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China's industrial policy and its implications for international business

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Abstract: While it is common for countries to use industrial policies to protect domestic industries, the way China uses industrial policy is significantly different. First, unlike the industrial policies of other countries, which mostly are guidelines, China's industrial policy is more like a corporate strategy that approves/disapproves projects and mobilises the country's resources to help its firms achieve dominance. Second, due to its size, the effects of China's industrial policy have a powerful global impact. Facing the rapid success of China's industrial policy, the international community needs to both understand it and effectively deal with it. We show how China has developed its industrial policy based on the Chinese Communist Party's governing philosophy, build our case using evidence from the electric vehicle battery, solar panel, and high-speed rail industries, compare China's policy with Japan's in the 1960s, discuss concerns from other countries and China's replies, and comment on the implications of China's policy for the world.

Keywords: industrial policy; China; electric vehicle battery; solar panel; high-speed rail; protectionism; national interest; Made in China 2025; trade barriers; new trade theory; strategic trade policy; trade war.

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1 Introduction

A major issue at the centre of the US-China trade conflict is the confrontational views on China's industrial policy between the USA and China. In a nut shell, China's industrial policy is that the Chinese government identifies a number of key industries to develop, sets up regulations to protect them, pours national resources into them (including capital, tax relief, state-aided technology acquisition, etc.), uses China's large domestic market to realise scale economies and low cost production, and eventually dominates the world market (Jiang and Li, 2010; Li and Alon, 2020; US-China Economic and Security Commission, 2017; Wen, 2019).

Historically, nationalistic development policies (such as those of Germany and Japan in the early 20th century) have led to not only trade wars, but also world wars (Wen, 2019). After the last world war, the international community has come to a consensus that maintaining "an acceptable degree of harmony among the international trade and monetary policies of different countries" is fundamental, and therefore has made "cooperation on international trade policies" "a well-established tradition" (Krugman et al., 2012, p.7).

The recent US-China trade conflict seems to be the beginning of the end of such cooperation and well-established tradition.

The world, especially the USA, is increasingly concerned about China's industrial policy and has explicitly asked China to stop it (Churchill and Wu, 2019; White House Office of Trade and Manufacturing Policy, 2018). This strong reaction from the USA has surprised China. China feels that, as a late comer in economic development, the policy is a necessary tool for it to catch up and develop, and therefore accuses the USA of trying to block China's development out of fear of losing its position as the largest economy in the world (China Economy Web, 2019).

"When elephants fight, it is the grass that suffers." Many countries are affected when the two largest economies lock horns. Not only do the USA and China need to find a solution to the conflict, but the international business community needs to understand China's industrial policy in order to formulate effective policies to deal with it.

Specifically, we need to study the following questions: What are the political and economic backgrounds of China's industrial policy? How was the policy implemented in industries deemed important by the government? What are the results of the implementation of the policy? Why are other countries, especially the USA, concerned about it?

While the above urgently calls International Business (IB) scholars to study the conflict, the IB research community has been slow to respond. As noted by several authors, international business research has lagged behind what has been happening in international business. Delios (2017) lamented that while the world of international business is vibrant and stimulating, IB managers are energetic and risk-taking, and media coverage of IB is eye-catching, scholars and journals of IB are anything. But Buckley et al., (2017) noted that IB research is rarely adopted by practitioners and called IB scholars to "play a more constructive and vital role by tackling expansive topics at the

business-societal interface" (p.1045), which is echoed by Witt (2019) and Poulis and Poulis (2018), who believed that the current challenge in globalisation requires a greater incorporation of political science into IB research and interdisciplinary efforts.

The gap between reality and research is especially pronounced regarding China (Buckley et al., 2017; Delios, 2017). As Delios (2017) observed, "in studies of IB in China, IB scholars have been zealously researching alliance formation and MNC investment into and out of China. More compelling issues such as the rapacious behaviour of the local partners of foreign firms, or the fundamental competitive inequities for foreign firms in China, as created intentionally by biased local policy makers, were hardly explored" (p.392). While agreeing to his observation, we want to add that the trade policies and practices of the Chinese government have caused many controversies globally, and yet, there is a dearth of IB research on this topic.

In this paper, we attempt to fill the gap between practice and research in international business by briefly reviewing the intellectual and historical evolution of the industrial policy, describing how the Chinese Communist Party (CCP) formulated the industrial policy using the development of several industries as cases, and showing why other countries such as the USA are concerned about the policy and how China reacts to such concern. In concluding remarks, we will offer our thoughts in the hope of facilitating further research within the international business community to deal with China's industrial policy more effectively.

2 Literature review (with historical events)

2.1 Nationalistic development strategy

China's industrial policy is heavily influenced by the nationalistic development view held by thinkers of Europe's industrialisation era, such as French political economist Jean-Baptiste Colbert and German economist Friedrich List (Clairmonte, 1959; Dettmer, 2020; Wen, 2019). Colbert argued for using tariffs and public works projects to develop the domestic economy in the 17th century (Chisholm, 1911). List (1909/1841) later more clearly articulated the nationalistic development strategy. Disagreeing with Adam Smith's view that individuals following the invisible hand of the market can create social goods, List (1909/1841, p.166) believed that only "the power of the State" is capable of fostering the welfare of all its citizens. He advocates imposing tariffs on imports and maintaining free trade of domestic goods, and only when a nation gains supremacy via protection can it enter free trade with other nations. His idea is called the "National System" or the National System of Innovation (Freeman, 1995). Interestingly, China calls its system the neo-national system of innovation.

His thought provided the foundation for National Socialism in Germany (more commonly known as Nazism) (Tribe, 2007). Japan also followed his model (Fallows, 1993), as can be seen from the international economic policy of Meiji Japan (1868–1912) (Linebarger et al., 1956). This nationalistic strategy helped to propel the two countries into conflict with other nations, leading to the Second World War.

