xianfeng. This political system could only follow, rather than lead events.

[8] Some scholars think that the Self-Strengthening Movement was successful. For example, Xia (1992) thinks that it was successful in putting down internal rebellions and partially successful in handling external threats.

Rawski thinks that Japanese government had the revenues and determination to subsidize domestic industries. Second, how to develop indigenous technological capacities necessary for sustained growth? Zuo Zongtang recognized and emphasized developing indigenous technological capacity (Xia, 1992). However, without enough trained workers, importing foreign technologies was difficult. Actually, one of the technicians hired by Li Hongzhang was a medical doctor and the canon produced explored. Without needed human capital, the costs of locally built ships were much higher than prices in the international market, and the maintenance costs were also high (Chu and Liu, 1994). Finally, how to maintain political stability when capital mobilization and technology development require cultural and institutional changes and those institutions are important in supporting the current political regime? Before the Taiping Rebellion, local governments in Qing controlled about 10 percent to 30 percent of their revenues and the central government had a firm control on provincial budget (Liu, 2003, p. 213). Over time, the central government's financial authority deteriorated. With the imperial examination system eliminated and the division of power among local officials declined, the Qing government was in a crisis.[9] When Japan defeated Russia in 1905, many Chinese believed that Japan's political system of higher local autonomy was better than Russia's.[10] Thus, Qing government conducted political reform by giving local governments more autonomies (Liu, 2003). This was a movement away from the commandery-county system under which the central government had firm control over local governments. With institutions used to maintain rule discussed in Section 2 gone or weakened and new institutions not established, the Qing government collapsed.[11]

The central government's lack of control of local governments contributed to nearly four decades of political turmoil after the fall of Qing. The May-Fourth Movement in 1919 challenged Chinese culture further. To achieve industrialization, scholars at that time proposed importing Mr.

[9] The Qing government officially stopped using the imperial examination system to select government officials in 1905. This cut off an important connection between government and society and the government lost the support of more than one million intellectuals. To handle the Taiping Heaven Movement (1851-1864), the Qing government gave local officials such as Zeng Guofan more autonomy, and the division of power among officials eroded. With increased power accumulated from past, various provincial governments declared independence in 1911.

[10] Yan Fu, a scholar classified as a new Legalist, pioneered in introducing western knowledge into China in the 19th century. Yan did not think that Japan's victory was a result of local government autonomy (Schwartz, 1964).

[11] With the death of Empress Dowager Cixi, the new leader (father of the emperor) of the Qing government was not politically experienced. With the newly formed cabinet composing mainly members from Manchu and the royal family in May 1911, the government alienated citizens, especially Han Chinese. When the Qing government tried to nationalize railways, citizens in Sichuan province became upset and the new army supposed to suppress citizens revolted in Wuchang, Hubei. Yuan Shikai, a leader of the new army previously forced to retire, was asked to put down the rebellion. Yuan was not loyal to the Qing government anymore and the Qing government fell down.

Democracy and Mr. Science into China. This way of thinking is consistent with the emphasis here of developing technological capabilities and institutions to sustain growth.

Industrialization in modern China is a long and continuous process and many individuals contributed. Some scholars believe that the period between 1927-1937 was a golden growth period in China. Rawski (1989) argues that China's growth before 1937 was substantial, not lower than the 1914-1918 period. He states that war damages caused by warlords were limited because they could not even finance large-scale wars. During this period, warlords (as stable bandits in the language of Mancur Olson) tried to have a good relationship with the business community. During the Second Sino-Japanese War (1931-1945), industries spread to relatively remote regions in China. The Natural Resources Commission staffed by technocrats handled industrial development and the management of public enterprises. Personnel from this Commission played important roles in the industrialization of Taiwan province and China mainland after 1949.

4. Self-reliance: Industrialization under Mao Zedong

CCP took over power in China mainland in 1949. Through various campaigns such as land reform, CCP consolidated power. Private firms were turned into public enterprises and the role of markets in resource allocated diminished to insignificance. Mao Zedong was eager to achieve industrialization and he was idealistic in his beliefs on public ownership (Li, 1994). This eagerness could cause huge problems as shown in the Great Leap Forward which caused deaths of millions of people.[12]

Mr. Mao tried to change traditional cultural values in his promotion of industrialization. Legalism focuses on concentrating resources on strategic goals, and it might receive more attention from scholars and policy makers during times of crisis. Mr. Mao agreed with Qin Shihuang who practiced Legalism and Mao had campaigns criticizing Confucianism. This kind of attack on traditional culture frequently went to extreme.[13]

Mr. Mao did not experience strong opposition in maintaining political stability: it would be difficult for political dissents to survive physically under that kind of political environment. Mao read heavily on China's history and got inspirations from history on how to maintain control

[12] Some dams built became hazards after rain and had to be destroyed later (Zhang, 2006).

