
The Chinese and Indian Automobile Industry in Perspective : Technology Appropriation, Catching-up and Development¹

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Summary

The comparison of the automobile industry in China and India allows shedding light on the economic processes of emergence at large. There is a stark contrast in the capacities of autonomisation and endogenisation of the sector in the two countries. This contrast serves as an analyser of the relationships between the modes of sector opening and the paths of technological catching-up that is at the core of the phenomenon of emergence.

Introduction

Clubbing two and three wheelers to the car industry, the automotive industries of China and India respectively rank as the 4th and 5th of emerging countries, after Korea, Brazil and Mexico. There are obviously strong similarities but also some striking differences in the way the car industry has developed during the last three decades in both countries in terms of trajectory, State control and protectionist measures, industrial strategies, industrial cooperation, technology mastering and innovation.

Comparing the Chinese and Indian automobile industries is relevant in three analytical ways.

It sheds light on the actual economic dynamics of the phenomenon of industrial emergence, especially on how firms and the industry in the two countries have followed specific technological and competition vs. partnerships strategies, the achievement and outcome of those strategies, the way companies both domestic and foreign in the car business have been able to catch up with the standards set by world leading companies.

The comparison equally shows the trajectories of exiting from former centralised models of industrialisation. In that respect, elements of path dependency as well as early choices explain the contrasted evidence. Where China still shows some patterns of

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centralised administration of the sector (in localisation of investment or organisation of industrial partnerships for instance), India largely shows a companies-driven trajectory of competition and diversification despite some remaining factors of protection.

Finally, this sector serves as a good illustration of the linkage between the gradual and phased out opening of economies on the one hand, and the companies' objectives and steps of industrial catching-up on the other. This directly relates to the current question of the existence or not of some room for these industries to take significant market shares of the world market.

Of particular relevance to the latter issue, the central *comparative* argument of this paper is that, while India develops a modern industry (that is, partly autonomised, partly integrated to the world industry), in China, the automobile firms conversely show, up to now, a limited autonomisation from their international partners (both technologically and financially). We base our argument on the differences in the characteristics of industrial partnerships in the two countries. In China, Joint Ventures (JV) have largely remained, on the Chinese side, *administrative* partnerships and automobile Chinese firms are on their way to become holdings more than industrial firms. In India, JVs have more generally speaking revolved around industrial contents, know-how *along with* markets. Endogeneisation has developed in a bigger way, from conception to production. We attempt in this paper to relate these different outcomes to the different modes of opening of the sector in the two countries.

We briefly describe the industrial trajectories, actors and markets of the sector in the two countries (section 1), then proceed with the industrial models and strategies to exit from the former system (section 2) and conclude with setting the perspective of the world car industry and likely respective positioning of China and India in it (section 3).

I - Industrial Trajectories, Actors, Markets

The development of the automobile industry conveys (as well as illustrates) the inter-meshing of different actors: the industry, its clients, and the State.

Trajectories of industrial regulation, in the broad sense, have been very different between China and India. With more than 115 cars manufacturers in 1990s China had created a model of duplication, miniaturization leading to an important fragmentation of the industry generally cooperating under the minimum efficiency scale (Huang, 2003). This is a striking difference with other countries which, at a stage of their industrial development have favoured import substitution strategies (Table 1). (Duplication of firms was mainly linked to two factors: the relative autonomy of provinces, the need to create local companies in order to absorb manpower. Largely inefficient on the industrial point of view, the challenge was to save and make some champions out of these. In India, the pre-reforms industrial regulation limited the expansion of private groups within a single sector. This forced them to diversify for nearly 40 years and, if it avoided the creation of monopolies, it nevertheless led to the creation of private conglomerates in situation of oligopoly. For these conglomerates, using their oligopolistic power as well as migrating from close activities (mechanics, utility vehicles, two-wheelers), in the reforms area automobile was to become one of their

many activities. Before this turning point, the major Indian industrial groups had undergone a long decade².

In terms of the financial macro-environment, financing circuits were to be built for car buyers (this has become an important activity of some Indian manufacturers). As well, the passage of some income thresholds, beyond a GDP per capita of 1,000 USD (and beyond 5,000 in PPP) illustrates what the transformation from a developing to an emerging economy means in terms of markets, for a sector that develops in urban zones where the income of its consumers is now at par with countries with an intermediary income.

Rising incomes in China and the development of a middle class have fuelled the demand for cars which, before, were mostly sold to public administrations and State-Owned Enterprises. Demand is still constrained by the lack of adequate financial network, the infancy of the second hand car markets, the impact of State regulation with credit squeezes.

Table : 1 Concentration ratios of the automotive industry : A four-country comparison (% of industrial output)

	One-firm ratio	Two-firm ratio	Three-firm ratio
<i>Brazil</i>			
1959	24.8	42.7	60.6
1970	56.1	74.3	91.2
<i>Japan</i>			
1960	32.1	56.1	65.1
1975	33.7	63.6	72.8
<i>Korea</i>			
1975	54.6	77.7	94.4
1986	71.3	88.6	97.9
<i>China</i>			
1985	19.2	38.0	43.0
1998	14.7	25.4	34.4
<i>India</i>			
2001	62.2	78.7	80.0
2005	50.9	68.6	85.9

Source : Y. Huang (2003) & SIAM

The State itself underwent a learning process, with the industrial dynamism of provincial states in China or the key role of (federated) State Governments in India with respect to development of clusters or access to land.

The combination of these elements in each of the two countries has led to a somewhat paradoxical result. Even though the Chinese market is at present much larger than the Indian one, the industrial potential of the Indian automobile industry is most certainly larger.

The actors on the playing field

Before analysing the trajectories of the industry in the two countries, we have to take into account the fact that the industrial organisation and competition in this sector are

² This coercive regulation, that requested them to get administrative licenses to expand production capacities, got to be labeled as the “Licence Raj” in reference to the “British Raj”, or coercive colonial rules earlier imposed by the British.

shaped by a set of actors and structures which influence the growth, the behaviour and the development of the different firms:

Both in mature developed and emerging economies, the State plays, through different means, a crucial role for supporting this industry such as building infrastructures, supporting the national system of innovation, setting national and sectoral industrial policies. Taxation, policy measures for attracting foreign investment are another dimension of State intervention notably in the case of substitution of imports strategies. More generally, macro-economic policies can constraint or support the growth of the sector through financial measures. Regional or provincial authorities also play an important role by developing local industrial policies, nurturing industrial districts with other local actors (industrial districts, clusters).

The domestic and foreign producers which are able to provide the market with products meeting the demand, do renew and expand the range of their production. Entry mode matters for foreign producers, which can arbitrate either for JV and M&A or building directly new facilities (greenfield investments) directly assembling car with local content or following fully or partially knock own strategies. This depends on the nature of property rights and institutional measures. Domestic and foreign suppliers, in this particular industry, play an important role both in the value and the quality chain. The industry, in mature market economies, is particularly externalized; outsourcing is important and parts makers are essential partners (both in line production as in design and development). Final assemblers have to set up a reliable network of suppliers able to supply firms just in time with quality and low cost products. This explains the massive presence, in the Chinese and now Indian markets and assembling chains, of US, European and Asian (South Korea, Japan) sub-contractors.

Consumers are the target and central players with their purchasing power, their desire to acquire superior goods, their willingness to differentiate by buying distinctive products following the increase of incomes. Increase of competition on domestic markets leads main foreign and domestic producers to anticipate and invest massively in low cost; 5000 \$ car, now 3000 \$ or “one lakh car³” as Tata put its efforts into doing (Financial Times, 2007, Le Figaro, 2007, interview at Tata & Sons in 2005 by the author; the “Nano Car” prototype got indeed released in January 2008 at the New Delhi Auto fair).

Local, national and international (WTO) regulations matters and have a direct impact on the level of both domestic and international competition and domestic demand (table 2). Since China has joined the WTO, the number of entries, on the market has increased the number of competitors both from outside and inside the Chinese market.

The State, in both countries, has influenced the development of the automobile sector first in supporting national programmes of development (through the import of licences – UK for India, USSR for China). At this stage, appropriation was low, concentrating on duplicating of existing imported models without betterment of the technology (Huang, 2007), or improvement of the know-how (in India, the Ambassador model produced by Hindustan Motors had become the epitome of this). This « Fiat

³ One lakh = 100 000 Rupees

Fiatovich » approach⁴ has been illustrated in China with the import of a whole industrial system from the USSR (which itself has done the same in the 30s by importing Ford technology⁵). In this model, there is only limited room for domestic appropriation of knowledge, there is almost no innovation, the industrial organisation is very heavy and concentrated. Sub-contracting doesn't exist. Production of parts is integrated in the factory. As a result, it has been very difficult -or almost impossible- to transform those industrial complexes in the post-socialist period. In India, the Ambassador model produced by Hindustan Motors out of a Morris-Oxford model of 1938 redesigned and transferred by Rover to India in 1954, or the Padmini, a model transferred by Fiat, had become the epitome of these cars that continued being produced for decades while meeting nearly no change.

