Indian Automotive Industry: Opportunities and Challenges Posed By Recent Developments

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Executive Summary: The Indian automobile industry is currently experiencing an unprecedented boom in demand for all types of vehicles. This boom has been triggered primarily by two factors: (1) increase in disposable incomes and standards of living of middle class Indian families estimated to be as many as four million in number; and (2) the Indian government's liberalization measures such as relaxation of the foreign exchange and equity regulations, reduction of tariffs on imports, and banking liberalization that has fueled financing-driven purchases. Industry observers predict that passenger vehicle sales will triple in five years to about one million, and as the market grows and customer's purchasing abilities rise, there will be greater demand for higher-end models which currently constitute only a tiny fraction of the market. These trends have encouraged many multi-national automakers from Japan, U. S. A., and Europe to enter the Indian market mainly through joint ventures with Indian firms. This paper presents an introduction to the key players in the Indian automotive industry, a summary of the recent developments, and an analysis of the opportunities and challenges facing the various players (Indian and multi-national assemblers and component makers) in the areas of product development, production, and distribution.

1.1 Introduction to The Indian Automotive Industry

For forty years since India's independence from the British in 1947, the Indian car market was dominated by two localized versions of ancient European designs -- the Morris Oxford, known as the *Ambassador*, and a old *Fiat*. This lack of product activity in the Indian market was mainly due to the Indian government's complex regulatory system that effectively banned foreign-owned operations. Within this system (referred to informally as the "license raj"), any Indian firm that wanted to import technology or products needed a license/permit from the government. The difficulty of getting these licenses stifled automobile and component imports, creating a low volume high cost car industry that was inefficient, unprofitable, and technologically obsolete. The two dominant products Ambassador and Fiat, although customized to the poor road conditions in India, were based on a stale design concept (with outdated features), and were also fuel inefficient.

In the early 1980's, the Indian government made limited attempts at reforming the automotive industry, and entered into a joint venture with Suzuki of Japan. The joint-venture, called Maruti Udyog Limited, launched a small but fuel efficient model (called "Maruti 100"). Priced at about $5,500, the product became an instant hit. The joint venture now produces three small-car models, a van, and a utility vehicle at a rate of more than 250,000 a year. Despite being a late entrant, Maruti's vehicles are estimated to account for as much as 70 per cent of India's car population.

In 1991, a newly elected Indian government took over and faced with a balance-of-payments crisis initiated a series of economic liberalization measures designed to open the Indian economy to foreign investment and trade. These new measures effectively dismantled the license raj which had made it difficult for Indian firms to import machinery and know-how, and had disallowed equity ownerships by foreign firms. In 1993, the government followed up its liberalization measures with

significant reductions in the import duty on automobile components. These measures have spurred the growth of the Indian economy in general, and the automotive industry in particular. Since 1993, the automotive industry has been experiencing growth rates of above 25%. Data for the 1995-96 financial year is yet to be released by all the firms, but estimates indicate that passenger vehicle sales may reach or exceed 350,000 for the first time. (Passenger vehicles include cars and vans but not jeeps.) Table 1 presents the production data of passenger vehicles for the top four Indian assemblers. Foreign vehicle sales have been insignificant until the 1994-95 years.

Company	**Main Products**	1992/93 Market Share	1994/95 Market Share
Maruti Udyog Limited (MUL)	Maruti 100, Esteem, Omni (Minivan)	74.8%	73%
Premier Automobiles Limited (PAL)	Premier Padmini NE118 (Higher end)	9.4%	11%
Hindustan Motors (HM)	Ambassador Contessa (Higher end)	13.4%	10.7%
Tata Engg. & Locomotive Company Ltd. (TELCO)	Tata Sierra Tata Estate	2.4%	4.9%
Total Passenger Vehicles		163,300	280,000 (est.)

Table 1: Estimated Production of Passenger Vehicles By the Top Firms in the Indian Automotive Industry; Source: Association of Indian Automobile Manufacturers (AIAM), Automotive Components Manufacturers Association of India (ACMA) and other press reports[1].