[13] For example, while the home of Confucius in Quhu, Shandong province was maintained for more than two thousand years during which many wars happened, it was heavily damaged during the Cultural Revolution when the tomb of Confucius was excavated.

(Li, 1994). For example, one measure Mr. Mao used to maintain his control of the army is to swap military leaders in the eight military districts in 1973.[14] This is like the three-year term limit of government officials in ancient China.

Was Mr. Mao successful in developing technological capabilities to achieve industrialization? To mobilize domestic capital, Mao's policies were consistent with thoughts in economics after World War II: the emphasis on saving and capital accumulation in the Lewis model. China tried to increase the saving rate through the so called "price scissor": high prices of manufactured goods and low prices of agricultural goods (Lin, Cai, and Li, 2003; Zhu, 2012). Also, wage rates in the urban sector were controlled. Consumption activities such as building residential houses were suppressed. The establishment of communes in rural areas helped the government to collect agricultural output and increased the number of days that peasants need to work even though real efforts of peasants might not increase.

By exporting mainly agricultural goods and raw materials, China imported machines from the Soviet Union and more than one hundred large projects were built in the 1950s. When China's relation with the Western world improved in the early 1970s, China imported sets of machines from Western countries (Chen, 2008). Partly due to the unprivileged relationship between China and industrialized nations, China emphasized self-reliance rather than opening to the foreign world under Mao. China praised the elimination of internal and external debts in this period and those potential policy tools for managing the economy were not employed. China's technologies in general were not at the world technology frontiers and China was not very successful in improving technological capabilities rapidly at that time (Zhu, 2012).

With a poor relationship with the Soviet Union, China employed huge amounts of resources in moving factories to regions not easily reachable by the Soviet Union. Cities such as Panzhihua were created during this process. While many projects became deserted after 1978, this process helped the spread of industries to inland areas. While growth rates were negative for various years, industrialization under Mr. Mao has some aspects of success, such as building a comprehensive industrial system. While total productivity growth in Mao's era was negative, Zhu (2012) shows that education achievement and labor participation rates increased significantly. In 1949, 80% of the total population was illiterate. By 1978, the illiteracy rate of young and middle-aged people had decreased to 18.5%. With the improvement of public health infrastructure in

[14] Source: Chronicle of Mao Zedong (vol. 6, p. 510) published by the Central Party Literature Press in 2013.

China, average life expectancy increased from 35 years in 1949 to 68 years in 1978. This kind of achievements made it possible for China to enjoy demographic bonus from 1978 to 2010 (Zhu, 2012). In addition, development of industrial clusters in China after 1978 is closely related with the Mao era.

5. Development of technological capabilities through reform and openness

Between 1978 to 1994, while Deng Xiaoping needed to share power with other leaders such as Chen Yun, Deng was the paramount leader (Vogel, 2011). Deng participated in China's debate with the Soviet Union and was active in the Great Leap Forward and Anti-Rightist Campaigns in the 1950s. With three rounds of fall and rise in his career, Deng came back to power in 1977 and he was impressed by the achievements of the Asia economies: Hong Kong, Singapore, South Korea, and Taiwan. With similar culture between China mainland and them, one sharp question is that if they could industrialize, what prevented China mainland from industrializing? Leaders from Hua Guofeng to Hu Yaobang were eager to develop the economy.[15] This desire was strong and so many contracts were signed with foreign countries in the early 1980s that later some projects had to be canceled or postponed and high costs resulted (Chen, 2008).

