

GERPISA

2008

**THE SUSTAINABILITY OF THE SMALL PASSENGER CAR PATH IN THE INDIAN
AUTOMOBILE INDUSTRY**

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1. INTRODUCTION

The term sustainability refers in its simplest meaning to a characteristic of a process or a state that can be maintained at a certain level indefinitely. Drawing on this rather broad concept of sustainability, we ask to what extent India's small car path is sustainable in the long run. While we recognize that the social and ecological sustainability is of paramount importance, we also ask to what extent the maintenance of the path is enabled and constrained by the interplay of a wider range of context conditions, including political, economic and infrastructural conditions.

The paper is structured as follows: In the second section we describe the emergence of the small car path in India and the conditions that have facilitated it. We will also discuss here different aspects of the path emergence in India. In the third section, we discuss the maturing and strengthening of the small car path and opportunities and threats for its sustainability. In the last section we wrap up the discussion and ask to what extent India's small car path is economically and ecologically a sustainable development.

2. THE EMERGENCE OF A SMALL CAR PATH

First thoughts: The idea to build small cars for the Indian market is almost as old as India's independence. Already in the late 1950s, the Indian Government established a commission with the task to look at costs and prices of motor vehicles produced in the country and invites proposals for the production of an 'economy car'. In response, different manufactures submit proposals. Tata, for example, submits a proposal for the license production of a DKW light car. In 1959, it is PAL that is allowed to enter into collaboration with the Fiat Motor Company for the production of the Fiat 500 which is later replaced by the Fiat 1100 (Mohanty et al. 1994).

While there are first efforts and ever new commissions looking into the question of mass-producing small cars there is no real effort to realize the endeavour before the 1980s. In fact, the production of passenger cars and MUVs rises from the 1960s to 1980s only slowly to around 40.000 vehicles annually (see Figure 1). Low production volumes and high prices put passenger car ownership out of reach for average middle class consumers. The stagnation is above all

related to India's post independence state-led investment regime that favours capital goods production (e.g. commercial vehicle production and busses), restricts market competition through a licensing system and shields of the national economy by a protectionist trade and FDI regime. Venkataramani (1990) also summarizes the situation as follows:

From time to time committees appointed by the Government purported to study the issue of initiating the manufacture of a small, economical, "people's car." But the persistence of the notion in high Government circles and in the Planning Commission that the passenger car was a luxury item that catered to the needs of a small section of the population inevitably promoted inaction. The Government kept talking periodically about a "small car," presumably to ensure that the existing manufacturers behaved acceptably and cooperatively. On occasion this tactic took the form of broad hints that the Government might seek collaboration of some foreign manufacturer to undertake the production of a "people's car." (Venkataramani, 1990: p. 12)

Thus, while the demand for passenger cars, which are considered luxury items, is restricted by stringent price controls and high taxes, the supply side is equally restricted by a licensing system and protectionism that curb production, domestic competition and locks out international players (Becker-Ritterspach & Becker-Ritterspach, 2008).

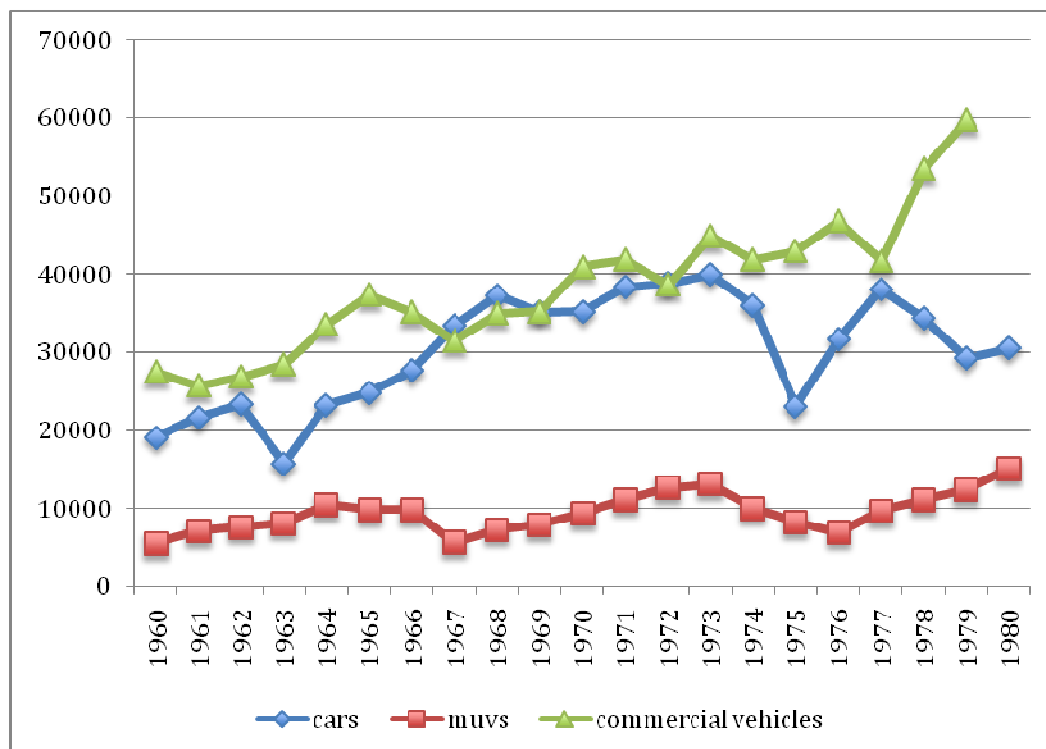


Figure 1: Production of Cars, Jeeps and Commercial Vehicles in India, 1960 to 1981 (compiled by SIAM 2006) (Production in Numbers)

The beginning: In the early 1970s the idea of mass producing a small car is taken up again. It is Sanjay Gandhi, Prime Minister Indira Gandhi's son, who revives the idea of producing a car for the people. On the 16th of November 1970, Sanjay Gandhi founds a private limited company named 'Maruti technical services private limited' (MTSPL). The stated mission of the enterprise is the development of a 'people's car' – an affordable, cost-effective, low maintenance and fuel efficient car – for India's middle class that is indigenously designed and produced. Following Sanjay Gandhi's initiative, Prime Minister Indira Gandhi's cabinet proposes the production of a 'people's car' and passes a unanimous resolution for its development and production. Although Sanjay Gandhi neither has any prior experience in automobile production nor a clear design proposal or tie-ups with another corporation, he is awarded the contract and the exclusive production license (Venkataramani, 1990). To produce the car a second company called 'Maruti limited' is incorporated in 1971 under the Indian Companies Act. Under patronage of Indira Gandhi's Government the company receives land, tax breaks and funds. 330 acres of land are provided by the Haryana government at Gurgaon near New Delhi and nationalized banks provide substantial amounts in loans for the new company (Shirali, 1984; Shenoy, 2003).

However, despite all government backing and support, Maruti – named after the Hindu God of the winds – doesn't take off. The young company proves incapable of producing a single marketable car. A part of the problem lies in the inexperience in automobile production of the Nehru-Gandhi family members who compose the company's top management. Maruti limited's problems culminate in the company's liquidation in 1977 (Becker-Ritterspach, 2007).

Trying to rehabilitate her family name, Indira Gandhi tackles the unresolved Maruti problem. Eventually the 'Maruti Scandal' comes to a close when in October 1980 the Government of India takes over Maruti limited and incorporates it in February 1981 by an Act of parliament (Maruti Limited Acquisition and Transfer of Undertaking Act) as a Public Limited Company. Rechristened Maruti Udyog Ltd., the company is incorporated under the provisions of the Indian Companies Act, 1956. Realizing that the company – as well as the industry as a whole – can only succeed with foreign cooperation, bids for foreign collaboration are invited. What is more, the Indian Government not only seeks to turn Maruti into a success story, but pursues a wider political agenda with the project that drives the search and selection for a foreign Joint Venture partner. According to Venkataramani, the "Project report for Manufacture of passenger cars and

light utility vehicles”, dated 27. May 1982 reveals that among the major goals associated with Maruti are:

1. Modernisation for the Indian automobile industry;
 2. Production of fuel efficient vehicles;
 3. A large output of motor vehicles;
 4. Import of foreign technology, and equity participation by the collaborator
 5. Production of a “peoples car” suited to Indian driving and climatic conditions
 6. Creating potential for earning foreign exchange by export of Maruti products; and
 7. Generating employment through establishment of ancillary industries
- (Venkataramani, 1990: p. 65)

Although there is an earlier intention to produce light commercial vehicles and medium sized-cars, the idea of producing a fuel efficient small car prevails. In 1981, Maruti’s board of directors decides that the vehicle to be manufactured will be a small car and that the engine size should be kept below one litre (Venkataramani, 1990). The decision is driven by the rationale that the Maruti project can only succeed if mass production is realized. This, in turn, is tightly linked to the car’s affordability and cost of operation. The decision is further supported by market research that finds at the time:

The survey of potential purchasers drawn from nine cities which then accounted for 60% -70% of the country's car owning population revealed that 90% of car use was within a city, the individual car owner travels 800 km a month on an average and that the average number of passengers in a car was four because cars were largely used for office-going purposes. Also, only 20%-30% of the respondents indicated a desire to purchase a car in the next two years at the then existing prices but for a new price range of between Rs.40.0(H) and Rs.55,000 the proportion of likely buyers went up to 43%-45%. Finally, the survey revealed that the two most important factors considered while purchasing a car are fuel efficiency and initial capital cost. Of the total sample, 37% preferred a small car and only 18% preferred a medium-sized car. "This strengthened our belief that the earlier decision to go in for a medium-sized family car was wrong. So we decided to manufacture a small car," says Bhargava. (Shirali, 1984: p.4)

In the light of these requirements, Japanese manufacturers turn out to be the more attractive partners:

Once the Japanese entered the race, the Europeans were almost automatically eliminated. The Peugeot and Volkswagen offers were reportedly over 50% more expensive than the Japanese offers. Apart from the obvious Japanese superiority in small car technology, a related reason for the Maruti Udyog team concentrating on Japanese offers was that they had derivatives such as vans, a pick-up truck and a four-wheel drive jeep — all using the same engine and transmission as the car. This offered Maruti Udyog the prospect of catering to a larger market and made possible mass production and economies of scale since the cars and derivatives could be made with the same engine. But the factor which decisively swung the balance in favour of the Japanese was the promise that an Indo-Japanese collaboration offered of a chance to introduce the work culture and management practices — which had made this cluster of islands with few raw material resources, into the world's No. 1 industrial nation — into Indian industry. (Shirali, 1984: p.5)

Ultimately, the Indian Government selects Suzuki as a partner because the company convinces with its small car product portfolio (see Table 1), its pricing, and its flexible approach in the negotiations.

Maruti vital statistics			
	Passenger Car (Maruti 800)	Pick-up truck	Van
Seating capacity	4	2	5-8
Body size (length x width x height)	3.295 x 1.405 x 1.335	3.195 x 1,395 x 1.660	3.195 x 1.395 x 1.660
Maximum loading capacity	-	600 kg	550 kg with 2 persons
Kerb weight	630 kg	645 kg	705 kg
Engine type	4-stroke cycle, water cooled, 3 cylinder (OHC)	Same as for car	Same as for car
Displacement	796 cc	796 cc	796 cc
Maximum horsepower	29.42 KW (39.5 HP) at 5500 RPM	27.50 KW (37 HP) at 5500 RPM	27.50 KW (37 HP) at 5500 RPM
Compression ratio	8.7:1	8.7:1	8.7:1
Transmission	4-forward. All synchomesh, 1-reverse	Same as for car	Same as for car
Brake system	Front disc. Rear drum	All drum	All drum
Turning radius	4.4 metres	4.4 metres	4.4 metres
Ground clearance	17.75 cm (7.09 in)	17 cm (6.7 in)	17 cm (6.7 in)
Fuel consumption – Japanese test result under simulated city driving conditions	19.9 km per litre	16.8 km per litre	16.8 km per litre
Fuel	Petrol (regular)	Petrol (regular)	Petrol (regular)

Table 1: Maruti vital statistics (Shirali, 1984: p.2)

In addition, Suzuki also promises to provide the much sought after Japanese manufacturing practices and culture. More importantly, Suzuki's equity participation offer is higher than that of all the other contenders (Venkataramani, 1990).

Suzuki's 796cc, SS80F model (introduced in Japan at the end of 1980) was the cheapest car on offer and it offered the best terms. The other Japanese cars being in the 650-665cc range were not considered powerful enough for Indian road conditions. [...]. Justifying the choice of Suzuki as the collaborator company Krishnamurthy says that — even though somewhat low-profile — the Suzuki Motor Company is Japan's largest manufacturer and exporter of small cars — with a 40% share of the 550cc car market in Japan and a 52% share in the export of such cars from Japan. "And compared to the others, their manufacturing costs are the lowest. They offered the best commercial terms — readily agreeing to subscribe a part of the equity capital and they were also prepared to provide us with facilities for the training of the Indian managers, engineers and technicians in all aspects of automobile manufacture," he explains. (Shirali, 1984: p.2)

Thus, while the idea and the market demand for a small fuel efficient affordable car for India's emerging middle class is probably present since the early 1960s, it isn't until the 1980s, with the entry of Suzuki, that the Indian passenger car market sees the arrival and mass production of a small car, the Maruti 800.

The successful establishment of a small car path around this time is facilitated by a complex of social, economic and above all political factors.

The *first* and probably most vital condition for the emergence of the small car path lies in a growing demand scenario for a small and fuel efficient car. Specifically, there is an accumulated demand which is not only constituted by potential first time buyers at the entry level – e.g. scooter or motorbike owners who seek car ownership – but also by extant vehicle owners who have a huge replacement demand given an average vehicle life of 25 years at the time (Venkataramani, 1990). The passenger car demand is constituted by India's growing middle class. It is among other factors, the expanding public sector that contributes to the emergence of a sizable middle class that poses increasing consumer demands (D'Costa, 2005). At the same time, the economic policy, most notably the Five Year Plans, with their focus on heavy industries, capital goods and later agriculture, prove increasingly unable to satisfy this growing demand (D'Costa, 2005).

The *second* reason for the emergence of the small car path is rooted in the situation and beginning de-regulation of the Indian economy in the 1980s. By the late 70s the Indian state-led economy shows signs of exhaustion finding expression in repeated balance of payment difficulties and a slow-growing economy (D'Costa, 2005). In response to the economic difficulties Rajiv Gandhi's Congress-led government introduces in the 1980s a number of deregulation measures that stimulate both the demand side and supply side.

On the demand side, passenger car ownership is no longer perceived as luxury, expressing in a lowering of customs and excise duties for small cars in 1983. On the supply side, first modest economic reforms aim at carefully stimulating domestic competition and carefully opening up the economy to foreign investors (D'Costa, 2005). The measures include the 'delicensing', the 'broadbanding' and the lowering of import tariffs. The in 1983 broadbanding is introduced to the commercial vehicle sector and extended to passenger cars in 1985. While there are new possibilities for collaborations there is still no free access to the Indian market for international

automobile companies. For Maruti-Suzuki, this situation creates a particularly protective and conducive environment. On the one hand, the company can, with the help of international cooperation and its small car strategy, out-compete its domestic rivals. On the other hand, the company is shielded from international competition through the licensing system and protectionism that remain in place (Becker-Ritterspach, 2007).

Moreover, not only does the company benefit from the limited reforms, but it also profits from preferential treatment by the Indian Government who holds the majority in the company. A range of policy measures are specifically drafted to support the company. For example, in 1983 the Indian Government “issued a special notification extending substantial reduction in customs and excise duties to automobiles that had a capacity of no more than 1000cc” (Venkataramani, 1990: p. 62). While this notification strongly benefits Maruti-Suzuki, which is about to produce an 800cc vehicle, the other two main competitors are put at a disadvantage by this measure.

However, if Maruti is currently able to offer a car for Rs.47.5(H) rather than Rs.70,000, the decision of the Union government taken in early 1983 — in what has been widely interpreted as a blatantly partisan enactment — which stipulated that cars with a piston displacement of less than 1000cc and fuel efficient engines would be subjected to a concessional rate of customs duty on imported components of only 40%, compared to rates of 140%-160% for cars with engines of over 1000cc certainly helped. Similarly, Central excise on cars with less than 1000cc engine displacement i.e. on the Maruti, was lowered to 15% compared to 25% payable by the other manufacturers. This meant that while the retail price of the Maruti plunged-HM and PAL which were going in for fuel efficient engines of a higher capacity, were penalised. (Shirali, 1984: p.7)

Maruti Udyog executives say that Krishnamurthy made out such a convincing case for excise and import duty reductions that the government could not refuse. Secretary (heavy industry) Kapur counters with the reply that "in Japan 547cc cars are subjected to much lower taxes so every automobile manufacturer makes suo-550cc cars." "So why talk of discrimination in favour of Maruti? And if, during the indigenization programme the initially imported components of a new efficient car are subjected to 160% duty, then what is the point of going in for foreign collaboration?" (Shirali, 1984: p.7)

While the deregulation of the Indian economy marks the beginning of a different policy vis-à-vis passenger car production and foreign involvement, certain themes remain unchanged and benefit the emergence of a small car path. One important aspect is the constant balance of payment problems of the Indian economy. As the Indian economy is fully dependent on oil imports the fuel efficiency of cars directly impacts India’s balance of payments. It is, therefore, a continued national policy goal to keep fuel consumption to a minimum.

The *third* factor explaining the successful establishment of the small car path is probably related to the political will to render the Maruti project a success. Maruti-Suzuki becomes a

'national champion' whose development Indira Gandhi vows in 1983 at the factory inauguration would be her personal interest. For Indira Gandhi Maruti's success becomes a personal goal. Not only is the company's success linked to the realization of her son's dream to produce a small car for India, but it also provides the opportunity to rehabilitate her family name, which becomes associated with the 'Maruti Scandal'. It is probably precisely the "politicised origin" that also allows Maruti-Suzuki to develop without too much direct political interference in its operations. Although Maruti-Suzuki benefits from economic reforms and preferential treatment as a public sector company, its relation to the government diverges from earlier modes of Government-Public Sector Undertaking nexus in that the government largely abstains from influencing operative decisions in the company to render the project a success (cf. Shiraly, 1984; D'Costa, 2005).

