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**Different Behaviors of Chinese Auto Maker in
Technology Introduction and Assimilation**

Jin Chen

Tianjin Commerce University, China

Takahiro Fujimoto

The University of Tokyo

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Technology Introduction and Assimilation**

Jin Chen

(Ph D Student of Graduate School of Tokyo University /
Associate Professor of Tianjin Commerce University, China)

Takahiro Fujimoto

(Associate Professor of Faculty of Economics, Tokyo University)

Abstract

The subject of this study focus on the car industry which is becoming an important element for the development of Chinese economy. The realistic comparison is conducted on their various adaptation behaviors to environmental change & management resource, the way of changing former organization behavior, the formation of their development strategies of the former large enterprises and medium and small-sized enterprises, which have poured into the car industry and are establishing mass production.

Concretely, this study analyzes the case of Chinese Auto industry by the framework of corporate strategy theory. The subject of this study is First Automotive Works Corporation, Dong Feng Motor Corporation, Shanghai Automotive Industry Corporation and Tianjin Automobile Industry Corporation, so called "Top Four" in current Chinese Auto industry, and the comparative verification is focus on the introduction of car production technique & the enlargement of production and the implementation of their development strategy and performance process .

I. Problem Consideration and Research Method

This research attempts to analyze the difference of competitive behaviors among Chinese modern corporation by the theory framework of corporate strategy. The subject of this study focus on the car industry which is becoming an important element for the development of Chinese economy. The realistic comparison is conducted on their various adaptation behaviors to environmental change & management resource, the way of changing former organization behavior, the formation of their development strategies of the former large enterprises and medium and small-sized enterprises, which have poured into the car industry and are establishing mass production.

Concretely, this study analyzes the case of Chinese Auto industry by the framework of corporate strategy theory. The subject of this study is First Automotive Works Corporation (FAW), Dong Feng Motor Corporation (DFM), Shanghai Automotive Industry Corporation (SAIC) and Tianjin Automobile Industry Corporation (TAIC), so called "Top Four" in current Chinese Auto industry (See Fig.1), and the comparative verification is focus on the introduction of car production technique & the enlargement of production and the implementation of their development strategy and performance process .

This paper mainly concentrates on the different performance pattern and development speed of each competitive auto maker, especially former large-sized enterprises and medium and small-sized enterprises are almost under the same environment condition. Furthermore, how do these enterprises establish their development strategies? How do they conduct their competition performance? what are their competition

achievements? And what are their main formation elements?

The reason we selected FAW, DFM, SAIC and TAIC as the subject of this study is followings: This four makers, showed as in Fig.1, is not only the top makers in Chinese Auto industry, but also the typical national enterprise. They have taken the quite different ways on technology introduction along with environmental change since 1980's. Tab.1 shows their quite different management performance of these 4 makers. The important parameters, such as total sum of profit, average productivity of each employee, etc., have changed rapidly. Especially the former medium and small-sized enterprises, such as SAIC and TAIC, developed much faster than the former large-sized enterprises. The research on this aspect has not been conducted so far worldwide.

II. Historical Development of Chinese Automotive Industry and the Strategic Framework of Car Makers

Along with the import of automobile, automobile transportation developed in big cities like Shanghai, Tianjin, Beijing and etc. between the 1920s and 1930s. Meanwhile automobile repair shop and parts manufacturing works were established. In 1937 China-Japan War took place. Newly established car makers had to be moved to the middle or west area because of the invasion of the Japanese army. On the other hand, Japanese built up assembly and repair plants for military trucks in Shanghai, Tianjin, Jinian, Wuhan and all these plants declined after the Pacific War.

In the early 1950s, the Soviet Union undertook the 156 projects of technological and financial assistance to China, including the construction of one complex auto manufacturing works. Referring to the candidate cities,

China used to consider Beijing, Xi'an, Wuhan which had parts production foundation. But finally Changchun in northwest area which was near to the Soviet Union was selected according to the suggestion of the Soviet. This led China to construct the First Automotive Works, which symbolized the starting of the Chinese car industry. On the other hand, from 1957 due to the shortage of auto supply, especially the autos except for medium-sized trucks, local government invested to establish small auto plants, which most of them did not exist later. The existing plants were those primary ones with the former repair and parts production foundation, i.e., Shanghai Passenger Car Plant, Beijing Jeep Plant, Nianjing Light Duty Truck Plant and Jinan Large Truck Plant.

In the middle 1960s, the central government started to establish the Second(DFM) Auto Corporation of medium-sized military truck for the preparation of the war with the US and the Soviet. This project was the highly vertical integrated production zones based on FAW model. But it was constructed in isolated mountain area with serious environment conditions. Besides, from the late 1960s, along with the continuous development of former primary plants like Shanghai Passenger Car Plant, Beijing Jeep Plant, Nianjing Light Duty Truck Plant and Jinan Large Truck Plant, some specially-equipped(custom-designed) vehicle plants were established in local area for local transportation needs. Started by Beijing Jeep Plant, some local works like Tianjin Auto Works, Shenyang(Golden Cup) Auto Works, Guangzhou Auto Works, Wuhan Auto Works and etc. began to imitate and trial produce light duty truck, which led to the increase of light duty vehicle makers.

