



THE WILLIAM DAVIDSON INSTITUTE  
AT THE UNIVERSITY OF MICHIGAN BUSINESS SCHOOL

*Between Two Coordination Failures:  
Automotive Industrial Policy in  
China with a Comparison to Korea*

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Working Paper Number 67  
Spring 1997

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# **Between Two Coordination Failures: Automotive Industrial Policy in China with a Comparison to Korea**

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## Abstract:

For twelve years now, China has attempted to develop and to consolidate its automotive industry through an industrial policy approach closely modeled on that of Korean government in the 1970s. While the growth of the automotive industry has been impressive, government's consolidation attempt has been a failure. This article argues and uses the example of Korea to show that success of automotive industrial policy (AIP) requires two necessary components. One is to overcome a coordination failure on the part of the firms to invest at a socially optimal level. This is the familiar form of market failure and is known as Coordination Failure 1 (CF1) in this article. The other is to overcome a coordination failure on the part of the firms to restrain entry into the automotive sector. This is known as Coordination Failure 2 (CF2). CF2 is more costly to overcome than CF1 in political terms and this asymmetric cost structure explains much of automotive developments in China.

## Between Two Coordination Failures: AIP in China with a comparison to Korea

In the past twelve years, the Chinese government has undertaken an ambitious program to upgrade both the production and technological scales of the Chinese automotive industry. A key component of the Chinese automotive industrial policy (AIP) is to consolidate the fragmented structure of its automotive industry. The Chinese government has long recognized the close correlations between the fragmentation of the automotive sector and the high unit costs of the production. The problem is especially serious in the production of the passenger cars, a sector where high tariffs and stringent quota restrictions have conferred a huge premium on domestic sales of automobiles and the induced entry has had a detrimental effect on the scale of production of passenger vehicles.

In 1985, the Chinese government declared automotive industry a “pillar” industry targeted for financial and developmental assistance. In 1987, the government adopted the so-called “three-large-three-small-two-mini” policy. This is a policy of authorizing three firms to produce large and compact cars respectively and two firms to produce subcompact cars. In 1989, the central government categorically banned new investments in the passenger car production outside those sites designated by the government. In 1994, the government renewed its effort to rationalize the automotive industry in the most ambitious and comprehensive effort to date. Unlike the previous efforts, the “automotive industrial policy” (AIP) of 1994 specifies fairly detailed objectives and outlines specific methods of accomplishing these objectives, including more targeted financial steering to support large automotive firms and fresh bans on investments in projects outside the government’s sanctioned list.

However, the Chinese automotive industry has remained stubbornly fragmented and its fragmentation has hampered significantly the development of China’s automotive industry. The quality of the Chinese vehicles is poor; China does not have any export positions in the world market in this sector, and its automotive industry remains overwhelmingly an assembly operation rather than an integrated manufacturing operation. Despite the explicit emulation of Korea in the Chinese AIP, the Chinese government has failed to achieve the consolidation objectives in its own AIP and has not made similar progress in production and export as compared with the Koreans during comparable stages of development.

This article explains why the AIP has failed to consolidate the industry in China and it does so by comparing the Chinese consolidation effort with a widely-acknowledged success story--the Korean AIP in the 1970s. My argument starts with the observation that there are two kinds of coordination failures in developing countries trying to launch an ambitious

industrialization program. Coordination Failure One (CF1) is a familiar market failure story in which investments are lower than the optimal level on account of market imperfections. Coordination Failure Two (CF2) refers to a situation in which governments or firms fail to coordinate their activities and this failure results in excessive entry of new firms into the automotive sector. Korea has succeeded in overcoming both CF1 and CF2 while China has focused on solving CF1 and has not been able to deal with CF2 successfully.

The reason is institutional. The Chinese government has attempted an “East Asian style of policy interventions” without having the corresponding institutions to enforce these interventions effectively. One of the reasons is that China still adheres to central planning principles in the way it organizes its government institutions even though the economy itself has moved away from that mode. The rest of this article proceeds as follows. The first section briefly reviews the developments in the Chinese automotive industry in the 1980s and 1990s. The second section presents an analytical framework. The third section assesses Chinese institutions. The fourth section concludes the article with some broad implications.

## **Chinese automotive sector<sup>1</sup>**

During the reform era (1978-1996), the Chinese automotive industry has developed rapidly.<sup>2</sup> In 1978, China produced 149 thousand motor vehicles; in 1995, the production volume reached 1.45 million, almost a ten fold increase in a span of seventeen years. Now China is the world’s eleventh largest producer of motor vehicles after Brazil. Chinese automotive industry is noticeable in another aspect: Multinational enterprises (MNEs) have been a significant source of capital. As of 1995, the foreign direct investment (FDI) stock in the automotive industry was US\$ 10.5 billion, accounting for 7.89 percent of China’s total FDI stock during this period.<sup>3</sup>(Ministry of Machinery Ministry 1996) Almost all the passenger vehicles are produced in

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<sup>1</sup> In this paper, the automotive industry covers passenger as well as commercial vehicles such as buses and trucks. Unless otherwise noted, “automobiles” refer to passenger vehicles.

<sup>2</sup> Academic studies on Chinese automotive industry have been rare. (Harwit 1995 ) mainly describes foreign investment in this sector in the 1980s and the early 1990s. This article draws extensively on the recently released data in China.

<sup>3</sup> The FDI figures are from Ministry of Machinery Industry (1996: 313). The role of MNEs in the automotive sector is expected to increase rapidly in the next few years as a number of large projects, including GM’s US\$ 1.5 billion project in Shanghai, are already in the pipeline.

joint ventures or produced under licensing agreements with the MNEs. In 1995, the joint ventures accounted for 25.3 percent of automotive sales and almost half of the profits in this sector (49.4 percent).<sup>4</sup>

Despite these achievements, the Chinese automotive industry is plagued by a number of serious problems. The foremost problem is the extreme fragmentation of the automotive sector. The 1.45 million production volume in 1995 was spread among some 122 automotive final assemblers. The average unit production volume is only about 12,000 vehicles, one of the lowest average production runs in the world.

A telling indication of the fragmentation in the automotive sector is the existence of the numerous small assembly plants independent of the major automotive firms. The Chinese government designates seven automotive firms as the “key firms” targeted for expansion. Table 1 shows how small these supposedly large “seven majors” are. While governments in other countries support one or two “national champions” in the highly competitive automotive industry, seven firms in China only control 28.7 percent of the total number of the terminal assembly plants and 7.5 percent of components plants. Although they account for 66 percent of the vehicle production, their individual size is small by international comparison. Their average output volume is only 27,446, far below the minimum viable level of production runs, which is commonly estimated to be between 250,000 and 300,000. The seven majors account for less than half of the total assets and of the investments made in the automotive sector in 1995, an indication that the Chinese government is unable to invest strategically.