Thus, it is essentially this interplay of an emerging market demand for small, fuel efficient cars, economic deregulation and political support that shape the emergence of India's small car path. Its emergence is inextricably linked with the company Maruti Udyog and Suzuki. Soon after Suzuki's involvement the other players Hindustan Motors (HM) and Premier Automotive Limited (PAL) lose their market share and are outperformed by Maruti. From the 1980s onward, Indian passenger car sales are dominated by Maruti cars in the lower segments. At the time, the Maruti 800 not only offers superior product technology, but also sells at a substantially lower price than the cars of the main competitors HM and PAL. Until the market liberalization in the 1990s the small car path is dominated by Maruti that absorbs in the early 1990s about 62 % of the market share (see Figure 4).

While the 1980s see the emergence of India's small car path in sales and production terms and for the first time higher production of passenger cars compared to commercial vehicles (see Figure 2), research and development (R&D) for small cars plays a marginal role. Basically all product and production competence lies in the hands of the foreign partner Suzuki. First efforts to set up R&D in Maruti, mainly aims at minor product adaptation to local road and climate conditions (Mohanty et al., 1994). By the same token, production is firmly focused on domestic demand. As the figure below shows overall exports remain negligible until the 2000s (see Figure 3).

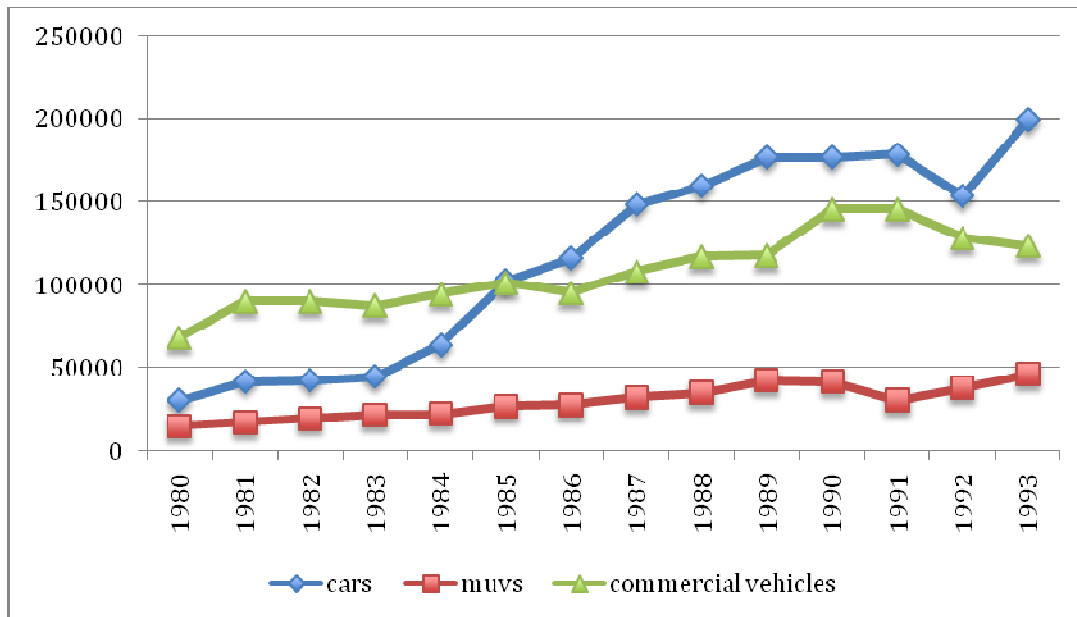


Figure 2: Production of Cars, Jeeps and Commercial Vehicles in India, 1980 to 1993 (compiled by SIAM 2006) (Production in Numbers)

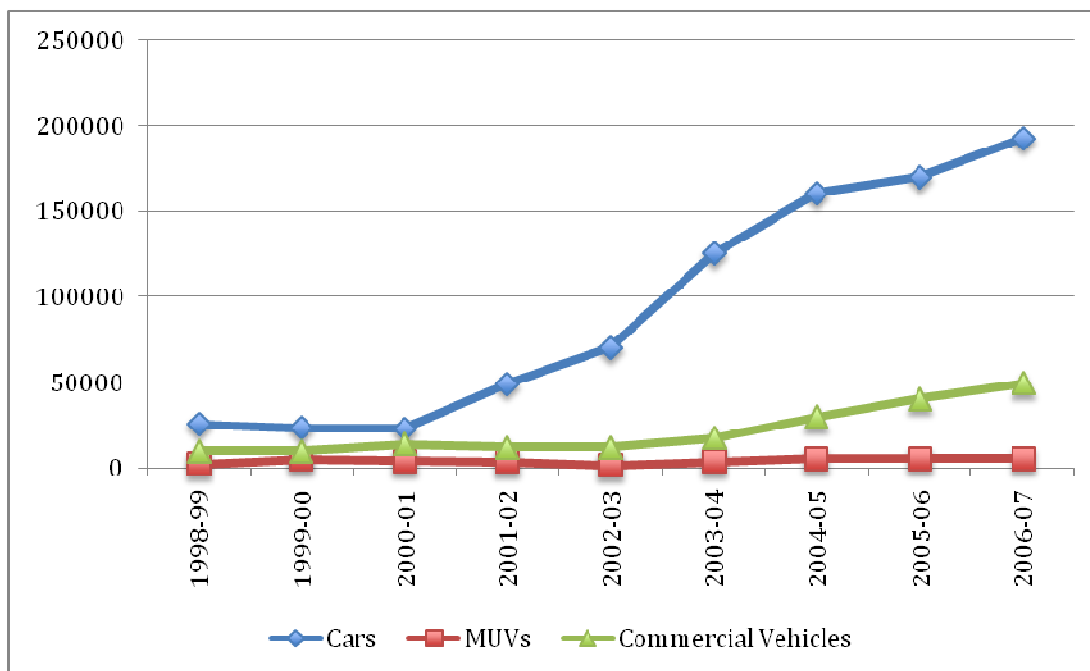


Figure 3: Export Trend of Cars, MUVs and CVs, 1998-99 to 2006-07(compiled by SIAM 2006:12) (Production in Numbers)

2. CHANGE AND CONTINUITY OF INDIA'S SMALL CAR PATH FROM THE 1990S ONWARD

In the 1990s and especially in the 2000s, India's small car path continues to develop and grows stronger. While it is still the lower market segment demand that sustains the small car path in sales and production terms, the emergence of small car export and R&D additionally strengthen the path. As the small car path develops further, there are changes in the path qualitative and quantitative terms. These changes are largely rooted in India's economic reforms that start in the 1990s and receive a new boost in the 2000s.

A new industrial policy in the 1990s: Following the balance of payment crisis in the early 1990s, the Indian Government launches stabilizing measures and embarks on a New Industrial Policy in 1991. First stabilizing measures include the reduction of the fiscal deficit and the devaluation of the Indian rupee. While the stabilization measures aim at short term alleviation of the economic crisis, the reform program addresses structural problems in the Indian economy with a more long term approach. Internally, the reforms focus on shifting the economy from a state-led coordination and state-led investment growth regime to a more market-led coordination and market-led investment growth regime. This implies the massive de-regulation of private sector controls and a step-wise privatization of public sectors and their enterprises. Externally, the reforms aim at liberalizing the trade regime summarized by Krueger and Chinoy (2002) as follows:

In the first two years of the reforms, measures liberalizing the trade regime included: (a) the removal of import licensing requirements for most imports (although prohibitions on the import of consumer goods remained); (b) the beginning of a program of tariff reductions; (c) restrictions on inflows of foreign direct and portfolio investments were significantly eased; (d) a number of export restrictions were removed or relaxed (although some remained). (Krueger and Chinoy, 2002: p.23)

For Indian companies, the liberalization implies the emergence of international competition in what used to be an entirely protected market. Yet, the liberalization pace is incremental with periods of slow down. For example, import tariffs remain high and indigenization requirements for FDI stay largely in place throughout the 1990s. In the mid 1990s, the reform-speed even loses momentum (Becker-Ritterspach, F., 2008).

Economic reform and new players in the small car segments: On the supply side the economic liberalization shows its first effects in 1993 with the abolishment of production licenses. Like in other sectors, import tariffs are reduced and the ‘Phased Manufacturing Program’ is reformulated. Moreover, the pre-entry security for investment decisions (such as expansion, diversification, merger and acquisition) for big companies – such as companies falling under the Monopolies and Restrictive Trade Practices Act (MRTP, implemented in 1969) – becomes obsolete (Mohnot, 2001). While a number of strict FDI controls stay in place through the 1990s, the 2000s see a further liberalization of the FDI regime (lower import tariffs, abolishment of local content requirements, 100% foreign ownership, dropping mandatory minimum levels for investment etc) (Becker-Ritterspach, J., 2008).

