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Why a Middle Income Country is Experiencing a Booming Auto Industrial Development: Evidence from China and its Meaning for the Developing World

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Abtract:
From almost nothing in 1970 to the World largest manufacturer and automobile market in 2013, China has essentially focused its rapid economic progress on industrial development. This paper discusses the meaning of middle income to the developing world. It then determines the factors contributing to the growth of China auto industry. It also argues on how the fast growing of a middle income country's auto industry could impact other developing economies. It therefore concludes that although the economic model established by China to develop its auto industry traces its basis in the diamond model's determinants, the application of these determinants has followed a different approach backed up by a pentagram model which places the government as the primary actor in the fast transformation of China auto industry.

Keywords: *Middle income, growing auto industry, pentagram model, government role*

1. Introduction

During the last decades, the world has witnessed a faster economic development of Middle income countries. China, Brazil, India, Mexico, South Africa and more others have relatively ameliorate their industrial capabilities with positive spillovers to the rest of the world. Among them, China in particular has been the good example of MICs' with impressive economic progress. Today it is the second largest economy after the USA. China's transformation from a traditional agricultural society to a modern industrial society has been greatly accelerated by a rapid industrial restructuring. In its auto industry, for instance, China has moved from 1,000,000 vehicles produced in 1992 and 2,000,000 in 2001 to 13,790,994 in 2009 and 22,116,825 in 2013 (fig 1). Since 2009, China is the world largest auto maker by unit production and consequently the world biggest marketwith13,644,794 cars sold in 2009 and 21,984,100in 2013(fig 3)[1]. Actually, annual production and sale of automobiles in China exceed that of USA and Japan combined (fig 2; table 1). The purpose of this paper is therefore to look for the strategic elements which have made a middle income country like China the world largest automaker and market, ranking ahead high income countries like USA and Japan. We will first start our study by a literature review of the evolution of China auto industry with the effects of a middle income on such transformation. We will continue with the significance of a middle income to a developing country, then answer the research question by analyzing a modified diamond model thatwe have named pentagram model. The analysis will be followed by the relevance of the Chinese model industrial growth to the other developing countries.

2. Literature Review

The auto industry in China has started in 1956 with the first modern automobile factory First Automobile Works, FAW (Jianhan Zhao and Lei Gao, 2009). Since that time many government policies have been taken both by the central and local governments to develop the domestic auto industry (Holweg M., Luo J. and Oliver N.). Governmental policies have played a direct role in the growth of auto sector through the opening up of the Chinese market to foreign companies and the reduction of restrictions on imports (JianxiLuo 2006). After the accession of China to the WTO (Andreas Alexiou, September 2009), FDI including joint ventures and R&D has considerably increased in the Chinese auto industry, resulting to the surge of auto production (Chen Fang and Pierre Mohnen, 2009). Other influential key factors of the strategic change of Chinese automobile industry and the effects of these factors have been discussed by Som Techakanjanakit and Meifang Huang (2012). Characteristics of the globalizing Chinese automobile industry have been provided by Qiang Ding, Michèle E.M. Akoorie (2013). While the impact of Chinese globalizing auto industry on foreign auto market (the U.S. motor industry) had previously been analyzed by Rachel Tang (2009), Research on

[1]http://www.oica.net/category/production-statistics/ ; http://www.oica.net/category/sales-statistics/

Chinese Automotive market and its opportunities for foreign and domestic automobile brands has nevertheless been provided by APCO Worldwide (2010). The evolution of the domestic auto market was further described by BBVA Research (2012). Additional discussions on the impact of the emerging middle class on auto growth have been made by HomiKharas, (2011).

3. Significance of Middle Income to a Developing Country

3.1. World Bank Criterion

The World Bank (WB) classifies countries in three (3) distinct groups, namely, low income, middle income (subdivided into lower middle and upper middle) and high income. This classification is based on gross national income (GNI) per capita of each country and reflects the Bank's operational lending categories. According to its level of GNI each country is entitled to appropriate loan or investment from the bank (IDA, BLEND, IBRD). These operational guidelines were established based on the view that poorer countries deserve better conditions from the Bank and for this reason comparative estimates of economic capacity needed to be established. MICs are countries with a per capita GNI in 2013 of more than $1,045 but less than $12,746. Lower-middle-income and upper-middle-income economies are separated at a GNI per capita of $4,125[2].Since 2010, China has been classified upper middle income country with GNI per capita of US $ 6,560 (World Bank data). This WB classification has been recognized and adopted by many international organizations such as the United Nations.