From the late 1970s, China adopted an openness policy. Due to the enlargement of auto market and the supply shortage, the construction of local makers was beyond control. On the other hand, along with the opened

market and the increase of car import, the distance of Chinese automobile technology level with developed countries obviously appeared. In order to shorten this distance, from the end of 1970s the government pursued the policy of introduction of advanced technique. At that time the large corporations like FAW and DFM affiliated the central government concentrated on the model change of medium-sized truck and the diversification of truck production. They did not pay attention to car production. The central government approved the joint venture projects of Beijing Auto Industry Corporation and SAIC to increase the production technique level.

Due to the supply shortage of passenger car and bus, from the middle of 1980s car import increased rapidly. The central government started to consider new industry policy. Guangzhou Auto Industry corporation which introduced pick-up technique and TAIC which introduced mini-vehicle technique had introduced car production technique immediately from usual technique corporation partners. In May 1987, the central government held "Chinese Automobile Industry Development Strategy Forum" in Dong Feng Motor Corporation, clarifying FAW and DFM as important car production groups with the development plan as two steps (DFM comes the first and FAW the second). Actually DFM project was foiled because of the sanctions of French government after the Tian'anmen Affair in 1989. On the contrast, the joint venture projects between FAW and VW led to a success. Later on, the central government had increase import tariff in order to protect domestic car market and pursued different tariff policy for domestic makers to import CKD parts for the promotion of car localization.

The demands for car increased rapidly (refer to Table 2), especially for mini car. Meanwhile, showed as in Figure 2, the productivity of SAIC and

TAIC increased rapidly, and finally ranked as top two. In order to join WTO, the central government pursued new automotive industry policy on Feb. 19, 1994, which led to the formation of competition system among few makers. Meanwhile import tariff began to decrease and Import License(I/L) system was canceled. Along with the market demands and government adjustment, car price began to be decreased and car production was diversified. New competition system began to be formed.

III. The Formation and Implementation of Development Strategy of SAIC and TAIC

III.1. History of Cars and Parts Production

In the first period of this century, Shanghai and Tianjin were the pioneer car production cities. Later from 1920s and 1930s, repair shop and parts manufacturing plants were built. Both became the most important parts production areas. In the Korea War of 1950s, the rigid requirement of delivery date for military truck parts, quantity and quality promoted the standardization and specification of Shanghai and Tianjin.

Shanghai had the experience of technique introduction from abroad and auto assembly before the World War II. After the war, the National Party's financial magnate purchased one auto corporation (i.e. Shanghai Car Plant, the prototype of Shanghai Volkswagen/SVW) from an English business company to assemble, purchase and repair Chevrolet and Austin serials cars which was the biggest assembly car corporation in China over that time. Unlike Shanghai, it was Japanese Toyota which introduced advanced automobile & parts production technique to Tianjin. In 1938, Toyota

established "Japan Toyota Automobile Corporation Lit.---Tianjin Assembly Plant" which produced truck and bus. In 1946 after the war, Toyota Tianjin Corporation started the small quantity production of "Flying Eagle" vehicle based on the model of Japanese Daihatsu's three-wheel vehicle.

In 1950s, after the success of trial production of jeep and three-wheel vehicle truck, Shanghai Auto Plant produced "Phoenix" passenger car based on the model of Poland Polske and Germany Benz 220S successfully. In 1964, "Phoenix" was changed to "Shanghai" with small production. During the Culture Revolution, passenger car was criticized as luxury transportation. Shanghai's capacity was only 5000 till 1980, whose performance and quality didn't match Benz. On the other hand, between 1950s and 1960s, Tianjin auto works produced various vehicmes, which was the copy of other area's car models with less capacity. In the late 1950s, many parts plants transferred to produce agriculture manufacturing products due to the government agriculture manufacturing policy. The supply of auto parts and accessories were in serious shortage condition. Later on in 1973, TAIC produced mini car based on Toyota model for mass production, which was abandoned due to the adjustment of the central government policy. Therefore, it became primary question for SAIC and TAIC how to increase technological level, form the mass production of Auto production and develop their own products. But till the end of 1970s, both two corporations were merely the administration departments which assigned local government's production task to their affiliated plants and supervised the completion of production plan. They were only local medium or small companies, which were much smaller than FAW and DFM regarding their production scale. They could not be supported and financial assisted by the central government.

III.2. The Formation of Car Strategy Vision along with Environment Change

From the end of 1970s, SAIC and TAIC clarified their models along with outside environment change. SAIC pursued a policy which focused on the more production of passenger car and less production of truck. TAIC conducted many market surveys and adopted the development plan for mini vehicle based on the disintegrate study of Japanese mini vehicle.

Along with the economic system reform, SAIC and TAIC transferred from the administration department which assigned local government's production task to their affiliated plants and supervised the completion of production plan to economic corporation organization with the economic responsibility for production, construction, technology & market and direct control for personnel, finance, equipment, production, raw material purchase and product market of affiliated plants. Meanwhile Shanghai and Tianjin governments reorganized their local industrial structure in order to promote their automobile industry. The independent right of SAIC and TAIC had been enlarged with contract & profit reserve systems. The central government's policy of "Introduction of One Passenger Care Production Line and Improvement of Shanghai Car Industry" led to the car introduction of SAIC. This policy was consistent with the idea of concentrate passenger car production of SAIC. Supported by Shanghai government, SAIC was active in the implement of the central government policy. Besides the purpose of the central government, local government and SAIC was all focused on the promotion of car production capability. Government and SAIC conducted a complete survey on introduced car model and foreign makers. In Oct. 1984, SAIC introduced technology from VW and signed a formal joint venture

contract of car production with VW .