With Mao's experiments with a planned economy believed to lead to disasters and world peace would be possible for a while, China made reform and openness the national strategy of development.[16] Since late 1970s, China engaged in institutional reforms (such as the reorganization of agricultural production and the *hukou* system) which increased the role of markets and efficiency[17] and helped the mobilization of domestic capital. State capacity increased through measures such as the reform of fiscal and monetary institutions. China also opened door to the international community. There were also interactions between reform and openness. For example, to attract foreign investment, joint ventures between domestic firms and foreign firms were established. This stimulated the transformation of domestic firms as stock companies. Reform and openness helped China to improve technological capacities and enjoy fast growth

[15] Hu Yaobang was also eager to industrialize China after 1978. His push for a higher growth rate rather than focusing on economic efficiencies contributed to his conflict with Zhao Ziyang (Zhao, 2009).
[16] Chen Yun had a good reputation in managing the economy (Li, 1994). Chen did not think that a planned economy would not work by nature. Chen had doubts on attracting foreign capital and he never visited the Special Economic Zones (Zhao, 2009).
[17] Tombe and Zhu (2019) show that reductions in internal trade and migration costs account for about one quarter of aggregate labor productivity growth in China between 2000 and 2005.

since late 1970s. Table 3 shows that China's per capita GDP advantage over India increased over the last three decades and China's per capita GDP as a percentage of US counterpart increased.

Table 3: GDP per capita of China, India, and USA over years in current US dollars

Country/year	1960	1970	1980	1990	2000	2010	2020
China	89.52	113.16	194.80	317.88	959.37	4550.45	10434.8
India	82.19	112.43	266.58	367.56	443.31	1357.56	1927.7
USA	3007.12	5234.30	12574.79	23888.6	36334.91	48467.52	63593.4

Data source: World Bank Open Data, https://data.worldbank.org.

5.1. Reform

China's economic reform after 1978 started in the agricultural sector without a plan. Before that, China implemented collective farming in the 1950s. The household responsibility system started in Anhui province. While it worked well for an underdeveloped region like Anhui, would it also work for a relatively more developed region? Concerns against this system included arguments that income inequalities among peasants could increase (Li, 1994) and small households could not handle large irrigation projects and agricultural machines effectively. Even with some local oppositions, this practice was adopted gradually throughout the country (Zhao, 2009). Deng Xiaoping gave his support when the household responsibility system turned out to be successful. This system made it possible for peasants to leave rural areas and to work in coastal provinces. While the number of days peasants worked reduced, this system increased agricultural output and income of peasants increased when prices of agricultural goods also increased (Zhu, 2012). That is, shirking was a serious problem under collective farming in China. This huge increase in agricultural output was valuable. Without enough food supply, developing countries might have to use scarce foreign exchanges in importing agricultural goods which could have been used to import machines to develop technological capabilities.[18] Recent output increase in the agricultural sector in China relies on mechanization of production (Zhang, Yang, and Reardon, 2017). That is, technical progress is important for sustained growth even in the agricultural sector (Zhou, 2009).

[18] See Li (1994) and Zhang (2006) for China's import of agricultural goods in the early 1960s.

To increase the role of markets, prices need to be determined by market forces. In the 1980s, dual-track prices happened under which there was a plan price and a usually higher market price for the same good. Qian (2003) and Brandt, Ma, and Rawski (2014) have argued that this practice achieved both output stability and incentive provision. A strong state was necessary to operate both types of prices. Even with the presence of a strong state, price differences led to widespread corruption. The attempt to adjust prices in a large scale during the so called "price reform" led to citizens withdrawing bank deposits to purchase goods. The price reform was stopped, and bank interests were raised to handle the problem. With the percentage of prices determined by markets increased, the dual-track price was eventually eliminated (Zhao, 2009). Highlighting both getting rich together under public ownership and the fundamental role of markets in resource allocation, the Chinese government began to promote socialist market economy in the 1990s.

China's town-village enterprises (TVEs) originated from Mao's period. Arguing that TVEs competing with state-owned enterprises for factors of production and markets, producing low quality goods, and generating pollution, there were oppositions to the development of TVEs within the government and among scholars. The presence of TVEs increased competition faced by state-owned enterprises (Zhou, 2011a) and led to huge increase in the production of manufactured goods. Wen (2016) argues that China's development of TVEs is consistent with Britain's Industrial Revolution when TVEs helped the spread of industrialization to rural areas.

