

Green Manufacturing and State-Owned Enterprise Effect on China's Economic Growth

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Abstract

This research was conducted to find out how the green manufacturing policy and state-owned enterprise (SOE) performance are affecting China's economic growth in the last 10 years. By using a qualitative approach based on secondary data, with the diamond theory of Michael Porter as an analytical tool, it can be said that the SOE in China has an important role in economic development in China, while trying to adapt and improve their green policies.

Keywords

China's green economy, China's SOE, Diamond Theory, State Capitalism Theory

1. Introduction

China is one of the countries that has succeeded in developing its economy through foreign direct investment (FDI) and multinational companies (Kim and Park 2015). China is now starting to target the United States in the country's GDP ranking. During the last 20 years, China emerged and became a country with very fast economic growth (Paul 2015). Thanks to their fast-economic growth, China emerged and became a nation that was recognized by others. According to the World Bank, China now has become second to the United States in terms of GDP (current US\$) in 2020. Despite being the second largest nation, China's economic growth has been slowing down since 2008, from 14.2% to 9.6%. China had an increase in 2010 of 10.6%, but started slowing down again in 2011 with 9.6%. Since then, their economic growth has been slowing down (IMF). Several factors, like the global financial crisis in 2008, convergence effect, and structural problems are the main issues for China's economic growth to slow down (World Bank Document). On the other hand, one of various factors that makes China's become one of the biggest nations is their state-owned enterprise.

SOE itself has existed since the 19th century. The Latin America and Caribbean (LAC) region is one of the regions that has used SOE for a long time. Public companies began to emerge due to lack of water supply. As in the state of Chile in 1884 which inaugurated the State Railway Company to unite trade between companies, offer low tariffs for the agricultural sector, and strengthen state control in the country (Guajardo 2007). In the late 19th century, the rise of SOE began to be seen from the increasing role of SOE in infrastructure financing, as happened in Peru (Marichal 2011). State interference in corporations grew stronger in the 1930s. SOEs are also beginning to adopt different and planned roles, such as investors and entrepreneurs (Millward 2005). In this second wave, SOE began to spread to Europe and also to other developing countries (Enrique 2016). China and several countries that used to be Soviet allies, began to adopt the SOE system. Most of the countries that started using SOE used partial disinvestments as

their characteristic. Until now, about 10% of the world's large companies (in terms of market capitalization and assets) are companies whose shares are partly held by the state (World Bank).

SOE's large-scale reforms in China have been ongoing since 1978. SOE is in charge of various sectors in China, such as infrastructure development, telecommunications, financial services, energy and raw materials. Although China is trying to start privatisation, China still maintains SOE because of its effectiveness in reforming the Chinese economy. SOE in China has 3 (three) phases. First, from 1978 to 1984, China focused on increasing manager autonomy. China does this in order to motivate SOEs in China to pursue profits and growth. Important innovations in this phase are the delegation of managerial autonomy from the government bureaucracy to corporate managers and the introduction of a dual-price system. The second phase of SOE in China started from 1985 to 1993.

In this phase the Chinese Government focused on separating corporate ownership and management by introducing a 'contract of responsibility' system. The Chinese government wants to turn SOE into a self-sufficient economic entity that is responsible for their own gains and losses. The Chinese government also wants to create an independent legal entity that shares certain obligations and rights. The policies implemented by the Chinese government make the company's management team pursue short-term interests rather than profitable long-term growth. This happened because the management team had the right to operate the SOE but not with clear property rights. The last phase started from 1993 until now. In this phase, the Chinese government is trying to shape SOE into a modern company. There is a new policy, namely 'holding on to the big and letting go of the small'. This changes the state's position towards shareholders into state and non-state ownership (Xiao et al. 2009)

1.1 Objectives

This research was conducted to find out how the green manufacturing policy and state-owned enterprise (SOE) performance are affecting China's economic growth in the last 10 years. By using a qualitative approach based on secondary data, with the diamond theory of Michael Porter as an analytical tool, it can be said that the SOE in China has an important role in economic development in China, while trying to adapt and improve their green policies.

