

Shifting Centers of Gravity

The End of the Automotive Industry As We Know It?



Contents

Executive Summary	1
The Rise of Emerging Markets	3
Trends and Market Conditions	4
The Challengers	8
New Automotive Giants in China	13
Future Battlegrounds	18
Conclusion	20
Contacts	21

Foreword

The global automotive industry is set to become a fascinating battleground over the next ten years as established OEMs from the triad markets wrestle with challenger OEMs from emerging markets for dominance. As this battle takes place, the industry itself will be transformed by powerful trends, including the emergence of major new economies, a shift in the size and concentration of the world's population, escalating climate concern and extraordinary technological innovation.

This report by Arthur D. Little, based on our industry expertise and expert interviews, identifies some of the strategies that emerging challenger OEMs will adopt as they seek to realize their significant ambitions in the global marketplace. It also highlights the key battles that established triad OEM champions will face as they prepare to take on the newcomers in the fight of their lives.

Authors:

Marc Winterhoff

Director, Head of Automotive & Manufacturing Central Europe

Dr. Thomas Schiller

Managing Director, Arthur D. Little China

Markus Aichert

Principal, Automotive & Manufacturing Central Europe

Frank Weidenfeld

Manager, Automotive & Manufacturing Central Europe

Charlie Jiang

Manager, Automotive & Manufacturing China

Jens Janzen

Consultant, Automotive & Manufacturing Central Europe

Lily Jiang

Consultant, Automotive & Manufacturing China

Executive Summary

The automotive industry's center of gravity in both production and demand is shifting inevitably towards emerging, mainly Asian markets. As we saw in the history of the automotive industry when the Japanese and Korean OEMs went global, these shifts led to significant changes in the automotive OEM landscape. In other industries, such as steel and computer hardware, such shifts changed the landscape completely, leading to a clear dominance of Asian companies in what were formerly key industries in the western hemisphere.

Trends like the accumulation of capital and buying power in BRIC countries, volume shift to emerging markets and smaller segments, the new emerging global middle segment and industry consolidation, to name just a few, are driving the change in demand and structure in the automotive industry. The recent acquisition of a 9.1 percent stake in Daimler by Abu Dhabi, the launch of the Tata Nano, Chinese OEMs interest in taking over Volvo and the massive problems of Chrysler and GM represent just a few examples of the magnitude of changes we will see within the automotive industry in the coming years.

We expect five challenger OEMs from China, which will emerge around today's Chinese leaders SAIC, FAW, Dongfeng, ChangAn and Geely, and potentially Tata from India, to gain access to the exclusive club of global OEM champions by 2020. For instance, for the newly enlarged SAIC group emerging by industry consolidation, we estimate total passenger car and LCV sales by 2020 of more than 3.2 million vehicles solely from own brands, aside from additional sales of global brands through their JVs with Volkswagen and GM. Therefore, some of the challengers could grow to about 1.5 times the size of BMW or Daimler and become almost as big as Renault, Fiat and the like.

First, challenger OEMs will focus on their home markets with the aim of becoming market leaders with own-brand products. They will also pursue a well orchestrated globalization strategy focusing on emerging markets beyond their home turf and especially in two-tier markets in Asia, the Middle East and Africa. Challengers will eventually compete head-to-head across all markets and all segments, starting at the lower end in emerging markets, where they already compete successfully against global OEM champions, and gradually moving all the way up to established auto markets and premium segments.

However, the challengers will have to overcome significant shortcomings in the areas of R&D, product portfolio and quality, sales and service networks, branding and human resources, and in the case of the Chinese challengers to absorb a massive wave of consolidation in order to become competitive on the global stage. Naturally these developments will take time. But, as we have seen with the compressed learning curve followed by the Korean OEMs in entering the global stage compared to the Japanese before them, we believe that it is feasible for the new challengers to become relevant players by 2020.

Several strong triad automotive OEMs will indeed remain global market leaders, but they will have to share the global automotive market with new challenger OEMs from China and India. We have identified three key questions that the triad OEMs must carefully include in their strategies as well as monitoring the movements of the emerging challenger OEMs if they are to be amongst the winners of this global industry shift:

1. How to secure future growth ambitions in emerging markets and the new global middle segment?

Triad OEMs base their future growth plans to a large extent on emerging markets and the new global middle segment. As the emerging OEMs will focus on exactly the same areas, competition from this angle will be much more intense. In this regard triad OEMs must align their product portfolio and specifications – in addition to the price points - even more on emerging market demand and, especially for China, find future strategies for the time when JVs with triad OEMs become second priority for emerging OEMs behind their own brand ambitions.

2. How to survive M&A power play?

The financial crisis, the shift of investment power to emerging economies and new players will all cause a new ownership landscape in the automotive industry both on an OEM and on a supplier level. Triad OEMs must find ways to protect their own ownership structure as well as the ownership of their strategic suppliers in order to maintain their ability to execute strategy independently and to maintain unrestricted access to key technology.

3. How to achieve and protect competitive advantage relative to technology in the light of new power train technologies?

Triad OEMs, especially European and Japanese OEMs, have a clear competitive advantage concerning traditional gasoline and diesel based power train technology. There is still enormous efficiency gain potential in this technology and no emerging OEM will be able to rival the triad OEMs in respect to this competitive advantage. Eventually traditional power train technology will disappear and emerging OEMs will invest heavily in new energy power train technologies as they consider this an area to leapfrog the established competition. Triad OEMs must develop strategies that enable them to achieve and protect competitive advantage, even on new power train technologies, in order to sustain competitive advantage in the future.

The Rise of Emerging Markets

By the middle of this century 70 percent of the world's population will be living in Asia. The BRIC countries (Brazil, Russia, India and China) are expected to have outgrown the G7 economies and to have become about twice their size (with GDP of US\$ 130 billion vs. US\$ 66 billion in 2050). By that time, IMF economists forecast that China's car fleet will be as big as the entire world car fleet today.

Consequently, the automotive industry's center of gravity has started to shift from the triad markets of North America, Western Europe and Japan towards emerging markets. This shift is fueled primarily by China which, by 2007, had already overtaken Germany both in terms of car sales and manufacturing numbers. But it is not just changes in China that are reshaping the market. By 2050, around 50 per cent of all cars worldwide will be sold outside the triad markets, with the majority being sold in the BRIC countries.

It is no secret that all of today's global OEM champions expect growth only from emerging markets and have therefore put globalization at the top of their strategic agendas. But will they enjoy a smooth ride? Or will they face fierce competition from new challenger OEMs from emerging markets?

Looking back at the history of the automotive industry, it becomes clear how trends and external factors such as the oil crisis of 1979 enabled the Japanese OEMs to double their market share within the US market. It still took the Japanese OEMs decades to achieve significant sales outside their home country, but they eventually became true global players, with Toyota even taking over from General Motors as the world's largest vehicle manufacturer in 2007. The Korean OEMs entered the global stage only a few years later, but even faster.

In other industries we have seen even more dramatic shifts in the centers of gravity. For example, 35 years ago, corporations from triad markets, such as Nippon Steel, US Steel, British Steel and ThyssenKrupp, dominated the world steel industry. Today players from emerging markets dominate the industry, with India-based ArcelorMittal leading the field with about 10 per cent of global market share, clearly ahead of the number two, Nippon Steel, with only about 3 per cent market share. It was external

factors, in this case a shift in process technology (mini mills vs. large integrated steel mills), that allowed the emerging players to enter the market from the low end and work their way up to eventually become industry leaders. Established players became acquisition targets, resulting in a transformation of the industry's structure, with players from the East emerging as global leaders.

