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The Political Economy of the Automobile Industry Development in  
China

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A Thesis

Presented to

the Faculty of Social Sciences

University of Denver

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In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

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by

Muyuan Niu

August 2017

Advisor: Christine Ngoc Ngo

Author: Muyuan Niu

Title: The Political Economy of the Automobile Industry Development in China

Advisor: Christine Ngoc Ngo

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## **ABSTRACT**

This paper analyses the political economy of developing the modern Chinese automobile industry. By using qualitative research method, especially case study, and developmental rent management analysis framework, the author analyzed the development in three different time periods since the Chinese economic reform in 1978. Case studies of learning period, developing period and new Chinese owned enterprises after joining WTO presented different policies and rent management strategies arranged by the state to industrialize and develop the modern Chinese automobile industry. Although there are failures involved in the arrangement, China finally industrialized and developed its modern automobile industry and became the world's largest automobile manufacturing country since 2009. This thesis provided evidences that developing countries cannot easily develop their own industry successfully without the well-designed interventions from the state.

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## **CHAPTER ONE: INTRODUCTION**

China is considered the most successful example of economic development, growth, and human development, having made great strides over the last four decades. China has had a transition economy since 1978, when the Reform and Opening Up policy transformed a heavily planned economy to a mostly market one. Unlike Russia's painful economic transition after the collapse of the Soviet Union, the Chinese transition maintained a high growth rate and improved living standards (Yao, 2014). In 1978 China had a relatively low GDP of US\$149.541 billion, which grew to US\$11.008 trillion in 2015 (World Bank, 2017a). China's GDP annual growth rate averaged nearly 10% until 2016; its highest growth rate was 15.139% (in 1984) and its lowest rate was 3.907% (in 1990) (World Bank, 2017b). Since 2010 China has ranked as the world's second-largest economy.

Prior to 1978, China's government mainly focused on its state-owned enterprises (SOEs), especially those in heavy industries for national defense. Most of these SOEs were established in the 1950s with help from the Soviet Union. During the Cultural Revolution (1966 – 1976), however, China's industries fell far behind all other advanced economies. In the earlier period of Reform and Opening Up, China's industrial goals were to rapidly expand its exports and transform heavy industries into light industries capable of producing consumer goods. The transformation to a market

economy allowed private owned enterprises to become more significant players in the economy. Percentage share of industry in GDP increased from an average of 39.18% prior to 1978 to an average of 45% between 1979 and 2015; this share peaked at 47.559% in 2006 (World Bank, 2017c). In the late 1980s and early 1990s, China had the world's largest labor-intensive cotton textile industry, which, by the late 1990s, had been replaced by heavy industries and high technology industry. Another leader is the machinery industry, which in 2015 reached a total value of US\$3.53 trillion and exported US\$288 billion in machinery tools (China Machinery, 2016). The rapid industrialization could not have been achieved without trade liberalization and export-oriented support from the Chinese government.

One of China's most successful advancements has been its international trade and integration into the global economy. International trade not only promotes economic growth but also generates a country's industrialization by efficiently allocating resources, including natural resources, human capital, and financial assets (Helleiner, 1992, 1995; United Nations Economic Commission for Africa, 2015). International trade in China has grown rapidly over the past several decades. In 1992 the total value of exports was US\$84.940 billion, with a surplus of US\$4.355 billion, in comparison to imports of US\$80.585 billion. At that time, China's largest trading partner was Hong Kong, with a total trading value of US\$37.512 billion. After 22 years of ongoing development, China reached its trading peak with a total export value of US\$2.342 trillion in 2014. Additionally, the trading surplus was US\$384.322 billion and exports were US\$1.958 trillion. China's largest trading partner changed



from Hong Kong to the United States, and the primary exports changed from labor-intensive textiles and clothing to technology-intensive machineries and electronics (World Bank, 2017d, 2017e).

China greatly improved its 1990 low score of 0.499 on the Human Development Index (HDI), attaining a score of 0.734 in 2014. China currently ranks 90th out of 195 countries and territories on the HDI (United Nations Development Programme, 2017a). Other data include that, as of 2016, expected schooling is 13.5 years, the gross enrollment in tertiary schools is 39% and secondary schools is 94%. The employment rate is 67.6% of the population older than 15 years old (United Nations Development Programme, 2017b). With such significant changes in human development, China upgraded its labor market from a mostly unskilled labor force into one featuring increasingly sophisticated workers (Hsu, 2015).

As noted above, China's economy grew exponentially, and with it so did highway construction. In 2014 China had a total of 4.46 million kilometers of highway, including 162,600 kilometers of toll roads (Department of Road, 2015). This is striking, given that China built its first highway only in 1984. By the end of 2015, it had built a total of 123,000 kilometers of highway.

This massive road infrastructure is needed because the automobile industry has become one of China's most successful industrial developments. By 2009 China produced the most automobiles in the world, which is astounding when compared to how undeveloped its automobile industry was in 1978. The first Chinese automobile was made in 1931, but the development of the automobile industry was interrupted by

the Japanese invasion in the same year. After World War II, and immediately after the Chinese Civil War (1945–1949), China built its first automobile factory in 1953 with help from the Soviet Union. The Chinese automobile industry grew slowly because of a state policy that wanted the industry to freeze technology and only copy existing models from other countries. This policy was designed to fill the large demand for automobiles even as the industry had poor productivity.

The Reform and Opening Up policy in 1978 boosted not only China's economy but also its automobile industry. The first joint venture between a Chinese carmaker and a foreign manufacturer was in 1984, and from that time onward the Chinese modern automobile industry continued to develop. According to the *Chinese Automobile Industry Year Book 1983*, there were 2,456 firms, including both automobile and motorcycle. In 1982 the total output was 8.21 billion RMB, with 942,821 workers (Automobile Industry Year Book, 1983). By 2015 there were 13,213 firms, with a total output of 3.33 trillion RMB (China Industry Information Net, 2016). In 2012 the automobile industry provided 4.249 million jobs in China. At that time, it was expected that employment in this one industry would exceed 10 million jobs in 2016 (Zou, 2016).

Technological upgrading improved significantly in the automobile industry. In 1984, at the beginning of a joint venture between China's SAIC and Germany's Volkswagen, China assembled its VW Santana using the completely knocked down method. The only parts produced in China were radios and other smaller parts. By 2001, however, the Chinese local firms had grown so well that they started to export

its production lines and factories overseas. Since 2009 China has manufactured the most vehicles globally. Another significant change was that China moved from simply copying cars to developing its own hybrid and electrical vehicles with independent intellectual property rights.

China's development and growth come with certain side effects.

Environmental pollution has become a major issue and threat to public health. With tax revenue being the sole focus of local government, highly polluting enterprises that would have paid prohibiting pollution penalties in other countries are attracted, even invited, to move their plants to China, where limited environmental regulations are in place to control the pollution (Tanpaifang, 2014). Lack of supervision becomes de facto encouragement for high polluting firms to only utilize their purification equipment during a governmental inspection, in order to reduce operating cost (Tanpaifang, 2014).

The primary source of air pollution used to be the coal use in industrial electricity generation, but the total volume of pollution was decreased since 1996 with enhanced regulation by the government. Nowadays, in major cities vehicular emission instead has become the major issue caused by the rapid expansion of automobile industry and the economy (Liu, 2004). The air pollution caused a 20 billion Chinese Yuan loss annually; death caused by lung cancer increased 0.02% in urban area; acid rain spreads to 30% area of the country (Economic & Trade Herald, 2001). The statistics shows the necessity of reducing air pollution. Initiatives to reduce traffic congestion and emission include limiting both vehicle purchase and

vehicle use (e.g., only a passenger car with a plate number ending in an odd number can be on the street on an odd calendar date) An example of other measures to reduce emission is that Beijing and Shanghai provide subsidies and “free license plate” (i.e., no registration fee) to encourage residents to purchase electrical vehicles and hybrid cars.

To accommodate the inevitable process of urbanization, more and more rural land has been claimed by the government to build new cities and infrastructure. Residents of such land – usually farmers – will have to be relocated. These residents will receive monetary compensation; most of the times they are also promised an apartment in the area after the new city is established. While seemingly fair, the largest hardship caused by urbanization to those farmers is that they may lose their only income source – farming - if they do not have any skills other than agriculture. They then become low-skilled workers in manufacture or construction industry. Urbanization brings phenomenal profit to local government and construction companies, motivating them to illegally force residents to leave their land and property. Social instability thus takes root.

China’s political and institutional structures have changed alongside with its economic reform. Guanghui Zhou (2011) stated that, policy making system is the core of China’s political system, as well as the crucial element that determines the development of China, in particular China’s automobile industry. China’s policy making system, founded since the year 1949. It consists of five branches, namely the Communist party, government, military, legislation and citizens form the policy

making system. Previously, significant policies were published under the name of the central committee of the Communist party, state council and central military council therefore the policy making system was called “party, government and military system”. Since the economic reform and opening up in 1978, political system has also evolved. Standing Committee of the Central Political Bureau of the Communist Party of China and the State Council became the two major policy making bodies. The political power also decentralized; functions and power are dispersed away from central government to specific offices and bureaus. The policy making process has become more democratic and use scientific method rather than empiricism as before. Think tanks and experts become more significant to influence the policy making processes (Yan, 2014). Recently, central government will hear public opinions before officially legislating a policy. The relationship between national government and local government also change from a command-and-obedience one to a more democratic one. Local governments have the right to provide suggestions as well as feedback to the national government. It is also within the local government’s responsibility to report the status of policy implementation and the public opinion. In addition, they can negotiate with the central government on how to implement a policy while accommodating their local interest (Yan, 2014).

Despite the progresses and setbacks that China achieved since its economic reform, this thesis specifically focuses on the industrial development of China’s automobile industry; why and how it took place; and the processes, incentives, and pressure that helped develop the industry. My research question is: What were the

political, institutional, and industry mechanisms that created the conditions for industrialization of the Chinese automobile industry?

The second chapter is a review of the literature of economic growth. It is China's economic growth that helped to develop the automobile industry; the state played a significant role in managing resources and creating industrial policies. The third chapter addresses the methodology of qualitative research, which includes three case studies of three different periods of development in the automobile industry. The Developmental Rent Management Analysis framework is used to observe rent management in a political context and to analyze how incentives and pressures to develop the industry affected institutional and industrial organizations. The fourth chapter presents the three case studies: the first is the learning period (1978–1991), the second is the developing period (1992–2000), and the third is the period of new SOEs and private firms (2001–2014).

The three periods are defined according to shifting in policies, market system and types of investment. During the learning period, the policies simply focus on modernizing China's automobile industry; there was no clear goal for the development of this industry. In 1992, government started setting clear goals for the industry and gaining a deeper understanding on how to develop the automobile industry. In this thesis the years of 1992 to 2000 are set to be the developing period. China joined WTO in 2001. As a result, Chinese firms started facing both international and domestic competitions. Chinese private firms and new SOEs gradually become influential, and thus I set such time range for the third period. The

conclusion offers observations of China's successes and critiques of the failures in its automobile industry.

## **CHAPTER TWO: LITERATURE REVIEW**

This chapter reviews the literature of industrial development. Industrial development requires two main factors: (1) the role of economic growth, and (2) the role of the state in managing resources and industrial policies. Economic growth for the long term requires technological change, especially in the case of developing countries because they must close the technological gaps with developed countries. Industrialization for developing countries is incredibly difficult without state intervention.

### **2.1 Three Models of Growth Based on Technological Change**

#### ***2.1.1. Solow Growth Model***

Neoclassical economist Robert Solow presented that technological change is at the core of growth. He based his model on a closed economy that had diminishing returns to scale and that assumed capital, labor, and knowledge or technology changes are fixed (Van den Berg, 2012). In his model, production function is fixed.

Additionally, labor and capital are the only two inputs in the production process, and they can be substituted for each other. According to Van den Berg (2012), with the assumption of no technology change and no labor growth, the new capital produced is generated from depreciating old capital with effective labor; thus, the aggregate



output is constant returns to scale. The model assumes constant supply of labor, which means that economic growth can be generated only from accumulated capital savings in the medium term from a temporary steady state. With diminishing returns to scale of any single input, economic growth is not a straight forward function of investment (capital savings); that is, depreciation results in the last unit of newly produced capital accumulating less capital stock than the previous unit (Van den Berg, 2012). Thus, economic growth will cease even if investment (capital savings) continues as a constant percentage of output; continued growth in output cannot be generated, even with a constant rate of savings and investment. To achieve long-term sustainable growth, Solow argues that a country needs technological progress to effectively reduce or eliminate diminishing returns (Van den Berg, 2012).

Technological progress effectively reduces or eliminates diminishing returns. Given the fixed-capital supply, technological progress is not, for example, about making more tools in the same way but in making them with advanced machines or innovative techniques; hence, improving overall production capacity. The Solow growth model argues that only technological changes can lead to permanent economic growth at a steady state (Van den Berg, 2012). Solow did not address the dynamics of technological change in his model.