Table 1.

The under-capacity of the Chinese major firms is best illustrated by a comparison with a number of benchmark countries. Here I chose Brazil, Japan and Korea during the 1960s, 1970s and 1980s as benchmark countries because these countries, similar to China today, attempted to enter the automotive sector at a time when the multinational firms had already firmly established their dominant positions. Thus the varying degrees of success, ranging from Japan’s undisputed leadership in automotive industry today to the more modest records of Korea and Brazil, is an indication that they--as late comers--possessed significant cost advantages as compared with the established American and European firms. Their development experience suggests that although

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<sup>4</sup> The calculations are based on figures provided in Ministry of Machinery Industry (1996: 55-56).

scale economy is not a sufficient condition, it is a necessary condition for the latecoming firms to establish cost advantages over the mature firms.

The most straightforward measure of the scale economy is the concentration ratios of firms, which measures the shares of production by the top firms in the same sector. Table 2 presents the shares of top one, two and three firms in the automotive output.

Table 2

The time periods chosen--1960s and 1970s for Brazil, Japan and Korea and 1980s and 1990s for China--are meant to highlight the status and the changes in the industrial structure during roughly comparable stages of automotive development in these four countries. There are two clear contrasts between Brazil, Japan, and Korea on the one hand and China on the other. One is that across one to three-firm ratios, Chinese automotive industry is far more fragmented both at the beginning and at the end of the period for comparison. In 1985, the one-firm ratio was 19.2 percent in China, as compared with 24.8 percent in Brazil (1959), 32.1 percent in Japan (1960), and 54.6 percent in Korea (1960). The second contrast is that among all three benchmark countries the automotive industry became more concentrated over time; in China, however, over time, the automotive industry became less concentrated. In 1985, for example, the three-firm ratio was 43 percent in China but it declined to 33.3 percent in 1995.

### **An analytical framework**

To some extent, the Chinese failure is puzzling. China in many ways is in a better position to develop its auto sector than Korea was in the 1970s. During the reform era, China experienced very fast growth in per capita income and unlike Korea, China has a large internal market for motor vehicles. Chinese state is also one of the most authoritarian in the world and seems to possess the kind of "political insularity" that many analysts attribute to the success of industrial structuring in East Asia.<sup>5</sup>

*My analysis proceeds in several steps. First, I will show that conventional instruments that the state relies on to overcome CF1s, such as investment organization, production subsidies and import protection, are insufficient to attain scale economy in the automotive industry. Market restrictions to solve CF2s--whether in the form of the state-imposed bans or of firms' internal discipline--are also needed. Second, in general,*

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<sup>5</sup> See (Wade 1990 ) and (World Bank 1993).

*market restrictions are politically and operationally more difficult to enforce than those policies devoted to overcoming CF1s. Their enforcement is more costly and therefore requires a more stringent institutional framework.*

### CF1s and their overcoming policies

Our analysis starts with the familiar form of the coordination failure: Private investments fall short of a socially-optimal level absence of governmental actions either to raise the returns from investments by restricting domestic markets to domestic firms or by socializing investment risks by undertaking public investments and/or by procurement guarantee. In this article, this form of coordination failure is known as Coordination Failure One or CF1 and those policies overcoming CF1s as CF1 policies. The economic analysis that shows CF1 policies to be welfare-improving is the strategic trade policy of the Krugman variety.<sup>6</sup> The idea here is that market restrictions placed on foreign firms can help domestic firms to achieve “cost advantages,” in two ways. One is that a domestic firm can attain economy of scale when the domestic market is closed to foreign firms and the domestic firm does not share the domestic market with foreign firms. The other channel is through learning by doing. Domestic firms can move down the learning curve when allowed a protected home market and will be able to undertake production more efficiently. The strategic industrial policy of Krugman variety mainly refers to those policies as applied to trade restrictions and it can improve a country’s welfare when the two effects mentioned above improve the export position of the domestic firms in the oligopolistic market, an important condition for Krugman’s analysis to work and a condition readily satisfied by the worldwide automotive market.

The other variety of the welfare-improving industrial policy is built around the idea of “big push.”<sup>7</sup> The idea here is that singular investments are inadequate to launch industrialization, for a number of reasons. One is that there is externality associated with certain investment activities. This comes about when the investment made by one firm creates profits for other firms

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<sup>6</sup> Very useful readings are contained in a volume edited by Krugman. See (Krugman 1995), especially, (Brander 1995), (Eaton 1995) and (Carliner 1995).

<sup>7</sup> This part is based heavily on the analysis in (Murphy, Shleifer, and Vishny 1989).



by, for example, changing the composition of demand in the future<sup>8</sup> or by producing a product that lowers the production costs of other firms.<sup>9</sup> The other is that because of the scale economies only when a large share of resources is invested in a sector does the investment become profitable. Thus a private entrepreneur would only be motivated to invest in this sector if others are doing so too. For example, investments in downstream industries are profitable if there are simultaneous investments in the production of inputs from the upstream industries. Thus one of the functions of the government is to raise the private returns to investments equal to the social returns and/or to directly organize investment activities across sectors so that the investments are simultaneous.

### CF2s and their overcoming policies

Many have attributed the Korean success in industrialization to the non-neutral industrial policies on the part of the Korean state. Dani Rodrik, for example, explicitly modeled the Korean and Taiwanese industrialization on the reasoning that the government interventions solved coordination failures on the part of the private firms in these two economies.<sup>10</sup> Another proponent of this school of thought, Larry Westphal (Westphal 1990: 54), puts the contribution of the industrial policy this way:

[S]elective intervention has greatly contributed to Korea's remarkable success. It has done so by accelerating the rate of growth with little if any compensating loss in efficiency terms. Evidence to support this assertion is found in Korea's exceptional record of realizing export success in a wide variety of industries as well as in the strong overall performance of its industrial sector.

However, the rationale for the Korean industrial policy--that it overcomes CF1s--poorly explains the Korean/Chinese comparison in their automotive developments. Public investments, procurements, trade restrictions and production subsidies have all been common components in the Korean and the Chinese AIPs but the results have been quite different. Another anomaly is

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<sup>8</sup> This comes about when the workers are paid higher wages and they demand the kind of goods they would only demand at a higher income level. Thus those firms producing these goods reap the benefits from the change in the composition of the demand.

<sup>9</sup> Typically infrastructure has such an effect. Railway reduces the production costs of other sectors.