Another legendary example is the "hostile takeover" of the consumer electronics industry by Japanese and Korean companies. However, more recently China has also played a role in reshaping the structure of other industries. For example, Lenovo has changed the landscape of the computer industry by becoming the world's third-largest computer manufacturer, behind HP and Dell. Lenovo started out as a leading Chinese brand but made a significant step onto the world stage in 2005 when it took over IBM's personal computer business. Lenovo combined a cost-efficient production base in China with leading technology, global sales, distribution and service network and a leading global brand. Lenovo also brought senior IBM managers out of retirement during the transition period to address the challenge of missing know-how and experience.

Should we expect similar developments within the automotive industry? Could, for instance, Tata become the automotive industry's Lenovo? Ratan Tata, founder and CEO of the giant Indian conglomerate, recently launched the Tata Nano, a revolutionary ultra-low-cost car with a target price of just US\$ 2,500. Tata has also acquired Jaguar and Land Rover in order to expand its footprint into premium brands. Similarly, during the 2008 Detroit Motor Show, Wang Chuanfu, chairman of the Chinese battery maker BYD, announced that his company had the ambition to become nothing less than the world's largest car manufacturer by 2025.

As automotive experts we are obviously inclined to dismiss these ambitions as absurd. Nevertheless, we feel it is important to consider whether we are on the verge of a gravitational shift that will bring about fundamental changes in the structure of the global automotive industry. What are the relevant industry trends driving this development? Who are the new challengers to watch out for? What are the battlegrounds of the future?

Trends and Market Conditions

Trends, disruptive technology and changing market conditions have paved the way for fundamental changes in many industries. Currently, Arthur D. Little identifies six overriding themes that could drive significant structural changes in the automotive industry.

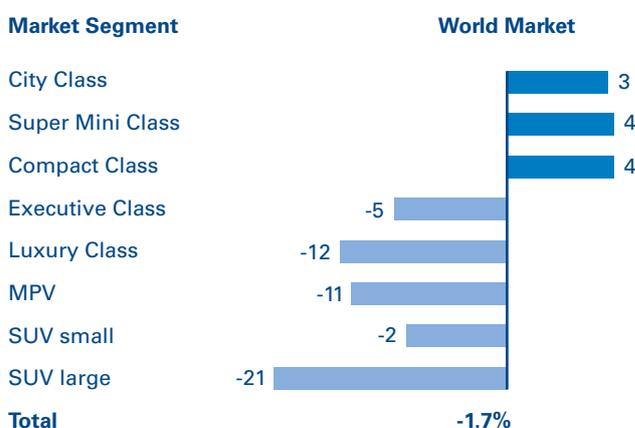
Shift in the economic center

The center of gravity in terms of trade, production, demand and capital accumulation is shifting towards emerging markets while US consumption has a weakening role as the global economy's growth engine. The new centers are increasingly interlinked, as shown by the connections between the world's two most liquid economies, China and the Gulf. The world's largest pools of surplus cash are managed here, providing the mould for blockbuster financial deals of the future. A host of new alliances is being created independently of the G7. The trade and investment channel between the European Union and the US is still the richest, worth about US\$ 1.5 trillion in 2007. But the new commercial blocs are growing at a faster pace. According to the Dubai International Finance Center, Sino-Gulf trade has doubled since 2000 to US\$ 240 billion and is expected to grow by several times that amount over the next decade. Aside from trade volume, the capital power of the emerging economies recently became apparent when Aabar, the Abu Dhabi state fund, took a 9.1 percent stake in Daimler. State funds in the Middle East alone are managing about US\$ 1.5 trillion, with Singapore, China and Russia following with US\$ 330 billion, US\$ 200 billion and US\$ 141 billion respectively. The economic center of gravity has begun to shift from Europe and the US to Asia and the Middle East.

“State funds in the Middle East alone are managing about US\$ 1.5 trillion, with Singapore, China and Russia following with US\$ 330 billion, US\$ 200 billion and US\$ 141 billion respectively.”

Figure 1. Short-term segment shift

Sales Quantity 2008 vs. 2007 (%)



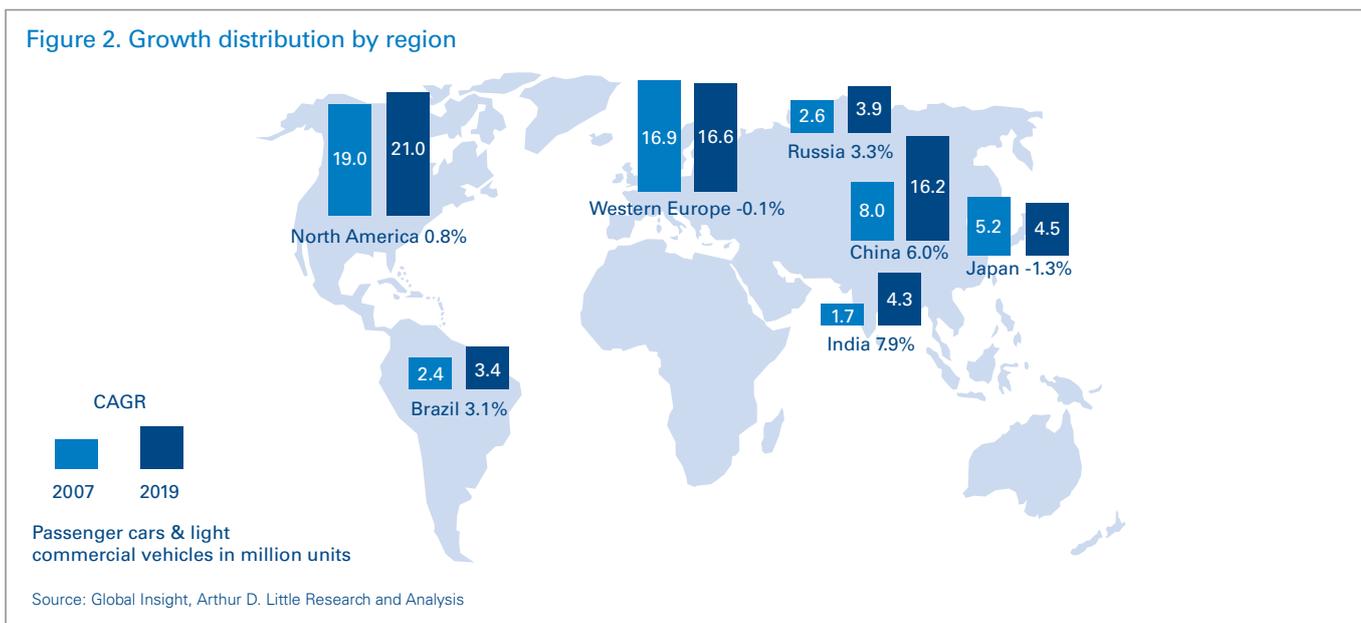
Source: Global Insight, CAR Uni Duisburg-Essen, Arthur D. Little Research and Analysis

Volume shift to small car segments and emerging markets

In the short-term, environmental awareness, high gas prices, tightening regulation and the current financial crisis are driving a dramatic shift among consumers from large to small car segments (see Figure 1).

In the mid- to long-term, volume growth can only be expected from emerging markets (see Figure 2). The established auto markets in the triad are likely to experience a stagnation or even a decline, most prominently in Japan.

In this context whole new auto trade channels are being established, bypassing established auto markets and domestic markets. The lion's share of China's car exports already comprises Chinese own brands selling in emerging markets in Southeast Asia, Russia, Latin America, Eastern Europe and Africa.