For the development of the small car strategy the de-licensing and opening up of the economy basically implies that new players, domestic and international, are allowed entering the market for passenger car production. For Maruti-Suzuki, which dominates the small path, this implies an increasing number of competitors, who also try to cater to small car or lower market segments¹. This is particularly the case with regard to Hyundai and Tata but also Ford, GM and Fiat (see Figure 5 and Figure 6). Yet, despite inroads by competitors, Maruti-Suzuki (MS) can defend its market share in the lowest market segment, the Mini (A1) segment. On the one hand, this has to do with the condition that no other manufacturer offers a competing product (the absence of a competing product) in the Mini (A1) segment (see Figure 7). On the other hand Maruti-Suzuki is able to defend its market share in the Compact (A2) and Mid-Size (A3) segment due to its products offensives and with its country wide service and sales network, owing to a first-mover advantage (see Figure 8 and Figure 9).

¹ Based on vehicle length and price, India’s automobile market is commonly segmented as follows: A1/A mini segment (up to 3400 mm; < 5000€), A2/B compact segment (3401-4000mm; 5000-8000€), A3/C mid-size segment (4001-4500mm; 8000-13000 €), A4/D executive segment(4501-4700mm; 13,000-22,000 €), A5/E premium segment (4701-5000mm; 22,000 € +), and A6/E+ luxury segment(more than 5000mm) (ACMA, 2006)

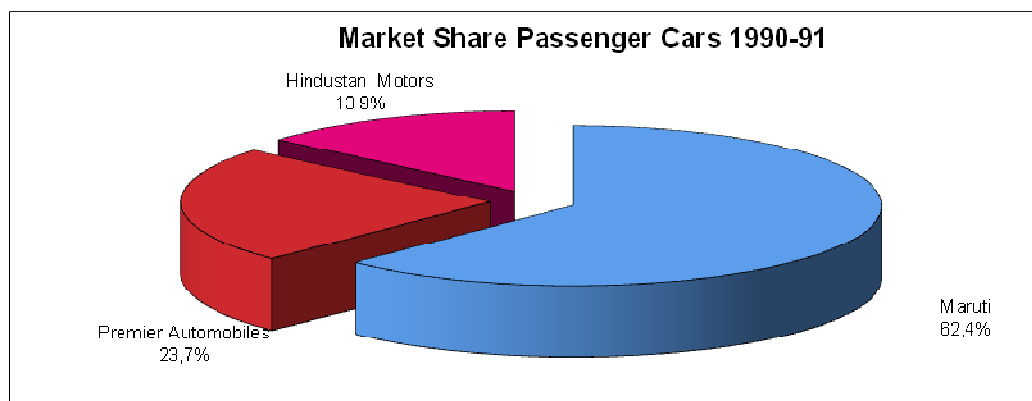


Figure 4: Market Share of the Indian Passenger Car Market 1990-91 (Mohnot 2001:61)

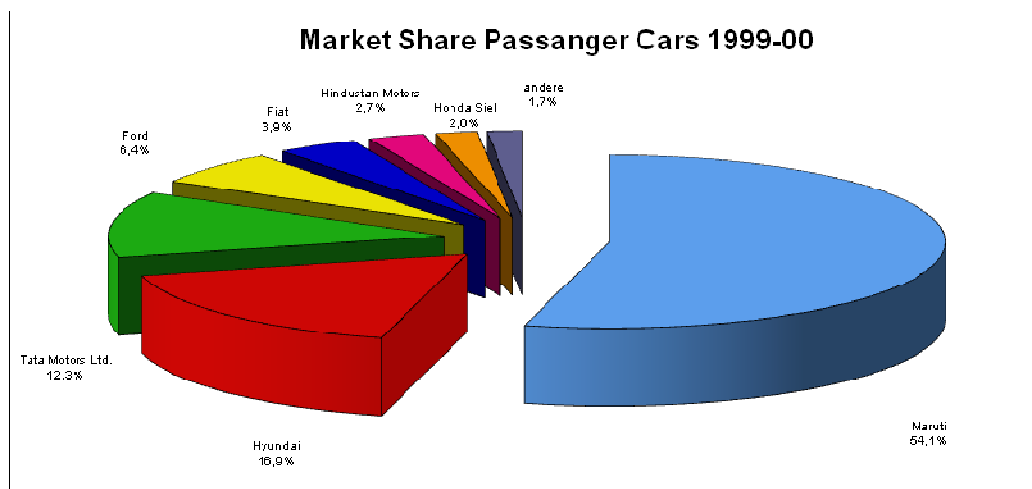


Figure 5: Market Share of the Indian Passenger Car Market 1999-00 (compiled by Centre for Industrial & Economic Research 2002:9)

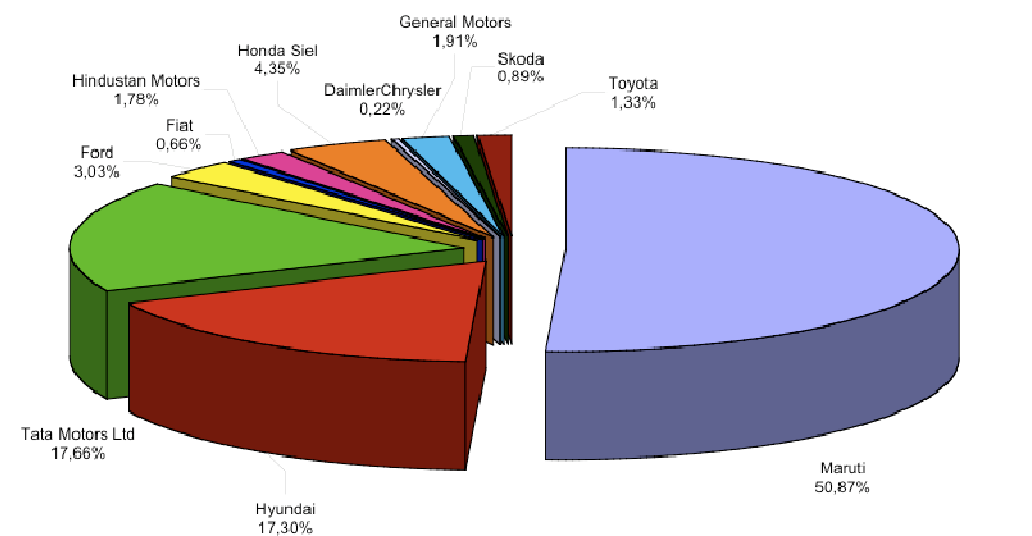


Figure 6: Market Share of the Indian Passenger Car Market 2004-05 (SIAM 2006:107)

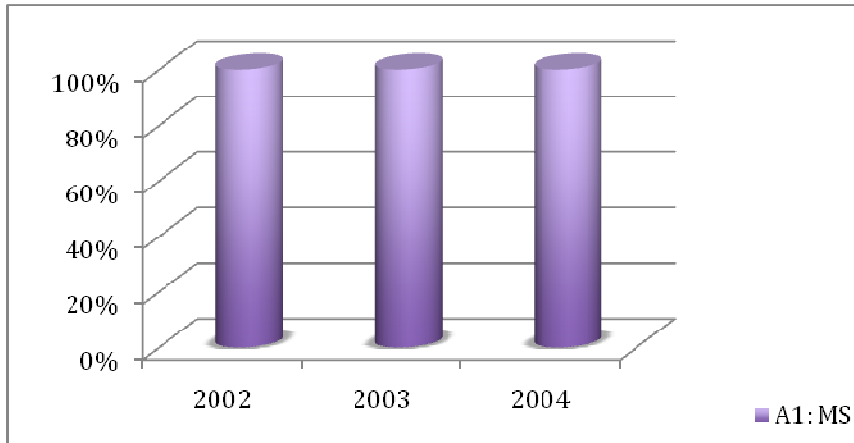


Figure 7: Development of the Passenger Car Mini (A1) Segment, 2002-2004 (SIAM 2006:100)

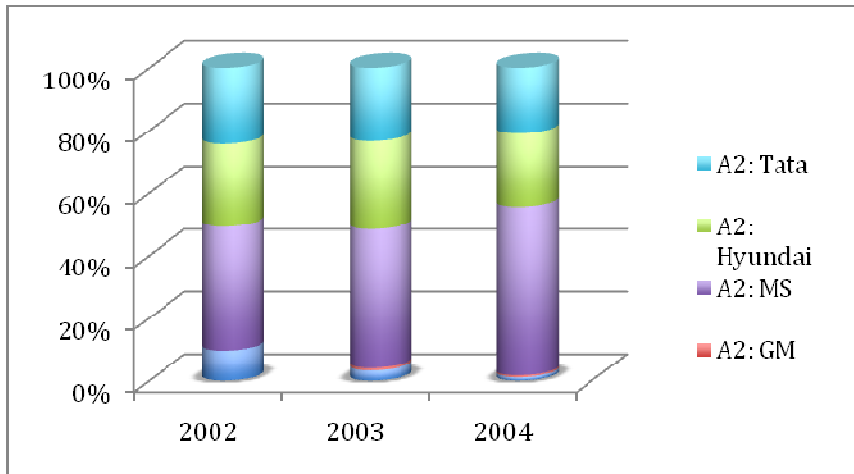


Figure 8: Development of the Passenger Car Compact (A2) Segment, 2002-2004 (SIAM 2006:100)