2. Literature Review

As a country that can be said to have emerged as a new global economic power, China uses a state capitalism system which is still in the early stages of development. State capitalism in China is a complex system. There is a structure within the system called the 'network hierarchy'. This structure embeds a dense network that can generate bottom-up and top-down information flows (Gilson and Milhaupt 2011). The network is the result of the many paths that connect each component of the system. An overview of this structure can be seen from SASAC, which is the country's economic planner, sending orders to vertically integrated companies. In 2011, there were 61 Chinese SOEs that were included in the 500 largest companies in terms of annual revenue. The 61 SOEs earned a total revenue of around \$2.8 Trillion US Dollars. The total revenue was 37% of China's GDP that year. In 2012, the number of SOEs included in the list of the 500 largest companies grew to 73 companies and had a total revenue of \$3.8 Trillion. SOE's contribution to China's economic growth rose to 44% of the country's GDP. In 2019, SOE's top 500 earned a total revenue of \$7 Trillion. This is the largest total revenue compared to previous years. This is integrated with the GDP obtained by China (Global Fortune 500).

State capitalism itself have a lot of definition. According to Whitley (2000), state capitalism is a state-organized business system, while Schmidt (2002) state that 'state capitalism', epitomized by French *dirigisme d'état*, is a third European variety of capitalism alongside the coordinated-market economy (CME) and liberal-market economy (LME) ideal types. State capitalism is seen as a particular organizational and governance form in emerging and transition economies in the strategic management literature. One of the main characteristics in state capitalism is the use of State-Owned Enterprises (SOEs) and sovereign wealth funds (SWFs) on their economic system. For example, the number of SWFs increased from 50 to 92 between 2005 and 2017 and their assets management grew to over \$7.5 trillion (Preşin 2018). In SOEs case, it can generate approximately one tenth of world GDP and represent approx. 20% of global equity market (Bruton et al 2015).

Because of its fast growing economic, China's been pressured to put more attention to the environment. In answer to that, China's government come trying to solve it with developing more efficient and effective environmental policies for the manufacturing sector and strengthen their enforcement. The Chinese government also take an important step to strengthen their environmental policies and legislation. For example, the 11th, 12th, and 13th Five Year Plans have

progressively integrated more ambitious environmental policy objectives. It helped to raise the public awareness, focus national efforts, mobilize resources and achieve tangible environmental results (DRC-OECD 2017). Despite the effort that the Chinese Government takes to put more attention to the environment, China still has more challenges like the drop in their economic growth and industrial production. In 2015, the growth in industrial production has been falling from 7% to 5.5%. China's economic growth in 2015 slowing down from 7.4% to 7%. From there, it can be seen that the Chinese Government still in its way to adapt to focus on environmental policies.

Environmental itself has been a major international problem, especially for companies around the world. These days, business operations are aiming to reduce costs and develop quality products without damaging the environment (Atasu, 2008 & Kleindorfer 2008). Thus, sustainable manufacturing is important for companies to cope with environmental issues. Sustainability itself already emerged from a series of meetings and reports in the 1970s and 1980s and most of them were motivated by environmental incidents and disasters (I.D. Paul et al, 2014). According to David A. Dornfeld. Et.al (2013), sustainable manufacturing is a philosophy that cannot be considered independent of broader environmental and socioeconomic systems.

Through Diamond Theory, we can see whether the state capitalist system used by China is one of China's competitive advantages in its economic development. Porter's own Diamond theory is used to identify the competitive advantage factors of countries and other sectors (Barragan 2005). In this theory, there are 4 main factors that affect a country's competitiveness: "conditions", "demand conditions", "enterprise strategy, structure and competition", and "presence of related and supporting industries". There are two supporting factors of the four factors above, namely opportunity and government (Civi 2001).

