# The Chinese Car Industry and Globalization

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***Abstract:***
*Since the beginning of the Open Door policy, instituted by the Chinese government following the death of Mao Zedong, the Chinese car industry has grown rapidly particularly from the early 1990s. The national government has encouraged both domestic and joint venture firm expansion through inwards foreign direct investment by western and Japanese car and component manufacturers. The objective is that China becomes a major player in the global car industry by 2020. This paper intends analysing the current strengths and weaknesses of the Chinese automotive industry and will discuss what is required if the industry is to grow globally. It will focus on government policy in relation to joint ventures, market expansion, how problems of scale and scope and quality need to be tackled if the Chinese are to compete against more advanced firms in the west. Finally, it will assess how easy or difficult it will be for Chinese firms to penetrate markets in the developed economies.*

Keywords: Emerging economy, foreign direct investment, joint ventures, rationalisation, exports, management and labour.

JEL Classification: O14

**The Chinese Car Industry Opportunity or Threat**

## Introduction

China’s emergence in the global automotive industry has given rise to a great deal of speculation among academics and industry analysts on what strategies Chinese car makers will pursue in entering markets beyond China’s immediate frontiers and threatening the established order among the main automotive producers by increasing its market share at their expense. Alternatively working with Chinese firms could provide an opportunity for western firms to grasp further opportunities in China’s burgeoning domestic market and cooperating with the Chinese to create what might be described as a ‘new order’ in the global industry.

China’s government is not without ambition and envisages a national output of circa 10-15 million units by 2020 and achieving approximately 10 per cent of global market share (outside China) in the ensuing decade. A leading domestic producer, Geely, has a target of selling 400,000 vehicles outside China by 2010. (Automotive Business Review, 2006) The burning question is how will this be achieved? On the one hand, the emphasis initially could be on the fairly easy penetration of soft markets such as those of the Middle and Far East, Africa and Russia as is already happening, before an assault on the more developed markets. Independent Chinese producers such as Great Wall, Geely, Brilliance and Chery, for instance, already sell their products to no fewer than 50 countries albeit in small quantities despite their weaknesses in product branding, technology, R&D, sales and distribution when compared to the multinationals. Great

Wall, for instance, plans to expand into European markets such as Spain, Portugal and Greece and even the United States in 2008-09. (China Automotive Review, 2005; Automotive News, 2007).

One the other hand, following the example of the Japanese and Koreans before them, these firms might try to enter the more mature markets of Europe and the United States through offering low priced small cars to establish what might be termed an initial 'beachhead' before attempting to move upwards. Bound up with this are questions such as what role Western-Chinese joint venture companies will play in helping their Chinese partners to perform on the global stage? Will western and Chinese firms cooperate more as a group of mutually obliged partners sharing common interests or will many joint ventures be severed with each firm going its own way? Finally, is it really in the best long term interests of western firms to export their Chinese joint venture products to the west, possibly taking market share from their own domestically produced products and then having to share any profits with the Chinese ?

Underlying such questions are important issues concerning how well equipped Chinese firms are to launch their products in the highly competitive markets of the west and, if they are not yet ready to do so, how long will it take them to prepare? It is unlikely that the Chinese will take as long as the Japanese and Koreans whose products took twenty to thirty years to be established firmly in the market place. Indeed, rather than rely on slow organic growth to reach the required levels of quality, safety and sophistication let alone establish dealerships, the Chinese will simply obtain western expertise either through acquisition as Nanjing Auto and the Shanghai Automotive Industrial Corporation (SAIC) have done or will buy in the necessary products, systems and technologies from specialist engineering and consultancy firms in the west to achieve their goal.

The objective of this paper is to assess the present state of readiness in the Chinese auto assembly and components sectors and to explore possible strategies for overcoming the weaknesses that undoubtedly exist. In so doing attention will focus on structural problems, investment, supply chain management, the role of national and provincial governments as well as on major issues surrounding quality, safety levels, price and branding. However, prior to this, it is essential to briefly contextualise the Chinese auto industry within the national economy and the current state of consolidation and technological change in the automotive industry as a whole.

