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# RIS Discussion Papers

**Strategic Approach to Strengthening the  
International Competitiveness in  
Knowledge Based Industries:  
The Case of Indian Automotive Industry**

**Neelam Singh**

RIS-DP # 82/2004



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# Strategic Approach to Strengthening the International Competitiveness in Knowledge-Based Industries: The Case of Indian Automotive Industry

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Neelam Singh\*

*Abstract:* This study examines the export performance and prospects of the Indian automotive industry. The technology factor being critical, the in-house, collaborative and sponsored R&D needs greater encouragement. We also recommend an early upgradation of testing facilities, and move towards uniform standards; establishment of auto compo zones/ parks, and window showcasing centers; the industry-government partnership in manpower training; institutional provision of export marketing information, market development funds and branding assistance; and FTAs with more prosperous regions. Fixed investment abroad should be promoted, say through tax credit, with a geographical focus and in a coordinated fashion for vehicle and auto component producers.

## 1. Introduction

This paper analyses the past growth, the problems and the future outlook of exports of automotive products from India, and offers some policy-related and other recommendations. The analysis pertains to both the vehicles and the components and parts sectors. We discuss also the post-independence evolution of the Indian auto industry and the structural transformations in the global automotive industry having repercussions on the Indian counterpart. The automotive industry is one of the largest and most global industries. It is a vital sector having significant backward and forward linkages; it applies engineering skills intensively. Road transport accounts for about 80% of passenger and 60% of goods traffic in India (ICRA, 2003b). The estimated employment in

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automotive sector during 2002-03 was 3.7 lakhs direct (1.2 and 2.5 lakhs in vehicle and component sectors) (ACMA, 2004: 6). The automotive industry accounts for nearly 3.3% of the GNP and 17% of indirect tax revenue (Auto Policy 2002). Transport equipment is classified as a medium-high tech sector by the OECD. Of the total FDI approvals during August 1991 to August 2001, the transportation industry received \$4033 million, accounting for 7.14% of the total amount approved; the number of approvals was 768 (CUTS, 2003: 5).

This paper has five additional Sections. Section 2 outlines the government policies relating to the auto industry, focusing mainly on those bearing on the growth, technology and foreign trade. Section 3 analyses the structure of this industry (mainly) in India and its dynamics. Export performance of the industry is analysed in Section. 4. To probe which government policies help or hamper exports and what measures can give these a boost, the producers are among the best judges. Hence we sent Email questionnaires to auto firms to know their opinions – *the views from the trenches*. Section 5 analyses this highly valuable primary information. The author also interviewed highly senior officials of the industry associations SIAM and ACMA and of EEPC on a wide range of issues relating to auto exports. These discussions were quite informative; important points from these discussions are mentioned at relevant places. Section 6 presents some policy recommendations.

## 2. The policy framework

Below we look at the major Indian policies pertaining to the auto industry<sup>1</sup> since July 1991, i.e. the post-liberalization period. The pre-1991 regulations are outlined in Appendix 2.

- In July 1991, approval of foreign technology agreements and upto 51% foreign equity (FE) investment was allowed on an automatic basis for the automotive sector - vehicles (excluding motor cars) and all auto components. All these norms applied to existing firms as well. The car segment was de-licensed in 1993. Post-July 1991, FE >51% was allowed on a case-by-case approval basis depending upon the projected exports, sophistication of technology, etc., and since the mid-1990s even 100% FE (even for cars) has been approved.
- PMP, requiring time-bound indigenisation, was dropped in 1991 (for existing units in 1994).
- The 1997 Auto Policy enjoined foreign exchange neutrality (export) and indigenisation requirements for new investors (see Section 3.1). In April

2001, QRs were lifted; so henceforth CKD/ SKD imports did not involve any export obligations (existing ones abolished in Aug.02).

- The March 2002 policy permits 100% foreign equity on an automatic basis for manufacture of automobiles and components; aims to make India an Asian hub for small cars and a global hub for auto components; promises to encourage R&D and vehicle designing (details in Appendix 2).
- An FTA with Thailand was signed recently.

**Recent policy announcements and developments:** The scheme of reimbursement for Sales-cum-Study Tours by individual exporters under MDA has been discontinued w.e.f. May 13, 2003.<sup>2</sup> It should have been continued at least for African and those neighbouring countries for which there is little (if any) likelihood of misuse for personal visits (the EEPC officials). The revised Market Access Initiative Scheme shall provide financial assistance to industry associations/ federations.

Since Jan. 2004 the government has permitted import of completely built unit (CBU) vehicles having CIF value of \$40,000 or above without homologation, ignoring the issue of mutual recognition of certification; extended the electronic filing of custom document from 9 to 23 custom formations; increased the period of tax breaks (partly partial) to companies in SEZs from 10 to 20 years; allowed outward FDI up to 100% of net worth (earlier \$100 million ceiling).

Our tariff rates on auto products, though falling over time, have been higher than the general Asian levels. For crucial raw materials like pig iron and steel the prices have risen in the recent past and SMEs have suffered from shortages. The mini EXIM Policy of Jan. 2004 has reduced (the peak and other) custom duty on many raw materials needed for vehicle and auto components manufacture. The tariff on steel etc. has been further reduced in the July Budget 2004-05. In this Budget, for R&D expenditure the benefit of 150% weighted deduction u/s 35(2ab) of Income Tax has been extended to the automobile sector – its long-standing demand; the cess allocation for automotive R&D has been raised from Rs. 50 crores to Rs. 73 crores.

## 3. Evolving structure of the Indian auto industry

Different broad segments of the vehicle sector are 2/3-wheelers, cars, multi utility vehicles (MUVs), and light and medium & heavy commercial vehicles (LCVs and M&HCVs). There is a moderate to high degree of substitution

between several of these segments for carrying people and/ or goods. However, these segments have diverse characteristics and customers, and have even faced somewhat different problems and government policies in India. Major vehicle firms usually operate in more than one segment. There are high segment-risks (cyclical factor). The auto components and parts industry, encompassing over 150 different products, is aptly described as an “agglomeration of industries” (ICRA, 2003a); yet, within any broad segment there is a commonality of supply as well as technology factors. Auto is a tier-ed industry. Auto components criss-cross States before reaching the OEM (original equipment manufacturer).

The auto industry, specially the vehicle sector, has significant economies of scale (see Kathuria, 1996; Krueger, 1975; Veloso and Kumar, 2002). Size is particularly important for R&D to spread the heavy costs of product development; in India, the relatively low cost of highly qualified labour reduces the development cost though. The marketing barriers, and for vehicles, the sales promotion expenses are high, more so for exports. The company/ brand name counts a lot; cars, MUVs, and 2-wheelers are heavily advertised. *Ceteris paribus*, Narayanan(2004) finds a positive effect of the firm size on its growth rate for vehicle firms.

### 3.1 Vehicle industry

At present, globally India ranks 2<sup>nd</sup> in the production of two wheelers but the share is far below China's. Among the top 15 car producing nations, in 2003 India's share was 2.43% and the rank was 13<sup>th</sup>.<sup>3</sup> India's share in world production of CVs was about 1% during 2002 (Singh, 2003).

**Broad overall trends, FDI and technology import:** Birla's Hindustan Motors produced the first partially manufactured car in India in 1949. Yet the vehicle industry did not make much headway till the 1970s due to all pervasive regulation and shelter from external competition (imports and FDI). Most 4-wheeler, many 2-wheeler and some component producers came under the MRTP Act; also a few companies fell under the FERA category (Kathuria, 1996: 91-92, 97). With excess demand for vehicles - long waiting lists and high premiums – the firms were virtually in a sellers market. There was little incentive to upgrade the technology and engage in R&D.

In the case of automotive industry, a minimum 50% indigenous content requirement was introduced in 1953 (WTO, 2001). In the late 1960s, firms having 5 years or more of production were enjoined to export at least 5% of

annual output by volume. Vehicle and component JVs established during the 1980s were required under the PMP program to achieve 95% indigenisation within five years of start of production. These JVs faced also some export targets.

The 1980s introduced a lot of competition through broadbanding and foreign collaborations in car, CVs and two-wheelers segments, introducing technologically superior products. Of the total 182 foreign collaboration approvals for the auto sector during 1982-1991 (omitting 1984), as reported by Narayana and Joseph(1993), roughly 20% were financial, 70% pure technical and 10% design & drawings agreements; the number of collaborations was 32 and 150 for vehicle and component sectors. Apart from technical agreements with global majors, there were JVs with Japanese OEMs – referred to as the ‘Japanisation’ phase (ACMA & SIAM, 2003). In the car segment the Govt. of India-Suzuki JV, Maruti Udyog Ltd. (MUL) was set up; however, in the 1980s the government restricted entry, having anti-competitive implications.<sup>4</sup>

For *the car and MUV segments* the early 1990s has been momentous with the entry of Indian players Tata Motors (then TELCO) and Mahindra and Mahindra (M&M). In the mid-1990s many global players entered, mostly proposing initially to only assemble imported SKD/ CKD kits (Auto Policy, 2002). For BoP reason, the government in 1995 asked these companies to individually commit to an equivalent amount of exports (ICRA, 2003b). The 1997 Auto Policy required establishment of production facilities, not just assembly operations. Moreover, a new manufacturer of cars or MUVs had to commit, by signing an MoU (Memorandum of Understanding), to achieve a minimum indigenisation of 50% by the 3<sup>rd</sup> year and 70% by the fifth year of the firm's first consignment of CKD/ SKD imports; and to commit to an equivalent value of total exports of vehicles and components, starting the 3<sup>rd</sup> year of production, neutralizing the foreign exchange spent on CKD/ SKD imports during the currency of the MoU. Also for having operations as a subsidiary, new foreign entrants had to bring in at least \$50 million. Eleven companies signed such MoUs with the DGFT (Auto Policy 2002). Appendix 3 analyses the effectiveness of performance requirements imposed in the auto sector in India. From April 1, 2001, QRs were removed; SKD/ CKD and even CBU imports of cars were put on the OGL list, not requiring an import licence any more; as announced in Jan. 2000, the foreign exchange neutrality requirement was lifted for new investors. The export commitments made under the MoU regime were abolished in Aug. 2002.

Tata Motors, a ‘Group’ company, launched India’s first indigenously developed car *Indica* in 1999, probably an unprecedented feat in the last 25 years in emerging economies. Its R&D facilities in Jamdeshpur and Pune were set up in 1959 and 1964. It has consistently emphasized in-house R&D while selectively importing technology mainly through technical agreements. Tata’s Engg. Research Centre, one of the most advanced test centres in Asia, has sophisticated facilities like crash test facility and NVH lab (SIAM, *Viewpoint*, IV(III), 2002).

For *the CV segments*, Kathuria(1996) observed that increased competition since the mid-1980s (de-licensing) and especially in the 1990s has led to a decisive increase in R&D and technological imports by all firms. There were a number of Japanese collaborations. In the mid-1980s Tata Motors took advantage of broadbanding to enter the LCV segment. Globally this segment has bright prospects with markets demanding higher flexibility and faster deliveries, and an increasing application of the hub and spoke concept, also in India due to city congestion. With just-in-time manufacturing, heavy CVs are being used as mobile warehouses too. Greater foreign trade due to an increasing globalisation would mean more traffic to be handled by CVs.

The *2/3-wheeler segments* are concentrated in developing countries. China and India together share over 50% of global 2-wheeler sales; outside India, the presence of scooters is limited. In India in terms of domestic sales (number) during 2003-04 the two-wheelers accounted for 78.96% share, all 4-wheelers 17.09% (13.26% for passenger vehicles) and 3-wheelers 3.95%. The 2/3-wheeler segments established a foothold in 1950s; some foreign collaborations were made too. In 1982 the government allowed JVs. Four such tie-ups for motorcycles were formed. For scooters and 3-wheelers there were technical collaborations. The post-liberalization period has seen the termination/ re-alignment of most of the JVs. There is a technological gap, narrowing though, between the Indian models and those in developed nations in terms of lighting/ optics, braking systems, power generation etc. (ICRA, 2003b: 108).

*At present*, the domestic vehicle market is fiercely competitive both in price and quality terms. There is a wide product range, sometimes conflicting with achieving the scale economies. The environmental regulations, e.g. Euro-I/ II emission norms, have added to the costs. Apart from growing volumes, now the production for domestic and export sales have the same quality. We are now not far behind the global standards, and well prepared for R&D. Improvement

in safety features and pollution norms (non-Euro to Euro-I, Euro-II etc.), introduction of telematics and GPS has involved technological improvements, including import of technology (SIAM officials). All vehicle producers for which information is available in SIAM(2004) have achieved quality certification beyond ISO9000 or its automotive version QS9000, at least for some plants.

**Growth of the industry:** Table 1 reports the gross turnover of vehicle industry in India since 1995-96. Appendix 1, Table A1 reports the segment-wise growth rates of automobile production since 1980; for pre-1980 figures see Mohanty et al.(1994: 38). The period till 1985 witnessed generally high segment growth rates, *albeit* from a low base. Last few years of 1990s were marked by low/ negative growth rates in general, and a low overall growth rate. The 2-wheelers domestic demand is shifting towards motorcycles, prompted by change in demographic profile of buyers and technological advancements; though plastic bodied scooters is a new niche market, the overall scooter sales have fallen in the recent past.

ACMA, ATMA and SIAM(2002) has predicted an average p.a. growth rate of domestic demand for passenger cars, MUVs and motorcycles as 8, 9 and 14% during 2002-03 to 2011-12. The demand for vehicles, highly cyclical, depends upon the growth of GDP (elasticity 1.5 to 2) and of rural income, road infrastructure, urbanisation, fuel prices and excise rates, besides the availability and cost of competitive modes of transport; launch of new models, incentives and easier consumer loans have contributed to a sharp pick up in the demand since 2002.<sup>5</sup> For the CV segment, apart from the increased buildings construction activity, various on-going road projects are acting as a spur. The high-speed roads being developed as part of the Golden Quadrilateral Project and North-South, East-West corridors are also prompting fleet rationalization and a shift towards multi-axle vehicles. The replacement demand has increased due to some States banning old CVs.

**Table 1: Gross Turnover of the Automobile Industry**

Year	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03
Rs. Crores	31358	36445	36541	36826	42293	49202	49914	59518

Source: SIAM database.