2.2 The new trade theory and the strategic trade policy

Contemporary economic thought also provided theoretical foundations for China's industry. In the 1970s, a new trade theory emerged that argues that if economies of scale

are important for an industry, then the government of a country should support a domestic firm to obtain the economies of scale by implementing protective measures such as subsidies. The firm may then become the dominant player in the global market and earn an above-average return that can more than offset the subsidy, thereby benefiting the country (Brander and Spencer, 1985). The new trade theory espoused a strategic trade policy that favours government intervention to support domestic firms to gain advantage in the global market (Brander, 1986; Krugman et al., 2012).

However, Krugman and colleagues later argued that even if the new trade theory and the strategic trade policy based on it make logical sense, in reality it is impractical to implement such a policy because (1) it is impossible for a government to accurately calculate the amount of subsidies, (2) domestic politics will make the subsidies be used inefficiently and in the wrong industries or firms and (3) it will trigger retaliation and trade war from other countries. All these may outweigh the potential gains of strategic trade policies (Krugman, 1987). Furthermore, "strategic policies are beggar-thy-neighbour policies that increase our welfare at other countries' expense…Few economists would advocate that the USA be the initiator of such policies" (Krugman et al., 2012, p.277). In conclusion, free trade is still the best practical policy for all countries (Krugman, 1992, 1987). Interestingly, when Krugman et al., specifically warned the USA not to use the strategic trade policy, they failed to consider a major country that was implementing it in large scale with full speed: China.

2.3 The "new" new trade theory

In the early 2000s, when examining firm level trade activities, some trade economists made an interesting observation that either the classical or the new trade theories cannot explain: as globalisation increased, only a small number of highly efficient firms were able to export and they accounted for a large share of world trade (Bernard et al., 2007; Helpman et al., 2004; Melitz, 2003; Tanaka, 2010). They began to build a new theory on international trade that is based on firm-level data. The basic argument of this new theory is that it is important to recognise the heterogeneity of productivities in firms within the same industry. They argue that a key barrier to exporting is the large fixed investment necessary to develop such capabilities. As such, through competition or natural selection, only the firms that can generate high profits can cover such a high fixed cost and thus tend to dominate the world market in their industries. Interestingly, this argument resembles the new trade theory in emphasising the economy of scale, although the latter assumes homogeneity in productivity in an industry in a country. One of the policy implications of the "new" new trade theory is that over-protection of a domestic industry hinders competition and natural selection and thus hinders increases in productivity of the domestic firms and their chance of becoming exporters. As will be shown later, the rise of productivities and export in certain industries and firms in China seems to counter this policy implication.

2.4 Studies on China's industrial policy

After the CCP took power in 1949, it nationalised the ownership of all industrial firms, dismantled the market function of supply and demand, and delinked economic reward and efficiency. From the early 1950s to the late 1970s, China's economic policy followed the Soviet model of central planning to set output targets for all industrial materials and

products in its five-year plans. These measures took the incentive to produce from people, and the economy was inefficient and wasteful, causing over production of useless output and shortages of useful products (Dreyer, 2010; Hill and Hult, 2019; Kornai, 2019; Meisner, 1999).

After the death of Mao Zedong, the CCP changed its stance from state ownership and central planning to a "socialist market economy with Chinese characteristics" (Dreyer, 2010). The CCP began to allow private and foreign ownerships to exist and to develop markets for products and services. Its industrial policy evolved from administratively setting output goals to setting developmental priorities and allocating resources to achieve them, while leveraging market forces to improve efficiency and competitiveness of Chinese firms (see the next section for a more detailed discussion).

Across the past few decades, several studies have examined industrial policies and China's in particular (see Kenderdine (2017) for a detailed review). Initially, industrial policy goals tended to be industry-specific and largely ineffectual (Eun and Lee, 2002), focusing on rationalising production but hamstrung by incentive misalignments between local and central government. In 2003, Hu-Wen's administration began to steer the policies more towards long-term, cross-sectoral goals that were less prone to appropriation by special interest groups (Heilmann and Shih, 2013), bringing about the current state of affairs.

Most studies on China's industrial policy examine it from the traditional economic argument of "market failure," and their main research question is "does industrial policy work?" Unfortunately, the answer to that question is not conclusive, as both successes and failures are found (Dettmer, 2020). Further, we argue that market failures are not necessarily what Chinese industrial policy is attempting to address. According to the White House (2018), the focus for the Chinese government is on obtaining new technologies and intellectual properties from other countries in order to drive future economic growth.

Using China's electricity and telecom industries as examples, Brandt and Rawski (2019) documented the Chinese government's great effort in mobilising resources and its institutional shortcomings and concluded that the result was "a complex mosaic of success and failure in both technical and commercial dimensions" in the two industries (book summary). Ling and Naughton (2016) studied China's techno-industrial policy from the economic development framework. They found a shift in China's policy from market to intervention in 2003, and attributed it to two forces: politically, the interventionists gained the upper hand against market reformers, and economically, it is due to economic conditions and capabilities change. Rodrik (2006) argued that the reason that China achieved more success in exporting than other countries with similar levels of development was because of its government policies. Liu (2019) examined the role of state intervention on sectors with market imperfection, and found that the intervention on upstream sectors that are large tends to produce positive effects for the economy (Liu, 2019). Using shipbuilding as a case, Barwick et al. (2019) showed that China's policy support for its shipbuilding industry dramatically increased its capacity and world market share, at a cost of creating more distortions and waste.

Most of the above studies agree, either explicitly or implicitly, that without its industrial policy, China's economy would not have grown so fast and become so powerful (Dettmer, 2020; Liu, 2019; Rodrik, 2006). At the same time, most scholars believe the Chinese government cannot always identify the right industries to support and

its "heavy-handed intervention is becoming increasingly ineffective." The implicit conclusion is that "China should shift to more market-oriented policies" (Dettmer, 2020; World Bank, 2019) and follow the rules based on free trade (Li et al., 2019).