## Contextualizing the Chinese Automotive Industry

The growth of China's automotive industry needs to be mirrored against the changes in the Chinese economy that have taken place since the adoption of the Open Door Economy in the late 1970s following the death of Mao Zedong. In essence China is edging its way towards a market economy through the growth of modern industries such as consumer durables, textiles, electronics, aerospace, telecoms and petrochemicals, In achieving this China has relied considerably on western Foreign Direct Investment as its borders become increasingly porous (Nolan 2001a and 2001b).

A successful motor industry is still viewed in many emerging economies as an engine of economic growth because of the direct and indirect employment generated, the stimulus given to local industry and the

adoption of advanced forms of work organization. China's nascent car industry in the late 1970s was highly dispersed as plants had been located for reasons of military strategy even in remote provinces such as Hubei. Provincial governments were keen on developing an automotive sector in the light of the serious problems of unemployment associated with the decline and subsequent rationalisation policies in older state owned declining sectors such as iron and steel (Harwit, 1995).

Realising that a competitive automotive industry could not be created without outside assistance, the Chinese government paved the way for western (in this context 'western' is taken to include Japanese firms) multinational firms to form joint ventures with their Chinese counterparts. Indeed, since 1994 the automotive industry has been designated as a 'pillar industry' in successive government five-year plans. .The first western firms to embark on this route were Chrysler, Volkswagen and Peugeot in the 1980's. With China's successful application to join the World Trade Organisation (WTO) in the following decade, others such as Toyota, General Motors, (GM), Ford, Honda and Hyundai followed suit. (Donnelly and Morris.2003) At the time of writing virtually all of the world's major multinational producers of automotives have formed joint ventures with Chinese firms as shown in Table 1. Since 1994 foreign automakers have invested over US$20 billion in China's auto industry and billions more are said to be forthcoming. (IBM Consulting, 2005). Finally, China exercises strict controls on joint ventures in that a foreign firm can hold equity of no more than 50 per cent in any venture except in special export zones from which all output is exported. The only western auto company so privileged is Honda.

**Table 1: Joint Ventures between Western and Chinese Automotive Firms**

| **Western Firm** | **Chinese Partner** |
|---|---|
| BMW | Brilliance |
| Daimler Chrysler | Beijing Jeep |
| Ford | Chang'an |
| Ford | Jiangling |
| General Motors | SAIC - Wulung |
| General Motors | SAIC |
| General Motors | Dongyue |
| Honda | Guangzhou |
| Honda | Dongfeng |
| Honda | China Motors |
| Hyundai | Beijing |
| Hyundai | Dongfeng |
| Mitsubishi | Hunan |
| Nissan | Dongfeng |
| Nissan | Zhengzhou |
| PSA (Citroen) | Dongfeng |
| Suzuki | Chongqing |
| Toyota | Tianji |
| Toyota | Sichuan |
| VW | FAW |
| VW | SAIC |

Source: Dicken (2007); Ernst &Young (2005).

There are circa a hundred firms producing vehicles in China. Of these only a dozen or so have the potential to become major players and make an impact internationally with only Geely, Cherry, SAIC, Automotive Brilliance and Great Wall among the domestic firms appearing likely to be able to compete independently within the next five to ten years. With so many firms vying against each other it is little wonder that even the Chinese domestic market is fiercely competitive. In 2000, VW held a market share of 53 per cent and its nearest rival, Daihatsu had 14 per cent, Citroen 8 per cent, Suzuki 8 per cent while the remaining 20 per cent of the market was shared by others including GM. However, as Table 2 illustrates the balance of power has shifted quickly with other firms including domestic Chinese firms taking share away mainly from VW even though the latter is producing more units than ever due to continued market expansion. Lastly of the hundred or so firms manufacturing in China only nine enjoy a market share of 5 per cent or above and of these six are joint ventures.

**Table 2: Automobile Market Share 2005**

| *Firm* | *Market Share%* |
|---|---|
| VW | 14 |
| GM | 11 |
| Honda | 9 |
| Hyundai | 8 |
| FAW | 7 |
| Chery | 6 |
| Nissan | 5 |
| Citroen | 5 |
| Geely | 5 |
| Mazda | 4 |
| Suzuki | 4 |
| Toyota | 4 |
| Others | 17 |

Deloitte, Touche, Tohmatsu (2006).