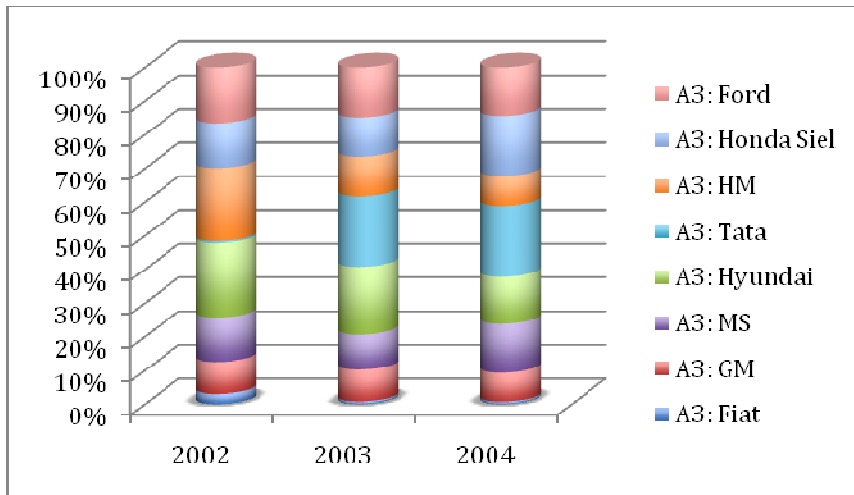


Figure 9: Development of the Passenger Car Mid Size (A3) Segment, 2002-2004 (SIAM 2006:100)

Economic reform and small car demand: The liberalization and India's new industrial policy has not only a strong impact on the supply side for the production of small cars. Equally important is the impact the liberalization has on the demand side for small cars in India.

In 2004/2005 the sales of passenger cars and multi-utility vehicles cross for the first time the 1 million mark (Maruti Annual Report, 2004/2005). In 2004, India is "the fastest-growing large market for passenger cars in the world" (The Economist Intelligence Unit, 2006: p.40). Yet, it remains to be a small car market. The Economist Intelligence Unit states in this context.

India's car market is, however, strikingly one-dimensional: the mini- and compact car segments combined accounted for 74.5% of new-car sales in April-December 2004, the first nine months of the fiscal year. One car in particular, Maruti's ubiquitous 800 model, with an engine size of less than 1000cc, remains the biggest seller, although its market share plummeted to 15% in 2004 from around 25% in previous years. Sales in the luxury-car segment – vehicles priced at US\$20,000 and above – doubled between 2002 and 2004, although they make up only 4.6% of the market. Few inexpensive cars are imported because of high duties, although import tariffs are coming down. (The Economist Intelligence Unit, 2006: p. 41)

It is the highly price sensitive, lower market segments (especially the Mini (A1) and Compact (A2) Segment (see Figure 10 and Figure 11)) that benefit strongly from the reform-driven economic growth and particularly fiscal and monetary reforms. Also, the reform of the banking system, low interest rates and the continued reduction of excise duty render vehicle financing easier and stimulate entry level demand (ACMA, 2006; Nair, 2006). Lastly, the automobile industry benefits as a whole from infrastructure projects, government efforts to reduce poverty and rural development. The Economist Intelligence Unit (2006) notes that investments in agricultural efficiency already contribute to a demand increase in rural areas.

India remains an overwhelmingly agrarian society, so that any initiative to raise farm incomes should translate into rising car sales. Car producers are already opening more dealerships in semi-urban and rural regions to tap rising incomes and demand, and these areas now account for a growing share of overall sales. (The Economist Intelligence Unit, 2006: p. 39)

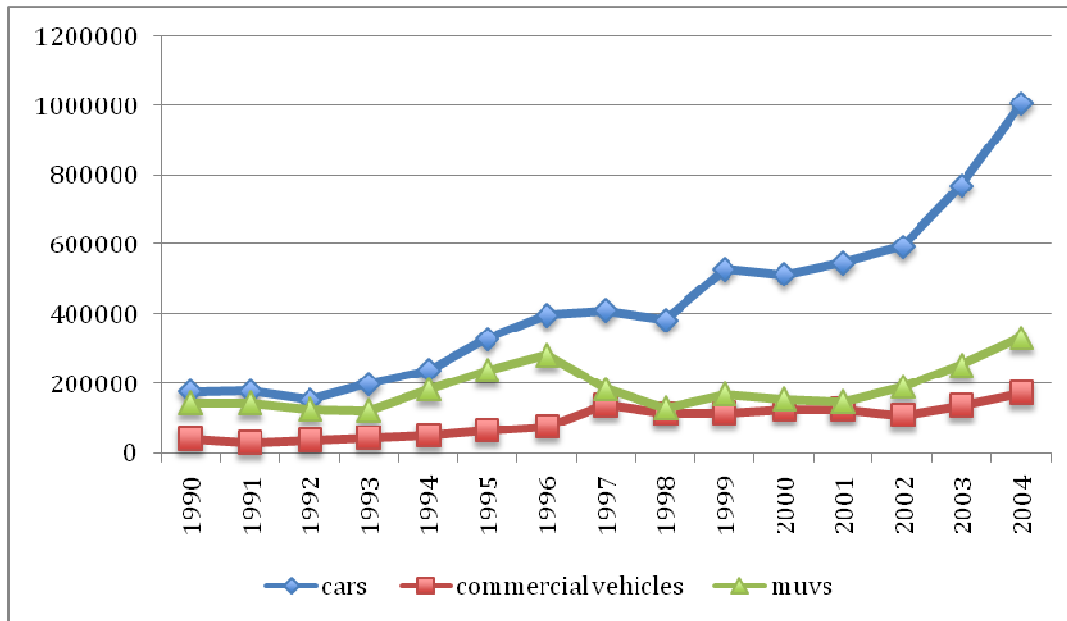


Figure 10: Production of Cars, MUVs and Commercial Vehicles in India, 1990 to 2004 (compiled by SIAM 2006) (Production in Numbers)

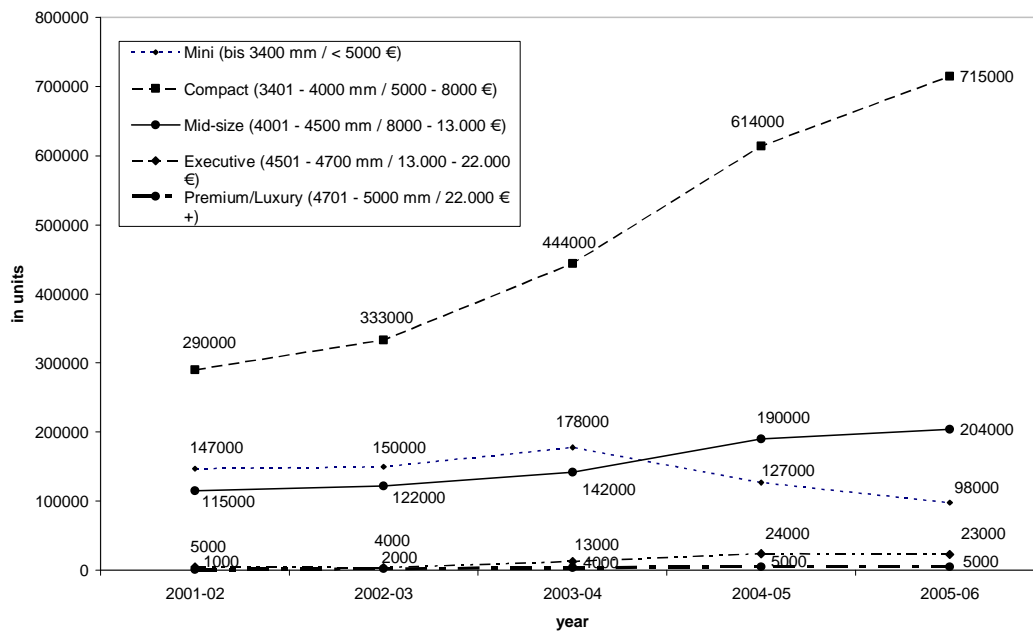


Figure 11: Development of the Passenger Car Market by Segment in India, 2001-02 to 2005-06 (compiled by ACMA 2006)

While the liberalization leads to an overall opening up and segmentation of automobile demand in India, it is the lower segments that remain the strongest and benefit immensely from the reforms and economic growth. Despite a strong growth of the luxury segments (starting from a very low level, however), India's social structure and disposable incomes suggest that the market remains to be dominated by lower and small car segments in the foreseeable future (e.g. D'Costa 2005). This outlook is also shared by the Economist Intelligence Unit that reflects the Indian automobile demand scenario as follows:

According to India's National Council of Applied Economic Research, in 2002 only 6.1m households out of a total of 176m were classified as 'affluent or very rich', and therefore able to afford a personal car. However, another 56.8m households were considered to be 'well off' able to afford motorcycles and scooters, but not cars. Some of those aspiring consumer households will have already moved into the 'affluent' group during the current economic boom. If only 10% of these 'well-off' households can move to the next level in the next five years, the number of car-owning households could rise by nearly 6m, nearly doubling current levels. Although this structural shift seems eminently achievable, economic shocks – such as a drought or a fiscal crisis that leads to much higher interest rates – could stem demand for a period of time. (The Economist Intelligence Unit Limited, 2006: p. 38)