Emerging new middle segment

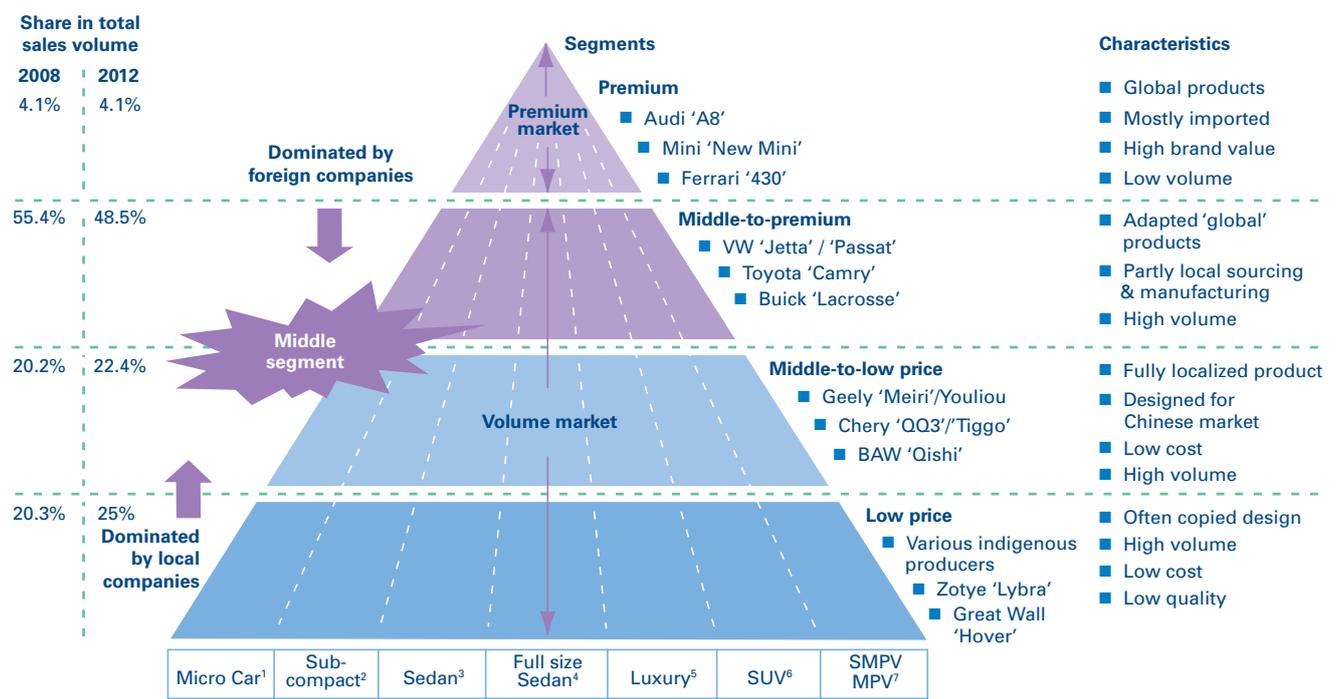
Climate debate, high gas prices, reduced brand loyalty, a shrinking middle class in triad markets and a growing middle class in emerging markets favor a new “middle” product segment. Products in these segments provide good basic functionality but without the full range of differentiating features, and at highly competitive prices. Both the established and the emerging global OEM champions will battle for market share in these middle segments. Established global OEM champions have no innate advantage here and this could provide the challengers with a once-in-a-lifetime opportunity.

Securing a strong position in the middle segment is both a challenge and a must for global OEM champions: a challenge because global OEM champions will have to find ways to outperform entrenched local middle-segment champions; and a must because challengers from emerging markets will otherwise use their locally acquired strengths to fund international expansion into global OEMs’ profitable home markets. Segment shifts and downsizing will therefore stay high on the agenda of all global OEM champions.

To take China as an example, across industries the middle segments in China constitute between a third and over half of the overall markets, thus representing 60-90 per cent of the potential markets accessible to multinational companies. The proportions are even more dramatic when looking at the automotive industry (see Figure 3).

The premium segment of the Chinese automotive market only constitutes 4 per cent of the total market and is dominated by global OEM champions. The middle segment covers 75 per cent, with two sub-segments. The middle-to-premium segment (55 per cent in 2008) is the home turf of the joint ventures of global OEMs with local Chinese OEMs, but likely to decline. The middle-to-low segment (20 per cent in 2008) is dominated by local brands and likely to increase. With this market relevance and outlook, the middle segment is today’s hottest battleground for competitors in emerging car markets.

Figure 3. Automotive product positioning pyramid for China



Source: Global Insight (GI); Segmentation following GI: 1) A; 2) B; 3) C1, C2; 4) D1, D2; 5) E1 – F2; 6) SUV; 7) MPV

Green technology

Challenger OEMs have realized the importance of innovation. Environmental regulations and governmental sponsorship targeting “green” technologies will put all OEMs under pressure. While technological solutions take years to implement, changes in CO₂-related buying criteria are set to become a real challenge in the short term. These shifts in demand, e.g. to ultra-low emission or zero-emission cars, and innovations in technology will provide challenger OEMs with opportunities. Some of them, like the Chinese battery maker BYD, may be able to leapfrog the competition by jumping directly into e-cars, rather than investing billions in conventional power trains.

Industry consolidation

The massive technology investments demanded by the CO₂ challenge and the cost pressure generated by the global financial crisis will drive a new wave of consolidation in the automotive industry. Well known industry leaders, such as Sergio Marchionne, CEO of Fiat Group, even expect that only six automotive groups will be able to survive the industry shakeout. Consequently, Fiat has joined forces with Chrysler while competitors, such as BMW and Daimler, are engaged in serious talks on cooperation.

In addition, we expect that Chinese OEMs will experience a huge wave of consolidation, encouraged by the Chinese national government (exerting its dominance over regional governments) and strengthened by the current economic crisis. First consolidation steps have already been taken, for instance with the merger of SAIC and Nanjing Auto in 2007. But a much bigger and more painful process lies ahead in China comparable to the waves of consolidation that hit Europe and the US shortly before and after World War II and in the 1970s. Recent rumors about possible takeovers within China involve almost all relevant Chinese OEMs.

National rescue packages

The economic rescue and stimulus packages currently being implemented are national in nature and are likely to postpone the required industry consolidation, since they favour national OEMs and national employment. The excess in global production capacity will therefore remain in the mid-term. By 2020, however, the necessary shake-out and industry consolidation is inevitable.

These trends indicate that powerful industry and external dynamics will, by their nature, foster structural change in the automotive industry. In this environment, ambitious and aggressive emerging challengers will confront a global automotive industry that is for the most part conservative and risk-averse, with a mindset that that is changing only very slowly.

“Well known industry leaders, such as Sergio Marchionne, CEO of Fiat Group, even expect that only six automotive groups will be able to survive the industry shakeout.”

The Challengers

Focusing on the BRIC markets, our analysis has identified several challenger OEMs with the potential to join the club of established global OEM champions. Supported by their unexpected successes in emerging markets and, in the case of the Chinese OEMs, supported by the Chinese government, these challengers are currently preparing to enter a new phase on their path to becoming truly global.

Brazil & Russia

There is no relevant challenger OEM to be expected from Brazil and Russia.

GM, Ford, VW and Fiat dominate the market in Brazil and between them have approximately 80 percent of the market share. Unlike in China, local partnerships or joint ventures were not required or imposed by the Brazilian government, hence the local manufacturers were not able to leverage foreign experience and know-how.

In Russia, despite steep duty and VAT on new or used imports, the local OEMs are not set to become a major threat to the global champions. Gaz and Severstal Auto will focus on commercial vehicles in the future. Avtovaz, after being decriminalized by President Putin in 2005, has to focus on improving productivity and quality to keep up with standards and rising customer expectations even in the low-end segments. Its well known brand, Lada, which sold 800,000 units in 2007, still dominates the regional market, but its 30 per cent market share in Russia is declining rapidly and its technical standards are far below the average achieved by the industry worldwide (e.g. Lada produced their first model with an ABS brake in 2007). Renault's decision to take a 25 per cent stake in Avtovaz at the beginning of 2008 could prove to be life-saving for the Russian company. Renault is using this strategic alliance to gain market access and is investing to produce Renault and Nissan models in Russia. Given that the Russian government holds a majority stake and Renault only a minor one it is unlikely that they will develop Lada into a global brand in parallel to Dacia.