Challenging in established markets will not be easy as these tend to be slow growing for demographic reasons and dominated by the premier multinationals. Moreover, the latter have tightened their grip on the industry due to a series of mergers and strategic alliances which have brought about increasing consolidation across the industry involving firms such as Ford, GM, Volkswagen, Renault and Peugeot. Even Korea, still regarded as an emerging car producer, has not been immune from this through the fusion of Kia and Hyundai and GM's takeover of Daewoo. Similarly, of the Japanese majors only Toyota remains totally independent (Dicken, 2007).

Not only do the larger global firms enjoy the advantages of having widespread design, R&D capabilities, extensive dealer networks and ongoing relationships with customers over long periods, their very size enables them to take advantage of state of the art technology and modularisation to reap economies of scale and scope in increasingly fragmented markets with ever shortening lead times (Morris and Donnelly, 2007). It is against such trends and superior technically advanced firms that Chinese companies will be forced to compete

## The Growth of the Chinese Automotive Industry.

The Chinese automotive market is still viewed as one of almost extraordinary potential growth and is further encouraged by the pace

at which the country is forcing the transition from a command to a full market economy with GDP growing at around 9-10 per cent per annum and expected to increase sevenfold between 2005 and 2030 by which time China's economy is predicted by some to be as large as that of the United States (Walker, 1997; IBM Comsulting 2005).

To build a successful automotive industry it is estimated that a country requires a population of circa 50 million, a GDP of a minimum of US$500 billion and an annual production level of 2 million units. By these measures China is already an established car producing country, but this is due primarily to the input of western firms in joint ventures. FAW's joint ventures produced just under a million units and SAIC's over 900,000, whereas total production by domestic firms was just over 700,000 units in 2005-06. To succeed globally and independently, China's domestic firms need to achieve output levels of at least two million units relative to population levels, based on their own fully integrated technology (EIU,2006) Nevertheless, in 2004 China became a net exporter of vehicles for the first time and sold 172,639 vehicles overseas in 2005, albeit mainly to African, Middle Eastern and Eastern European countries (EIU,2006) In essence, years of investment have catapulted China into fourth place as a global producer behind the United States, Japan and Europe. In specific country terms, however, it is now the third largest automotive producer in the world ahead of Germany (China Auto News, 2006 ).

While there is a government inspired drive to push Chinese cars increasingly into export markets quickly, it has been argued that this will not take place on the scale envisaged by the authorities in Beijing until the easier domestic market have been satisfied. The domestic market is by no means homogenous due to the disparate structure of China's urban, rural and coastal economies. Despite a population of 1.2 billion and rising sales of passenger cars from a figure of 7,520 units in 1995 to 725,164 in 2000 to 4 million in 2006, car ownership is limited to 24 vehicles per thousand compared to a global average of 120. So, there remains considerable scope for expansion as GDP per capita rises due to anticipated continued GDP growth rates of around 9-10 per cent per annum over the next decade. (Flint, 2006; IBM Consulting, 2005) By 2015 sales of passenger vehicles and commercial vehicles are expected to exceed 6.4 million and 4.84 million respectively. (Ernst & Young, 2005) It needs to be stressed though that car sales are concentrated primarily in Beijing and in the southern and eastern cities of South China where per capita income on average is around US$8,000 compared to a national average of US$1,000. Finally, the domestic market remains far from saturated as it contains approximately 80 million as yet untapped potential customers at the necessary income level, but for many, especially those on low incomes in rural areas, car ownership is but a dream.

## Export Potential

There is little doubt that eventually independent Chinese firms will export vehicles to the more advanced markets, but estimates of how long it will take them to do so vary from between five to fifteen years (Knowledge Wharton, 2006). Apart from the potential profitability that may lie in overseas markets, the drive to export will be further propelled by the overcapacity that exists in the industry which is engendering fierce price competition between the JV and domestic firms alike.

In exporting overseas the Chinese car industry faces internal and external hurdles and these are very much intertwined, posing the following question. How ready are the Chinese to export? The picture is exceedingly mixed, but there are specific problems that need to be addressed and these centre on, as previously indicated, low quality, poor safety, lack of brand recognition, a weak components sector, a lack of intellectual property, shortages of technological and managerial skills and insignificant R&D expenditure to say nothing of the stiff competition that will be encountered. (EIU, 2005).