The economic sustainability of the small car path rests above all on the nature of domestic demand scenario in the years to come. This demand scenario is constituted by India's market reform and economic growth, the political will to further develop the small car path and above all the social structure and income situation that create demands at the lower end. It is also this basic condition that entices new players to introduce small or and lately mini car into the Indian market. Cases in point are the Tata Nano (see Table 2) and yet another mini car, Renault and Bajaj are plan to introduce in cooperation by 2011 (e.g. Lamparter, 2008). Especially the mini-car projects are likely to have a substantial impact on the Indian automobilisation, as Baig states:

Impact on the auto market: Priced at nearly half the price of the cheapest Indian car but three times the price of an average motorcycle, the Tata Nano will create a new market niche. It may just end up attracting some 5% of the 7 million annual buyers of two-wheelers and define a new entry level for cars. Indians bought 1.2 million cars last year and the Tata Nano will probably add some 3 - 400, 000 new buyers to this. Bigger cars however are likely to remain unaffected and motorcycles and scooters will continue to sell. (Baig 2008: p. 2)

Vital statistics: Maruti 800 and Tata Nano compared		
	Maruti 800 (Passenger Car)	Tata Nano (Passenger Car)
Seating capacity	4	4-5
Body size (length x width x height)	3.335 m x 1.440 m x 1.405 m	3.1 m x 1,5 m x 1.6 m
Kerb weight	665 kg	
Engine type	4-stroke cycle, 3 cylinder	multi-point fuel injection petrol engine, 2 cylinder
Displacement	796 cc	623 cc
Maximum horsepower	39 HP	(33 HP)
Fuel consumption	18,3 km per litre	20 km per litre (estimation)
Fuel	Petrol	Petrol
Price in Rs.	190 000 – 230 000 (plus taxes)	100 000 (plus taxes)

Table 2: Maruti 800 and Tata Nano compared (Rediff News 2008, AutoCar India 2008, TopGear 2008 Baig 2008)

A new government focus on the development and export of the small cars in the 2000s: Apart from the changing FDI regime that potentially invites new players to compete in the small car segment, the 2000s sees another important shift. As part of its privatization policy, the Indian Government pulls out of Maruti-Suzuki. With this shift, there is also a shift in the Indian government's small car policy. Until the end of the 1990s the promotion of the small car strategy is intimately connected with the Indian government's stake in Maruti. This promotion gradually shifts in the 2000s, by creating economic incentives for all manufacturers catering to the development, production and export of small cars. Thus, while the political will and agenda to see the small car sector thrive remains an important ingredient in the economic sustainability of the small path, there is a change with regard to the level of influence. This level moves from the company to the sector level.

But let us take a closer look at continuity and change in the auto policy. Promoting sector conditions that facilitate small car R&D, production and export become important building blocks in the new auto policy in the 2000s. The Indian government's Auto Policy of 2002 and the Automotive Mission Plan (AMP) 2006-2016 (see also Table 3 and Table 4) state respectively that:

Domestic demand mainly devolves around small cars not exceeding 3.80 meters in length. Small cars occupy less of road space and save on fuel. These capture more than 85% of the market. India can build export capability and become an Asian hub for export of small cars. The growth of this segment needs to be spurred. (Ministry of Heavy Industries & Public Enterprises, 2002)

In order to raise the contribution of automotive industry to GDP from 5.2% to 10%, there has to be a focus on both the domestic market as well as exports. Domestically the focus should be on developing and selling appropriate products for the large population of the country. These products could include cost effective small carriers, strong, rugged, low cost vehicles for the rural market, USD 300-350 motorbikes and small, safe four wheelers for family transport. (Ministry of Heavy Industries & Public Enterprises, 2006: p. 13)

This policy aims to promote integrated, phased, enduring and self-sustained growth of the Indian automotive industry. The objectives are to:

- (i) Exalt the sector as a lever of industrial growth and employment and to achieve a high degree of value addition in the country;
- (ii) Promote a globally competitive automotive industry and emerge as a global source for auto components;
- (iii) *Establish an international hub for manufacturing small, affordable passenger cars and a key center for manufacturing Tractors and Two-wheelers in the world;*
- (iv) Ensure a balanced transition to open trade at a minimal risk to the Indian economy and local industry;
- (v) *Conduce incessant modernization of the industry and facilitate indigenous design, research and development;*
- (vi) Steer India's software industry into automotive technology;
- (vii) Assist development of vehicles propelled by alternate energy sources;
- (viii) Development of domestic safety and environmental standards at par with international standards.

Table 3: Objectives of the 2002 Auto Policy (Source: Ministry of Heavy Industries & Public Enterprises, 2002)

A core rationale of the new auto policy is that the development of the Indian automobile industry (in production and R&D terms) crucially depends on volumes. Volumes, in turn, can only be realized in India if the vehicles produced and developed are affordable for Indian consumers.

Volume is important for any manufacturing enterprise. However, it is more important for the automobile sector, both for the manufacture of vehicles as well as auto components. Lack of volume will not only inhibit efficient manufacture but also R&D and introduction of new models. The investment and fiscal policies should create an environment for volume production and indigenous capability for innovation for small cars and auto components. (Ministry of Heavy Industries & Public Enterprises, 2002)

Specific measures to develop the small car path include fiscal policies such as lower excise duties for small cars. In the 2000s, the Indian Government reduces excise duty for small cars to 8%, contrasting with the 16% for other passenger cars.

1. Manufacture and export of small cars, MUVs, two & three wheelers, tractors, components to be promoted
2. Negative list of items and rules of origin for FTAs/ RTAs to be followed
3. Appropriate Tariff Policy will be followed to attract investment
4. Specific measures will be taken for expansion of domestic market
5. Incremental Investment of US\$ 35-40 Billion in the Automotive Industry during the next ten years to be encouraged Exports to be encouraged
6. Exports to be encouraged
7. Policy initiatives for competitiveness and development of technology would be taken
8. National Road Safety Board to act as the coordinating body for promoting safety
9. Inspection and Certification system to be strengthened by encouraging public-private partnership
10. Fleet Modernisation to be encouraged
11. Implementation of GST should be time bound
12. National level Automotive Institute for training on automobiles at ITIs and ATIs to be set up
13. Centers for automotive manufacturing excellence to be created
14. Adoption of ITIs and ATIs by OEMs, Tier I component manufacturers to be encouraged
15. An Auto Design Centre to be established at NID, Ahmedabad
16. NATRIP to act as Centre of Excellence for Technical Design Data
17. Integration of IT in manufacturing and in Automotive infotonics to be promoted
18. Infrastructure development around identified automotive clusters to be undertaken
19. Closer partnership between Industry, research institution and academia for innovation and IPR to be encouraged
20. R & D for product, processes and technology to be incentivised
21. Continuous investment in road, port, railways and power to be encouraged
22. Strive for Labour reforms
23. Road Map for Auto Fuel Policy beyond 2010 would be drawn
24. Rationalisation of motor vehicle regulations to be undertaken
25. Setting up of virtual SEZ and Auto Parks for auto component industry would be considered

Table 4: Summary of Recommendations of the Automotive Mission Plan 2006-2016 (Source: Ministry of Heavy Industries & Public Enterprises, 2006, p. 47)

Despite new emphases in India's automobile policy, we see above all continuity in the goal and motivation for fostering a small car path. An old issue is that small cars are seen as a *sine qua non* to realize mass production in India. Mass-production, in turn, is seen as a prerequisite for the growth of the Indian automobile industry and its contribution to the Indian economy. The emphasis on fuel efficient cars and export capability are also old policy issues and reflect India's continuing balance of payments challenge. At the same time, the concern for safety, environmental pollution and infrastructure bottlenecks are new policy issues that additionally drive the small car path (Ministry of Heavy Industries & Public Enterprises, 2002 and 2006).

The emergence of India as a worldwide research and production hub for small cars: Economically, the small car path in India has reached a sustainable level. In the past this sustainability has largely been driven by the nature of domestic demand. However, the Indian government envisions this path grow even stronger by turning India into a worldwide R&D and production hub. The Automobile Mission Plan states in this context, for example:

Export opportunities for four wheelers would lie primarily in the small car segment as Indian companies have gained expertise in manufacturing vehicles in this segment and enjoy an advantage over other low cost countries. India should capitalize on this expertise and target becoming a manufacturing hub for A/B class vehicles. This is already being leveraged by OEMs like Hyundai with Santro, Suzuki with Maruti 800/Alto and TATA Motors with Indica. (Ministry of Heavy Industries & Public Enterprises, 2006: p. 13-14)

Concrete measures recommended or in the process of being implemented include (Ministry of Heavy Industries & Public Enterprises, 2006):

- investment support (deduction on R&D expenditure,
- excise duty concessions, tax/levy exemption, research grants)
- introduction of stiffer emission standards; infrastructure investment (ports, roads, rail, energy/power)
- set up of testing-, certification and –homologation facilities
- development of centres of excellence in the area of: noise (at Mansear), vibration & harshness, auto components (at Mansear); engine and material testing (at Pune); automotive infotronics and crash testing (at Chennai); testing track and vehicle dynamics (at Indore)development of focused lab facilities at the Indian Institutes of Technology and Management

While the National Automotive Testing and R&D Implementation Project (NATRIP) is envisioned to play a coordinating role, different states have also taken individual initiatives with regard to providing R&D facilities. The government of Maharashtra, for example, has set up an auto cluster providing testing facilities for OEM and their suppliers. While the political initiative is there, the question is to what extent the Indian automobile industry actually moves beyond being a mere technology adopter and producer for the domestic markets?