1.2 A Brief Introduction to the Top Four Indian Automotive Assemblers

As seen in Table 1, Maruti Udyog Limited (MUL) is the number one Indian automotive assembler commanding more than a 70% share of the Indian passenger vehicle market. (It also sells a few thousand jeeps, called Gypsy, which are not included in the passenger vehicle data of Table 1.) Most recent data released by MUL show that it produced a total of 277,000 vehicles in 1995/96 resulting in a turnover of approximately $2 billion (Rs. 6673 crore, Source: Financial Express, March 30, 1996). It is also a reasonably profitable venture with after tax profits of about $122 million (a 65 % increase over the previous year). MUL's relatively large production volumes offer scale economies in production and distribution, that pose formidable barriers to entry. It has also established a solid supplier-base located around India (most of its assembly is concentrated in Northern India near New Delhi). Its products enjoy good reputation – in fact, Indian automotive industry observers credit Maruti for the rapid improvement in quality and supplier capability in this industry. (Until last year, new Maruti's have to be booked several months in advance!) MUL's product line is concentrated in the economy car segment, although it has been moving up recently to cater to the premium market segments by introducing the higher-end *Esteem.*

[1]Much of the data presented in this paper has been extracted from the annual reports published by ACMA, and from articles in the business press and trade journals.

Occupying the second position in 1994/95 is Bombay-based Premier Automobiles Ltd. (PAL), which edged out Calcutta-based Hindustan Motors Ltd. (HM) from the second place. In fact, PAL produced the *Fiat*, and HM produces the *Ambassador* – both products that dominated the Indian automotive industry for decades. The advent of Maruti has resulted in the decline of both these firms. PAL's main products are the Premier Padmini (in the compact car segment) and the NE118 (in the mid-size car segment). Recently, PAL has rejuvenated itself by entering into joint ventures with Peugeot (for the Peugeot 309), and with Fiat (for the Fiat Uno). Its close competitor HM continues to produce Ambassadors in small volumes targeted at the economy/compact car segment. HM also offers a higher end product called Contessa Classic, and has entered into joint venture agreements with General Motors (GM) to produce the Opel Astra, and with Mitsubishi to make the Lancer targeted at the higher-end market.

Despite occupying the fourth position and producing passenger vehicles only in small volumes, Tata Engg. & Locomotive Company Ltd. (TELCO) is noteworthy, not only because it is a part of the powerful Tata industrial family, but also because it is one of the few firms with indigenous product development capabilities, and has been a dominant player in the commercial vehicles segment. (The author, in fact, worked with TELCO for a brief period in the late 80's in their light commercial vehicles product development group.) TELCO holds about 70% of the heavy commercial vehicles market, and (after entering the market late) has also managed to fend off Japanese competition by gaining about 50% of the light commercial vehicles segment with its in-house product development. It entered the passenger vehicles market only in 1991-92, and has quickly established itself in the higher end of this segment with its Estate and Sierra models. The firm has entered into a joint venture with Mercedes Benz to assemble the E220's, and is also said to be planning an entry into the small/economy car segment challenging Maruti's stronghold.

1.3 A Brief Introduction to the Indian Component Suppliers

Component suppliers are the backbone of an emerging automotive industry. By all accounts, the Indian component industry, based mostly in the southern city of Madras, is tiny. The auto component manufacturers association of India (ACMA) estimates that $2.1 billion worth of car parts were produced in the financial year 1995, out of which exports amounted to $228 million. To put this in perspective, the entire Indian industry's revenue is roughly one-tenth that of GM's component unit, Delphi automotive systems[2]. But, the component market has been growing rapidly at about 25% a year, and is expected to quadruple in size by the year 2000. This growth has not only been due to the growing demand for passenger vehicles, but also due to the increasing trend by multi-national OEM's to resort to global sourcing to improve competitiveness.