The year 2003-04 shows encouraging results for all segments of vehicles; overall the growth in total sales is approx 16% in numbers and 24% in value terms. India has crossed the 1-million mark for the total sales, inclusive of exports, for passenger vehicles (i.e. cars, UVs and MPVs). During 1998-99 to 2003-04 the multi-axle CVs had 67% p.a. growth. The sales-capacity ratio of vehicle producers has improved since 1999. The total installed capacity in 2002-03 vs. that in 2001-02 is quite static in 4-wheelers and engine segments; however, there is a 14% rise in the 2/3-wheelers segment (SIAM, 2004).

**Industry Concentration:** The data since 1991-92 indicate a high concentration ratio, CR of total sales in most segments of the vehicle industry (Table 2). Each segment has a few dominant firms. Some segments have also quite minor players. A decrease in CR is observed in some segments after mid-1990s, e.g. in cars, MUVs and 3-wheeler segments with new entrants, and in scooters segment. With Honda's 100% subsidiary HMSI now entering the motorcycle segment, the competition is likely to increase there. The CV segments show mixed tendencies. For the year 2003-04 we have also calculated the Herfindahl index,  $Ss^2$ , the sum of square of shares. Its high value for several segments indicates the oligopolistic structure. Besides, foreign MNEs having a presence in India have inter-connected global shareholdings. Multi-segment operators enjoy greater power. The Indian-owned companies and local partners in JVs are generally parts of industrial 'Groups of companies'; this is also true of leading auto component firms.<sup>6</sup>

A spate of M&As among global OEMs in recent years (see ICRA, 2003b: 57) is said to have been prompted by the global excess capacity; the Asian region too has distinct possibilities of M&As and closures (Velooso and Kumar, 2002). From the point of enjoyment of economies of scale there seems to be a bit of over-crowding in India too in segments like cars (Kathuria, 1996; Sridharan, 1999). The Indian auto industry was almost free of M&As during the 1980s and 1990s (Panda and Oba, 2000); however, there have been partial takeovers in the sense of transfer of units/ divisions of existing units to foreign firms (Nagaraj, 2003: 1707).

**Testing and Certification Facilities:** Currently there are 3 big auto clusters around Bangalore/ Hosur/ Chennai, Delhi/ Ghaziabad/ Gurgaon/ Faridabad, and Mumbai/Nasik/ Pune. ARAI and VRDE located closely in the Western region conduct almost all the testing and certification work in the country; IIP, Dehradun does not undertake homologation; VRDE, a defence establishment,

**Table 2: Segment-wise Market Structure of Vehicle Sector: Total Sales Concentration Ratios, CR (%) and Herfindahl Index, H**

Vehicle Category (H value, 2003-04)	Year	CR1	CR2	CR3	CR4	No. of Firms
Passenger cars	1992-93	74.8	88.2	97.6	100.0	4
	1997-98	82.7	88.1	90.8	93.2	10
	2003-04	49.7	70.6	84.8	90.3	11
MUVs	1992-93	84.6	100.0			2
	1997-98	52.3	85.0	91.6	97.4	5
	2003-04	33.4	64.1	80.5	95.8	9
LCVs	1992-93	48.1	76.4	81.8	87.1	9
	1997-98	66.2	74.8	83.2	90.9	8
	2003-04	51.2	79.3	86.9	92.9	7
M&HCVs	1992-93	75.6	99.97	100.0		3
	1997-98	67.3	99.6	100.0		3
	2003-04	63.6	91.8	97.4	99.7	7
Scooters	1992-93	62.2	76.5	89.1	99.97	6
	1997-98	49.9	74.3	85.3	94.3	5
	2003-04	36.4	61.2	81.3	90.8	7
Motorcycles	1992-93	33.4	62.4	87.8	95.7	6
	1997-98	36.0	63.8	82.5	98.3	5
	2003-04	47.6	71.8	88.0	94.1	8
Mopeds	1992-93	31.0	58.4	78.7	93.7	7
	1997-98	45.1	68.8	90.2	98.1	5
	2003-04	75.3	92.2	100.0		3
Three-Wheelers	1992-93	91.3	95.9	100.0		3
	1997-98	82.1	89.0	95.3	100.0	4
	2003-04	68.0	83.8	92.2	97.4	5

Note: 1992-93 figures pertain to production shares.

Source: Compiled from ACMA(2003: 13-23, 37-38); SIAM media report, 16/4/04.

has only one test track. Several firms have set up some key world-class testing facilities but this involves huge capital investment and sometimes sub-optimal usage of many of the sophisticated facilities. The Ministry of Heavy Industry and Public Enterprises (MOHI&PE) in early 2002 asked SIAM to draw up a comprehensive plan for (shared) testing facilities required over the next decade. The SIAM Plan for 'Upgradation of Testing Facilities' submitted in 2002 suggests: setting up of two additional independent stand-alone centres in the northern and southern regions, and a new Proving Ground, apart from upgradation of the existing facilities (SIAM, *Viewpoint*, IV(III), 2002). This proposal has been approved by the Planning Commission and Ministry of Finance, with a revised investment figure of approx. Rs. 1700 crores; MOHI&PE is finalizing the modalities for its implementation (SIAM, Annual Report, Sept. 2004).

**Taxes and tariffs:** The FY2003-04 Budget slashed the excise duty (ED) rate for 4-wheelers and their chassis from 32 to 24%; for other auto products it stays at 16%. The July 2004 Budget grants ED exemption to tractors and ED concession on ambulances for private hospitals. Our tax incidence is high and needs to be reduced to enlarge the market (Singh, 2003). Lower taxes on components will also discourage the supply of spurious components.

For India the WTO bound rate of custom duty for CVs and auto components is 40%; the actual tariff rate in recent years (at the peak rate) has been less. For cars, MUVs and 2/ 3-wheelers, the un-bounded segments, there is still high protection; for both their CBU and SKD imports the basic custom duty is 60% since FY2003-04; the CKD tariff rate since early 2004 is 20% (the peak rate). The second-hand imports of vehicles under unbounded segments continue to attract custom duty at 105%. Depending upon the excise rate etc., the other duties add up to 40-60% over the basic custom duty. With a view to encourage domestic production, SIAM has asked for status quo on tariffs on unbound segments, while a 40% tariff on CVs (the bound rate) or at least not below 30%. However, an excessive tariff protection can severely dilute the gains from inward FDI (Virmani, 2003: 32), and hurt the consumer and in the long-term the industry too. Barring a few outliers, Singh(2003) finds the Indian cars prices to be competitive vs. our imports; in case of 2-wheelers the Chinese prices are lower. He too recommends a lowering of the tariff rate on cars and two wheelers. There are hardly any important countries producing cars below 1000 cc, i.e. small cars; the EXIM policy stipulation that car imports can come from only countries of manufacture can work as some sort of a barrier against uncontrolled imports

(ICRA, 2003b: 57-58). For 2<sup>nd</sup>-hand cars we have to be careful on environmental and technical grounds.

**Imports:** Imports of vehicles have been small in relation to the domestic demand (sales; see Appendix 1, Tables A2 and A3). During 2001-02 this ratio was 0.16% for 4-wheelers (0.26% if including used vehicles imports also), 0.06% for motorcycles, negligible for other 2-wheelers and 3-wheelers, and 0.08% overall. Subsequent to the lifting of QRs, there has been a substantial increase in imports in several categories during 2002-03, particularly noteworthy for new cars, used motor cars and chassis with engine for motor cars. Of the total new car imports of Rs. 216.79 crores, Czech Republic, German FR, Japan, Belgium and USA accounted for 39.53, 33.80, 15.58, 11.18 and 2.10% respectively (compiled from ACMA, 2004: 155-59). As for imports of vehicles from China, these have been small till the recent years; any large-scale imports are unlikely in the near future (ACMA and SIAM, 2003); we have stringent emission norms (SIAM officials).

**R&D vs. tech import:** There has been an increase in the technology import intensity since 1991 (Panda and Oba, 2000). R&D by auto firms has been generally low till the recent past. Gumaste(1988) finds that foreign collaboration firms took up R&D with even less intensity and variety of end objectives; e.g. MUL has so far neglected the development of indigenous technical know-how. For the 4-wheeler segment, Panda and Oba(2000) explore the determinants of growth of the firm. They find that relatively high growth rate firms have comparatively high import intensities of technology, capital goods and intermediates, especially among foreign-owned units; among Indian-owned units, they also have a higher R&D intensity. We observe higher import and 'tech import' propensities and a lower R&D intensity of foreign affiliates compared to locally-owned firms (Sections 4.1 and 5).

**R&D in recent years:** The R&D efforts got partly fuelled by the imposition of stringent Euro norms since the 1990s, requiring a quick upgradation of engines. The auto industry is willing to produce Euro4 compliant cars by 2005-06 and heavy-duty vehicles by 2007-08. This would require the matching fuels. But our Auto Fuel Policy is lagging behind in this respect. In case of 2-wheelers the price sensitivity of domestic demand acts a speedbrake.<sup>7</sup>

Engineering and designing services account for a significant chunk of the auto outsourcing; these costs are comparatively low in India. India-developed

*Reva* costs less than half of the next cheapest electric car anywhere in the world (source: the company website), and this company has recently unveiled a Fuel Cell car. A few Indian companies are doing cutting edge development, e.g. Bajaj's work on DTSI and Tata Motors's development of diesel engines with CRDI. GM, Suzuki (Maruti) and Hyundai are starting R&D bases in India. Suzuki has decided to develop India as its only R&D hub for small cars in Asia outside Japan. GM's engineering centre to develop automotive electronics and control systems and Ford's software development centre (FITSI) in India would cater to their Asian operations. India can exploit its IT skills in terms of vehicle tracking systems and designs. Innovation is critically dependent on pervasive use of IT. India has significant opportunities for outsourcing R&D, vehicle software development, CAD/ CAM solutions, and modelling & prototyping of components.<sup>8</sup>

The government's recent budget decision to allow a weighted deduction of 150% of R&D expenses by automobile firms would encourage the R&D. However, no concrete measures have been taken so far for promoting the setting up of independent auto design firms; nor has there been any excise duty relief for R&D, though promised under the Auto Policy 2002. Allocation to the cess fund for automotive R&D has been increased from the pre-2002 Rs. 9-11 crores annually to Rs. 73 crores in July 2004 Budget, and is quite wide in scope. Towards the harmonization of standards India has recently joined as an observer at the UN Forum Working Party-29 formulating global norms for automotive safety and emissions. Development of related fields like machine tools, with which the auto sector has vital linkages, is important too. Singh(2003) recommends fiscal incentives and infrastructure facilities, at par with the IT sector, to strengthen auto designing and testing facilities in India.

Dr. Haren Gandhi (at SIAM Annual Convention, Sept. 2004) emphasized the need to: increase the industry-university interaction; identify competency areas to focus efforts; establish supporting infrastructure (like test tracks, wind tunnel, and crash-testing facilities) for validating the vehicle developments; develop international R&D collaborations; encourage Indian OEMs to set up houses abroad to derive the location efficiencies; develop the component industry also to provide full system solutions to OEMs.

**Global trends in technology:** These trends need to be watched for our domestic market as well as to create and nurture our niche in export markets.

Vehicle manufacturers are moving into completely new raw materials and technologies, partly guided by environmental legislation; some of these affect profoundly the supply chain, like electric and hybrid powertrains, and alternatives to the all-steel body; the use of electronic technologies and telematic applications is increasing (for details see ICRA, 2003b: 204). Introduction of Fuel Cells vehicles will revolutionize the concept of vehicle design, and may shift the conventional vehicle assembly in a big way to developing countries with proven expertise and mass production base (Singh, 2003).

A Core Group on Automotive R&D (CAR) was set up in 2003 under TIFAC, Ministry of Science and Technology. Involving the government, industry and academia, CAR aims at identifying the frontier technologies. Embedded control systems, telematics, hydrogen, advanced materials, road safety and cyclicability are the focus areas. SIAM also interacts with worldwide experts to assess the technological trends (SIAM, Annual Report, Sept. 2004).

### 3.2 Auto component industry

The efficiency of vehicle production is closed linked to that of the supplier base. The malfunction of a single part in a fully assembled vehicle can entail high costs of disassembly and replacement. There is considerable buyer-seller interdependence for ancillary products, as most parts and toolings are model-specific (Krueger, 1975). Structural changes in the auto components industry are inextricably linked to those in the vehicle industry. Appendix 1, Table A4 lists the broad segments of the Indian auto component industry. These segments involve diverse technologies, and have in general a large number of players - a few dominant and a highly competitive fringe. Some 'Groups' have companies in different segments. The auto component industry in India meets almost all the OEM demand and the huge replacement (after market) demand in India.<sup>9</sup> However, the size of the Indian auto component industry is roughly only 1/6<sup>th</sup> of the world's largest auto component company, Delphi, USA (ICRA, 2003a).

**Table 3: Production of Automotive Components: Organized Sector**

Year	1961-62	1971-72	1981-82	1990-91	1991-92	1996-97	2000-01	2001-02
Rs. Crores	18	131	648	2156	2607	8827	13736	16164

*Note:* These data do not include the SSI sector production.

*Source:* ACMA(2003: 32).

The Indian auto component industry has enjoyed a high average growth rate of output over the past four decades (see Table 3). This industry is fragmented with about 400 organized sector units and over 5000 in unorganised sector. The unorganised sector contributes an estimated 23% of the output (its production assumed to be 30% of the organized sector's). Small/tiny units mostly produce items having high excise duty rate and non-sophisticated technology. SMEs have insufficient funds for global marketing and doubts regarding their delivery schedules etc. still persist (our survey of producers, Section 5). A large majority of organized sector producers have achieved some quality certification like ISO9000/ QS9000 and more, and follow TQM philosophy (Khanna et al., 2002; ICRA, 2003a; acmainfo.com). Many firms are planning a major capacity expansion.

**Ancillarization and LCRs:** TELCO's arrival in 1954 initiated the process of ancillary growth (Kathuria, 1996). Some automotive components have been reserved for exclusive production by the small-scale, SSI sector.<sup>10</sup> This along with the 1965 demarcation of components between in-house and external supply, and the indigenisation/ local content requirements (LCRs) led to a faster ancillarization of the auto industry. In the 1980s, foreign collaborations in the vehicle sector and the phased manufacturing programme dynamized the component industry. The quality of components came under close scrutiny. This led to many foreign collaborations in the component industry, technological upgradation and closer relations with assemblers. Vehicle manufacturers generally ask their suppliers to locate in close proximity to their plants - to achieve better control over their supply chain (Gulyani, 2001; SIAM, 2002). The clustering tendency has been encouraged by sales tax concessions, provision of subsidized land, etc. Firms have generally many SSI suppliers; there are substantial technological linkages upgrading the vendor skills. Non-SSI units can produce items exclusively reserved for the small-scale sector, provided they undertake an export obligation of 50% (SIA, 2000). Since 1991 large (Indian or FDI foreign) firms can hold upto 24% ownership in small firms. The SSI advantages have got partially eroded due to gradual 'de-reservation', de-licensing and excise/ custom rate changes.