As in western markets, the Chinese industry with the exceptions, of FAW-Toyota and possibly VW also faces problems of excess capacity, high inventory levels and new investment which continues to increase. Great Wall, for example, is in the process of constructing a new US4257 million plant in Hubei province and FAW Xiala plans to invest a further US$386 in new production capacity by 2010. (Automotive News, 2007a and b). It has been estimated that excess capacity is above 30 per cent and inventory levels in 2007 will be greater than the productive capacity of the entire industry with most of the excess belonging to domestic firms. In contrast the main JV global manufacturers such as Ford, Toyota and Hyundai currently lack the capacity to meet the growing demand for their products (Chen, 2006; China Talk, 2006b). Moreover, in 2003, for example, with the exceptions of VW, GM and Honda, capacity utilization among the foreign producers in general stood at only 65 per cent and at a mere 40 per cent by the domestic producers, well below the internationally accepted figure of 85 per cent needed for profitability. Such figures suggest low labour productivity and high unit costs which were not helped by high inventory levels. Such factors, when coupled with problems on the supply side with so many key components still having to be imported, means that China is not necessarily a cheap place to construct cars. Honda argues that it is more expensive to build the Accord in China than in the United States. Moreover, often JV firms are on occasions saddled with additional costs such as providing housing, medical, dental and educational services for their workers and their families (Thun,2006). If an export drive is to be mounted then attempts must be made to drive costs downward (Deloitte, Touche, Tohmatsu, 2006).

To counteract the excess capacity that exists and drive down costs, the national government has urged a policy of rationalisation even though this will be painful through factory closures and loss of jobs. Implementation though has proved hard to effect and policy seems contradictory. Ideally, Beijing intends focusing activity on what are known as the ‘Big Three’ SAIC, First Auto Works and Dongfeng. Already some rationalisation has begun, but this appears more company than government inspired with SAIC, for example, acquiring 25 per cent of Chery and 76 per cent of Wulung Motors respectively. Similarly, Donfeng has taken a major stake in Jiangsu Yueda and Nanjing Motors have bought up two smaller concerns in Jiangsu province. (Gao, 2002b). The weakness in government policy is, however, transparent in that smaller firms are still being encouraged to raise output and are permitted to ally with global partners such as Honda and Suzuki. (Goldman Sachs,2003).

Inherent in the obstacles preventing rationalisation are the policies of provincial governments. Firstly, these are intent on preserving their auto empires and, viewing the car industry as a generator of

growth and employment, have little intention of dismantling their firms or participating in cross-provincial mergers which could ultimately prove more beneficial to other provinces. Many are still encouraging firms to seek new partners to stay in business. Secondly, often such expansion is financed by locally owned banks with little understanding of the industry and so little attention being paid to commercial criteria which in turn has forced Beijing to clamp down on their lending activities. This in itself may contribute to a shake up among the smaller less efficient firms (Ernst & Young, 2005) With such contradictory policies and the inherent tensions in centre-periphery political and economic relations, the ruthless rationalisation required to improve industrial competitiveness to global standards will prove a slow process.

A key problem that needs to be overcome is that of quality and safety. Currently Chinese passenger cars are well below the standards demanded both in the United States and in the EU and until these problems are overcome Chinese cars will fail. The weaknesses in safety were glaringly exposed in 2005 when the Landwind, an SUV, made by Jiangling Motors, which was destined for the European market failed an independent German crash test. In a 64 miles an hour front-end impact test, the car's front-end collapsed pushing the front wheel and the engine back into the cabin with the steering column penetrating the dummy driver's head. According to the German safety agency, ADAC, the driver would been killed (Just Auto 92006a).

The incident indicated just how far behind western standards even an advanced Chinese company lagged .and is said to have caused other Chinese firms such as Chery and Geely to adopt a more cautious approach in as to how they will approach key export markets and they are now no longer prepared to rush in. The Landwind debacle is said to be the reason why Geely studiously avoided participating in the 2006 Paris Motor Show. Earlier in Frankfurt the company had displayed five cars intended to be developed for export. These have subsequently been withdrawn and the firm says it will now develop all-new cars for sale in western markets, built with inputs from European engineering and design consultants (Just-Auto,2006a). Jiangling was not the only Chinese firm to fail European test rules; the First Auto Works suffered the same fate with a small car that had been destined for EU markets (Just-Auto, 2006).