### ***2.1.2. Schumpeterian Research and Development Model***

Unlike Solow, Joseph Schumpeter provided substantial insights into how technological change pushes economic growth forward. Schumpeter pointed out that

technological progress is a dynamic process of profit-driven technological competition, in which innovators with advanced new technologies or innovations can generate additional profits; these new innovations could lead to new products with better quality, lower prices, and more attractive features than the existing ones on the market (Van den Berg, 2012). Schumpeter also pointed out innovation has up-front costs of required time and money needed for equipment, location, and knowledge to create new technologies (Van den Berg, 2012), and that these costs deserve to be recovered. Thus, any profits should be treated and protected as incentives for firms to keep innovating new technologies. Temporary monopoly rents can attract innovators to engage in technological competition, which, in turns, can lead to comparative advantages. According to Schumpeter, under competitive equilibrium, the price of each product equals the cost of production and there is no profit. Profits only arise with the dynamic changes that result from innovation, and they continue only until the innovation moves into general use by other companies (Van den Berg, 2012). Temporary profits are generated from technological competition. The force of competition will eliminate all profits by replacing existing innovations with new innovations created by innovators; this is the dynamic process that Schumpeter called creative destruction (Van den Berg, 2012). The constant process of creative destruction across many segments of an economy is the source of increased economic development and overall standards of living (Van den Berg, 2012). In Schumpeter's model, dynamic technological changes push economic growth forward.

### ***2.1.3. Romer Model of Technological Change***

In Paul Romer's model, management of resources supports technological change and technological change is endogenous (Van den Berg, 2012). According to Romer's model, all things being equal, the high number of innovations in an economy shifts equilibrium of costs and profits of innovation rightward; that is, the profit of innovation will be increased for innovators (Van den Berg, 2012). Profit-driven innovation activities will stimulate new innovations that could bring greater profits to innovators and, in turn, give profitable innovators access to more resources that could be used for their new innovations. With the idea that newly created products and techniques are better, cheaper, and more attractive than existing ones; innovators could allocate scarce resources more efficiently in creating new innovations (Van den Berg, 2012). In the imperfect competitive market, innovators understand their own innovations will destroy earlier innovations but also that future innovations created by other competitors will replace their innovations as well. With scarce resources and other costs, innovators must analyze their expected returns and costs of innovation throughout the innovative process.

Innovators will stop innovating when their profits equal the costs of innovation (Van den Berg, 2012). In Romer's model, new ideas are easier to create because they are based on existing ideas. The more existing ideas there are, the more new ideas can be created. This accumulation of knowledge leads to an acceleration in technological change; new innovations can be sold with a larger profit margin in a creative economy, and successful innovators value future potential gains with a much

higher expectation (Van den Berg, 2012). In this situation, the market force will allocate more resources to innovative sectors than will a less creative economy. Thus, the larger economies of developed countries experience greater technological change and innovate faster than poorer, smaller countries (Van den Berg, 2012).

Clearly, Solow, Schumpeter, and Romer offer three different models to illustrate how economic growth is generated from technological change. Solow does not discuss the dynamics of such change in detail; Schumpeter describes technological competition as a process of creative destruction and as the driving force of economic growth; and Romer demonstrates how effective allocations of scarce resource accelerate technological change. Additionally, Solow asserts that perfect competition by itself will make an economy efficient, while Schumpeter and Romer argue that innovators need protection and incentives to improve technology or create more advanced techniques. Under the Schumpeterian model, profits made by existing innovators offer real advantages to future innovators, such being able to lobby the government for more protection or barriers that favor their existing market power. State regulations of monopolistic behaviors are thus crucial in developing a country's economy and its industries.

## **2.2 Role of the State in Managing Industrial Development and Technological Changes**

### ***2.2.1. Purposes of Industrial Policies***

Friedrich List argues that a nation's true wealth is the development of its productive power; that is, power is created from the interaction among its intellectual capital, natural capital, and material capital (Levi-Faur, 1997). There are four characteristics that describe the development of a state's productive power: (1) the aggregate development of the entire economy; (2) the coordination of societal conflicts that maintain social stability and national interests; (3) the balancing of long-term goals with short-term needs; and (4) the suitability with the native culture (e.g., people's beliefs). These four characteristics of productive power require the state to play a significant role in development process: only the state can coordinate all sectors in the economy. List's approach to economic development and the role of the state is a stark contrast to Adam Smith, who argued that the primary causes of development are the division of labor and accumulation of capital. In Smith's theory, it is the invisible hands of the free market to smooth out everything in the society. In contrast, List argued that the state must protect its productive power; he suggested that the state should protect its infant industries through a broad range of policies designed to accelerate industrialization and economic growth (Levi-Faur, 1997). In order to accelerate the economic development in a developing country, governments should use industrial policies and create rents (for example, benefits or resources) to achieve the goals of development.

### *2.2.1.1. Promoting Technological Change*

Economic growth requires technological change, especially for developing countries, because technological upgrading promotes their economic development and allows them to catch up with the technological capability of developed countries. These changes always occur at the firm level: domestic firms in developing countries learn and adapt the new technologies that were developed and innovated in developed countries (Amsden, 2009). During the learning and adopting process, the productivity and capability of a developing country will be expanded significantly; according to Ngo (2017, p. 5), “acquisition of tacit knowledge<sup>1</sup> requires a great deal of effort, financial resources, and time.” Therefore, the state must help entrepreneurs to reduce the technology gap that List pointed out (Levi-Faur, 1997). From the parsimonious strategy, the industrial policies of developing countries should focus on improving their existing production activities, which, in turn, might result in higher productivity and better quality of products. From this comes an increased opportunity for new products to emerge (Hausmann, Rodrik, & Sabel, 2007).

Freeman (1977) offers a prime example. In the nineteenth century, Britain had the most key innovations in the mechanical industry. The Prussian government set up technical training institutes to train German technicians to reverse-engineer the imported British machines, and it also attracted British technicians to Prussia to help its technicians learn tacit knowledge. As a result, Prussia replaced Britain as the

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<sup>1</sup>Tacit knowledge is the knowledge that is difficult to transfer to another person by means of writing it down or verbalizing it. It can only be learned from training or hands-on experience.

world's leading machinery manufacturer in the last half of nineteenth century. Kruz (1992) offers a complementary example by describing how West Germany followed a similar path as Prussia after World War II. The West German government highly supported its innovative small and medium enterprises (SMEs). The government's strategy was to focus on improving its existing products and technologies. Deep penetration in a narrow part of a niche market, with highly modified and improved products, resulted in West Germany having the highest GDP in Western Europe during the Cold War.

#### *2.2.1.2. Attracting Foreign Direct Investment*

Weak technological capabilities as well as lack of resources and skilled labor, forces developing countries to rely on foreign direct investment (FDI) in the forms of foreign resources, knowledge, technology, and training. The transfer of technology and the tacit knowledge of how to use this technology are two of the benefits that foreign investors provide to developing countries. This acquisition and diffusion of technology can lead to improvement in a developing country's productivity and growth. Therefore, developing countries rely on imported technologies, especially from foreign investors, in order to gradually build their capability and improve their productivity.

It should be noted that adapting imported technology is more challenging than buying it, although the process of localizing advanced imported technology in domestic firms could increase productivity levels and “strengthen international

competitiveness by supplying value-added goods” (Ngo, 2017, p. 4). For instance, the Singapore government provided grants to foreign firms that transferred advanced technologies that allowed the state to become more competitive; and the government also worked closely with multinational corporations (MNCs) to understand what types of skilled workers were needed, and then it provided training to the necessary workers for MNCs (Lall, 2004). To attract foreign investors to set up their factories in Singapore during the development of its electronics industry in 1970s, the Singapore government subsidized supporting industries, transportation, and communication infrastructures, as well as trained the relevant skilled laborers (Lall, 2004). Later, Singapore successfully established its advanced electronics-related industries and relocated the related labor-intensive product lines to neighboring countries (Lall, 2004).

Tacit knowledge, which takes time and effort, is learned during the production process, and is required for local firms to upgrade their technologies and facilities. Nevertheless, Saggi (2002), among other scholars, suggested that developing countries should instead attract foreign firms and FDI with the use of subsidies, and should give up localization and adaptation of advanced technology. Additionally, technology transfers can be prevented; for example, if the developed country sanctions a developing country or prohibits a technology for international transfer. Technology transfers are neither voluntary nor automatic because foreign firms want to retain their most valuable knowledge and innovations at home (Ngo, 2017); for example, “multinational corporations are important source of capital investment, they



often carry relatively limited technology transfer, with the most tacit forms of knowledge and a good deal of R&D activities kept in developed countries” (Cimoli, Dosi, & Stiglitz, 2009, p. 8).

This could be avoided if the state focuses not only on attracting FDI but also on setting up an agenda that ensures the localization of foreign technology. Without this step, domestic technologies may fail to upgrade, leaving the developing country permanently dependent on the foreign technology and with only its own low-tech and low-value-added activities (Warren, 2007).

#### *2.2.1.3. Stimulating Firms Capability Building and Promoting Technological Learning*

Localization of an advanced technology requires entrepreneurs to invest effort, time, and capital into the process. If entrepreneurs must bear the full cost of these business ventures and risks, they are less likely to engage in self-discovery processes or the necessary risks associated with trying to achieve higher technological capability (Rodrik, 2004). Many development projects require long-term and large-scale investments before they can achieve beneficial outcomes. Private entrepreneurs do not have the resources or abilities to arrange all the necessary connections in related sectors and might not have the financial resources for the significant upfront costs; these coordination failures occur when new industries require economies of scale and non-tradable inputs in a specific region (Rodrik, 1993). Thus, an industry cannot develop itself without direct government intervention because industrial

policies require centralization and prioritization. A well-designed state industrial policy can both widen the range of development along the country's production frontier and stimulate jumps in capacity building (Hausmann, Rodrik, & Sabel, 2007).

One example of this need for state policy is when the government of South Korea selected some private firms to which it allocated large up-front costs, subsidies, and privileges to build economies of scale, which eventually led to large (still private) conglomerates. These conglomerates, known as *chaebols*, were mainly focused in the heavy industries; they allowed South Korea to specialize and learn complex technologies from abroad (Lall, 2004). These government-backed, export-driven chaebols developed impressive technological capabilities from this strategy. Simultaneously, during the learning phase, the government highly protected the domestic market. As a result, South Korea is now one of the most successful countries in automobile manufacturing and the most successful in commercial ship manufacturing (Lall, 2004).

In another example, Taiwan, a province of China, had focused on supporting small- and medium-sized enterprises (SMEs) in its advanced technology industry. Initially, local firms in Taiwan had little capability to absorb new foreign technologies. Hence, the government played an active role in helping SMEs to locate, purchase, diffuse and adapt these new foreign technologies. In some cases, the government itself entered into joint ventures as a public enterprise, especially in manufacturing semiconductors and throughout the aerospace industry (Lall, 2004).

### ***2.2.2. Managing Policies and Rents***

Political context and political change are two major factors that affect the rent management system. Political context gives important insights into the interactions among stage agents, policy making system and the possibility of effective or ineffective implementation of policies (Khan and Jomo, 2000). Rent seeking operates through the political structure of a developing country formally and informally; the ability to affect technological change and upgrading determine whether rent-seeking can successfully assist economic growth (Khan and Jomo, 2000). In developing countries, the relationship between the state and business sector is always complicated. Informal relationships frequently came into being behind formal institutional structure and relationships, so details of a policy depend on the political context of said country, and such policy has to be accepted by different political stage agents. Studying political context and political change can help us understand rent in certain political context can be value-enhancing or value-reducing, the possibility of effective or ineffective implementation of the policy.

Industrial policies create rents because they generate new benefits for firms. Neoliberal economists argue, however, that businesses are incentivized to lobby the government for rents, which often shifts state–business relationships away from productive activities, as entrepreneurs devote their time and resources to capturing windfall rents (Krueger 1974). Ultimately, the inefficiency that results from rent and rent seeking creates economic waste and losses. Based on these insights, neoclassical economists, including Buchanan, Tollison, and Tullock (1980) and Krueger (1974),

suggest that avoiding rent creation and rent seeking reduces social welfare loss because resources devoted to the rent-seeking processes are not used in value-added productive activities. However, Khan (2000) argues that the overall effect of rent seeking—the rent outcome created and actual costs of rent—must be analyzed. From this perspective, rent could be redistributive or developmental when the positive outcome outweighs the cost of rent. In the context of development, the government plays a significant role in creating an effective rent management system to ensure that rents are value enhancing and developmental, despite the costs associated with rent seeking (Khan, 2000; Ngo, 2013).