**Foreign Collaborations:** During 1985-1991 there were JVs with Japanese companies (ACMA and SIAM, 2003). After 1992 global tier 1 suppliers started operations in India. While entering India, global OEMs have encouraged their existing preferred suppliers to establish facilities here. At present, almost all the prominent players in the Indian auto component industry have links with at

**Table 4: Foreign Collaborations: Auto Components**

	<b>Nature</b>	<b>Number</b>
1.	Financial	118
2.	Joint Venture	31
3.	100% FE	7
4.	Financial-cum-Technical	53
	Financial Total (1+2+3+4=)	209
5.	Technical	310
	<b>Grand Total</b>	<b>519</b>

Source: Compiled from ACMA(2003: 171-86).

least one international player - operating as a subsidiary/ JV or in a technical tie-up. Table 4 states the No. of ongoing foreign collaborations by type, as reported by ACMA (date not specified). Of these, 40% are financial; 7 are 100% foreign-owned; about 30% collaborations are with Japan (ACMA, 2003: 165). In addition, ACMA(2003: 167-68) lists 68 new JVs.

**Reorientation of assembler-supplier relationship and consolidation trends:** Globally, OEMs are passing the responsibility of developing, manufacturing and assembling important sections of the vehicle to their suppliers (Veloso and Kumar, 2002).<sup>11</sup> Hence size becomes important to operate in complex and higher value-added sub-segments. There is growth of mega-suppliers specializing in specific areas of supply, and with global base, and an increasing trend towards global outsourcing of components by OEMs and tier-1 companies. The big vehicle companies are reducing the number of suppliers (vendor rationalization), segregating their component companies, and tending towards modularisation, i.e. purchasing systems or modules rather than individual components. Global OEMs are making suppliers share responsibility for warranty costs. Tier 0.5 suppliers (system integrators), a new category, exclusively design and assemble a whole module for a vehicle. For new products OEMs are also outsourcing services of design and engineering suppliers. In some parts of Asia, local auto component firms are facing a threat due to a heavy influx of foreign players (Veloso and Kumar, 2002).

In India too, many OEMs are pursuing vendor rationalization, as it facilitates quality control and efficient supply chain management (ICRA, 2003a). Ancillary firms are increasingly expected to employ flexible manufacturing techniques to cater to proliferation in parts following the proliferation of vehicle models. With WTO guidelines being effective (like removal of LCRs) and

liberalized imports, the local auto component firms need to form alliances with global commodity chains – producer-driven in auto industry – to seek both technology and markets, and meet their quality and delivery requirements (Bhavani, 2002). Large investments in R&D, technological upgrade & quality improvements, and the ability to serve as a sourcing hub are the key success factors. Many SMEs would find it hard to meet these challenges. All these factors are likely to result in some sort of re-alignment in the Indian industry as well; already global majors are picking up decisive and controlling stake in the Indian companies (ICRA, 2003a: 140; ET, 3/7/2003:11, 1/6/2004: 5 and 8/9/2004: 11).

**Threat(?) from Thailand and China:** The major low cost suppliers of components are Brazil, China, India and Thailand. India's RTA with ASEAN and PTA with MERCOSUR would increase the degree of competition faced by the Indian players.<sup>12</sup> The recently concluded FTA with Thailand (part of the Asean RTA) poses both a threat and an opportunity to the Indian auto component producers. The Early Harvest Scheme stipulating 50% tariff reduction, starting Sept. 1, 2004 covers a number of critical components (see Appendix 1, Table A5); another 25% reduction is to take place both after 1 and 2 years. The Japanese firms dominate the Thai component industry; the Japanese OEMs in India might now source critical components from their associated Thai ventures. However, these imports may largely replace the Indian imports from Japan, which are considerable at present. Thailand is a strong competitor for us but basically due to our high local taxes (SIAM officials). Thailand has only 2-10% duty on raw materials. ACMA officials argue that while FTAs are coming, we still do not have the level-playing field. Singapore is a free trade zone; it can be a conduit for trade. ACMA has been asking for a minimum 50% value-addition norm both ways & substantial 6-digit transformation.

As for China, according to ACMA and SIAM(2003), India enjoys an advantage in producing components requiring high design and engineering inputs. India has a superior quality of products. However, as import duties fall and global tier-1 or tier-2 suppliers set up large capacities in China, India may face significant imports from China, especially for standard components.<sup>13</sup> Indian component makers are considering setting up production bases in China to exploit the domestic market and export from there; Sundram Fasteners e.g. has done it recently.

**More on RTAs/ PTAs:** Globally, with the abolition of LCRs and reduction of tariffs, the relative cost-efficiency and operational competence of producers

across different nations would play a more decisive role in sourcing decisions of MNEs. The auto industry sponsored studies by ICRA on China, Asean and Mercosur indicate that India has a manufacturing cost disadvantage vis-à-vis many of these countries in vehicle and components production.<sup>14</sup> This is mainly on account of higher taxes, tariffs and infrastructure costs. China enjoys also significant economies of scale; it is also true of Mercosur for component manufacturing. Most of these countries have excess capacity in many vehicle and component segments, and are looking at exports (FTAs/ PTAs) for the auto industry growth. There is a strong presence of Japanese OEMs in most of the Asean countries and of European OEMs in Mercosur. The Asean and Mercosur regions have a high import intensity of the auto sector; Thailand imports primarily from Japan, and even basic raw materials are procured largely from Japan. As for the Asean RTA, Indian OEMs have low to moderate export opportunities to Asean (high for CVs); import threats exist for light CVs, MUVs and >1600cc cars; there are also component sourcing opportunities in these segments and also for 2-wheelers. At present, there is limited scope for establishing manufacturing bases in Asean, restricted mainly to 2-wheelers.

#### **4. Export performance of the industry: retrospect and prospects**

Exports expand the market and can be instrumental to quality improvement, product upgradation and technological advancement by the firm. The overall impact of the cyclicity (e.g. of a domestic down-cycle) can be softened with overseas forays. Also in earlier years exports by the firm have been linked to an easier access for it to imports of capital goods and intermediates.

##### **4.1 Vehicle exports**

**Factors in export competitiveness:** The vehicle industry does not lend itself to global standardization, given each country's unique driving habits, lifestyle and topography. The wage component in production is low; skill levels and technological capabilities influence the competitiveness. An adequate supply of materials, both domestic and foreign, is essential (Krueger, 1975). Exports require overseas distribution and provision of after-sales services.

Auto manufacture is volume-driven. In segments like motorcycles whose size in India is global, local companies have the ability to compete with global companies and become at least an Asian player. But few car companies in India have reached the required scale to attain (cost and quality) competitiveness. Unlike Brazil and Mexico, which are major export hubs for cars, in India apart from inadequate scale of local demand for cars and UVs, there is no integration

with any prosperous regional trading block (ICRA, 2003b). However, markets of our 'existing FTAs' member countries, though generally small, are growing. Again, though the FDI in India has been primarily market seeking and not cost reducing, MNEs are gradually realizing India's cost advantages. The domestic sales for cars and UVs are also growing fast. Further, productivity, quality and technology benchmarks are more crucial than the scale, and must be raised in the domestic market to build a significant global market presence (ET, 1/7/2003: 5).

Despite the price advantage in CVs production and competent field engineering, the domestic demand peculiarities in the past - the need for rugged and easy to repair CVs, less concern for aesthetic/ safety/ comfort features and pollution norms, etc. - rendered our CVs suitable for export only to developing countries with similar demand pattern; further, we are unable to provide cheap loans and mixed credits i.e. grants-cum-loans for sale to governments (Kathuria, 1996). For vehicle firms during 1989-90 Bhat and Sethuraman(1995) find a positive influence of foreign technology, R&D expenditure and profits while the foreign ownership coefficient is insignificant.

India exports vehicles to almost all parts of the world. However, these exports are predominately to the neighbouring countries, and the remaining are largely to S. Africa, Middle East and L. America (see SIAM, 2004). Access to the triad region (US, EU and Japan) is both important and quite difficult for firms from non-triad regions (Rugman, 2002). There is e.g. no global car. Over 90% of the auto products produced in each of the triad regions are sold within that region. There are rules of origin and several exceptions to the principle of national treatment. Again, over 60% of the world trade in sectors like automobiles is intra-firm. Many collaborations have export restrictive clauses or understanding, e.g. the TVS-Suzuki JV tie-up till 2001; Suzuki also imposed informal restrictions on its car JV, Maruti against exports to Japan (Parmar, 2002).

As for the government policies, according to the SIAM officials, there are some important areas of concern. Our custom infrastructure has been somewhat poor. There are so many local taxes (other than central taxes) on components, including on intra-city movement of items; our producers face about 12% cost disadvantage due to embedded taxes. We still have high duty on many raw materials. There is no branding assistance as such to producers. Homologation (non-uniform standards across countries) is a major non-tariff barrier in the auto industry.<sup>15</sup> We do not have an FTA with a prosperous region; the ASEAN market

is small; we have some scope for 2-wheelers, some for CVs but not much for cars there. The industry needs internal reforms, and would be more comfortable with VAT and labour reforms, and a better enforcement of laws; all solutions do not lie in technology.

**Overseas marketing alliances and assembly:** For exports of vehicles, the sales promotion & distribution are expensive activities. In case of exports by a foreign affiliate, the associated MNE usually lends its name/ brandname, e.g. for Hyundai India and MUL. Locally-owned firms may engage in marketing alliances. A few recent cases are: Bajaj Auto with Kawasaki and Aprilia for 2-wheelers; Tata Motors with Rovers and Khondro for cars, and with Rovers/ Phoenix Ventures for UVs/ pick-ups; but the sales are under the collaborator's brandname. Such co-marketing has to be encouraged. Firms are also realizing the importance of promoting their own indigenous brands for global marketing. "By affixing the "Made in India" label on products that roll out of India, Indian exporters would further their own cause and equally that of the industry and the country." (SIAM, *Viewpoint*, IV(5), Oct. 2002). A well-positioned (company/ brand name domestically is a prerequisite.

Most countries, even developing nations, like to assemble vehicles from knocked-down kits or components rather than import them as CBUs; there are rules of origin and incentives for local production; again, there are specificities of local demand; vehicles, especially M&HCVs, are heavy items (Kathuria, 1996). These factors limit the direct exports of vehicles. Therefore, overseas local assembly may be a better or complementary way of serving some foreign markets, and somewhat inescapable for large-scale international business. Some Indian-owned companies have undertaken overseas production of vehicles in a limited way, mostly as JVs, e.g. M&M, Tata Motors, Bajaj Auto and ALL. Tata Motors has recently acquired Daewoo's CV unit in Korea. It can now sell its lower HP trucks to the South Asian market and outsource to the Daewoo plant. There are more plans of overseas assembly operations by these and several other firms. The enlarged EU market with 10 new members in May 2004 is likely to spur JVs for manufacturing bases in the low-cost new member countries. While the expected tariff reductions by new EU members would favour our auto exports to them, especially of auto components and assemblies, the issues of origin and non-tariff barriers will acquire a greater importance.

**Exports and export intensity:** Auto exports during 1981-82 to 1991-92 had a low 4% annual real growth (Narayana and Joseph, 1993). In recent years,

looking at the number of vehicles exported from India during 1995-96 to 2003-04 (Table 5) there seems to be no consistent upward trend for any segment. However, many segments have witnessed a major jump in exports in the last 2-3 years. Export performance of the automobile industry was quite good during 2002-03 and 2003-04, with an overall exports growth of 65% and 56%. In value terms the vehicle exports during 2003-04 have crossed the \$1 billion mark. The exports to total sales ratio figures (Table 6) should be viewed along with the domestic sales figures (Appendix 1, Table A3). Only during the last few years there has been an increase in the export intensity of cars and motorcycles sales, though for motorcycles there is also a robust growth of domestic sales. The scooters segment shows a positive trend of export intensity but this is against falling domestic sales in recent years. Other segments show erratic year-to-year fluctuations in export intensity. Thus (barring scooters) there is no clear-cut trend of an increase in export intensity in any of the segments. In value terms the 2002-03 figures for vehicle exports and imports are Rs. 2615 and 447 crores respectively; the ratio to production is 4.39 and 0.75% (compiled from ACMA, 2004: 6).

**Trade and R&D intensities by segment and ownership:** Table 7 employs the firm-level information for 2002-03 for SIAM member companies in the private sector, on f.o.b. exports, c.i.f. total merchandise imports, total R&D expenditure, etc. The average export, import and R&D intensities are computed using the company gross turnover weights. The data on technology import expenses is not available. We exclude the public sector M&HCV unit Vehicle Factory (Jabalpur) under the Ministry of Defence. In the (3 25% FE) foreign-owned firms category there is one case each of 26:26% JV in 4-wheelers and 2/3-wheelers segments; all others have 3 50% foreign ownership, mostly 100% or close to it.

This Table indicates that compared to their local counterparts, the average R&D intensity of foreign-owned firms is consistently far less while the average import intensity is much higher, specially in the 4-wheeler segment. The average export intensity for foreign-owned and indigenous firms is similar in the 2/3-wheeler segment but relatively high for foreign-owned firms in the 4-wheeler segment. However, foreign firms have a greater presence in passenger vehicles than in the CV segment and the average export intensity is more for passenger vehicles. The engine category, having a few firms, follows the 4-wheeler patterns. For all vehicle firms the average R&D intensity is 0.8% only, and the export and import intensities are 5.0 and 6.3%.