In China, the industrial organisation had counter productive effects in a double way. Car plants were under the direct control of a State Ministry through a vertical system of command implying different layers of transmission bodies: State ministry, Department of automobile construction, provincial ministries, municipalities, factories. Localisation of firms over the country followed political decisions in the first stage of the industrialisation (Huang, 2003). When foreign companies entered the domestic market, they were channelled to different locations in order to venture with SOE.

Both the degree of autonomy of provincial powers and the pressure for job creation have pushed local governments to duplicate fragment and miniature (Huang, 2003) the number of under-sized factories, notably in the car industry, producing low volumes (in 2003, 88 companies produced volumes under 50 000 units each, 170 between 100 and 10 000. On 31 provinces, only five didn't have facilities making cars. The Chinese State today wishes to develop 'national models' that would be able to compete in the world market integrating different makers.

Table 2 Impact of China WTO membership on the automotive industry

	Before entry into WTO	After entry into WTO
Tariffs	200% in 1980s, 80-100% in 1990s	25% by 2006
Import quotas	30 000 vehicles a year allowed from foreign carmakers	Quotas increased 20% a year, phased out by 2006
Local content	40% in first year of production, increased to 60%, 80% in second and third years, respectively	No local-content ration required
Foreign participation in sales, distribution	Limited to wholesaling through joint ventures; prohibited from consolidating sales organizations of imports, joint ventures	Will be allowed to own vehicles wholesale, retail organizations permitted by 2006
Auto financing for Chinese domestic customers	Foreign, nonbank financial institutions prohibited from providing financing	Foreign, nonbanking financing permitted in selected cities prior to gradual national rollout

Source : The McKinsey Quarterly (2002)

In India's context of the quasi-monopoly of Hindustan Motors and oligopoly in trucks and utility vehicles (with Mahindra & Mahindra, Ashok Leyland and Tata's Telco), and so as to test the possibility of reforms in this sector, the state opened up to a joint venture between the industrial group Maruti Udyog and the Japanese car-maker Suzuki, in 1982. Further on the success of this JV, in the 1990s the sector was opened to private investment, and foreign companies as well as Indian conglomeral private groups

⁴ Term coined by analysts of the Russian car industry to illustrate the duplication strategy of the host country receiving technology from a more developed country but without adding any local upgrading.

⁵ See Buck & alii (2006)

took the lead in several segments. Indeed, conversely to the case of China, a large part of the automotive industry had always been private, especially in the trucks (along with the two and three wheelers).

Domestic automotive production realised by private industrial groups, in fact by big diversified companies, is a distinctive feature of the industry in this country. Along the three truck or Jeep makers -Tata, Mahindra & Mahindra, Ashok Leyland, the first two were able to engage into a strategy of technology acquisition to partly design their own car models over the 1990s, and later engage into international commercial agreements in the 2000s. These conglomeral groups, which have really restructured along the 1990s and somehow refocused their core business, nonetheless present interesting scope dynamics: a technological up gradation or a process up gradation can often and easily be internally transferred to other branches. The large cash flow of these groups can easily be concentrated towards development of strategic sectors –car development for M&M; car and steel for the Tata group which was also benefiting from the huge cash flows generated by its IT branch, TCS. Inter-branch transfers, concentration on specific business, allow a rapid move on the value chain ladder: in the most competitive sectors, intensive capital investments are made (Tata). The role of the State is now increasingly limited to a more decentralised form of support in terms of access to land: example the State of Karnataka in attracting Toyota, but via its partner in the JV, Kirloskar.

The Growth of the Automotive Sector in China and India

Constrained for many years, the automotive sector in general and the passenger car sector in particular has witnessed a tremendous growth in the recent years due both to liberalisation policies, to economic growth and the shift of demand for cars, to the promotion of this sector by different policies and the presence of foreign competitors allowed to enter the market in order to meet the growing demand for cars.

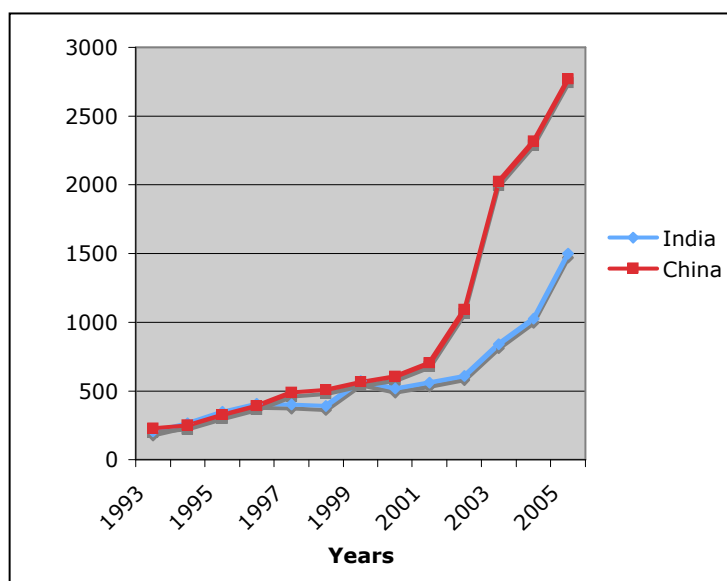
Table 3: World production of new vehicles (including trucks) in 2003

Production	Volume (million units)	World production share (%)
USA	12.1	19.8
Japan	10.3	16.9
China	4.4	7.2
India	1.2	2.0

Source: Conjoncture, BNP, February 2005

Demand for cars in China and India is growing steadily and should follow the growth of GDP in the future year. Within a few years, China will replace Japan as the second-largest domestic market; further, it could overcome the US in one or two decades. Table 4 illustrate the growth of the sector in the two countries, multiplied by 2,5 in India and by 4 in China in only one decade. There is a steep acceleration after the WTO signature by China, that can be explained by several factors. Structurally, all taxes decreased and costs reduced for all China-based producers, due to increased competition.

Figure 1: Production of Passenger Cars in China and India, 1993-2005



Source: Automotive Component Manufacturers Association of India & Automotive industry of China, China Association of Automobile Manufacturers

As India still has an intermediary mode of consumption with a more important role for two and three wheelers, table 4 gives the structure of the automotive sector.

Table 4: Structure of the larger automotive sector in India

	1995-96	2000-01	2005-06
Cars	348 146	517 907	1 112 542
Multi Utility Vehicles	67 643	125 938	196 371
LCVs	129 417	63 869	171 781
Buses & Trucks	129 731	88 185	219 297
Scooters	1 225 895	879 759	1 020 013
Motor Cycles	809 097	2 183 430	6 201 214
Mopeds	623 114	694 974	379 574
3-Wheelers	173 412	203 234	434 424
Tractors	191 311	248 079	296 080
Total 2/3 Wheelers	2 831 518	3 961 397	8 035 225

Source: SIAM

Compared to other Asian countries, the share of production and export is still low although both countries are entering the world market following different strategies. India, concentrating on some product segments with higher added value export relatively more than Chinese companies. In this country, at least for JV, the domestic market matters first. Only new comers, some private Chinese companies (Geely, Chery, Nanjing Car company) are starting to export on the world market, but up to now with low end products to Asian and Middle East countries. Other companies are developing facilities in foreign countries either to produce, assemble (in Malaysia, Egypt), or to have access to sub-contractors with more developed technology to increase the quality of their product (in Mexico). While for long India was not used as an assembling for re-exports platform by international companies, the exports of cars from India took up. This has notably been the achievement of companies like Tata, including in markets like the UK. These specific capacities of a few private companies to internationally export

have been visible since the mid 2000s in India in contrast with their Chinese counterparts (see table 5). Beyond respective capacities in technological and branding issues, the difference can also be explained by the fact that, except for very young and substantially smaller private companies, Chinese companies have become somewhat dependent on their partners in JVs, and dependent on their strategic choice to focus on the Chinese market. Relatively greater capitalistic and technological independence of private Indian companies, along with a capacity to internationally market their products that they had earlier gained from their other branches in their Conglomerate structure, explain Indian companies' advantage. Last but not least, the smaller domestic market in India was a greater compulsion for these companies to go abroad.