Leading automotive assemblers and component makers are increasingly turning to India for components. One of the now widely-cited examples of this trend is the Indian component firm, Sundaram Fasteners Limited (SFL), which the author has been studying for the last year. SFL became GM's largest supplier of radiator caps, and exports about 300,000 caps from its factories in Madras to GM plants around the world. In 1992, when GM was planning to close one of its plants in UK., SFL took advantage of the liberalized economic environment in India, bought the machinery from GM, and relocated them to its plant in Madras. The company has continued to

[2]It is also noteworthy that Delphi is in the process of setting up its own units in India to make steering systems, chassis, and electrical systems recognizing the needs of the fast-expanding Indian automobile market.

invest heavily in quality and productivity improvements, and a tour around SFL's suburban Madras Factory shows a world-class plant with minimal inventory and rework. The company's workers, trained in statistical tools and control charts, keep processes under statistical control due to which radiator cap rejection rate is less than 1% of annual production. The company also has a very skilled managerial and engineering workforce, which has helped it develop in-house product development capabilities. Using these resources and skills, the firm is now seeking to expand its supply to other manufacturers in Europe, US, and Asia, and also diversify into other components.

SFL exemplifies the Indian auto components industry, which although small and fragmented has the competitive advantages of a skilled workforce and low labor costs. It is estimated that components can be produced about 30% cheaper in India than in the west. (The top Indian assembler, Maruti, is able to price its cars at about $5,500 because it sources 90% of its components from Indian suppliers.) Rapid growth and tie-ups with foreign firms will help Indian auto components suppliers further invest in capacity and automation and acquisition of the latest know-how, thereby closing the productivity gap with other world-class component makers. Exhibit 1 shows a few other notable Indian component suppliers and their exports to OEM's.

2. Recent Developments and Issues Facing the Indian Automotive Industry

In the past two years, more than a dozen multi-national firms have announced plans to enter the Indian market. Most of them have formed joint ventures with Indian firms, while there are exceptions such as Hyundai which plan to form fully-owned units. Exhibit 2 displays most of these firms and their products planned for the Indian market[3]. Despite the large growth potential of the Indian market (analysts expect the growth to triple in the next five years), no one expects the industry to sustain the fragmentation caused by more than a dozen suppliers. Many of these new firms will not enjoy the scale economies and relationships with suppliers that Maruti does, so they have decided not to challenge Maruti at its price of $5,500 in the smaller car segment. Most are planning to produce between 20,000 and 50,000 higher-end vehicles. The stiffest competition is building up in the mid-sized car range (1,300 cc and above), where several of these multi-national and Indian companies are planning to go head-to-head. Although these newly announced vehicles at $12,000 or above remain expensive by Indian standards and planned capacity exceeds projected demand, new entrants are betting on the rising incomes of middle-class families. Notably, Daewoo's new product Cielo, priced at about $15,000 in a joint venture with the Indian firm DCM, drew 76,000 advance bookings last year – reflecting the pent-up demand in the market.

Amongst the many issues facing the Indian automotive industry, the biggest by far is the poor road infrastructure. India's road network, comprising of a modest national highway system (that is only 2% or less of the total roadway length) is woefully inadequate and dilapidated, and can barely keep pace with the auto industry's rapid growth. Most roads are single-lane roads built in the 1950's and 60's, and are crowded with two-wheelers, bullock carts, and even pedestrian humans and cows. Traffic laws are not well enforced leading to one of the highest per-capita accident rates in the world. It is to be expected that the introduction of bigger and more powerful vehicles will only worsen the situation. Upgrading the existing highway system is itself expected to cost $30 billion or more, and resource and land constraints prevent the building of new highways. The Indian

[3]Conspicuous by its absence from this list of new entrants is Toyota, which initially had an arrangement with the Hinduja group that was called off in March, 1996. Toyota is said to be adopting a wait-and-see attitude.

government's approach to solving this problem is to privatize the road infrastructure, by having private firms build and operate tollways. However, it is unclear if this alone will be able to solve this infrastructure problem of enormous proportions, which can severely bottleneck future growth.

The significant (about 50%) tariffs imposed on import products and components combined with the vagaries of currency exchange rates make localization an important imperative for foreign companies entering the Indian market. Firms are already making a major effort to localize rapidly; The Daewoo-DCM venture is expected to raise its local content to 90% by the decade's end. GM's Astra will start with 40% labor content, and go up to 75% within three years. One challenge to localization is a shortage of component suppliers with size and sophistication.