<sup>10</sup> See (Rodrik 1996).

the Korean/Taiwanese comparison. The industries of the two economies started out in similar positions in the early 1970s as measured by export levels, the depth of components industry, and the reliance on completely knocked-down (CKD) assembly. Throughout the 1970s, the two governments adopted broadly similar CF1 policies in the form of import restrictions and fiscal and credit support for this sector. Yet, by the end of the 1980s, the two industries had diverged sharply.<sup>11</sup>

A comparison of Korean with Chinese/Taiwanese automotive industries suggests that that successful industrial policies not only encompass trade restrictions and investment/production subsidies--CF1-type policies--but also need to address a coordination failure of a second kind or CF2. CF2s arise when the entry on the part of domestic firms into the sector favored by the CF1 policies is "excessive" and the automotive sector is populated with smaller-than-optimal sized firms and the scale economy fails to occur. CF2s are especially likely to occur when CF1 policies are in place.

High import tariffs or stringent import quotas confer price premium on domestic producers of the import-competing goods and thus induce entry by new firms. There is also an incentive effect. Higher price premia raise returns at any given level of production scale and thus lower the incentive on the part of the domestic firms to increase the production scale. Second, high profit margins induced by protection would induce entry in absence of countervailing policy restrictions. For these reasons, CF2 policies--state-imposed market restrictions--are a key component in any successful AIP, as in the case of the Korean AIP. As will be shown below, the Korean AIP contained stringent entry restrictions on domestic firms, government-imposed market ordering arrangements, and production license re-assignment, in addition to the more positive side of the same policy coin, such as targeted and selective financial support. The CF1 and CF2 policies are summarized in Table 3.<sup>12</sup>

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<sup>11</sup> For an excellent analysis on Korean/Taiwanese comparison in automotive developments, see (Chu 1994). For a detailed case study on the Taiwanese automotive industry, see (Arnold 1989 ).

<sup>12</sup> The foregoing analysis implicitly assumes that there is some coordination failure on the part of the firms to avert excessive capacity and entry. This assumption is not unrealistic in a developing country setting. By definition, the firms in infant industries are also infant firms and thus none of them has achieved a production scale or has moved on learning curve far enough from the rest of the domestic firms sufficient to deter new entry on its own. The Krugman

Table 3.

### Institutional requirements

Industrial policy makers in developing countries face a dilemma. Strong CF1 policies require strong CF2 policies in order to create scale economies but CF2 policies are more costly to enforce in political and bureaucratic terms. This asymmetry in CF1 and CF2 cost structure imposes a stringent institutional requirement on governments pursuing AIP: Governments need to have the political and intellectual capacity to discipline the existing firms to increase scale and to impose restrictions on entry so that the price premium is conferred on one or a few firms rather than being shared among a large group of firms. For the same reason, the asymmetric CF1 and CF2 cost structure explains why the Korean success is rare and the more common pattern are governmental actions heavy on CF1 but light on CF2 policies, as in the case of the Chinese AIP.

CF1 policies reduce the flow of benefits to foreign firms whereas CF2 policies allocate “rent” among domestic firms. Thus both CF1 and CF2 policies are inherently re-distributive but the beneficiaries of the CF1 policies are all domestic firms whereas the CF2 policies pit one group of domestic firms against another group. This is politically costly for the government. CF2 policies also tax government’s analytical ability. CF1 policies are sectoral policies; import protection raises the returns on the protected sector relative to the unprotected sectors. But CF2 policies are firm-specific interventions and they allocate rent to those domestic firms given the entry right and deny the same to those denied the entry right. It requires more technical competence from the government to pick “winner” firms than “winner industries.”

The reason that picking a “winner” industry is easier than picking a “winner firm” is that there are precedents to follow to pick a “winner” industry. In the 1960s, the East Asian governments largely followed the example of Japan in selecting the industries to promote and the

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analysis only applies to stylized developed economies, in which two well-established firms, one domestic and one foreign, are vying for a fixed share of foreign and domestic markets. In developing economies, the main effect of CF1 policies of the Krugman variety is to induce new entry as well as to induce existing firms to invest more. In the Chinese case, most of the new entrants into the automotive sector in the late 1980s and 1990s produce passenger cars. This is a new product area for all the Chinese automotive firms, including the most established firms. Thus the most established firms do not enjoy the kind of first-mover’s advantage to deter new entry.

policy choices were fairly clear from the beginning. Industries with large income elasticity and positive spillovers were targeted.<sup>13</sup> Chinese leaders, for example, essentially emulate Korea and Japan in targeting the automotive sector. Picking firms, however, often means that the government has no precedents to follow and often there is very little *a priori* information about what makes a successful firm. The reason is that the firms in developing countries are “infant firms” and typically their performance is distorted by the CF1 policies, which distort prices. The asymmetric cost structure in CF1 and CF2 policies is summarized in Table 4.

Table 4.

## **Korean and Chinese institutions**

China has pursued a deeper version of import substitution strategy as compared with a number of the “developmental” East Asian economies. According to (Sachs and Warner 1995), China in the 1980s had the highest combination of average tariff rates and import quota coverage as compared with other East Asian economies. The average tariff rate was 25.4 percent and the import quotas covered 29.1 percent of the goods, as compared with Korea’s 13.7 percent and 10 percent, respectively.

China has granted steep protection to the automotive sector. In Korea, the import liberalization in the automotive sector started in the mid-1980s, roughly 13 years after the initial period of HCI drive in 1972 and by the late 1980s, the legal tariff rates were quite low.<sup>14</sup> Roughly, China’s protection level today is about the same level as Korea in the 1970s and the import liberalization in 1994 was very limited. As a result of the high protection, the ratio of the after-tax profits to book value assets in the automotive sector in 1995 was three times the ratio of the manufacturing sector as a whole. This is remarkable considering that the automotive sector is among the heaviest taxed sector and that considerable capacity expansion in the 1990s has already reduced the profit rate in this sector. The comparison of the policy developments in the two countries is shown in Table 5.

Table 5

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<sup>13</sup> For work on follower countries, see (Wade 1990).

<sup>14</sup> Effective protection rate is the sum of the legal rate and the amount of subsidies and this makes the analysis somewhat incomparable for the 1970s. But the low tariff rates in the late 1980s do indicate a meaningful reduction of import protection as this reduction also coincided with withdrawals of governmental subsidies to the automotive sector.

Thus China has pursued a very strong version of developmental, CF1-type policies and yet as the following analysis will show, it does not have the corresponding developmental institutions to enforce CF2 policies. The bulk of the empirical analysis explores these institutional issues. It shows a centralized Korean economic and industry governance, as compared with what can be characterized as “decentralized” or “shared” economic and industry governance in China. Centralized governance means mergers of several policy functions within one government agency and strong financial controls by the government. Decentralized governance means separations among policy functions and diffused financial controls by the government. To enforce CF2 industrial policies requires centralized governance and decentralized or shared governance gives rise to high coordination costs among different government agencies. The following sections first compare Korean and Chinese economic governance and then their industry governance.