Table 5: Export of Cars by Asian Countries

Countries	Exports ('000)	Production (million)	Export as % of production
Japon	4 224	8.8	48%
South Korea	2 108	3.1	68%
Thailand	240	0.8	30%
India	100	1.0	10%
Indonesia	32	0.4	8%
Malaysia	16	1.4	4%
China	11	2.3	2%

Source: Conjoncture, BNP, February 2005

The next step is aimed at entering the US and other developed markets at the low end but many problems are still ahead in terms of marketing, after-sales, dealership, not to speak of the quality of these cars competing on markets where low prices is not the only factor for increasing market shares.

In both countries, the supply of car is concentrated among few makers, both domestic producers and joint-ventures companies. JV that have entered first on the market still keep, at least up to now, important market shares. But they are challenged today by new competitors able to answer the local demand more differentiated in India than in China. Middle range and more luxurious car are developed through venture companies (Toyota) in China. New entrants, mostly private and no-State Owned enterprises try to enter. India is able to export small volumes but with higher added value cars (4 wheels Scorpio) on developed market and meet the demand for less priced cars in the neighbour Asian market.

Table 6: Leading Car Makers in India, 2001 & 2005⁶

Name & Rank (2005)	Sales 2001	Market Share	Sales 2005	Market Share
Maruti Udyog (JV)	351,949	62.2%	417,179	50.9%
Tata Motors (Indian)	64,712	11.5%	144,827	17.7%
Hyundai (Foreign)	93,999	16.5%	141,830	17.3%
Hero Honda	10,310	1.8%	35,653	4.3%
Ford	14,306	2.5%	24,845	3.0%
General Motors	8,305	1.4%	15,649	1.9%
Hindustan Motors	19,398	3.4%	14,601	1.8%
Toyota Kirloskar	-	-	10,873	1.3%
Skoda	-	%	7,269	0.9%
Fiat	NA	NA	5,407	0.7%
DaimlerChrysler	1,415	0.2%	1,785	0.2%
Daewoo	NA	NA	-	-

⁶ Mahindra & Mahindra does not figure here as, until they started co-producing with Renault the 'logan', their production has been on SUVs.

Total	564,113	100,0%	819,918	100,0%
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Source: Indian association of automobile manufacturers, SIAM

Table 7: Leading Car Makers in China, 2001 & 2005

	Passenger car 2001	Market Share (%) (passenger)	Passenger car 2005	Market Share (%) (passenger)
FAW-VW + China FAW Group Corporation	155,381	21.9	684,340	24.7
Shanghai Automotive Co Ltd (VW + GM)	328,473	40.9	564,592	20.4
DongFeng Motor (Citroen)	72,192	10.2	412,352	14.9
Chang'an	43,123	6.1	153,349	5.5
BAIHC	NA	NA	221,846	8.0
Guangzhou Honda	51,146	7.2		
Tianjin Automotive (Daihatsu)	51,019	7.2		
Total of these firms & % of market shares	Total 6	94	Total 5	70

Source: China Association of Automobile Manufacturers, CAAM

FDI in China

FDI has played a major role in the development of the car industry in China, bringing in money, technology, know how, developing networks. The central government, early after the start of the economic reform has designed a policy for creating JV with main foreign constructors. In the mid 80s, new companies have been set up: Shanghai VW in Shanghai (1984) in which the German makers, right from the beginning had 50% control in the JV; Beijing Jeep in Beijing with Chrysler (33%), Guanzhou Peugeot (1985) in Guanzhou, with PSA (25%)⁷, FAW VW (1991) in Jilin with VW (40%), Dongfeng Citroën (1992) Hubei Province with PSA (25%). Exploiting foreign licences has also taken place between local and foreign makers : Tianjing Xiali and Daihatsu (1987) in Tainjing, Chang'an Automobile and Suzuki (1983) in Sichuan, Guizhou Aviation and Fuji Heavy (Subaru) (1989) in Guizhou. Two things are important to consider: entry mode and level of commitment on the one hand, country origin of entrants on the other. On the first point, JV is preferred to licensing; secondly, the level of commitment matters: the initial level of investment by the foreign partner gives them more power to start the venture and the operation of the business. On the second point, the divide between Asian countries and European and the US is interesting to mention: the second one privileged licensing when the other, further away from the Chinese market, facing higher transaction costs, cultural differences opted for a more difficult approach.

First movers have attracted followers (Table 7), notably from Asian countries whose main car makers are playing a major role in shaping the future of the Chinese automobile industry (Honda, Toyota).

FDI in India

Table 8 shows contrasted elements. It demonstrates the lasting advantage Maruti-Suzuki had as an 'opener' to the sector (a company focusing on the smaller size vehicles, this may now be challenged in a near future since Tata has introduced the 'Nano' car). However, what is relevant as far as influence of FDI matters in the sector is to realise

⁷ The low level of initial investment explain, partially, the failure of the French maker's strategy. On this case, see Ruffier 2006

that the *rest* of the sector, that was opened during the post-1991 reforms (Maruti-Suzuki is, conversely a 1984 JV) did not benefit the foreign companies in such a great way noticeable in the Chinese case. There was no ‘Japanese advantage’ that further developed. Nor did American or European companies outperform (table 8 would, post 2008, ne completed with Renault-Nissan which had introduced its ‘mod-low cost’ vehicle the Logan, but being a late comer that does not change much of the statistics at that point, even though the company has extremely ambitious plans for the future, of producing in a phased manner 250,000 then 400,000 vehicles in India, both for the national and international markets).

In fact, FDI played a major but *qualitative* role. This can be understood for instance in examining the case study of Mahindra & Mahindra (M&M). M&M (until recent diversification in media) had 6 branches out of which 4 are integrated: (i) automobile, (ii) tractors, (iii) automobile-components, (iv) consumer finance for the automobile sector, (v) telecom softwares (in a tie-up with British Telecom for BT softwares), (vi) infrastructure and real estate. An estimate 75% of turnover comes from the automobile and tractors. After 1991 the automobile industry was among the very early sectors where competition got introduced, it was already under competition by 1991; as interviewees declared: “Maruti-Suzuki had already changed the paradigm in quality and production processes”. The challenge was to go ahead from a utility vehicle production of 38,000 vehicles (out of which 35,000 tractors) to a capacity of 100,000. Tractors production doubled and M&M diversified into automobile”. The challenge however was that M&M had 18,000 employees when Maruti-Suzuki produced 200,000 vehicles with 4,000 people. This opened scope for business product re-engineering. This was, along with other process learning, the main reason why in 1994 M&M signed a tie-up with Ford, which for the first three years used the M&M plant for the local market. After 1997, Ford wanted a new plant. The investment would have represented a 100 million dollars for M&M’s share, had it wanted to remain at par with Ford. At the same time, M&M had mostly benefited of the process learning, and wanted to develop its own semi-utilitary vehicle. It chose to invest these 100 million USD into developing a model of its own, the Scorpio. M&M ‘s share into Ford India went thus down to 15%. The FDI was used as a transitional phase, mostly for managerial learning and not so much for technological development. Technology for the Scorpio, instead, was purchased through royalties and IPR purchase from the international market.

Table 8: Leading Car Makers in India, fiscal year 2005-06 by Nationality of Capital control (for JVs: majority)

JAPANESE OEM		EUROPEN OEM	
Maruti Udyog Ltd	572,097	SkodaAuto India Pvt Ltd	9,767
Toyota Kirloskar Motor Pvt Ltd	44,975	Daimler Chrysler India Pvt. Ltd	1,780
Honda Siel Cars India Ltd	41,361	Volvo India Pvt Ltd	1,004
Swaraj Mazda Ltd	11,946	Tatra Trucks India Ltd	125
Total	670,379	Fiat India Pvt Ltd	671
		Total	13,347
KOREAN OEM		INDIAN OEM	
Hyundai Motor India Ltd	260,440	Tata Motors Ltd	449,878
Total	260,440	Mahindra & Mahindra Ltd	128,601
		Ashok Leyland Ltd	65,085
AMERICAN OEM		Force Motors Ltd	
General Motors India Pvt Ltd	30,687	Eicher Motors Ltd	24,348

Ford India Pvt Ltd	26,946	Hindustan Motors Ltd	15,458
Total	57,633	Total	719,098

Source: ACMA

China and India are experiencing today a fast growth of their production that should last in the future years. China has an exponential growth, from less than few hundred thousand in the beginning of 1993 to nearly 2.5 millions in 2004. China is going to surpass Germany as the third car maker in the world after the US and Japan in the coming years. Some forecasts predict that the country could overcome the US in more than two decades. Growth of the sector is subject, of course to many factors, particularly to the development of a sound financial market providing financing to private consumers; it also depends of macro stabilisation policies which aim at keeping inflation under control and then to practice recurrent credit-squeeze with a direct impact on the demand and the financing. Infrastructure development, pollution issues, substitution of energy less-dependant are also important issues.