According to Rodrik (2004), the management of industrial policy or rents depends on the political and economic contexts of the specific developing country, since the context varies from one country to another. A certain policy that works well in one developing country might not fit the circumstances of another country. Furthermore, “economic development requires the role of the state to create and regulate the economic and political relationships that can support sustained industrialization, or, in short, a developmental state” (Chang, 1999, p. 183). Developing countries must follow international conditionality and must find their own roles in the global economy, but this cannot be achieved without state intervention (Bolesta, 2007). For instance, Vietnam followed China’s economic reform model (in Vietnam it was called Doi Moi), although it was more cautious than China in its reform policies and activities (Pesek, 2013). Learning from the Chinese experience (that is, moving from a planned to a market economy), Vietnam decided to

focus on enhancing its SOEs by using foreign technology (Pesek, 2013). It still faced similar problems as China, such as party elites getting rich from the development; however, Vietnam's challenge is more manageable because its SOEs are relatively smaller than China's (Pesek, 2013).

#### *2.2.2.1 Providing Incentives in Policies*

To overcome lack of information or firms' profit-seeking behaviors, a government should provide both incentives and guidance on how to grow and develop its industries. Firms do not have these resources to collect enough information for the economy, even information in their participated industry; only a government's political and economic powers can help them collect myriad information from all sectors. A developing country's government usually creates industry associations and then works closely with them to analyze the current state of the industry and the economy. This gives firms a better understanding of the different business and national scenarios, which can then be used to create both long-term and short-term strategies. A state can also often offer tax cuts and subsidies, as well as invest in human capital, as a well-trained labor force is vital when developing an industry. Government grants and scholarships can be offered in certain fields to attract talent and promote innovation, because a well-trained labor force is important for developing an industry.

For example, in order to develop its export industries, South Korea hosts monthly meetings between leading exporters and high-ranking officials. The

government and the firms together set goals for industry, as well as firm and product levels (Lall, 2004). In another example, to be more competitive in the international market, the Singapore government set goals to maximize learning, increase technological acquisition, decrease the technological gap, and improve both the skills and incomes of the working class. It realized that it had to be “willing to contribute capital, tax concessions, infrastructure, education and skills training, and a stable and friendly business environment” (Lall, 2004, p. 18).

As noted throughout this chapter, economic growth is driven by technological change. However, technological change has significant upfront costs but success is uncertain. With the natural tendency of firms to be attracted to profit, they may not invest long-term in technological change and innovation. Research and development (R&D) is expensive, which is why a government should support these types of activities. Technology upgrading and adaptation requires time and effort (Freeman, 1997). Subsidies and tax cuts can support firms as they struggle to learn and develop. For example, West Germany, in the 1980s, provided funding for basic research and supported its industries’ R&D’s long-term objectives: 20% of federal R&D funding went toward basic research, 4% went toward subsidies and investments for R&D activities, and 4% went toward technology-oriented new firms (Kruz, 1992).

Additionally, without government intervention, financial institutions may not have incentives to fund risky investment projects. This is a market failure that often prevents productive firms from investing in new, advanced technologies. However, firms that can access financial resources might request a change to their original

interest and alter their strategies to engage in sectors that have a much faster—and higher—return on profits. This occurred in China in recent years, when many Chinese SOEs shifted from traditional industries to China’s real estate market after it rapidly expanded. For example, China Poly Group Corporation, which participated in the international trade market in both civilian goods and national defense equipment, turned to the real estate market, becoming the largest investor in 2009 (Tian, 2010).

From this perspective, free markets (instead of state oversight and protections) and poorly managed industrial policies cannot help develop an industry. As noted above, and in review, market failures are assumed away by neoclassical economists, while heterodox economists believe that markets alone cannot resolve market failures, especially for developing countries, and thus state intervention is necessary to correct market failures (Ngo, 2013).

#### *2.2.2.2 Compulsion for Performance*

As covered in this chapter, rent creation can provide benefits to help firms develop within an industry. However, these rents should be removed gradually after firms prove themselves capable of competition in the market. The government needs simultaneously to provide benefits that support an infant industry and create developmental goals and performance measures, including punitive measures: if firms or an industry cannot perform as expected, the state withdraws the rent. This would create pressure for firms to put in real effort in learning and developing. In some cases, a significant fine could be imposed on firms that received resources from the

government but failed to develop properly. In an extreme scenario, a firm, or even an entire industry, could be shut down to protect other developmental strategies. The goal, of course, is for a government to pick those firms or industries that will succeed, but it also must protect itself if the firms or industries become unsuitable for the country's developmental strategy (Rodrik, 2004).

For example, Singapore, a free-trade country, instituted highly interventionist policies that promoted and deepened its industries, and its government acted firmly to guide transnational corporations (TNCs) to follow Singapore's development strategies (Lall, 2004). Singapore provided significant amounts of resources and concessions to TNCs, but it also punished firms that had low performances (Lall, 2004). Rents from the government were removed if a firm could not survive rapid competition in domestic and international markets; many multinational factories had to shut down or relocate their facilities to neighboring countries because of their low-value-added and labor-intensive products (Lall, 2004). Punitive policies helped Singapore avoid the industrial hollowing out that, for example, Hong Kong suffered in its textile industry. Through its supportive and punitive policies, Singapore successfully upgraded its labor-intensive industries into high-tech industries.

### **2.3 Literature Review: Summary**

This chapter has provided a brief literature review of why the role of state and proper rent management can help grow industries in developing countries. First, it reviewed three development models: (1) technological change is at the core of the



economic growth, and the nature of technological change is that new technology replaces existing technology, which leads to permanent economic growth (Solow's model); (2) technological progress is a dynamic process that involves profit-driven technological competition, called creative destruction, which is the source of economic development resulting in increased standards of living (Schumpeter's model); (3) technological change is endogenous, and efficient allocation of resources can boost technological change (Romer's model).

Next, this chapter reviewed the literature from mainstream and development economists on how technological change and innovations enhance economic growth. However, this process requires the role of state and its interventions to support and develop firms' and industries' capacity. The purpose of industrial policies is to promote technological change, attract foreign direct investments, and stimulate capability building and technology growth. However, rent seeking must be managed appropriately by the state. State intervention should provide both incentives and pressures to push firms and industries to achieve certain conditions of performance. Successful management of industrial policies and rent seeking could greatly benefit developing countries in growing their industrial sectors.

## **CHAPTER THREE: METHODOLOGY AND ANALYTICAL FRAMEWORK**

### **3.1. Methodology**

The research for this thesis, which specifically studies the automobile industry in China, employs qualitative and case study analyses to assess its industrial development. As noted in the previous chapter, China has developed rapidly since 1978, including economically and politically, even though the state's initial developmental goals were unclear and were changed frequently due to rapid development. Thus, qualitative research, and in particular case study analysis, is the best choice to understand the nuances and timeline of China's development of its automobile industry. For this thesis, the development of the automobile industry has been broken into three periods: 1978–1991, 1992–2000, and 2001–2014.

There are several advantages to using the case study method in research. First, it provides the ability to have an in-depth analysis with a relatively small number of cases (Starr, 2014). Second, information collected from multiple resources helps create consistent, reliable, and empirical patterns to understand the phenomena of interest. Third, dynamic processes—such as of research and development and technology adoption, cooperation, and/or competition among firms in different political contexts across time can be hard to quantify, but can be analyzed using a case study (Starr, 2014). For this thesis, qualitative research and case studies of three

periods provide a way to study China's dynamic economic process in developing its automobile industry.

Nevertheless, there are also limitations to using case studies. To make this type of research valuable and reliable, the researcher must have a research process that is fair and free of personal judgments and perspectives. The researcher also has to analyze information from multiple sources because a single resource will not provide enough data (Piore, 1979). Qualitative research and case studies are less reliable to explain theories; however, they are useful to identify and characterize causal processes (Starr, 2014).

Due to the rapid development of China's economy and political environment since 1978, the collection method of statistical data has varied considerably, including the different types of ownership within the automobile industry. With unreliable official data, unquantifiable information, and varying developmental strategies, using qualitative research and case studies is the best choice for my research, which is the in-depth analysis of the historical and political contexts and the institutional and industrial mechanisms behind the development of the China's automobile industry. This type of information is hard to quantify, and as noted above, this makes it difficult to use quantitative research.

In this thesis a successful qualitative research is defined based on two criteria.. First, researchers must carefully cross-check qualitative data obtained either from primary or secondary sources through the literature or across primary data itself (Helper, 2000; Starr, 2014). Second, an analytical framework must provide an

appropriate tool to guide the completeness of the case study (Starr, 2014). This thesis aims at providing insight on the transformation of China's automobile industry during each aforementioned period analyzed in the case study. Data collection and analytical framework employed in this thesis are discussed in details in the following sections.

### **3.2. Data Collection**

The empirical research used in this thesis includes data and information collected from major Chinese newspapers and magazines, auto channels on reliable websites, government websites, and from the World Bank. Being fluent in Chinese, I was able to access original-language data.

Most data on the Chinese automobile industry were generated from the *China Automobile Industry Yearbook*, which was first established in 1983 by the China Automobile Technology and Research Center and China Association of Automobile Manufactures. It collects official data and information from all firms in China's automobile industry. It also collects government leaders' significant opinions and speeches as well as government orders and policy documents. All of this data are published yearly as a summary of the industry. Thus, the *China Automobile Industry Yearbook* is the best source to study this industry in-depth and with a clear timeline.

Major newspapers and automobile magazines and websites have significant influence in China. Many of the staff members of these media are former government officials or professionals and experts who worked in the automobile industry for a long time, so they have considerable insights.

All the data collected were double-checked and triangulated across different media, government websites, and articles written by professionals. I am confident that I have used the most reliable data sources available for my case studies.

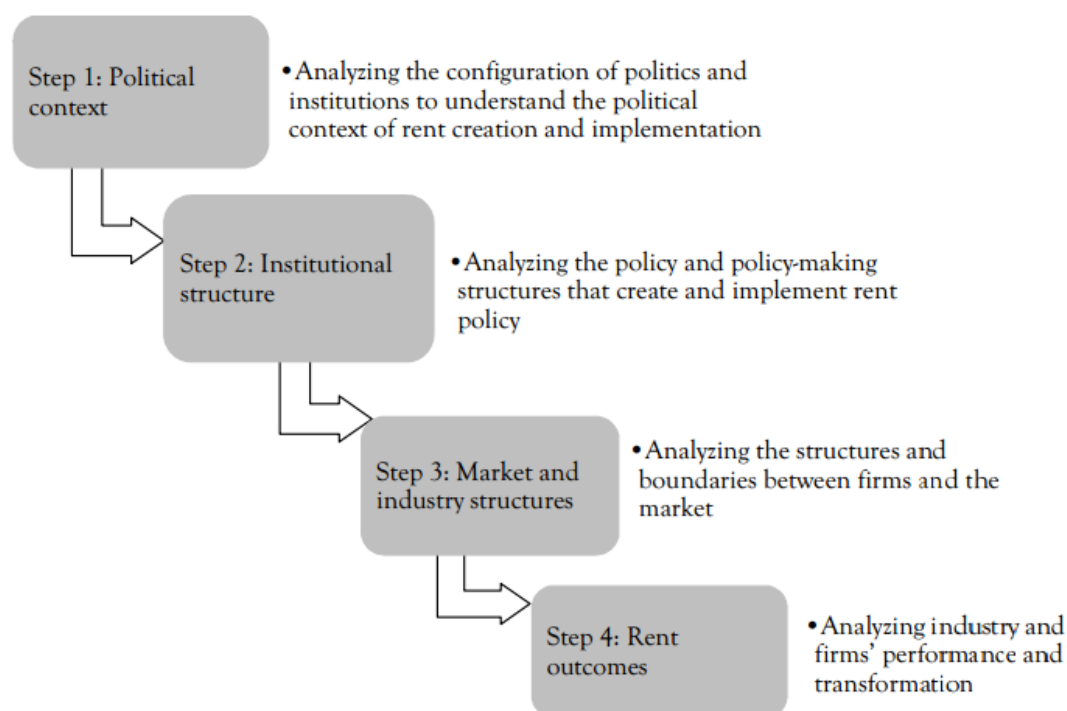
### **3.3. Analytical Approach**

Various methodological approaches have been combined to illustrate this research. It starts with a literature review of theoretical debates, including from critical economists and neoclassical economists on technological adoption; upgrading; foreign direct investment (FDI); research and development; and the roles of the state, rent, rent seeking, and rent management. Related issues are discussed in the literature review to answer the research question of this thesis: What were the political, institutional, and industry mechanisms that created the conditions for industrialization of China's automobile industry?

I use the developmental rent management analysis (DRMA) framework, developed by Ngo (2016), as the analytical framework for the case studies. The DRMA framework was used to analyze the factors that affected the technological adoption, upgrading, and role of FDI in building capability and industrializing and modernizing China's automobile industry in the one-party Chinese government after 1978. The DRMA framework focuses on rent management strategies in state-owned enterprises (SOE)–joint venture relationships, which ensured development of the firm, industry, and national levels under guided state policies. Successful rent management strategies must relate closely to a country's political and institutional contexts and its

specific domestic and international situations; one country cannot simply copy directly from another country and expect to be as successful. The DRMA framework provides a way to analyze how rents are created, allocated, and managed, and how to evaluate rent outcomes and rent seeking and rent management results in the developmental outcome of a developing country. Figure 3.1 details the four steps of the DRMA framework.