3.2. How Middle incomes matter for auto production and market?

According to WB's analysts, MICs have significantly contributed to global development over the past decades through their higher growth rates. To HomiKharas3, middle classes are an important key driver of growth. The rationale of this is that middle class consumers (particularly the upper middle class) are willing to pay a little extra for quality vehicles. This trend encourages manufacturers in product differentiation and thereby feeds investment in production and marketing of new goods (Murphy, Shleifer and Vishny (1989). The Chinese middle class is that proportion of people earning between $17,000 and $35,000 a year[4]. Accounting to 45% of the population (estimated at 630 million today)and about three-quarters of urban Chinese households[5], China emerging middle class is an important driver of auto growth. The Chinese middle class is able and willing to pay a premium for quality or spend more for luxury goods and not just the basic necessities.

4. The Pentagram Model

4.1. The diamond modelas origin of the pentagram model

The pentagram model uses as its starting point, the diamond model of Michael Porter. The diamond model of M. Porter determines factors of nationalcompetitiveadvantage. It analyzes why some nations are more competitive than others are, and why some industries within nations are more competitive than others are. This diamond model consists of four major determinants and two accessorial ones. All the determinants are interactive as a system (Porter, 1990). They major ones include: factor condition, demand condition, related and supporting industries and firm strategy, structure and rivalry while the accessorial ones comprise the government and chance.

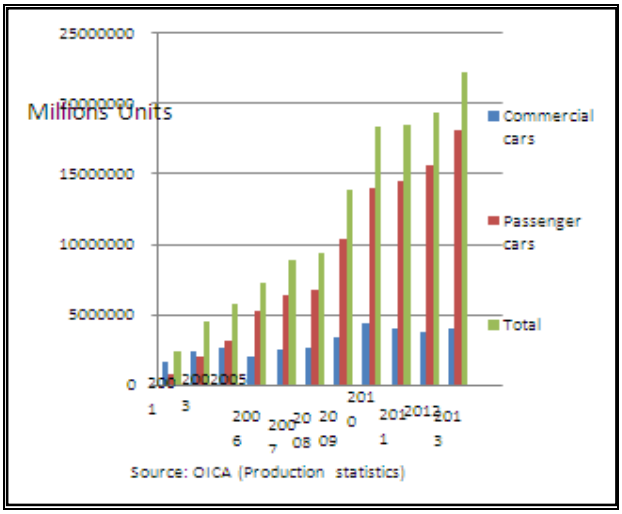

Figure 1: China production vehicles (2001-2013)

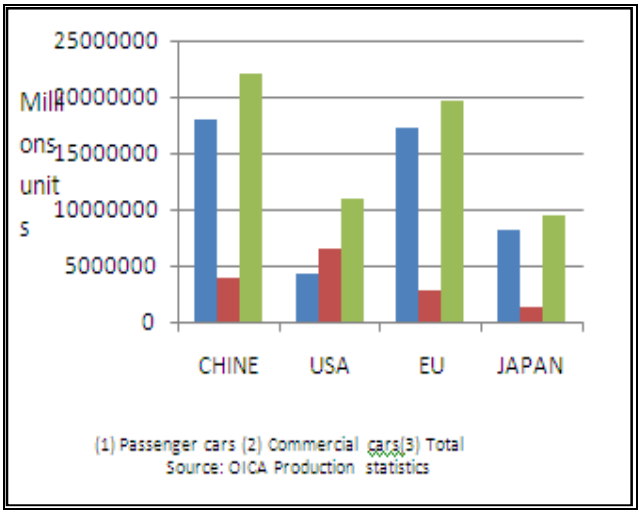

Figure 2: China, USA, EU, Japan production statistics (2013)

[2]http://data.worldbank.org/about/country-and-lending-groups
[3]HomiKharas, The Emerging Middle Class in Developing Countries, Brookings institutions, June 2011.
[4] Andrew Moody and Lyu Chang (China Daily), China's middle class emerges, to spend more http://english.peopledaily.com.cn/90778/8272768.html
[5] Dominic Barton, Half a billion China middle class consumers, The Diplomat, May 30, 2013.