In terms of *exports*, the 2000s show a new trend pointing towards rising exports in the passenger car sector. What is more, most of the vehicle exports do focus on the lower market segments with Hyundai being the dominant exporter (see Figure 12 and Figure 13).

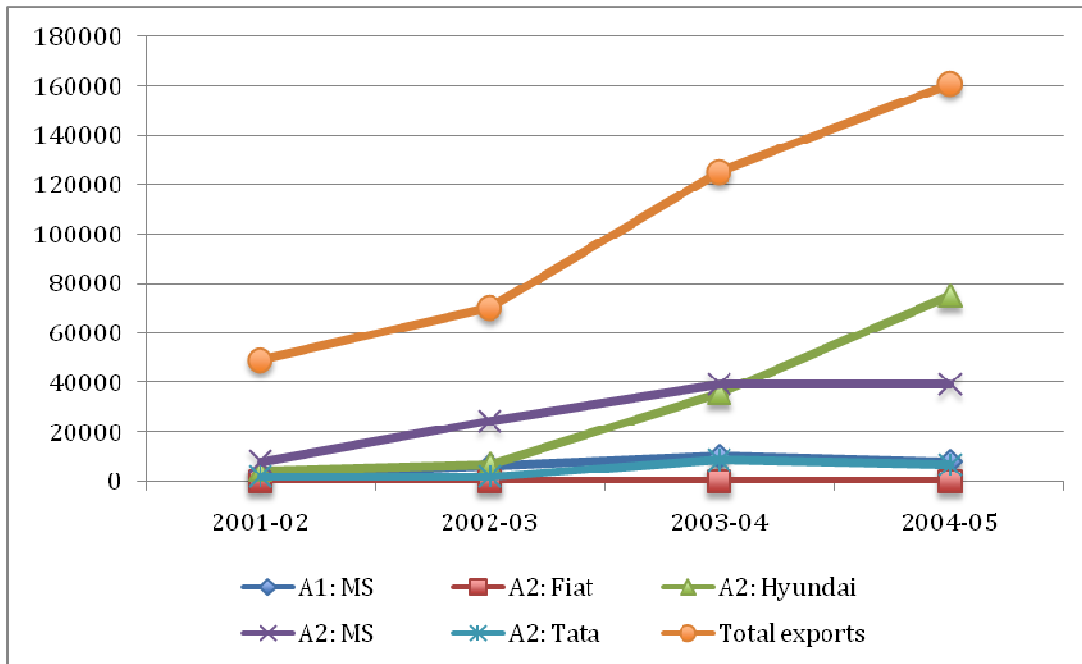


Figure 12: Export Trends of the A1 (Upto 3400 mm) and A2 (2401 - 4000 mm) Segment compared to the Total Export (A1 to A6 (5001mm & above)) (compiled by SIAM 2006:61) (Production in Numbers)

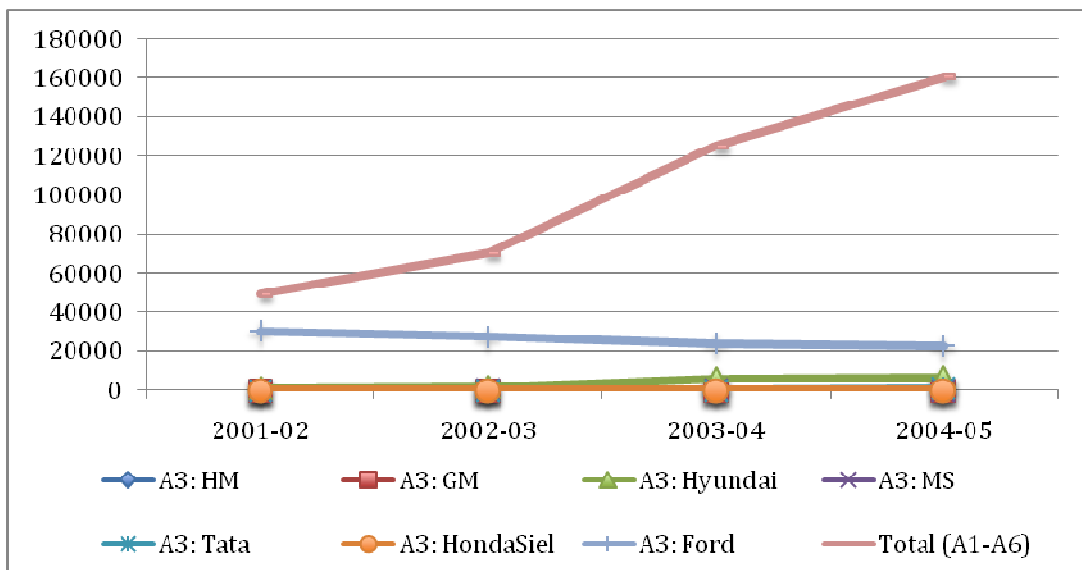


Figure 13: Export Trends of the A3 (4001 –4500 mm) Segment compared to the Total Export (A1 to A6 (5001mm & above)) (compiled by SIAM 2006:61) (Production in Numbers)

With regard to R&D we also see an emerging trend of using and developing local capability. On the one hand there is a general development of increasing R&D expenditure in the Indian

automobile industry (see Table 5), which has been stimulated recently by more stringent emission regulations (Shastry, 2004).

Company	Total Gross Turnover Rs. In Million	Gross Profit Rs. In Million	R&D Expenditure Rs. In Million	R&D Expenditure % of Turnover
Ashok Leyland	83,047.17	6,045.06	1,564.02	1.88
Mahindra&Mahindra	144,395.19	15,435.43	1,493.00	1.03
GM India	22,815.40	-	840.00	3.68
Tata Motors	321,298.80	25,731.80	796.86	0.25
Maruti Suzuki (MS)	151,823.00	17,500.00	639.00	0.42
Force Motors	12,313.00	31.00	401.00	3.26
Eicher Motors	18,844.40	988.60	363.30	1.93
Ford India	27,223.00	-	148.00	0.54
Premier	891.66	550.67	90.00	10.09
Swaraj Mazda	6,902.00	354.00	53.00	0.77
Hyundai Motor	99,159.00	-	47.00	0.05
Hindustan Motors (HM)	8,064.00	128.00	20.00	0.25
Fiat India	5,200.00	-	17.10	0.32
International Cars &Motors	219.68	-101.86	16.83	7.66
Toyota Kirloskar	45,540.91	-	7.05	0.02

Table 5: 15 Four Wheelers ranked in terms R&D Expenditure 2006-07

On the other hand, there is indeed an increasing small car R&D focus among some manufacturers, who seek to develop India into their corporate hub for car research and development. A case in point is Maruti-Suzuki that is in the process of developing the Indian operation into a R&D hub for small cars. Similarly, Tata has invested substantially in small car R&D in recent years (Venugopal, 2005) and Hyundai and Fiat have also established regional R&D centres in India (The Economist Intelligence Unit Limited, 2006). The Tata Nano is probably the most prominent example of India's rising local R&D capability in the small car segment. While Tata strongly relies on local partners/suppliers (most of which international involvement like Bosch, Freudenberg, Conti (Lamparter, 2008)) to develop the Nano and its

components, it is to a large degree Indian engineers who do the actual development. Interviews held in May 2008 underline that it is not only the low cost of engineers that make India a highly attractive location for small car development. More important than this is the Indian engineers' intimate understanding as to what is essential and what is not with regard to building a vehicle that has to satisfy developing country requirements and conditions.

3. CHALLENGES TO THE SUSTAINABILITY OF THE SMALL CAR PATH IN FUTURE

Looking at a host of factors including India's demographic development (a young and fast growing population), upwards social mobility (rising per capita income from a low level), low vehicle density (8 per 1000 in 2004 (Statistisches Bundesamt, 2006)), rising oil prices, infrastructure bottlenecks and pollution problems, a small car path seems to be not only economically a sustainable path for India's future auto-mobilization. At least, it appears to be the most sustainable path within the traditional ambit of mass-motorization.

Yet, the same conditions that suggest a small car path also pose limitations. For example, rising oil prices and India's dependence on oil pose a threat, as small car demand may be more vulnerable than other segments. And this situation may not only apply to domestic demand but also to exports. Another threat to the socio-economic sustainability of the small car path is the poor road infrastructure in India. Clearly, small cars need less road space than large cars. However, as an interviewee pointed out, if two wheeler owners migrate at a sudden and substantial rate to small car segments, traffic will come to a virtual standstill given an infrastructure development that is already now unable to keep pace with vehicle growth on India's roads (see also Figure 14 to Figure 16). This is also why the new mini car producers (e.g. Tata Nano target markets) strongly eye rural areas, where road traffic is still moderate.

