INTRODUCTION:

Automobile industry is a key driver of any growing economy. It plays a pivotal role in country’s rapid industrial and economic development. It caters to the requirement of equipment for basic industries like steel, non-ferrous metals, fertilizers, refineries, petrochemicals, shipping, textiles, plastics, glass, rubber, capital equipments, logistics, paper, cement, sugar etc. It facilitates the improvement in various infrastructure facilities like power, rail and road transport. Due to its deep forward and backward linkages with almost every segment of economy, the industry has a strong and positive multiplier effect and thus propels progress of a nation. The automotive industry comprises of the automobile and auto component sectors. It includes passenger cars; light, medium and heavy commercial vehicles; multi-utility vehicles such as jeeps, scooters, motor cycles, three wheelers, tractors, etc; and auto components like engine parts, drive transmission parts, suspension and breaking parts, electicals, body and chassis parts; etc.

In India, automotive is one of the largest industries showing impressive growth over the years and has been significantly making increasing contribution to overall industrial development in the country. Presently India is the world’s second largest manufacturer of two wheelers, fifth largest manufacturers of commercial vehicles as well as largest manufacturers of the tractors. It is the fourth largest passenger car market in Asia as well as a home to the largest motor cycle manufacturer. The installed capacity of the automobile sector has been 9,540,000 vehicles, comprising 1,590,000 four wheelers (including passenger cars) and 7,950,000 two and three wheelers. The sector has shown great advances in terms of development, spread, absorption of newer technologies and flexibility in the wake of changing business scenario. It is also finding increasing recognition world wide and a beginning has been made in exports in vehicles as well as components.

AUTOMOBILE HISTORY:

The automobile history dates back to the late 18th century. Nicolas Joseph Cugnot, a French engineer is credited with the first self propelled automobile. Cugnot’s vehicle used steam power for locomotion. The vehicle found military application in the French army. Cugnot’s automobile was never commercially sold.

In the beginning automobile industry was dominated by steam-powered vehicles. The vehicles were expensive and difficult to maintain. The incidence
of frequent boiler explosions also kept potential purchasers away. Commercial history of automobile started with the invention of gasoline powered internal combustion engines. The germen inventor, Karl Benz constructed his first gasoline powered vehicle in 1885 at Mannheim, Germany. Commercial production of Benz cars started in 1888. Panhard et Levassor of France was the first company to exclusively build and sell motor cars from 1889.

The early 1900s saw many automobile manufacturing companies coming into existence in a number of European countries and the United States. The first mass produced automobile in the United states was the curved-dash Oldsmobile. It was a three-horsepower machine and sold 5,000 units by 1904. the economics of the US car market was disrupted by the arrival of Henry Ford and his Model T car. The Model T was the world's first mass produced vehicle-a million units were sold by 1920-a space of 10 years.

Mass production of cars led to cheaper vehicles. This made cars more affordable to the common American and European citizen. The British automobile manufacturing history was a revolutionized by assembly line production methods employed by two separate car makers- William Morris and Herbert Austin. Austin Seven was the world's first compact car. The Morris manufactured vehicles had engine mounted on front.

The 1960s saw rapid developments in automobile manufacturing technology. A milestone in the history of automobiles was achieved by the invention of efficient fuel injection process, independent suspension and turbochargers. Pontiac Trans Am was the best selling car from 1969 to 1980. Computer Aided Design (CAD) was introduced for designing vehicles from the 1980s. Ford Taurus was the first vehicle to be build using CAD.

BIRTH OF AUTOMOBILES:

Horses had dreams of them since time immortal, but it was only in the 18th century that the first horseless carriage actually hit the roads. That's not to say that the idea never struck anyone. Seeds of the idea, in fact, originated long before the first contraption was rolled.

The history of the automobile actually began about 4,000 years ago when the first wheel was used for transportation in India. Several Italians recorded designs for wind-driven cars. The first was Guido da Vigevano in 1335. it was a wind-mill type drive to gears and thus to wheels. Vaturio designed a similar car that was also never built. Later Leonardo Da Vinchi designed clockwork-driven tricycle with tiller steering and a differential mechanism between the rear wheels.

In the early 15th century, the Portuguese arrived in China and the interaction of the two cultures led to a variety of new technologies, including the creation of a wheel that turned under its own power. By the 1600s, small steam-powered engine models were developed, but it was another century before a full-sized engine-powered automobile was created.
A Catholic priest named Father Ferdinan Verbiest is credited to have built a steam powered car for the Chinese Emperor Chien Lung in about 1678. There is no other information about the automobile, only the event. Since James Watt didn’t invent the steam engine until 1705, we can guess that this was possibly a model automobile powered by a mechanism like Hero’s steam engine—a spinning wheel with jets on the periphery.