What the above studies missed is that correcting market failure may not be the main goal of the industrial policy of China's ruling party, and the "shift to more market-oriented policies," which may be good for China in developing a market economy, may not be in the best interest of the Chinese Communist Party.

3 China's industrial policy

3.1 The Chinese Communist Party Runs China as a Corporation

In order to understand China's industrial policy, a brief description of the Chinese Communist Party (CCP) is necessary. Founded in 1921, the CCP is what political scientists call a Leninist party with the following characteristics (Chou and Nathan, 1987): (1) adhering to Marxist communist ideology, (2) assuming absolute power to rule, (3) relying on exclusive membership, (4) being highly centralised and mandating unconditional obedience to the top leader and (5) having three key departments: the organisational department, the propaganda department and the united front work department. According to communist ideology, no one but the communist party knows the destination for humans and therefore must lead societies to reach it. This ideology also puts the party beyond laws, which are merely tools of the party to rule. According to the CCP, "everybody – the government, military, people, and academics, and everywhere – east, west, south, north and central, the party leads them all" (Chinese Communist Party, 2019). The relationship between the CCP and the Chinese government is like the board of directors and the management; the party controls the government and the government executes the party's wishes. In other words, the party and the state are one, which can be called the "party-state" (Guo et al., 2017; Li and Alon, 2020). The party-state controls all rights and resources in the economy: all lands are owned by the party-state, registering a business is not automatic but is permitted by the party-state (Chinese Government, 2017), financing by banks is tightly regulated by the party-state, and entering into an industry must be approved by the party-state (Jiang and Li, 2010). In sum, the way in which the party-state runs the Chinese economy closely resembles that of the way a management team runs a corporation, in which state-owned firms are treated like business units or subsidiaries of China, Inc., and private and foreign firms are treated like franchisees (Li and Farrell, 2020). The party-state sets long term plans, five years or even longer, for the corporation to achieve, and it also sets yearly targets in growth rate for it to meet (Chinese Government, 2019a). In China's stock market, the party-state directs institutional investors via "window guidance" (Shi, 2019) on buying or selling depending on whether it feels the market is too high or too low, and it plays in the market as the "national team" (Ying, 2019). Recently, the party-state calls its ability to mobilise the whole country's resources to achieve its goal the "New National System" (新型举国体制，*xinxing juguo tizhi*) (haiwainet.cn, 2019).

3.2 Industrial policies as corporate strategies

Under the philosophy of managing China as a corporation, "Managing the whole country is like playing a game of chess," and "adhering to the advantage of concentrating the country's resources to do big things," the CCP designs its industrial policy not merely as guidelines with incentives/disincentives in select industries for people and firms to follow, but rather, it covers nearly all industries and is mandatory to follow since the party-state controls all necessary resources for entering and operating business, such as land use and financing approvals (Jiang and Li, 2010; U.S. Chamber of Commerce, 2017).

China's industrial policy is formulated based on the party-state's assessment of the economies of China and the world. It identifies industries, products, and technologies to develop. For example, its "List of Currently Important Industries, Products and Technologies to Be Encouraged by the State (1)" published in 2000 (Chinese Government, 2000) covers 28 industries and 526 products. The measures of the party-state to implement the list include permission to enter, project evaluation and approval, land use approval, bank loan approval, and forced closing (for discouraged industries). Essentially, without "encouragement" by the party-state, no one can operate in an industry (Chinese Government, 2005; Jiang and Li, 2010).

3.3 General goals and means of China's industrial policy

The general goals of China's industrial policy are to identify industries, products and technologies to be developed or to be curbed. The ones to be developed tend to be the industries that are deemed by the party-state as important, futuristic and having high-technology contents. The ones to be curbed tend to be low-tech, polluting and sun-set industries (Jiang and Li, 2010).

The general means to develop key industries include direct subsidies to domestic firms to develop them, protectionism against foreign competition, and supporting domestic firms to compete in the global market. For example, in "Made in China 2025," the party-state identified ten strategic industries to gain world dominance: next generation information technology, high-end numerical control machinery and robotics, aerospace and aviation equipment, maritime engineering equipment and high-tech maritime vessel manufacturing, advanced rail equipment, energy-saving and new energy vehicles, electrical equipment, new materials, biomedicine and high-performance medical devices, and agricultural machinery and equipment. According to a study, the ten industries account for 40% of China's entire industrial value added manufacturing (U.S. Chamber of Commerce, 2017). Under such a strategy, China attracts foreign firms that innovate more, and Chinese firms go abroad for market and resource access (Blomkvist and Drogendijk, 2016; Li et al., 2018).

Below we compiled cases of how China developed its dominance in several industries.

4 Cases of China's industrial policy

4.1 China's electric vehicle (EV) battery industry

The Chinese government's strategy on the development of the EV battery industry was taking shape in the early 2010s. In 2013, Beijing implemented a subsidy program to encourage local and foreign auto makers to sell more EVs, making China the largest EV market in the world (International Energy Agency, 2019).

In the early stage of the EV battery industry development, the government's strategy was to support domestic firms with a clear emphasis on scale – only firms with a large capacity could operate. In its 2015 directive "Vehicle Power Battery Industry Regulations", the state specified that EV battery producers must meet the annual production of 200-megawatt hours threshold. In the same year, the government also published the directive of "Lithium Ion Battery Industry Regulations" to specify the types of material and technology allowed. The state also published a "Whitelist of EV Battery Firms" (as opposed to a "blacklist") designating state-supported EV battery producers. From 2015 to 2016, four such lists were published, totalling 57 firms, which were all domestic firms (Ren et al., 2019).