**Table 5: Exports of Vehicles in Numbers: Segment-wise**

Category	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04
M&HCVs	8560	6606	5872	4544	5089	5510	4824	5638	8112
LCVs	6995	7230	8212	5564	4823	8260	7046	6617	9115
<b>Total CVs</b>	<b>15555</b>	<b>13836</b>	<b>14084</b>	<b>10108</b>	<b>9912</b>	<b>13770</b>	<b>11870</b>	<b>12255</b>	<b>17227</b>
Passenger Cars	28851	37161	29705	25468	23272	22990	49273	70263	125327
UVs	2987	2484	3288	2654	5148	4122	3077	1177	3067
MPVs							815	565	922
<b>All Passenger Vehicles</b>	<b>31838</b>	<b>39645</b>	<b>32993</b>	<b>28122</b>	<b>28420</b>	<b>27112</b>	<b>53165</b>	<b>72005</b>	<b>129316</b>
<b>All 4 wheelers</b>	<b>47393</b>	<b>53481</b>	<b>47077</b>	<b>38230</b>	<b>38332</b>	<b>40882</b>	<b>65035</b>	<b>84260</b>	<b>146543</b>
Scooters / Scooterettes	23106	26236	30267	28753	20188	25625	28332	32566	53148
Motorcycles/Step Through	48596	50353	45338	35461	35295	41339	56880	123725	187287
Mopeds	42269	48139	49899	35788	27754	44174	18971	23391	24234
<b>Total Two Wheelers</b>	<b>113971</b>	<b>124728</b>	<b>125504</b>	<b>100002</b>	<b>83237</b>	<b>111138</b>	<b>104183</b>	<b>179682</b>	<b>264669</b>
<b>Three Wheelers</b>	<b>32214</b>	<b>21973</b>	<b>18595</b>	<b>21138</b>	<b>17725</b>	<b>16263</b>	<b>15462</b>	<b>43366</b>	<b>68138</b>
<b>Grand Total</b>	<b>193578</b>	<b>200182</b>	<b>191176</b>	<b>159370</b>	<b>139294</b>	<b>168283</b>	<b>184680</b>	<b>307308</b>	<b>479350</b>

Source: Siam Database.

**Table 6: Exports-Sales Ratio (%) of Vehicles: Segment-wise**

Category	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04
<b>M&amp;HCVs</b>	6.67	4.37	6.24	5.43	4.57	6.30	5.09	4.65	4.79
<b>LCVs</b>	8.01	8.57	12.88	9.89	8.02	13.14	11.06	8.11	8.44
<b>Passenger Cars</b>	8.35	9.03	7.11	6.21	3.64	3.89	8.82	11.49	15.26
<b>UVs</b>	2.86	1.84	2.47	2.38	4.17	3.25	2.87	1.03	2.07
<b>MPVs</b>							1.30	1.07	1.52
<b>Scooters/Scooterettes</b>	1.89	2.02	2.40	2.17	1.61	2.84	3.02	3.79	5.66
<b>Motorcycles/Step Through</b>	6.00	5.14	4.01	2.54	1.96	1.92	1.93	3.28	4.30
<b>Mopeds</b>	6.75	7.04	7.69	5.25	3.82	6.42	4.44	6.45	7.26
<b>ThreeWheelers</b>	18.19	9.98	7.96	10.06	9.34	8.21	7.17	15.78	20.23

Source: Compiled from SIAM database.

**Table 7: Private Sector Vehicle Companies by Segment and Ownership: 2002-03**

Vehicle Segment and ownership categories [No. of firms]	R&D Intensity (%)	Export Intensity (%)	Import Intensity (%)	Gross Turnover <sup>1</sup> (Rs. millions)	Installed Capacity <sup>2</sup> (No.)	Total Investment <sup>3</sup> (Rs. millions)
1. 4-Wheelers:						
Foreign-owned [13]	0.38	*6.03	***12.46	227282	833800	141716
Locally-owned [5]	1.45	4.19	2.55	179136	601600	50785
<b>All firms [18]</b>	0.85	5.12	7.33	406418	1435400	192501
2. 2/3Wheelers:						
Foreign-owned [5]	0.27	4.59	5.94	73564	2529000	21647
Locally-owned [7]	1.25	**4.72	2.97	93453	5455000	42168
<b>All firms [12]</b>	0.82	4.66	4.28	167017	7984000	63815
3. Engines:						
Foreign-owned [1]	0	1.87	1.93	5138	60000	3171
Locally-owned [2]	0.52	0.42	0.54	4965	206500	1201
<b>All firms [3]</b>	0.26	1.16	1.25	10103	266500	4372
<b>All vehicles (1.+2.):</b>						
Foreign-owned [18]	0.35	5.62	10.42	300846	3362800	163363
Locally-owned [12]	1.38	4.36	2.70	272589	6056600	92953
<b>ALL VEHICLE FIRMS [30]</b>	0.84	4.98	6.32	573435	9419400	256316

Notes: 1. Flow figures are adjusted in case of the financial year length # 12 months. Gross turnover is inclusive of excise duty and sales tax; else (a few cases), an approximation is made.

2. N.A. for Volvo India (a 4-wheeler foreign-owned unit). Bajaj Tempo and M&M operate in 4-wheeler and 3-wheeler segments, and HML operates in 4-wheelers and engines; their capacity is added at appropriate places.

3. This is total accumulated investment since the inception. N.A. for SkodaAuto India and Volvo India (foreign-owned 4-wheeler producers). For Eicher Motors, Royal Enfield and TVS Motor in 2/3 wheelers segment the 200001 investment figures are employed.

\* Calculated excluding Hyundai Motor India, a car producer (its exports value figures N.A.); its volume export intensity is 7.96%.

\*\* Calculated excluding LML, a 2-wheeler producer (its exports value figures N.A.); its volume export intensity is 9.49% for scooters, 0.64% for motorcycles and 3.95% overall.

\*\*\* Excluding firms for which import figures are N.A.

Source: Compiled from SIAM(2004).

In the 4-wheeler segment overall the foreign-owned firms group is dominant; the average gross turnover and installed capacity per firm are smaller for this group, as some foreign firms, primarily selling vehicles imported as CBU's or assembled from SKD/ CKD kits, have limited production operations in India. Foreign firms are concentrated in the motorcycle sub-category of 2-wheelers, while locally-owned firms dominate the scooter and moped sub-categories; the latter has lower per unit value. The Indian companies dominate the 3-wheeler market; during 2003-04 Bajaj Auto had 68.03% share of total sales (along with Bajaj Tempo, the Bajaj's share was 76.48%). Cumulated investment figures, being available at book prices, are not comparable.

**A close look at car exports:** The car segment has received much FDI inflow through the entry of global majors during the 1990s; also the earlier JVs have been re-aligned wresting the equity (or at least the managerial control) from the local partner. Effectively, Tata Motors stands out as the only indigenous competitor in the car segment, mainly on account of its engineering and R&D capabilities. Hindustan Motors has a small domestic market share.

Of the total exports of about 1.25 lakh passenger cars from India during 2003-04 (Table 8), the locally-owned and controlled companies exported small amounts, namely 8895 by Tata Motors and only 11 units by Hindustan Motors (7.10% and 0.01%, totalling a share of 7.11%). Overseas sales of cars is a particularly 'high entry barriers' activity, and global affiliations can matter a lot. Tata Motors' exports have picked up subsequent to the export marketing agreements with Rovers. Among the foreign-owned car 'producers' in India, exports by five of them are zero; Honda Siel has a small volume of exports. Ford India has been exporting 'Ford Ikon' in CKD form without the engine; its export intensity in value terms – the ratio of 'value of exports of vehicles, SKD/ CKD kits and engines reported together' to gross turnover during 2000-01, 2001-02 and 2002-03 being 15.95, 18.73 and 8.54% respectively (compiled from SIAM, 2004: 42-43) - is much lower than in volume terms (over 50%).

Maruti and Hyundai India have exported in large numbers as their collaborators are using the Indian arm as an export hub<sup>16</sup>; in Aug. 2003 Hyundai India exported to European markets. Incidentally the parent company in both cases – Suzuki, Japan and Hyundai, Korea – is a relatively small operator on the global scene. Thus in recent years, in terms of car exports India seem to have benefited less from FDI by relatively big MNEs. A possible reason is that the 'intra-MNE sales interdependence' factor may be more impinging in their case

**Table 8 – Firm-level Passenger Car Exports: 2002-03 and 2003-04**

Company	2003-04		2002-03			FDI		
	Car Exports (No.)	Car Export Intensity (%)	Car Exports (No.)	Car Export Intensity (%)	Company R&D Intensity (%)	Company total turnover (Rs. million)	FE (%)	Country
Maruti Udyog	50247	12.31	31508	10.28	0.31	90636	54.2	Japan
Hyundai Motors	42115	24.54	8960	7.96	NA	40602	100.0	S. Korea
Ford India <sup>1</sup>	24000	53.29	27558	64.17	0.43	10514	85.0	USA
Tata Motors	8895	7.60	2105	2.58	1.37	108551		
Honda Siel	59	0.29	83	0.62	0.41	9854	99.0	Japan
Hindustan Motors	11	0.07	49	0.27	0.59	10747		
General Motors <sup>2</sup>	0	0	0	0	0.29	1706	100.0	USA
Fiat India	0	0	0	0	NA	8909	100.0	Italy
DaimlerChrysler	0	0	0	0	NA	2888	100.0	Germany
Toyota Kirloskar	0	0	0	0	0.18	17696	99.0	Japan
Skoda Auto India <sup>3</sup>	0	0	0	0	NA	3836	100.0	Czech/Germany
<b>TOTAL</b>	<b>125327</b>	<b>15.26</b>	<b>70263</b>	<b>11.49</b>				

Notes: Export intensity is exports in numbers in relation to total sales of passenger cars.

R&D intensity is the ratio of total R&D expenditure to total gross turnover of the company.

The cases of R&D intensity data being 'NA', appear to be mostly zero or negligible figures.

Daewoo Motors India (100% FE, S. Korean) incorporated in Oct. 1994, is out of business.

1. Ford India has been exporting cars in CKD form, without the engine.

2. Its R&D intensity figure is for 2000-01 (NA for 2002-03).

3. It is 100% owned by a wholly-owned Czech subsidiary of Volkswagen AG, Germany.

Source: Compiled from SIAM(2004) and SIAM media summary report, 16/4/04 (on exports and domestic sales data).

due to their wider global network of production centres (Singh, 2001: 33). More important, in the car segment India has a comparative advantage in the small/ compact car sub-segment (see Appendix 1, Table A6); domestically also there is a concentration of small car sales. Hence, only the MNEs having technological capability of small/ compact car production can contribute significantly to car exports from India at present.<sup>17</sup> MNEs selling primarily premium cars imported as CBUs or assembled from SKD/CKD kits are unlikely to contribute much by way of car exports in the near future while they have high import intensity. It is hard to expect such operations to have significant positive spillovers (Nagaraj, 2003).

Since 2002-03 the auto firms have faced practically no export obligations; the previous ones were abolished in Aug. 2002 and it was imminent in the early 2002 itself. Overall, the recent export performance record of foreign-owned companies in the car segment is a mixed one. Incidentally, a similar mixed picture emerges regarding the effect of foreign ownership if we examine the exports of multi utility vehicles, MUVs (i.e. UVs and MPVs), another vehicle segment attracting the FDI during the 1990s. GM, Hyundai and Ford have zero UV exports till March 2004; but they have started their domestic sales of UVs during 2003 only. As against sizeable domestic sales, Toyota Kirloskar exported only 4 and 16 UVs during 2002-03 and 2003-04. Maruti, on the other hand, has been a large exporter of MUVs, having an export intensity (in numbers) of 1.31 and 1.44% during the same periods. The average exports intensity for the MUV segment for foreign, domestic and all firms combined is respectively 0.87, 1.21 and 1.04% for 2002-03, and 0.97, 2.73 and 1.91% for 2003-04 (compiled from SIAM media report, 16/4/04).

**Export prospects:** As per the Auto Policy 2002, an export target of US \$ 2.7 billion by 2010 is feasible. In general, export strengths typically derive from the strength of domestic demand. With greater awareness of safety, comfort and pollution features in the domestic market, export competitiveness of Indian vehicles is likely to improve. Many global MNEs having affiliates in India plan to make India a global manufacturing and export hub for low-cost/ capacity passenger cars, 2/3 wheelers etc.; Hyundai, Ford, Suzuki, Kawasaki, Yamaha, Honda and Piaggio are some of the examples. The overseas market for sub-compact cars is growing. With the expansion of EU and the increased need for cars with better fuel economy, small cars will become more popular there (Business Line, 9/5/2004: 13). The 2/3 wheeler producers have identified exports as a thrust area. Indian-owned companies such as Bajaj Auto and TVS Motor

have significant export plans (ICRA, 2003b). Now with introduction of 4-stroke 2-wheelers in the domestic market, it will be possible to export to more countries. The Indian 2/3-wheeler producers need to promote their products overseas more vigorously in countries with similar road conditions (congestion) and/or low to medium per capita income.

#### **4.2 Auto component exports**

**Factors in export competitiveness:** Consistent good quality, meeting delivery commitments and price competitiveness are the most critical operative factors. Krueger(1975) refers to the problems in obtaining necessary imports, especially by rapidly expanding auto component firms; also the choice of export markets for components was largely confined to those having similar outdated vehicle models as in India then. For auto component manufacturers during 1985-86 to 1987-88, Chugan(1998) finds that among large/ medium units a higher profitability, R&D and technology import seem to lead to a greater inward-orientation. Among small (SSI) units, the bigger, more profitable and higher R&D intensity firms have a better export performance. For both the groups, he finds a significant positive effect of the export orientation index - based on the export promotion bodies membership, foreign visits, participation in foreign trade fairs and exhibitions, foreign buyers visits, and publicity in foreign journals or magazines. Our e-mail responses from auto producers (Section 5) corroborate the importance of such efforts. The associated overseas exposure involves also informal technology exploration. Therefore, export promotion bodies like EEPC should encourage and facilitate such activities more vigorously.

The foreign collaborators tend to impose export prohibitions affecting the export performance (see our survey of producers, Section 5); informal restrictions on entering the foreign partner's territory are common. For the high-end items and critical components, like fuel injection equipments, and emission management and control systems, the technology is proprietary and held by MNEs even if some of it is developed in the design centres of these companies in India (Economic and political Weekly, 24/4/ 2004: 1636-37); outsourcing of these components can come about only if these multinationals decide to use their Indian operations as an outsourcing base (ICRA, 2003a). OEM export market has relatively large and assured volumes, but low margins and stringent quality norms and the validation process takes a long time. For outsourced products, if something goes wrong, a recall liability can be very heavy.