3. Methods

This research uses a descriptive qualitative approach based on secondary data with the diamond theory tools from Michael Porter. To find how deep is SOE's role and the effect of green manufacturing on China's economic growth, we can find it per-year and make a conclusion based on that finding. The data collected is by using literature research and official website and review them to then analyse it with the theory.

3.1 Theoretical Framework



4. Results and Discussion

A. *State Capitalism*

Usually, capitalism is defined as a system that uses privatisation, liberalisation, and free market and it is considered the only system capable of generating sustained economic growth and efficiency. But, in recent years, there is one country that used a capitalist economic system to raise their economy and become a new emerging power. The system that China uses is different from the traditional view of a free market economy, it cannot be considered as a pure capitalist system. It's often referred to as state capitalist because of the difference in central role that plays in the economy. The traditional capitalist central role is private ownership, while state capitalist used state owned firms as their central role (Estrin, Liang, Shapiro & Carney 2019).

According to Musacchio & Lazzarini, state capitalism is a system that allows the government to have a direct influence on economic relationships in capitalist economies. It means that the government's role is not limited to performing fiscal, regulatory, social welfare, and security functions of the nation. State capitalism can become a system that presents mixed benefits and costs. One highly distinctive characteristic of state capitalism in China is the central role of about 100 large, state-owned enterprises (SOEs) controlled by organs of the national government in critical industries such as steel, telecom, and transportation.

Since the 1990s, China's already tried to reform SOEs to improve the competitiveness of Chinese firms. In the 2000s, China redefined the SOE reform as concentrating state control over key and pillar industries. It came out to be good because of the fast-economic growth result. In 2013, China tried to transform their SOEs into modern corporations by trying to reduce the control of the state in commercial SOEs while pushing SOEs in strategic industries. In 2015, China started to focus on allocating their state capital toward strategic industries and reducing direct intervention in SOE's day-to-day operations to improve their efficiency.

China's state capitalism cannot be separated from their SOE's. It is one of China's competitive advantages and what makes their economic growth so fast. It is true that China's economic growth is slowing down, but most of them are

external factors like The 2008 Financial Crisis and The Covid-19 Pandemic. From inside, China is trying to reform their policy on SOE's so that they can become more competitive.

B. *Diamond Theory*

Through Diamond Theory, we can see whether the state capitalist system used by China is one of China's competitive advantages in its economic development. Porter's own Diamond theory is used to identify the competitive advantage factors of countries and other sectors (Barragan 2005). In this theory, there are 4 main factors that affect a country's competitiveness; **“conditions”**, **“demand conditions”**, **“enterprise strategy, structure and competition”**, and **“presence of related and supporting industries”**. There are two supporting factors of the four factors above, namely **opportunity** and **government** (Civi 2001).

To see if SOE is the competitive advantage to China's economic growth, another SOE from another country that has the same political system is needed, such as Russia. We also compare the green manufacturing policies in each country. With that being said, we can move to how the research is conducted. To start, we only discussed the year that each country had an economic slowdown to see the effect and only focused on the 5 SOE each country in the past 10 years. Then we can try to analyse it with diamond theory to each country's SOE.

Using data from the IMF, we can see that in 2010 each country is having an economic slowdown. China can manage to stabilise the economy in 2012, while Russia in 2015. China's economic growth slowed down from 10.6% to 7.8%, while Russia from 4.5% to 4%. (Figure 1.)