For EV makers to get state subsidies, they have to use batteries made by the whitelisted domestic firms. While auto makers can forego the subsidy and use batteries made by foreign firms, "they were warned by Chinese officials to use local batteries or face reprisals in a country where foreign companies face a constant struggle to stay on good terms with the authorities" (Moss, 2019).

To secure raw material supply and reduce costs for the domestic makers, the government also sponsored global acquisitions to lock up much of the raw materials for batteries, such as cobalt in the Democratic Republic of Congo (Moss, 2019).

Under the state policy, local battery producers made a great leap forward. From 2009 to 2018, China's installed EV batteries were more than doubled on a yearly basis to 57 gigawatt hours. By 2018, China accounted for about 60% of the world market in EV batteries. Contemporary Amperex Technology Ltd. (CATL), a little-known Chinese company started in 2011, has taken advantage of the policy to become the world's biggest maker of EV batteries. Speaking about China's protective policy and the rise of CATL, Jiang Lingfeng, a former CATL project manager, commented, "What the government did was a good thing for China." "Without its restrictions, I don't think CATL would ever have been successful" (Moss, 2019), a sentiment with which other analysts concur (Shao, 2019).

Now that Chinese firms are well established in the global market of EV batteries (all top ten suppliers in China are domestic and three of the top five global suppliers are Chinese), the state has changed its policy from protection and emphasising size to encouraging them to upgrade and compete globally. In 2019, the government abolished its whitelist, reduced subsidies, and encouraged firms to digitise and implement smart production technologies (Ren et al., 2019).

In preparation for the weaning of state subsidies, CATL has begun to set up subsidiaries or branch offices in foreign countries, and has signed partnership agreements with major auto makers in the world to lock them in. Several foreign auto makers who had complained about being forced to use CATL batteries now view it as an "important and valued partner" and "felt compelled to help make the company successful for the sake of their own reputations" (Moss, 2019; Shao, 2019).

4.2 China's solar panel industry

An emerging technology with importance for the future as well as an energy input good, solar power proved a tempting target for China, with its market share in photovoltaic panels erupting from a tiny fraction to well over 50 % of the global total within a decade (Earth Policy Institute, 2015). In 2010, the state established a powerful organisation called the "China Photovoltaic Industry Alliance" to promote and regulate the industry and to use its government-backing and resources to fight against any charges of unfair subsidies and dumping by other countries. In 2012, the Chinese state published its policy to promote the photovoltaic industry by subsidies, price regulation, favourable fiscal policies, support in land use and infrastructure construction (baike.baidu.com, 2017).

Given the trifecta of government support, lower labour costs relative to the USA and EU, and the ability to bypass environmental protections entirely, global dominance was relatively easy to achieve (Shubbak, 2019).

Specifically, subsidies took the form of tax breaks, low-interest loans and active recruitment programs for top talent (Shubbak, 2019). Through the Chinese Development Bank, government officials are able to finance pet projects, such as the solar industry, at rates which unsubsidised firms are unable to attain. "Free money is impossible to compete with," lamented one American solar executive (The Guardian, 2011). Subsidies funded over 70% of several solar projects, making rooftop solar a commonplace sight in China (Shubbak, 2019). Through the "Thousand Talents" program, the CCP was able to recruit over four thousand scientists from around the globe, and to use their knowledge and network connections to advance Chinese solar technology (Ball et al., 2017).

While polysilicon required for photovoltaic panel production typically costs $84,500 per ton in Western economies, Chinese companies can make the same amount for as little as $21,000 per ton through bypassing the recycling of silicon tetrachloride, a poisonous by-product of polysilicon production. In one case, a solar panel manufacturer dumped this waste on a field in a neighbouring village, poisoning residents and crops. Owing the state support of this facility, complaints from the villagers were ignored (Cha, 2008). Though China officially imposed regulations to stop these practices in 2011, it is not certain how well these are being enforced, if at all (Mulvaney, 2014).

When international demand faltered, the Chinese government simply propped up the industry through increasing already-high subsidies. Specifically, the USA and EU responded to China's dumping with a wave of tariffs from 2012–2014, as the various policies which China used to support their solar industry rendered the West unable to compete. China retaliated by increasing duties on imported polysilicon raw materials, further harming domestic production, which might have collapsed entirely if not for government stimulus (Shubbak, 2019). Predictably, this has resulted in an excess capacity problem. Curtailment rates, a euphemism for the rate of waste, have reached as high as 30% in the rural areas where solar is farmed due to the difficulty inherent in transferring this energy to more heavily populated areas (Reuters, 2017).

On May 31, 2018, the Chinese government abruptly reduced or even stopped some of the subsidies for the industry. The policy, widely known as the "531 Policy," caused huge shock waves in the industry (Liu, 2018; Solar, 2018). While surprised by the swiftness of its implementation, most Chinese firms had anticipated or even supported the policy, as they had greatly benefited from the subsidies, were dominant, and were ready to compete in the world market.

4.3 China's high-speed rail industry

Much like the cases of solar power and electric vehicle batteries, China was able to mobilise state policy in order to move from a position of inferiority to that of a world leader. In the case of high-speed rail, this was in terms of both the size of its high-speed rail network and the sophistication of its technology.

Beginning in 2004, the State Council dictated that China would embrace high speed rail travel and that it would use conventional tracks for this as opposed to maglev technologies (People's Daily, 2004). This proved problematic as domestically produced high-speed locomotives were considered to be too unreliable to function as regular passenger transportation (Tokyo Shimbun, 2011). To overcome this barrier, the Ministry of Railways opted to solicit bids from foreign manufacturers. The selected firms each had unique strengths. For example, Alstom of France had better control systems, Siemens and Bombardier, both of Germany, had better transmission technology, while a consortium led by Japanese firm Kawasaki offered power dispersion technology that would reduce energy waste (People's Daily, 2004).