India

In India the domestic market leader, with about 40 per cent market share, is Maruti, which started as a government project in the early 1980s and is still perceived as an indigenous Indian OEM. In reality the Japanese OEM, Suzuki, holds a 54 per cent equity stake in Maruti Suzuki and is therefore in full control. This is reflected in the company's product line-up, which consists almost entirely of modern Suzuki vehicles such as the best-selling Alto and the more expensive Swift. Suzuki Motor itself has chosen a strategy of "world strategic models" to drive long-term growth. As part of this strategy, Maruti Suzuki develops global models that are European in overall styling and design and modified to suit local markets. The Swift, launched worldwide in 2005, was the first model to emerge out of this strategy, followed by Grand Vitara, SX4 and Splash. In recent years, Maruti has made major strides towards its goal of becoming Suzuki's R&D hub for Asia and it is planning to make small cars exclusively within Maruti for export to Europe. Maruti Suzuki in India will eventually become a global hub for compact cars for Suzuki.

Besides Tata, all other genuine Indian OEMs combined, including Mahindra & Mahindra with its 49 per cent joint venture partner Renault, account for less than 11 per cent of the Indian market. This leaves Tata Motors, with about 20 per cent market share in India and about 10 per cent export volume of its total production, as the only genuine and relevant Indian challenger OEM. On the one hand, Tata has to work hard to reach quality levels matching those of the global champions in order to be competitive beyond the Indian market. On the other hand, Tata has already demonstrated its ambition to leave a significant footprint in the global automotive industry by the acquisition of Jaguar and Land Rover in 2008 and the revolutionary idea of developing and producing the ultra-low-cost vehicle the Nano. The plans to build the Nano with a target price of US\$ 2,500 were revealed in early 2008 at the New Delhi Auto Expo. Hardly any global champion will be able to adopt a similar "greenfield approach" within its established structures, processes and mindsets.

Figure 4. Major OEMs and sales volume in China (Unit: thousand, 2008)

Chinese OEM Group (Joint Venture Partner)	Passenger Car ¹		LCV ¹	Total
	Foreign Brand	Own Brand		
SAIC (VW, GM)	987	36	610	1,633
FAW (VW, Toyota, Mazda)	910	384	171	1,465
Dongfeng (Nissan, Honda, PSA)	702	41	265	1,008
Changan (Ford, Mazda, Suzuki)	329	46	269	644
Guangzhou Auto (Toyota, Honda)	476	/	/	476
Chery	/	356 ²	/	356
Beijing Auto (Hyundai)	304	11	34	349
Brilliance (BMW)	35	108	145	288
Geely	/	222 ²	/	222
BYD	/	204	/	204
Sub-total	3,743	1,408	1,494	6,645

Note: ¹ Global Insight vehicle classification ² Including export volume (Chery 135k and Geely 40k in 2008)
Source: Global Insight, company information

Even Toyota's Entry Family Car, EFC, which will hit the market in 2010 and is intended to again revolutionize Toyota's efficiency, has a target price of US\$ 6,500. For this year's Geneva Auto Show 2009, Tata announced that it would show a Nano version for the European market matching all relevant emission and safety standards with a target price of ₹5,000, largely matching Toyota's EFC targets.

If those announcements hold true and Tata proves capable of delivering on its ambition, Tata will definitely be a challenger OEM to watch out for. On the other hand, Tata Motors recently had to cope with serious problems, including a sales slump of about 30 percent in India and for the brands Jaguar/Land Rover. Last December Tata even had to turn to private Indian investors for refinancing via newspaper ads because banks refused to provide additional funds due to the financial crisis.

Beyond that, recently Ratan Tata himself put the US\$ 2,500 target price for the Nano in perspective by stating "Yes, we will offer the Nano for US\$ 2,500, but only in India, in the beginning and for a limited period of time." The price is guaranteed for only the first 100,000 buyers, who will be identified by lottery as Tata expects a full order book. Tata definitely has a strong vision of becoming a relevant player within the global automotive industry, but it has yet to deliver on its ambitions.

China

Sales figures for major Chinese carmakers in 2008 prior to the current crisis show that the challenger OEMs are still some distance away from the size of their global counterparts, with SAIC and FAW selling around 600k own brand vehicles, whereas Toyota sold more than 8 million cars and Volkswagen more than 6 million in 2008 (see Figure 4).

Figure 5. Chery – Cooperation overview

Category	Company	Partner	Type	Benefits
Vehicle Level	Chery Mercosur (Uruguay)	Socma (Argentina)	Joint venture with Argentina's Socma Group (49%) with a total investment of USD 100 million.	Officially march towards Latin America.
	Chery Socma (Argentina)	Socma (Argentina) Oferol (Uruguay)	Joint venture between Chery, Argentina's Socma Group and Oferol of Uruguay.	Expansion in Latin America.
	Chery-Khodro (Iran)	Khodro (Iran) Solitac (Canada)	Joint venture with a total investment of USD 370 million between Chery (30%), Khodro (49%) and Solitac (21%).	Further exploration of the Middle East market.
	Chery Alado (Malaysia)	Alado Corporation Sdn Bhd (Malaysia)	Joint venture of Chery and Alado to assemble and distribute Chery (FBUs and CKD) cars in Malaysia.	Expansion in South East Asia.
	/	CIG Group (Egypt)	CKD project in Cairo for Chery QQ model and Fulwin model.	Further exploration of the African market.
	/	Indomobile Group (Indonesian)	CKD project on manufacturing Chery cars in Indonesia.	Expansion in South East Asia
	/	UkrAVTO Corporation (Ukraine)	CKD project in Ukraine.	Expansion in East Europe and CIS countries 1).
	/	Avtotor Group (Russia)	SKD project on manufacturing Chery cars in Russia.	Expansion in East Europe and CIS countries.
	Chery Quantum Auto Co.Ltd	Quantum LLC	Joint venture for producing medium and high segment models of Chery.	Additional capacity of ca. 150k units to be acquired in 2011-2012.
Part level	ArvinMeritor Wuhu	ArvinMeritor, Inc	Joint venture between Chery(40%) and Arvin Meritor (60%), production of chassis systems and other parts.	Improve the products quality and enhance R&D competency.
	Johnson Control (Wuhu)	Johnson Control	Joint venture with Johnson Controls (50%: 50%) for the interior parts production.	Improve the quality of cars for a greater overseas presence.
	/	AVL/Lotus/ Bertone/ Pininfarina	Jointly development of engine chassis design and aesthetic design.	Improve R&D capability and preparation for export to developed countries.
	/	Bosch	Co-operation in transmission development.	Improvement in transmission technology.

Note: ¹ Commonwealth of Independent States
Source: Arthur D. Little research and analysis

Due to the joint ventures that global OEM champions were forced into as they built up their local operations in China, the Chinese OEMs are already well interlinked with the global automotive industry. In addition, the Chinese OEMs have built a whole network of partners, joint ventures and alliances worldwide in sync with their globalization strategies. Chery, for example, has already established various joint ventures and partnerships, ranging from whole cars to engines and components, aiming at market presence, quality and cost improvement and eventually competitiveness in the global arena (Figure 5).

As a result of our analysis and in contrast with the other BRIC markets, we see China as the country from which four or five major challenger OEMs are likely to emerge, reflecting the country's weight and importance in the global arena.

Based on our research and interviews with top executives we see a clear pattern in the strategies of the Chinese challenger OEMs.

Focus on new emerging middle segment

The new emerging middle segment as described in figure 3 is currently dominated by global brand products adapted for the local market and produced by the JVs global brands have engaged in with Chinese OEMs, in order to enter the Chinese market. Acknowledging the current capabilities, Chinese brands are competitive only in the low-price and low-quality segment. As the middle segment will grow not only in China, but also on a global scale, the strategy of Chinese OEMs is to become competitive in this segment, by gradually improving product portfolio and quality.