Table 9: Main big international car manufacturers investing in China

Country	Maker	JV
Japan	Honda	Guangzhou Honda Automobile Co., Ltd. Dongfeng Honda Motor Co., Ltd. Honda Automobile (China) Co., Ltd. Dongfeng Honda Motor Co., Ltd. Honda Automobile (China) Co., Ltd.
	Mazda	FAW Car Co, LTD FAW Hainan Automobile Co., Ltd.
	Mitsubishi	Hunan Changfeng Automobile Manufacture Co., Ltd.
	Nissan	Dongfeng Motor Co., Ltd. Zhengzhou Nissan Automobile Co., Ltd.
	Suzuki	Chongqing Changan Suzuki Automobile Co., Ltd. Changhe Suzuki Automobile Co., Ltd.
	Toyota	Tianjin FAW Toyota Automobile Co., Ltd. Sichuan Toyota Motor Corp. FAW Huali Motor Co., Ltd. FAW Fengyue Automobile Co., Ltd. Guangzhou Toyota Motor Co., Ltd.
Germany	BMW	BMW Brilliance Automobile Co Ltd.
	VW	FAW-Volkswagen Automotive Company Ltd. Shanghai Volkswagen Automotive Company Ltd.
USA	Ford	Changan Ford Automobile Corp., Ltd.
	GM	Jinbei GM Automotive Co. SAIC-GM-Wuling Automotive Stock Ltd. Shanghai GM Automotive Co. SGM Dongyue Automotive Co.
Italy	Fiat	Nanjing Fiat Co., Ltd
South Korea	Hyundai	Beijing Hyundai Motor Company Dongfeng Yueda Kia Automobile Co.,

Source : Automotive Resources Asia

Credit policy is another important issue. Huge loans default by financial institutions have been recently reported. This is a big concern both for the government which wants to keep control on money supply, for local and foreign car makers. Private consumers use a mix of cash and loans. Working a sound financial is on the agenda in China. Also the organisation of a second-hand cars dealer network is essential in order to sustain sales of new cars. In India, interest on car loan has gone down from 28% in 1995, to 17% in 1999 and reached since 2004 a base level of 5%; meanwhile, the income tax rates fell from 40 down to 30% (source: ACMA).

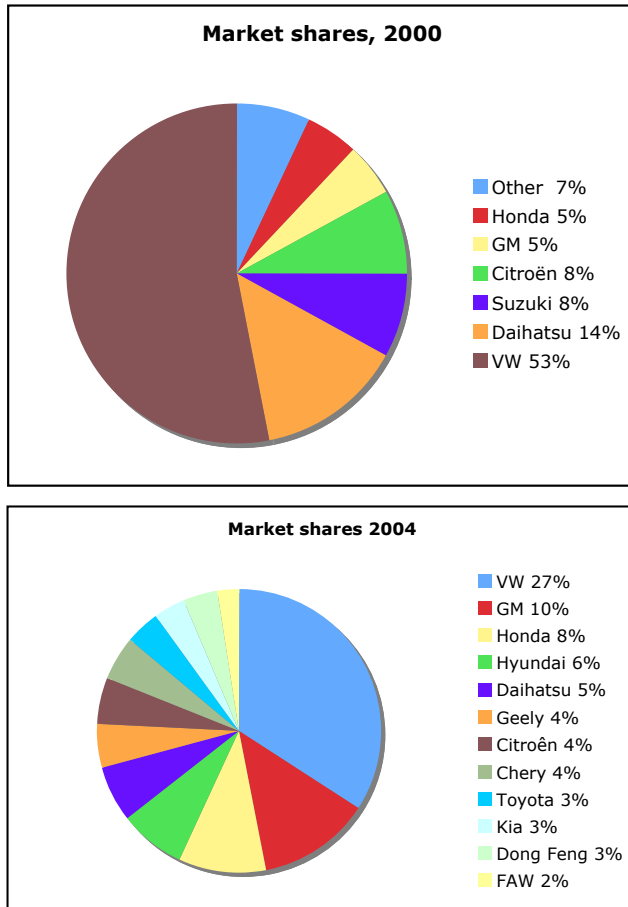
In fact, as the continued dominant position of Maruti-Suzuki shows, there has long been in India a focus on lower range/segments of the market. However, with continued macro-economic growth, with steep decrease in credit cost, and now with the new development of the Nano car with which Tata Motors managed not only to counter the introduction of Renault's Logan, but also to anticipate the development of a low cost car that Renault-Nissan want to design from India, the segment at stake is more than ever the lower/middle one. But the war won't be just on prices unlike in China: Renault-Nissan's 3rd Global R&D centre, after France and Romania, will be in India; Tata wishes to indigenise the technology of its Nano, and go towards a clean engine, partly with French, partly with Indian technology. High segments are not forgotten however, and while in China *foreign* companies go towards this segment, Indian makers equally anticipate this evolution by targeting the global market. The takeover of Jaguar and Rover by Tata, the global alliance with Fiat, are to be understood in this context. Indian makers are realising an integration across different markets and segments.

In China, competition is centred around small and partly middle cars (around 80%) generally with low margins, explaining the decline in profitability following the entry of new competitors, both domestic and foreign companies. This doesn't stop foreign makers (table 10) to enter the market and domestic producers to invest in capacity addition. The government itself has launched a new industrial plan to rationalize the sector. Foreign makers are still willing to invest big amounts of capital to increase their market share with, as a consequence, the decrease in market share of leading companies which, up to now, enjoyed the lion's share on this market.

India encounters also a steady growth (8% per year), projections put the future growth at 15-20% per year. The market is still dominated by small cars (Maruti has still 55% of the market in this range of cars). New capacities are built on this segment: Maruti, Tata, Honda from India). Growth on the upper segment is taking place; different car makers are moving towards sedan cars (Maruti will double its share of sedan cars Esteem and Baleno) which has recently attained 15% in order to adjust to domestic demand fuelled by the country's rising incomes and the availability of inexpensive loans.

The development of car loans is not an issue today in India. But the deficiencies of infrastructure are a burden on profitability. Since India is a more 'integrated' market than China (less province-specific patterns for demand), infrastructure constraints add to freight costs. The sharp acceleration in clusters formation, that could be observed since then, if it has an industrial organisation rationale, has definitely been fostered by the deficiencies of the distribution sector. The distribution structure nonetheless has negative effects on the least vertically integrated firms, that are the most 'organisationally dynamic'.

Table 10: Market Share of Domestic and Foreign Car companies in China, 2000 and 2004*



Source: Automotive Resources Asia, (2005)

NB: China entered WTO in 2002

II - Industrial Models: a Contrasted Experience

We characterise here the modes of cooperation that developed between international and domestic firms, in order to see their impact in terms of technological catching-up, development of clusters and insertion in the value chain, linkages with the State. We show different growth and business models between China and India.

Modes of entry and origins of cooperation in the automobile sector are very contrasted. While in China it was based on political directives (the State acting as an organiser of ‘arranged weddings’), for India there were truly inter-firms. The target of the JVs, and the action expected by the international companies from the domestic partner equally differed: from an administrative link to access markets in China, to the commercial mastering of markets and the control of supply chains in India.

In turn, the observed differences in capacities of technological catching-up are strongly explained by the JV structure. The parameters range from the capital rules (50-

50 not to be exceeded in China⁸, as opposed to the right of majority control in India), the industrial vs. portfolio approach on JVs (investment in JVs have seen some strategic opting-out so as to invest into proprietary models by some companies in India, whereas large public Chinese companies behave increasingly as financial holdings), or even the contrasted strategies of new entrants: from a spin off as for Geely or Chery in China, opposed to a model of addition/evolution of a branch in a conglomeral group for Indian private firms

The outcome is an industrial policy which is quite dualist in China, while in India the centrality and generality of the conglomeral model ensures a certain level of integration of the automobile industrial policy.