China followed a multi-pronged strategy to usurp all of these benefits for its own rail companies and in turn use these advantages to dominate the world in the market for high--speed rail travel. First, China made technology transfer mandatory for these firms in order to grant them access to the Chinese market. The foreign companies had to form joint ventures with Chinese locals and adapt their technology to Chinese rail standards (Bombardier, 2010; Kawasaki, 2004; Kwok, 2009). Manufacturing of trains for the new project also went from complete knockdown kits to wholly domestic in a fairly short span of time (Shirouzu, 2010).

Second, these trains, known collectively as the Hexie, were later re-engineered using the acquired know-how to make an even faster series of trains, the Fuxing (Xinhua News Agency, 2017; You, 2017). While the Hexie type trains had design elements that were protected by foreign patents, the Fuxing type trains are designed and built in China and as such can be exported with no legal issues (Johnson, 2011; Xin, 2011).

Third, China subsidised the industry so heavily that its investment is still far from breaking even in some areas (Jiadi, 2016). China embraced high speed rail as a stimulus project during the Great Recession and poured billions into developing high speed rail routes (Bradsher, 2010; Forsythe, 2009; McDonald, 2010), damaging the domestic airline industry in the process (Li, 2011). In early 2011, China's high-speed rail network became the largest in the world (Barrow, 2018).

Finally, China permitted a merger of its two largest rail companies, CSR and China CNR, creating CRRC Corporation Limited. The goal of the merger, expressly stated, was to become more efficient and more competitive internationally (The Railway Gazette, 2014). The CRRC is a state-owned enterprise which controls over 90% of the Chinese market – in common parlance, a monopoly (Gazette, 2015).

In 2013, the Chinese government introduced its new global expansion strategy called the Belt and Road Initiative to further leverage and to fully utilise its high-speed rail capabilities.

With the fastest trains, the largest network, and the biggest company worldwide, the CRRC is making aggressive moves into foreign markets. They have opened manufacturing plants in Boston (Barrow, 2014), Malaysia (Barrow, 2015), Argentina (enelsubte.com, 2014), Chicago (Reuters, 2016) and Los Angeles (CRRC, 2014).

Furthermore, the Chinese state has been using its high-speed rail capacity as a "powerful means to project broader political influence" (Ker, 2017, p.3).

5 Policy and business discussions

5.1 A historical comparison with Japan's industrial policy

Japan's industrial policy of the 1950s and 1960s, often referred to as Japan, Inc. (Abegglen, 1970), had some similarities with the industrial policy currently embraced by the CCP, but as we intend to argue, there are also some key differences.

The first similarity is that both have successfully followed a strategy of shielding domestic industries from foreign competition while encouraging competition at home. For example, Kiyomiya Hire, Vice President of Fujitsu, which participated in a cooperative project with Hitachi, explained that "Frankly speaking, if we do not do this, we cannot confront our American competitors" (Anchordoguy, 1989, p.108).

Japan also ran entire industries as though they were one firm in terms of pooling R&D efforts. This type of cooperation regarding research and development matters was not only known to the Japanese government but encouraged by them through the Ministry of International Trade and Industry (MITI) in various instances. Famously, MITI orchestrated the Very Large Scale Integrated (VLSI) semiconductor alliance between Fujitsu, Hitachi, Mitsubishi Electric, NEC and Toshiba – firms which were, under ordinary circumstances, competitors. By founding a joint laboratory and funding the project with interest-free loans, Japan was able to catch up with the West in terms of developing silicon wafer substrates, improving computer-aided design technology, and other goals (Sakakibara, 1983). In another case, MITI required a steel firm to purchase a license to use the Basic Oxygen Furnace (BOF), a then-new steel making technology. They also required other steel firms to contribute towards the BOF license – and then distributed the technology to all the contributing firms. This kept the patent holder from playing firms off of one another in order to increase the licensing fee and levelled the playing field for Japanese steel by keeping their costs comparable to Western economies (Shibata and Takeuchi, 2006).

Another similarity is that both Japan and China erected non-tariff barriers and forced technology transfers (often illegally or unethically). For example, Texas Instruments applied for Japanese patents in 1960 and to establish a wholly owned subsidiary in 1964. Given the importance of TI's technology for both the fledgling semiconductor industry and the importance of computers as an economic input good, the Japanese declined to approve the patents until much later – 1977 for some and 1989 for others, in a process that typically only took 6 to 7 years. In the interim, Japanese firms actively stole TI's technology without facing repercussions domestically. TI, obviously displeased, threatened to sue any companies exporting this stolen technology on grounds of patent violations within the destination countries. To appease them, TI was eventually permitted to form a joint venture with Sony (Hayes, 1989; US Congressional Office of Technology Assessment, 1991).

A key difference between their industrial policies is that Japanese firms were allowed to rebuff suggestions by MITI, while in China, all firms are required to bend to the will of the Communist Party. This ability to dissent proved highly valuable to Japan's consumer electronics and automobile industries. For example, MITI would initially not

allow Sony to purchase transistors for its radios as this was seen as a waste of valuable foreign currency. Sony's transistor radios went on to be a massive sales success (Lynn, 1998). MITI also suggested on several occasions in the 1950s and 60s that the auto industry consolidate. In 1955, they suggested that one firm should export a single subcompact car, and in 1961, they suggested that the industry be consolidated into three firms, each specialising in one type of car. Backlash was so strong, however, that this action, widely seen in retrospect as a mistake, could be avoided (Saxonhouse, 1986). Had MITI's political power been on par with the CCP, Japan's success in transistor radios, automobiles, and other fields may have been less than what it was. In comparison, it is difficult to imagine that the CCP would allow government regulations or public opinion to stand in the way of policy implementation.