Chinese OEMs enjoy significant cost advantages. They use know-how acquired from joint-venture partners as the basis for establishing their own global operations and they will achieve economies of scale through own-brand vehicle standardization and platforms. Basically this translates into the situation that Chinese own brands become real competitors to the products produced by their JVs with Western OEMs.

Globalization strategies with clear priorities

Despite the fact that Chinese OEMs eventually want to play a significant role in all major automotive markets, we see globalization strategies that follow a prioritization path following clear guidelines set by the Chinese government.

The first priority of the major Chinese OEMs is to improve the market position of own brands within the Chinese market itself.

The second priority is to establish a global footprint via other emerging markets like Russia, ASEAN, Middle East, Latin America and Africa, hence markets where customer demand matches the low-cost, low-quality offerings currently available from Chinese OEMs. Chinese OEMs exported 680,700 cars in 2008, up 11.1 per cent more than in 2007. Major Chinese passenger car exporters are Chery, Great Wall, Geely, Zhongxing, Brilliance and Hafei. As part of the export strategies a changing focus from small low-cost products towards the emerging middle segment can already be observed. Before 2008 about 50 per cent of Chery's car export were contributed by the QQ model, a small city car almost identical with the Daewoo Matiz. But in 2008, Chery A5, a middle size sedan, achieved the largest export volume among the Chinese exported cars.

Current sales attempts within triad markets. e.g. the Brilliance BS 4 in Germany, are more or less to be considered as "testing the water" and can be attributed to the ambition to demonstrate capabilities, rather than being part of a strategy to seriously enter European markets as of now.

Eventually, when the product portfolio and quality is adequately developed, the major Chinese OEMs will compete in all major automotive markets including the triad. Naturally this will take time since there is still a long way to go for China's challenger OEMs.

Focus on next generation power train technology

Next generation power train technologies such as plug-in hybrids, electrical or fuel cell drive trains are an essential part of the future strategy of the Chinese automotive industry and government for two reasons.

The government acknowledges the immediate need for environmental protection and the key role of the transport sector in this effort.

Both OEMs and government see new energy vehicles as the key to competing with the established players or even leapfrogging the competition. Rather than catching up with traditional technology, they acknowledge the constraints for the dissemination of new energy vehicles, such as lack of technologies, lagging infrastructure and high costs, but are committed to closing this gap as soon as possible.

The central government offers ample financial support, and at the same time puts high pressure on the Chinese OEMs to deliver on set targets. E.g. the government expects to see 500.000 "new energy" vehicles, such as plug-in hybrids or purely electrical cars produced by Chinese OEMs by 2011. Wan Gang, Minister of Science and Technology publicly stated recently the expectation that 10 percent of China's new car output by 2012 are "new energy" vehicles. From a supply perspective the government has already spent about US\$ 120 million for the development of new energy vehicles and announced to provide another US\$ 1.5 billion within the next three years. From a demand perspective, in a joint effort of the Ministry of Finance and Ministry of Science and Technology from February 2009, the government provides subsidies to car buyers when purchasing a hybrid car that cuts fuel consumption by 40 percent.

The subsidy amount is 50,000 Yuan or US\$ 7,320, which easily accounts for the higher price when buying a new energy car. The program is being piloted in 13 cities now. The government also announced plans for an extensive construction of new energy vehicle infrastructure, for example building a recharging network by the end of 2009.

All major Chinese OEMs are engaged in development of new energy vehicles and some have even started to sell these in the Chinese market. At this year's Shanghai Auto Show 2009, BYD will begin selling its F3DM as the country's first mass-production electrical hybrid vehicle – allegedly even the world's first plug-in hybrid in mass production – for a retail price of around US\$ 21,000. BYD announced two more electrical models in 2009. With the A5 BSG, Chery already sells a hybrid vehicle and has announced a purely electrical model, the S18EV, which still has to pass NDRC approval, for this year. The S18EV provides a range of 150km and a top speed of 120km/h and is equipped with a 40kw electrical engine and 40ah li-ion phosphate battery pack.

Due to the lack of required R&D competencies, Chery engaged the engineering company Ricardo for the development of the electrical core systems. SAIC established the Shanghai Jieneng Automotive Technology Co. Ltd. to independently develop hybrid and electrical drive trains. The first self-developed new energy vehicles by SAIC are announced for 2011. Dongfeng announced own hybrid models in 2009 without specifying a launch date.

As a summary it becomes clear that despite the comparably low product quality of Chinese brands and rather unrealistic ambitions by some Chinese OEMs, all in all the Chinese automotive industry follows a sound development plan with the clear ambition to become a relevant force within global automotive markets. In a nutshell, there is still a long way to go for China's challenger OEMs, but the established auto world should not make the mistake of underestimating the threat as strategic moves within China may change the picture significantly over the coming years as our war-gaming example of the Chinese automotive industry in the next chapter suggests.