Another major uncertainty facing the Indian market is the government's policies toward foreign investments and joint ventures. As Amsden and Kang [95] note[4], governments play a key role in shaping the growth of the auto industry in emerging economies (as compared with developed countries). Although many observers say the economic reforms initiated by the ruling Congress party are not reversible, the difficulties experienced by Enron Corp. in its investments in the power sector under the hands of the opposition Bharatiya Janata Party (BJP) do not bode well for other foreign investors. With elections in mid-1996 expected to return a coalition group to power, it will be hard for the new government to push the reform measures with the same vigor and pace as the previous government did. It is even unclear if the group in power will be so positively inclined to foreign investments and trade as the current government.

3. Discussion of the Strengths and Weaknesses of the Various Players

To analyze the strengths and weaknesses of the various players in the Indian automotive industry, it is useful to classify them into the following four categories: (1) Indian Assemblers, (2) Multi-national Assemblers (3) Indian Component Makers, and (4) Multi-national Component Makers. Table 2 presents the strengths and weaknesses of each of these groups.

The Indian assemblers, typified by Maruti, have built a formidable distribution and after-sales network. They also have an established supplier base, which gives them cost and delivery time advantages, especially in light of import tariffs and currency exchange rate fluctuations/ devaluations. Their biggest weakness, with the exception of TELCO, is the lack of product design capability. In the coming years, they should focus on acquiring product design and lean production know-how (as the Korean firms did in the eighties and early nineties [Amsden and Kang 95]). They could acquire know-how with help from their joint-venture partners, and also with investments in research and development which at present are at extremely low levels.

Multi-national assemblers could really benefit from their lean production capabilities in India, where production runs are expected to be small due to the large number of players entering the Indian market. They could also set themselves apart by incorporating safety and comfort features not currently included in Indian-assembled products. These include seat restraints, airbags, and anti-lock brakes, and comfort features such as power windows, and central locks. U. S. assemblers have a reputation of safety, which they could leverage to their advantage. Close cooperation with

[4]Amsden, A. H., and J. Kang, "Learning to Be Lean in An Emerging Economy: The Case of South Korea", IMVP Sponsors Meeting, Toronto, 1995.

the joint-venture partners can overcome the lack of experience with the Indian market, but the small size of the component supplier base will pose a challenge to their need to localize rapidly.

Group	Strengths	Weaknesses
Indian Assemblers	• Established distribution and after-sales networks, and supplier base. • Understanding of the Indian market and ability to liaison with the government	• Lack of product development capabilities (except TELCO) • Brand image (especially HM and PAL).
Multi-national Assemblers	• Lean production capability • Ability to design products with differentiating features • Deep pockets, brand image.	• Lack of experience with the Indian market, industry, and government. • Small component supplier base and high import tariffs.
Indian Component Suppliers	• Low cost, skilled workforce • Learning From exports	• Small Size, Fragmentation • Lack of know-how in certain areas.
Multi-national Component Suppliers	• Size, Deep pockets • Experience and Know-how in technology.	• Import tariffs, currency exchange rate fluctuations. • Inexperience with Indian workforce.

Table 2 Strengths and Weaknesses of the Different Groups in the Indian Auto Industry

As mentioned earlier, the Indian component industry is small and fragmented, but is growing and learning fast due to exports. It is also estimated to hold a 20-40% cost advantage over multi-national component suppliers who are much larger and are themselves opening up units in India to take advantage of the lower-cost, skilled workforce. The Indian component industry needs to invest in capacity and research and development to stay abreast of competition, when the wage gap closes over time. It is likely that some of the multi-national assemblers or component makers might buy some of the small but niche component makers with a reputation for quality.