**Figure 3.1. The DRMA Framework**



*Source:* Ngo 2016, p. 1051.

The first step of the Ngo's DRMA framework is to identify the political context of rent creation and management. Understanding the political context is very important because: (1) economic institutions are created and supervised by political processes; (2) rent management counterbalances social conflicts; and (3) rent

management associated with political, industrial, and economic contexts affect a state's future. According to Ngo (2016), there are four types of rents: learning, Schumpeterian, monopoly, and redistributive. These rents are created by government policies and the nature of market: they can be value-enhancing rents if they increase the market, but they can also be value-reducing rents if they cause market failure. Identifying the types of rent created provides fundamental information for the second step in the DRMA framework, which is to analyze and understand the mechanisms of different policies and policy-making structures in managing each rent under a country's particular contexts. Once a rent is created, it will have both intended and unintended effects. Evaluating the rent created for a specific situation and its rent outcome is vital. The third step of the DRMA framework is to understand the specific market and industrial structures of the country under study. Ngo (2016) explains that it is the analysis of how market structures, ownerships of the firm, technological contexts of the industry, and competition from domestic and international markets collaborate to affect the industry and its firms. The dynamic process of rent management requires the rent to be examined and evaluated from the perspectives of internal and external incentives and pressures; the effects from both market and state interventions must also be evaluated. The final step is to analyze the rent outcomes and transformation of the firms or industry as a result of the rent creation and management (Ngo, 2016).

In this thesis, the DRMA framework allowed for an in-depth analysis to understand the process of technical learning and adaptation of development in

China's automobile industry across three periods: 1978–1991, 1992–2000, and 2001–2014. How did the industry modernize itself in a relatively short period, and how did it increase its capability so quickly? How and in what political and economic contexts did SOE–joint ventures and local enterprises develop in very different directions? The collected data, information, and evidence offer an understanding of how rent seeking and rent management worked in tandem to develop China's post-1978 automobile industry, and how rent creation during this process had both positive and negative results.



## CHAPTER FOUR: CASE STUDIES

### 4.1 Learning Period (1978–1991)

#### 4.1.1 *Historical-Political Context of the Automobile Industry*

In the early 1970s, China's central government turned management of its automobile manufacturers over to provincial and municipal governments because of the limited supply of, yet rapidly increasing demand for, automobiles. Before 1978, prior to the Reform and Opening Up policy, Xiaoping Deng, the most powerful leader of China's central committee, approved the central government's request to import foreign processes to modernize the Shanghai Automobile Factory. By cooperating with foreign countries, China could manufacture both sedans and heavy trucks (Li, 2004). Deng said on several occasions: "To develop the socialism motherland, we had to bring not only foreign technology but also foreign capital" (Chen, 2014). In order to attract foreign companies to China to develop its outdated automobile industry, the Chinese government sent invitations to many of the world's major automobile enterprises. General Motors (GM) was the first foreign enterprise to show interest. Thomas Murphy, the CEO of GM, visited China in October 1978 with the idea of a joint venture. However, GM's board of directors rejected Murphy's idea because it did not believe that China had the capability to produce cars, given its level of industrialization (Li, 2008). Instead, the first joint venture—Beijing Jeep—was

established between Chrysler Jeep and the Beijing Automobile Factory (Zheng, 2013). The state's permission to work with foreign enterprises opened a new chapter for China's automobile industry.

China, however, was inexperienced in working with foreign countries, especially capitalist Western countries. Yun Chen, the vice president of Chinese Communist Party (CCP), suggested: "To cross a shallow river, one must follow the rocks under the water"; in other words, the goal was to modernize the Chinese automobile industry, but no one knew how to do that, and so the Chinese would have to solve problems as they arose (Han, 2014). One such issue was that cooperation with foreign enterprises would be largely dependent on negotiations between the Chinese government and specific foreign enterprises.

In 1954, privately owned businesses in China were confiscated, or "purchased by the state," and so all businesses became either publicly owned or state owned. Industries that required a large amount of capital, such as the automobile industry, became state owned or operated by the People's Liberation Army (PLA), and business licenses were initially given only to existing automobile factories. The decades of Socialism operation, only SOEs were automobile manufacturers existing in the market, which provided monopoly rent to SOEs. As noted above, in the early 1970s, the central government turned over the management of automobile manufacturers to provincial and local governments. To help industrialize the industry, China's sixth five-year plan (1980–1985) and the seventh five-year plan (1986–1990) provided political support through nationally planned development goals developed

by the National People's Congress (NPC). In the sixth five-year plan, the goals for the automobile industry were (1) to improve the quality and models of heavy trucks, off-road vehicles, and cars; (2) to increase the overhaul time from 150,000 to 200,000 kilometers, and (3) to reduce fuel consumption by 20% (National People's Congress, 1982). The seventh five-year plan goals were (1) to develop the automobile industry into a pillar industry; and (2) to increase technical performance of main models by the 1990s to meet the standards of the early 1980s in industrialized countries (National People's Congress, 1986). However, in the fifth five-year plan (1975–1980), the State Council established that the six existing automobile manufacturers operate within the six geographical regions in China (Northeast, Northwest, Southeast, Southwest, North China, and South China); that is, each manufacturer supplied the automobiles only for the region in which it was located; and the China National Automobile Trading Corporation was to manage these dealerships and government-backed retail networks. This meant that competition in the industry was rare.

At the time, China's automobile industry was tightly controlled by the State Council (Hsia, 2006). Other bureaus under the State Council, such as the First Ministry of Machine-Building and the Ministry of Finance, worked together in the industry (Hsia, 2006). The way they managed the industry changed several times alongside with the political and economic reform, which will be discussed in the following section.

#### ***4.1.2 Institutional Mechanism of Rent Allocation***

Governments, including China's, use political power to ensure expansion of infrastructures of an industry. To lower the costs of components and, thus, overall costs, China's automobile industry required both significant fixed costs and economies of scale. Land had been provided when the factories were first established decades ago, and the automobile manufacturers' production lines were built at that time. The advantage for state-owned enterprises (SOEs) was access to the state-owned land. According to the Constitution of the People's Republic of China (1978), the state could repurchase, require, or renationalize land; if the government wanted to expand a factory, it could simply take the land it needed by removing and relocating nearby residents. The privilege to obtain land with zero cost provides an informal learning rent. If local farmers lost their rights to the land, job opportunities would be offered to them in the factory. This was the most common compensation for individuals living on land taken by the state.

Historically, SOEs have benefited significantly from well-trained, loyal workers. Most SOE workers, their families, and their neighbors would work in the same factory for generations, especially those employed in the manufacturing industries. Workers were thus very familiar with their particular factory and developed a strong loyalty to it. Workers' children who graduated from middle school would receive priority to enter the factory's training school. This training, in turn, would ensure quality of labor for the factory. After graduating from training school, an individual would be placed on his or her related production line and assigned an

experienced worker—who might be a neighbor or relative—as a master teacher. Another significant source of workers was PLA veterans. The better the service record as a soldier, the better the factory job as a worker. Thus, factories could boast a team of well-trained, hardworking, and conscientious workers at a much lower cost than hiring people outside the area. Hiring and training local children and veterans, intended as a benefit for families and retired PLA soldiers, were not only an informal learning rent that made SOEs benefitting from well-trained workers, but also a redistributive rent to maintain societal order.

Nevertheless, lack of industrial pressure was a major problem for China's automobile industry. A state- or provisional government-owned automobile manufacturer could get financial support from its respective government (Hsia, 2006), and, unlike in Western countries, manufacturers did not need to worry about making profits. The state used the automobile industry to generate tax revenues and fulfill the production plans designed by the State Planning Commission (SPC) and PLA (He, 2010). If a manufacturer failed to meet its production plan, the government could cut its performance bonus or possibly redeploy its employees to other departments within the government. If a manufacturer were facing a financial loss, the appropriate government could provide a financial subsidy by reallocating tax revenues from other sectors. SOEs could not be shut down without permission from the State Council, and employees were not easily fired unless a person caused a fatal accident. With SOEs, also called "iron bowls," competition pressures and incentives were minimized for both factories and their workers.

Before 1982, the First Ministry of Machine-Building (FMMB) of the PRC ran China's automobile industry. The FMMB managed the large factories while provincial and local Bureaus of Industry managed the small- and medium-sized factories. Automobiles from these latter factories were "sold," or distributed, by the State Bureau of Material Reserve (SBMR) and local Departments of Machinery. The capital allocation to a factory was directly related to the administrative level of the factory's control agency; that is, the higher the administrative level of factory's control agency, the more capital and resources allocated to the factory (Hsia, 2006). Additionally, large SOEs could usually get free inputs from the government, or at considerably lower prices than from the market. This was quite disadvantage for provincial and local small and medium factories, which had much higher input costs.

Prior to May 1984, the Department of Price decided the prices of automobiles and its parts, and the central and local governments together distributed the automobiles. Additionally, the "market" for automobiles was mainly under the planned economy, and there were rarely demands for automobiles from the private sector. An average family at the time had relatively little disposable income, making it financially impossible to own a car. An additional issue was that during this period, in order to buy a car, one was required to get a quota from the government, and then that quota and the cash were brought to the SBMR. For these reasons, buyers were mainly the government, the military, and the SOEs. The automobile industry was still largely focused on manufacturing trucks, but the state was starting to increase its production of buses and cars.

A new policy in 1983 requested by the Ministry of Finance, the Idea of Change in the Commercial Tax System, incentivized enterprises to be more active and to push the Reform and Opening Up policy. With this new policy, major SOEs no longer had to turn over all profits to the state but only had to pay a certain proportion in the form of taxes. In May 1984, State Council Decree 67 allowed SOEs to sell their products on the market after they finished their state-mandated production plans in a given year. In August 1984, the Ministry of Machinery and State Bureau of Price loosened its control over the automobile industry, and the price of automobiles sold directly by SOEs could vary by 10% in either direction of the original price set by the State Bureau of Price. Finally, to create a market economy and develop competitiveness among SOEs, investment in the automobile industry changed from interest-free government grants to bank loans and investments that the firm generated from both public and private sectors (Wang, 2015).

In 1985, the SBMR and the State Bureau of Price allowed SOE automobile factories to sell their excess production at market prices. However, any automobiles produced within the production plan had to be sold at the price set by the Department of Price. All of these changes led to automobiles moving from being distributed in the planned economy to being sold in a market economy (Jia, 2003).

During this period, international trade was heavily controlled by the government. The tariff was 220% on imported automobiles; only a limited number of licensed importers were eligible to import automobiles (China Automobile Consumer Network, 2006). The purpose of import was to fulfill the demand for automobiles

when domestic production was limited (Hsia, 2006). Heavy tariff and heavily-controlled import system protected China's infant automobile industry; they also provided learning rent so that Chinese automakers could have space to avoid international competition while improving their technology and production capacity.

#### ***4.1.3 Structure of Industry***

Working with foreign automobile enterprises and importing their technology were the best ways for China to narrow the gap between its weaker automobile industry and the advanced automobile industry in Western countries. This also attracted the foreign enterprises that wanted to enter China's giant market. The only option for foreign automobile enterprises to establish production lines in China was to work with a Chinese automobile manufacturer through a joint venture ("Status of Sino-foreign joint ventures," 2011). For the Chinese automobile manufacturers, simply importing the foreign technology was too expensive because of the high foreign exchange rate, and foreign exchanges were controlled by the Administration of Exchange Control. Before 1978, Chinese automobile manufacturers had to follow the policy of "freeze the technology, copy the existing models" (Cai, 1983, 37-39); that is, up until 1978, Chinese manufacturers were not allowed to conduct any research and development because of its high upfront costs but uncertain returns. To develop a modern automobile industry, cooperating with a foreign enterprise thus gave Chinese automobile manufacturers the only way to improve its technology and production.



SOEs and provincial and local manufacturers set up several new automobile factories to handle the increasing demand for automobiles in China's domestic market, which was encouraged by policies designed to develop China's automobile industry. In 1982, the Automobile Department, under the First Ministry of Machine-Building, became the China Automobile Industry Corporation (CAIC; Chinese Automobile Industry Association Secretariat, 2009). Bin Rao, minister of the FMMB, became the president of the CAIC, which came under the State Council. All the SOEs and provincial and local automobile manufacturers were merged into seven integrated regional corporations under the CAIC, and additional automobile factories were established. Table 4.1 shows that, through the Reform and Opening Up policy, the number of automobile factories doubled and the number of refitting factories tripled. The number of Chinese automobile factories jumped significantly in 1985, and then grew at a much slower rate through 1991. The growth in refitting factories was fairly consistent between 1978 and 1991. With the increasing number of automobile manufacturers, the production capability of the industry also improves significantly due to collaboration with foreign enterprises. Table 4.3 in the following section shows the increasing production capacity.