Internal mobility costs decreased with the reform of the *hukou* system, and labor market efficiency increased (Tombe and Zhu, 2019). Houses were privatized. The real estate sector was employed as a growth pole and state-owned banks provided huge amounts of mortgages to consumers. China privatized many state-owned firms, especially small and medium sized firms in the 1990s. Private firms received legal status, and they produce a significant percentage of output in China (Zhu, 2012). Millions of workers were laid off at that time (Brandt, Ma, and Rawski, 2014). To handle large number of unemployed workers, Chinese government under Zhu Rongji established social welfare system (Zhu, 2011). A strong state helped this transition process in reducing social unrests. However, pushing the provision of education, medical service, and caring of elder citizens to the market might have gone too far at that time and there was no differentiation between economic policies and social policies (Zheng, 2016).

5. 2. Openness to the foreign world

No closed economy in the world is rich. Sustained growth of a country relies on technical progress. With significant fixed costs in developing new technologies, it will be more efficient for countries to trade and learn from other countries. Being open is a necessary even though not a sufficient condition for a country to prosper. Even a large and innovative country like United States needs to import machines and technologies from other countries.

Under Deng Xiaoping, China became more pragmatic in international affairs and tried to build a good relationship with countries such as Singapore which was previously criticized as following the United States too closely. Different from Mao Zedong, Deng did not believe China should play the role of a leader in international affairs. Viewing the Soviet Union as the ultimate enemy, Deng tried to build a good relationship with the United States (Vogel, 2011).

Since the late 1970s, China has taken many measures to open. For example, when Hua Guofeng was still the leader, China established four export zones to attract foreign capital, including Shenzhen, which is next to Hong Kong. China joined the International Monetary Fund and the World Bank in 1980. In 1985, under the request of Deng Xiaoping, the World Bank organized an international conference (Bashan Boat Conference) to study China's long run development strategy. China also established laws related to foreign investment to attract foreign capital. Together with Jiang Zemin, Zhu Rongji promoted China's membership in the World Trade Organization (WTO). After arduous negotiations lasted more than one decade, China joined the WTO in 2001. Joining WTO eliminated the need for the annual renewal of China's most-favored-nation trading status with the United States. With lower uncertainties, foreign direct investment in China and China's volume of international trade increased significantly. Increased capital inflow and trade surplus led to significant increases in foreign reserves.

China's development of technological capabilities benefited from openness directly and indirectly. For direct effects, first, China sent students overseas to study. Those returned helped China's accumulation of human capital. Second, lack of capital is an important constraint in developing technological capabilities and capital inflow helped China's development.[19] For example, many firms in Guangdong province were established by entrepreneurs from nearby Hong Kong. Third, adoption of foreign technologies directly helped China's development of

[19] In year 2015, China used 135.577 billion dollars of FDI. For year 2014, it is estimated that FDI firms provide employment to about 10% of urban employment (Source: Statistics on FDI in China, 2016).

technological capabilities.[20] For the indirect effects, as China opens to the foreign world, China's institutions are influenced by foreign countries, such as the reforms on the tax system and the central bank in the 1990s and the establishment of National Natural Science Foundation, national laboratories, research universities, science and technology parks, and listing of firms in science and technologies in 2019.

5.3. State capacity and leadership

With the practice of developed countries in mind, Zhu Rongji implemented reforms of the tax system and the central bank which increased China's state capacity (Yang, 2004). After arduous negotiations with provinces such as Guangdong, the reform of the tax system in 1994 provided a uniform system of taxation in China. This reform increased the percentage of tax revenue going to the central government even though it contributed to the reliance on revenue from the real estate sector for local governments (Fang, Gu, Xiong, and Zhou, 2016). The reform of the central bank in 1998 reduced the control of provincial officials on money creation and helped the control of inflation. China has employed fiscal and monetary policies actively.

The philosophy of low tax rate is neither practiced nor praised in propaganda in China after 1978. Consistent with the development experiences of other countries (Besley and Persson, 2014), China's taxes as a percent of GDP increased during the industrialization process.[21] This increase in the percentage of income going to taxes became possible when the tax base was broadened with measures such as the introduction of income tax. Table 4 shows China's government revenue over time. Other things equal, a higher tax revenue as a percent of GDP increases the government's capacity to provide public goods, such as transportation infrastructures.

Table 4: Annual revenue of the Chinese government in 100 million yuan

Year	2000	2005	2010	2015	2020
Revenue	13395.23	31649.29	83101.51	152269.23	182913.88

Data source: https://data.stats.gov.cn

[20] For example, in year 2001, China signed 3,900 contracts and paid 4.395 billion dollars for importing technologies. In year 2013, China signed 12,448 contracts and paid 41.09 billion dollars for importing technologies (Source: Report on FDI in China 2016, p. 46, Ministry of Commerce of PRC).