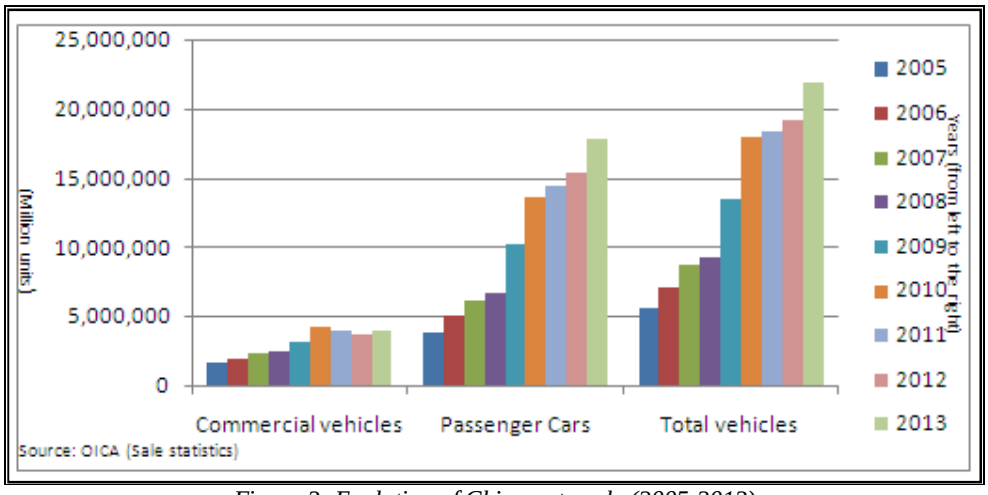

Figure 3: Evolution of China auto sale (2005-2013)

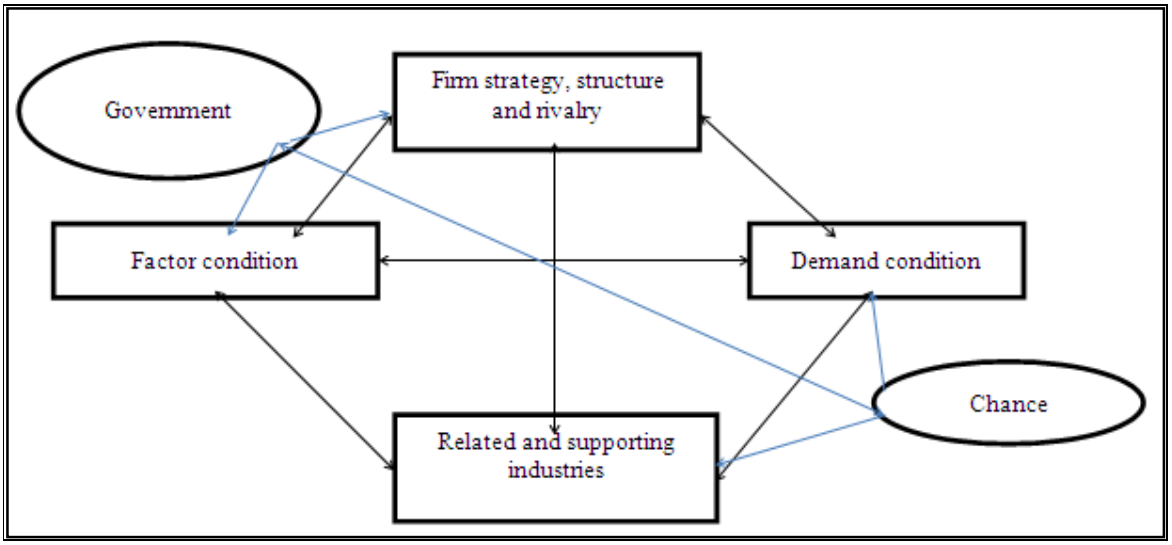

Figure 4: Porter's diamond model

However, while the analysis of Porter's diamond comes to the auto industry of China, It need be adapted to the specific factor and variables so that it could provide a relevant explanation for the success of this booming industry.

4.2. The scope of thepentagram model

Porter established his diamond model based on the studies realized in developed countries. He didn't include the reality faced by other countries. This is why his diamond model cannot identically apply for all the countries (Rugman, A.M., &D'Cruz, J.R, 1993)[6]. For developing countries or MICs like China, previous research works indeed revealed the primary role of the Chinese central government (Andrew Szamosszegi)[7] and the major role of the local governments in the development of China auto industry (Eric Thun, 2006). Our studyspecifically shows how the government role is more direct and vital in the development of its auto industry. The function released by government could be mirrored by the following aspects: 1) state owned auto firms such as FAW, Dongfeng, and SAIC; 2) policy oriented finance; 3) industrial policy by M&A;4) foster the supporting infrastructures;5) regulating the market monopoly by encouraging competition and local brands. The Chinese government permanently released strong industrial policies to enhance and develop its young domestic industries and protect them against foreign competition. It ensures the mutual interaction of the other determinants. To better represent the role played by the Chinese government in the fast

[6]Rugman, A.M., &D'Cruz, J.R., The double diamond model of international competitiveness: Canada's experience. Management International Review, 33(2), 17–39. (1993)

[7] Andrew Szamosszegi, How Chinese government subsidies and market intervention have resulted in the offshoring of U.S. auto parts production: a case study.

growing of its auto industry, this study has proposed another diagram that we have named the pentagram model[8]. The pentagram model includes all the major determinants of Porter's diamond model with a substantial difference on the framework.