**Table 4.1. Number of Chinese Automobile Factories and Refitting Factories, 1978 to 1991**

Year	Automobile Manufacturers	Refitting Factories
1978	55	173
1979	55	185
1980	56	192
1981	57	198

1982	58	202
1983	65	207
1984	82	248
1985	114	314
1986	99	338
1987	116	347
1988	115	386
1989	119	464
1990	117	459
1991	120	486

*Note:* Adapted from China Automobile Industry Yearbook 1983, 1993.

Between 1984 and 1991, a Chinese automobile factory had one of three ways to improve its technology. The first was simply to import the technology through a joint venture. For example, the China National Heavy Duty Truck Group Company Limited bought original design drawings and manufacturing techniques from Germany's Maschinenfabrik Augsburg-Nürnberg's Style Heavy Truck; and Chang-An Machinery Industry Factory imported minicar technology from Japan's Suzuki. The second method was to bring the foreign company's production line to China to produce foreign-brand automobiles in China. For example, as noted earlier, the Beijing Automobile Factory cooperated with Chrysler Jeep to produce off-road vehicles named Beijing-Jeep; and SAIC worked with Germany's Volkswagen to produce cars branded as SAIC Volkswagen. The third method was to use the market to gain technology. For example, China purchased 40,000 Isuzu light trucks in exchange for that truck's design drawings (Chinese Automobile Industry Association Secretariat, 2009). As shown in Table 4.2, the major joint ventures founded during

this period display how China's SOEs cooperated with world's leading automakers in different ways during the learning period.

**Table 4.2. Major Joint Ventures Established between 1984 and 1991**

<b>Joint Venture Name</b>	<b>Established</b>	<b>Foreign Firm</b>	<b>Joint Venture Form</b>	<b>Major Product</b>
Beijing Jeep	1984	Chrysler (United States)	Import production line	Off-road vehicles
Tianjin Micro	1984	Daihatsu (Japan)	Import technology	Light truck and cars
Chang-An Machinery	1984	Suzuki (Japan)	Import technology	Minicars
SAIC Volkswagen	1985	Volkswagen (Germany)	Import production line	Cars
Qingling Motors	1985	Isuzu (Japan)	Import production line	Van
Wuling Motors	1985	Daihatsu (Japan)	Import technology	Van
Nanjing Automobile	1986	Fiat (Italy)	Import technology	Light trucks
Beijing Light Automobile	1988	Isuzu (Japan)	Use the market	Van
FAW Volkswagen	1991	Volkswagen (Germany)	Import production line	Cars
Jinbei Auto	1991	Toyota (Japan)	Import technology	Van

*Note:* Adapted from China Automobile Industry Yearbook 1986, 1993; Automobile Industry Association Secretariat 2009.

During this period, the major production method for joint ventures in China was completely knocked down<sup>2</sup> (CKD) kit assembly. Most parts were manufactured

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<sup>2</sup>Automobiles are produced in their original country, but disassembled completely into parts and imported to China, and then Chinese workers reassembled the parts into a finished vehicle in the plant in China.

in the foreign country; the plants in China could only assemble the parts under the supervision of foreign engineers, and only a small number of less significant parts, such as radios, could be manufactured in China. Nevertheless, new models began to appear after the joint ventures were started. In September 30, 1986, for example, the first Xiali, made by CKD method with Daihatsu, rolled out of the plant in China, and it later became the first family car in China.

#### ***4.1.4 Outcomes***

Over the course of 10 years, joint ventures boosted the development of China's automobile industry so that the gap in technology between China and industrialized Western countries narrowed: Chinese manufacturers better understood the modern automobile industry, and joint ventures brought standardization of management. Before this upgrading, Chinese-made vehicles were mainly "hand-fitted," meaning that even the same components in a model were not interchangeable. This meant, for example, that reaching the German standard of manufacturing was the result of a long learning curve by SAIC. Carl Hahn, the former chairman of Volkswagen recalled that, in the middle of the 1980s, Chinese managers and engineers in the SAIC-VW joint venture had to be trained at German headquarters, and that the Chinese-made components had to be shipped to Germany to see if they passed VW's quality certification (Li, 2008). Because of VW's high standards, in the mid-1980s, only 2.7% of components could be produced locally. In 1985, for the Santana, the flagship model of SAIC-VW, only its wheels and radios were made in

China. However, after hard-earned learning, the localization rate of Santana components rose to 82% by 1993 (Liu, 1994).

Foreign investments and the technology learned in joint ventures helped China to expand its automobile industry significantly during this period. The total number of automobiles produced in China rose from 149,062 in 1978 to 708,820 in 1991. The development of China's economy and automobile market led to the number of factories producing vehicles to increase from 57 in 1981 to 120 in 1991, and refitting factories to increase from 198 in 1981 to 486 in 1991 (see Table 4.2). Joint ventures clearly allowed the Chinese automobile industry to expand significantly, and the increased productivity that resulted from these joint ventures reduced the shortage of automobiles in China.

A significant number of cars were manufactured through these joint ventures. Table 4.3 shows that, from 1978 to 1991, automobile production increased dramatically in China. Production of trucks, off-road vehicles, buses and passenger cars boomed as a result of collaborating with foreign automakers. Trucks remained major type of vehicle manufactured; the number of buses also increased during this period. Tables 4.3 and 4.1 together show that the number of automobile factory has doubled over 14 years, while the number of automobiles produced per year has increased 7.2 times during the same period. Productivity and capability improved significantly due to cooperation with foreign firms in joint ventures.

**Table 4.3. Production by Vehicle Type Manufactured in the Chinese Automobile Industry, 1979 to 1991**

<b>Year</b>	<b>No. of Trucks</b>	<b>No. of Off-Road Vehicles and Buses</b>	<b>No. of Cars</b>
1978	96,103	–	2,640
1979	11,9501	–	4,152
1980	135,532	–	5,418
1981	108,261	38,832	3,428
1982	121,789	38,000	4,030
1983	137,100	34,477	6,046
1984	179,846	43,481	6,010
1985	236,934	50,282	5,207
1986	218,863	46,532	12,297
1987	299,356	36,825	20,865
1988	364,000	32,325	36,798
1989	342,835	41,536	28,820
1990	269,098	44,719	42,409
1991	452,023	175,442	81,055

*Note:* Adapted from China Automobile Industry Yearbook, 1993.

With China's transformation from a planned economy to a market economy, the proportion of planned distribution shrunk. In 1982, 92.3% of automobiles were distributed by state plan, but this shrank to 22.19% in 1989. Additionally, the market turned able to set the prices for automobiles instead of the power of the state.

#### ***4.1.5 DRMA Summary of Learning Period 1978–1991***

A summary of the learning period discussed in this section, using the DRMA framework, is in Table 4.4.

**Table 4.4. DRMA Summary of Learning Period 1978–1991**

Step 1: Political Context	<ul style="list-style-type: none"> <li>• Strong political support from the Chinese government; no conditional requirements for SOEs</li> </ul> <p>Type of rents:</p> <ul style="list-style-type: none"> <li>• Learning rents: heavy trade protection to help domestic automakers avoiding international competition and improving capability and upgrading technology.</li> <li>• Informal learning rents: based on privileged access to land, labour, infrastructure, and materials</li> <li>• Monopoly rents: based on decades of socialism, only SOEs are automobile manufacturers on the markets</li> </ul>
Step 2: Institution Structure	<ul style="list-style-type: none"> <li>• Allocation of land and capital resources; well-trained, loyal workers</li> <li>• Planned economy minimized competition</li> </ul>
Step 3: Market and Industry Structures	<ul style="list-style-type: none"> <li>• Heavy protection: foreign firms can set up factories in China only as joint ventures</li> <li>• Growing market and new policies attract foreign direct investment (FDI)</li> <li>• Planned economy ensures government the only distributor of automobiles; SOE–joint ventures do not worry about marketing</li> </ul>
Step 4: Rent Outcomes	<ul style="list-style-type: none"> <li>• SOEs become joint ventures</li> <li>• Chinese engineers train in foreign countries</li> <li>• Industry successfully upgrades technology and capability</li> <li>• Productivity increases significantly in late learning period</li> </ul>

Four factors support the industry and ensure that the rent management is growth enhancing. In order to industrialize the automobile industry, Chinese leaders provided a strong and clear political support to reform the economy and develop the industry. Formal and informal learning rents were provided to firms to ensure technology acquisition and upgrading through working with foreign automakers in joint ventures.

There are failures took place as well when wrong policies were implemented. Old SOEs were forced to give up self-branded models and focus on the production of foreign models in joint ventures. Although the technological upgrading and capability building were successful in the automobile industry, technological diffusion, transfer and research and development of core technology were limited or prohibited by foreign firms. Government in developing countries should pay more attention to technology transfer when negotiating with foreign firms.

## **4.2 Developing Period (1992–2000)**

### ***4.2.1 Political Context of the Chinese Automobile Industry***

After a decade of cooperation with foreign enterprises in joint ventures, the Chinese government started to pass policies that supported China's automobile industry. During a meeting of the national automobile industry in 1992, two vice prime ministers of China, Rongji Zhu and Jiahua Zou, suggested that having too many automobile component factories with limited production capabilities restricted development of the entire industry. They determined that it was important to reduce the number of factories, expand production, improve both the quality and quantity of component products, and relocate component factories closer to the manufacturers to lower costs and increase profits (China Automobile Industry Yearbook, 1993). The State Council published Strengthen Aggregate Management (Including Motorcycle) in Automobile Industry of the Interim Measures, an order designed to reinforce announcements from these two vice prime ministers.



With the progress of China's reform, government loses control on most aspects of its economy. Although automobile industry is controlled by the State Council, the State Council changed its role from a hands-on player to a guide guiding the industry development by implementing policies that were based on information collected from both international and domestic sources (Xu, 2003). Automakers are approved by the State Council to make decisions by themselves.

#### ***4.2.2 Institution***

State Council Decree 82 (1988), State Council Notification to Control the Number of Car Manufacturers, prohibited the issuance of new licenses or building new car production plants and stopped projects without State Council approval. Conflicting with local government interests and the national development goal, the decree was not favored by local government, the implementation of which had thus been slow down. This influenced the boom of, and reestablished entry barriers into, the automobile industry. Although this decree was published in 1988, it largely affected the automobile industry in the developing period. Two Chinese automobile companies, Alto and Yunque were established—both under the military system—regardless of the decree.

With State Council Decree 17 (1994), the Policy of Automobile Industry, passed in 1994, the government, for the first time, encouraged private families to own cars. It thus aimed to make the automobile industry a pillar of the Chinese economy. As noted earlier, the government policy stated that manufacturers could set the prices

for their own for civilian cars, as long as the change in price was within 10% above or below of the price set by the Department of Price. To expand the automobile market and to satisfy the increasing demand for vehicles, the State Planning Commission encouraged automobile factories to operate their own retail networks; thus, a new system was brought to the automobile market.

Decree 17 also encouraged automobile manufacturers to seek investments from domestic and/or overseas automobile companies. One goal of this decree was to reduce the number of Chinese factories while having the remaining factories improve their productivity and quality of their products. Also under Decree 17, privately owned Chinese automobile corporations were finally allowed to conduct R&D. Clearly, the purpose and capacity of the automobile industry changed radically over time, from filling state demand for a limited audience to developing into a modern industry. With its R&D institutions, privately owned Chinese automobile businesses created their own models with their own technologies. Nevertheless, these new models had to earn a certain proportion of the market to get state support; but if a factory reached this proportion, it would benefit in seven ways:

- Its fixed asset investments would become tax-free.
- It would receive priority of floatation of shares to enter the stock market.
- It would receive priority for faster bank loans with lower interest rates.
- It would also receive priority to get FDI.

- Its plan to expand its economy-car production would receive policy-based lending.
- Its financial department could broaden business, with permission from a related government agency.
- Its R&D projects would receive financial assistance from the state.

China started reducing its tariff on imported automobiles in 1994. Tariff for automobiles with displacement smaller than 3.0 liters was reduced to 110%, and that for cars with displacement larger than 3.0 liters was reduced to 150% (China Automobile Consumer Network, 2006). In 1997, tariff was reduced to 80% and 100% respectively for imported cars with displacement smaller than 3.0 liters and larger than 3.0 liters (China Automobile Consumer Network, 2006). However, the percentage of imported vehicles has shrunk from 16.5% in 1992 to 3% in 2001. With the development of China's automobile industry and economy, customers prefer domestically-manufactured automobiles because of lower price and relatively high quality. Although tariff has been reduced, it provides protection for China's developing industry.

#### ***4.2.3 Structure of Industry***

As the market economy system began to function in China, privatization of SOEs largely took place in all sectors. Private businesses became the most active element in the market, for they brought fierce competition to the market for both private enterprises and SOEs (Li, 1992). Competition has also been intense in the

automobile industry, even for newly-emerged private automobile manufacturers. Joint ventures forced those private ones to improve their capabilities (Hsia, 2006). However, joint ventures and private firms went on the different paths to their own success.