Although by the mid of 18th century the idea of a self-propelled automobile has been put into practice with the development of experimental car is powered by means of springs, clockworks, and the wind, Nicholas Joseph Cugnot of France is considered to have built the first true automobile in 1769. Design by Cugton and constructed by M, Brezin, it is also the first automobile to move under its own power for which there is a record. Cugnot’s three-wheeled steam-powered automobile carried four persons and was meant to move artillery pieces. It had a top speed of a little more than 3.2 km/h (2mph) and had to stop every 20 minutes to build up a fresh head of steam.

Evan was the first American who obtained a patent for “a self-propelled carriage”. He, in fact, attempted to create a two-in-one combination of a steam wagon and a flat-bottomed boat, which didn’t receive any attention in those days. During the 1830s, the steam car had made great advances. But stiff competition from railway companies and crude legislations in Britain forced the poor steam automobile gradually out of use on roads. The early system-powered automobiles were so heavy that they were so heavy that they were only practical on a perfectly flat surface as strong as iron. A road thus made out of iron rails became the norm for the next hundred and twenty-five years. The automobile got bigger and heavier and more powerful and as such they were eventually capable of pulling a train of many cars filled with freight and passengers.

France too had joined the motoring scenario by 1890 when two Frenchmen Panhard and Levassor began producing automobile a powered by Daimler engine, and Daimler himself, possessed by the automobile spirit, went on adding new features to his engine. He built the first V-Twin engine with glowing platinum tube to explode the cylinder gas-the very earliest from the sparkling plug. The engines were positioned under the seat in most of the Daimler as well as Benz cars. However, the French duo Panhard and Levassor made a revolutionary contribution when they mounted the engine in front of the car under a ‘bonnet’.

Charles Duryea built a car carriage in American with petrol engine in 1892, followed by Elwood Haynes in 1874, thus paving the way for motor cars in that country.

For many years after the introduction of automobiles, three kind of power sources were in common use: steam engines, gasoline or petrol engines, and electrical motors. In 1900, over 2,300 automobiles were registered in New York, Boston, Massachusetts, and Chicago. Of these, 1,170 were steam cars, 800 were electric cars, and only 400 were gasoline cars.
In ten years of the invention of the petrol engine, the motor car had evolved itself to amazing designs and shapes. By 1898, there were 50 automobile manufacturing companies in United States, a number that rose to 241 by 1908. In that year, Henry Ford revolutionized the manufacture of automobiles with his assembly-line style of production and brought out the model T, a car that was inexpensive, versatile, and easy to maintain. The introduction of model T transformed the automobile from a plaything of the rich to an item even people of modest income could afford, by late 1920s the car was commonplace in modern industrial nations.

Hurbert Austin and Willium Morris, two different car makers, introduced mass production method of assembly, in the UK, thus paving the way for revolution in the automobile industry. Austian Seven was the world’s first practical four-seater ‘baby car’ which brough the pleasures of motoring to many thousands of the people who could not buy a larger, more expensive car. Even the ‘bull-nose’ Morris with front mounted engine became the well-loved model and one of the most popular cars in the 1920s.

Automobile manufacturers in the 1930s and the 1940s refined the improved on the principles of Ford and other pioneers. Cars were generally large, and many were still extremely expensive and luxurious; many of the most collectible cars date from this time. The increased affluence of the United States after World War II led to the development of large, petrol-consuming cars, while most companies in Europe made smaller cars, many of which have been produced in Japan as well as in Europe and the United States.

The history of motor cars has surly been a well-traversed one. The automobiles, as it progressed, was a product of many hands, of revolutionary concepts, and of simple, almost unnoticed upgrading. In the end, the one who received the most for these challengers and changers was the motorist, whose interest, money, and enthusiasm have forced the auto-moguls to upgrade, perfect, and add to previous achievements in order to stay in the competition.

**AUTO INDUSTRY: A WORLD OVERVIEW**

1.1 The production of passenger and commercial vehicles has reached a new record of 66.46 million units in 2005. The growth in production has been as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>World Vehicle Production (units in million)</th>
<th>Percentage Increase/Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>55.87</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>53.20</td>
<td>(-)4.77</td>
</tr>
<tr>
<td>1999</td>
<td>55.74</td>
<td>4.77</td>
</tr>
<tr>
<td>2000</td>
<td>58.33</td>
<td>4.64</td>
</tr>
<tr>
<td>2001</td>
<td>56.17</td>
<td>(-)3.70</td>
</tr>
</tbody>
</table>
1.2 There has been an addition of 10.59 million vehicle production since 1997. A majority of this growth is coming from the Asia–Pacific region (excluding Japan). The production has nearly stagnated in Western Europe at 17 million, NAFTA at 16 million and Japan at 10 million but it has more than doubled in Asia-Pacific region from 7.1 million in 1997 to 16 million in 2005.