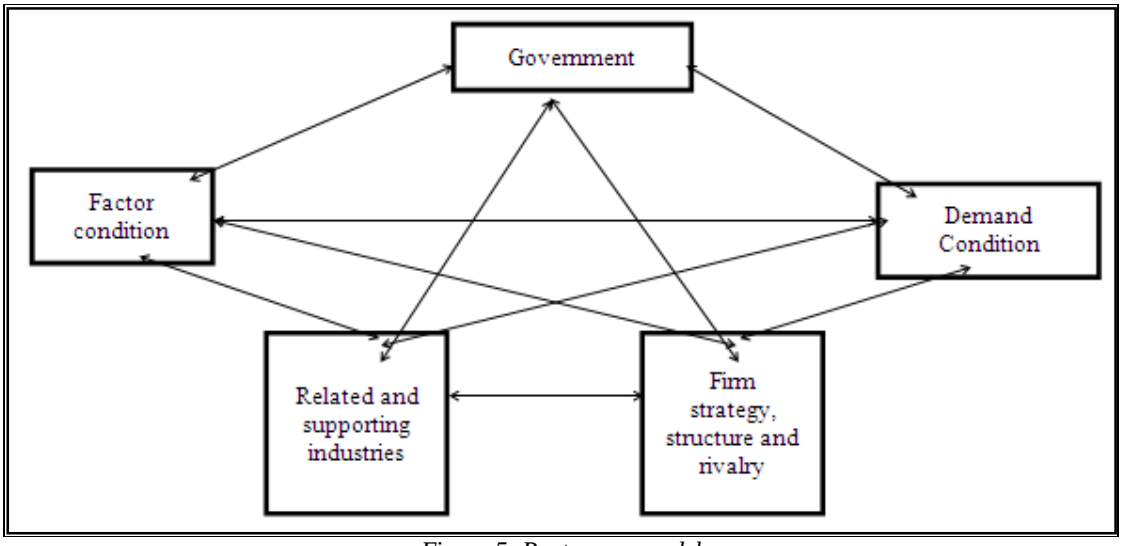

Figure 5: Pentagram model

5. The Pentagram Model Analysis

5.1. Government role

Contrary to the diamond model, the pentagram model largely focuses on the active role of government in the development of their Nation. It is a long tradition of government intervention in the Chinese automobile industry (Hua Wang). Since the beginning of China auto industry in 1956, the government has played an active role for the development of this strategic industry. At first, the government created incentives to set a favorable business environment in China for local and foreign auto makers through new legislation and opening uppolicies. The first "Industrial Policy for the Automobile sector" was approved in July 1994 to develop and consolidate China's indigenous automobile industry. Because of its inconsistency with WTO[9] principles, it was replaced by the 2004 Auto policy whose goals were "to promote the adjustment and upgrading of the structure of the automotive industry, enhance the international competitiveness of the automotive industry, satisfy the ever-increasing consumer demand for automobile products, and promote the healthy development of the automotive industry. This 2004 policy was reported by US Congressional-Executive commission on China to be a comprehensive roadmap for development of a robust auto sector in China. The year 2009 was marked by two main policies: the Auto Stimulus Program (March 2009) whose purpose was to efficiently respond to the 2008 global financial crisis (table 2) by boosting buyer interest, adjusting and reviving the auto sector and the August 2009 policy essentially aimed at deleting provisions of the 2004 policy dealing with tariff rates applicable to the import of auto parts and assemblies. Secondly, through entry barriers, quotas, tax cut, frequent subsidies and other preferential treatments like encouraging and favoring the acquisition of small companies by big SOEs, Chinese government involvement in its auto industry restructuring and booming has already been discussed and recognized in different research works (OECD 2009; LihuiTian 2007; JianxiLuo 2006). Government intervention arises much more when dealing with foreign car makers' penetration into Chinese home market. When looking at the report (fig 1 and fig 3) of the Chinese auto industry during the last decades, we notice that the major policies released by the government have all directly been followed by a huge increase as well as in the production as in the sale. Table 4 shows a resume of the major influential policies regarding auto industry in China.

5.2. Demand conditions

China's automobile industry is booming on the back of strong domestic demand (Xinhua)[10]. With the bigger size of its market, the government developed consumption policies (table 4) to encourage and facilitate car ownership by individuals. The Chinese market with more than 1.3 billion people is the second and essential major determinant in the booming of its auto industry. At the end of 2013, the total number of automobiles in use in China was nearly 137 million; this number is expected to continue increasing rapidly in future years according to China Association of Automobile Manufacturers (CAAM)[11].In terms of quality,

[8] We name it Pentagram because of a five-pointed star. The upward pointed star represents both the starting point and the ruling organ of the system. The other four points respectively represent interdependent elements which are all essential for the competitiveness of the industry.