Opening-up and joint-venturing in the car industry

Economic development and the increase of income per head have allowed both governments to soften their policies towards the development of the car sector first by allowing national constructors to create joint ventures with foreign makers (Suzuki, in the JV Maruti-Suzuki) to develop specific brands in order to fulfil growing demand of the market (households mainly in India, State companies and administration and then households in China). Opening of the car industry came at an early stage in the cycle of successive sectoral reforms in India (one of the first sectors, precisely because it was not quite developed technology transfers were sought after), while it came at a much later stage by the end of the 70s, and in a controlled manner in China, with a very step-by-step approach and a remaining importance of (political) lobbying (most car makers, locally, have been able to push local governments to raise barriers to entry to protect their local markets.

Strong impact in India

Market liberalisation started in 1991 by de-licensing and developed after this, through gradual lowering of imports tariffs in different stages. The initial segments positioning, was based on investing in entry on low range models. The specific entry mode revolved around cooperation with Joint Ventures founded in cooperation with diversified conglomerate firms. A regular, phased out succession of entries, a gradual capacity expansion for each company, and positioning on regional markets, were and still are a key driver for location. Compared to China, geographical location was left free, and not at all State-led.

However, the JV model is not a 'must', and all varieties exist in terms of share composition, technical level of the partner, as well as specific contribution of the partner in land access aspects (an important factor in India, where the democratic state leads all things being equal to a more fragmented control over land). Importantly, the Indian partner was not necessarily the main investor. There are even cases where the Indian partner has only 1% of the asset (Kirloskar in its JV with Toyota; in that case Kirloskar, a mechanical equipment and components company, benefits from the clustering effect and process dissemination in its own industrial machine-tool activities). Some JVs have taken the form of a "Platform strategy", where cooperation allows foreign companies to use facilities without necessarily associating the host company (example of Logan by Renault, produced on Mahindra & Mahindra plant).

⁸ At least at final assemblers level. This is not the case for sub-contractors which can now set up 100% foreign owned companies.

Indian companies committed to take market shares (Tata), investing in technologies in order to master costs and technology both for low range products or for very specific brands (Scorpio) with high export potential. Export of cars is definitely an issue that Indian manufacturers already look at (more than in China). Constraints on growth and development, especially on the local market, are still strong with respect to infrastructures, financing, services. The take-over early 2008 of Jaguar and Rover's activities by Tata Motors corresponds to synergies between these three dynamics: access to a technological portfolio that will accelerate the technological catching-up of the firm, deepening of the establishment of Tata as a brand for quality, access to larger distribution circuits.

The key industrial problem is the kind of synergy coming out from the association of diversified groups (Indian) and specialised foreign groups. The organisation of subcontracting is local, through FDI, and production still relies on foreign technology, but 'upstream' investment in R&D develops.

Going beyond the sole level of the firms, and in a comparative fashion, low transaction cost, rule of law, respect of contracts, bring an advantage to JVs in India. Already discussed the more equal power in terms of who brings what, and the fact that Indian partners can pull out almost entirely from the JV (see Toyota India, see also Maruti, a JV between the State and Suzuki created in 1983 in which Suzuki had a 26% share), makes FDI secure. In Maruti-Suzuki, further, the State is pulling out (it still possesses 18%) and Suzuki owns a majority 56%. However, the fact that some actors (notably Mahindra & Mahindra) has played its cards in JVs in a strategic manner –entering JVs and exiting a few years after after having gained processes if not technology- (M&M did that with Ford and then with Renault-Nissan, exiting in 2007) has recently given ground for some wariness of foreign players.

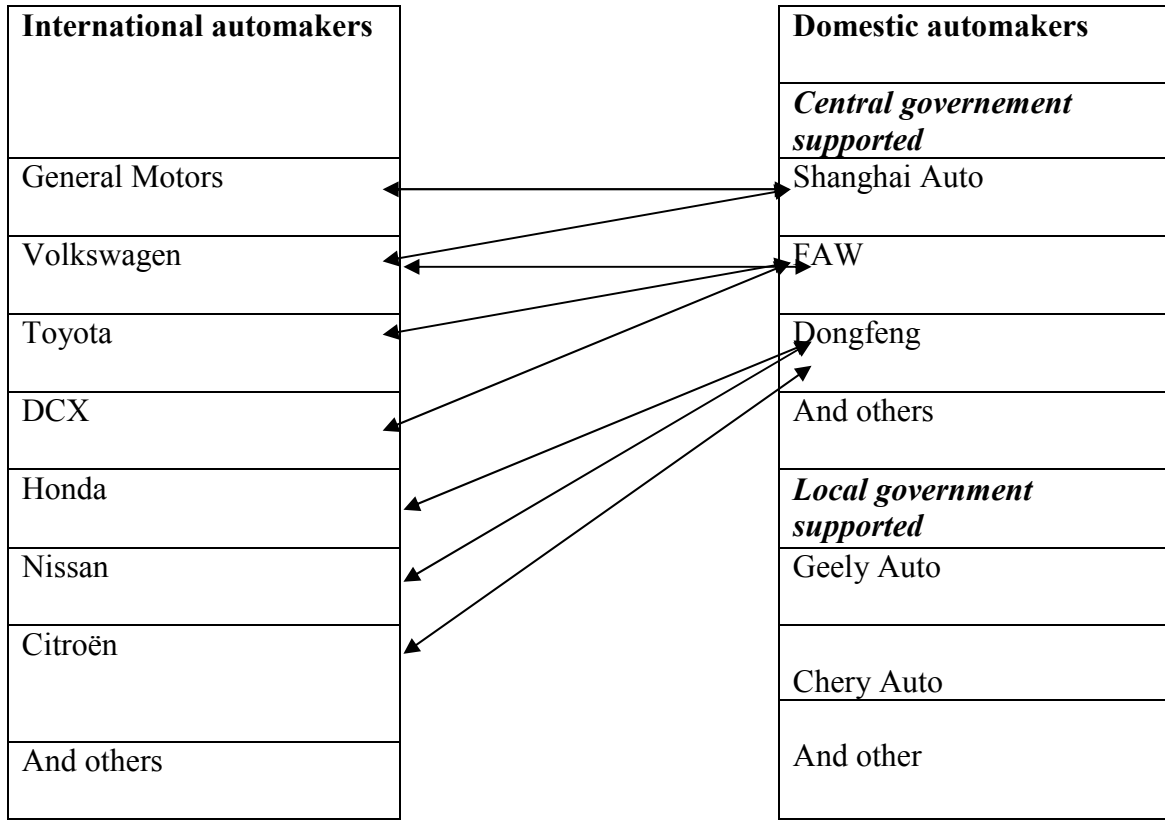
Meanwhile, if one looks at the sector in a vertical manner, the relationship is less and less of the nature of the 'market', to take the form instead of 'repeated contracts'. In fact Geographic re-concentration with suppliers develops around makers' plants, leading for some supplying companies to quasi-integration with some car makers. In fact, sub contracting in India is shaped along strong and fast cluster concentration and emergence of an exporting parts industry. The capacity to climb up the value ladder and to design models is more important in India than in China. All things being equal, a more segmented demand calls for larger range of models in the Indian market, refined with more demanding marketing specificities in terms of price control and quality. A segmented demand is a driver for a differentiated offer, and calls for more intense incremental innovation. In a sense, Tata and Mahindra & Mahindra have already established their 'Indian model of cars', while the 'Chinese model of car' will require the assistance of the foreign companies engaged in JVs (Citroen will help DongFeng, while Mahindra had developed the Scorpio on its own and thus attracted Renault).

Important task, but difficulties to implement, low process, low expertise accumulated. Western makers eager to protect intellectual property rights : a big issue in the country : See GM/QQ row about fake products.

FDI in China: A Dualistic or an Integrating model?

FDI in China has started in the early 80s with the entry in China of several Western OEMS. Entry was strictly controlled by the State and provincial regulations, in terms of investment, volume of production, pricing, sales inside the country, sub-contracting.

Figure 2 : The Industrial Structure of the Car industry in China



Source : McKinsey

The central government regulation had a strong a impact at the beginning as it has imposed the localisation of foreign investment among the territory. Transaction costs were also very high. It took almost 8 years for the US car company AMC to get its investment into operation in Beijing to produce the Beijing Jeep following the planned target.