1.3 Again a bulk of this increase in Asia-Pacific region has come from China where production has trebled from 15.82 lakh units in 1997 to 46 lakh in 2005. The second contributor to this growth is India where the production has doubled going up from 7.72 lakh units in 1997 to 15.76 lakh in 2005. The third contributor to this growth is Thailand where it has increased from 3.60 lakh units in 1997 to 8 lakh units in 2005. It is pertinent to note that the global installed capacity in the sector is around 80 million, so still an idle capacity of about 15 million exists world wide.

1.4 The 12 global majors with 2 million units plus per year production capacity account for 53.02 million of vehicle produced in 2005 against a total of 66.46 million, which is almost 80 percent of the total production.

1.5 Global motorcycle production has increased from 30 million units in 2003 to 40 million units in 2005. Asia is the major producer of motorcycles in the world with 90% share. Within Asia, China accounts for 17 million units whereas India is at second position with 7.7 million units a year.

1.6 The industry being highly capital intensive, it offers huge entry barriers, so these existing global majors themselves are realigning their production bases coming closer to the scene of action which is in Asia-Pacific region mainly in China, India and Thailand. Besides the above the constant pressure for cost reduction on OEMs is forcing them to outsource more and more components from Low Cost Countries. The combined forces, as outlined above, have opened a floodgate of opportunities for Indian Automotive Industry.

1.7 India, with its strength of a huge domestic market, rapidly growing purchasing power, market linked exchange rate and well established financial market and corporate governance laws, is working as an attractive destination for new investments in this sector.

1.8 The rapid improvement in infrastructure including road, port, power and world class facilities for Testing, Certification and Homologation, ensuring availability of trained manpower and alignment of government policies with a view to promote fair competition can make Indian Automotive Industry more competitive in world arena besides making the country a favorable destination for investment by global majors in auto industry.
EVOLUTION OF INDIAN AUTOMOBILE INDUSTRY:

The automotive industry in India started developing in the 1940s, distinct growth rates started only in the 1970s. Cars were considered ultra luxury products, manufacturing was strictly licensed, expansion was limited and there was a restrictive tariff structure. The decade 1985 to 1995 saw the entry of Maruti Udyog in the passenger car segment in collaboration with Suzuki of Japan, and Japanese manufacturers in the two-wheeler and commercial vehicle segments.

After economic reforms took place in India in 1991, it is only in the mid-1990s, that the automotive industry started opening up. Thus, the mid-1990s are characterized by the entry of global automotive manufacturers through joint ventures in India. Till the 1990s, the automotive industry in India was primarily dominated by Maruti Suzuki, Tata Motors, Hindustan Motors and Premier Padmini in the passenger car segment. Ashok Leyland, Tata Motors and Mahindra & Mahindra dominated the commercial vehicle segment while Bajaj Auto dominated the two-wheeler segment. After the year 2000, further policy changes were introduced and focus on exports in the industry started increasing. Following that, the Core Group on Automotive Research & Development (CAR) was set up in the year 2003 to identify priority areas for Research and Development (R&D) in India.

Contribution of the automotive industry to GDP and employment in the 1990s:

Turnover of the automotive industry in the year 1998–1999 was Rs. 360 billion and the industry provided employment to over 10 million people directly and indirectly. The contribution of the automotive industry to the GDP during the same period was 4 per cent rising from 2.77 per cent recorded in the year 1992–1993.

Surge in road freight and passenger traffic generated demand for automobiles in 1990s:

The average rate of growth of freight and passenger transport on the road was the highest compared to other means of transport such as rail, air and sea throughout the 1990s. Even in terms of absolute volume, traffic handled by roads was the maximum among the other means. This partly explains the rise in growth of the automotive industry especially since the 1990s.

The figure below shows the trends in traffic movement among different means in the transport sector. Among the other means of transport, roads
The history of the automobile actually began 5,000 years ago when the first wheel was used for transportation, probably on Mesopotamian chariots in 3200 BC (The Great Idea Finder 2005). The dawn of automobile in India actually goes back to 4000 BC when the first wheel was used for transportation in India in form of chariots. Since then it has traveled a long way, from chariots to bullock cart, to the jet-age. It was in 1898 that the first motorcar rode down India’s roads in Mumbai. Mumbai had its first taxicabs in the early 1900. Then for the next many years, cars were imported to satisfy domestic demand. Till the First World War, about 4,000 cars were directly imported to India from foreign manufacturers (Auto India Mart 2007). The
growing demand for these cars established the underlying requirements of the Indian auto market that these merchants were quick to pounce upon. Between 1910 and 1920 the automobile industry made a humble beginning by setting up assembly plants in Mumbai, Calcutta and Chennai. The import/assembly of vehicles grew consistently after the 1920s, crossing the 30,000 mark in 1930 (India Infoline 2007). The Hindustan Motors (HM) was set up in 1942 and in 1944; Premier Autobackmobile (PAL) was established to manufacture automobiles in India. However, it was PAL who produced the first car in India in 1946 by assembling 'Dodge De Soto' and 'Plymouth' cars at its Kurla plant in Mumbai, as HM concentrated on auto components and could produce their first car only in 1949. After a short period of time, it was another company, Mahindra and Mahindra (M&M), which manufactured sturdier utility vehicles, namely the American Jeep. In 1950s, Government of India granted approval to only 7 car dealers to operate in India. The1960s witnessed establishment of two and three wheeler industry in India, and in the 1970s, things remained much the same. Since the 1980s, the Indian car industry has seen a major resurgence with the opening up of Indian shores to foreign manufacturers and collaborators. The 1990s became the melting point for the car industry in here when large number of foreign players came into the country through collaborations and partnerships. The Table 1 below shows the trend of production growth in the industry. It can be seen in Figure 3 too that growth was steep only after 1980s after the partial liberalization and steeper after total decontrol in 1991. Maximum decadal growth rate of 347.46% is seen between 1980 and 1990, when Maruti Udyog Ltd. entered market with other Japanese two-wheeler firms.