Another key difference is that unlike the Chinese government that has almost the whole country's resources at its disposal (Li and Alon, 2020), the Japanese government cannot mobilise the whole Japanese economy to implement its industrial policies, which are merely "administrative guidance" (Johnson, 1982). The Chinese government controls approximately 56% of GDP per annum through taxes, fees and SOEs (IMF, 2019; National Bureau of Statistics of China, 2016, 2018). In contrast, during the height of MITI's administrative guidance in the 1960s, Japanese government spending hovered around 10% (Tajika and Yui, 2002). The totalitarian nature of the Chinese economic system also means that the CCP enjoys greater control over sectors which are nominally private. According to the Heritage Foundation's Property Rights Index, Japan scores 84.1% (i.e., "free"), while China scores 49.9 ("repressed") (The Heritage Foundation, 2017).

A third difference is the size of their economies in the world. Given the relative size of China's economy, i.e., the largest based on purchasing power in the world (at $23 trillion accounting for 18% of the world's total output) (CIA, 2019) as well as its status as the "world's factory," it is much better positioned than postwar Japan (whose GDP accounted for 3 to 7% of the world's in the 1960s (World Bank, 2020)) to defend itself against tariffs and other barriers set in place by the international community. Evidence shows that the Chinese government uses access to China's markets as a bargaining chip to coerce foreign countries to go along with its policies and preferences (Dreyer, 2019).

Since Japan's industrial policy was successful, then why was it changed? While a comprehensive answer is complex and beyond the scope of this paper, we make the following observations. One factor was that MITI's ability to steer industrial policy declined. The financial success of Japanese firms meant less debt financing, making interest rate incentives less attractive. Regulatory factors, both domestically and internationally, resulted in the opening of financial markets and reductions in trade barriers. Further, increasing budget deficits meant government could not financially support industrial development as it once had (U.S. General Accounting Office, 1982).

At the same time as the government's power to implement "administrative guidance" was in decline, Japanese economists note that Japan's single-minded objective to recover from the war gave way to more divided public opinion. Under pressure from voters, Japan shifted attention to matters such as environmental pollution or the preservation of jobs in industries that were hard-hit by external shocks such as the oil crises (Kobayashi, 1993; Okuno-Fujiwara, 1991). Popular sentiment exerted influence in other ways, too. For example, public outrage hamstrung dumping and collusion efforts undertaken in the television industry; firms were forced to lower domestic prices on colour television sets

when it became widely known that Japanese were being overcharged and Americans undercharged for these sets (United States Congress Office of Technology Assessment, 1991).

Finally, we should note that there are two key downsides to this type of industrial policy both generally and as it applies to China in particular. First, there are obviously efficiency losses in preventing the domestic market from accessing superior foreign goods. In Japan, for example, government promotion of domestic supercomputers meant that universities and firms only had access to inferior machines through the entirety of the 1980s (US Congressional Office of Technology Assessment, 1991). Second, government support of industries can lead to excess production capacities, such as those being experienced now in Chinese cement and steel, which have been repurposed to service the so-called Belt and Road Initiative (The Economist, 2017).

See Table 1 for a summary of the upsides and downsides of industrial policies in general, and specific comparisons of how they have been embraced in China and Japan.

Table 1 Industrial policy pros, cons and examples

Industrial policy aspect	*Benefits*	*Drawbacks*	*Examples from China*	*Examples from Japan*
Domestic protectionism/ import substitution	Allows infant industries to learn by doing and become competitive internationally	Protects inefficient firms; worse outcomes for domestic consumers	Solar Power Industry	Automobiles
Technological appropriation / capacity reorganisation	Offers domestic industries an opportunity to "catch up" with leading economies in an expedient way	Creates international tensions; patent laws may be such that these "innovations" cannot be exported	High-speed rail	Steel Industry BOF (Basic Oxygen Furnace) Technology
Infant industry subsidies	Domestic firms can become internationally competitive	Distortions can create issues such as excess capacity; states can pick the wrong winners; diverts resources from other sectors; policy capture by special interest groups	White lists (e.g., Barwick et al., 2019)	MITI and the Automotive Industry
Administrative guidance	Allows for the coordination of efforts	The government can be incorrect in its recommendations	National Battery Power Innovation Centre (Kenderdine, 2017)	MITI and Sony's Transistor Radios

5.2 Implications of China's industrial policy for MNCs

MNCs face unique challenges as a result of this industrial policy. Firms doing business in China can expect to have their technologies co-opted, and possibly used against them in domestic markets, as in the case of the high-speed rail industry (Shirouzu et al., 2010). When competing with Chinese firms domestically, strategies such as cost leadership (Porter, 1980) might prove futile in industries where the Chinese government grants firms significant support. These firms might instead lobby their own governments to take steps that will "level the playing field" on an institutional level. For example, historically, Japanese industrial policy was shackled by import tariffs and regulations, eventually forcing their domestic car manufacturers to build plants in the USA (Gu, 2010).

5.3 Reactions to China's industrial policy

Most countries refrain from criticising the party-state of China for fear of losing access to its market (aljazeera.com, 2019; Lau, 2017), with the notable exception of the USA. We will briefly review some ways in which the rest of the world has reacted to China's industrial policy.

The US's sentiment on China's industrial policy has experienced significant changes. For a long time the United States' main concern had been about China's vast supply of low cost, unskilled workers and the products they made, such as textiles and garments (Krugman et al., 2012, p.233). China's plan to develop strategic industries with high technological contents did not catch much attention in the USA. Similarly, in Europe, Chinese exports were not a concern. In the case of textiles, for example, Chinese low and medium quality exports complemented high-quality textiles of European manufacture (Tao and Fu, 2007).