TAIC was active in the introduction of mini vehicle production technology supported by Tianjin government. The president of TAIC realized the common usage of parts between mini vehicle and small-sized car, when he visited Japan Daihatsu. The introduction of mini vehicle technology may promote the passenger car production. In March 1984, TAIC signed a contract to introduce Hijet mini vehicle with Japan Daihatsu. Along with this introduction, Tianjin government imported 300 Charade passenger cars and distributes them to local taxi corporations, government and large enterprises for follow-up survey. Moreover the strategy vision for car production was formulated and the base & equipment for small-sized car production were under preparation. But at that period, the production scale of SAIC and TAIC were quite limited with only annual productivity of 10,000--20,000 units.

III.3. Enforcement of Car Production and Network of Formation of Parts Localization

From the middle 1980s, along with the increasing market demand, car import increased to the great extent. Chinese government began to consider the policy of car technology introduction. Supported by Shanghai government, SAIC which just signed a contract with VW, formulated permanent plan with the capability of 300,000 cars in Jan. 1985. SAIC conducted a long term market demand survey together with Chinese General Automobile Corporation and VW from May. Furthermore, 100 experts and professors expend 10 months to complete a general report regarding the SAIC possibility of 300,000 productivity . Meanwhile TAIC produced small-sized passenger car along with the production of mini car suggested by the

government from 1984. In March 1986, the central government approved "Proposal Item" of TAIC. TAIC signed a contract immediately with Daihatsu to introduce Charade car production technologies and formulate mass production system.

After the contract with VW, SAIC carried out "Independent funds raise and self increase" supported by Shanghai government. From 1987 Shanghai government pursued a financial profit and tax contract privilege systems for Shanghai automobile industry. At the same time Germany-VW and Chinese government concentrated together on the additional investment of SVW. TAIC had already prepared for small-sized car production along with the establishment of mini vehicle production line. When opportunity comes, it will transfer immediately to passenger car production. Later on, TAIC could not expect any investment from the central government and the support from foreign partners. In order to adapt to the changing market TAIC adopted "Develop New by Old" method, that was the required fund for passenger car production depended on the market profit of former vehicle production (small-sized truck and mini vehicle).

After the introduction of car production technology, SAIC reorganized its production structure and stopped its former production models. The production capability was all concentrated on car production, especially the Santana car production (refer to Table 3). Additionally SAIC formed first the national-wide car's parts supply network which promoted the parts localization of passenger car and made contribution to the development of Chinese automobile industry. In order to adapt to market demand, SAIC formulated related market system in order to increase its market share, Along with the rapid enlargement of car market, SAIC undertook serial strategy activities with the investment mainly of car production and its parts makers.

The capability of SVW was only 30,000 within its initial establishment period. But in 1996 its capability reached to 300,000 with its annual production of 200,000. Along with the increase of production, the sales volume, profit and production efficiency of SAIC were increasing. From the early 1990s, it ranked the No. 1 status.

Shown as in Table 4, after the introduction of mini car production, TAIC promoted the new product development depending on the sales profit of former vehicle model. But the primary investment was focused on the assembled car instead of parts production due to the limitation of investment. Additionally along with the increase of car production, TAIC was active in formulating national-wide market system, pouring more power into sales market. The capability of small-sized car of TAIC reached up to 60,000 in 1993 from the initial 10,000. In 1994 the central government made additional investment for TAIC to establish a small-sized car production plan with 150,000 productivity. In this way TAIC has developed to one of "the big three" companies in auto industry by analyzing market demand orientation, adjusting models according to market change, enlargement of productivity like "snowball " along with the outside environment change. It has been ranked as No.2 company referring to the productivity and total profit of passenger car since the early 1990s.

III.4. The Process of Technology Assimilation and Capability Accumulation

The primary purpose for SAIC to establish joint venture corporation is to increase its capability by catching up world advanced level. After the technological introduction of car production , Quality Control(QC) system is

formulated within the whole company. The formation of the rigid QC system is close related to the management principle and management organization structure of Shanghai VW, which is the key assembly car corporation of SAIC. The managers of each management division who deals with parts makers in SVW are almost Germans. The quality of parts supply is much more emphasized. In addition, SVW established the quality control process of parts localization in parts suppliers same as the formation of QC system within SVW.

In 1988, SAIC formulated its QC "Production Zone" system within its Santana parts makers by the promotion opportunity of Santana parts localization. The advanced management method is introduced and widely popularized by the introduction of advanced production line instead of former manual operations, the organization of material circulation route & specified management of production spot, color-mode management and personnel training and operation inspection. In addition, SAIC studies and promote Japanese Lean Production with the help of Japan Koito Manufacturing. In March 1997, SAIC signed a new contract with GM by the second joint venture opportunity with foreign makers. SAIC established an automobile technology center as its R&D institute with GM which emphasized its R&D ability together with car production.