According to the ACMA officials, this body feels concerned about the DEPB rates and income tax rebate for exports having fallen since earlier times, inadequate market access funds for small firms and complex documentation (now made easier with Electronic Data Interchange and digital signature, avoiding direct interface with custom officials). ACMA has also suggested setting up of special auto compo zones and parks. For FTAs, we do not have a level playing field still; the rules of origin should be in place. Two major *non-tariff barriers to exports* are:

- The buyer's stipulation that the product is to be tested at specific laboratories that may be costly. There is non-uniformity of standards across countries, and absence of mutual recognition.
- Product liability can be huge in case of vehicle/ product recall by a foreign OEM who may try to pass on this liability partly to their Indian vendors (no known case till date) through various clauses; so vigilance is required to avoid arm-twisting contracts. Some auto component firms have taken product liability insurance; besides being expensive, few insurers provide it.

**Export Performance:** Till the 1980s the auto component exports from India were quite small - approx. Rs. 140 crores and Rs. 178 crores during 1981-82 and 1989-90 (estimated from Narayana and Joseph, 1993: M-14) - and catered mainly to the aftermarket. In the early 1990s a number of global auto majors made arrangements to source components from India, also through buyback agreements in new collaborations (Chaudhuri, 1995). Shridharan(1999) finds India's share in world exports for 1993 for all components and parts together to be 0.25, up from 0.17 in 1988. The quality levels have improved considerably after the entry of international OEMs in India. However, only for the last 5-7 years have the auto component firms started exporting to OEMs in a significant way. Domestic slow-down in the automobile industry in the late 1990s also made them look for exports. The global trade in components is over US \$ 300 billion annually (ET, 1/6/2004: 5); thus the Indian exports at \$1 billion during 2003-04 constitute roughly a marginal 0.3% share. At present the sales to OEMs and tier-1 suppliers account for 55% of all auto component exports by India, up from about 20% a decade ago (Hindu, 12/5/2004: 12).

Indian companies are attempting customer and geographical diversification of exports. Indian component manufacturers continue to enjoy competitive advantages primarily on the strength of low labour costs, less stringent environmental regulations, and low minimum economic scales and possession

of established technology (as in castings and forgings; ICRA, 2003a: 51-52). Indian companies are highly cost competitive even at lower volumes due to appropriate levels of automation, low cost of automation and automation (ACMA website). Firms have increased productivity through TQM, TPM and Toyota Production Systems.

India was a net importer of auto components till 2001-02, and is a net exporter during 2002-03 (Table 9). The export intensity of auto component sector has risen in the recent past. Exports during 2002-03 and 2003-04 grew by 26 and 29%. For 2002-03 the export destinations were: America 31%, Europe 30%, Asia 18%, Africa 11% and Middle East 8% (ACMA, 2004: 95). The major/ important export destination countries are listed in Appendix 1, Table A7. These markets vary in terms of vehicle sophistication and platform size, and the propensity to offshore to low cost countries (McKinsey, 2004).

India has competitive advantages in the area of labour intensive components such as engine components. According to McKinsey(2004), India's comparative disadvantage in electronic and plastic intensive components is due to lower manufacturing scale and higher raw material costs than in other low cost countries. India needs to diversify its component offering in the export basket to include items that have been reporting a brisk growth rate (drive, transmission and steering components). Also since our major export items like castings and forgings have some environmental repercussions for our nation, the diversification is desirable. Telematics value chain area offers a huge market opportunity.

**Export Prospects:** McKinsey(2004) predicts auto component exports of US \$20-25 billion by 2015. Overall, the picture of component exports from India seems bright. Of late, India is emerging as a sourcing hub for global automotive majors. Indian vendors have to measure up to the global standards of quality, cost and service, and need to integrate into global supply chains.

**Outsourcing from India** - India offers a good mix of low-cost and high-technology engineering skills. Global tier-1 suppliers like Visteon, Mico Bosch, Cummins, Delphi, Denso and Koyo Seiko are rapidly increasing their exports from India; some have set up International Procurement Offices in India. The prominent global OEMs outsourcing from India include GM, DaimlerChrysler, Toyota, Ford, Arvin, Volkswagen, Renault and a few Chinese truck OEMs. Indian auto component producers are slowly gaining global recognition and the large

**Table 9: Exports and Imports: Auto Components Sector**

	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04
Exports (Rs. crores)	1227	1399	1827	2706	2775	3497	4500
Production(Rs. crores)	12032	12997	16356	17857	21602	25535	30640
Ratio of Exports to Production (%)	10.20	10.76	11.17	15.15	12.85	13.69	14.69
Imports of Auto Components (Rs. crores)	2422	2444	3386	3060	3164	3250	N.A.
Ratio of Imports to Domestic Demand (%)	18.31	17.40	18.90	16.80	14.39	12.51	N.A.

*Notes:* The domestic demand is estimated as production plus net imports. The 2003-04 figures are estimates.  
*Source:* Compiled from ACMA Annual Convention, Sept. 2004, Industry Overview; ACMA(2004: 162).

firms have started getting mega export orders. However, since the increasing outsourcing of components and assemblies from India by companies in Europe and North America is being fuelled not by a growth in their auto market but by the pressure to cut cost, these companies might give orders with only wafer thin margins (Business India, 7/7/2003: 96).

**Quality and R&D** - Sourcing from India means at least 15% cost benefit for global auto firms; however, it is the consistency in delivery and quality that makes them come back to India.<sup>18</sup> GM and Ford are prime examples of quality seekers. Lead-time (final order to delivery) and on-time delivery logistic capabilities are also considered. Many Indian firms have received the quality/best supplier award from global OEMs, greatly improving their brand equity, especially for export orders. India has endorsed the report on global harmonization of technical standards relating to safety and emission norms. The Indian auto components industry shall not find it hard to implement these standards since it already has the highest number of ISO-9000 and QS-9000 certified companies among the domestic industrial sectors (ICRA, 2003a: 34). The average quality of automotive components produce in India has improved particularly during the past few years; both the average end of the line rejection rates (by the component producer) and the customer level rejection rates have come down significantly (ICRA, 2003a: 55-56).

However, the spending on R&D has to be scaled up significantly to compete seriously in the global market. Technical collaborations alone would not suffice. There is a need to enhance the design and engineering capabilities. The R&D spending has been small - 0.3% average R&D intensity during 2001-02 and 2002-03 for auto component units in our sample. Most large firms have realized the importance of intellectual property. Also in recent years in India the return of expatriate engineers from US and Europe would strengthen this industry (ET, 1/6/2004: 5).

**Global presence** - Closeness to assembly plants is essential for just-in-time delivery of modules. Many assemblies/ sub-assemblies of components are difficult to ship out over long distances. So regionalized manufacturing may be a solution. Also, many countries (e.g. in E. Europe and Northern Africa) offer numerous fiscal concessions to auto component enterprises (ICRA, 2003a). Therefore, global presence - through setting up of manufacturing/ distribution units or via strategic alliances - may be important for serving overseas markets. It facilitates reliability and timeliness in dealing with global players, better

provision of after-sales service and availability of spares, and learning the dynamics of foreign markets. The 'outward investment' by firms in India has been mostly the trade supporting type and can therefore be expected to encourage exports by the parent. Their overseas production, if any, has not generally reached the stage to raise the issue of substitutability between exports from the parent and the overseas production. In the component sector the companies acquiring/ establishing production units abroad are Group companies; each of these Groups, having several companies, operates in diverse auto component segments and some operate in the vehicle sector too. Therefore, outward foreign investment (OFI) by any Group company is expected to enhance the Group's exports of auto items.<sup>19</sup> Kumar and Pradhan(2003)'s econometric study also points to a consistent positive effect of the OFI on exports.

In the component sector the TATA Group e.g. has established overseas JVs through its Group company TACO, Tata AutoComp Systems Ltd., dealing in components, modules and assemblies, as well as design and engineering, system engineering, testing and homologation. TACO has 12 JVs – 1 in India (JBM Tools Ltd., since 1998) and the remaining abroad in several countries like Japan (5), US (2), etc.<sup>20</sup> Some firms have taken the overseas acquisition route, as a gateway strategy to reach the established customers of the acquired company since global OEMs hardly move outside their captive vendor base to source components. In recent years Amtek Auto, Sundram Fasteners Ltd. (SFL) and Bharat Forge have acquired firms in US, UK and Germany. SFL also set up a greenfield project in China in 2003, to be considered for outsourcing from China by auto majors. Thus the buzzword is international business, not exports (alone), which is a paradigm shift in outlook and strategy - a step ahead in the direction of internationalisation.<sup>21</sup>

**Externalities from vehicle exports** - The policy makers and the industry need to realize fully that the vehicle and auto component exports are complementary. The export success of indigenously developed vehicles like Indica, Scorpio and TVS Victor has also somewhat changed the world attitudes towards the Indian component makers who developed their components and systems; it reflects the maturity of vendor base of these "Made in India" vehicles (ET, 1/6/2004: 5). Further the expected increase in vehicle exports from India will boost component exports for the after market over a period of time. In short, component exports from India are poised for a big leap.

Next with the vehicle assemblers beginning to globalise their operations and setting up production and assembly outside India, our component producers

will follow them in the world market. For international business the Japanese have synergies among producers - of vehicle producers with component producers in terms of market areas of overseas operations. This is not the case in India at present<sup>22</sup>; e.g. the Tatas may go alone for overseas production operations. The synergies emerge by-and-by. The government should facilitate the development of the Japanese type synergies (SIAM officials).

## 5. Views of auto producers

Next we discuss the primary information collected by us through sending a detailed e-mail questionnaire to all vehicle producers and to a large number of auto component producers (even non-exporters). We asked their opinions on the importance of government policies etc. The importance is rated on a scale of 0 to 3, not important (or non-existent) to highly important. We also sought information on the company size, export involvement, technology strategies, etc.

**The Sample: A Few Facts** – The respondent sample consists of exporters only, operating in different segments, and both local and foreign-owned firms (for auto components as JVs). The auto component sub-sample contains firms operating in industrial clusters and outside, and 'Group' as well as non-Group companies. The export intensity ranges up to 100%; some are tier-1 or 2 suppliers. A small minority of auto component firms has simply ISO-9000 or QS9000 quality certification level; all others and all vehicle firms have higher certified quality levels. The vehicle sub-sample includes export hubs.

Considering the 2001-02 and 2002-03 data for vehicle sample companies, the average export and R&D intensities are relatively much higher for the locally-owned group, while the average technology import, merchandise import and advertisement intensities are substantially higher for foreign affiliates,<sup>23</sup> broadly conforming to the patterns found for the entire vehicle sector (Table 7). For foreign, locally-owned and all vehicle firms respectively in the survey the average (direct) export intensity is 0.30, 3.64 and 2.88%; the average R&D intensity is 0.34, 1.60 and 1.32%; the average technology import intensity is 2.15, 0.68 and 1.01%; the average import intensity is 10.37, 1.88 and 3.81%. The average advertisement intensity is high, being respectively 2.57, 0.68 and 1.11% (0.03% for the component group). Locally-owned and almost all foreign vehicle firms have formal foreign technical collaboration. Some of the locally-owned firms have foreign assembly operations too.

For the auto component companies the average export and import intensities are 2.67 and 1.74%. The average R&D and technology import intensities are 0.30 and 0.06%, implying relatively low spending on technology acquisition. A small minority of firms report having overseas marketing/ distribution alliances for exports (one firm mentions 8), or overseas branches/ sales or distribution centres; these are 'Group' companies having generally high export and R&D intensities. The average ratio of foreign exchange expenses on travel including trade fair visits, overseas publicity/ advertisement and subscription to foreign journals etc. is a meagre 0.03% of gross turnover (0.19% for vehicle firms); except for a small proportion, these expenses are on travel only. About 2/5<sup>th</sup> firms in the components sample have foreign technical collaboration - generally 1 or 2. The incidence of overseas subsidiaries, JVs or other such financial collaborations is rare; the usual mode is a JV.

As for any export restrictions imposed by the foreign financial or technical collaborator during the last 5 years, the foreign-owned vehicle firms' response was 'No'; the locally-owned vehicle units did not reply to this question. SIAM and ACMA (officials) believe that there are informal restrictions, like prior consent of the parent. About 1/3<sup>rd</sup> of auto component producers having any collaboration, mentioned restrictions like prohibition to export to select countries/ regions, and total prohibition to export the licensed product(s). The perceived effect on their export performance during the last five years varies from 'nil' to 'a large extent' (scale=2).

Auto component firms in India have a wide size-range. We asked this group: Judging by the international standards, whether the 'small' scale of operations of the company has affected its export competitiveness? The answer is 'Yes' for about 1/3<sup>rd</sup> replies, arguing: paucity of funds for global marketing, and big names and foreign OEMs hesitating to approach them due to likely delivery schedule constraints. Apparently non-Group and non-cluster firms are affected more by their 'small' size. Interestingly, a large-sized firm, which is a 'Group' company, felt that the 'small' size of the enterprise affected it adversely in some areas of its manufacturing and exports.