[21] While China's government revenue as a percentage of GDP may be consistent with other countries, there is claim that China's effective tax rates are higher if government revenue from land sales and state-owned enterprises are included.

With reform and industrialization as a long process, it is important to maintain political stability. A strong organizational capacity helps implementation of policies and prevention of political turmoil. CCP provides organizational capacity, which was lacked in the Self-Strengthening Movement.[22] At that time, the central government controlled officials only up to the county level. Under the county level, clans and the gentry class had control of villages. The organization department of CCP is responsible for selecting officials, replacing the function of the imperial examination system.[23]

Since institutions are incomplete, leaders have significant impact on China's development. Deng Xiaoping maintained control over the army through personnel loyal to him, such as Yang Shangkun. Deng did not engage in micromanagement (Zhao, 2009), but he maintained significant influence on the appointments of key officials. Deng was willing to accept advice from others, such as the suggestion to reinstate China's College Admission Exam in 1977 and Lee Kuan Yew's suggestion on improving relations with countries in Southeast Asia. In the 1980s, Deng pushed the retirement of old officials and promotion of young leaders.[24] In the early 1990s, Mr. Deng conducted some key personnel arrangements. First, General Liu Huaqing, a subordinate of Deng in the Second Field Army during China's Civil War, became a standing member of the Politburo to control the military even though Liu was relatively old at that time. Second, Zhu Rongji was chosen to manage the economy. Mr. Deng won over oppositions from Chen Yun and Zhu became vice premier in 1991. In 1992, previously only a candidate member of the Central Committee, Zhu became a member of the Standing Committee of the Politburo.[25] Zhu's reforms on the tax system and the central bank system increased China's state capacity. Finally, Hu Jintao became a standing member of the Politburo as the next generation leader after Jiang Zemin. Those measures helped China's transition after Mr. Deng passed away.

[22] Higher level of the party can appoint and change lower level party leaders, ensuring centralization of power. Naughton (2016) argues that CCP has internal accountability, but CCP refuses external accountability.

[23] China has election at local level such as villages, but the national leader is not elected by citizens. China's political representation is internal through selection, rather than external through election.

[24] Many officials were reluctant to retire since some just came back to work after being pushed aside during the Cultural Revolution. A temporary institution, the Central Advisory Committee, was established for this purpose. Old officials became members of this institution and some of their privileges were kept. This institutional innovation made the transition smooth (Vogel, 2011).

[25] Source: http://history.people.com.cn/n/2014/1021/c372327-25876475.html

5.4. Why did China take off?

How to explain China's economic boom since late 1970s? Various scholars have proposed the importance of political hierarchy.[26] Compared with society, China state is powerful. This can be understood as follows. CCP has a higher concentration of power. Land reform in the 1950s in China mainland was more abrupt than land reforms in Japan, South Korea, and Taiwan province in the sense that many large landlords were physically eliminated. Land in China is officially owned by the state. Labor unions are not autonomous in China. Inheriting the county system, China's government organization is unitary, rather than federalism with division of power among administrative, legislative, and court and between federal and local governments. This helps to avoid power struggles within the government. Without intense competition from groups such as large landlords or labor unions, the Chinese government is strong and can implement policies.

As shown in the building of Boshan Steel and the development of the high-speed train, the Chinese government can concentrate resources on strategic projects. First, Boshan Steel imported Japanese technologies. Without a strong state, this project might not be undertaken: this project alone exhausted China's foreign reserves at that time and many small projects had to be postponed or cancelled. Shanghai Municipal Government quickly relocated residents in a piece of land more than 1,000 acres. The Ministry of Metallurgical Industry exerted enormous efforts in coordinating the building of this project, with the participation of design institutes of iron & steel factories from Chongqing, Wuhan, Anshan, Beijing, and Changsha. The number of construction workers exceeded 10,000 sometimes, and many of them came from northern China (Chen, 2008). The building of Boshan Steel started the process of modernization of technologies in China's steel and iron industry and other major steel and iron companies in China followed Boshan Steel. Second, the development of high-speed train relied on thousands of researchers across the country. Chinese government can coordinate parties and resources because China's high-speed railway industry is dominated by only a few large SOEs and research institutes. Liu, Lv, and Huang (2016) argue that easy collection of land and government finance also contributed to the development of high-speed rail.