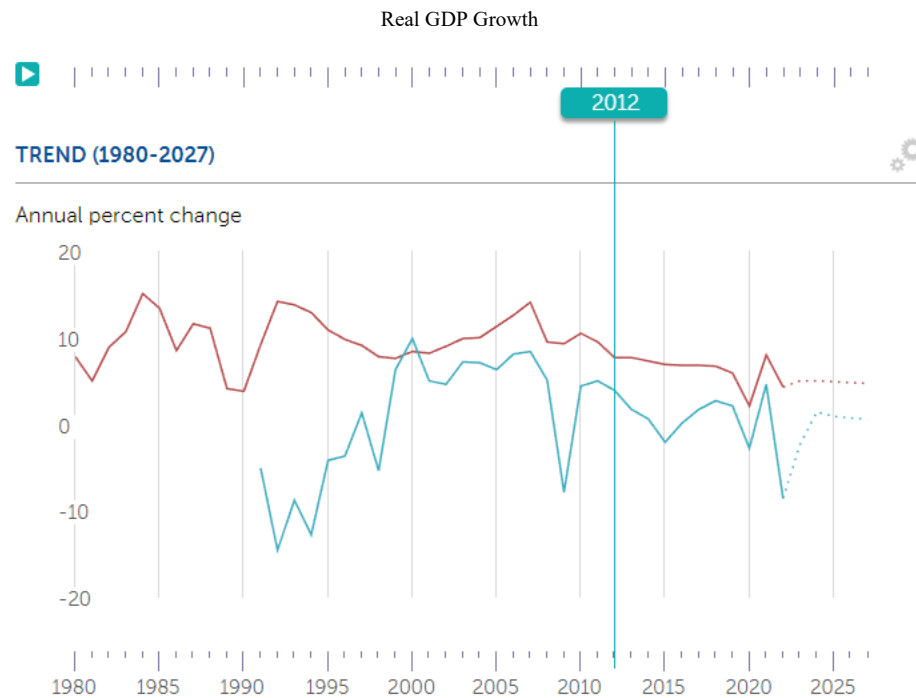


Figure 1. Real GDP growth in 2012

*China=Red, Russia=Blue

China and Russia's data on real GDP growth according to IMF from the year of 1980 to 2026 (Chart I). According to IMF, Gross domestic product or GDP is the most commonly used single measure of a country's overall economic activity. GDP represents the total value at constant prices of final goods and services produced within a country during a specified time period, such as one year (World Economic Outlook, 2022). Based on data from the IMF (Chart I), we can see that in 2010 each country is having an economic slowdown. China can manage to stabilise the economy in 2012, while Russia in 2015. China's economic growth slowed down from 10.6% to 7.8%, while Russia from 4.5% to 4%. (see Chart I)

Table 1. Comparable Data

Year	The SOE's			
	China		Russia	
2012	China Petrochemical Corp. (CPC)		OAO Gazprom	
	China National Petroleum Corp. (CNPC)		Sberbank	
	State Grid Corp. of China (Grid)		Rosneft Oil Company	
	Industrial and Commercial Bank of China (ICBC)		Aeroflot	
	China Mobile Communications Corp. (CMC)		Russian Agricultural Bank (RAB)	

a. Fortune Global 500, 2012,
b. SEC

There is a total of 6 variables in diamond theory to identify the competitive advantages of each country through their SOE's. List of each country SOE's to be compared (Table I).

- Conditions: Although each country shares almost the same political system, their focus is different. China on the other hand has already started focusing on their SOE since the 1990s, while Russia did not focus on SOE. This causes the difference in their capital and infrastructure. We can see the difference in the total revenue of their 5 SOE's. China SOE's has total revenue of \$1.3trillion, while Russia is \$270billion. (Fortune 500). This shows that China is more competitive than Russia in terms of conditions.
- Demand conditions: China is famous because of their cheap prices for their labour and products. But in 2012, CNPC only produced 173million tons of oil equivalent, while Rosneft produced 892billion barrels (37billion tons in today). This shows that Russia is more competitive than China in terms of demand conditions. (CNPC & Rosneft Annual Report).
- Strategy, structure, and competition: For CMC, there is China Telecom and for Aeroflot there is S7 Airlines. In 2012 Aeroflot had a total revenue of \$4billion, while S7 Airlines \$1billion. CMCC total revenue is \$87 billion, while \$44 billion. The competitiveness in each SOE can be seen in the difference in total revenue with their competitor. For this factor, Russia is more competitive than China because the difference of the total revenue in Russia is not that big. China policies also play a role. (Annual Report).
- Supporting industries: As an SOE, the government always manages how the company operates and sometimes gives support with more capital. In this case, China is more competitive than Russia because the focus is different. China itself already has more than 10 SOEs in the top 500 companies globally in 2012, while Russia only has 8. (Fortune 500).
- Opportunity: This supporting factor can either be good or bad to each country. Russia and economic growth have been struck. Russia with the oil price drop and sanctions, China with the inflation. It's hard to say who is more competitive in this factor. It depends on the situation and their policy in dealing with the issue.
- Government: A good policy can be benefitting for a country. China has a protection from competition policy, while Russia is still open to the competition. Each policy has its weaknesses. In china policy, the SOE's can't compete with other companies because most of the company is state-owned and also China itself is siding with their SOE's. But the income is massive to the country. It's the opposite for Russia policy. So, for economic growth, the China policy is the suitable one.