**Policy Assessment and Responses:** Among the government policies affecting the growth of exports of auto products from India during the last 5 years (Table 10), the 'complicated custom and trade documentation/ procedures' has been viewed as the most adverse factor. Inadequate infrastructure and market

information have been inhibiting too. Lack of Trade Agreements with a prosperous region has mattered more for exports by vehicle units. Under 'any other policy constraint', some firms have emphatically (scale=3) listed: non-vatable embedded taxes; inflexible labour policy; inadequate availability of high tensile steels, and good heat treatment & painting facilities; 180 days stringent time-limit for depositing export proceeds (extended now); and the FIPB permission for FDI in private limited companies taking unduly long time. As enabling environment for exports, the liberalization of industrial licensing has been viewed as the most important policy contributing to the growth of exports during the last 5 years (Table 10). Liberalization of imports is also highly rated. The liberalization of FDI and of technology imports has mattered too, more so for component exports. Under 'any other contributory policy', firms have specified emphatically: MoU Policy and QRs as well as EPCG & consequent export commitments; DEPB/ Advance Licensing; lower taxes and interest rates spurring domestic growth. Auto compo firms have also listed the 'Generalized System of Preferences with EU'.<sup>24</sup>

**Table 10: Government policies constraining/ contributing to the growth of exports of auto products from India during the last 5 years: Producers' views**

(Scale 0 to 3)

Government Policies affecting growth of auto exports	Average Scale	
	Vehicles	Components
<b>Policy Constraints:</b>		
Inadequate infrastructure	2.17	1.82
Inadequate provision of marketing & other information	1.50	1.71
Complicated custom and trade documentation/ procedures	2.33	2.00
Constraints to outward FDI	0.50	0.53
Constraints to overseas distribution/ sales centres	1.17	0.53
Constraints to forming overseas marketing alliances	0.67	0.71
Lack of Trade Agreements with a prosperous region	2.00	1.18
Any other government policy(s). Pl. specify.	1.00	0.71
<b>Contributing (Favourably) Policies:</b>		
Liberalization of imports	1.83	2.20
Liberalization of FDI	1.50	2.20
Liberalization of import of technology	1.50	2.27
Liberalization of industrial licensing	2.00	2.53
Any other government policy(s). (Pl. specify)	1.50	1.40

**Table 11: Firm-specific factors etc. improving the firm's export competitiveness during the past 5 years: Producers' views**

(Scale 0 to 3)

Factors affecting firm's export competitiveness	Average Scale	
	Vehicles	Components
Low labour costs	2.25	2.31
Low costs, other than labour (Pl. specify)	2.50	1.85
In-house R&D	1.50	2.15
R&D links with domestic institutions/ firms	0.25	0.77
R&D links with foreign institutions/ firms	1.50	1.38
Overseas marketing alliances	1.75	1.54
Overseas branches/ distribution or sales centres	1.00	1.08
Overseas financial ventures	0.25	0.23
FDI in the firm	0.50	0.76
Import of technology	2.25	1.23
Foreign travel, including trade fair visits	2.00	2.00
Publicity/ advertisement abroad	1.00	1.62
Subscription to foreign journals etc.	0.75	0.77
Government incentives (Pl. specify).	2.75	2.38

Among the various factors improving the firm's export competitiveness during the last 5 years (Table 11), 'Government Incentives' has been accorded the highest average scale; firms mention EPCG, DEPB and duty drawbacks, advance license, tax benefits and MDA grant. Low labour cost is assigned a high average scale. Under 'low non-labour costs', firms have listed power, interest and transport factors, rupee depreciation and reduction in material costs (through technology upgradation). In-house R&D has been important to the component companies for their exports; domestic and foreign R&D links have been of lesser importance for them. Among vehicle units in-house R&D is quite important to locally-owned units but not to foreign affiliates; of the two sets of firms, the latter assign greater importance to R&D links with foreign institutions/ firms (say with the foreign associate) and no importance (scale=0) to 'R&D links with domestic institutions/ firms'. For both the vehicle and component units the overseas marketing alliances are important; however, overseas distribution/ sales centres or financial ventures, or FDI in the firm have not been important in general in the recent past. The 'Import of Technology' is rated highly by vehicle companies while only modestly by component firms. Foreign travel is important for both the groups; also somewhat important is 'publicity abroad', more so for component firms.

**Table 12: Response of the firm to liberalization measures since 1991: Producers' views**

(Scale 0 to 3)

Response of the firm	Average Scale	
	Vehicles	Components
Increasing R&D efforts	1.00	1.85
Seeking new technology tie-ups with foreign companies	0.80	2.00
Improving quality standards	2.40	2.85
Increase in inward FDI (Pl. specify)	2.00	0.46
Establishing/ increasing the number of foreign affiliates, distribution centres or marketing/ export alliances	0.80	1.15
Any other(s) (Pl. specify).	1.20	0.23

As response strategies to the Post-1991 liberalization measures, 'Improving quality standards' has received the maximum emphasis; some vehicle firms have also mentioned "improving quality standards of our supply base" (under 'Any other(s)', Table 12). Seeking new technology tie-ups with foreign companies has been an important strategy by auto component producers, and some vehicle companies, specially the locally-owned firms. A similar pattern is seen in terms of increasing R&D efforts; relatively speaking, auto component firms and locally-owned units among vehicle firms have been more responsive in this regard. Increase in inward FDI by the vehicle producers is mainly due to re-alignment of JVs in favour of (greater equity to) foreign associates. Establishing/ increasing the number of foreign affiliates, distribution centres or marketing/ export alliances has been listed as a significant response only by a minority of firms.<sup>25</sup> Among 'Any other' responses by the vehicle companies are: seeking to become leaner, and increasing exports of components. Some auto component firms have resorted to cost reduction using TPM/ Strategic Sourcing.

As regards the future role envisaged for government policies in promoting auto exports (Table 13), greater fiscal incentives in the form of income tax and import duty concessions/ rebate for exports as well as R&D are weighed the most, more so by auto component firms. Under other fiscal incentives/ measures, vehicle firms have stated: tariff reduction, implementation of VAT by States and concessional power costs; auto component firms have specified: improved shipping frequency and lower port charges; concessional rate of bank interest for export credit. Auto component firms have expressed concern regarding: DEPB rate going down; rupee getting stronger; high import duty on steel (now slashed down); likelihood of income tax concession on export earnings going

**Table 13: Future role of government policies in promoting auto exports: Producers' views**

(Scale 0 to 3)

Future role of government policies	Average Scale	
	Vehicles	Components
Income tax concession for exports	2.20	2.93
Income tax concession for R&D	2.40	2.71
Concessional imports for exports	2.80	2.86
Concessional imports for R&D	2.40	2.57
Any other fiscal incentives. Pl. specify.	1.60	1.29
Providing more marketing information	1.20	1.86
Simplifying custom & trade documentation/ procedures	2.00	2.07
A liberal outward FDI policy	1.40	1.29
Having regional trade agreements	2.40	1.07
Any other(s). Pl. specify.	0.00	0.79

Source for Tables 10-13: Compiled from responses to the E-mail questionnaire sent by the author.

away. Some small-sized (non-Group) auto component firms have resented the discontinuation of MDA for study/ sale tour, saying that it is “essential and desperately needed” by the SSI sector, and have urged for its re-instatement.

Table 13 also indicates that ‘simplifying custom & trade documentation/ procedures’ would matter a great deal to both the vehicle and auto component producer-exporters. Auto firms, especially component units would like to seek greater institutional assistance in the form of ‘dissemination of marketing information’. Since high transaction costs of exports can nullify the (labour and other) cost advantages of exporters, those need to be contained. Apparently a liberal outward FDI policy would be of modest importance; however, the outward FDI is not considered to be much policy constrained (SIAM and ACMA officials; Table 10). Having RTAs (or FTA) is assigned a high average scale by vehicle producers, while a modest one by component producers. Some of the vehicle producers are also exporting auto components and assemblies and these regional arrangements would provide them greater market access; lowering the duty would also cut the material costs of vehicle assembly. Under ‘Any other’ policies, some auto component firms have suggested further liberalization and fine tuning of technology import policy; urban centre licensing reforms; automatic approval of FDI in private limited companies.

**Policy suggestions:** We also requested the firms to suggest policy support measures to improve India’s international competitiveness for auto products. Apart from many common concerns and perceptions, the vehicle and auto component producers, as expected, face somewhat different operational constraints to exports and accordingly place different emphasis on policy improvements in different directions and its nitty-gritty. Hence we consider their policy suggestions separately; those specific to the auto industry are marked (\*\*). Incidentally the EXIM and other policy changes since the early 2004 have taken suitable steps in some of these directions; some of the email responses were received just prior to that.

**Policy suggestions by vehicle producers:**

- Export-import policy & incentives: reduction of import duties; incentives for indirect exports also; national registration of exporters and this database to be available at all the exit port offices to effect export and allow the exporter to get export benefits; quick implementation of SAFTA.
- Improve custom infrastructure & simplify documentation procedure (also by compo firms).
- Strengthen and modernize road, power and port infrastructure; public private partnership.
- Rationalization of local tax regime: Removal of embedded taxes to a single VAT rate.
- Government assistance in setting up global class testing facilities for the Industry. (\*\*)
- More CAR Program type initiatives. (\*\*)
- Implementation of the Auto Policy 2002. (\*\*)
- Marketing information and assistance, including branding assistance, more than the IBEF scheme; improved inputs on market possibilities from embassies and High Commissions; greater incentives in export and branding for manufacturers that make indigenous vehicles/ parts. (\*\*)

**Policy suggestions by auto component producers:**

- Export-import policy & incentives: to continue DEPB/EPCG/Advance License Schemes; reduce interest for export packing credit to international rates; reintroduce special marketing development incentives of the 1990s. Price control over raw materials, like pig iron and alloy; reduction of tariffs on steel and other inputs; more incentives for exports made to OEMs. (\*\*)
- More duty cuts and tax incentives for R&D initiatives. (\*\*)

- Marketing Assistance: Setting up window show casing centres for export items specially from S.S.I. units on the lines of China models in big cities/ metro where importer can have a good idea of the range/ price/ source of product. (\*\*)
- Improvement in shipping frequency and ports; power tariff reduction for bulk consumers.
- Restore income tax benefits u/s 80HHC to 100% for the next 5-10 years.
- Labour reforms, and measures to improve workers and overall productivity.
- The ceiling of US\$ 2 million for automatic approval by the RBI in respect of lump sum payments for technology agreements should be made applicable per agreement, instead of the cumulative basis at present. This limit, fixed in 1991, needs to be substantially revised upwards.
- Industrial licensing restrictions relating to expansion of capacities in metro towns to be eased, s.t. compliance with pollution control requirements and no further land acquisition in the metros.

## 6. Policy recommendations

The Indian auto industry – both the vehicles and components sectors – is poised at a critical juncture. Our export potential is far above our export performance. We should not miss the opportunity to be a true global base for components and in some vehicle segments too. Hence there is need for judicious and the right amount of facilitation, subject of course to the WTO compatibility. To save space we offer mainly the auto industry specific policy recommendations.

The Indian auto industry needs to capitalize on the high design, engineering and IT capabilities which are available at competitive rates and needs to concentrate on building the ‘made in India’ brand. The government needs to improve the logistics and infrastructure for exports, reduce excise and import duties, introduce VAT and flexible labour laws. The auto component producers would also welcome a lower interest rate on export credit.

The government needs to further encourage the in-house, collaborative and sponsored R&D in the auto sector and the setting up of independent auto designing & styling firms. Various empirical studies, also for the auto sector, generally point to a favourable effect of the in-house R&D on exports. Technology tie-ups help indeed; however, even for exploring foreign technology and un-bundling capability, the in-house R&D is a must. Greater government-industry consultation and coordination is recommended for the technology-

related matters. Technical advancement of the related fields like machine tools and die-making is crucial too. The SIAM/ MOHI&PE Proposal for Upgradation of Testing Facilities should be implemented at the earliest. Steps should be taken to move quickly towards mutual recognition of standards and eventually for uniform standards across countries.

Direct overseas marketing and distribution of auto products may be quite expensive and difficult, as the marketing barriers are high. In the recent past a few large firms have resorted to marketing and/or brandname agreements; the export of vehicles is under the collaborator’s brandname. However, we must aim to establish our own brandnames globally. Hence the government assistance in marketing information and branding is required; there should be improved inputs on market possibilities from embassies and High Commissions, and branding assistance to improve the negative perception on Indian brands for sophisticated products. Greater incentives may be devised for exports and branding for manufacturers that make indigenous vehicles or parts. Also there should be special incentives for component exports to OEMs, as these exports involve stringent quality norms while improve the firm’s brand equity, thereby enhancing exports in future.

We recommend setting up of window show casing centres for auto component export items especially from S.S.I. units, as in China, where the potential importer can have a good idea of the range/ price/ source of product. Such centres may be located close to the major auto component clusters in India, and ACMA can do the required networking. Since there are a large number of components, for exports we ought to select niche items for greater emphasis and encouragement; also geographically we need to be focused.

EEPC and other trade promotion bodies should play a more active role. They should coax the firms to participate in foreign trade fairs or at least to send their literature for publicity, and should share more liberally and openly their marketing information with SMEs. Market access funds are important to SMEs. Therefore, a resurrection of the earlier MDA scheme for business study/ sale tours – after fixing the earlier loopholes – would be desirable. ACMA has been assisting in coordinating trade visits by global OEMs and tier-1 suppliers for outsourcing in India from large well-established firms. It must also help (non-Group) SMEs similarly and encourage them to pool their resources in case of a mega order.

Given the growing importance of a large size for auto component exports, some minimal technical and testing facilities should be created in each auto cluster as a shared resource. The government ought to give a serious consideration to ACMA's suggestion of setting up of auto compo zones and parks. The industry-government partnership is required also for the manpower training, including setting up of institutes of auto designing.

FTAs need to be concluded with more prosperous regions to enhance the vehicle exports. The auto component producers must have a level-playing field in terms of taxes and duties on raw materials; also the rules of origin should be in place. At the same time ACMA has to ensure some restructuring, like technological upgradation by firms to be prepared for FTAs/ PTAs.

In view of the 'proximity (to OEMs) need' for bulky and critical components, the shift to modularisation and tierisation, and the rules of origin/ implicit local content requirements in many countries, it is imperative that prominent Indian component players now move their focus to overseas operations through production establishments and sales/ distribution offices abroad. Given these three factors, at this stage, overseas local production is not likely to happen at the expense of exports from India. In case of vehicles the rules of origin, the buyer country's usual preference for local assembly (over imports) and the bulkiness of vehicles (specially CVs) are important considerations. Thus compared to the direct export of vehicles, having overseas production centres may be a better mode of tapping certain foreign markets vigorously.

A handful of firms both in the vehicle and component sectors have created/ acquired overseas production facilities, mostly in the last few years; some have distribution/ sales centres too. The instances are still rare. The government policy thus needs to be re-oriented to support and encourage setting up of overseas production and/ or distribution operations centres (and even R&D centres), largely 'infant activities' in India at this stage. One such step can be a special investment tax credit scheme for business fixed investment abroad in plant & equipment and buildings (also in case of acquisitions). For promoting outward FDI some specific geographical area can be chosen for 2-3 years for concerted focus (as under the MDA schemes); subsequently some other area(s) can be selected as the focus area. The government should also facilitate the development of synergies between component and vehicle manufacturers for overseas production. These two sets of manufacturers need to make overseas

geographical moves in cohesion. SIAM and ACMA should also work together to coordinate this.