[26] By comparing China with Russia, Blanchard and Shleifer (2001) have argued that political concentration is important in affecting incentives of local officials such as in preventing corruption. Naughton (2009) has argued that China's political hierarchy played a key role in the implementation of dual track reform. Naughton (2016) has emphasized the strengthening of China's political hierarchy as a coherent system. Wen (2016) believes that western democracy did not work in China, as demonstrated after the Xinhai Revolution which led to the fall of the Qing government.

Lo, Li, and Chan (2019) find that innovations such as mobile payments, WeChat, and high-speed rail in China have helped to increase the efficiency of the Chinese economy by reducing transaction costs. For systematic study on the impact of government on innovations, Guo, Guo, and Jiang (2016) have studied the effects of Innovation Fund for Small and Medium Technology-based Firms (Innofund) in China on the number of patents, sales from new products, and exports for Chinese manufacturing firms. They find that Innofund-backed firms generate considerably higher technological and commercialized innovation outputs compared with the same firms before winning the grant and their nonfunded counterparts. Mao et al. (2021) have argued that China's science and technology policies contribute to larger productivity growth in globally evolving high-tech sectors than in domestically catching-up and domestically mature sectors.

With China's huge size, while the political system is centralized, China allows regional experimentations and regional competition (Xu, 2011; Brandt, Ma, and Rawski, 2014; Wen, 2016). The adoption of the household responsibility system in the rural area is an example of regional experimentation. Regional officials were evaluated by GDP growth rates of their regions, and they had strong incentives to develop the economy (Li and Zhou, 2005). By providing public goods valuable for firms, local government autonomy can play important roles in economic development (Che and Qian, 1998). Local governments help to develop industrial clusters such as the potato cluster in Gansu Province through leveling land, establishing a potato trading association, and attracting processing firms (Zhang and Hu, 2014). Local governments can help building of specialized markets, which are important in the formation of industrial clusters. While local government officials may ensure input supplies, loans, and government services to firms, local governments also extract resources from TVEs. Overall, Qian and Xu (1993) and Qian, Roland, and Xu (2005) have shown that regional competition contributed to China's growth.

The development of Santana in Shanghai is an example that can be used to illustrate the role of local governments in China's development of technological capabilities. Santana is a joint venture between Shanghai Municipal Government and Volkswagen from German. Shanghai Municipal Government concentrated resources in ensuring the localization of supplies of parts which was essential for the survival of the company because foreign exchanges were in short supply at that time. According to Lu Ji-an, the General Manager of the company at that time, this automobile had 1968 parts. Shanghai Volkswagen produced 376 parts itself and had 1592 parts purchased from firms in Shanghai (around 50% of total parts) and other regions in China. This

concentration of resources on absorbing foreign technologies in strategic projects was possible under a strong state because some other industries such as the textile industry in Shanghai (which was believed to be a sunset industry without technological potentials) was sacrificed when they did not get much investment and many workers were laid off. The development of parts for Santana laid the foundation for the relative success of the Shanghai Automobile Group, which was the largest automobile firm in China.[27]

Without political centralization, China's large market size could not be exploited. Without regional competition, incentives of local governments will be smaller. The two aspects may not always work smoothly. Local governments have their own interests and countermeasures and may violate policies of the central government. Countermeasures by local governments can be viewed as experiments. When faced with varying outcomes of local experiments, the central government can choose the "better" one as the basis for the next round of policy revision (Chu, 2011).

Overall, with a strong state, China develops technological capabilities relatively successfully. First, political stability was maintained. Higher government expenditure to support prices of agricultural goods and reduced profits from state-owned enterprises facing competition from TVEs led to government deficits in the 1980s and inflation. During China's reform and openness, corruption could rise, and Chinese culture and ideology were affected by foreign culture and ideology. Inflation and corruption could pose challenges to political stability, as shown in the painful experiences in 1989. Second, China succeeds in mobilizing domestic capital through reform and foreign capital through openness. Third, state capacity helped developing technological capacity directly, as illustrated in previous examples.