Each country also made their own effort to realize the sustainable development that was set by the U.N. In 2011, China made targets for 2015 in their 12th Five-Year Plan. There are 7 major targets and all of them are policies that try to maintain the environment. China successfully adjusted their pollution from 10% in 2010 to 7% in 2012. For Russia, there are Concepts for The Long-Term Socio-Economic Development of Russia until 2020". An inter-agency was established to work on climate change issues and sustainable development.

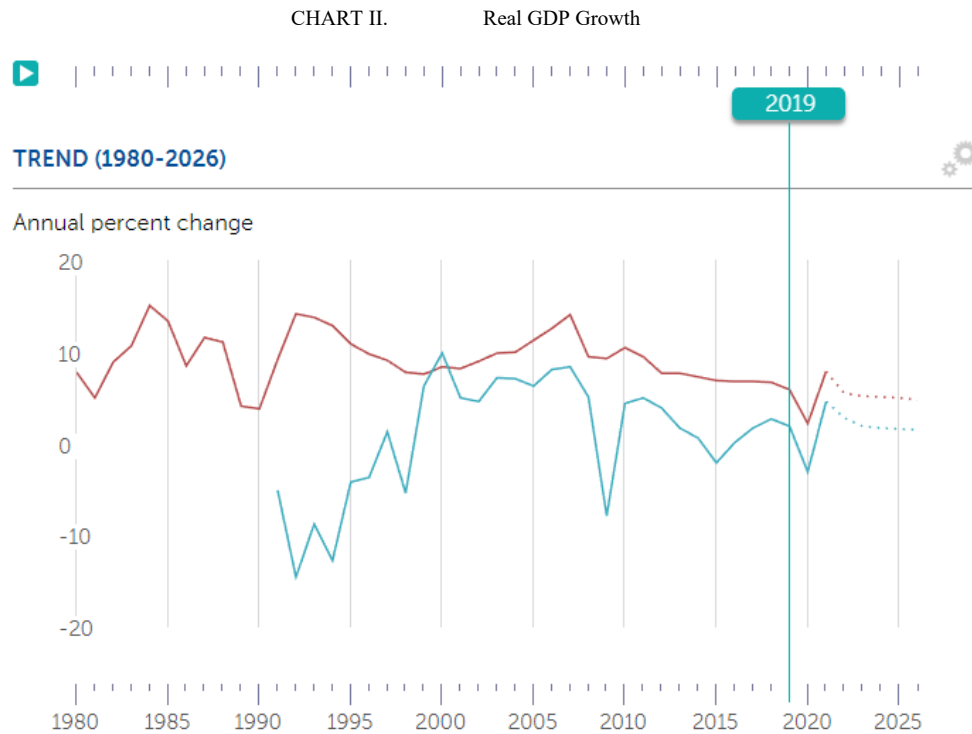


Figure 2. Real GDP growth in 2019.

*China=Red, Russia=Blue

Based on data from the IMF, we can see that in 2019 China's real GDP growth went down from 6.6% to 2.2% and Russia's from 2.2% to -27.