[9] China join the WTO in 2001

[10] http://www.chinadaily.com.cn/business/boao2014/2014-04/09/content_17420847.htm

[11] For the first quarter of 2014, the production and sale of passenger cars reached 4,798,700 and 4,869,500 units respectively, up 9.5% and 10.1% year on year.

consumers' demand is increasingly more sophisticated, the emerging middle class becomes more demanding of more advanced and high tech cars. The sale and production of new energy vehicles is reported increase year on year (2.3 times from July 2013 according to CAAM)[12].

5.3. Factor conditions

M. Porter classified the factors conditions to the creation of a competitive advantage of an industry into five major categories: human resources, physical resources, knowledge resources, capital resources and infrastructure. With regard to human resources, China and its big population (1.358 billion) offer to domestic and foreign automakers a huge number of qualified workers at a competitive low cost compared to other giant countries in auto production. According to the international Organization of Motor Vehicle Manufacturers (OICA), the Chinese auto industry employed directly 1,605,000 of people in 2013 while Japan and USA respectively employed 725 000 and 954 210 people. Physical resources include the capacity of China to acquire raw materials used in the manufacturing of auto parts and cars (cobalt, copper; germanium; manganese; rare earths; titanium; tungsten; tin; and vanadium[13]) and the land provided by the government to manufacturing enterprises at lower cost. Knowledge resources refer to the Chinese individuals formed at universities and trained at research centers to constitute a qualified workforce for manufacturing industries. It also includes technical knowledge from R&D centers established by foreign and domestic automakers and auto parts manufacturing companies. In capital resources both private and public investments constitute an important factor. Public investment is generally provided by the government (local or central) through subsidies and tax cuts (table2)while private investment originates from foreign and domestic private companies. Foreign investments are manifested in China auto industry through Joint ventures with state-owned enterprises (SOEs). The successfulfirst joint ventures in 1990 with the installation of Audi assembly line (April 1990) and the joint venture agreement between FAW and Volkswagen (November 1990) have subsequently give rise to multiple open policies to attract foreign capital. In 2013 China was reported to be the top investment destination for global automakers (KPMG[14]). Table 2 summarizes the major Sino-foreign joint venture.

5.4. Firm strategy

Instead of focusing only on its home activities as required by Porter through its home base concept, Chinese government has also developed multinational activities through outbound and inbound foreign direct investment (FDI). In order to increase and enhance their auto industry, Chinese government hasrelied on joint ventures and mergers and acquisition. As already mentioned above foreign automakers entered the Chinese market by forming joint ventures companies with local firms (table 2). Joint ventures (JVs) played a significant and strategic role in the improvement of China auto industry in terms of quality and quantity over the last decades. At the quality level, foreign automakers have brought advanced technology lacking to Chinese automakers. This technology skill has enabled Chinese cars to catch up with international standards and eventually gain credibility. At the quantity level, China auto production and sale have considerably increased over the last decade with record productivity and sale largely dominated by Sino-foreign joint venture companies.

Mergers and acquisition (M&A) between Chinese auto producers with foreign producers are also believed to strengthen the global competitiveness of Chinese domestic auto enterprises(YU Hong & YANG Mu). See table 3 for some successful Chinese M&A with foreign companies. In addition it is worth reminding that JVs and M&A between domestic manufacturers also happened to strengthen the market positions of domestic companies in front of foreign companies (e.g. acquisition of Nanjing Automobile by SAIC in December 2007; Hafei and Changhe from AVIC by Chang'an Auto Group in 2009) .

5.5. Related and supporting industries

In the long-term growth of developing economies, building competitive supporting industries is a positive step in building a competitive focal industry. Oil and gas, chemicals, metals, mining and crude oil production, insurance, electronics, building materials and glass, petroleum refining and bank industries are all related and supporting to the auto industry. However, the development of auto parts manufacturing zones and clusters in all China industrial regions has been the priority of Chinese provincial and municipal government to sustain its automobile industry growth. Today only five provinces are virtually without such zones or clusters: Gansu, Qinghai, Ningxia, Xinjiang, and Tibet. Products and services in this industry include mechanical parts and accessories with 54% of total industry revenue in 2014, electric motor parts and accessories with 23.5%, and electronic parts and accessories 22.5%. China today has become one of the largest auto-parts producers in the world and the fourth world largest exporters, with exports primarily going to the United States (30.4% of total exports), Japan (10.1%), South Korea (4.7%), Germany (4.3%), and Russia (3.9%)[15].