The fund for TAIC's technology introduction and production development all comes from the profit made by market sales. The adaptation to market demand and profit increase determine the fortune of TAIC. In order to increase its productivity, TAIC is active in introduction and purchasing equipment instead of the introduction of the software like production management and quality control. The technological training for its personnel is not enough either. The investment of TAIC is mainly on the assembly

production of small-sized car & mini vehicle instead of the technology innovation of its affiliated parts suppliers. The technology and equipment level of most of parts supplier are still quite low.

The Charade car made by TAIC is the most popular model in China. TAIC has tried many ways to get approval from the government and increase its productivity by snowball rolling method. On the other hand, due to the supply shortage the managers and personnel of TAIC did not pay much attention to quality. The former model of TAIC and the privilege of mini-vehicle market have become out-of-date since 1990s. In order to solve the primary Charade car neck market problem in the South, i.e. the insufficient engine for air condition, TAIC signed a joint venture project with Toyota to establish 1.3L engine plant in May 5, 1996. Meanwhile TAIC frequently assigned QC groups to Japan Daihatsu which led to the emphasis on the quality control instead of the merely emphasis on quantity.

IV. The Formation and Implementation of the Development Strategy of FAW and DFM

IV.1. The Establishment as National Project and their Early Production Activities

The Northeast and Hubei areas where FAW and DFM locate are the pioneer sites for auto repairing and trial production in China. But after the surrender of Japanese Army, all equipment in northeast car companies and parts makers were almost taken over by the Soviet and transferred to its own country, which did not have any relation with the establishment of FAW. While most of car repair shops in Hubei area were centralized in Wuhan without the foundation

as DFM built among the mountain area.

As new China's greatest "national project", FAW and DFM are regarded as the "first son" and "second son" of Chinese automobile industry with the complete investment by the central government. Within their establishment process, FAW and DFM were assisted by all over the country. Many engineers and technicians of SAIC and TAIC were assigned to FAW and DFM. FAW was established completely based on one set introduced from the Soviet blueprint ranging from equipment to model, from production method to management method in the middle of 1950s. Changchun which was near to the Soviet and owned less manufacturing function, was selected as the company location under the suggestion of the Soviet. While DFM was the "cold war project" which was built in the middle mountain area of Hubei Province with severe environmental condition based on the FAW's model in the late 1960s for the preparation of the war with the US and Soviet.

The local content rate of their in-house parts of FAW and DFM was quite high from the beginning. Later along with the enlargement of production, parts production was attempted to be over spread. But due to the rigid of corporate production system and insufficient environmental condition, parts production was over spread very slowly. In addition, the products of FAW and DFM have been very simple for long term and most products are medium-sized truck. In the late 1950s, FAW produced "Red Flag" luxury passenger car with limited productivity by almost manual operations for central government senior leaders from the late 1950s.

With the planned market economy, even though FAW and DFM are the top corporations in Chinese automotive industry, they are merely manufacturing plants without management ability. Their enlargement is limited within productivity according to national plan. The establishment and enlargement

of productivity rely on the great investment by the central government. They depend on government plan and policy (i.e. government investment) to the great extent which are in the passive position that is limited by government as while as assisted by government investment. Along with the establishment of other makers, the market share of FAW and DFM are decreasing. FAW and DFM regard their top position of productivity in automotive industry as very important and pride themselves.

So the model change of truck and products diversification become their permanent desire.

IV.2. Promotion of Truck Diversification Related to Central Government Plan

From the end of 1970s along with the environment change, FAW and DFM confronted with crisis condition. First in 1975, the order item for military all wheel drive truck produced by DFM decreased rapidly influenced by the alleviation of cold war. Military truck had to be transferred to ordinary truck. From 1978 the primary product had be changed to EQ 140 5-ton medium-sized truck, a competitive product with FAW's "Jiefang". So the market share of DFM was increasing, while FAW confronted with its first sales crisis from 1979. The truck storage of FAW became serious, with the storage up to 1/3 of it productivity in 1985. In order to get rid of its dilemma, FAW conducted its first full model change of medium-sized truck. Later for quite long term, FAW and DFM competed each other and undertook their own corporate strategies in order to keep their own top position in automotive industry.

DFM developed itself by self-reserved profit with the introduction of "Profit Reserve System" in 1980 and "Profit Turnover Increase Contract

Responsibility System" in 1983. The medium-sized truck change in FAW totally relied on its self profit reserves, depreciation reserves and bank loan instead of former reliance of government investment. In order to raise great fund, FAW and DFM have made great efforts. The central government treats FAW and DFM equally. Regarding model distribution, central government supports DFM first in medium-sized truck change, and supports FAW first in small-sized truck production.

FAW and DFM become active in obtaining government investment instead of being passive position in receiving investment by hard experience of financial dilemma and self raises fund. In the early 1980s, in order to improve the unbalanced model production, i.e. the shortage of small-sized and heavy-duty truck, the central government proposed separate development policy with FAW's down with small-sized truck and DFC up with heavy-duty truck. FAW and DFC obtained project investment and undertook their activities according to the truck diversified production policy of the central government. These two corporations did not prepare for the mass production of passenger car for truck model change and diversification till the car reform of the central government in the middle of 1980s .