Figure 3: Joint venture automotive companies in China

Main Foreign Makers in China

Country	Maker	Chinese J.V Partner
Japan	Honda	Guangzhou Honda Automobile, Ltd Dongfeng Honda Motor Co, Ltd
	Mazda	FAW Car Co, Ltd FAW Hainan Automobile co, Ttd
	Mitsubishi	Hunan Changfeng Automobile Manufacturer Co. Ltd
	Nissan	Dongfeng Motor Co, Ltd Zhengzhou Nissan Automobile Co, Ltd
	Suzuki	Chongjing Changan Suzuki Automobile Co, Ltd Chenghe Suzuki Automobile Co, Ltd

	Toyota	Tianjin FAW Toyota Automobile Co, Ltd Sichuan Toyota Motor Corp. FAW Huali Motor Co., Ltd FAW Fengye Automobile Co, Ltd Guangzhou Toyota Motor Co, Ltd
Germany	BMW	BMW Brilliance Automotive Co, Ltd
	VW	FAW-Volkswagen Automotive Company Ltd Shanghai Volkswagen Automotive Company Ltd
USA	DCX	Beijing Jeep Corporation
	Ford	Changan Ford Automobile Corp, Ltd
	GM	Jinbei GM Automotive Co. SAIC-GM Wuling Automobile Stock ITD Shanghai GM Automotive Co. SGM Dongyue Automotive co.
France	PSA	Dongfeng-PeugeotCitroen Automobile Co
Italy	Fiat	Nanjing Fiat Co Ltd
South Korea	Hyundai	Beijing Hyundai Motor Company Dongfeng Yueda Kia Automobile Co

Foreign investors have followed different strategy in terms of commitment. VW in Shanghai, for instance, has invested an amount of capital close to 50/50, giving the company more power to implement the facility and to develop the cooperation with its partner. On the contrary, Peugeot in Canton, which had a control share of about 25% has never been able to develop its proper strategy and has pulled rapidly (Jean Ruffier, 2006). Citroën, in Wuhan, before reaching 50/50 ownership has met difficulties with its partner to meet its industrial obligations (investments)⁹. In all case, State regulation had a strong impact on the development and growth of the business (credit, regional regulations forbidding, for instance) the entry the sale Citroen cars in Shanghai which market was protected by the lobbying of SAIC/VW).

Asian manufactures, and late comers have adopted a “wait and see “ approach, notably Asian car makers careful to protect their brands. They first assembled totally knock down old models, finally entering after Western makers have succeeded (Honda, Toyota, Nissan).

As a result, as it can be shown from figure 2 and 3, the industrial organisation of the car industry in China as two main features:

A more or less dualistic structure where we have three kind of actors;

- State-Owned enterprises with three main leaders, SAIC, FAW, Dengfend. Each of them has connexion with foreign investor which must have 50% shares in the joint venture. SAIC in shanghai, thus can cooperate with two foreign companies (GM, VW).
- Foreign companies which are located in different regions according to State decisions. The core technology still in the hand of Western manufacturers. China leadership aware of this shortcoming : setting a new industrial policy
- “Private Chinese companies”, spill over of the cooperation between State and Foreign companies and which are supported by local governments or municipalities. These companies produce their own brands, State companies produce and market cars under their foreign name.

⁹ X. Richet & W. Wang (2002)

Localisation and Industrial Districts in the industry

Industrial districts in India

According to McKinsey, at the horizon 2015, 40 billion USD turnover will be reached for the sector of auto components, with a 60 % exports. It will represent 3.5 % of the world market. A 6,000 small or very small enterprises cover 20 % of this market. How this sector will concentrate is unknown, but it is likely that the number of companies will strongly reduce further to increased competition. The national sector meets most of the domestic requirements, with the auto-component imports being “at about 13%, restricted to items requiring special steels and materials and precision engineering” (Ramaswamy, 2003)”. However, apart from this small sector, the market is already reasonably concentrated, with 400 large suppliers and an organised sector that accounts for 85 percent of the total output.

The supply chain is getting increasingly integrated in the Corporate Social Responsibility policies that play an increasing role in capacities to enter international markets (for example Tata, but also Ashok Leyland) and in rising the productivity. Certification develops: SA 8000, ISO 14 000, and all makers have been focusing on selective clusters since the early 2000s so as to develop regularity in their supplier relations. Since the local market still constitutes the base market for components suppliers, their ability to target various car makers is a must in their strategy: simultaneous presence of several car makers in a cluster does bring positive externalities on the suppliers. Two clusters in particular are dynamic and well organised to bring agglomeration economies

- a ‘Western axis’, in Maharashtra, around Bombay, Pune, Nashik and Aurangabad, lined to Mahindra & Mahindra, Daimler-Chrysler, Fiat, Skoda, Bajaj and Kinetic,
- a Southern axis that constitutes a zone across Bangalore and Madras, around de Ford, Hyundai, Mitsubishi (Lancer), Toyota, Ashok Leyland, TVS and Volvo.

Table 11: Break-up of parts production range, 2005-06

Electrical Parts	9%
Equipments	10%
Suspension & Braking Parts	12%
Engine Parts	31%
Drive Transmission & Steering Parts	19%
Body & Chassis	12%
Others	7%

Source: ACMA

To benefit from these hubs, as well as to follow their clients, international parts suppliers are already investing in India. Ramaswamy (2003) reported such activities by large players:

- the sourcers for large groups, to include Delphi (GM), Visteon (the sourcing arm of Ford), MICO(Bosch) and Cummins International
- the direct sourcing functions by Ford UK, Volvo, Toyota, GM
- as well as sourcing by the Chinese truck industry.

In reverse, a few Indian companies think to outsource some of their components from China (M&M). By 2005, Cummins and Caterpillar had joined the club, Toyota Motors

had a global hub for transmissions (160,000 per year), Daimler Chrysler was sourcing more than 70 million Euro, Ford had a full fledged component Sourcing Team, Fiat, Skoda, Renault, Electrolux, Kautex, Textron, Eaton were on the ranks (source: ACMA).

In fine, suppliers have developed a logic of climbing the value chain mostly through ‘process upgrading’ and ‘product upgrading’.

Ultimately, M&A abroad are an essential components as well so as go gain time, markets, technologies. This holds true for OEMs as well as for part suppliers see table 12).

Though the strategies of internationalisation of the automotive industry go beyond the ‘territorial look’ we have adopted here, it is worth mentioning that Indian companies are increasingly looking at ASEAN markets and ASEAN countries as a production base. Notable examples are TVS Group and Bajaj Group investing in Indonesia to manufacture.

Table 12: Some Examples of Indian Companies Investing Overseas

Tata Motors	Daewoo Commercial vehicles Plant, Korea Jaguar & Rover production lines, UK
Mahindra & Mahindra	JianglingMotor Company, China, SarAuto Products Ltd.
Bharat Forge Ltd	Carl Dan Peddinghaus, Germany, CDP Aluminiumtechnik Germany, Federal Forge, USA, ImatraKilstaAB, Sweden, Scottish Stampings Ltd., Scotland
Motherson Sumi	WOCO Group, Germany, G&S Kunststofftechnik
AmtekAuto	GWK, UK, New Smith Jones Inc of USA, Zelter, Germany
UCAL Fuel Systems	AMTEC Precision Products Inc, USA

Source: ACMA, Press, interviews

Industrial districts and supply chains in China

A few authors (like Thun, 2005) are confident in the ‘Mexicanisation’ of the car industry (the policies of welcoming foreign investors in JVs in Mexico in the 1960s and 1970s in a protected environment had allowed the further liberalisation of the 1980s and 1990s with the result of having large exports to the US and most of the world car makers assembling in Mexico to re-export to the US). But some are worried about the risk for the local supply industry, which in Mexico was gradually replaced by global suppliers as and when global car makers came with their own suppliers. The global context is however very different today for, if in China foreign groups have long come with their own suppliers, they now diversify their supply at the same time for their local production but also for their global sourcing. Chinese suppliers have themselves engaged into a dynamic of technological and quality catching-up, and there is little

doubt that the policy of national models, even though assisted by foreign companies, will foster the growth of Chinese parts suppliers. Provincial differentials will no doubt play, since Shanghai has long maintained a policy of ‘internal imports substitution’, demanding assemblers to locally invest preferably to importing ‘from the rest of China’, which Beijing or Guangzhou bureaucracies have not been able to implement. As a result, Shanghai has been able to develop its cluster through ‘stealth’ (by 2003, the parts output of Shanghai Province was thrice the one of the following province, Zhejiang). Guangzhou’s freer model was less able to build a parts makers district (Guangdong and Beijing rank as 9th and 10th), but was conversely able to attract companies at an assembling level, especially Japanese, but Shanghai may have won its bet, for it is the first destination of car makers, and the home of more than 80 European and US companies, and nearly 60 Japanese companies anyway.