6. The Interrelation between the Determinants: A Pentagram Approach

Porter says that the key for the success when applying the diamond model is the mutual interaction of all the determinants as a system. Firms are most likely to succeed in industries in which the four determinants are interrelated. In the same line, our study highlights the importance of the interdependence of the pentagram model. But the other question that we are answering is who secure this interrelation between these different determinants: is it the firms themselves belonging to that particular industry or the

[12] http://www.caam.org.cn/AutomotivesStatistics/20140711/1405124354.html

[13]http://www.manufacturingnews.com/news/12/0207/Chinaautoparts.html

[14] Bloomberg News, China 2013 Auto sale may accelerate this year to top 20 million, January 2013 available at http://www.bloomberg.com/news/2013-01-11/china-2012-auto-sales-miss-forecast-as-restrictions-damp-demand.html

[15]IBISWorld industry report 3725, Auto Parts Manufacturing in China, April 2014, available atWWW.IBISWORLD.COM.CN

government? In China and particularly in its auto industry, the government is acting like a father following the growing up of his young kid. Of course, he will protect his kid until he reached his majority. The Chinese government as a lawmaker provides incentives measures to the creation and development of competitive factor conditions; it creates a favorable business environment which will attract foreign companies including their capital and technological know-how; it encourages the consolidation of domestic industries to form big auto groups. It regularly provides subsidies to domestic firms especially State Owned Enterprises and to the other actors of the industry to encourage production, sale and purchase of vehicles.As a shield, it protects domestic industries from aggressive foreign competition.

Concerning Chinese home market, its increasing size and sophistication have been the reasons why firms are becoming more productive, innovative and competitive. This increasing consumer demand creates confidence in auto makers to produce more while sophistication of the demand makes them differentiate their production based on different needs and preferences of Chinese market. Factor conditions are linked to the other determinants through the big size of the population which creates competition in the available workforce (a competitive workforce generally provides competitive products); lower manufacturing wages attracting foreign firms coming with advanced knowledge and capital resources for heavy investment; through lower land cost for the construction of production facilities. The proximity to the market of related and supporting industries such as the auto part industry contributes to the cost minimization of auto production. The financing industry highly structured also provides a strong support to auto manufacturers and to the consumers wishing to get loan credit for the purchase of new cars. The firm's strategies through JVs and M&A increased the number of auto makers in China and helped to increase manufacturing capacity for a bigger consumer demand (fig1; fig3). They also helped in the improvement of quality standards of vehicles manufactured in China. This greater number of auto makers (more than 100 today) in China stimulates rivalry which gives rise to greater innovation and competition in China market. All these determinants are all important and all play strategic role in the fast growing of China auto industry.

7. Meaning Of This Booming To Other Developing

Up to now, China has achieved remarkable industrial progress particularly with an unprecedented record in its automobile industry. This impressive progress of a MIC can represent both a challenge and an opportunity for other developing economies. It is a challenge for other developing economies because it shows that the industrial development is not only exclusive to high income countries or developed countries and that, whether you are MICs or LICs, you can create your own competitive advantage to improve your industrial sector as China did. It particularly highlights the important role that government should play for a greater growth in developing countries. Government should create and secure opportunities for the development of infant industries. Before being developed nations, South Korea and Japan, for instance, carried out a similar model emphasizing on the active role of the government during the early stage of the development of their auto industries (Wang H. 2002). It is later on that China successfully followed this development model, a model that we have named pentagram model because of its five (5) interlinked determinants with the government as the most important determinant. The pentagram model explains more comprehensively than the diamond model why a MIC like China has become the world largest auto industry by unit production and gives a way to other developing countries to build or ameliorate their industrial sector as China did. China industrial booming is therefore an opportunity for other developing countries facing difficulties in development strategies to learn from the Chinese model. Even though countries do not have the same conditions factors, they may have the same needs which are to ameliorate the living standards of its population. For this reason it is up to government to help private sector achieves productivities in each particular sector.

8. Conclusion

Middle income countries have been important growth poles these recent years (WB). The development of their industrial sector has played a significant role in this strengthening of their economy. This paper particularly identified the major factors contributing to the booming of China auto industry. It found that the rapid expansion of China auto industry can be traced to the heavy State intervention in all aspects of the automotive supply chain. It found that the Chinese government followed a pentagram model, based on Porter's diamond model theory, to transform its small auto industry into the biggest one in the world. It thereby brings out how China big market, especially with its emerging middle income class, has been an essential driver in the growing of its auto industry. It highlighted the impact of a strong local auto-parts industry and the strategic role of multinational activities (through FDI) in China auto growth. It is therefore the combination of all these strategic and competitive assets under a regulated supervision of the government which has resulted in a fast booming of automobile industry in China.