From the middle of 1980s, along with the rapid growth of passenger car import, the central government pursued a new industrial policy which promoted DFM to produce 300,000 cars till 1995 and FAW to produce 300,000 till 2000. Influenced by this policy, the two corporations eager to formulate their own development strategy for passenger car. Especially FAW hurried to propose the strategic plan of "Unified Planning, Separate Complement". And it has persuaded the central government to obtain the "Pioneer Project" of the introduction of Dodge from Chrysler (later transferred to VW Audi). But because these two corporations' policies were

formulated according to government plan, the survey on the environment elements besides the central government's policy was not sufficient, which is verified by the later dilemma.

IV.3. The Trouble of Technology Introduction of Passenger Car and Reconstruction of Organization

FAW intend to improve "Red Flag" car production with 30,000 units by the introduction of "Dodge 600" production technology after the introduction of "Dodge 600" engine. But Chrysler offered high price for the production equipment of "Dodge" which caused the negotiation stopped. FAW had to choose VW for its technology introduction and regard VW as joint venture partner with 150,000 productivity project by the technological assistance of Audi car. Limited by foreign currency, FAW purchased old equipment from the plant in American Pennsylvania and selected Jetta A2 passenger car (with 1.56L engine) released in 1983 as the model for mass production in 1990s. The rigid of old equipment brought certain technology risk to FAW which greatly restricted market competition and product model change later.

In addition, FAW tried to engage in the diversification of truck production especially for small-sized truck. Due to the conflict of profit distribution with local government, FAW invested great amount of capital and time in the combination & purchase of local truck makers in order to guarantee its sales channel of the Dodge engine and increase its market share of small-sized truck. Because of the continuous truck combination, the capital of FAW became limited which led to the cancellation of the establishment of new Audi (i.e. Small Red Flag) plan in the early 1990s. Although the sales of Small Red Flag kept growing, it is impossible for FAW to increase

productivity to the great extent and make cost down within short period limited by its productivity. On the other hand, mass-produced Jetta confronted with the sales dilemma competing with SVW's Santana. Although FAW ranked the top position back regarding total productivity by the growth of truck production in the middle of 1990s, its production point was still restricted to truck production showed as in Table 5. Because of the backward car production, FAW's profit volume and production rate decreased.

After DFM was specified as the first passenger car production base according to government industrial policy, it began to look for joint venture partner. But due to the serious limitation of foreign currency over that time, the central government made quite restricted condition for DFM joint venture. DFM did not obtain any foreign currency from its own government and had to rely on foreign government and bank loan with the condition with 1/3 assembly car export. DFM made great effort to get the French government loan and select Citroen as partner. Unfortunately in 1989 the Tian'anmen Affair happened which led to the project delay for several years because of French sanction policy to China. The mass production in DFM was completed more than one year later than FAW.

In addition, the environment among the mountain area was unfavorable to passenger car production, especially to the distribution of parts makers which forced DFM to transfer its passenger car production base to Wuhan. The production of car parts was spread to Shanghai area from Wuhan, which expended DFM too much time. While Citroen as partner doubted the development of Chinese automotive industry and did not set up its permanent development strategy, which influenced the development of DFM car production. Most importantly from the middle of 1980s, DFM had made great achievement and occupied the top position regarding productivity by early

adaptation of profit contract system and the enlargement of medium truck production. DFM never confronted with crisis and pressure as SAIC and TAIC. So from 1990s, DFM has faced its management dilemma because of the declination of former market need and the slow growth of car production (shown as in Figure 1, Table 1 and Figure 2).

IV.4. The Process of Technology Assimilation and Capability Accumulation

Influenced by the great intention for "top position", FAW and DFM were eager to obtain country's project and launched a competition for top position, which delayed the development of car production. Within this period, the competition for passenger car market was intensified and these two corporations had to compete with SVW--Santana. VW and Chrysler as joint-venture partners set strict rules for FAW and DFM regarding their mark, quality & parts control. The central government demands FAW and DFM to enforce quality control, increase function, improve model and lower cost too.

Confronted with increasingly intensified competition, FAW introduced QC system for its car production assisted by Audi and VW and carried it out. The Affiliated parts makers also introduced foreign technology and equipment or establish joint venture corporation with foreign makers in order to promote their technology ability and management level. And the Japanese Lean Production introduced in some plants is carried out in car and parts makers from 1990s. But due to the insufficient capital and product cost management, they start to confront with severe capital shortage from the middle of 1990s when they obtain great amount of investment.

DFM began to adjust its strategy because of the intensified competition,

which developed its small truck for market competition in order to increase its market share. Then with the privilege of new model improvement with Citroen, new cars with 1.3L and 1.6L EFL stroke volume engine were released to compete directly with Shanghai's Santana and FAW's Jetta. In addition, DFM established joint venture corporation with engine production and market abilities by half and half investment with Honda, when French Peugeot withdrew from Guangzhou in Nov. 1997. It is supposed to supply engine for Guangzhou-Honda Accord passenger car (with 2.3L stroke volume engine) in Autumn 1999.

In order to retrieve car production disadvantage, FAW and DFM enforce their product development ability as while as the model change by self dependence and joint venture with foreign makers. Additionally they urged to obtain government policy and capital support and they coordinate local government & foreign makers as while as release their stock in order to overcome the insufficient capital problem. They also promote car diversification in order to increase car market share.