#### Economic governance

Economic agencies within the Korean government prior to the economic liberalization of the late 1980s were far more powerful than their counterparts within the Chinese government.<sup>15</sup> The Korean economic governance is characterized by a high degree of “policy integration.” The most important agency was the Korean Economic Planning Board (EPB). The EPB was a supraministerial agency and it was headed by a deputy premier, the only agency in the government headed by a vice premier in the cabinet. The EPB merged several economic policy functions of different ministries, budget from the Minister of Finance (MOF) and the collection of national statistics from the Ministry of Internal Affairs. EPB set up an industrial screening committee and convened regular meetings to supervise the implementation of economic policies. The members included ministers from Ministry of Commerce and Industry (MCI), MOF, and other concerned ministries and disputes over export promotion or rationalization goals were resolved there.

EPB’s financial control was sweeping. Through its supervision over MOF, the EPB effectively controlled Korea’s banking sector and credit allocation decisions as the Bank of Korea Act of 1962 transferred monetary policy authority to the MOF. This authority

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<sup>15</sup> This section draws heavily from (Jones 1980 ), (Johnson 1987 ), (World Bank 1987), (Amsden 1989 ), (Chu 1989), (Stern et al. 1995), (Cho and Kim 1995) and (Nembhard 1996).

encompassed appointment power, the right to “reconsider” the resolutions adopted by the Monetary Board and foreign exchange allocation. In the early 1960s, the government also nationalized commercial banks and the commercial banks were required to deposit their funds in the Korean Development Bank (KDB), to purchase long-term bonds issued by the KDB, and to extend credit to firms with loan guarantees from the KDB. Government’s targeted use of policy loans to support exports and to promote Heavy and Chemical Industrialization (HCI) in the 1970s was also a powerful instrument to re-structure Korea’s automotive industry. Foreign loans were also channeled via government. All the firms wishing to borrow from foreign banks were required to obtain approvals from the EPB. Since foreign credit constituted a significant source of capital to Korean financing, this translated into an important policy leverage for the EPB. The government’s credit control was an extremely important source of policy leverage for the economic bureaucracy because the debt/equity ratio in Korea was extremely high, around 300 percent according to some studies.

The concentration of planning, financing, trade policy functions and analytical capabilities gave bureaucracy crucial leverage and independence. Many observers have remarked about the top-down nature of Korean industrial planning, insularity and secrecy of the economic and fiscal policy deliberations in the Korean government. The political and policy independence from the major business groups in the Korean economy was probably the most critical factor behind enforcement of CF2 type of policies, such as entry restrictions and administrative market segmentation. The importance of this independence is summarized aptly in the World Bank’s “miracle report” on East Asia:

Without it [technocratic insulation], technocrats in the high-performing Asian economies would have been unable to introduce and sustain rational economic policies, and some vital wealth-sharing mechanisms would have been neutralized soon after their inception, as was land reform in the Philippines (World Bank 1993, p. 167)

The State Planning Commission (SPC) in the Chinese government is entrusted with similar policy functions as the EPB and is also a supraministerial agency. The power of the SPC and of the central bureaucracy as a whole is limited.<sup>16</sup> The fundamental limiting factor is China’s decentralized economic management. Regional governments maintain *significant and*

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<sup>16</sup> SPC also has a lower political status now than before. In the 1980s, usually a vice premier headed the SPC but now only a regular cabinet official does so.

*autonomous* economic control, akin to “profit centers” in the M-form organizations.<sup>17</sup> As of 1994, firms under central government accounted for 16.2 percent of employment and 37.8 percent of investments while the central government directly collected 55.7 percent of consolidated government taxes. The relative weak stature of the SPC, as compared with the EPB, means that it is not as independent from other ministries and enterprises. The World Bank economist, Inderjit Singh, has noted that the Chinese government’s priority list for development is inordinately long, a sign of “bottom-up planning,” i.e., the SPC simply aggregates requests from different ministries without being able to be selective and to impose its visions (Singh 1992).<sup>18</sup>

A sharp contrast between Korea and China is fiscal management. In Korea, MOF was a powerful agency due to its combined controls over the budgetary and credit allocations. In China, MOF is much weaker. The central government’s budgetary revenues--taxes and non-taxes--accounted for only 3.1 percent of GNP in 1994, as compared with 18 percent in 1980 in Korea (World Bank 1996, Table 14, pp. 214-215). Budgetary management is not integrated across different ministries and provinces, i.e., the MOF only sets a portion of the financing of the entire public sectoral programs and activities. The Chinese ministries and regional governments finance a considerable portion of their expenditure needs from their non-budgetary accounts that they themselves maintain and that the MOF only monitors indirectly.

During the reform era, the size of non-budgetary account has grown relative to the size of the budgetary account. Table 6 presents two estimates of the ratios of nonbudgetary revenue to budgetary revenue during the reform era.<sup>19</sup> Between 1982 and 1994, a period of sustained and

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<sup>17</sup> In an M-form corporate organization, the central office monitors subsidiaries’ cash and profit flows but it does not intervene in their operations (Williamson 1975 ). (Qian and Xu 1993) have compared China’s economic system to an M-form organization.

<sup>18</sup> Local governments also use other methods to evade central control. One method is to “miniaturize” investment projects so that they do not reach the “trigger” level for review by the SPC by breaking a large project into several small projects. See (Huang 1996).

<sup>19</sup> The main difference between the two estimates is that the lower bound estimate does not include retained earnings by the supervisory agencies and firms, while the upper bound figures do. The non-budgetary revenue as disclosed in the Chinese statistical sources is broken down by governmental or quasi-governmental account and enterprise account--retained earnings. Here the enterprise retained earnings are netted out in order to more accurately measure the size

extensive fiscal decentralization, the ratios steadily increased, from 0.12 to 0.36, in the lower-bound estimate. There has been a similar trend in the upper-bound estimate; by 1992, the size of non-budgetary revenue--inclusive of retained earnings at the supervisory agencies and firms--was larger than that of the budgetary revenue. As measured by the lower-bound estimate, in 1994, an amount of fiscal stance equivalent to 36 percent of the budgetary revenue lay outside the purview of the MOF.

Table 6

#### Governance of the automotive industry

Korean automotive industry was governed in a highly centralized fashion. One agency, Ministry of Commerce and Industry (MCI), was in charge of implementing the AIP. Its mandate was to issue "administrative guidance" to industries, similar to those functions performed by the powerful Japanese Ministry of International Trade and Industry (MITI).<sup>20</sup>(Johnson 1982) The MCI had the sole authority to regulate entry and impose market order on private firms and MCI, similar to its Japanese counterpart, also was in charge of implementing foreign trade policies.<sup>21</sup>(Chu 1994) (Jones 1980 )

In China, Ministry of Machinery Industry (MMI) is in charge of the auto sector but unlike its Korean counterpart, it is not an economywide regulatory agency; its supervision over the auto sector is only partial and it exercises power over the manufacturing stage of the value chain but not the distribution stage. Incomplete controls and separated policy functions characterize the way the MMI supervises and regulates the auto sector in China.