Table 1: Decadal Growth of Indian Automobile Industry

Source: SIAM 2007

<table>
<thead>
<tr>
<th>YEARS</th>
<th>PRODUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
</tr>
<tr>
<td>1960-61</td>
<td>41535</td>
</tr>
<tr>
<td>1970-71</td>
<td>181752</td>
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<tr>
<td>1980-81</td>
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<td>2797241</td>
</tr>
<tr>
<td>2000-01</td>
<td>5497416</td>
</tr>
<tr>
<td>2006-07</td>
<td>11065142</td>
</tr>
</tbody>
</table>

Source: SIAM 2007

Figure 3: Trend of Production in Indian

The Indian industrial sector has undergone fundamental regulatory changes in recent times as a consequence of the economic reforms program put together between 988 and 1991. India moved away from the control era
towards the ‘open’ economy model. The policy changes in the automobile industry took place in two phases, i.e. pre-liberalization (total control and partial de-control) and post-liberalization periods. The Automobile industry in India grew under a highly regulated and protected economic environment over the period 1950 to 1985. There were quantitative restrictions on imports of raw materials, components, and equipments through licensing and a tariff structure designed to restrict the market. Also there were restrictions on FDI, and imposition of indigenization of components production protected the domestic market. The initial changes, introduced in 1985, eased the licensing requirements, broad-based the classification of vehicles for issue of licenses, allowed selective expansion of capacity and partially relaxed controls with regard to foreign collaborations, imports of capital goods, raw materials and spares. Though liberalization of economic policies and the outward orientation introduced since 1991 brought about a dramatic change in this industry. These new measures effectively dismantled the license raj, which had made it difficult for Indian firms to import machinery and know-how, and had disallowed equity ownerships by foreign firms (Krishnan 2002). In July 1991, approval of foreign technology agreements and upto 51% foreign equity investment was allowed for the automotive sector. Further in 1997, some more reforms were made where new foreign entrants required establishing actual production facilities, the minimum foreign equity was raised to $50 million, and the minimum indigenization was to be 50. Auto policy announced by the government in 2002 (Ministry of Heavy Industries and Public Enterprises 2002) permitted 100% foreign equity on an automatic basis. The Automotive Mission Plan 2006-2016 was released in 2007, which visualizes India emerging as a destination of choice in the world for design and manufacture of automobiles and auto components with output reaching a level of $ 145 billion accounting for more than 10% of the GDP and providing additional employment to 25 million people by 2016.

THE INDUSTRY BACKGROUND:

In 1998 the Society of Indian Automobile Manufacturers (SIAM) was formed with a goal to promote sustainable development of the automobile industry, focusing on technology up gradation for environment and safety. SIAM is an important channel of communication for the industry with Government and National and International organizations. In keeping with a liberalized economic environment, the Society is committed to playing a proactive role in all issues of relevance to the industry. SIAM organizes, biennially, the Auto Expo series of Trade Fairs in cooperation with Confederation of Indian Industry (CII) and Automotive Component Manufacturers Association of India (ACMA). SIAM promotes the advancement of vehicular technology in India, which would ensure that the products are environment friendly, with enhanced safety features, are cost effective and provide mobility to most people.
The automotive industry in India has come a long way from its inception in the early 1940s to the present day dynamic form. As compared to a mere production of 4,000 vehicles in 1950, the production of the industry crossed a historic landmark of 10 million vehicles in 2006. The industry is witnessing an impressive growth in production in all the vehicle segments; see Figure 1.

![Figure 1: Production of India’s automotive industry](chart)

The Indian automotive industry today operates in terms of the dynamics of an open market. Both the automobile and the auto-component industries, which constitute the automotive industry, exhibit a good balance of domestic and foreign players. The direct foreign competition in the industry is on a continuous rise as evident from the industry’s FDI figures; see Figure 2.
Figure 2: FDI trend in the Indian automotive industry
(Source: GOI 2008)
The influx of global auto-majors and Tier-1 suppliers into the Indian automotive industry has catalysed the development of capabilities of the industry. The industry is producing nearly all kind of vehicles and components. The exports and R&D efforts of the industry are on the rise. Today, the Indian consumers have at their disposal a broad array of vehicle models to select from at competitive prices and satisfactory quality levels.