As E. Thun has pointed out, there is a strong regional and local dimension, with different kind of control over the industry which have taken place since the development of the car industry in china, conducting to three main local development models (figure 4):

Local development state: Shanghai

Laissez-faire Local State: Beijing, and Guangzhou

Firm dominated Local State: Changchun , Wuhan

Figure : Regional Paths to Auto Sector Development

Location	Local policies content	Development Model
Shanghai		
Remaining industrial planning with firms controlled by local government which has no specific knowledge in the car industry	Decentralisation and reform policies pave the way for active municipal planning organisations. Auto firms unified in one group, all fully-owned by group	Local Development State
Beijing		
Little separation of national and local interest due to localisation.	Does promoting sectoral development by the national capital an issue.? Weak control of suppliers not fully-owned by ministries	Laissez-faire Local State
Guangzhou		
More autonomy from Beijing due to distance, strong trade links with Hong Kong	High autonomy from the beginning Weak investments control. Suppliers not fully owned by local	Laissez-faire Local State

	ministries	
Changchun and Wuhan		
Largest and oldest auto firm in China. Controlled by central government, not municipal	Importance of non-financial interests. National dimension of the industry, low control from local government. Auto groups cooperate poorly with foreign firms. Poor monitoring	Firm-dominated Local State

Source : Adapted from E. Thun (2006)

III - Chinese and Indian automobile sectors in the global industry

Argument of the section

China shows a fast expansion of its car market; Chinese companies have further shown some capacities of imitation. However, what is the likely future in terms of endogeneisation? Can the dualism of the sector continue? While large public car-makers target national the market, some new entrants, smaller, private, wish to expand on international markets and the two dynamics show little industrial complementarity as of now.

India, for macro-economic reasons, obviously has a less developed market, but which however expands fast, shows a potential for exports already, and where the domestic and exports dynamics combine better. Endogeneisation is strong with 2 firms having developed truly national models (Mahindra & Mahindra and Tata) and a third one that is an example of 'national' champion even though being primarily a JV (Maruti-Suzuki). IPR are protected which has fostered the development of strategic partnerships, between M&M & Renault-Nissan, or between Tata & Fiat. Further, the inter-branch synergies that conglomerate groups show, may lead to further acceleration on technological catching-up (the example of Tata Motors and Tata Steel for instance, in which case the development of new models of cars has to be seen in the context of the recent take-over of Corus' know-how by Tata).

For China, the big issue is to really develop an industrial policy for the sector and test the feasibility of national models. It will be interesting to see the development of partnerships on this beyond the 'formalised' JVs. Conversely, in India, the inter-firms relationships have already reached a level of joint-lobbying towards the State, where both domestic and foreign firms play at par within the same business association (SIAM).

Lastly, a dynamic relate to parts and components will play a role in catching-up. Positioning of Indian suppliers in the value chain takes place heavily. Both access to international markets and to supply chains by Indian car makers will foster their innovation capacities. While the number of global players will keep 'rationalising', their

relationships with regional producers will take importance, the global firm in this sector becoming increasingly a 'bundle of contracts'.

Some assumptions

There is no means for developing countries as China and India, at least in the next decade, to follow the Japanese¹⁰ or the Korean way to promote the development of a strong and competitive car market, through imitation and « reverse engineering » and then to be among the world leaders at least in producing final volumes although China is tempted today by this path of development but competition is fierce in the low end of the market. Foreign makers have developed successful low cost strategies (Renault Logan) both answering demand in developing market economies and also to answer demand low income segments in mature market economies..

This doesn't mean that India or China cannot become, on some segments, leaders or serious competitors to incumbent companies. Already, Chinese companies begin to enter new markets (Middle East, Asia) with low quality products and volume productions as did Korean companies at the start of their world strategy. Mass entry on the US markets is planned in 2007. Indian car makers are concentrating on some niches with strong positions on markets with high added value (Scorpio by Mahindra & Mahindra, or Tata Indica) both in emerging and developed economies. Similarly, for two-wheelers, also for cars based on several foreign technologies but designed in India, Indian companies target and develop in emerging markets or start exporting to developed markets (Bajaj, Mahindra & Mahindra, Tata Motors, etc.), either alone or in strategic collaboration (with Renault for Mahindra, with Fiat for Tata).

Outsourcing for parts in India and China is already a threat for big US, Japanese and European car makers although that they are, partially the main providers, pushing their Western suppliers to develop facilities in these countries¹¹. Outsourcing of businesses from the US, Europe and Japan, should increase the role of China as a mass provider of parts if local companies, in partnership with foreign OEMs are able to build up facilities in order to reach size, volume and reduce costs. But a division of labour should remain: high tech contents would come from developed market economies, labour intensive parts would be made in China (see Toyota and Honda in China). The learning curve in this specific field can be rapid although there are some technical constraints linked to proximity (near-shoring) which necessitate the close presence of the sub-contractor near the final assembler in home countries.

The appropriation process is slower in China¹² than in India, cooperation remains an important tool for knowledge transfer concerning designing and production upgrading. Setting more voluntarist policies in China is on the agenda, associating foreign and local companies to accelerate innovation and technology transfers. On the contrary, Indian companies invest in advanced technologies to be able to cope with international competition (Tata) as well as to answer the domestic growing demand for more sophisticated products.

¹⁰ Freeman, C. (1988)

¹¹ See case study at Valeo in Wuhan

¹² This point is addressed by Huang Yasheng (2003)

Large global companies still benefit from a strong technology, marketing, finance advantages although they are today subject to change in demand and face big problems in managing over-capacities both at home and in affiliates facilities (GM, VW, Ford). Leader companies like Toyota still set and will set the standards, keeping their strategic advantage.¹³

Competition is not only on products supply and prices, but also on processes, on quality, sub-contracting (the “value chain”), delivery, on dealer networks, after sales services, financing. In India this is obvious, less in China where « first buyers » are less interested in what is inside the car (first, low price matters), whereas Indian buyers increasingly demand world-class models, hence a decreasing delay in models introduction. The catch-up strategy pushes both domestic and foreign makers to introduce new products that it was before, to invest in new technologies at home¹⁴, even to invest in developed market economies to be nearer from R&D centre. This is the case for Tata, which, with its Indica model, is investing today in high tech in the Midlands, in the UK, the earth of the automobile industry in this country, to set up a plant which will employ 1000 people. Off-shoring the other way!

As a result, Indian companies, by concentrating on some segments (with low and medium volumes) may later become a competitor on higher segments of production. Chinese “private companies”¹⁵, on the contrary, by following a mass production strategy at low entry level, are unlikely to progress on the ladder as they’ll have to manage a more complex system, relying on huge investments, on reliable sub-contracting networks, on technology transfers. Mergers and acquisitions could precipitate the concentration and the emergence of few domestic car makers. Eagerness to take market shares on the domestic market and to export on the world market is a recent trend followed by private car makers in China. On the other hand, foreign companies in China are stuck to increase market shares in China with the exception of Honda which is thinking to re-export its products towards Western markets.

Finally, the issue is the following: how to become a major player, how to catch up in term of technology, mastering a complex industry, in marketing and in exporting on foreign market. There is not necessary room to become a world leader, as Japanese and South Korean companies have done during the past three decades although the hierarchy of top leaders might change with the crumbling of some major US companies and growing difficulties of some European car makers (Fiat, VW)¹⁶. Conversely, how fast can world companies move from the preliminary step of a market implantation in China and India, to strategies of outsourcing or even developing re-export platforms? In other words, how and how fast will Indian and Chinese economies as well as firms integrate the world markets and world division of production?

The question could be this: whether this ‘déjà vu’ model is not by now outdated, and such an argument would often gain ground from the conversely *cliché* view that foreign car-makers would like to see the Chinese car makers they had to associate with being progressively absorbed by foreign multinationals. Field surveys give a more contrasted

¹³ See case at Toyota, Bangalore and the Economist, January 25, 2006

¹⁴ Johnson J.(2005)

¹⁵ These companies are not linked to big State-owned enterprises but are still backed by provincial and municipal authorities.

¹⁶ See The Economist, « The Global Car Industry. Extinction of the Predator », *The Economist*, 8th September, 2005

perspective. Most of the foreign car makers have actually very pragmatically welcomed Beijing's decision. Beyond the fact that there is no other way but to accept this statist decision and the impact it will have on their public JV partners, they see some interest in transferring their technologies and processes beyond the sole JV production lines, and to actually accompany the industrial transformation of the National Chinese firms' production lines, with duly accepted royalties being paid. In this context, the R&D support that Beijing brings through national policies certainly makes sense.