Similar to MCI, MMI formulates both the macro policies toward the automotive sector as well as technical standards for automotive products, issues production licenses, and specifies localization goals and schedules. But the main difference is that the MMI only has partial enforcement power over the auto sector. Unlike the Korean ministry, which was an economywide regulatory agency, MMI has more control over the downstream firms in the

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of government's non-budgetary revenue. However, no such breakdowns are available for the non-budgetary expenditures.

<sup>20</sup> The classic work on Japanese Ministry of International Trade and Industry is Johnson (1982).

<sup>21</sup> The discussion here is based on Jones and Sakong (1980) and Chu (1994).



automotive sector and relatively little control over the upstream firms.<sup>22</sup> While firms under MMI accounted for 74 percent of the automotive output value and 61 percent in the automotive employment in 1993, MMI only controls a fraction of the machinery sector. In 1993, for example, the firms under MMI accounted for 36.2 percent of the output value of the machinery industry and about 33 percent of the employment in the machinery industry.<sup>23</sup> (Ministry of Machinery Industry 1994a)

Even over the downstream, terminal firms, MMI does not have full supervisory control. Seven other powerful ministries or agencies in the Chinese system also manufacture and assemble vehicles. Table 7 presents the shares of control, as broken down by output, number of firms, employment, sale, etc. The non-MMI firms are controlled by Ministry of Justice, Ministry of Ordinance Industry, Ministry of Communications and Ministry of Construction. In addition, two corporations with the ministerial rank, General Aviation Corporation and General Aeronautic Corporation and the Department of General Logistics under the Central Military Commission are also involved in automotive production. Although MMI accounts for a large fraction of output value (73.4 percent), sale (54.9 percent), number of firms (54.9 percent) and employment (62.4 percent), non-MMI firms employ a significant portion of the automotive labor force and are numerous in quantity.

Table 7.

As in other areas of the Chinese economy, regional governments exercise significant control. The Chinese system divides all the state firms into central and regional firms and an important source of governmental control is the power to appoint firm managers. MMI itself only appoints managers to three large conglomerates, which in turn control 17 out of the 122 final assembly firms. MMI exercises indirect and limited appointment power over the rest of the final assembly firms. As a standard practice in the Chinese system, the regional bureaus of the MMI report directly to regional governments, not to the central MMI in Beijing.<sup>24</sup>

As pointed out before, the Korean ministry, MCI, integrates both industrial policy and trade policy functions. However, MMI supervises the manufacturing functions but exercises

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<sup>22</sup> Downstream firms are at the terminal stage of automotive production and assemble vehicles whereas upstream firms supply components and raw materials.

<sup>23</sup> Calculated from Ministry of Machinery Industry (1994).

<sup>24</sup> For more details on the Chinese system in this aspect, see (Lieberthal and Oksenberg 1988).

minimal distribution functions. Domestic trade of final automotive products is regulated by the Ministry of Internal Trade (MIT). Foreign trade in automotive products is similarly outside the power of the MMI and is subject to regulatory power and administrative restrictions imposed by the Ministry of Foreign Trade and Economic Relations. The economic reforms have considerably liberalized marketing in the auto sector. The governmental, non-price allocation of motor vehicles in 1994 was only 4 percent of the total volume of motor vehicle transaction. (Ministry of Internal Trade 1995)

Table 10

## **CF2 policies in Korea and in China**

Successfully enforcing domestic entry restrictions in the presence of high import protections in Korea results from the centralized economic and industry governance described above. Specifically, the centralized industry governance enabled one single agency of the Korean government to possess many policy instruments and to use the policy instruments in one area--such as foreign trade--to facilitate enforcement of policy goals in another area (such as consolidation in the automotive sector). The centralized industry governance and the strong financial control also enabled the Korean government to reward or penalize companies in ways that are compatible with consolidation objectives.

In China, these policy instruments are not available to MMI. To enforce entry restrictions, MMI needs cooperation from other agencies but the fundamental problem is that MMI is either equal with or inferior to these very agencies in bureaucratic and political status. For example, the Chinese army is not only completely independent of but far more powerful than the MMI. A further complication is that on a bureaucratic level the MMI has exactly the same rank as provincial governments from whom MMI seeks cooperation to enforce its policies. This bureaucratic and political equality means that the MMI cannot issue binding edicts to provincial governments.<sup>25</sup> (Lieberthal and Oksenberg 1988) The relationship between ministries and provincial governments is best characterized as that of consultations and negotiations.

These institutional characteristics vastly complicate MMI's management of the auto sector. As an example, even though the MMI firms are more efficient than the non-MMI firms and thus the burden of the restructuring ought to fall on the non-MMI firms, the 1994 consolidation effort produced exactly the opposite result. While the number of MMI firms fell

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<sup>25</sup> In the Chinese political system, a ministry is of the same rank as a provincial government. See Lieberthal and Oksenberg (1988).

from 1,341 to 1,286 from 1994 to 1995, the number of the non-MMI firms increased from 1,101 to 1,193 during the same period (Ministry of Machinery Ministry 1996). This section describes some of the restructuring attempts in Korea and in China in some detail.

## Korea

Korean success in automotive industry is widely acknowledged. The beginning of the Korean automotive industry is usually dated to 1972 when the government launched the famous Heavy and Chemical Industrialization (HCI). The production and the export of Korean vehicles increased rapidly. In 1974, Korea only produced 9,100 units; by 1979, the production volume increased to 113 thousand units (Altshuler et al. 1986: 42). Korean automotive industry achieved export success very early in its development. In 1975, three years after the initiation of the HCI drive, Korea exported only 31 vehicles; in 1980 the export volume reached 25,253 units, accounting for 20.5 percent of the total vehicle production for that year (Motor Vehicle Manufacturers' Association 1995). In contrast, ten years after the auto industry was incorporated as a pillar industry, China in 1995 exported 17,747 units, accounting for 1.22 percent of the total production.