In addition to safety, Chinese cars would fail to achieve western emission standards which are far in excess of those acceptable in China. Getting through European and American emission tests successfully is an exhaustive and expensive process and without a western expertise in developing exhaust control emission systems, Chinese firms may well struggle. (Bremner and Kerwin, 2005). Geely has admitted that its Freedom Cruiser, an economy sedan, despite its being on display at the 2006 Detroit Motor show, still fell below western emission standards (China Automotive Review, 2006). Finally, one has to consider the time required to erect substantial dealerships and establish brands in overseas markets, though this might be lessened if joint venture firms participate and assist the Chinese by allowing them to piggy-back off their existing dealerships where they would compete against their own domestically produced models, a highly unlikely move..

In the light of the above discussion it is axiomatic that raising quality will be the crucial to China's success in advanced export

markets. Quality improvements are not an easy option and entail high levels of design, engineering, innovation and improvements in management skills and techniques. In other words, wholly Chinese cars will succeed only when in line with government policy, they are independent of joint venture partners as the latter may well prove reluctant to export Chinese made products into their own domestic markets (Donnelly and Morris, 2003).

If the assembly side of the Chinese automotive industry appears hopelessly fragmented and high costing, then the component side is even more so and stands in need of even greater rationalisation. There are more than 5,000 firms in the parts and components sector and only 130 of these have sales in excess of RMB 100,000 million, a small sum by international standards, and most lack research and development capabilities (Deloitte, Touche, Tohmatsu, 2006). The components and spare parts industry in Liaoning province, for instance, has been described as chaotic with investment being highly dispersed with three producers for each product. Quality is low with only 30 per cent of firms capable of producing to international standards, attributable to the lack of qualified personnel in the industry with sufficient expertise in design or of carrying out R&D (Netherlands Business Support Office, 2004). Moreover, western firms such as Germany's Lemfoerder Fahrwerktechnik and GM, have complained that the supplier development costs entailed in attempting to bring Chinese component firms up to international standards can offset China's lower labour costs. This is due to rising wage costs, having to purchase raw materials at global prices, the weakness of the dollar against the Reminibi whose value is controlled tightly by the government and also to an underestimation of how much time was be required to overcome the problems posed by outdated machinery, inexperienced management and poor quality control (Webb, 2007a and b).

To be fair investment in the supply side has improved considerably in recent years after decades of neglect, partly because of the demands made by foreign multinationals to improve the quality of components and partly by the demands of the government to increase China's share of the global components market from its current 0.7 per cent to 10 per cent by 2015 to yield a predicated export income of US$120 billion.( China Talk 2006a) Much of the improvement that has come about in recent years has been financed by Sino-foreign joint ventures of which there are around ninety Evidence of such improvement is the increasing share of wholly Chinese produced components purchased by Western firms such as Bosch, Ford and GM, but these remain only a fraction of their total component spend.. Such exports tend to be at the lower end of the value chain and consist of items such as wheel rims. lights and brake pads. Overall the component side of the industry is still lacking in scale economies and suffers from a highly integrated structure, though this has begun to reduce over the past decade. As in the assembly side the necessary shake-out of weaker firms will take probably at least another decade to effect a more rational structure.

The Chinese themselves are painfully aware of the breadth and depth of the problems they face. Paramount among these is the lack of core design and R&D facilities which means that domestic firms have low levels of intellectual property. Organic acquisition of such skills, knowledge and experience is necessarily slow, taking years to accumulate. Essentially there are four alternative routes open to quicken the process:

- Acquiring foreign firms or their technologies;
- Entering into partnerships with foreign firms
- Obtaining the services of foreign engineering/service firms
- Working with international 0.5 or Tier-one suppliers

A quick route to accessing new technologies is by acquisition and already this is beginning to happen as evidenced by SAIC's purchase of intellectual property from the now defunct British firm, MG Rover, thereby enabling it to build Rover 45 and 75 models in China and also by purchasing a substantial part of the Korean producer, Ssanyong in 2004 (IBM Consulting, 2006). Production of the Rover 75 commenced in 2007 under the name Row'ee and will be SAIC badged. (Though the Rover marque is said to still hold a considerable cache in China, the name cannot be used as it was purchased by Ford from a previous owner BMW) (Just-Auto, 2006b). How much SAIC will benefit from selling Rovers is extremely debatable as the almost continuous decline of Rover from its previous lives as British Leyland/Rover and finally, MG Rover over a period of thirty years has tarnished the brand severely. In time SAIC intends selling its Shanghai- built models in the UK, but reviving the brand in the UK may prove difficult, requiring a strong sales and marketing structure, areas in which SAIC is weak. Moreover, Rover's former UK customers were primarily middle-aged and may not prove receptive to Chinese-made cars, while British dealers may prove highly reluctant to revert to selling 'Rovers' (EIU,2006).