#### *4.2.3.1 Joint Ventures.*

As noted above, the Chinese automobile industry required economies of scale, which is why the Policy of Automobile Industry (1994) supported SOE–foreign company joint ventures. In order to increase passenger car production, the government chose eight joint ventures. Of these eight, three large were (FAW Volkswagen, Second Motor Works [Dongfeng Peugeot-Citroen], and SAIC Volkswagen), three were medium (Beijing Jeep, Tianjin Micro, and Guangzhou Peugeot), and two were micro (Chang-An Machinery and Guizhou Aerospace, both under the military). With existing economies of scale, these joint ventures reached the standard set in Decree 17. Some well-run local SOEs also benefited from the policy.

Conversely, SOEs with poor management washed out of the market, making the industry stronger. Military-owned automobile enterprises were also hurt when, on July 22, 1998, the Central Military Commission, under President Zemin Jiang, ordered the People’s Liberation Army to withdraw from all commercial businesses, which turned them into civilian-run enterprises. These new enterprises, of course, had no military privileges. This 1998 order undid the order of May 4, 1985, when the State Council and Central Military Commission approved the PLA’s request to

engage in commercial activities. The 1985 order allowed the military to make money to cover their financial shortages. However, the military turned into a giant economic system engaged in all kinds of economic activities, including mass smuggling. The income tax rate for nonmilitary firms was 33%, but the rate for military-owned firms was only 9.9%. Military-owned firms also had licensing privileges and increased scopes of business. Within one decade of approving military-run operations, the State Council and Central Military Commission realized the military needed to withdraw from commercial activities (Cao, 1999). However, those former military owned enterprises still favored from their former ownership in accessing financial and other resources.

This 1994 development policy encouraged the remaining manufacturers to develop in producing their products into series and improve their production techniques to a more professional level. With increased sales from the market economy—and with financial assistance from Western companies to encourage R&D projects—operational financial support by government agencies was removed. SOEs now had to bear their own financial losses even as they benefitted from the joint ventures, such as gaining the opportunities to get national investments and bank loans and to enter the stock market (He, 2010). Additionally, market competition forced the remaining automobile enterprises to develop in a modern direction through rapid increases in productivity and capacity. Truck production eventually slowed down through the end of the Cold War, given there was no need to produce trucks for

military use. Meanwhile, with the rapid expansion of the economy, as well as through Decree 17, there was an increase in the demand for buses and cars.

As noted above, Decree 17 also encouraged automobile enterprises to establish two types of retail networks: dealerships and commission agents (Liu, 2006). Dealerships purchased automobiles using their own money (and bearing higher financial risks), while commission agents worked as middlemen, selling automobiles on commission (bearing lower risks). According to *Fourin*, a Japanese auto magazine, retail networks sold 60% to 70% of cars; state-owned and locally owned automobile companies sold 20% of cars; and military-backed trading enterprises sold 10% of cars (Hsia, 2006).

SOE–joint ventures, through their higher productivity and capacity, generated much higher profits for Chinese-based manufacturers. However, a major failure in rent management was that SOEs, unlike privately owned manufacturers, were not allowed to develop their own core technologies under their own copyright; instead, the R&D departments of foreign partners stayed in their own countries. Actually, one of the most common terms to establish a joint venture was that a Chinese manufacturer would not pursue its own R&D. SOEs suffered from lack of technology transfers and diffusion because their foreign partners did not allow Chinese engineers to transfer foreign technologies to China’s own brands (Jia, 2011). Instead, foreign partners allowed their technology only to be localized by providing production permits (Li, 2012). All products in a joint venture had to be approved by the foreign party, which made it impossible for the Chinese manufacturer to improve its Chinese-

made products. Foreign parties were also in charge of providing new products and prohibited their Chinese partners from creatively modifying any car in order to avoid conflicts of interest (Zhu, 1996). SOE–joint ventures, thus, turned out to be much more like an overseas assembly line for foreign enterprises.

#### *4.2.3.2 Privately Owned Automobile Enterprises*

Unlike SOE–joint ventures, privately owned Chinese automobile enterprises were allowed to develop technologies, so they organized their own R&D departments. Nevertheless, this period was challenging for them, too. Geely Auto’s history, for example, is telling. Geely—eventually one of the most successful privately owned automobile enterprises in China—was founded as a refrigerator manufacturer in 1986, but it wanted to enter the automobile market. Although the 1994 policy encouraged civilian families to buy vehicles, the state still tightly held licenses for manufacturing entrants to the industry. Geely gained its automobile-manufacturing license by purchasing a bankrupt local SOE in 1997. Geely’s first mass-produced car was a copy of the Xiali, a model made by Tianjin Motors and originally imported from Daihatsu in Japan. Geely’s engines were purchased from the joint venture FAW–Toyota, although the joint venture both increased the price of its engines for Geely and cancelled its engine warranty. There was nothing Geely could do against this giant joint venture, so it decided to invent its own engines, first by copying these engines. Private enterprises such as Geely were forced to start their own R&D departments in order to combat the SOEs’ monopolistic powers (Che, 2016).

#### **4.2.4 Rent Outcomes**

Because of State Council Decree 82 (1988), the number of automobile factories was slightly decreased in the developing period, even as refitted factories increased, as seen in Table 4.5. As noted above, though, the smaller number of manufacturers improved their scales of economy and capabilities in production and operation. The automobile industry expanded largely during the developing period, despite that the number of automobile manufacturers slightly decreased. One decade of cooperation with foreign enterprises helped China establish a solid foundation for the modern automobile industry, which ensured rapid development in the developing period. By comparing Tables 4.5 with 4.6, it can be found out that within the industry, the number of automobile manufacturers has slightly decreased, but the capability and productivity have increased significantly.

**Table 4.5. Number of Manufacturers in Chinese Automobile Industry, 1992–2000**

Year	Automobile Manufacturers	Refitting Factories
1992	124	479
1993	124	552
1994	122	536
1995	122	516
1996	122	520
1997	119	540
1998	119	521
1999	118	546
2000	118	542

*Note:* Based on China Automobile Industry Yearbook, 2001.

Table 4.6 shows that, through the developing period, manufacturing capability increased from 106 thousand automobiles in 1992 to 2.06 million in 2000. This



means that only after eight years, capability had increased 20 times. Competition led to new models, and price wars led to more affordable cars. As noted above, this also led the industry to move away from manufacturing commercial trucks and toward passenger cars. Although trucks were still the major products in the industry, the demands for passenger car and bus have increased dramatically. Passenger car also changed from a symbol of political power to consumer goods, except for some luxury ones.

**Table 4.6. Number of Vehicles, Manufactured by Type, 1992 to 2000**

Year	Truck	Bus	Car	Total
1992	626,414	272,582	162,725	106,1721
1993	774,868	292,213	229,697	129,6778
1994	785,876	317,159	250,333	1,353,368
1995	721,822	405,454	325,461	1,452,697
1996	688,614	395,192	391,099	1,474,905
1997	659,318	435,615	487,695	1,582,628
1998	661,701	459,025	507,103	1,629,182
1999	756,312	509,179	566,105	1,830,323
2000	751,699	709,042	607,445	2,068,168

*Note:* Based on China Automobile Industry Yearbook, 2004.

Before China joined the World Trade Organization (WTO), more new models entered the Chinese market—and not only localized models of foreign brands—and competition increased. Although the Price Department originally stated that cars, sold after distribution quotas were met, could float only +/- 10% of MSRP (Manufacturer Suggested Retail Price), a price war was declared by the joint ventures in 1998. The highest point of this war occurred in 2000, the year before China joined the WTO. Dongfeng–Peugeot–Citroen reduced the price of its Citroen Fukang by 9.7% of MSRP,

and the formerly military-owned Chang-An Machinery reduced the price for its Alto by almost 18% of MSRP. Table 4.7 shows the price change of vehicles in the year 2000, in which the fiercest price war in China’s automobile market took place. It also provides evidence that competition forces automakers to lower the price in spite of government’s regulation on MSRP.

**Table 4.7. Price Changes of Major Popular Vehicles During Price War, 2000.**

	SAIC-VW Volkswagen	FAW-VW Jetta	Dongfeng- Citreon- Fukang	Beijing- Jeep BJ2020	FAW- Red Flag	Chang- An Alto
Price in Jan. 2000	¥ 12,150	¥ 13,150	¥ 11,960	¥ 6,850	¥ 19,800	¥ 6,080
Price in Dec. 2000	¥ 12,000	¥ 12,350	¥ 10,800	¥ 6,600	¥ 18,800	¥ 4,990
Percentage Reduced	1.23	6.1	9.7	3.65	5.05	17.93

*Note:* Adapted from Hsia (2006, p. 25). ¥ is the unit of RMB.

An online survey on automobile ownership, which collected 3,268 responses from across 32 provinces—and which was subsequently reported on eight major national websites and across seven major mainstream media services—showed that, of the sample collected, 15.7% already privately owned an automobile; 92.5% wanted to purchase a car; and 67.9% wanted to buy one within five years (Beijing Asian Games Village Automobile Market, 2000). Automobiles became a more traditional consumption good rather than a luxury item or symbol of political power, as in China’s recent past. The number of privately owned vehicles increased significantly from 1996 to 2000. According to the *Year Book 2001*, the number of privately owned trucks and cars doubled in this period: in 1996 there were 2,896,738 privately owned trucks and cars, which increased to 6,233,304 in 2000. The structure of demand in the

market also changed significantly. In 1996, the market was split evenly between cars and trucks. However, the number of privately owned cars increased 250% in five years, while trucks increased 80%. Thus, with the development of the Chinese economy, passenger cars became a priority for the industry: cars increased the living standard, while trucks simple made profits.

R&D in the automobile industry took two separate routes, one by the SOE–joint ventures and the other by privately owned automobile enterprises. As noted earlier, joint ventures made localized products for their foreign partners, so they focused on localization of technology (Zhu, 1996). Privately owned enterprises, however, were forced—or encouraged—to invent their own new models with core technologies under their own copyrights.

#### ***4.2.5 DRMA Summary of Developing Period (1992–2000)***

A summary of the developing period discussed in this section, using the DRMA framework, is in Table 4.8.

**Table 4.8. DRMA Summary of Developing Period 1992–2000**

Step 1: Political Context	<ul style="list-style-type: none"> <li>• Political support from the state to increase scales of economy in the industry; stops issuing new licenses to newcomers</li> </ul> <p>Type of rents:</p> <ul style="list-style-type: none"> <li>• Monopoly rents: based on: prevents newcomers and encourages scales of economy</li> <li>• Redistributive rents: based on military establishing new factories, regardless of State Council Decree 82 (1988)</li> <li>• Schumpeterian rents: based on tax breaks and priority to access finance, FDI, and grants after enterprise meets standards of innovation</li> </ul>
Step 2: Institution Structure	<ul style="list-style-type: none"> <li>• Stops issuing new licenses to increase scales of economy</li> <li>• State encourages innovation</li> <li>• Moves toward market economy to prepare for WTO</li> </ul>
Step 3: Market and Industry Structures	<ul style="list-style-type: none"> <li>• Increase competition among SOEs and joint ventures</li> <li>• Government and military remove support from their enterprises</li> <li>• Market economy appears</li> <li>• R&amp;D in joint ventures limited to localization</li> <li>• Private-owned enterprises appear but struggle under both industrial policy sectors and SOE–joint ventures</li> </ul>
Step 4: Rent Outcomes	<ul style="list-style-type: none"> <li>• Production of automobiles doubles in eight years with slightly decreased number of manufacturers, due to industry’s upgrading in technology and capability</li> <li>• Increasing competition as a result of price war</li> <li>• SOE–joint ventures and private enterprises have different paths to R&amp;D</li> </ul>

After decades of cooperating with foreign firms, Chinese government gains a better understanding of how to support the automobile industry, how regulations would help develop it, and how a free market could improve the capability of SOE-backed joint ventures. Increasing economic scale efficiently improves the productivity and capability, but high entry barriers prevent new comers to the industry,

especially the private firms, or even new SOEs. Joint venture helped China's automobile industry develop quickly in both productivity and capability, but failure of technology transfer and diffusion in joint ventures hurt those SOEs and lead to the trap of foreign direct investment.

### **4.3 Chinese-Owned Automobile Enterprises in Post-WTO Period (2001–2014)**

#### ***4.3.1 Political Context***

China joined the WTO in 2001, which brought both challenges and opportunities to the automobile industry. Joining the WTO had been a milestone of the Reform and Opening Up policy. Up until 2001, the Chinese automobile industry had developed through foreign technology and capital, but that development was protected by high tariffs and other nontax protections (He, 2006). Joining the WTO meant that these supports and protections would have to be removed. The U.S.–China Bilateral WTO Agreement, for example, included six major terms that would affect the Chinese automobile industry: (1) tariffs on automobiles would be lowered from current 80% or 100% by 2001, and then to 25% by 2006; (2) tariffs on auto parts would be cut to 10% by 2006; (3) all quotas and quantity limitations would be removed by 2005; (4) foreign enterprises could engage in international trade without Chinese trading enterprises as middlemen; (5) foreign enterprises would be permitted to set up their own retail and customer services in China; and (6) the regulations to limit production of types and models of vehicles would be removed within two years after joining WTO (“U.S.–China Bilateral WTO Agreement”). Simply stated, joining

the WTO lowered tariffs, opened the market, and removed government protections and assistance for the domestic automobile industry. The time horizon to implement these terms provides learning rents so that China's domestic firms (especially for new SOEs and private firms) have time for technological upgrading, as technological upgrading requires time and government protection.