V. The Formation and Implementation of Development Strategy: Complex Comparison

(1) From the comparison on the strategy formation process of the car technology introduction, SAIC and TAIC introduced car model from foreign makers, conducted market demand survey and pursued specified strategy vision much earlier than FAW and DFM. On the contrast, FAW and DFM promoted truck production diversification according to the central government's plan. When they confronted with intensified car market, FAW and DFM rushed to pursue their car development strategy adopting to the

central government's car policy. Due to the insufficient survey which left many problems and had been improved much later. We may conclude that in spite of the great change of market till the middle of 1980s, FAW and DFM concentrated merely on the truck market competition for their own top position instead of the strategy of passenger car market.

By the view of management resource and competition capability, along with environment change from the early 1980s, these four corporations determined their own development direction by the logic of overcoming the disadvantage of existing resource. If direction is consistent with environment change, that is the same acknowledge to environment change and management resource, the successful strategy may be formulated. Otherwise, it will be unsuccessful. Actually from the middle of 1980s, along with the rapid growth of imported car the key point of the central government industrial policy had been transferred to passenger car instead of truck. FAW and DFM occupied privilege position in model change and diversification regarding truck production, but they missed the opportunity to pour into car market.

(2) SAIC and TAIC transferred their focal development point to passenger car production adopting to the environment change after their introduction of car production technology. Especially SAIC investment is focus on "one-point concentration", assisted by the central government, local government and foreign makers. FAW increased its car production rapidly closely followed by the increase of market need. Even though TAIC is assisted by its local government, it is not supported by the central government and foreign makers. Therefore TAIC increased its production by "Support New by Old". The more rapid growth of passenger car of SAIC and TAIC than Beijing Automobile Corporation and Guangzhou Automobile Corporation depended

on their success of the enforcement of car production.

Compared with SAIC and TAIC, the passive cooperation attitude of local government, environmental limitation and the strategic adjustment of foreign makers influenced the development of car production of FAW and DFM. But what is more important, FAW and DFM kept restricted with their former focus of truck diversification, which spent most management resource in truck production. And their car production fell behind a lot. The strong consciousness urging for top position exists in FAW and DFM. We may find that in spite of the possibility of falling behind of car production, the organization rigidities which concentrate on the current production increase also exist deeply in FAW and DFM.

(3) From the comparison on the promotion process of technology and management abilities, the potential capability of management know-how of these four corporations differs a lot. Restricted by serious environment, according to its strategy of enforcement of car production by different step, the quality of SAIC Santana received favorable comments not only within China but also in VW group. In contrast, TAIC only concentrated on the low level market demand. Even though the productivity increased, its quality control and production development had not been improved at all. Therefore TAIC became weak in confronting with intensified competition. On the other hand, in order to improve the disadvantage in car production, FAW and DFM pursued QC system in their assembly plants and parts makers as while as increased their own development ability for car diversification in order to adopt to the intensified competition and increase their car market share.

During this process, TAIC only introduced foreign makers' technology by technological cooperation. While SAIC, FAW and DFM established joint

venture corporations or reserved their former trade mark which destroyed former organization rigidity of underestimation of quality and promote improvement. On the contrast, TAIC missed its organization improvement opportunity and its organization rigidity of enforcement of productivity & underestimation of quality was enforced. Additionally SAIC and FAW had long experience of car production. Especially SAIC had been distressed about its quality problem for long period which directly led to the introduction of management know-how from developed countries. In the other way, during the same rapid development period of car demand, different corporations behaved differently with specified environment based on their own historical experience and different research & competition consciousness due to market pressure.