In buying Rover's UK facilities the Nanjing Automobile Group has gambled. The company was motivated to buy Rover to acquire scale and technology in which it was severely lacking. Production of Rovers was due to begin on Nanjing's outskirts in 2007, using production facilities shipped to China from Rover's Longbridge plant. Moreover, Nanjing argued that Rover's technology and models fitted well with its own capabilities and was not bought because it simply happened to be available. Output is targeted at 200,000 units for both domestic and export consumption. Initially, Nanjing promised to maintain a solid production base at the Longbridge site in the UK, but over time the projected output figures have been revised downwards repeatedly and at the time of writing projected output in the UK will be counted in thousands rather than ten of thousands (Buckley,2007.

To facilitate development, international and former MG Rover engineers have been recruited to work in Nanjing's new technology centre as has MG Rover's former director of quality. Developmental cooperation has been agreed to achieve to access design and technology with, for instance, the UK's Ove Arup. Other key components will also be purchased from the English Midlands until such times as these can be sourced from international firms operating in China. Despite this there remains the same high element of risk as faces SAIC over the age of the models, brand image and customer profile (EIU, 2006).Additionally, Nanjing intended building MG Rover sports vehicles in the United States where MG sports vehicles were popular in the 1950s and 1960s, but even these modern variants are based on early 1990s designs and technology with Nanjing appearing to lack both the necessary capital and expertise to revitalise the brand. (Just-Auto,2006c) Finally, under pressure from the Beijing government in late 2007, SAIC and Nanjing decided to join forces in both producing and selling 'Rovers' rather than indulge in wasteful competition.

An alternative to purchasing brands and technologies is to enter into agreements with foreign assembly and component supply firms. This concept goes beyond the current very tight Chinese definition of joint venture which is to manufacture and market vehicles in China which have been developed by the JV partner outside China. What the Chinese are now looking for is more in the realms of cooperative development in design, technology and R&D etc. to bring about a win-win situation for both parties. This would entail, for example, the development of vehicles for the Chinese market in the first instance and which would not compete directly against joint venture models. (IBM Consulting, 2006) Nevertheless, in enhancing core technologies, it is safe to speculate that this route might assist, however indirectly, the development of wholly Chinese export models in the future. Such cooperation does open up the possibility of a less attractive scenario to the Chinese because the foreign firm in the assembly side in search of quality products may be prove so dominant that it will source from other JV firms rather than from purely Chinese component firms. This type of dependency may then retard the potential development of domestic firms, a feature that has already happened in Brazil, Mexico and Thailand and is one the Chinese would hope to avoid (Thun, 2006).

The third and fourth alternatives available are for Chinese firms to avail themselves of the services of overseas engineering and service firms or to work with 0.5 and Tier One suppliers with global footprints. SAIC,for instance, works with the British design and engineering company, Ricardo Engineering in engine building. Chery cars have bodies designed by Pininfarina of Italy, chassis engineered by Lotus of the UK and engines calibrated by Australia's AVL (EIU, 2006; Wharton knowledge, 2006). Such outsourcing not only facilitates a swifter route to development than organic growth, it also helps to avoid accusations of copying or pirating western firms technologies and so infringing intellectual property rights which have already given rise to disputes between GM, VW and several Chinese firms. Fiat, for instance, is about to sue Great Wall for allegedly copying the Italian firm's Panda model (Automotive News, 2007). More importantly, being content to copy other people's technologies, means that the engineers involved miss out on the cumulative experience and intellectual development gained in this and so may lack the capacity for innovation and development and so outsourcing is a means of overcoming this in the short but not necessarily in the longer term.