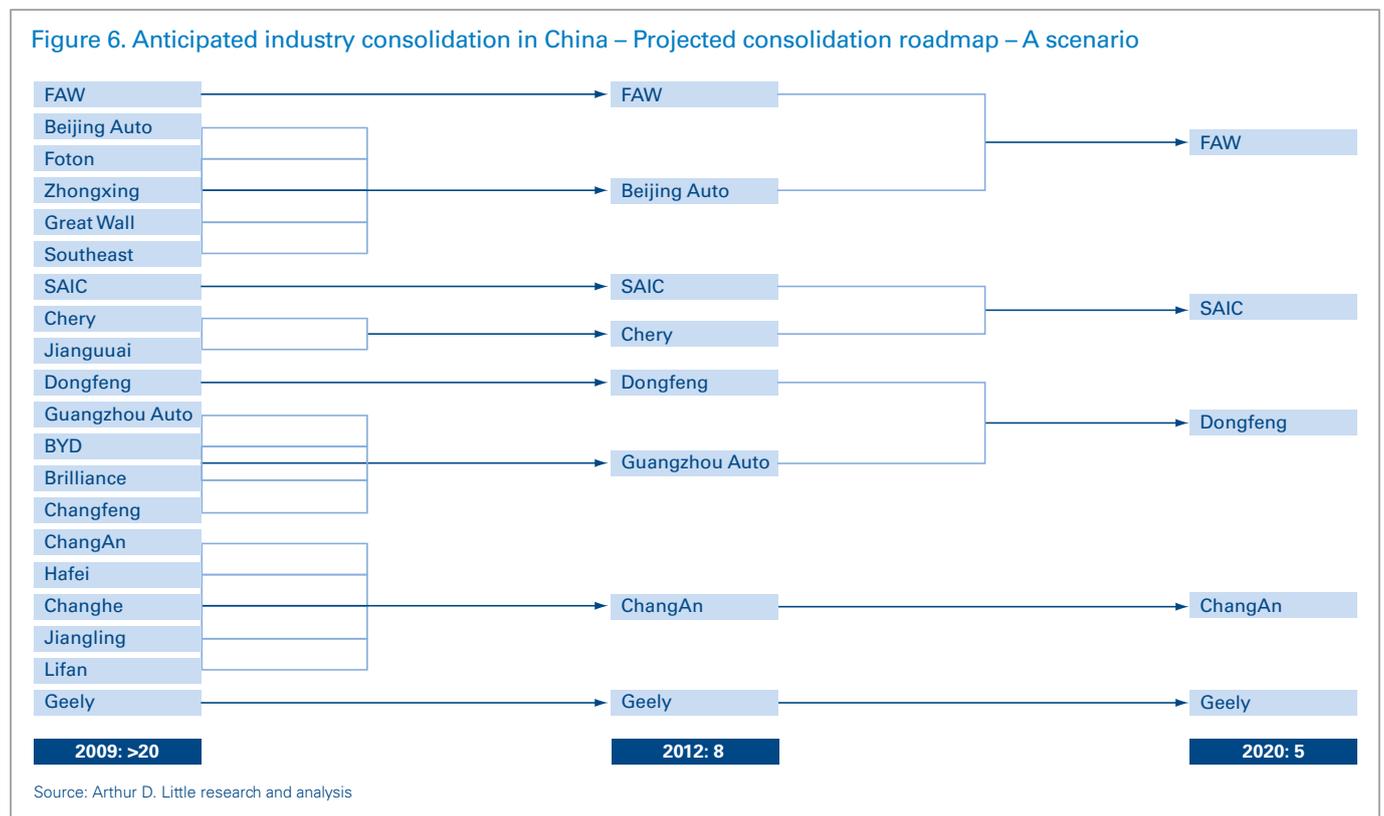
New Automotive Giants in China

Depending on the method of counting, there are currently somewhere between 50 and 100 domestic automotive OEMs operating in China, from Aux Auto to Zhongxing Automobile. Just as the consolidation waves that swept the US and Europe in the first half of the 20th century reduced the number of OEMs, so China will see the number of OEMs decrease significantly. Regional governments, as the owners of many OEMs, will fight hard for their local industry and the related jobs. However, the Chinese government is determined to build its own strong automotive industry, for which a few of today's OEMs will be selected to become national heroes.

Due to the global financial crisis, the Chinese government announced in January that it would support the domestic steel and automotive industry. Later details revealed that by 2011 the government wants two or three large OEMs with a production capacity of more than 2 million units each and four or five OEMs with more than 1 million units each.

Domestic OEMs are encouraged to further develop their own brands and support for mergers and acquisitions abroad is promised. The four major Chinese OEMs – SAIC, FAW, Dongfeng and ChangAn – are particularly encouraged to drive the industry's consolidation.

Under these circumstances the nation's largest automakers will be combined into about 10 companies in the short term and we see only up to eight relevant brands still existing in 2012. Expert interviews and war-gaming indicate that in the mid-term, by 2020, consolidation to about five major Chinese OEMs is highly likely (Figure 6).



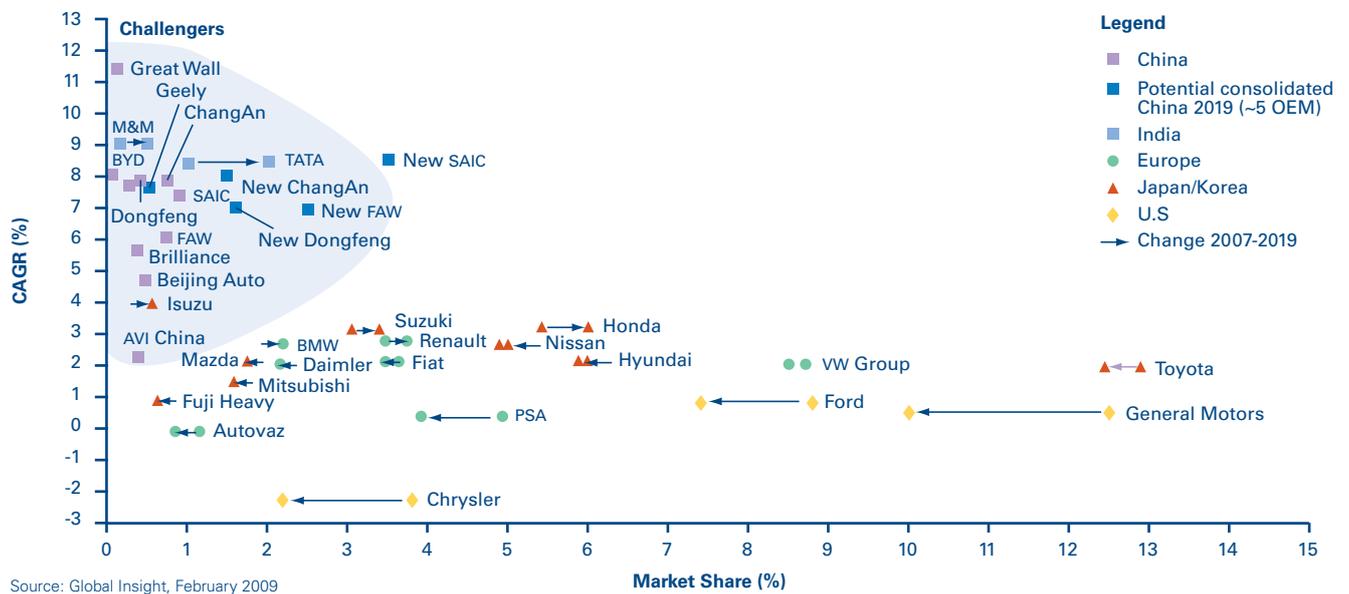
Chinese Challenger OEM	Potentially merged from	Rationale	Potential globalization path and remarks
New SAIC	SAIC Chery Jianghuai	Fully fledged volume OEM, highest-profile Chinese OEM (THE national hero), complementary product portfolios plus very close geographical proximity and informal ties, branches already in the US, Europe, Hong Kong, Japan and Korea leveraging major well known global brands, SAIC already holds 10 per cent shares of Daewoo and a majority stake in Ssangyong of South Korea.	SAIC as the biggest and most advanced Chinese OEM is leading the way, targeting emerging as well as established auto markets with a full range of own-brand passenger cars and light commercial vehicles (focus on European market but gradual expansion into South America, Africa and the Middle East), biggest threat for triad markets.
New FAW	FAW Beijing Auto Great Wall Zhongxing Southeast	Fully fledged volume OEM, has built strong own-brand vehicle portfolio, apart from FAW all other OEMs lack the required economies of scale, close geographical proximity and complementary product and brand portfolios, already numerous rumors concerning mergers among them.	Lower profile than SAIC and more selective globalization strategy, lower-budget passenger cars and commercial vehicles, major threat first in emerging markets (esp. Russia, Mexico, Middle East, Southeast Asia and Africa) but foreseeable in triad markets (starting with Northern America and Southern Europe) as well.

For example, Changfeng and BYD are not large enough to compete on a global scale. Due to geographical proximity both have fairly close informal ties to Dongfeng and their product portfolios fit well into Dongfeng's. In addition, Dongfeng's own-brand hybrid car plans fit very well with BYD's battery expertise and pure electric car plans. BYD's CEO has already declared his ambition at the Detroit Motor Show to make BYD Auto the world's biggest car manufacturer by 2025.

Even though this might be unrealistic for BYD alone, eventually a potent global player could emerge, centered around Dongfeng and BYD and with a strong hybrid and e-car offering. As Dongfeng and Guangzhou Auto are both partners of Honda and thus aligned through this cross-link, a consolidation here appears reasonable.

Chinese Challenger OEM	Potentially merged from	Rationale	Potential globalization path and remarks
New Dongfeng	Dongfeng Guangzhou BYD Brilliance Changfeng	Product portfolio of Changfeng and BYD can easily be integrated into Dongfeng, Dongfeng and Guangzhou with same foreign partner, wide range of products from heavy commercial vehicles, passenger cars to automotive parts and battery-powered e-cars, complementary e-car plans, current M&A rumors already involving Guangzhou Auto, Brilliance and Changfeng.	Very selective globalization strategy likely targeting emerging markets with commercial vehicles and triad markets with offerings from automotive parts to battery-powered e-cars leapfrogging conventional technologies, major threat in emerging and/or profitable niches in triad and emerging markets.
New ChangAn	ChangAn Hafei Changhe Jiangling Lifan	Military background of ChangAn Hafei and Changhe with common ownership profiles, Ministry of Industry & Information Technology is pushing merger, Lifan privately owned and likely to require additional funds, informal ties to ChangAn.	At first form a multi-million-unit level mini-car and mini-van group, focus on emerging markets with “middle” segment passenger cars and light commercial vehicles, so far no threat to triad markets but competitor in emerging markets in selected segments.
Geely	Geely	First independent automobile manufacturer in China, shifting from price advantage to technology enhancement, diversified products to meet the customer requirement, strong emphasis on independent R&D, private company with a flexible structure, good execution abilities, lower labor cost compared with larger auto groups.	Geely has a very good position for the future due to the consumption and tax regulations which favor smaller cars, serious competitor in the low-cost segment. Geely will extend exports to Russia, Ukraine, South America, Africa. Geely might push internationalization by acquiring outside China – as they showed their interest in Volvo recently.