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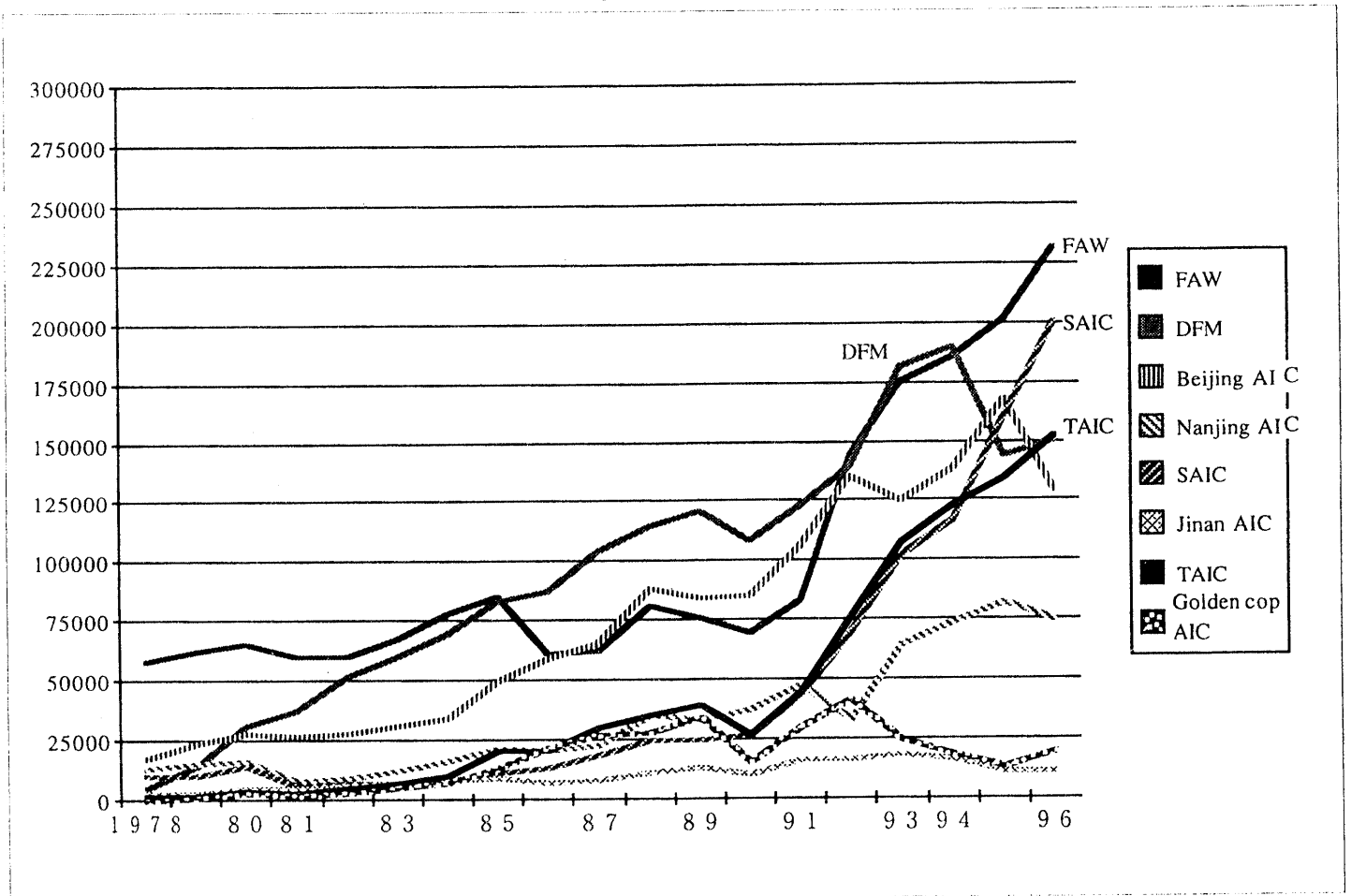
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**Fig.1 Output of the Eight High-ranking Makers
in Chinese Auto Industry (1978-1996)**



Source : According to *China Automotive Industry Yearbook* and the annual report of each maker

Tab. 1 Sales Volume · Total Profit · Productivity Efficiency per Person · Total Employee of
FAW · DFM · SAIC · TAIC (1978-1995)

sales volume · profit : ten thousand unit, personnel : person,
productivity efficiency (person · average annual productivity):yuan

	FAW				DFM				SAIC				TAIC			
	sales volume	Total profit	Employee	Productivity	sales volume	Total profit	Employee	Productivity	sales volume	Total profit	Employee	Productivity	sales volume	Total profit	Employee	Productivity
1978	n.a.	20,317	42,793	n.a.	n.a.	131	42,503	n.a.	23,801	43,374	7,269	7,269				
79	96,992	23,822	43,311	7,726	41,023	7,324	44,536	2,875	24,988	43,537	7,797	7,797				
1980	103,446	26,713	44,370	8,409	83,507	16,147	47,885	5,236	26,242	46,624	7,907	7,907				
81	81,455	21,144	45,481	7,510	68,306	12,677	50,875	5,332	14,616	48,308	5,006	5,006				
82	92,822	16,380	54,541	5,551	116,769	21,913	53,062	5,892	16,810	49,591	5,231	5,231				
83	120,762	19,833	53,628	6,237	135,933	28,045	55,354	6,643	21,318	50,516	6,089	6,089	5,439			
84	139,877	34,915	60,944	8,413	159,687	35,272	59,605	8,737	24,764	50,933	7,036	7,036	7,676			
85	164,551	43,862	66,825	10,828	221,213	62,091	63,469	15,091	30,428	50,302	9,951	9,951	11,670			
86	101,195	8,604	69,572	4,419	232,802	46,610	65,810	11,920	25,577	50,532	10,158	10,158	15,212		n.a.	
87	n.a.	23,947	87,274	n.a.	n.a.	73,095	84,889	n.a.	23,435	50,964	10,715	10,715	12,444		37,757	n.a.
88	n.a.	44,115	95,847	n.a.	n.a.	87,175	93,488	n.a.	33,374	54,548	15,567	15,567	15,821		41,473	n.a.
89	314,187	34,915	95,560	9,971	490,102	66,646	90,781	15,061	30,030	55,467	16,017	16,017	10,483		42,908	8,227
1990	319,286	6,054	100,908	11,545	467,183	43,651	92,370	13,878	34,504	52,968	10,238	10,238	8,968		40,348	8,048
91	n.a.	6,891	105,557	n.a.	n.a.	69,035	97,020	n.a.	90,269	n.a.	n.a.	n.a.	26,308		45,818	n.a.
92	1,218,888	77,553	109,826	32,739	986,147	116,760	97,856	27,008	125,264	40,485	45,438	45,438	488,602		43,842	24,087
93	1,965,082	98,391	117,701	37,812	2,140,801	168,972	125,182	38,115	182,717	44,595	67,169	67,169	738,788		44,052	23,761
94	2,300,916	52,177	141,961	49,902	2,088,285	118,462	123,354	43,850	225,172	57,233	90,464	90,464	870,439		57,815	35,398
95	2,567,352	50,270	173,940	44,779	1,601,306	37,471	123,392	21,047	376,054	58,914	138,181	138,181	984,443		58,925	44,080