As implied above, concerns have been raised for a considerable time at the seeming inability of Chinese firms to innovate independently. The reasons for this are not hard to find. In engineering, for example, 33 per cent of all university students study engineering compared with 20 per cent in Germany, but the main drawback is that Chinese university education is highly theoretical, dependent upon rote learning and involves little practical experience or teamwork. Being aware of this the national government through the legal requirements in joint venturing has stipulated that foreign firms should open design, innovation and training centres in China to upgrade necessary skills and competences and is trying to reform the patterns of delivery in higher education. As well as having a Chinese design centre VW has linked with Tonji University to set up an Institute for Automobile Studies. GM, besides financing links between Jiatong University and the University of Michigan to establish the GM BO Manufacturing Laboratory in Shanghai, sends Chinese managers, engineers and technicians to Michigan for training in design and

engineering.. (Donnelly and Morris,2003). Additionally with its partner SAIC, GM has established the Pan Asia Technical Automotive Centre in Shanghai and with its advanced software boasts a virtual reality design studio, prototype, power train, kinetics and compliance laboratories and has the facility to test to Euro 111, Euro IV and California emissions standards (GM China, PATAC,2007). Laudable though this is, management training is costly and time consuming and there always remains the possibility that once the Chinese partners in joint ventures have benefited from the efforts of western innovatory inputs, they will transfer this knowledge into their own domestic concerns to enable them to compete against their JV partners at home and abroad. The consensus though is that in many cases Chinese firms still lack necessary, design technological and production skills as well as the managerial talent to take the western multinational motor firms head-on for the time being. (Farrell and Grant, 2005)

From what has been said it is clear that China's domestic car producers are not yet in a position to mount a serious challenge in the world's advanced car markets. Recent experiences over safety and emission tests have brought about a more sober mood among China's car producers, but that ought not to give rise to any kind of complacency in the west. The Chinese will learn from their experiences and it is likely the gaps in design and technology will narrow in coming years. When Chinese cars do begin to penetrate western markets, even firms like Chery which enjoy a good reputation in China will be forced to follow a low price strategy with prices estimated to being approximately 30 per cent below their US or European equivalents. What cannot be afforded is low quality which could do long term damage to the brand making it difficult to compete even in well-developed used car markets with high levels of after-sales care. Moreover, Chinese firms will have to face the cost of building up dealerships and in the US this would entail a minimum of 250 outlets whose initial set-up costs could mitigate against firm competitiveness (Kwan,2005). Finally, and especially in the US, concerns have already been expressed about China's failure to revalue its currency to a realistic level against the dollar. This means that unofficially Chinese parts and car exports are seen as receiving an unfair government subsidy against American products which may provoke a backlash against Chinese products as happened over the undervalued yen when Japanese exports first came to America in rising quantities (Goodman and Blustein,2006)

## Conclusion

From the foregoing it is obvious that China is well on its way to being an extremely potent force in the global car industry and that it is not a question of if, but when its domestic automotive producers are adequately prepared to try to penetrate the advanced, saturated markets of the West and of Japan. However the weight of evidence indicates that this will not be a serious position for circa five to ten years and when it happens, Chinese producers will follow the path previously trodden by Japan and Korea, but at a much quicker pace.

Before this can occur the Chinese need to deal with the serious problems confronting their industry. These include the need to embark on a policy of rationalisation to weed out the weaker firms either through closure or by take-over and merger, leaving possibly only a dozen or so large concerns that are capable of challenging western multinationals. This will not be easy and may require an element of confrontation between the Bejing authorities and provinical

governments, leading to directed mergers and factory closures. An even greater degree of rationalisation will be required on the component side of the industry.

Technically Chinese firms are light on the possession of intellectual property and it is thought that before trying to export to the west they will need to develop a much more integrated industry capable of high levels of design, R&D, product safety and quality and so lessen the current dependency on western firms. If this proves too difficult in the short to medium term, there always remains the option of changes in government policy to reduce the restrictions on joint ventures and encourage new forms of projects so that JV firms can assist Chinese firms in their desire to export. The caveat is that western firms may not be keen to export their Chinese made products which would compete against their own domestic products. Finally, it will take time for Chinese firms to build up distribution and dealership networks in Europe and America. In the meantime, western producers will not be standing still but neither will the Chinese. – they are coming!

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