However, much of the growth of the Indian automotive industry has happened over the last two decades. Prior to the 1980s, the functioning of the industry was heavily regulated by means of a bureaucratic licensing system. Automotive firms were required to obtain licenses from the Indian government for entry, expansion, diversification and relocation. The vehicle models produced by the industry were restricted to an absolute minimum. On one hand, such restrictive government policies helped the Indian automotive industry to develop indigenous capabilities, while on the other, it hindered the process of demand development and led to unsatisfactory industrial performance (Narayana 1989). The partial-liberalisation of 1980s and the liberalisation of 1990s have put the industry on the fast track of development. Today, the industry with its rising contribution to the GDP is considered as a sunrise sector for the Indian economy (GOI 2006).

The development of the Indian automotive industry has been shaped by the demand on one hand and the government interventions on the other, the influence of the latter being considerable (Narayana 1989). Various government interventions in the form of policies, existing at various points of time, have influenced the development of India’s automotive industry. It is of interest in the undertaken study to identify these government policies and to understand the influence they had on the development of India’s automotive industry. It is also of interest to understand the considerations made on the part of the Indian government that underlie these policies and to explore the role played by it in different stages of industry’s competitive development. Such a study shall help to obtain a broader understanding about the role the government plays in the development of an industry. It shall also help to explain the industry structure and the demand characteristics of the Indian automotive industry as we see it today.

AUTOMOBILE INDUSTRY IN INDIA:

A well developed transport network indicates a well developed economy. For rapid development a well-developed and well-knit transportation system is essential. As India’s transport network is developing at a fast pace, Indian Automobile Industry is growing too. Also, the Automobile industry has strong backward and forward linkages and hence provides employment to a large section of the population. Thus the role of Automobile Industry cannot be overlooked in Indian Economy. India is emerging as a source of high value and advanced quality engineering products and services for multinational companies. India is set to emerge not only as a large domestic market for automotive
manufacturers, but also as a crucial link in the global automotive chain. Among other industries, the automotive industry in India is understood to be the most dynamic. It has been experiencing strong growth rates after delicensing of the industry in 1991, when major economic reforms took place in India.

Automotive industry plays a pivotal role in country's rapid economic and industrial development. It caters to the requirement of equipment for basic industries like steel, non-ferrous metals, fertilisers, refineries, petrochemicals, shipping, textiles, plastics, glass, rubber, capital equipments, logistics, paper, cement, sugar, etc. It facilitates the improvement in various infrastructure facilities like power, rail and road transport. Due to its deep forward and backward linkages with almost every segment of the economy, the industry has a strong and positive multiplier effect and thus propels progress of a nation. The automotive industry comprises of the automobile and the auto component sectors. It includes passenger cars; light, medium and heavy commercial vehicles; multi-utility vehicles such as jeeps, scooters, motor-cycles, three wheelers, tractors, etc; and auto components like engine parts, drive and transmission parts, suspension and braking parts, electricals, body and chassis parts, etc.

In India, automotive is one of the largest industries showing impressive growth over the years and has been significantly making increasing contribution to overall industrial development in the country. Presently, India is the world's second largest manufacturer of two wheelers, fifth largest manufacturer of commercial vehicles as well as largest manufacturer of tractors. It is the fourth largest passenger car market in Asia as well as a home to the largest motor cycle manufacturer. The installed capacity of the automobile sector has been 9,540,000 vehicles, comprising 1,590,000 four wheelers (including passenger cars) and 7,950,000 two and three wheelers. The sector has shown great advances in terms of development, spread, absorption of newer technologies and flexibility in the wake of changing business scenario. It is also finding increasing recognition worldwide and a beginning has been made in exports of vehicles as well as components. During the year 2006-07 (up to November 2006), the automobile exports registered a growth of 27.25 per cent.

The Indian automotive industry has made rapid strides since delicensing and opening up of the sector in 1991. It has witnessed the entry of several new manufacturers with the state-of-art technology, thus replacing the monopoly of few manufacturers. At present, there are 15 manufacturers of passenger cars and multi-utility vehicles, 9 manufacturers of commercial vehicles, 14 of two/three wheelers and 14 of tractor, besides 5 manufacturers of engines. They have set up a manufacturing capacity of over 95 lakh vehicles per annum. The norms for foreign investment and import of technology have also been liberalised over the years for manufacture of vehicles. At present, 100% foreign direct investment (FDI) is permissible under the automatic route in this sector, including passenger car segment. The import of technology for technology upgradation on royalty
payment of 5% without any duration limit and lump sum payment of USD 2 million is also allowed under automatic route in this sector. The Indian automotive industry has already attained a turnover of Rs. 1,65,000 crore (34 billion USD) and has provided direct and indirect employment to 1.31 crore people in the country.