While rising oil prices and infrastructural problems pose a threat to India's small car path in socio-economic terms, there are other problems of sustainability. The high pollution in Indian cities poses already now a serious threat to air quality and human health. An extensive growth of small car demand (replacing two wheelers) is, therefore, in environmental terms not sustainable. It is the dependence on oil and the recognition of environmental problems that has also pushed the Indian government towards creating incentives for alternative fuels and engine technology (Ministry of Heavy Industries & Public Enterprises, 2002 and 2006).

There is finally the question whether India can develop its automobile industry into a small car production and research hub for the world. There are certainly some indications that India may have a competitive edge in this segment, owing to its own national demand scenario, its past experience and policy measures supporting such an end. At the same time, there are factors that work against the economic sustainability of such a path. Small car production relies above all on low cost. India, however, has seen sharp rises in labour cost in the automobile industry and suffered from low productivity, rigid labour laws and high infrastructure cost, despite some improvements in this regard (Belzowski et al., 2007). A cost comparison study comparing the Indian and Chinese industry found, for example, “the cost of manufacture of passenger vehicle in China is 23% lower than in India with the principle difference owing to higher taxes and the cascading impact in India” (Ministry of Heavy Industries & Public Enterprises, 2006: p. 12). Clearly, China has also seen increases in labour cost in recent years. However, there may be other emerging economies that are more competitive than India and China in this regard. With regard to R&D the situation may be slightly different. After all, India offers one of the largest pools of well trained engineers in the world and the national and state governments are investing in R&D facilities as well as human resource development that is specifically geared towards automobile industry (Ministry of Heavy Industries & Public Enterprises, 2006). Here, it remains to be seen if the Tata Nano is more than one off in setting the pace for global automobile development.

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APPENDIX

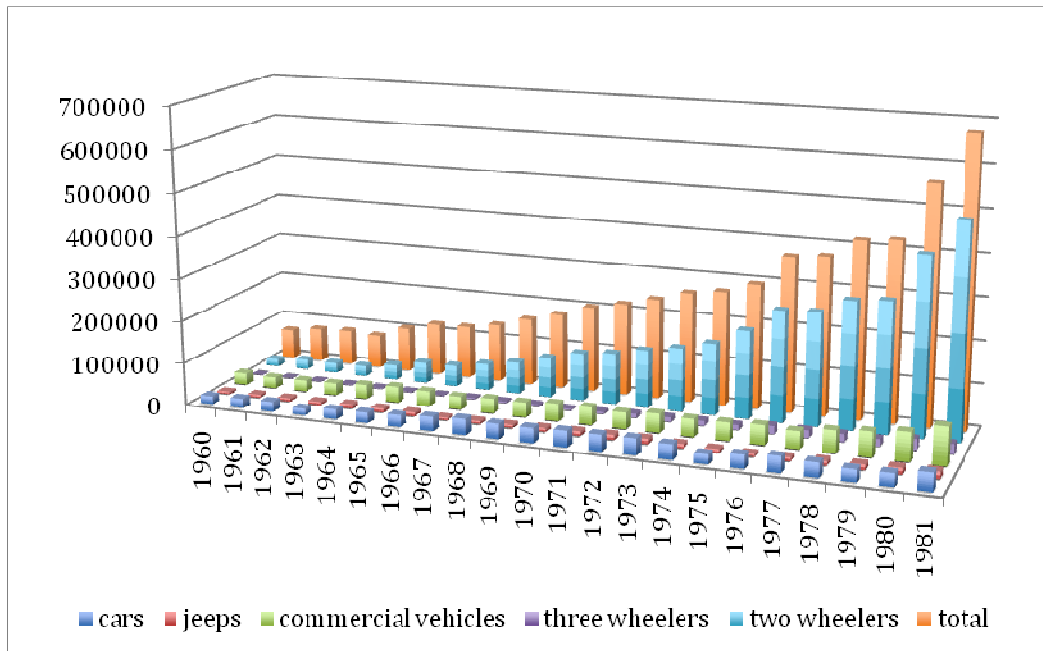


Figure 14: Production of Vehicles in India, 1960 to 1981 (compiled by SIAM 2006) (Production in Numbers)

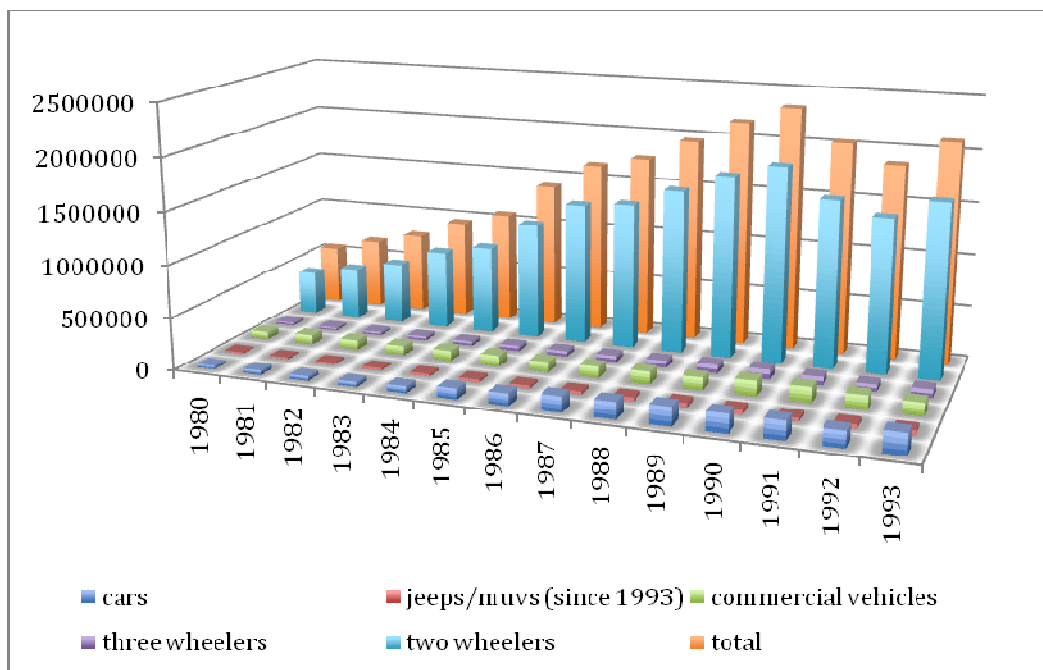


Figure 15: Production of Vehicles in India, 1980 to 1993 (compiled by SIAM 2006) (Production in Numbers)

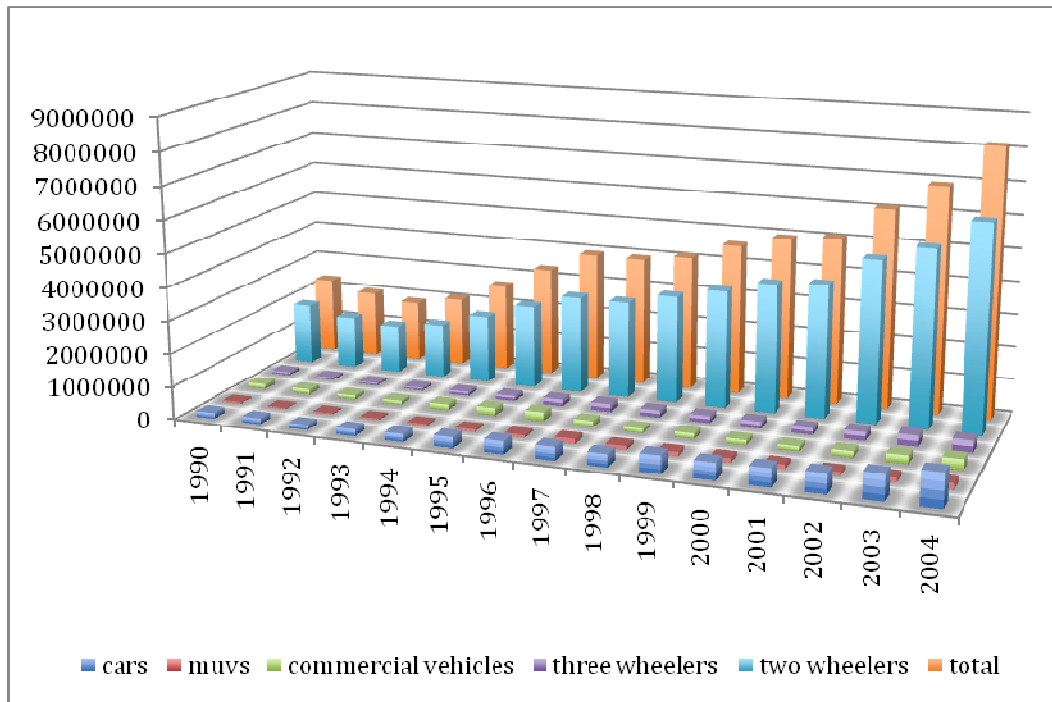


Figure 16: Production of Vehicles in India, 1990 to 2004 (compiled by SIAM 2006) (Production in Numbers)