Figure 7. World market changes 2007 – 2019 and war-gaming

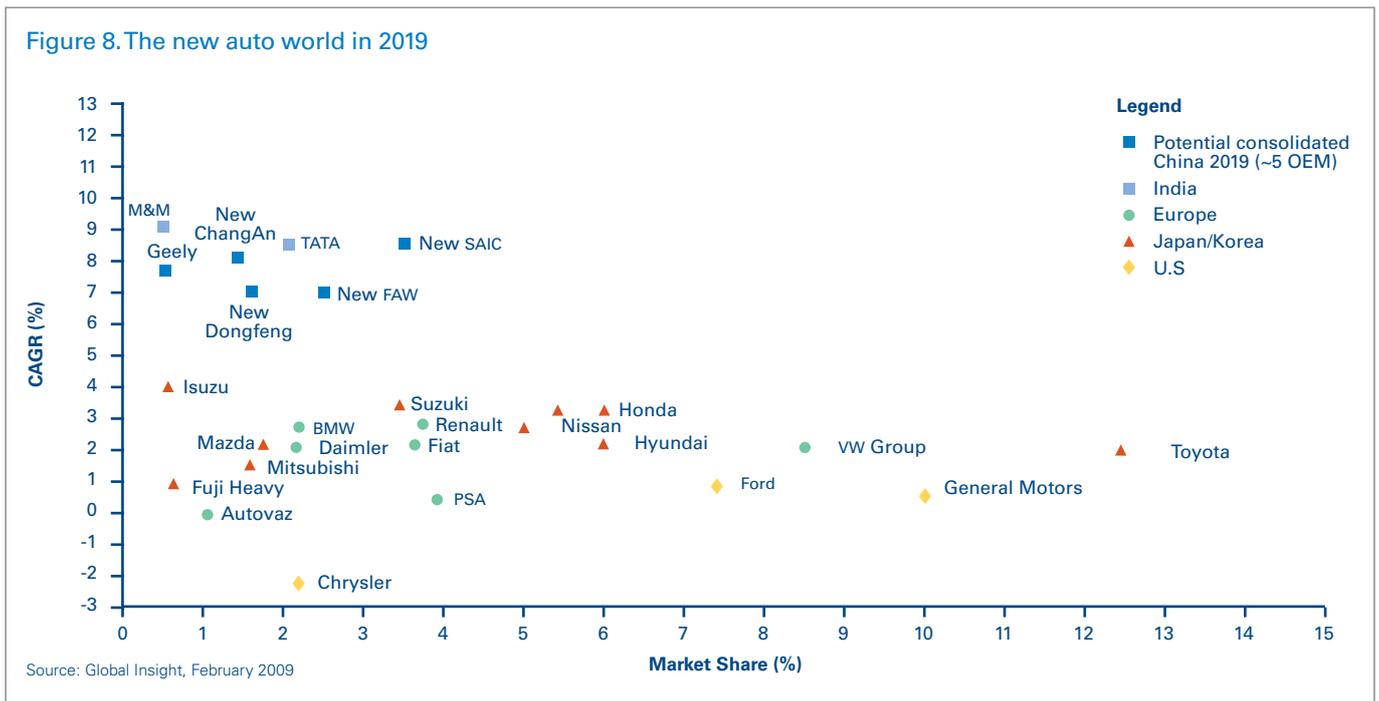


Source: Global Insight, February 2009

The rationale behind the complete consolidation scenario is based on expert expectations, common ownership structures, complementary product portfolios and/or plans, cross-links via the same joint-venture partners, known informal ties and recent consolidation rumors in the Chinese automotive industry.

We see five major automotive groups emerging around the big players SAIC, FAW, Dongfeng and ChangAn, with Geely as the first independent car manufacturer with a strong brand to survive the surrounding mergers.

Aside from structural changes in the overall automotive OEM landscape driven by the current economic crisis, which involves several of the formerly strong automotive giants like GM, Chrysler and Ford, the new automotive world order will look very different simply due to the changes in China. We expect the structural change to take place between 2012 and 2015. Figure 7 illustrates the possible future world automotive market based on Arthur D. Little's war-gaming and recently updated market forecast data.



In the new auto world of 2019 (Figure 8) relative market share will shift from global OEM champions (shown bottom, with a lower growth rate) to challenger OEMs (shown top left). In terms of absolute numbers, Arthur D. Little foresees that mainly US OEMs will suffer heavily from decreased sales volumes, although the other global OEM champions will also experience significant pressure on their ambitious growth plans. To put things into perspective, the new challenger automotive group around SAIC will have annual sales of more than 3.2 million vehicles and hence be one and a half times bigger than BMW or Daimler, and about as big as Suzuki, Renault, Fiat and the like.

“Arthur D. Little foresees that mainly US OEMs will suffer heavily from decreased sales volumes, although the other global OEM champions will also experience significant pressure on their ambitious growth plans.”

Future Battlegrounds

As outlined in the previous chapter, we expect five strong challenger OEMs from China and potentially Tata from India to gain access to the exclusive club of global OEM champions by 2020. Even though the new challengers are eager and hungry, and despite the fact that various disruptive scenarios can be envisaged, we believe that structural change in the automotive industry will be a mid-term rather than a short-term phenomenon.

This is for two main reasons: firstly the painful process of internal consolidation within the auto industry that has yet to take place, and secondly the need for challenger OEMs to catch up to global standards in the areas of R&D, product portfolio and quality, sales and service networks, branding and human resources. However, by the time challenger OEMs (whether merged and fully consolidated or not) enter the global stage as convincing contenders, they will already have crossed blades with global OEM champions on various battlegrounds where the future structure of the automotive industry is being shaped. The degree of success of the emerging challengers will be decided in three main fields:

Emerging growth markets and new global middle segment

For the foreseeable future, emerging OEMs will focus mainly on their home markets and other emerging markets with similar customer requirements. While this is good news for already highly competitive triad markets, it also means that emerging OEMs will be fierce competitors in those markets where established OEMs plan to grow. Currently the triad OEMs primarily have their main competitors on the radar screen, but they also have to share their growth with emerging car manufacturers from China or India. The consumers in the emerging markets are no more willing to buy the old triad OEM models but they can't afford the latest ones. As the triad OEMs plan to introduce "stripped down" cars for the Emerging markets as price competitive, attractive models are not existing in their portfolio – the new OEMs already have the right low cost products in their product portfolios and will gradually improve quality to competitive levels matching demand from the new global middle segment.

Especially for China we see a fierce competition as four or five major automotive groups will emerge, which are chartered to push own brands and eventually will become strong competitors for triad OEMs. To state it clearly, Chinese OEMs will refocus from producing and selling triad OEMs brands via their JVs to developing competitive products for their own brands, hence the future of the JVs and the triad OEM volume growth is definitely endangered.

M&A power play and war for talent

Capital markets reshaped by the financial crisis, petrodollars, or Asian state funds will have significant impact on the ownership structure within the automotive industry. Daimler provides a recent example of how emerging economies are taking greater stakes in iconic companies of the automotive industry. Together the state funds of Kuwait and Abu Dhabi now own a 16 percent stake of Daimler. Aside from capital investments that eventually have an impact on triad OEMs corporate strategies, the emerging OEMs will not rely on organic growth alone to realize their future growth targets and ambitions. Technological know-how, supplier networks and even brands do not need to be built from scratch but can be bought on the market. Just as Tata has acquired Jaguar and Land Rover, SAIC has taken over the remains of Rover including the complete engineering team, others will follow. Geely's and other Chinese OEMs interest in Volvo is another recent sign of this trend.