The growth of Indian middle class, with increasing purchasing power, along with strong macro-economic fundamentals have attracted the major auto manufacturers to Indian market. The market linked exchange rate, well established financial market, stable policy governance work and availability of trained manpower have also shifted new capacities and flow of capital to the auto industry of India. All these have not only enhanced competition in auto companies and resulted in multiple choices for Indian consumers at competitive costs, but have also ensured a remarkable improvement in the industry's productivity, which is one of the highest in Indian manufacturing sector.

LARGEST MANUFACTURERS OF THE AUTOMOTIVE INDUSTRY:

The largest Indian passenger car manufacturers include Tata Motors, Maruti Suzuki, Mahindra & Mahindra and Hindustan Motors. Presence of foreign players such as Mercedes-Benz, Fiat, General Motors and Toyota is also growing in this segment. Recently, the passenger car segment has also seen the entry of other global majors such as BMW, Audi, Volkswagen and Volvo.

Major Indian manufacturers of commercial vehicles are Tata Motors, Ashok Leyland, Eicher Motors, Mahindra & Mahindra and Force Motors. Like the passenger car segment, this segment has also seen foreign companies such as MAN, ITEC, Mercedes-Benz, Scania and Hyundai entering the market. Two-wheeler manufacturing is dominated by Indian companies like Hero Honda, Bajaj Auto and TVS. Foreign players in this segment include Honda, Yamaha and Piaggio. Three-wheeler manufacturing is also led by Indian companies that include Bajaj Auto, Force Motors and Mahindra & Mahindra.

MARKET OVERVIEW:

The automotive sector comprises the Original Equipment Manufacturers (OEMs) and auto component manufacturers. Globally, the automotive industry is recognised as a key component and driver of national economy. The global automotive industry is in the midst of a major structural transformation –

- Among OEMs, global conglomerates are emerging, driven by mergers and alliances among manufacturers (eg: GM/Fiat/Suzuki; Ford/Volvo/Mazda).
• Component manufacturers, or suppliers, are getting Tierised, with Tier 1 suppliers taking on the role of component aggregation and module supply/assembly, and component suppliers being relegated to Tiers 2 or 3.

• Relationships between OEMs and suppliers (especially Tier 1s) are becoming increasingly collaborative.

These trends have affected the Indian auto industry as well, leading to a rapid transformation of the industry over the last decade or so. After the end of licensing in 1993, the industry has witnessed rapid growth in volumes and capacity, and 17 new ventures have come up in the last 10 years. These include global giants such as General Motors, Ford, Toyota, Honda, Hyundai and Fiat. The industry encompasses commercial vehicles, multi-utility vehicles, passenger cars, two wheelers, three wheelers and auto components.

The domestic automobile market has been growing at 14.2 per cent CAGR over the past 4 years (2000-01 to 2004-05), while the auto components market has been growing at 19.2 per cent CAGR (2000-01 to 2003-04). The industry (OEMs and suppliers together) contributed nearly 4 per cent to the country’s GDP in 2003-04. The automotive sector also offers significant employment opportunities. It employs 0.45 million people directly and around 10 million people indirectly.

The industry’s capabilities in design, engineering and manufacturing have been recognised the world over, and most automotive majors are looking to increasingly source auto components from India. India is emerging as one of the most attractive automotive markets in the world, and is poised to become a key sourcing base for auto components. The table below captures the highlights of the sector in India that illustrates its growing significance.

<table>
<thead>
<tr>
<th>Indian Automobile Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Largest three wheeler market in the world</td>
</tr>
<tr>
<td>2nd largest two wheeler market in the world</td>
</tr>
<tr>
<td>4th largest passenger vehicle market in Asia</td>
</tr>
<tr>
<td>4th largest tractor market in the world</td>
</tr>
<tr>
<td>5th largest commercial vehicle market in the world</td>
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</tbody>
</table>

THE INDUSTRY STRUCTURE SPANS ALL SEGMENTS AND IS CONCENTRATED IN REGIONAL STRUCTURE:
The India automotive sector has a presence across all vehicle segments and key components. In terms of volume, two wheelers dominate the sector, with nearly 80 per cent share, followed by passenger vehicles with 13 per cent. The industry had few players and was protected from global competition till the 1990s. After government lifted licensing in 1993, 17 new ventures have come up. At present, there are 12 manufacturers of passenger cars, 5 manufacturers of multi utility vehicles (MUVs), 9 manufacturers of commercial vehicles, 12 of two wheelers and 4 of three wheelers, besides 5 manufacturers of engines. With the arrival of global players, the sector has become highly competitive.