One of the prominent features of the Korean AIP approach was its firm- and product-specific character.<sup>26</sup> The Korean government was able to assign and re-assign production licenses to private firms in ways that were compatible with its AIP objectives. In order to achieve scale economies, the Korean government vigorously enforced entry restrictions. In 1974, the Korean government stipulated three primary producers in automotive production--Hyundai, Kia, and GM-Korea (later Saehan, which was taken over by Daewoo), a stipulation the government enforced vigorously. The force of the entry restriction was augmented by the government's exit policy, which was designed to carve out domestic markets and to facilitate production scale by product specialization. In the wake of the second oil crisis and the slowdown in the world economy, in 1980, Kia, one of three firms, was forced to exit from passenger production in 1980 was granted monopoly in light trucks and the government instructed Hyundai and Kia to choose between cars and power equipment as a part of government's automotive industry rationalization plan. The strict entry and exit requirements enabled the Korean automotive makers to achieve economy of scale quickly. Kia's production of passenger cars declined from 22,140 units in 1979

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<sup>26</sup> This section draws from (Hyun and Lee 1989), (Chu 1994), (Stern et al. 1995), (Lew 1992), (Wade 1988 ) and (World Bank 1987).

to zero in 1984, while Hyundai's production rose from 71,744 units in 1979 to 123,110 units, increasing the one-firm ratio in car manufacturing from 63.2 percent to 77.7 percent. The one-firm ratio for the entire automotive sector increased from 50.8 percent in 1980 to 53.1 percent in 1984.<sup>27</sup> Kia suspended its car manufacturing until 1987 when it was allowed to resume the production by the government. The entry and exit policies are not the only tools available to the government. The government required the producers to cooperate in the production of standardized parts and components. The government was able to segment market among the three producers.

The ultimate stick that the Korean government used to solicit compliance from companies such as Kia was its control over financial resources. There were a number of sources. The first one was the firm-specific direct government assistance, which HMC received from the government until 1989 (Stern et al. 1995, p. 162). Second, firms would need government guarantees when they borrowed abroad, which gave the government a mechanism to screen and channel their financing.

The other approach in the Korean AIP is to use export promotion as a way to increase production scale. Despite its rapid economic growth, the size of Korean domestic market for automobiles was still quite small in the 1970s and 1980s and focusing exclusively on domestic market would have limited automotive firms' growth potentials and resulted in sub-optimal scales.<sup>28</sup> Exporting would also prompt the Korean firms to improve quality of their products as their products would have to meet tough safety, fuel efficiency and emissions standards in developed economies.

The Korean government used contests to spur the auto makers to export. One contest was the administrative allocation of premia associated with domestic sales of cars, which arose due to import restrictions. The Korean government granted the right to import top-of-line models (in kit) to those firms which fulfilled the targets to export cars. The profitability of this arrangement can be roughly gauged by the price differentials of a domestic model, the 1979 Hyundai Pony. Its

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<sup>27</sup> Calculated from World Motor Vehicle Data 1995.

<sup>28</sup> The need to export in order to achieve scale economies in Korea is illustrated by comparing Korea and with Japan. It took Korea only about five years after beginning automobile production to export 15 percent of the output whereas it took Japan more than ten years. See (Amsden and Kim 1989)

export price was \$2,200 but its domestic price was \$5,000. The production cost was \$3,700. The other contest was the administrative allocation of foreign exchange to those firms who fulfilled their export targets. The Korean auto makers especially relied on preferential allocations of foreign exchange because producing for more competitive and mature foreign markets needed large importation of foreign technology. Hyundai Motor Company, between 1968 and 1985, acquired fifty-four technological licenses from eight countries. To develop Pony, HMC's successful export product, HMC hired a former managing director and six other technical experts from British Leyland as well as acquiring body styling and design from Italy and engine and transmission technology and axle design from Mitsubishi (Hyun and Lee 1989).

## China

These governmental contests were easier to enforce when policy integration enabled a single government agency to regulate foreign trade, industrial policies and finance. The shared industry governance creates obstacles to this kind of integrated approach. Shared governance implies two kinds of separations. First, policy making and policy enforcement are separate and second, production and sale functions are separate under the Chinese institutional arrangement. These two separations in turn imply that the Chinese government is simply unable to enforce consolidation policies over the automotive sector in a consistent, coherent and targeted manner that characterized the style of Korean AIP.

As pointed out before, the enforcement of the AIP in China depends on cooperation from multiple agencies, which increases the coordination costs. Secondly, some of the regulations and policies MMI has tried to enforce, such as entry restrictions, work directly against the economic interests of these government agencies and some of these agencies have a bureaucratic stature that is either equal to or higher than that of the MMI. The Chinese military, for example, has a significant stake in the automotive industry and its political influence far exceeds the MMI. MMI has considerable troubles restricting entry by non-MMI firms. As shown in Table 9, on average, MMI firms are about twice as large as the non-MMI firms as measured by asset size and sales and yet MMI has not been as effective in consolidating the non-MMI firms despite their smaller scale and less efficient operations. In 1995, there were 1,286 firms under the MMI system as compared with 1,432 in 1992. The number of the non-MMI firms, however, increased from 1,123 in 1992 to 1,193 in 1995, reversing a declining trend in 1993 and 1994. A plausible explanation is that the MMI exercises less power over the non-MMI firms because of the administrative divisions.

Table 9

Table 10.

There are numerous examples of the failure by the MMI to enforce entry restrictions. Table 10 describes the wide discrepancy between the policy announcement on the one hand the actual outcome on the other. Although the official policy since 1987 has been to sanction eight passenger car producers and the 1989 industrial policy and the 1994 AIP explicitly banned new passenger car projects, as of 1995, there were in fact twelve producers with a production volume above 1,000 units. In addition, despite the 1987 policy of restricting subcompact cars to only two producers, in 1995, there were about twenty-nine small producers either with the ongoing production of subcompact cars or with production plans to do so in the future.<sup>29</sup> The formulation of the 1987 policy of sanctioning eight car producers itself was symptomatic of the porous policy enforcement. At first, the policy was to allow seven producers and the eighth was added at the last moment due to pressures from the defense industry.<sup>30</sup> Of the 122 final assembly plants, seven of them operate without production licenses from the MMI and in 1994 they had a combined output volume of 11,888 units of motor vehicles in 1994. As striking evidence of the porous AIP enforcement, in 1992, out of the total sixty-five motorcycle producers in China, forty of them operated without production licenses and five of them managed to be among the top twenty motorcycle producers in the country.<sup>31</sup>

## Implications

The problem with the conventional prescription for the strategic industrial policy is that it has performed poorly as an empirical explanation for why some countries succeeded in developing the automotive industry and why others have failed. Korea, Taiwan and China have all adopted policies broadly consistent with Krugman/Rodrik variety of strategic industrial policy but Korea remains the lone success story. Other developing countries are littered with examples of infant industries that have never matured. The failures are far more common than successes.

This article offers an institutional explanation. It shows that “simulating market,” to borrow the phrase from Robert Wade, is politically and intellectually demanding on governments. Arguably, when the requisite institutional characteristics, such as policy integration

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<sup>29</sup> For a list of these producers, see (Ministry of Machinery Industry 1996b).

<sup>30</sup> The eighth producer was the subcompact producer in Shaanxi.

<sup>31</sup> See (Ministry of Machinery Industry 1993), p. 107 and p. 111.

and bureaucratic competence, are absent, pursuing strongly developmental policies can make a country worse off than otherwise. The fundamental reason is that strongly developmental policies, such as import protection, without the political capacity to restrict entry, creates a strong bias toward smaller than optimal production scales. CF1 policies require CF2 policies to make them successful. The following paragraphs offer a number of broader implications drawn from our analysis.