The tenth five-year plan (2001—2005) encouraged families to purchase automobiles, which was the first time that the state officially supported private automobile ownership. This encouragement from the state caused the automobile market to grow significantly. Many private owned and government-owned automobile enterprises were founded during this period, and they grew significantly; they sold their cars at much lower prices to take lower price market was leftover from the SOE-joint ventures. These smaller enterprises succeeded even without support from the Chinese government. Until 2004, the policies of the Automobile Industry Development focused on economies of scale, not on developing products and brands.

#### ***4.3.2 Institutions***

In 2004, the National Development and Reform Commission (NDRC) published NDRC Decree 8 (2004), an automobile industry development policy ("Chinese Automobile," 2004). This decree created Schumpeterian rent that encouraged automobile enterprises to cooperate with each other to improve R&D to more professional levels, increase economies of scale, and invent their own core technologies. Additionally, this decree included goals for emission reduction and

development of new-energy vehicles, such as electric cars, hybrid cars, and so on. To move the automobile industry toward a higher level of productivity, entry barriers were raised once again. With its significant fixed costs and economies of scale to build new plants and support R&D, the minimum up-front investment to apply for a license to enter the automobile industry was at least 2 billion RMB. With this decree, licenses that would bankrupt an automobile enterprise were cancelled, and enterprises were prohibited from buying a bankrupt licensed manufacturer in order to gain a license. The entry barrier rose again for the new comers and also created monopoly rent for existing automobile enterprises.

To help private individuals purchase automobiles, as encouraged under the tenth five-year plan, the NDRC Decree 8 supported banks to provide auto loans to these individuals. The China Banking Regulatory Commission (CBRC) published CBRC Decree 2 in 2004, which provided guidelines for auto loans, including the basic requirements for a private person to apply for a loan. These requirements lowered proof to basic personal information, income, and sufficient property to act as collateral (“Regulations of auto loan management,” 2004). The applicant also needed to have a good credit history, although the Chinese personal credit information system started its operation only in January 2006 (Credit Reference Center, n.d.).

#### ***4.3.3 The structures of two corporations***

When SOEs joined into joint ventures, they had to give up producing their own models, even if some so-called innovative models were simply redesigned

bodies with imported chassis and engines. For example, Hongqi, a luxury-class sedan from FAW, was first made with a chassis and engine from Audi and Chrysler; a later version was a copy of the Crown from Toyota (Wu, 2012). From 2001 to 2014, privately owned and new SOE automobile enterprises started to develop their own models. For this case study, two specific companies, one state-owned and one privately owned, are discussed next.

#### *4.3.3.1 The Chery Company*

The Chery Company was a state-owned automobile corporation established in 1997 by the Anhui provincial government. Five local investment corporations in Anhui province provided the up-front investment of 1.75 billion RMB; the Anhui provincial government managed this company. With Decree 17, discussed above, the State Council stopped issuing new automobile production licenses. Until 2001, the Chery Company could only sell their cars within the Anhui province, with support from the local government (Phoenix Auto Channel, 2009). To help the unlicensed Chery remain on the market, the government of Wuhu City forced the local taxi companies to purchase the first batch of Chery cars (Luo, 2005). In order to enter the market outside Anhui province, Chery gave away 20% of its shares to SAIC in exchange for use of SAIC's license to sell Chery vehicles on the national market (Sohu Business Channel, 2003).

Additionally, to attract engineers and experts to produce its Chinese-designed cars, Chery used its provincial government's political and financial clout: "Chery headhunted 30 overseas experts with broad experience in global corporations such as



GM and Ford” (Li, 2009). These experts brought their knowledge to Chery and trained Chery’s young engineers. Table 4.9 details the professionals hired.

**Table 4.9. List of Experts at Chery**

<b>Name</b>	<b>Post</b>	<b>Experience</b>
<b>Overseas Chinese Experts</b> (approx. 30 people)		
Xu, M.	Director of Automobile Engineering, Institute of CHERY, Chief Leader of R&D	Ph.D., Engineering, Hiroshima University; worked for GM, Ford, Visteon; engine expert
Xin, J.	Vice Director of Automobile Engineering Institute of CHERY, Leader of Engine Durability & Hybrid Car	Worked for Honda (United States).
Gu, L.	Vice Director of Automobile Engineering Institute of CHERY, Leader of Digital Crash Test	Ph.D., Modern Mechanics, University of Science and Technology, Beijing; Northwest University; worked for Ford; crash test expert
Yuan, T.	Vice President, Parts Procurement	Ph.D., Engine, Centre National de la Recherche Scientifique; studied at Beijing University of Aeronautics and Astronautics.
Qi, G. J.	Vice Director of Automobile Engineering Institute of CHERY, Leader of Automobile Body-In-White (stage in auto manufacturing)	Worked for DaimlerChrysler AG
Sun, G. C.	Vice President and Chief Financial Officer	Chief Financial Officer, DuPont (China)
Yuan, Y. B.	Chassis Research	Worked for TRW Automobile
Li, M.	Electronic Driving Research	Worked for Motorola
Zhu, X. C.	Transmission Research	Chery, Australia; returned to Chery, China.
Gu, Y.	Vice President of CHERY Subsidiaries; Die & Mold	Worked for Fuji (Japan)
<b>Chinese Experts from FAW</b> (approx. 150 people)		
Kang, L. M.	Chief Engineer, Engine Project Manager	FAW
Hu, F.	Vice Chief Engineer, Project Leader of Engine Co-project with AVL	Graduated from Automobile Engineering, Tsinghua University; FAW; retired from DongFeng Motors (1995)
Feng, J. Q.	Vice Chief Engineer, Designer of CAC372 engine for QQ0.8L	First engine designer of New China; designed the 6102 gasoline engine for JieFang 141 Truck
<b>Foreign Experts</b> (approx. 40 people)		
Terada, S.	Plant Manager, Operation Management	Mitsubishi Motors, Plant Manager (30 years)

Kawano, K.	Director of Plant KAIZEN	Mazda Motors (40 years)
Kim, U. S.	Vice Chief Engineer	Ricardo Company
German Expert	Manufacturing Technology Support	Unknown
<b>Other Domestic Engineers (Unknown number)</b>		
Lu, J. H.	Vice President, R&D	Graduate, Automobile Manufacturing, Tsinghua University
Li, F.	Vice President, Sales	Vice President, Foton Motors Sales Co.

*Note.* See Z. Li 2008, pp. 103–115. In 2006, Chery had 18,000 employees, including nearly 4,000 engineers; 1,500 were directly involved in R&D.

Chery headhunted its first group of R&D engineers from Dongfeng Motor.

These engineers could no longer conduct R&D research at Dongfeng after it became a joint venture with Nissan. As a reminder, an SOE in a joint venture could not pursue its own R&D. These Dongfeng engineers had already worked together for a long time, so they could quickly set up and operated the R&D department at Chery. The two most significant benefits were that (1) these engineers had overseen the modification and localization for Dongfeng-Citroen, and (2) Citroen in France had trained some of these engineers (Lu, 2005). These engineers were worried that Chery might become another Dongfeng, since they were both government-owned enterprises. However, Chery provided 2/3 shares as financial support, and these engineers provided human capital as the other 1/3 share to start a new automobile design and development company: Jia Jing Technology Company (Luo, 2005). Chery outsourced its R&D projects to the independent-operated Jia Jing Technology, which was the first step in Chery's strategy to develop its own R&D. Chery's goal was to develop new products with foreign automobile and engine design companies, and thus train its engineers through this project (Guo, 2005). The second goal was to then independently design low-end models to advance Chery's capability of developing a new car development

process. The final goal was to establish R&D for full line of passenger cars in all price and size ranges, from sedan to SUVs (Luo, 2005).

#### *4.3.3.2 The Geely Company*

The Geely Company was the most successful privately owned automobile corporation in China. It was established in 1986 as a privately owned refrigerator maker, with money borrowed from the owner's family (Chen, 2012). Geely's ability to sell inexpensive products to Chinese consumers gave it the financial backing in 1997 to purchase a bankrupt licensed automobile factory so it could enter the automobile market (Che, 2016). Because it was privately owned, Geely had no political or financial support from the state. The economic and political environments were much tougher for a private enterprise in China, and remain so even today. Running into issues with FAW-Toyota, first when it increased the price of its engines and then when it decreased its engine supply, Geely decided to start its own R&D department by copying the Toyota engine purchased from FAW-Toyota ("First-branded," 2006).

Geely understood that independent innovation would be the key to its success when it entered the automobile market, and that lower innovation costs would be needed. With its lack of financial support, technology, and human resources, Geely decided to offer less expensive automobiles (Che, 2016). By copying existing models, especially engines and transmissions, Geely could avoid the risk of using component supplies from SOEs. When Geely built its plant, it purchased advanced technology to

improve the quality of its model, Ziyou Jian (Ma, 2007). With its great quality control processes, Geely was able to enter the higher-end passenger car market.

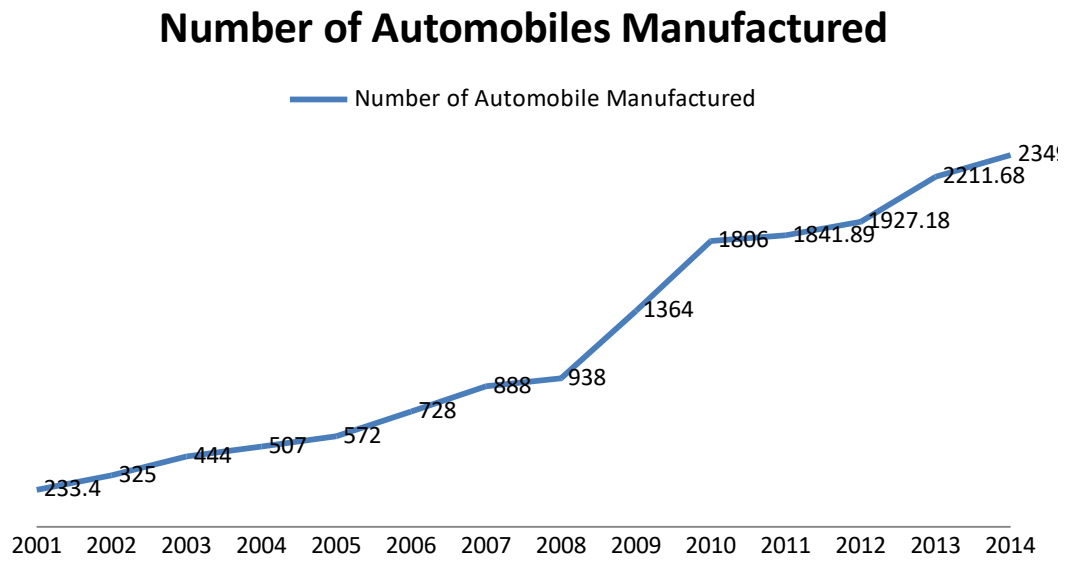
To create its core technologies, Geely established four colleges in China: Beijing Geely University, Sanya University, Zhejiang Automobile Engineering Institute, and Hunan Geely Automobile Technical College (Geely, n.d.a.). At the Zhejiang Automobile Engineering Institute, 166 professors taught graduate students who would eventually work for Geely (Geely, n.d.d.).

#### ***4.3.4 Outcomes***

After joining the WTO, Chinese automobile production increased from 2.334 million in 2001 to 23.5 million in 2014; and, since 2009, China has ranked as the country with the highest number of automobiles manufactured. As happened with Chery and Geely, private owned and new state-owned automobile manufacturers became the most active enterprises in the Chinese automobile market. Additionally, over time, an increased number of newly Chinese-designed auto models entered the market, which began in the early stages of China's R&D period with the reverse engineering of foreign cars. Lower prices helped private firms survive under the pressure of giant SOE-joint ventures, and producing in-house designed models made them successful in the marketplace. Figure 4.1 shows the number of cars manufactured in China between 2001 and 2014. It demonstrates growing capability of China's automobile industry after joining the WTO. The production capability of China's automobile industry rose 10 times during this period and thus made China the

country with the highest number of automobiles manufactured in the world since 2009.

**Figure 4.1. Number of Automobile Manufactured, 2001 to 2014, in ten thousand**



*Note.* Based on China Automobile Industry Yearbook, 2013, 2015.