Automobile manufacturing units are located all over India. These are, however, concentrated in some pockets such as Chennai and Bangalore in the south, Pune in the west, the National Capital Region (NCR, which includes New Delhi and its suburban districts) in the north, Jamshedpur and Kolkata in the east and Pithampur in the central region. Following global trends, the Indian automotive sector also has most auto suppliers located close to the manufacturing locations of OEMs, forming regional automotive clusters. Broadly, the three main clusters are centered around Chennai, Pune and the NCR.

The Indian automotive component industry is highly fragmented. There are nearly 6,400 players in the sector, of which only about 6 per cent are organised and the remaining 94 per cent are small-scale, unorganized players. In terms of value added, however, the organised players account for nearly 77 per cent of the output in the sector.

The sector manufactures components across all key vehicle systems. The break-up of the output from the organised sector, in value terms, across key vehicle systems, is shown in the figure.
The automotive sector is growing strongly in both domestic and exports market

Indian automobile industry has been performing well both in the domestic and the international market.

Automobiles - domestic performance

The production and domestic sales of the automobiles in India have been growing strongly. While production increased from 4.8 million units in 2000-1 to 8.5 million units in 2004-05 (a CAGR of over 15 per cent), domestic sales during the same period have gone up from 4.6 million to 7.9 million units (CAGR 14.2 per cent).

A positive trend in the domestic market is that the growth has not been driven by one or two segments, but is consistent across all key segments. Two wheelers, which constitute the majority of the industry volume, have been growing at a rate of 14.3 per cent, three wheelers at a rate of 14 per cent and passenger vehicles at a rate of 11.3 per cent. Commercial vehicles have been growing at a higher rate of nearly 23.5 per cent, although from a lower base.

Passenger vehicles consist of passenger cars and utility vehicles. This segment has been growing at a CAGR of 11.3 per cent for the past four years. A key trend in this segment is that with rising income levels and availability of better financing options, customers are increasingly aspiring for higher-end models. There has been a gradual shift from entry-level models to higher-end models in each segment. For example, in passenger cars, till recently, the Maruti 800 used to define the entry level car, and had a predominant market share. Over the last 3-4
years, higher-end models such as Hyundai Santro, Maruti Wagon R, Alto and Tata Indica have overtaken the Maruti 800. Another development has been the blurring of the dividing line between utility vehicles and passenger cars, with models like Mahindra & Mahindra’s Scorpio attracting customers from both segments. Upper end sports utility vehicles (SUVs) attract potential luxury car buyers by offering the same level of comfort in the interiors, coupled with on-road performance capability.

**Two wheelers**
The production of two wheelers in India increased from 3.76 million vehicles in 2001 to 6.53 million vehicles in 2005.

The domestic sales have been increasing at a CAGR of 14.3 per cent for the past 4 years. Motorcycles constituted 79.5 per cent of the domestic sales of two wheelers in India and have been growing at nearly 24 per cent CAGR. In the scooter segment, overall domestic sales grew by 1.3 per cent CAGR, driven primarily by ungeared scooters and scooters with automatic gears. The sales of mopeds have declined at a CAGR of 15.9 per cent for the past four years. The motorcycle segment clearly drives the growth of the two wheeler segment in India. The two wheeler segment is being shaped by changing demographics and lifestyles. An increasing number of working women and greater affluence among college goers have led to an increase in demand for ungeared/auto geared scooters. As with the case of passenger vehicles, there is a rising demand for higher-end models that combine style and performance in this segment as well. In motorcycles, for example, models with higher engine capacities (125cc, 150cc or above) are proving very popular.
Three wheelers
The three wheeler segment in India is currently small in size, but growing rapidly. The production of three wheelers in India has increased from 203,234 vehicles in 2001 to 374,414 vehicles in 2005. The domestic sales have increased at a CAGR of 14 per cent for the past four years from 181,899 vehicles in 2001 to 307,887 vehicles in 2005. These vehicles find use as passenger vehicles (auto-rickshaws) as well as small capacity commercial vehicles (pick-up vehicles).

![Indian Auto Component Industry Output & Investment (US$ million)](image)

Source: ACMA

Auto Components - Investments are increasing in line with the output According to Automotive Component Manufacturers Association of India (ACMA), the output of auto component industry in India has increased at a CAGR of around 25 per cent for the past three years from US$ 4470 million in 2002 to US$ 8700 million in 2005. With booming domestic sales and increasing demand from exports, the confidence of industry players is high. This is reflected in the increase in investments in capacity creation and expansion. Investments in this sector have increased from US$ 2300 million in 2002 to US$ 3950 million in 2005, a CAGR of 20 per cent.
Exports of automobiles from India are booming
While the domestic sales of automobiles have been increasing at a significant rate, exports have taken a quantum leap in recent years. The exports of automobiles from India have been growing at a CAGR of 39 per cent for the past four years.
Exports growth has been spearheaded by the passenger vehicle segment, which has grown at a rate of 57.4 per cent. As a result, the share of passenger vehicles in overall vehicle exports has increased from 18 per cent in 1998-99 to 26 per cent in 2004-05.