Is China's economic development experience relevant to other developing countries? What kinds of lessons can be learned from China's industrialization? If China's growth relied on reform and openness, why did not some other countries adopt the same strategy to grow (Xu, 2011; Brandt, Ma, and Rawski, 2014)? If China's growth is helped by centralized political power, how to explain the performance of Soviet Union which also had centralized political power? Given the initial conditions, the performance of the Soviet Union economy initially was not so bad. There are some essential differences between China after 1978 and the Soviet Union. First, the Soviet

[27] This example of import substitution shows that the local content requirement may help economic development. The rent from the automobile industry was envied by other provinces and they also developed their automobile industries. Competition among local governments reduced firm sizes in the automobile sector. This is an example that competition among local governments may not always be healthy.

Union had a planned economy. Second, with embargo, the Soviet Union could not participate in international trade and investment as intensively as China. Leaders in the Soviet Union recognized the importance of developing technological capabilities in long run growth and invested large amounts of resources on science and technology. Without reform and openness to mobilize domestic and foreign resources efficiently, the Soviet Union economy could not develop technological capabilities fast enough and relied on extensive growth through expansion of inputs. It is not strange that the Soviet Union lost the Cold War.

While the distribution of political power between state and society in China helped developing technological capabilities, it is also a contributing factor behind many problems that the Chinese government is trying to handle. First, in terms of allocation of resources, government interventions can cause significant distortions in factor markets. Eliminating distortions such as financial market distortions can lead to significant output gains (Hsieh and Klenow, 2007; Song, Storesletten, and Zilibotti, 2011). Government interventions also lead to increasing levels of municipal debts. Second, while GDP growth received much attention from local officials, environmental protection was frequently ignored. Government officials might have limited incentives in investing in education that will show results in the long run. Finally, an unrestricted state can cause social problems. While millions of peasants moved to cities and helped China's economic growth, with the existence of urban-rural dualism and household registration (*hukou*) system: their children may not be able to go to public schools in the cities and they do not get enough medical coverage and retirement benefits (Tombe and Zhu, 2019). When local officials tried to generate growth through real estate development, they forced residents to move out their homes. Workers laid off might not be compensated enough.

6. Implications and the future of China's economic boom

With China's rapid industrialization, scholars have debated the existence of a China model of economic development (Huang, 2012; Brandt, Ma, and Rawski, 2014; Wan, 2014). From the perspective of political science, Bell (2015) argues that the China model has the following three features: democracy at the local level, experimentation at the intermediate level, and meritocracy at the top level. From the perspective of economics, Huang (2012) argues that a China model does not exist. China's development has two significant features: governmental intervention and attraction of foreign investment. Huang believes those two features can also be found in many

other economies. First, governmental intervention itself does not distinguish China from other countries. For example, Chang (2003) have illustrated policies used by countries such as Britain, German, Japan, and South Korea to achieve industrialization.[28] Second, attraction of foreign capital is not uncommon. Also, countries such as South Korea imported many technologies during the industrialization process. While the Washington Consensus may not have a favorable reputation (Rodrik, 2006), China's growth could be viewed as consistent with privatization, liberalization, and stabilization proposed by the Washington Consensus. First, compared with the economy under Mao Zedong, the private sector plays a much important role in China today. Second, China participates much more actively in international trade and investment. Third, China has also avoided high inflation rates in the past two decades. China model carries different meaning to different scholars. Even within China, regions such as the Pearl River Delta and Wenzhou differ in their development patterns (Wan, 2014). In terms of her unique culture and institutions, large size, and achieving industrialization starting from a planned economy, we believe a China model exists.

Will China's approach provide an alternative to developing countries other than western democracy? Bell (2015) illustrates the shortcomings of the democracy system, such as tyranny of majority, tyranny of minority, limited abilities and knowledge of voters. He also discusses the shortcomings of the meritocracy system, such as the ossification issue. There are pros and cons associated with both systems. Under election, one advantage is that citizens participate in choosing officials, which increases the legitimacy of a political system. However, elected officials may not be experienced (Bell, 2015). When top leader is not chosen through election, the political regime faces a legitimacy issue. However, officials under selection are experienced. In general, it will be difficult to argue which political system dominates.[29] For formal models on different mechanisms on decision-making, Maskin and Tirole (2004) have compared the performance of direct democracy, representative democracy, and judiciary.[30] In their model, politicians and bureaucrats have better information than citizens. Politicians need to be reelected, while bureaucrats do not.

[28] Policies used by Britain include ensuring markets through erecting tariffs and the prohibition of exporting raw materials. For a country in late development, governments or banks could play active roles in consolidating resources for economic development.