In 2015 when China's party-state published "Made In China 2025" strategic plan, the USA began to pay serious attention to China's industrial policy, as shown in a report on the plan by US Chamber of Commerce, a powerful group representing American business interests who rarely criticise any governments, especially the Chinese government (U.S. Chamber of Commerce, 2017). Calling the plan "global ambitions built on local protections," the Chamber believes it "constitutes a broader strategy to use state resource to alter and create comparative advantage…on a global scale" (p.6), expresses "mounting concerns of American business with plans like MIC 2025" (p.4), and warns that it will "hamper its [China's] complete integration into the global economy" (p.4). The chamber calls for monitoring and forecasting how MIC 2025 will "impact critical sectors of the global economy" and for "formulating appropriate policy responses" (p.6).

Penny Prizker, the US Secretary of Commerce in the Obama administration, was also alarmed: "Let me state the obvious: this unprecedented state-driven interference would distort the market and undermine the innovation ecosystem. The world has seen the effects of this type of targeted, government-led interference before…The result has been overcapacity in the global marketplace that has artificially reduced prices, cost jobs in both the US and around the world, and caused significant damage to those industries globally" (Nov 2, 2016), quoted from U.S. Chamber of Commerce (2017, pp.7–8).

A more direct response is from US Senator Marco Rubio, who calls on the USA to form its own industrial policy to counter China's: "it's a call to policymakers to remember that the national interest, not economic growth, is our central obligation…It's

a call to invest and compete in the emerging industries of the future, rather than forfeit them to China" (Rubio, 2019).

Similar sentiment is also expressed in the European Union, perhaps less loudly. The Mechanical Engineering Industry Association (VDMA), which represents more than 3200 member companies in the mechanical and systems engineering industry in Germany and Europe, recently openly criticised China's industrial policy, specifically state subsidy distortions and market entry barriers. It called Germany and the EU to re-examine their trade policies towards China accordingly (Dan, 2020).

This was not an isolated incident. In the European Commission's EU-China Strategic Outlook, China is noted as being a competitor who "fails to reciprocate market access and maintain a level playing field" (European Commission, 2019). European firms have faced similar degrees of forced technology transfer, and evidence exists that recent outward foreign direct investment from China into the EU can be directly linked to Made in China 2025 goals (Buysse and Essers, 2019).

In sum, their concern is that the CCP has made China into a system that is systematically and fundamentally different from the market economy (Li et al., 2019), and has unfairly made its players dominate key industries globally (Li and Farrell, 2020; Wen, 2019). Based on these concerns, the USA raised tariffs on goods from China as a means to pressure the party-state to change its industrial policy, among other goals (Churchill and Wu, 2019). This concern and reaction is not toward the Chinese people and the Chinese culture (Chiu, 2019), but is based on political and economic considerations. In other words, if another country practises a similar industrial policy, the USA, the European Union, or other countries will react the same.[1]

5.4 China's Response

The response from China on the USA's critique of its industrial policy has several dimensions. First, the party-state has toned it down. For example, the government has stopped talking about "Made In China 2025" publicly to avoid international criticism. However, observers believe Beijing is still quietly pushing forward MIC2025. In November 2019, China set up a $21 billion fund called the "National Manufacturing Transformation and Upgrading Fund," "indicating that US criticism on China's subsidy does not stop China's ambition to become world's leader in technology" (DWnews.com, 2019). As one reporter puts it, "[Premier] Li Keqiang may have gone quiet about MIC2025, but the policy is not dead. On the contrary, it may already be out of control" (Holland, 2019). Another example is Chinese government's recent policy, "The Development and Action Plan for Ultra-High-Definition Visual Industry (2019–2022)", which lays out a plan to transition from 4K to 8K technology in order to develop a 4 trillion yuan industry with 200 million uses of ultra-HD TV, and to create a group of globally competitive firms (Chinese Government, 2019b).

Second, the party-state has rolled out favourable policies and laws to pacify and attract foreign investors. In 2019 the Chinese government published its "Foreign Investment Laws" and a series of policies aimed at further lowering entry barriers and encouraging foreign investment to enter the following industries: transportation, infrastructure, culture, manufacturing, mining, and agriculture (Ribao, 2019). The concern by China's trading partners with such an approach is that the very success of the policy will be a source of risk for potential investors because the powerful government

can give all the green lights required to jumpstart a project, only to then easily kill it by a simple administrative order (Li and Alon, 2020).

Third, the party-state has sent a clear signal to reject the US criticism. For example, an official website of the CCP published an interview by its reporter of an official economist, entitled "The USA has no right to criticise China's industrial policy." In asking the economist to comment on US criticism, the reporter set the tone of the interview by stating that "China's industrial policy is in compliance with the international rules" and calling the US criticism "arrogant," "irresponsible," and "groundless." In his answer, the economist claimed that China has every right to uphold its industrial policy, the policy is fair, and the US's criticism is its effort to stop China from overtaking the USA as the world's industrial leader (China Economy Web, 2019).

5.5 Why is asking China to change difficult?

In addition to the fear of retaliation from the party-state of China (Li and Gaur, 2014), the evolution of domestic political economy makes it difficult for China to change its industrial policy.

Before the opening up in 1978 and during the party leader Mao's ultra-leftist rule (1949–1976), the party kept China closed and the people were poor as a result. The economic game was played as the party versus the people in which the party gained at the loss of the people. The people, who were increasingly worse off in the game, wanted to change. As such, after Mao died in 1976, the party's decision to open up was not difficult, even though some hardliners in the party were against it, because people did not support the party hardliners, as they wanted to improve their lot by opening up.

Now, the party has increasingly integrated with the people and firms in China much like a corporation, with the party as the board of the directors. The economic game, in turn, has become China Inc. (the party and its subjects) versus the rest of the world. Overall, the Chinese people have benefited from the industrial policy of the party-state (provided that China's trading partners accept China's industrial policy). This has made the US's attempt to punish the party-state for its unfair industrial policy difficult, because not only the party-state, but also the Chinese people will be hurt by the trade war. As such, when the party-state labels the US attempt as derailing China's progress, many Chinese agree with the party. This is one of the main reasons why asking China to change is difficult.