Although the development of auto industry in China is still optimistic for future, especially in passenger cars which continue to keep a faster growth, the future of Chinese brands cars remains lower. For the first four months this year, the market share (of Chinese brands cars) has decreased by 5.8 percentage points from the previous year 2013(CAAM), showing the lack of competitiveness of Chinese brands against their foreign partners. They also make out that challenges still remain both for Chinese auto brands and government to consolidate and develop their domestic auto industries so as their product's demand turns bigger at the national and international level.

Countries or regions		2005	2006	2007	2008	2009	2010	2011	2012	2013
Japan	P.C	4,748,482	4,612,318	4,325,508	4,184,266	3,905,310	4,203,181	3,509,036	4,572,333	4,562,282
	C.V	1,103,552	1,127,202	983,692	897,967	704,023	752,967	701,188	797,388	813,231
USA	P.C	7,659,983	7,761,592	7,562,334	6,769,107	5,400,890	5,635,432	6,089,403	7,241,900	7,585,867
	C.V	9,784,346	9,287,389	8,897,981	6,724,058	5,200,478	6,136,787	6,951,210	7,544,036	8,298,102
Europe	P.C	17,906,455	18,685,556	19,618,588	18,821,722	16,608,862	16,500,379	17,168,534	16,192,920	15,890,309
	C.V	3,172,862	3,176,679	3,386,623	3,049,017	2,035,301	2,307,923	2,571,227	2,472,954	2,392,156
China	P.C	3,971,101	5,175,961	5,175,961	6,755,609	10,331,315	13,757,794	14,472,416	15,495,240	17,928,858
	C.V	1,787,088	2,040,011	2,493,990	2,624,893	3,313,479	4,304,142	4,032,698	3,811,195	4,055.221

Table 1: Passenger cars (P.C) and commercial vehicles (C.V) sale of selected countries and regions (2005-2013)
Source: OICA (Sale statistics of Passenger cars and commercial vehicles)

Chinese automakers _ location	Foreign partners (Year of JV)
Beijing Benz Automotive Co., Ltd. (BBAC) _ Beijiing	Daimler AG, and Daimler North East Asia (2005)
Beijing Hyundai _ Shunyi, Beijing	Hyundai (BHMC) (2002)
BMW Brilliance Automotive _Shenyang Liaoning	BMW (2003)
Chang'an Ford _Chongqing	Ford (2001)
Chang'an Mazda _ Nanjing	Mazda (2006).
ChanganPeogeut Citroen (Changan-PSA, CAPSA)_ Shenzhen, Guangdong	Peugeot Citroen (PSA) .
Changan Suzuki _ Chongqing	Suzuki (1993) .
Changhe Suzuki _ Jingdezhen, Jiangxi	Suzuki (1995) .
Qoros Automotive _ Shanghai	Israel Corporation (2007)
Dongfeng Nissan _Guangzhou, Guangdong	Nissan (2003)
Zhengzhou Nissan _ Zhengzhou, Henan	Nissan (1993)
Dongfeng Peugeot Citroen Automobile Company (DPCA) _ Wuhan, Hubei	PSA Peugeot Citroen (2002)
Dongfeng Honda _ Wuhan, Hubei	Honda (2003)
DongfengYueda Kia _ Yancheng, Jiansu	a joint venture of Dongfeng, Jiangsu Yueda, and Kia (2002)
FAW Volkswagen _ Changchun, Jilin	Volkswagen (1991)
FAW-GM Light-Duty Commercial Vehicle_Changchun, Jilin	GM (august 2009)
FAW Mazda _ Changchun, Jilin	Mazda (2005)
FAW Toyota _ Beijing (sales)	Mazda (2005)
Fujian Benz (Fujian Daimler) _ Fuzhou, Fujian	Daimler Light Vehicle (Hong Kong) (2007)
GAC (Guangzhou Auto) Honda _ Guangzhou, Guangdong	Honda (1998)
GAC Toyota _ Guangzhou, Guangdong	Toyota (2004)
GAC-Fiat _ Changsha, Hunan	Fiat (2010)
GAC-Mitsubishi _ Changsha, Hunan	Mitsubishi (2012)
SAIC-GM-Wuling (SGMW) _ Liuzhou, Guangxi	A joint venture of SAIC, GM, and Wuling (2002)
Shanghai GM_ shanghai	GM (1997)
Shanghai Volkswagen (SVW)_ shanghai	a joint venture of SAIC and Volkswagen (1985)
Nanjing Iveco (Naveco) _ Nanjing, Jiangsu	a joint venture of Nanjing Auto, a subsidiary of SAIC, and Fiat (1996)