## Endnotes

- <sup>1</sup> Based on Agarwal(1991), ICRA(2003a; 2003b), Kathuria(1996), Krueger(1975), Mohanty et al. (1994), Panda(2001) and [siamindia.com](http://siamindia.com).
- <sup>2</sup> This scheme allowed reimbursement of travel expenses upto 90% (75% for non-SSI units), s.t. a maximum of Rs. 60,000 per tour (Rs. 90,000 for LAC region); since Sept. 2001 the scheme had been confined to firms having exports not exceeding Rs. 5 crores during the previous financial year. Source: [eeepc.gov.in](http://eeepc.gov.in).
- <sup>3</sup> Compared to 2002, production in 2003 increased by 28.82% for India, as against 83.25% for China and a mere 0.82% for all top 15 nations; it fell for developed countries like Japan and USA (Business Line, 10/4/2004: 1). Even during 2002 the world output of 4-wheelers grew by only 2% - for passenger cars by just 1% (ACMA, 2004: 197).
- <sup>4</sup> Notwithstanding the scale economies, allowing only one car MNE entry was a narrowly focused policy (ICRA, 2003a). Applications by TELCO and M&M were rejected (Kathuria, 1996: 376).
- <sup>5</sup> Many of these variables fluctuate sharply. Even the replacement demand may be somewhat pre-/postponed accordingly. Low replacement demand of vehicles in India (due to long average retention life) adds to the cyclicity of gross demand. On a year-to-year basis there has been unsteady growth in the vehicle industry, e.g. during the 1990s for almost all segments, like a rapid growth followed by even a negative growth rate, i.e. moving from top to reverse gear; at the firm-level, the segment-wise spikes would obviously be and have been usually sharper.
- <sup>6</sup> Moreover, many Business Groups operating in the auto sector have leading companies in related fields, like steel, aluminium, rubber, plastics, glass, electronics, machine tools, insurance and advertising & marketing. Vehicle assemblers are also increasingly getting into software development, vehicle financing, corporate leasing & servicing, and transactions in second hand vehicles – usually through subsidiaries or JVs – thereby shifting the focus to lifetime value generation (ICRA, 2003a and 2003b; SIAM, 2002 and 2004).
- <sup>7</sup> Anumita R. Chowdhury, *Auto Monitor*, 4(16), 1/9/04: 20-21.
- <sup>8</sup> Background Note prepared by ICRA for SIAM Annual Convention, Sept. 2004.
- <sup>9</sup> Considering the figures in Tables 1 and 9, the ratio of imports of auto components in India to gross turnover of the Indian automobile industry was: 6.63, 6.64, 8.01, 6.22, 6.34 and 5.46% respectively for years 1997-98 to 2002-03. The estimated vehicle population on 31/3/03 is 64 millions, of which 45 millions is 2-wheelers (ACMA, 2004: 6).
- <sup>10</sup> NCAER(1999) examines the incidence of duplicates/ spurious auto components in the SSI sector. Even a small amount of such components exported, say for after market, can bring a bad name to the entire industry. The Trademarks Act, 1999 now

recognizes the counterfeiting or dealing in counterfeits as cognizable offence (ACMA, Annual Report, 2004).

- 11 At home, M&M involved several global tier-1 and tier-2 suppliers in developing some of the components and assemblies for its MUV model Scorpio.
- 12 The Asean RTA involves Thailand, Singapore, Indonesia, Philippines and Malaysia. The Mercosur PTA involves Brazil, Argentina, Chile, Bolivia, Uruguay and Paraguay.
- 13 Auto component imports by India from China P REP increased from Rs. 10.48 crores in 1997-98 to Rs. 49.09 crores in 2002-03 (from 0.43% to 1.51% of total Indian imports of auto components). However, our auto component exports to China have grown faster over the same period, from Rs. 1.61 crores to 70.4 crores, rendering India a net exporter to China. But India is a net importer of components from Thailand, the exports and imports being Rs. 30.98 and 178.97 crores respectively during 2002-03. Source: ACMA(2004: 100-02 and 163-64).
- 14 India has a labour cost advantage, but it offsets only partially. Source: ACMA and SIAM(2003), ICRA(2004) and for Mercosur study the ICRA presentation at an RIS Workshop, August 13, 2004.
- 15 SIAM has been urging the government to take an early decision on signing the 1958 and/or 1998 Agreement (SIAM, Annual Report, Sept. 2004).
- 16 In the early 1990s MUL's exports were far below the projections (Parmar, 2002). Incidentally, using India as an export base has helped Suzuki to circumvent the EC trade restrictions; exports to the rupee trade area again imply no competition to Suzuki; the 800cc model is phased out in Japan. MUL also imports extensively from Suzuki and has been paying royalty till 2002 even for its older models (HT, 10/5/2003: 13; Times of India, 19/5/2003: 13).
- 17 However, the Asean RTA countries, including Thailand, have predominance of large car sales (>1600cc).
- 18 The ACMA executive director, quoted in Times of India, 8/6/2003: 12. Of the 467 ACMA members, the status of Quality Certification is: 395 (ISO 9000), 224 (QS 9000), 68 (ISO 14001) and 99 (TS/ISO 16949) companies; source: ACMA Annual Convention, Sept. 2004, Industry Overview.
- 19 Besides, for sub-categories of components for which another low cost country has an edge over India, creating overseas manufacturing footprints there would enable the producer to serve that domestic market and outsource globally from there.
- 20 Downloaded from [www.tacogroup.com](http://www.tacogroup.com) on 8/7/2003. Tata Technologies, a subsidiary of Tata Motors, undertakes for GM, Ford, DaimlerChrysler and Renault the crash analysis, product lifecycle management work, and knowledge-based engineering work, apart from tooling work for European auto-makers (ET, 3/7/2003: 11).
- 21 It is a move to a stronger strategic group in the hierarchy of 'mobility barriers' groups, as discussed in industrial economics literature. In simple words, these activities set the firm apart from its local competitors in the economy.

- 22 In general the Indian-owned vehicle firms are parts of business 'Groups'. Though these Groups have also auto component producing units in India, those do not usually produce the entire range and quantity of components required by the 'Group' vehicle companies.
- 23 These ratios (intensities) are computed employing the data on company gross turnover (as weights), fob exports, total current & capital R&D spending, total technology import expenses (royalty, technical fess, consultancy & others) and total merchandise imports cif (all types, including capital goods and finished goods for resale).
- 24 Most of the auto replacement parts have been classified as semi-sensitive, enjoying duty concession. US, Japan and Canada too grant such concessions for imports from developing countries. Source: told by the EEPC officials.
- 25 A few foreign-owned vehicle firms have mentioned here that the Indian arm is a part of the purchasing department of the parent company under its global sourcing strategy.

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## Additional Tables

Table A1: Compound p.a. Growth rate of Automotive Volume Production (%): Segment-wise for Vehicles

Financial Year	Cars & Utility Vehicles	Commercial Vehicles	Two-Wheelers	Three-Wheelers	Tractors	Overall
1980-1985	23.2	8.2	21.9	13.2	3.1	18.9
1985-1990	11.1	7.5	10.8	14.2	10.5	10.7
1990-1995	12.6	10.3	6.4	10.3	5.5	7.3
1995-2000	10.1	-8.1	9.1	7.2	6.9	8.2
2000-01	-8.7	-9.7	-0.5	6.8	-3.5	-2.2
2001-02	7.3	-6.7	15.0	4.6	-15.9	11.5
2002-03	7.7	25.0	19.6	27.5	NA	18.5*

Note: \*Excluding Tractors; NA: Not Available.

Source: ICRA(2003a: 47).

Table A2: Imports of Vehicles: 1998-99 to 2002-03

Category	Values in Rs. '000 (No. in brackets)				
	1998-99	1999-00	2000-01	2001-02	2002-03
<b>Tractors</b>	91896 (81)	89555 (73)	78346 (104)	80148 (241)	41536 (78)
<b>Public Transport Vehicles</b>	52061 (97)	57659 (116)	26711 (46)	15166 (81)	26051 (92)
<b>New Cars</b>	441488 (2748)	507737 (3678)	339458 (734)	412927 (642)	2167934 (5877)
<b>Jeep &amp; Land Rover (Assembled)</b>	15907 (30)	25805 (30)	24607 (66)	25746 (39)	93160 (108)
<b>Used Motor cars including Jeep &amp; Land Rover</b>	369424 (1393)	239768 (704)	231489 (695)	328050 (802)	733515 (2490)
<b>Special Transport Vehicles (Ambulance &amp; Prison Vans)</b>	239722 (761)	82525 (129)	161394 (107)	118288 (150)	384851 (1396)
<b>Trucks</b>	261375 (145)	374992 (193)	347516 (138)	561516 (200)	710168 (172)
<b>Chassis with Engines for Motor cars</b>	20935 (125)	24278 (49)	13823 (1153)	6840 (13)	289231 (187)
<b>Mopeds</b>	120 (3)	323 (5)	22 (3)	214 (8)	7946 (1012)
<b>Scoters</b>	618 (16)	2418 (37)	1437 (30)	637 (8)	2250 (18)
<b>Motorcycles</b>	5212 (64)	8935 (1312)	9558 (140)	10321 (1863)	11945 (226)
<b>Autrickshaw</b>	266 (1)	5 (1)	1792 (24)	1294 (36)	1566 (31)
<b>Grand Total</b>	1499027 (5464)	1414001 (6327)	1236151 (3240)	1561146 (4083)	4470153 (11687)

Source: ACMA(2003: 121-125) and ACMA(2004: 155-59); original source: DGCi&S.

**Table A3: Domestic Sales of Vehicles in Numbers: Segment-wise**

CATEGORY	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04
M&HCVs	119781	144511	88259	79124	106261	81960	89999	115711	161414
LCVs	80302	77165	55555	50698	55350	54625	56672	74971	98931
<b>Total CVs</b>	<b>200083</b>	<b>221676</b>	<b>143814</b>	<b>129822</b>	<b>161611</b>	<b>136585</b>	<b>146671</b>	<b>190682</b>	<b>260345</b>
Passenger Cars	316489	374144	388015	384483	615318	567728	509088	541491	696207
UVs	101273	132157	130014	109082	118323	122832	104253	113620	144981
MPVs	-	-	-	-	-	-	61775	52087	59564
<b>Total Passenger Vehicles</b>	<b>417762</b>	<b>506301</b>	<b>518029</b>	<b>493565</b>	<b>733641</b>	<b>690560</b>	<b>675116</b>	<b>707198</b>	<b>900752</b>
<b>Total 4 Wheelers</b>	<b>617845</b>	<b>727977</b>	<b>661843</b>	<b>623387</b>	<b>895252</b>	<b>827145</b>	<b>821787</b>	<b>897880</b>	<b>1161097</b>
Scooters / Scooterettes	1199543	1274815	1232432	1297115	1233781	876224	908268	825648	885038
Motorcycles / Step Through	760931	928329	1085976	1360196	1761439	2114693	2887194	3647493	4170459
Mopeds	583843	635617	598943	646114	698321	643461	408263	338985	309516
<b>Total Two Wheelers</b>	<b>2544317</b>	<b>2838761</b>	<b>2917351</b>	<b>3303425</b>	<b>3693541</b>	<b>3634378</b>	<b>4203725</b>	<b>4812126</b>	<b>5365013</b>
<b>Three Wheelers</b>	<b>144841</b>	<b>198463</b>	<b>215138</b>	<b>189082</b>	<b>172135</b>	<b>181899</b>	<b>200276</b>	<b>231529</b>	<b>268702</b>
<b>Grand Total</b>	<b>3307003</b>	<b>3765201</b>	<b>3794332</b>	<b>4115894</b>	<b>4760928</b>	<b>4643422</b>	<b>5225788</b>	<b>5941535</b>	<b>6794812</b>

Source: SIAM database.

**Table A4: Auto Components: Segment-wise Production Share, 2002-03**

Segment	Share(%)
Engine Parts	23
Electrical Parts	8
Suspension & Braking Parts Equipments	12
Drive Transmission & Steering Parts	7
Others	16
Total	34
	100

Note: The shares are for the organized sector. Source: ACMA.

**Table A5: Auto Components Falling under Early Harvest Scheme of India-Thai FTA**

HS Classification	Description of Items
732020	Helical springs of iron or steel
840991	Parts suitable for use solely or principally with spark-ignition internal combustion piston engines
841381	Other pumps
848210	Ball bearings
851220	Other lighting or visual signaling equipment
870840	Gear boxes

Source: ACMA(2004: 209).

**Table A6: Passenger Car Exports and Domestic Sales by Size**

(No.)

Model Type	Exports		Domestic sales	
	2002-03	2003-04	2002-03	2003-04
Mini	6,682	10,479	1,43,342	1,67,565
Compact	33,755	84,077	2,99,359	3,69,537
Mid-size	29,801	30,739	92,389	1,39,304
Others	25	32	6401	19801
Total	70263	125327	541491	696207

Source: Business Line, 9/5/2004: 8.

Table A7: India's Auto Component Exports and Imports by Country

Country	Exports		Imports	
	2002-03	% share	1997-98	2002-03
			Country	
China FR	70.36	2.01	1.61	107.73
German FR	317.53	9.08	104.23	49.09
Italy	126.81	3.63	34.84	105.21
Korea RP	10.50	0.30	29.38	453.53
Malaysia	57.17	1.64	32.51	197.98
Mexico	150.99	4.32	4.41	586.73
Singapore	46.43	1.33	29.08	388.91
South Africa	77.14	2.21	42.26	178.97
Sri Lanka	98.90	2.83	69.26	252.12
Thailand	30.98	0.89	7.99	382.12
UK	263.98	7.55	112.65	
USA	857.24	24.52	307.25	

Source: ACMA(2004: 6, 100-02 and 162-64).

### More on Policies

**The pre-1991 policies:** It was a period of little to muted competition, initially highly regimented marked by stringent regulation of imports, industrial licensing, foreign technology and FDI, and a gradual softening to some degree. The major policies relating to the auto industry were:

- Imports of fully-built up vehicles were virtually stopped since 1949. In the early 1950s, assemblers without an industrial licence and a program for progressive manufacture – i.e. those interested only in imported kits assembly - were asked to quit the field within three years. Total seven firms were given licences for 4-wheelers and engines; a few came up later.
- Until 1990-91 local content requirements were imposed on new investors.
- For 4-wheelers, there was informal price control since 1956, and since 1969 a statutory one for cars, abolished in 1975.
- The automotive component sector, particularly the small-scale (SSI) production, has been promoted through: restrictions on import of components; reservation of several scores of auto components for exclusive SSI production; 1965 listing of the components that must be bought-in by assemblers (they were denied additional fresh capacities). Monopoly regulations barred large vehicle manufacturers from acquiring a stake in their supplying firms.
- In 1966 'priority entitlement to import replenishment' was given to CVs and ancillaries.
- In the late 1960s the firms in production for 5 years or more had to export 5% (by volume).
- The 1970 Appendix I (core) industries list - to confine the expansion of MRTP and FERA companies - included jeeps. CVs were added in 1973, cars, 2/3 wheelers and specialized components in 1982, and all auto components in 1985 – a reluctant piecemeal inclusion.
- In the early 1980s the government allowed new entry and JVs with foreign collaborators in all segments, which occurred primarily in the period 1982-84, and it was effectively banned for the rest of the 1980s except in the components sector.
- In 1985 there was de-licensing of CV segment; the automotive sector (except 'reserved' items) was de-licensed for non-MRTP and non-FERA undertakings. The 1983 broadbanding policy was extended to 4-wheelers in 1985 only and to 2/3-wheelers and components in 1986 (within broad categories). In 1986 minimum economic scales were announced for vehicles.
- The small-scale reservation was over-ridden provided 75% of the output was exported. Also several export promotion measures were adopted, such as cash compensatory support, duty drawback and import replenishment; some of these schemes have been abolished after 1991.