Table 2. Comparable Data

Year	The SOE's			
	State-Owned Enterprise		Russia	
2019	China Petrochemical Corp. (CPC)		OAO Gazprom	
	China National Petroleum Corp. (CNPC)		Sberbank	
	State Grid Corp. of China (Grid)		Rosneft Oil Company	
	Industrial and Commercial Bank of China. (ICBC)		Aeroflot	
	China Mobile Communications Corp. (CMC)		Russian Agricultural Bank (RAB)	

a. Fortune Global 500, 2019
b. SEC

List of each country SOEs to be compared (Table I):

- Conditions: We can see the competitiveness from capital, land or labor. This year, China SOE's has a total revenue of \$1trillion, while Russia is \$332billion. This shows that China is more competitive than Russia in terms of conditions.
- Demand conditions: Each country has oil companies that contribute mostly to the GDP. In 2019, CPC produced a total of 1.047 billion cubic feet of natural gas and 249 million barrels of crude oil, while Russia

managed to produce 501 billion cubic feet of natural gas. This shows that Russia is more competitive than China in terms of demand conditions.

- c. Strategy, structure, and competition: For CMCC, there are China telecom and China Unicom. For Aeroflot, it is still S7 Airlines. A campaign was added by SLG that allowed SOE shares to be bought by private capital. But, the 'double-hundred actions' is not successfully reducing state control over pilot SOE. Russia on the other hand, plans to sell stakes of their SOE while continuing to hold a significant degree of ownership. For that reason, Russia is more competitive in this factor than China.
- d. Supporting industries: China is still more competitive than Russia in this factor. They did not lack supporting industries to support their SOE and the government itself always babysits the SOE's.
- e. Opportunity: COVID-19 is the variable in this factor. Despite being the first one to get hit by the Pandemic, China also became the first country to recover. So, China is more competitive than Russia in this factor.
- f. Government: Despite being the first country that was affected by the Pandemic, China also became the first country to recover its economy. China proved to be more competitive than Russia in terms of policymaking.

This year, China is trying to achieve sustainable industrialization goals by making industrial parks. There were already 215 industrial parks at the national level and over 1000 industrial parks at the provincial level. Russia also tries to achieve the goals by focusing on energy efficiency to reduce emissions. China also has the Low-Carbon Development Strategy which provides for an increase in emissions up to the year 2050.

5. Conclusion

State capitalism that is used by China is inseparable from their SOEs. Their role in China's economic growth is very important and impactful to the extent that the Chinese government is willing to spend capital and policy to keep their SOEs running. The variables in diamond theory can determine whether a country is competitive or not. From the discussion sector, we saw that China excels Russia in several variables and it makes China more competitive than Russia.

This research intends to show that despite the unique way China uses its SOEs, they still manage to grow its economy beyond everyone's expectations. But, their policy for their SOEs is changing and trying to adapt to the world economy. Green manufacturing also became one of the reasons why China's economy is slowing down. Trying to adapt its policy to environmental issues as the basis of its industrial production. Hopefully, this research can become one of the guides for when scientists want to see the good and flaws in China's policy on their SOE.

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Biography

Ferusi Hibanavik is a student majoring in International Relations and is currently studying at Bina Nusantara University to pursue his bachelor's degree. While studying, he also participates in other activities, like becoming a member of an organization, a staff seminar, extracurricular member, and other activities. He also finished his internship at the Ministry of Law and Human Rights for 6 months. In his 8th semester, he has a GPA of 3.48 and currently working on his final paper to get his bachelor's degree.

Roseno Aji Affandi is a lecturer at Bina Nusantara University that focuses on International Relations major. Mr. Roseno has earned a bachelor's degree in Management Economics at the Islamic University of Indonesia, a Master's Degree in Management at Gajah Mada University, and a Doctorate in International Relations at Padjadjaran University. His fields are in issues regarding multinational corporations (MNCs), international political economy (IPE), MNC business strategy, and corporate social responsibility (CSR). In 2020, Mr. Roseno already conducted a number of researches with his colleagues, one of the examples is China's State Capitalism and Economic Development in Southeast Asia. He also participated in several community activities by attending some workshops and training.