### Economic maturity

The truly distinguishing characteristic of the East Asian development is its leapfrogging process. The process of economic maturing was faster in the East Asian Newly industrialized economies (NIEs) than in any other country in the world. It took roughly 15 years for Taiwan and South Korea to complete a process of industrialization which took Japan 25 years and the Great Britain 50 years. Korea roughly doubled the share of manufacturing in GDP between 1960 and 1983, from 14 percent to 30 percent; in the 1980s, for both Korea and Taiwan, the share of manufactures in exports was around 90 percent, compared with 14 percent for Taiwan and 32 percent for Korea in 1960 (Wade 1990 : 44).

The economic success of China so far is mainly in the area of production of labor-intensive products, as indicated by the enormous expansion of Chinese foreign trade along the line normally expected from a low-income and labor-abundant country such as China. This process is facilitated in no small measure by the investments of what Louis Wells calls "mobile exporters"--the Asian corporations which have invested enormous amount of capital in China, mainly in labor-intensive products that they used to produce locally (Wells Jr. 1993 ). In this regard, Hong Kong provides a striking example. Today, 77 percent of Hong Kong's 3.1 million labor force is employed in the service sector but Hong Kong firms in China employ about 3 million Chinese workers.

There is doubt whether China can successfully the make the kind of transition in a leapfrogging fashion as other East Asian NIEs to capital-intensive products which embody skills and technological know-how and which, above all, require scale for efficiency. The lesson from East Asia is that for the second-stage industrialization to occur in a leapfrogging fashion government needs to play a more active role in financing, steering or even organizing investment and production activities. But as the above analysis shows, China may not have the appropriate institutions for this task.

## Trade liberalization

This lack of institutional capacity imposes a specific cost on the Chinese government. One of the most contentious issues over the negotiations about Chinese accession to the World Trade Organization (WTO) is its steep protection over the automotive sector. China may be forced to liberalize this sector at a time when the automotive industry is still in its infancy, unlike Korea in 1986 when it embarked on import liberalization after its automotive industry had already become quite competitive. Had China been able to discipline its automotive industry more effectively in the last twelve years, it could have liberalized the sector at a significantly reduced cost.

## Policies and institutions

After 17 years of economic and fiscal decentralization and bureaucratic downsizing, the central government in China is discovering the appeal of industrial policy. During the reform period, the government was moving away from the two pivotal instruments of central planning: administrative investment controls and material balances. And it is necessary for the government to find new ways to regulate and shape economic development in a decentralized environment. Heavily influenced by the East Asian experience, the state bureaucrats are convinced that administrative guidance, industrial targeting, credit and fiscal subsidies and optimal import restrictions are the new policy tools of the state.

This interest is misplaced. East Asian governments pursued industrial policies in a very different environment from the Chinese leaders. Effective industrial policies depend on the presence of corresponding institutions. The fundamental issue is that China is not an East Asian economy in an institutional sense. At a micro level, state firms dominate the automotive sector and this ownership difference has also contributed to the divergent outcomes described above.<sup>32</sup> At a more macro level, government institutions are still organized on the basis of central planning that allocates governmental tasks by products rather than by functions. Additionally, an

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<sup>32</sup> This may produce the expectation on the part of the state firms that they can always rely on government for protection and procurement. It also affects their production orientation. Most of them concentrate on high-end vehicles because most of their users are government officials who are not constrained by hard budget. The average size of Chinese passenger cars is larger than the Japanese size in 1992. For example, all the state firms have completely neglected agricultural utility vehicles that the Chinese peasants strongly demand. This issue will be dealt with separately.



uniquely Chinese institutional characteristic is the strong role of regional governments, which imposes coordination costs on central attempt to enforce market-suppressing industrial policies.

Another reason that emulating East Asian NIEs may be inappropriate for China is that the Chinese government is faced with more daunting tasks. For East Asian governments, the task in the 1960s, 1970s, and 1980s was to transform their economies from rural to industrial economies. Only much later since the late 1980s, the issue of economic reforms became important. The Chinese leaders face the twin task of industrialization as well as institutional reforms and this is a far more daunting task.

#### Political economy of economic reforms

Organization of government institutions has increasingly become an issue in the debate on economic reforms. Government needs to be organized in ways that are compatible with the way the economy works. Reforms of government institutions encounter immediate political barriers. The Chinese reform experience has been characterized by a gradualist approach. When the government took measures to reduce the power of central ministries, the local governments gained power as a result. That way, the government ensured that its policies were supported by some constituents in the system. As our analysis shows here, reforming government institutions now, however, requires undoing some of the power gained by the local governments during the reform era and reconfiguring the central ministries by converting them from product planning agencies into economy-wide regulatory agencies. The political costs are higher now than before.

Tables and Figures

**Table 1 Seven major firms in the Chinese automotive sector, 1995**

	Number of assemblers	Number of suppliers	Vehicle volume	Book value of assets (billion yuan)*	Investments in 1995 (billion yuan)
7 Majors	35	129	960,618	48.57	7.38
Auto Industry	122	1732	1,452,697	115	23.13
Shares of the 7 Majors	28.7%	7.5%	66.1%	42%	32%

\*: Value of fixed-assets evaluated in original prices.

Source: China Automotive Yearbook 1995.

**Table 2 Concentration Ratios of the Automotive Industry: Four-Country Comparison (%)**

	One-Firm Ratio	Two-Firm Ratio	Three-Firm Ratio
Brazil:			
1959	24.8	42.7	60.6
1970	56.1	74.3	91.2
Japan:			
1960	32.1	56.1	65.1
1975	33.7	63.6	72.8
Korea:			
1975	54.6	77.7	96.4
1986	71.3	88.6	97.9
China:			
1985	19.2	38.0	43.0
1995	12.6	23.6	33.3

Sources: Data on Brazil, Japan, and Korea are calculated from World Motor Vehicle Data and Ward's Automotive Yearbook, various issues. Data on China are calculated from China Automotive Yearbook 1995.