Table 2: Sino-Foreign Joint Ventures
Source: ChinaAuto Web (Chinese Auto Companies, Sino-Foreign Joint Ventures)

Chinese companies	Foreign companies acquired	year
SAIC and Nanjing Automobile Group	MG Rover	2005
Zhejiang Geely Automobile Holdings Group (Geely)	Volvo from the Ford Motor Company	August 2010 (with technology transfer agreement signed in march 2012)
Chinese-Japanese investment group in electric car push	Saab Automobile	June 2012
Wanxiang Group	Fisker (electric car maker)	February 2014
Geely	Emerald Automotive	March 2014

Table 3: Chinese successful acquisition in the auto industry
Source: Chinadaily.com; chinacartimes.com

Time	Auto Policies
1994	Encouragement of independent product development; encouragement of automotive enterprises to raise development fund from various sources to support increased industry concentration; encouragement of joint venture with foreign partners who meet certain conditions (e.g. technology must be 1990s. standards, r&d facilities must be established, foreign partner must have independent product patents and trademarks and have a good capital raising ability); prohibition of imports of used vehicles; preferential tax rates for enterprises with high localization rates; encouragement of individual ownership of automobiles; co-ordination and development for supporting industries; expansion of exports as production rises, priority loans for enterprises whose exports exceed 3-8% of annual sales volume for passenger cars; State support for enterprises which exceed certain production volumes and R&D effort.
2004	Articles 7 to 12 development of automotive technology, both through indigenous innovation and by studying international cutting-edge technology
	Article 13-16 lay out a framework for the structural adjustment of the auto sector through the creation of large auto enterprise groups and alliances, and international cooperation ŧ
	Articles 40 to 51 lay out detailed investment approval procedures and requirements such like government approval of various categories of auto or auto parts companies, establishment of automotive research and development centers, and foreign shareholding ratio restrictions applicable to foreign investment in the sector
	Article 56 to 69 encourage the growth of private automobile consumption, and sets standards by setting a range of regulations to facilitate and encourage private auto purchases, such as regulations on types of vehicles, toll road charges, fees, auto finance, the second-hand market, insurance premiums, and construction of parking lots
	Miscellaneous provisions provide additional provisions on technical standards, trademarks and branding, sales and service networks, import restrictions, and support from other industries, such as metallurgy and electronics
2009	Allocation of 5 billion yuan (730 million U.S. dollars) to provide one-off allowances to farmers to upgrade their three-wheeled vehicles and low-speed trucks to mini-trucks or purchase new mini-vans under 1.3 liters from March 1 to Dec. 31
	Subsidies for people to scrap their old cars and regulations that restrict car purchase.
	Subsidies of 10 billion yuan to support auto companies to upgrade technologies and develop new engines that use alternative energies.
	Financial support to promote the use of energy-saving autos and those fueled by new energies, and support automakers to develop independent brands and build auto and parts export bases
	Improvements in the credit system for car purchase loans
	Pilot subsidy program for private purchase of new energy vehicles: The pilot program is launched in selected cities with up to RMB 50,000 for plug-in hybrid electric vehicles (PHEVs) and RMB 60,000 for electric vehicles (EVs) from central government, with extra subsidy from the local government
	A one-time subsidy program (RMB 3,000 per vehicle) was launched for specific energy-saving vehicles with displacement volume below 1.6 Liters

	New sale taxes policy for energy-saving and new energy vehicles which were allowed to be exempted from the sales taxes since 2012
2011	The NDRC launched anti-monopoly probes into the auto sector to safeguard competition in the market and protect customer rights
2013	The 3R (repair, replacement and return) policygiving Chinese customers unprecedented rights to return a faulty vehicle for a repair, replacement or refund
	preferential fiscal and taxation policies to encourage auto companies to import new energy vehicles' key components
	Reform of commercial auto insurance sector
	Approved plan to break up local monopolies
2014	Subsidies to locally produced new-energy vehicles, with 35,000 yuan ($5,700) to 60,000 yuan available to buyers of pure electric passenger vehicles
	New-energy cars (pure electric cars, plug-in hybrid electric cars and fuel cell cars) exempted from purchase tax from Sept 1, 2014 to the end of 2017
	Enforcement of Anti-monopoly law (through massive anti-trust probes) resulting in price adjustments of vehicles and spare parts from foreign brands operating in China.

Table 4: Auto industries policies reforms (2004-2009)
Source: US Congressional-Executive commission on China and news.xinhuanet.com; CHINADAILY; IHS;

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