Since 2001, price competition is the norm among China's automobile makers. With the increasing prices of iron and rubber in the global market, Chinese automobile manufacturers began to purchase materials and components from all over the world. Additionally, 3S (sale, spare parts, and service) and 4S (sale, spare parts, service, and survey) dealerships became retailers, replacing certain government departments (such as Machinery Department in different administrative levels) that used to distribute automobiles (Hsia, 2006).

The Chinese automobile industry developed rapidly between 2001 and 2014, with 60 brands of automobiles produced and registered in China, including new Chinese brands through SOE-joint ventures (Sina.com, 2016); both private owned

and new SOE enterprises played significant roles in both the domestic and international markets.

Chery cooperated with Iran's SKT to build a Chery assembly line in Iran to produce automobiles by the CKD method. Chery provided the components and design and also helped to build the Iranian retail network (Sina Auto Channel, 2003). In 2007, Chery established another joint venture in Iran with Iran Khodro, and authorized it to build Chery cars with the CKD method (China Net, 2007). In that year, Chery produced its one-millionth car in China—having produced its first car in December 1999 (Chery, n.d.a.). In 2014, Chery built its largest overseas plant in Brazil (Phoenix Auto Channel, 2014). Chery also recently started to produce electric vehicles (Chery, n.d.b.).

Geely, the most successful Chinese private automobile enterprise, also exported its products to the international market; for example, it exported one of its assembly lines to the Ukraine, producing its Ziyoujian model through the semi-knocked down method (Sina Auto Channel, 2007). Geely bought Volvo Cars by purchasing 100% of its shares in 2010 (Phoenix Auto, 2010). In 2012, it signed an agreement with Egypt's GB Auto to assemble Geely's Dihao EC7 model and to build a retail network in Egypt (Zhou, 2012). In 2012, Geely exported its products to Saudi Arabia, Iraq, Jordan, Kuwait, and other Middle Eastern countries; and it built an assembly line in Iraq to produce cars with the CKD method (Geely, n.d.c.) Geely has been one of the world's top 500 enterprises since 2012.

### 4.3.5 Summary of Chinese Owned Enterprises (2001–2014)

A summary of automobile manufacturing in China, using the DRMA framework, is in Table 4.10.

**Table 4.10. DRMA Summary of Chinese Owned Enterprises 2001–2014**

Step 1: Political Context	<ul style="list-style-type: none"> <li>• WTO brings pressure to the market</li> <li>• Government removes protections with a time horizon, due to the WTO regulations</li> <li>• Rapid growth in economy and automobile market results in more automobile newcomers</li> <li>• Government supports R&amp;D core technology</li> </ul> <p><b>Type of rents:</b></p> <ul style="list-style-type: none"> <li>• Learning rents: based on time horizon to remove protections, helps learning in technological upgrading in private owned and new SOEs; protection and support for new SOEs at administrative level to which they belong</li> <li>• Schumpeterian rents: created by government, encourages core technology innovation</li> <li>• Monopoly rents: raises entry barrier</li> </ul>
Step 2: Institution Structure	<ul style="list-style-type: none"> <li>• Sets initial minimum required up-front costs for new manufacturers to gain license</li> <li>• Encourages R&amp;D for core technology</li> <li>• Effective institutional arrangement and management of rent to support industry development</li> <li>• Establishes market economy</li> </ul>
Step 3: Market and Industry Structures	<ul style="list-style-type: none"> <li>• New SOEs still have limited protection from the administrative level to which they belong</li> <li>• Professional engineers and managers hired at privately owned and new SOE car manufacturers</li> <li>• Market incentives for lower-priced cars</li> <li>• Pressure from joint ventures as suppliers force privately owned and new SOE car manufacturers to innovate core technology</li> </ul>
Step 4: Rent Outcomes	<ul style="list-style-type: none"> <li>• Private and new SOEs become most active players on the market</li> <li>• Became the world's largest automobile manufacturing country</li> <li>• Successfully exports technology to foreign countries</li> </ul>

After joining the WTO, market economy and both international and domestic competition have forced China's automobile industry to develop faster. Private and new SOEs become the most active players in the industry by having their own core technologies and active business strategies. Policies during this period successfully helped automobile industry become strong and developed, but they still neglect the fact that the private enterprises need support from the state.



## CHAPTER FIVE: CONCLUSION

This thesis presents the developmental process of the modern Chinese automobile industry in three case studies. By analyzing development of the automobile industry in three consecutive periods, several decisive factors that significantly affected development of the industry were identified: technology upgrading, its diffusion, and its capability building in terms of rents.

Empirical case studies provide evidence that properly managed rents can be value enhancing and developmental. However, a rent management system has to focus on the current political and economic conditions in a specific country, with its own unique path to industrial growth. During the learning period (1978–1991) in China, strong political desire to develop the industry, existing economic scale of state-owned enterprises (SOEs), and efficient resource allocation resulted in state-backed ownership and lack of regulations, even though the total volume of the economy ensured fundamental development of the industry. In the period of development (1992–2000), valuable cooperation with foreign firms enabled the government to have a better understanding of how to support the automobile industry, how regulations could develop it, and how a free market could improve the capability of large SOE–joint ventures. Simultaneously, failures of technology transfer and diffusion in joint ventures hurt these SOEs, and led to the trap of foreign direct

investment (FDI). Nevertheless, rapid economic development helped build the industry, and private-owned and newer SOE automobile factories appeared on the market. During the post-World Trade Organization period (2001–2014), SOE–joint ventures, new SOEs, and private-owned automobile enterprises developed along different paths: diverse strategies made all types of enterprises successful in their unique way in the market.

Analytically, these case studies help improve the understanding of how different rent management mechanisms affected the structures of the industry. The state provided incentives and pressures for firms with different ownership types and further drive these firms to adopt technological learning, to upgrade, and to find strategies of innovation in other developing countries. This configuration of factors helps to explain the successes and failures in developing China’s automobile industry. The analytical framework is based on the developmental rent management analysis, which focuses on different configurations of factors in three directions: (1) the political context at different times, which results in particular combinations of formal and informal rent outcomes; (2) the structure of formal and informal policies, which supports different types of rent; and (3) market structures and types of ownerships, which affect various strategies and rent opportunities.

Multiple factors supported the industry and ensured that rent management was growth enhancing in China. First, top Chinese leaders provided strong and clear

political support to reform the economy and develop the industry. Second, formal<sup>3</sup> and informal<sup>4</sup> learning rents provided to firms ensured technology acquisition and upgrading. Third, the state allowed limited domestic competition to ensure SOE–joint ventures grew in their infant periods. Fourth, the state provided protection against international competition, even after joining the World Trade Organization. Fifth, timely policies ensured proper management of industrial developmental goals, development of the economy, and international relationships. These factors together provided an effective rent management mechanism for the Chinese automobile industry to promote industrialization and development. Some institutional failures were identified in the case studies, but overall the outcomes were industrial and economic growth.

During the learning period (1978–1991), older SOEs were forced to give up self-branded models and had to focus on the production of foreign models in their joint ventures. During this period, the state government did not negotiate with foreign firms for technological diffusion or R&D departments to gain core technology. Nevertheless, with top leaders’ political support, with SOEs’ existing capacity for learning, with a large demand for automobiles, and with heavy protectionism in the domestic market, technological upgrading and capacity building in the automobile industry was ensured.

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<sup>3</sup>Formal learning rent is intentionally created by policy makers to help rent receivers on technological adoption.

<sup>4</sup>Informal learning rent is created unintentionally or comes from unexpected learning outcomes.

In the developing period (1992–2000), SOEs in joint ventures had limited R&D and technological diffusion because of their foreign partners, and private enterprises ran into licensing regulations and limited state policy support; made private enterprises hardly to enter the industry and lack of policy support to private firms. However, strong political support from the Chinese state government; large demand for automobiles; and the protected domestic market; additionally, flexible management strategies of private firms; active market competition, and pressures from SOE–joint ventures forced R&D in private firms ensured their growth and overall development and technological upgrading.

Nonetheless, the case studies also suggest that some of rent management factors resulted in growth reduction. Historical monopoly rent favored SOEs in the learning period (1978–1991) and the developing period (1992–2000); this gave them priority in accessing foreign direct investment, which was used to create the SOE–joint ventures. Redistributive rents helped military-backed firms enter the industry, even though the State Council had stopped issuing new licenses. These military-backed firms were favored in tax collection and resource allocation, and these firms continued to benefit even after the Central Military Commission withdrew military ownership.

The development of China’s automobile industry can provide many lessons for other developing countries. First, attracting FDI and creating joint ventures with foreign companies initially boosted China’s automobile processes and economies of scale. However, state-owned enterprises (SOEs) were trapped into either importing or

localizing foreign technologies, not developing their own technologies. This meant that the SOEs became little more than low-value-added assembly lines. Therefore, joint ventures helped to develop China's automobile industry only for a short time. Conversely, with limited access to state resources, new SOEs and private-owned firms in China were forced to create their own R&D departments to innovate technologies. Although they had a slower start and higher uphill climb, these firms became the more successful players in the domestic marketplace, and they even moved into the international market. The case of FDI in joint ventures provides evidence that supports the literature review in Chapter 2. Technology transfers are never voluntary and automatic; instead, most significant innovations and research and development activities stay in the mother countries of foreign partners.

The Chinese automobile industry also provides several lessons for Chinese leaders. First, before they write policy, they need to analyze both domestic and international conditions, such as levels of technology, overall financial and human resources, and needed natural resources. Second, as Rodrik (2004) suggests, rent management strategies have to focus on the political and economic contexts of a specific country. Third, understanding the gap between domestic and advanced foreign enterprises, and the advantages and disadvantages of each, is vital. Fourth, policymakers need to consider both short-term and long-term developmental goals; and they need to schedule a timeline for meeting these goals, providing both incentive and punitive measures associated with that timeline. As Khan and Jomo (2000) noted, a state needs to accept if a firm or industry is not developing along the given time

horizon, and needs to use punitive measures, including cutting subsidies and adding tariffs. Conversely, once a firm or industry goal is achieved, the state should then slowly remove the benefits so that local firms stop depending on state resources. Fifth, as Stiglitz (2016) and Chang (1999) argued, the state needs to properly manage economic problems through a variety of institutional arrangements to ensure sustainable development of the industry. Finally, although FDI can rapidly grow an industry in its infancy, there is little to no technology diffusion to domestic firms. Therefore, policies should include expectations related to technology diffusion, including setting quantitative measurements.

This final point is reflected in Amsden (2009), Ngo (2007), and Hoekman (2004), who all acknowledge that adaptation of new technology from a developed country will enhance the capability and develop the industry in a developing country. Stiglitz (2016) adds that properly managed technology policies can make a country more competitive. Chinese SOEs suffered from not being able to develop their own technology. Chinese policymakers could have learned a valuable lesson from the Singapore government, which used highly interventionist policies to promote and deepen its industries and to upgrade its industrial structure. An Economic Development Board was created in the 1960s to manage industrial policies and FDI. Singapore not only provided grants to foreign firms but also had strategies to induce transnational corporations to establish R&D sectors. Finally, if a firm failed to follow set developmental strategies, the Singapore government removed its support.

Chinese policymakers need to provide opportunities for local firms, not just state-run enterprises. Failure to develop local firms will hollow out the industry, which is what occurred in Hong Kong. Hong Kong rapidly developed in its textile industry, but then it deindustrialized it because of increasing costs, and it did not upgrade this labor-intensive industry to be high tech. If China provides subsidies and government grants to support local firms' R&D to develop their own core technologies, these core technologies will then push industrial development further. Properly imposed tariffs and quotas can give time for domestic firms to mature, yet they can also be removed to push domestic firms to grow. Strong industrial policies and effective management will help developing countries, including China, develop strong industries.

Automobiles become common goods in Chinese people's life rather than a luxury or political symbol a decade ago. Middle-class families can afford an automobile for everyday use; lower middle classes prefer electric motorcycles since no license or insurance is needed, even though they are required by law. China's automobile industry develops fast in three decades from a subpar industry to a highly developed industry that can export not only the end products but also technology and production plants (Sina Auto Channel, 2003, 2007; China Net, 2007; Zhou, 2012). Now, China can export its automobiles to East Europe, Middle East, Latin America and African countries (Sina Auto Channel, 2003, 2007; China Net, 2007; Zhou, 2012). Electric cars become popular in large cities such as Beijing and Shanghai. In order to protect the environment and reduce emission, local government provides encouraging

subsidies to support people who want to buy a new energy car and they do not need to be limited by the quota for getting license plate in large cities (East Today, 2016). Vehicles on the road are mostly domestically made due to lower prices and decent quality. However, rapid increase in automobiles brings a lot of troubles in the urban area. Traffic jam, air pollution and insufficient parking lots trouble drivers in most cities throughout the country. Particularly, air pollution is not only due to the increasing number of automobiles, but also the state-owned oil industry that produces low quality gas (Yang, 2017). Rapid development has brought Chinese people to a higher living standard, but also new issues and challenges that wait to be solved.



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