4. Conclusions

The Indian automotive industry, although growing rapidly, is in a state of flux. The production capacities planned by the new joint ventures currently exceed most projections, and unless import

tariffs come down quickly and the economy grows remarkably, a shake-out may be expected from the current 20 firms to about half a dozen major firms turning out finished products by the end of the decade. However, if multi-national firms decide to use India as a production base from which vehicles are exported to the rest of the world, more than half a dozen firms may be able to remain profitable in India. Suzuki has already begun to use its Maruti joint-venture production to export a few thousand cars to the Middle East and Europe. However, the production capacities of other emerging economies such as Korea and China are also predicted to grow significantly in the coming years, so exports may also face a highly competitive market situation.

In this paper, we have presented a brief introduction to the Indian assemblers and component suppliers. We noted that Indian assemblers have a tight hold over the small-car market due to their low cost supplier base and the tariffs levied on import components. Maruti with its production volumes of over 250,000 enjoys scale economies in production, distribution, and service that are hard to challenge. As Amsden and Kang [95] (cited before) and Womack et al.[5] note, production volumes do confer several advantages to a firm. However, new entrants can set themselves apart by offering new safety and comfort features that are not currently offered in the Indian market. They can also leverage their low production run (lean) capabilities to stay profitable despite the low production volumes. Further, they can combine their reputation with the Indian industry's lower production costs to produce cars and export them to the global markets. Many multi-nationals are already said to be planning such an approach.

For Indian component makers and assemblers, product development capability is key, in order to rejuvenate their product lines, enhance their reputation, and export their products to the markets in developed countries. The author is currently pursuing a study of product development and production systems in the Indian component industry. Since the plants located in India are very far from the developed markets of the USA, Europe, and Japan, component suppliers incur significant transportation and inventory carrying costs in exporting products to global markets. Their situation is worsened by the poor Indian infrastructure, which leads to frequent power interruptions and long delays in supply. These companies are adopting innovative techniques to cope with these uncertainties, which will be a topic of another paper.

The Indian automotive industry, as a whole, is also severely bottlenecked by the woefully inadequate road infrastructure. Privatization of the road infrastructure, even if started immediately, can take years to solve this problem. India also experiences an extraordinarily high number of traffic fatalities, and faces severe pollution problems. As of April 1, 1996, the ministry of surface transport has set emission norms (that are modest by international standards), which local automakers say are hard to meet. Multi-national firms can bring their experience and know-how to bear in these areas, and enhance their reputation as well as attract customers who are safety-conscious and environmentally aware. This will also result in the gradual reduction of the auto-related facilities and pollution (due to the diffusion of these practices), thereby contributing to the further growth of the Indian automotive industry.

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[5]Womack J. P., D. T. Jones, and D. Roos, "The Machine That Changed The World: The Story of Lean Production", Harper Publishers, 1990.

Exhibit 1: Notable Indian Component Suppliers and Their Exports To OEM's

Sundaram Fasteners: Supplies radiator caps to GM, Caterpillar, and others.

Wheels India: Supplies wheels to heavy vehicle and automotive manufacturers in Europe.

Eicher Goodearth: Supplies machined castings to Mitsubishi and other major automotive firms.

Sona Steering: Supplies steering systems to Japanese component makers.

Brakes India: Castings and rubber components to Lucas Industries, Germany.

Source: ACMA Annual report and India Today (March 93)

Exhibit 2: New Entrants To The Indian Automotive Industry as of March 1996

Company	Joint Venture Partner	Planned Products (Ave. Price)
Audi (Volkswagen)	Franchise (Imported car)	Audi-A4 ($85,000)
Daewoo (Korea)	DCM	Cielo ($15K)
Fiat	Premier Automobiles (PAL)	Fiat Uno 1000 cc ($10,000)
Ford Motor Company	Mahindra & Mahindra	Ford Escort, Festiva ($12K)
General Motors Corp. (GM)	Hindustan Motors (HM)	Opel Astra ($22K average)
Honda	Shriram Industries	Civic ($18K)
Hyundai (Korea)	Wholly-owned subsidiary	Accent
Mercedes-Benz	TELCO	Mercedes E220 ($70K)
Mitsubishi	Hindustan Motors (HM)	Lancer ($15K)
Peugeot	Premier Automobiles (PAL)	Peugeot 309 ($15K)
Volkswagen	Eicher Ltd.	Golf ($20K)

Source: Press Reports From India