**Institutional and the industry support:** Here we may mention the setting up of Development Council for Automobiles in 1959, and of Automotive Research Association of India, ARAI in 1966 to assist applied research. The homologation clearance (certifying vehicle roadworthiness) is given by ARAI or the Vehicle Research and Development Association (VRDE), Ahmednagar. The Engineering Export Promotion Council (EEPC)

was set up in 1955 to promote international trade in engineering goods and projects. It also disburses market development assistance (MDA) to auto exporters under various schemes, like reimbursement of expenses for participation in overseas trade fairs and publicity, subject to certain limits.

Automotive Component Manufacturers Association of India (ACMA) and Society of Indian Automobile Manufacturers (SIAM) were set up in 1959 and 1960 (then as AIA&AIA and AIAM respectively). These organizations, representing component producers and assemblers, communicate with government and other agencies, and provide statistical information. ACMA has also instituted awards for excellence in exports, technology, quality & productivity for both SSI and non-SSI categories of members; the exports award was started in 1966. ACMA plays a key role in customer-supplier interactions, export promotion and global outsourcing; it imparts 'Six Sigma' training. In recent years it has been assisting the member companies in improving productivity through the ACMA centre of Technology (ACT), which is an independent division. ACMA and SIAM have sponsored studies on export competitiveness, demand projections, WTO regime etc. They are also paying increasingly greater attention to technology-related matters.

**Auto Policy, March 2002:** This Policy seeks to establish a globally competitive auto industry in India – emerging as a global source of auto components and an Asian hub for export of small cars - and to double its contribution to the economy by 2010. Salient features of the policy are:

- Automatic approval for FE up to 100% for manufacture of automobiles and components.
- Tariffs to be designed to boost domestic manufacturing without undue protection.
- Production of small cars (upto 3.8 meters in length) to be encouraged, through excise concessions etc. Fiscal incentives to be provided to MUV sector.
- To promote the use of multi-axle CVs to reduce pollution and road wear & tear.
- To increase the weighted tax deduction for the in-house and sponsored R&D by auto producers. Rebate in excise duty to be considered for R&D by vehicle manufacturers.
- Government will encourage setting up of independent auto design firms by providing tax breaks, concessional duty on plant/ equipment imports and granting automatic approval.
- Allocations to automotive cess fund created for R&D of automotive industry shall be increased and the scope of activities covered under it enlarged.
- To promote low emission fuel auto technology and discourage the use of older vehicles.
- To harmonize standards.

### Performance requirements on auto companies - An evaluation

This industry has been regulated all over the world – both in developed and developing countries - in terms of certain performance obligations/ requirements, PRs on investors. As discussed above, in India the government imposed localization of intermediates and export commitments, e.g. under the MoUs signed by companies during the 1990s. Apart from these, there have been some explicit PRs imposed at the time of foreign collaboration approvals that we analyse first.

**Incidence and pattern of explicit PRs:** We examine the DSIR data on foreign technical and/or financial (25% FE) collaboration approvals for the mid-1980s to end-1990s – years 1984, 1988 and 1991 and for post-liberalization era using three sub-periods 1992-1993, 1995-1997 and 1998-2000, marked by somewhat different policy stances. The data for 1994 is not available to us. We consider the approvals for motorized road vehicles (excluding bulldozers/ cranes, excavators etc.), engines and auto components & parts listed under the transportation sector, and for auto components production listed under the mechanical engineering sector (a few). The cases of usual fuel efficiency and pollution norms to be met from time to time are excluded.

The Table below indicates that the incidence of explicit PRs has been low for both the vehicles (+engines) and components sectors. The PRs have been primarily as export obligations (EOs) and during the early period as a few cases of PMP/ import restrictions. The R&D and technology transfer requirements are few and rather trivial. There are no cases of 'training of employees' requirements. For the vehicles or engines manufacturing, during 1984, 1988 and 1991 only 7 foreign collaboration approvals (none financial) faced any PRs; among technical collaborations for vehicles there is one case each of 'no import of capital goods allowed' and 'prototype of the vehicle to be tested by a specified institute', loosely speaking, a case of technology transfer requirement. The 1992 to 1993 data list no PRs, except for a '50% FE' vehicle firm to produce the latest models, a kind of technology transfer condition. A similar case is found during 1995 to 1997; additionally this firm faced EO and PMP requirements (and an explicit dividend balancing requirement). The 1998 to 2000 period is devoid of any explicit PRs.

For the component sector, during '1984, 1988 and 1991' period, 3 technical collaborations faced R&D obligations (all for 1984), simply as having an in-house R&D facilities/ program; a majority foreign collaboration was allowed import of capital goods only against foreign equity; post-1991, the imposition of PRs is minimal, only as a few cases of EOs. The 100 (or 75%) EOs are special cases as these are export-oriented units or operating in export-processing zones, taking advantage of several associated benefits.

**Effectiveness of performance requirements:** Pre-1991, the indigenisation and export requirements imposed on firms were generally met (Gulyani, 2001; Krueger, 1975; Parmar,

Table: Performance Requirements on Foreign Collaboration Approvals for Auto Sector

Types of PRs, Performance Requirements	1984,1988,1991		1992 to 1993		1995 to 1997		1998 to 2000	
	Pure TC	FC (FE %)	Pure TC	FC (FE %)	Pure TC	FC (FE %)	Pure TC	FC (FE %)
<i>Vehicles+Engines:</i>								
Export obligation						1 (49)		
- 100%								
- 75%								
- 50%	1							
- 25-40%	0+1					1 (37.47)		
- 10-20%	1							
- Specified value	0+1							2 (50,100)
PMP/ local content	1+2							1 (50)
Import of K goods	1							1 (50)
Technology/Transfer	1			1 (50)				
<b>Total approvals facing PRs</b>	<b>4+3</b>			<b>1</b>				<b>4</b>
<i>Components:</i>								
Export obligation								
- 100%								
- 75%								
- 50%								
- 25-40%	2	2 (21,25)						
- 10-20%								
- Specified value	1							
PMP/local content	4							
Import of K goods								
R&D obligation	3							
<b>Total approvals facing PRs</b>	<b>10</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>7</b>	<b>4</b>

Notes: 1. The 1994 data are N.A. to us. 2. TC and FC are technical and financial collaboration. 3. Blanks are zero.

Source: Compiled from the dataset used in Kumar and Singh(2002); original source: DSIR, Foreign Collaborations, different volumes, New Delhi.

2002). The extent of indigenisation is subject to increasing costs. Till the 1970s it was hard for assemblers to ensure good quality of their vendor base, given the SSI reservation, the '1965 Demarcation' of components, and restrictions on foreign collaborations. Maruti and other JVs established during the 1980s had to create a domestic base quickly. The local content requirements, LCRs, for cars and MUVs, under the Auto Policy 1997, though in a way marked a return of the pre-1991 PMP (Rao, 1997), were softer: viz. 70% vs. 95% earlier. Moreover, by then a relatively well-developed auto components industry in India, and given liberal FDI norms, many preferred suppliers of OEMs following them to India made it easier to meet the LCRs.

A recent study by the author (Kumar and Singh, 2002; published in UNCTAD, 2003: 81134) examines the effectiveness of performance requirements imposed on investors during the 1990s, in particular the export obligations and JV requirements. It covers both the explicit PRs and MoU commitments. It finds that export-obligations imposed on automobile MNEs at the time of their entry into the country in the form of foreign exchange neutrality have prompted them to explore the potential of the country as a sourcing base for components for their worldwide operations. The affiliates of auto MNEs on whom export obligations were imposed, generally fulfilled them by way of the parent company sourcing some components from India for its global operations; sometimes even CBU vehicles or SKD/CKD kits were exported. Initially these global OEMs were hesitant to import components from India fearing poor quality - apprehensions that were belied. Export obligations helped in overcoming the information asymmetry or perception gap regarding the host country capabilities and led to a fuller realization of the export potential through MNEs. The global OEM-vendor linkages would be of long-term value. The auto MNEs also set up subsidiaries and JVs for component production/ outsourcing and exports from India. See UNCTAD(2003: 21-24) for success stories of export performance requirements also in many other countries.

The export obligations and localization commitments have also contributed to the development of local manufacturing base while preventing heavy drain of foreign exchange on imports. Foreign investors of the 1990s generally reached the 70% target within the stipulated time. Though they were not initially happy with the MoU route, it has turned out to be a blessing in disguise, leading to a quantum leap in the quality of components manufactured in India; the interaction and exposure between the component industry and the overseas manufacturers increased dramatically (Business India, 7/7/2003: 99). Our survey of producers and discussions with SIAM and ACMA officials corroborate that the MoUs and the related export commitments and localization requirements under the Auto Policy 1997 have contributed significantly to the auto exports since the mid-1990s, and helped the ancillary development; also, technology *per force* was flowing in. Despite the PRs during the 1990s - namely the indigenisation requirement, and export obligations/ foreign exchange neutrality until March 2001, and dividend balancing requirements till July 2000 for cars (exports to match dividends over the initial 7-year period) - the Indian auto industry attracted many established auto majors from the US, Europe, Japan and Korea. Apparently the lure of the market seems to be quite important.

The Industrial Policy has laid down JV requirements and maximum FE(%) sectoral caps, also for existing companies – e.g. in the auto sector during the early 1980s allowing JVs, usually with 26% FE and in 1991 allowing up to 51% FE on an automatic basis. Subsequently during the 1990s FE above 51% was permitted on a case-by-case approval basis. Since March 2002, 100% FE is allowed under the automatic approval route; SIAM believes that with no minimum investment (amount) criteria specified for FDI, this policy does not encourage value addition within the country against mere trading activity.

Export competitiveness depends upon the technology used. JVs may not receive as advanced technology as 100% subsidiaries would get (e.g. Moran, 2002). Foreign collaborators may be wary of transferring proprietary technology to a joint venture for reasons of secrecy. However, certain core technologies may not be transferred even to wholly owned subsidiaries abroad (Parmar, 2002), due to fear of the risk of dissipation or diffusion through mobility of employees. Kumar and Singh(2002) argue that the presence of local partner in a JV enhances the chances for local learning and diffusion of whatever knowledge that is transferred. Moreover, as regards the exports from affiliates, the MNE may have several global strategic considerations, and may impose formal/ informal export restrictions. A multivariate empirical study of Indian pharmaceutical firms finds that over the period 1978-79 to 1991-92 the increase in percentage export-sales ratio was higher for minority foreign-owned firms compared to majority foreign-owned units; it argues that in a minority foreign-owned enterprise the local joint venture partner may view exports as integral to the success of the firm (Singh, 2001). Also, the presence of a local partner may help to bridge the information gap regarding the potential of local suppliers, and may result in a higher local content ratio (Belderbos et al., 2001). Several studies indicate that relatively a JV may be more prone to export and to undertake R&D to absorb and assimilate technology, though sometimes the JV partners may have serious conflicts.

Case studies in Kumar and Singh(2002) show that for 2-wheeler JVs where the foreign partner has pulled out, the local partners have been able to stand on their own feet after the termination of JV and to launch new models, an indicator of absorption of technology and building of local technological capability; they are now placing an increased emphasis on R&D and exports. The local partners of erstwhile JVs for vehicles have sometimes benefited from the foreign partner beyond the currency of the JV, e.g. Bajaj Tempo and HML in terms of contract manufacturing (SIAM, 2004: 50; ET, 17/1/2004: 3); M&M's Scorpio R&D project received a little supervisory assistance from Ford.

**Re-alignment of JVs in the auto sector:** The maximum FE norms have been liberalized since 1991, also for the existing companies. At present in India in the vehicle sector there are few JVs between Indian companies and foreign collaborators. Many foreign-owned firms have de-listed themselves from the domestic stock exchanges (Nagaraj, 2003: 1705). The erstwhile JVs have been re-aligned - many cases in the recent couple of years (ICRA, 2003b; Nagaraj, 2003; SIAM, 2002 and 2004). For the car segment, in general, the local partner's equity stake has been reduced to zero or an ineffective/ negligible level; in most cases this is apparently due to the limited financial resources of the local partner to meet the expansion needs or the initial losses. In the other segments the re-alignment has happened

in the opposite direction too. The Indian-owned vehicle companies in recent years seem to be emphasizing technology tie-ups (some of these having an export arrangement) and quality upgradation; many of them are also investing large sums in R&D (SIAM, 2002 and 2004). Incidentally the re-alignments of JVs have also taken place in the auto component sector, though in smaller proportions and noticed less often; also some technical collaborations have been turned into financial ones (ICRA, 2003a; ET, 3/7/2003: 11).

**Scenario since 2002:** The rules of the game have been changing over the last couple of years. Now companies do not face any local content or foreign exchange neutrality requirement. The new 4-wheeler premium models are being introduced by MNEs in India almost invariably as CBUs (ICRA, 2003b: 43 and 202) or as CKDs, and the localization of their intermediates is expected to be slow, also due to low volumes and the absence of strategic local partners. Hence the earlier achieved high degree of overall indigenisation of vehicle manufacturers is expected to fall for many firms. For the new vehicle models introduced in India by foreign affiliates, there would probably be high import dependence. On the other hand, India has now many producers of components and some engine producers satisfying the international standards. As part of global mandating, foreign automobile MNEs are likely to outsource increasingly from India, through their affiliates/ technical tie-ups here, or those of their preferred global suppliers. On the whole, we expect some increase in import intensity (total imports to sales ratio) of foreign-owned vehicle manufacturers in the near future, while the export-output ratio of the auto component industry would also increase.

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