But taking over struggling western OEMs is not the prime choice for emerging OEMs since it involves high risks, as the recent bankruptcy of Ssangyong after SAIC had taken over a major stake revealed. For instance the Chinese government even warned manufacturers to stay away from acquiring struggling established brands.

Most of the M&A will be around suppliers, ailing contract manufacturers and design and engineering service providers. Geely just acquired the Australian transmission supplier DSI to get access to their extensive engineering know-how in the gearbox sector. Beijing Auto has expressed interest in Delphi, the American auto-parts giant. SAIC already acquired Ricardo 2010 Consultants Ltd., a former subsidiary of the engineering consulting company Ricardo PLC back in 2007. Chery is relying on AVL regarding engine development and renowned Italian design firms like Bertone or Pininfarina concerning exterior design. Established OEMs must put even more focus on protective ownership structures, resulting in cross-over investment and cooperation.

Challenger OEMs face a severe shortage of qualified people to support ambitious growth and globalization strategies. The workforce, despite the impressive numbers, is highly volatile and often lacks the necessary quality and experience of global OEM champions. Those OEMs will become aggressive competitors for the global OEM champions in the “war for talent”. The ailing Big Three in Detroit are currently the target of Chinese OEMs hunting for talent.

Established OEMs and suppliers must find ways to retain their talent both on a managerial and an engineering level.

New power train technologies

New, low or even zero emission, power train technologies are crucial for the automotive industry to respond to new tightened regulations, increasing energy prices (after the financial crisis) and as a result changing customer demand. Established global OEMs invest heavily in new power train technologies like hybrids or electrical vehicles. At the same time the OEMs, particularly the established OEMs, also focus on efficiency improvements of their traditional gasoline and diesel engines for several reasons. a) They expect that for the foreseeable future (even by 2020) more than 80 percent of cars sold worldwide will be powered by gasoline and diesel engines, b) They can build on enormous know-how and experience with efficiency improvements of traditional power trains, c) They draw a good share of differentiation and therefore competitive advantage from their power train technologies.

Environmental protection and CO₂ reduction will become as dominant a topic in emerging markets as it already is in triad markets. Industry outsiders are likely to make inroads and established players need to watch them closely as manufacturers like BYD embrace the plans to rely on electric and hybrid driven vehicles to become an important automaker both in China and in global markets. In this regard, emerging auto markets are likely to leapfrog established markets not only in terms of car technology but also in terms of infrastructure. As emerging OEMs don't share the same legacy, they can potentially take a green field approach with supplying traditional power train technologies via cooperation with established OEMs and mainly focus mastering next generation power train technologies.

Conclusion

Based on our research, the question of whether or not we are on the verge of the end of the automotive world as we know it must be answered with a clear yes. Even the vast investment that Western governments continue to make to keep ill-fated OEMs afloat will not prevent the inevitable change in the structure of the industry. Several strong triad automotive OEMs will indeed remain global champions, but they will have to share the global automotive market with new challenger OEMs from China and India, while other established OEMs, among them some of the biggest names of past decades, will disappear and give way to the new automotive world.

However, the challengers will have to overcome significant shortcomings in the areas of R&D, product portfolio and quality, sales and service networks, branding and human resources, and in the case of the Chinese challengers to absorb a massive wave of consolidation in order to become competitive on the global stage. Naturally these developments take time but, as we have seen with the compressed learning curve of the Korean OEMs in entering the global stage compared to the Japanese before them, we believe that it's feasible for the new challengers to become relevant players by 2020 and beyond.

For the triad OEMs we see three key questions to respond to the challenges from emerging OEMs:

1. How to secure future growth ambitions in emerging markets and the new global middle segment?

Triad OEMs base their future growth plans to a large extent on emerging markets and the new global middle segment. As the emerging OEMs will focus on exactly the same areas, competition from this angle will be much more intense than currently anticipated. In this regard triad OEMs must align their product portfolio and specifications as well as the price points even more on emerging market demand and, especially for China, find future strategies for the time when JVs with triad OEMs become second priority to emerging OEMs behind their own brand ambitions.

2. How to survive M&A power play?

The financial crisis, the shift of investment power to emerging economies and new players will cause a new ownership landscape within the automotive industry both on an OEM and on a supplier level. Triad OEMs must find ways to protect their own ownership structure as well as the ownership of their strategic suppliers in order to maintain their ability to execute strategy independently and to ensure unrestricted access to key technology.

3. How to achieve and protect competitive advantage relative to technology in the light of new power train technologies?

Triad OEMs, especially European and Japanese OEMs have a clear competitive advantage concerning traditional gasoline and diesel based power train technology. There is still enormous efficiency gain potential in this technology and no emerging OEM will be able to rival the triad OEMs on this competitive advantage. But eventually traditional power train technology will disappear and emerging OEMs will invest heavily in new energy power train technologies as they consider this an opportunity to leapfrog the established competition. Triad OEMs must develop strategies to achieve and protect competitive advantage, even with new power train technologies, in order to sustain competitive advantage for the future.

Contacts

If you would like more information or to arrange an informal discussion on the issues raised here and how they affect your business, please contact:

Benelux

Jeroen De Kort
+31 10 2018 817
dekort.jeroen@adlittle.com

Central Europe

Marc Winterhoff
+49 611 7148 136
winterhoff.marc@adlittle.com

China

Thomas Schiller
+83 10 656 77 055
schiller.thomas@adlittle.com

France

Laurent Hartmann
+33 1 55 742 915
hartmann.laurent@adlittle.com

Italy

Fabrizio Arena
+39 06 68882 344
arena.fabrizio@adlittle.com

Japan

Yusuke Harada
+81 334368931
harada.yusuke@adlittle.com

Korea

Daesoon Hong
+82 2 720 2040
hong.daesoon@adlittle.com

Middle East

Thomas Kuruvilla
+971 4 433 5401
kuruvilla.thomas@adlittle.com

Portugal

Grant Greatrex
+35 1 210 091 500
greatrex.grant@adlittle.com

Spain

Jesus Portal
+34 91 702 7434
portal.jesus@adlittle.com

South East Asia

Jeffrey Lai
+60 3 2164 6063
lai.jeff@adlittle.com

Sweden

Per M. Nilsson
+46 31 758 1022
nilsson.per.m@adlittle.com

UK

Simon Mall
+44 207 7660 246
mall.simon@adlittle.com

USA

John Brennan
+1 617 532 9500
brennan.john@adlittle.com

Priscilla McLeroy
+1 281 404 9870
mcleroy.priscilla@adlittle.com



BYD e6 – The First Purely Electrical Chinese Car

BYD has announced to sell the first purely electrical Chinese car with a remarkable range of 400km by the end of 2009.

Immediately after the 2009 Shanghai Auto Show, BYD will start selling the F3DM, the country's first mass-production plug-in hybrid and have announced plans for export to the US market for 2010.

Arthur D. Little

Arthur D. Little, founded in 1886, is a global leader in management consultancy, linking strategy, innovation and technology with deep industry knowledge. We offer our clients sustainable solutions to their most complex business problems.

Arthur D. Little has a collaborative client engagement style, exceptional people and a firm-wide commitment to quality and integrity. The firm has over 30 offices worldwide. With its partner Altran Technologies, Arthur D. Little has access to a network of over 17,000 professionals. Arthur D. Little is proud to serve many of the Fortune 100 companies globally, in addition to many other leading firms and public sector organizations. For further information please visit www.adl.com

Copyright © Arthur D. Little 2009. All rights reserved.

This report is printed on process chlorine free paper made from 100% recycled post consumer waste.

www.adl.com/shiftinggravity