[29] Dahl (1989) does not think democracy is an end itself and he believes that democracy will be helpful for freedom and self-development. However, democracy could not determine its boundary.

[30] Even in a democratic country, government agencies differ in their style of decision making. Federal Reserve has independence, while Internal Revenue Service does not. Blinder (1997) argues that time horizon is one of the three factors determining whether politicians or technocrats should be chosen for decision-making.

The interests of politicians and bureaucrats may be incongruent with citizens. Under democracy, politicians may pander to citizens. However, incongruent bureaucrats can be screened out. In Alesina and Tabellini (2007), while a politician is interested in being reelected, a bureaucrat is interesting in building reputation. Alesina and Tabellini show that which regime is optimal depends on parameters such as the level of ability of an official. If theoretical research could not settle the debate, how about empirical evidence on economic performance of different types of political regimes? As shown in Przeworski and Limongi (1993), the relationship between political regimes and economic growth is not clear-cut.

It is claimed that China engaged in economic reform after 1978, but not political reform. For various reasons, people suspect the sustainability of the China model of economic development.[31] Will political reform be necessary for further economic reform?[32] Vogel (2011) states that Deng Xiaoping believes that political control of CCP is essential for economic reform and Deng does not think that separation of power will work in China. Relationship between economic reform and political reform is complicated, as shown in reforms in late Qing. Brown (1997, p. 137) also shows a complicated interaction between economic and political reforms in the Soviet Union. Feeling frustrated about the progress of economic reform, Gorbachev tried to push political reform. While political reform exposed officials with pressures to reform, political reform also radicalized opinions and made economic reform more difficult. Political reform could even harm the implementation of economic reform. When Gorbachev implemented contested election in the Soviet Union in 1989, he lost the organizational capacity provided by the Communist Party and it became more difficult for him to implement his policies.

China has various things to handle. Externally, international environment has changed, and China needs to deal with the ongoing conflict with the United States (Lau, 2019; Wan, 2021). Internally, one significant achievement in China's political system since China's reform was the institutionalization of two-term limit for the president. The party secretary which is also the president of the country may serve up to two terms, as shown in the examples of Jiang Zemin and Hu Jintao. However, the selection of next generation leaders has not been institutionalized, as

[31] Xu (2015) states the lack of independent judiciary system in China and proposes constitutional democracy as the only choice for China's future.

[32] It is claimed that economic reform and political reform are complementary because political reform will help to fight corruption. However, fighting corruption may not be a sufficient reason to engage in political reform because there is no monotonic relationship between democracy and corruption: democratic countries such as India do not lack corruption while nondemocratic countries such as Singapore control corruption well.

shown in the 19th session of National Congress of the Communist Party of China held in 2017. The term limit for the president was removed and no relatively young individuals entered the Politburo Standing Committee. This term limit reflected lessons learned from the era under Mao Zedong. After the Cultural Revolution, leaders in China such as Ye Jianying were reluctant to see the concentration of power on one individual (Vogel, 2011). In China's history, conflicts from ruler succession frequently led to political turmoil and social unrests. China may need an institutional innovation to handle this important issue of leadership succession.

7. Conclusion

In this paper, we have argued that sustained growth relies on the development of technological capabilities and China's economic boom since the late 1970s is a result of employing state and markets to mobilize domestic and international resources to develop technological capabilities. While the presence of a strong state frequently harms the development of markets (such as the financial market which is mainly monopolized by state banks), overall the development of markets and the presence of a strong state and leadership facilitated the development of technological capabilities.

It might be difficult to separate the development of technological capacities from cultural and institutional changes. Over the last two centuries, China has remodeled institutions to industrialize. Traditional Chinese institutions include the county system, imperial examination system, division of power among officials, and low tax rates. In modern China, while the county system is intact, some function of the imperial examination system is played by CCP, division of power among officials is replaced by professional division of labor, and the philosophy of keeping the tax rate as low as possible is not emphasized. After rounds of pathbreaking efforts over the last two centuries, China's industrialization effort became successful. China's superb performance after 1978 relies on internal reforms to increase efficiency and external openness to absorb foreign knowledge, capital, and technologies. Room for internal reforms to increase efficiencies such as measures to increase the degrees of labor and product markets integration is still large. China also needs to remain open to maintain growth in the future.

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