5.6 To play or not to play?

As US Chamber of Commerce puts it, China's state-led strategy is "to embrace the global economy as a means to expand the market share of indigenous companies globally" (U.S. Chamber of Commerce, 2017, p.4). We may use competitive sports as an analogy to further illustrate the issue: if one player uses steroids, what should other players do? Should they keep playing, knowing for sure that they will lose? Or should they also use steroids? If they do not want either, should they just throw in the towel?

The USA and the EU are facing such a dilemma now. They do not want to play the game with China as-is since they will lose, and they cannot resort to steroid use given their open and democratic systems with a strong rule of law and checks and balances. As such, if China does not make structural changes, some of the countries, such as the USA,

may have to gradually decouple from China. Even the hint of this action immediately draws criticism from China – and from other countries for that matter – that the US resorts to protectionism and isolationism.

Furthermore, there is a danger that other large countries will mimic China's protective policies. Recently, lawmakers in the USA are calling for the adoption of similar policies (Rubio, 2019), and India erected barriers of entry for its digital market, "taking cues from China's protectionism" (Purnell, 2019).

If large economies in the world become more protectionist, China may also be further detached from the world's economy. In this sense, the CCP's refusal to make structural changes risks isolating China in the long run (Li, 2019). If the majority of Chinese realise that the party's industrial policy may drive trading partners away and eventually hurt them, they may push the party-state to make structural changes. In other words, if China's trading partners begin to resist China's industrial policy, the gains for China from the policy may be outweighed by the losses (Li and Alon, 2020).

In this sense, relying on the USA alone to ask the party-state of China to make changes is not enough; the EU should also do the same. The above scenario may only be possible if the international business community collectively ask the party-state to change. From the game theoretical perspective, Platteau (1994) laid out the conditions under which public ordering in a free market society can be maintained. An important condition is the existence of what he called "general morality", in which "honest people are willing to sanction breaches of honesty conventions even when their own interests have not been harmed by the observed breach" (Platteau, 1994, p.765). Expanding his argument, we argue that, in order to maintain free and fair trade in the global market, member countries need to be willing to oppose any country's protectionist policies even when they face retaliation from the violator. In other words, maintaining free and fair trade needs to be a collective effort of the world.

6 The trade theories revisited

6.1 The case for the new trade theory

Evidence from China suggests that strategic trade policies based on the new trade theory exist. If Made in China 2025 is realised, then China will dominate the ten industries that account for roughly 40% of industrial value added manufacturing in the world.

Is Krugman Correct?

Unfortunately, what happened failed to support Krugman's argument that the complications caused by a strategic trade policy would outweigh its potential gains and therefore no country should use one. The domestic politics foreseen by Krugman, such as how much to subsidise, whom to take the money from, and whom to give the money to, do not seem to apply to the CCP, who runs China, Inc. without dissent. Since the 1980s China has successfully practised an industrial policy that is in essence a strategic trade policy similar to what Krugman described and has become dominant in a number of industries worldwide. Perhaps the only point where Krugman was right is that the success of China eventually triggered a trade war, which, according to experts, came too late (Burnett, 2019).

6.2 The hit-and-miss of the "new" new trade theory

The "new" new trade theorists advised governments not to protect their domestic industries and firms because doing so, they believe, would stifle competition and lower productivity, making them unable to export. However, what happened in the key industries and leading firms in these industries in China seems to have defied their prediction and advice: With strong government interference and support, the Chinese firms in the key industries we reviewed here became the world's dominant players. On the other hand, the fact that the Chinese government picked candidates to make them winners can be viewed as recognising the existence of heterogeneity in industries, with a twist: the new trade theorists believe the heterogeneity in an industry is the result of free competition, whereas the Chinese government is actively creating it.

7 Concluding remarks

This study is an effort to answer the call by the aforementioned scholars (Buckley et al., 2017; Delios, 2017; Poulis and Poulis, 2018; Witt, 2019) to bridge the gap between reality and research in IB. We compiled evidence from several industries deemed strategically important by the Chinese government, and examined the policy measures taken by the Chinese government to help domestic firms achieve dominance in these industries. The case we built based on China shows that such practices have global consequences and the IB research community should study them. As China is poised to become the world's largest economy and the Chinese government commands more than half its GDP, the IB research community needs to develop new theoretical frameworks to understand this new situation in world trade and global competition. As Poulis and Poulis (2018) pointed out, studies of localised or single-country phenomena (e.g., our study of China) may paradoxically help IB move forward.

From the policy perspective for the international community, future research should examine how other countries could effectively ask China's party-state to change. For instance, the USA has successfully pressured China in the past using Section 301 actions (Chaloupka and Laixuthai, 1996), and trading partners in the WTO have been successful in asking China to limit their interventions on behalf of the solar and automotive industries (Aggarwal and Aggarwal, 2016). The challenge of dealing with China's industrial policy and asking China to change not only provides opportunities for academics to apply policy and analytical tools such as game theory to tackle it, but also requires policymakers to work closely with academics to develop practical and effective responses and policies.

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Note

1 China's industrial policy also serves the CCP's geopolitical goals beyond mere economic objectives. China's dictatorship, which prioritises political considerations over economic incentives, has caused concern to the USA and other countries (McBride and Chatzky, 2019). Is 'Made in China 2025' a Threat to Global Trade? *Council on Foreign Relations*, May 13 (Available online at: https://www.cfr.org/backgrounder/made-china-2025-threat-global-trade): accessed on May 19, 2020.). We thank an anonymous reviewer for pointing this out.