**Table 3 CF1 and CF2 policies and their rationales**

	Policy rationales	Policy examples	Theoretical significance
<u>CF1 policies</u>			
1) Strategic trade	<ul style="list-style-type: none"> <li>• Increase the size of the market available to domestic firms.</li> <li>• Gain competitive advantage.</li> </ul>	<ul style="list-style-type: none"> <li>• Import restrictions.</li> </ul>	<ul style="list-style-type: none"> <li>• Settle the debate between developmental state argument and neoclassical argument about the neutrality of the state interventions.</li> </ul>
2) Big push	<ul style="list-style-type: none"> <li>• Equalize actual returns to latent returns on private investments.</li> </ul>	<ul style="list-style-type: none"> <li>• Tax and credit subsidies.</li> <li>• Public enterprises.</li> <li>• Investment coordination.</li> </ul>	
<u>CF2 policies</u>			
	<ul style="list-style-type: none"> <li>• Restrict domestic entry in the presence of CF1 policies.</li> </ul>	<ul style="list-style-type: none"> <li>• Restrictive licensing. Compulsory exit and merger.</li> <li>• Market segmentation policies.</li> <li>• Co-production arrangements.</li> <li>• Firm-specific credit and tax subsidies.</li> </ul>	<ul style="list-style-type: none"> <li>• Explain why some developmental states succeed while others fail.</li> </ul>

**Table 4 The asymmetric cost structure of the CF1 and the CF2 policies**

	Policies	Beneficiaries	Resource allocation	Requirements
CF1 policies	<ul style="list-style-type: none"> <li>• Restrict foreign access.</li> <li>• Investment mobilization.</li> </ul>	<ul style="list-style-type: none"> <li>• Rent distribution from foreigners to domestic firms</li> </ul>	<ul style="list-style-type: none"> <li>• Inter-sectoral allocation.</li> <li>• Pick a winner industry</li> </ul>	<ul style="list-style-type: none"> <li>• Normal institutions.</li> <li>• Normal bureaucracy.</li> </ul>
CF2 policies	<ul style="list-style-type: none"> <li>• Restrict domestic access.</li> <li>• Investment allocation.</li> <li>• Set up alternative contests.</li> </ul>	<ul style="list-style-type: none"> <li>• Rent distribution among domestic firms.</li> </ul>	<ul style="list-style-type: none"> <li>• Inter-firm allocation.</li> <li>• Pick a winner firm.</li> </ul>	<ul style="list-style-type: none"> <li>• Strong institutions.</li> <li>• Capable bureaucracy.</li> </ul>

**Table 5 Protection and import liberalization on finished vehicles in Korea and China**

	Tariff levels	Administrative restrictions
<b>Korea</b>		
1) High protection in the 1970s and the early 1980s:	Effective protection rate on transport equipment: 327% in 1978 and 124% in 1982.	Effective ban on vehicle imports since 1966.
2) Liberalization since 1986	Legal tariff rate: 30% in 1988 and 10 % in 1993.	Phased-in liberalization, first in special-purpose vehicles (1986), commercial vehicles (1987) and then passenger cars (1988).
<b>China</b>		
1) High protection in the 1970s and 1980s-mid-1990s:	Legal tariff rates ranged from 200% to 240%.	Extensive and highly discretionary quota restrictions.
2) Limited liberalization since 1994:	Legal tariff rates ranged from 110% to 150%.	Reduced quota coverage and reduced discretion. Published the negative list.

Sources: Tariff figures for Korea and China are found in (World Bank 1987) and (Ministry of Machinery Industry 1994b).

**Table 6 Ratios of non-budgetary to budgetary revenues during the reform era.**

Ratios/Year	1982	1985	1990	1992	1994
Lower bound	0.12	0.14	0.22	0.28	0.36
Upper bound	0.66	0.76	0.92	1.11	N/A

Note: Lower bound figures do not include retained earnings by the supervisory agencies and firms. Upper bound figures include these earnings. For 1994, the reported figure does not include retained earnings and therefore is not comparable to previous years.

Source: (State Statistical Bureau 1996, pp. 235-236).

**Table 7 Shared Governance: Shares of production by MMI and non-MMI firms in automotive sector, 1994 (%)**

	MMI firms	Non-MMI firms
<u>Terminal Sector</u>		
Physical output	87.5	12.5
Number of firms	63.1	36.9
<u>Entire Sector</u>		
Output value	73.4	26.6
Number of firms	54.9	45.1
Sale value	74.1	25.9
Employment	62.4	37.6

Note: Non-MMI firms refer to those under the following ministries or their related agencies: Ministries of Communication, Light Industry, Urban Construction, Justice, Defense, Chemical Industry, and other miscellaneous agencies.

Source: (Ministry of Machinery Industry 1996b), p.8 and p. 17.



**Table 8 Chinese Ministry of Machinery Industry: Segmented Governance Structure**

	Policy functions	Regulatory reach	Management appointment	Controls over value chain
MMI	<ul style="list-style-type: none"><li>• Policy making.</li><li>• Co-enforcement authority with other agencies.</li></ul>	<ul style="list-style-type: none"><li>• Downstream firms.</li><li>• MMI firms.</li></ul>	<ul style="list-style-type: none"><li>• Central firms (17 out of 122 final assemblers).</li></ul>	<ul style="list-style-type: none"><li>• Manufacturing.</li><li>• Very little control over distribution.</li></ul>

**Table 9 Number of MMI firms and non-MMI firms and their performances**

	1992	1993	1994	1995
<u>MMI Firms</u>				
No. of Firms	1432	1349	1341	1286
Average book value of asset (million yuan)	22.6	31.2	43.56	60..3
Average sale (million yuan)	63.44	101.8	102.4	117.2
<u>Non-MMI Firms</u>				
No. of Firms	1123	1113	1101	1193
Average book value of asset (million yuan)	12.1	10.03	20.87	31.4
Average sale (million yuan)	24.84	41.41	43.6	55.96

Source: (Ministry of Machinery Industry 1993), (Ministry of Machinery Industry 1996b), (Ministry of Machinery Ministry 1996), and (Ministry of Machinery Industry 1996a).

**Table 10 Official policy and reality in the Chinese automotive sector, 1994 and 1995.**

	<b>Passenger cars</b>	<b>Compact cars</b>	<b>Licensing</b>
<b>Official policy goals</b>	• 8 main producers	• 2 main producers.	• Need license to produce vehicles.
<b>Reality</b>	• 12 producers above 1,000 units	• 29 producers either in operation or in the pipeline.	<ul style="list-style-type: none"> <li>• 7 out of 122 final assemblers without license.</li> <li>• 40 out 65 motorcycle producers without license.</li> <li>• 5 of these motorcycle producers among the top twenty producers in the country</li> </ul>

Source: Same as Table 9.

## Abbreviations

AIP: Automotive Industrial Policy.

CF1 policies: Government policies to solve CF1 (such as import restrictions).

CF1: Coordination failure one (= Insufficient investments).

CF2 policies: Government policies to solve CF2 (such as domestic entry restrictions).

CF2: Coordination failure two (= Excessive domestic entry).

CKD: Completely knocked-down.

CPEs: Centrally planned economies.

EPB: Economic Planning Board in Korea

FAW-VW: First Auto Work-Volkswagen

MCI: Ministry of Commerce and Industry in Korea.

MMI: Ministry of Machinery Industry in China

MOF: Ministry of Finance.

SH-GM: Shanghai Motors-General Motors

SH-VW: Shanghai Volkswagen

SKD: Semi knocked-down.

SPC: State Planning Commission in China.

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