Figure 8: Highlights of Automobile Industry Development Policy

Section	Highlights
Policy objectives	Aim at making China a main player's auto market with export quality products Develop a few internationally competitive automotive groups which could become « Global 500 »
Technology innovation	Provide incentive for enterprises that develop their own IPR on new technologies Promote the development of environmentally friendly and fuel efficient cars as well as fuel technologies Reduce average fuel consumption for new passenger cars by more than 15% of the 2003 level
Branding	Promote brand marketing and strengthen brand consciousness for all OEMs and auto parts makers

Source : National Development and Reform Commission, 2004

The key determining factor is however, as Thun (2005) indicates, that in the Chinese context there is a large deal of provincial control & de facto large presence of foreign companies already. We would add that, this decentralisation model also fits with the industrial heritage of the Maoist period. In that sense, Beijing no longer has what the Japanese or Korean states' latitude was in bringing out Toyota or Hyundai. The state's role will definitely remain important (and its direct role will remain more than in India as we shall see, but in a context of private-led and foreign-influenced competition).

Cooperation and Competition

Main Western car makers have played a major role in the development of direct investment, in developing countries, through M&A or greenfield investments following a double aim: market access, on the one hand, integrating vertically facilities not so far from the main location (for instance outsourcing in Eastern Europe for servicing VW facilities) on the other. The big issue linked to outsourcing is either outsourced facilities (for instance Japanese companies in China) will start to export cars manufactured in China toward Western markets or will remain in China.

In transition and developing economies, two entry modes exist for foreign firm: M&A and greenfield investments on the one hand, and cooperation on the other¹⁷.

In the first case, local companies, existing, or built up from scratch, are controlled by foreign OEMs which decide what to produce, which volume, for which markets. The

¹⁷X. Richet (2002)

company keeps its technology, develops the new business, organises its sub-contracting and dealer networks. Three conditions should exist for the foreign investor to enter the market: low barriers to entry and a “friendly approach” towards foreign investors, internal demand and market growth potential. The development of the national system of innovation allows tapping in the existing stock of domestic competencies. In this respect we will show that the potential for this strategy, though it may look purely private-driven, still lies in ways on state policies. Quite illustratively, the stricter JV controls imposed by the Chinese state in favour of the Chinese partner, actually tend to bring disincentives in investment for the foreign partner. This tends to limit the technology transfer that would otherwise be motivated by a large market. Conversely, we will illustrate how more flexible rules for JV (larger control for foreign but also the possibility of flexible participations, with many examples of ‘opting out’ from the side of Indian companies) facilitate technological transfer and catching-up. For instance, after an initial JV with Ford, Mahindra & Mahindra preferred to opt out and use the gained processes to develop its own model (the Scorpio). This strategy of technological autonomisation later allowed it to re-enter into an agreement with Renault in a much better condition. Similarly, Kirloskar gradually reduced its stake in its JV with Toyota down to 5% of the capital but conversely used its gained technological know-how to strengthen its position in the machine tools and parts supply.

In the second case, cooperation has another ambition, more limited for both parties, Western and host country companies. The scope is more limited in terms of market access, of integration, of technology transfer. For Western companies, the business environment is not favourable, entry barriers are high, intellectual property not respected, markets development weak. Mostly, the main reason is the attitude of host countries which still wish to maintain or create national champions, control the pace of development of the industry. Through cooperation, they can get the knowledge necessary to adjust the production and develop the industry autonomously. As we will see, both countries, China and India, have tried to follow this pace before opening to foreign companies in a limited way.

However, in a world economic environment that fosters re-deployment of production processes, both strategies can culminate into strategic collaboration as we will exemplify in the Indian example. In both cases, the coming in of foreign makers brings in technology and management know-how with strong spill over effects on sub-contractors and generally all companies working for this sector. Of course, appropriation through M&A has more important effects in terms of technology transfer, organisation, speed of adjustment, up-grading and rising the standards than cooperation which still faces higher transaction costs, has a more limited impact in terms of technology transfer and spill over. On the other hand, it reinforces the governments in the idea that they can pursue a kind of national industrial policy in order to be able, one day, to master the industry. There is still, in development economies, and particularly in India and in China, strong oppositions among decision makers to the presence of TNC which are still viewed as a kind of Trojan horse with the aim of conquering local industries¹⁸. Economic nationalism is not only a European mood.

Nonetheless, there are other differences. The national system of innovation in India is much more developed and efficient in the adjustment of firms. Intellectual property

¹⁸ Huang Y. (2003)

rights defence is much more secure in India than in China. The early diversification of big conglomerates (Tata) has facilitated the entry in new industries, spread risks on different business and created strong industrial and financial synergies.

Conclusion

Today China and India car industry are at the cross-road. They have transformed the car industry both with similar and different tools and are facing the world competition.

Constrained by state regulation, they have experienced opening strategies, early 80s in China, early 90s in India.

China has supported the development of this sector through bureaucratic means and market mechanisms: bureaucratic as the State and Province has kept a direct control over this industry, Provinces taking advantage of de facto decentralisation to develop locally. As the result, the sector, up to recently was weak and fragmented with the existence of more than 120 car maker over the country.

The national system of innovation in China is weaker than in India. It is through successive national industrial policy programmes that the government as supported the enhancing of this sector, promoting industrial collaborations with foreign car makers.

There is a difference in the aims among domestic and foreign partners. Foreign OEMs are looking for profitability, market shares on an expanding market with a strong growth potential. Few of them are looking at taking advantage of low costs to export toward Western markets. There is a different approach concerning suppliers, both foreign and domestic which are looking only looking at the domestic market but are willing to take advantage of the low cost advantage for low technology products.

Foreign makers face, at this stage of their development, the following problems:

- property rights issues linked to imitation and fakes (see the Geely-GM row, other Western car maker have faced the same problem), trust in local arbitration courts and willingness to keep the core technology.
- price war: competitive war on low segments of production on which margins are low coming from the new competitive private sector.
- state regulation and state macro-policies in order to curb disequilibrium from an heating economy, to control the financial and banking system.
- the difficulty in organizing the sub-contracting sector, up-grading it.

For the Chinese government, the main question is how to foster technology transfer from foreign OEMs in order to appropriate it and support “domestic champions”. In relation with Chinese companies, the government is willing to support catching up strategies in promoting the taking over of foreign companies (in Western Europe, Brazil?) to acquire the latest technologies. Adjustment of the industry, domestically, follows different paths according to regional policies: accumulation of competencies and local innovation system in the region of Shanghai, market policies in Canton and Beijing. Technology advantage from Western companies will be difficult to overcome.

Going global is an important issue. The predictable issue will be the specialisation of China in producing low added-value parts for exporting on the world market; mass export will be more difficult before Chinese companies build up a strong competitive advantage at home which meet facing competition with foreign market on the domestic market.

India, apparently, by following another way, seems to have accumulated more advantages in its cooperation with Western companies following the opening up.

There are first two major advantages:

- The national system of innovation, much more developed than in China, with strong relations between actors (Central government, local government, the development of scientific and technical knowledge, English as *franca lingua* which facilitate communication, the rule of law and respect of contract which reduce transaction costs. This has fostered the transfer of technology and adaptation to the market environment.

Indian conglomerates have eased the entry in new markets, and facilitate cooperation with foreign groups. Trust is more important than majority control in JV where foreign companies can get almost the whole majority of equities. Fundamentally, the originality of the Indian entry in the car industry is based on the conglomeral form of the Indian industrial groups. The groups which have engaged into JVs with foreign groups have been able to transfer the processes they have learnt not only to their car branch but to all their industrial activities, where they had 100% control. This led to a leveraging effect and fostered their financial resources. All things being equal, Indian groups have also been able to use financial resource from other branches to fund their car development (Tata, Ashok Leyland for instance). Groups having entered JV then had differentiated strategies in the way to use the processes they have gained. Kirloskar (with Toyota) decreased its share in the JV to focus on its own business and develop car parts. Mahindra & Mahindra chose to withdraw from a JV with Ford in order to develop its own model of SUV. It later re-entered into a JV with Renault-Nissan, on a much better technological position. Indian groups can thus be characterised by the flexibility of their technology transfer between the various branches of their industrial activity, as well as by the fluidity of their partnering strategy, not hesitating to strategically withdraw from a partnership to target a more advanced one. This maturity contrasts with the state-regulated JVs in China.

Foreign companies have entered the country differently than in China, not looking first at market shares. Investment has followed the growth of the market. Sub-contracting has not developed as such an important issue as in China.

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