Source : According to China Automotive Industry Yearbook and the annual report of each maker

Note: Productivity efficiency= pure productivity ÷ average personnel

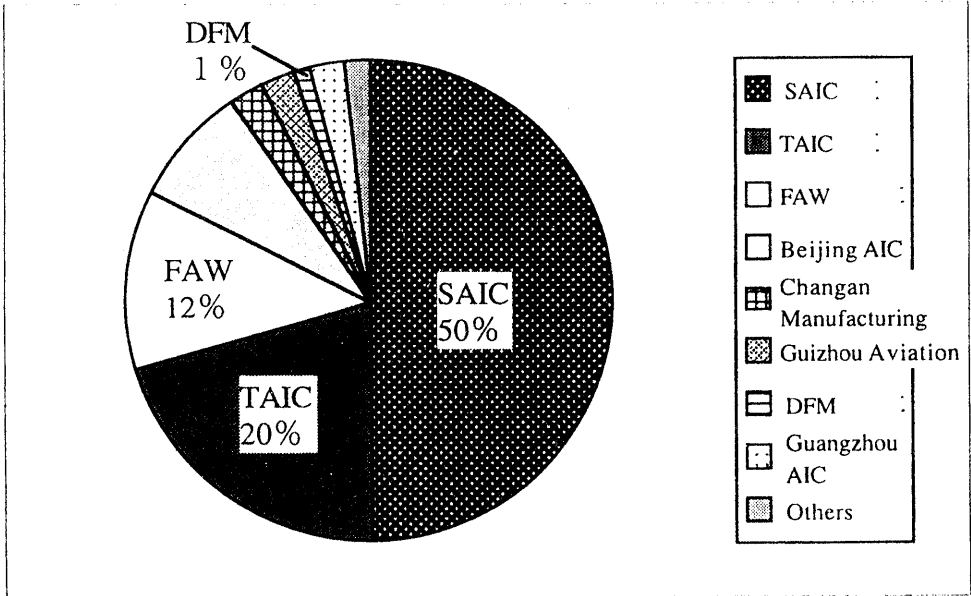
Tab.2 Productivity Change of Different Automobile in Chinese Automotive Industry (1990—1995)

Unit: thousand

1	A	B	C	D	E	F	G	H
		1990 year	1991 year	1992 year	1993 year	1994 year	1995 year	annual growth
2	passenger car	42	81	163	230	250	321	49.95%
3	bus	128	176	275	292	317	382	24.5%
4	large-sized truck	18	19	27	34	37	30	11%
5	medium-sized truck	173	205	259	335	313	250	7.7%
6	small-sized truck	123	178	274	330	335	357	23.8%
7	mini-truck	26	50	65	76	101	110	33.4%
8	total productivity	509	709	1062	1297	1353	1450	23.3%

Source : *Shanghai Automobile* Volume 5,1996,p,3

Fig. 2 Productivity Percentage of Chinese Passenger Car in 1995



Source : 1995 Yearbook of Chinese Auatomobile Industry p.302

Tab.3 Productivity Comparison of Different Automobile in SAIC between 1979 and 1995

	A	B	C
1		1 9 7 9 year	1 9 9 5 year
2	Santana Car		160070
3	Shanghai Car	4015	
4	ambulance Car	340	
5	2-ton truck	3302	
6	4-ton truck	2201	
7	15-ton truck	671	720
8	32-ton truck	33	
9	other truck		65
10	car chassis		282

Source : "Shanghai Editorial Board "(1992),p.299-303 and
Yearbook of Chinese Automobile Industry 1996 ,p.123

Tab.4 Productivity of Different Autos in TAIC (1983--1994)

	A	B	C	D	E	F
		TJ130 small-sized truck	TJ620 small-sized bus	hijet mini truck	charade car	total
1	1983	6252	867	0	0	7119
2	1984	8510	1085	500	0	10095
3	1985	13558	2229	5000	0	20787
4	1986	17020	2506	1956	60	21542
5	1987	23500	3066	3500	100	30166
6	1988	27953	5106	9329	2873	45262
7	1989	21523	2408	14031	1274	39236
8	1990	10170	4473	9400	2920	26963
9	1991	13159	9833	10441	11261	44694
10	1992	17477	14668	13420	30150	75715
11	1993	17713	11751	30738	47850	108052
12	1994	12027	7666	44297	58500	122490

Source : Advertisement of TAIC in 1993 and 1994

Tab.5 Productivity of Different Autos in FAW (1991--1994)

	A	B	C	D	E	F	G
1		medium truck	small truck	mini vehicle	Audi car	Jetta car	Red Flag car
2	1991	76039	n.a.	n.a.	6500	156	0
3	1992	100054	6606	n.a.	15127	8050	0
4	1993	110616	21616	10898	17769	12117	0
5	1994	105377	43701	7843	20128	8219	58

Source : *Annual Report of FAW, 1994*