Europe is the biggest importer of cars from the country while predominantly African nations import buses and trucks. The Association of South East Asian Nations (ASEAN) region is the prime destination for Indian two wheelers.

**Auto Components exports**

Large potential Auto component exports from India grew from US$ 760 million in 2002-03 to an estimated US$ 1.4 billion in 2004-05. Key export destinations include the Americas (31.1 per cent), Europe (30.3 per cent), Asia (18.2 per cent), Africa (10.7 per cent) and the Middle East (7.6 per cent). Most of the key auto component manufacturers in India are very positive about the outlook for exports, and expect about 15 per cent of their revenue to come from exports over the next 3-5 years. It has been estimated that exports of auto components from India could be around US$ 20-25 billion by 2015.
LARGEST MANUFACTURERS IN EACH SEGMENT WITHIN THE AUTOMOTIVE INDUSTRY:

Both domestic and foreign manufacturers have been mentioned. The list may not be exhaustive.
SHAREHOLDER VALUE CREATION IN THE AUTOMOBILE INDUSTRY IN INDIA

<table>
<thead>
<tr>
<th>Passenger cars</th>
<th>Commercial vehicles</th>
<th>Two-wheelers</th>
<th>Three-wheelers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maruti Suzuki</td>
<td>Ashok Leyland</td>
<td>Hero Honda</td>
<td>Bajaj Auto</td>
</tr>
<tr>
<td>Tata Motors</td>
<td>Tata Motors</td>
<td>Bajaj Auto</td>
<td>Piaggio</td>
</tr>
<tr>
<td>Mahindra &amp; Mahindra</td>
<td>Eicher Motors</td>
<td>TVS</td>
<td>Mahindra &amp; Mahindra</td>
</tr>
<tr>
<td>Hindustan Motors</td>
<td>Swaraj Mazda</td>
<td>Royal Enfield Motors</td>
<td>TVS Motors</td>
</tr>
<tr>
<td>Honda</td>
<td>Volvo</td>
<td>Kinetic Motors</td>
<td>Tata Motors</td>
</tr>
<tr>
<td>Toyota</td>
<td>MAN</td>
<td>LML India</td>
<td>Force Motors</td>
</tr>
<tr>
<td>Volkswagen</td>
<td>ITEC</td>
<td>Suzuki Motors</td>
<td>–</td>
</tr>
<tr>
<td>General Motors</td>
<td>Scania</td>
<td>Yamaha Motors</td>
<td>–</td>
</tr>
<tr>
<td>Ford</td>
<td>Mercedes-Benz</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Audi</td>
<td>Hyundai</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

Source: The table has been compiled based on industry research and analysis

AUTOMOBILE PRODUCTION TRENDS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Passenger Vehicles</td>
<td>989.560</td>
<td>1,209.876</td>
<td>1,309.300</td>
<td>1,544.850</td>
<td>11.77%</td>
</tr>
<tr>
<td>Total Commercial Vehicles</td>
<td>275.040</td>
<td>353.703</td>
<td>391.083</td>
<td>520.000</td>
<td>17.26%</td>
</tr>
<tr>
<td>Three Wheelers</td>
<td>356.223</td>
<td>374.445</td>
<td>434.423</td>
<td>556.124</td>
<td>11.77%</td>
</tr>
<tr>
<td>Total Two Wheelers</td>
<td>5,622.741</td>
<td>6,529.829</td>
<td>7,608.697</td>
<td>8,444.168</td>
<td>10.70%</td>
</tr>
<tr>
<td>Grand Total</td>
<td>7,243.564</td>
<td>8,467.853</td>
<td>9,743.503</td>
<td>11,065.142</td>
<td>11.17%</td>
</tr>
</tbody>
</table>
Automobile Exports registered a growth of 25.43% during April-March 2007 over the same period last year.

Passenger Vehicles Exports grew by 13.05%.

Commercial Vehicles exports increased by 22.58%.

Three Wheelers exports by 87.17%.

Two Wheelers Exports grew by 20.65%
SIZE AND STRUCTURE OF AUTOMOBILE INDUSTRY IN INDIA:

The Indian automotive sector has a presence across all vehicle segments and comprises of key component manufactures, concentrated in regional clusters.

The Indian automobile market is still in its evolutionary stage. Therefore, no fixed or widely accepted method of segmenting the market has evolved as yet. Segmentation has mostly been done on the basis of product types, its weight/size or product uses. It is categorized into following four segments namely; Commercial Vehicles, Passenger Vehicles, Two Wheeler and Three Wheelers, which covers 5%, 14%, 77% and 4% of the total market share of the industry respectively (Society of Indian Automobile Manufacturers 2007).

It has been noticed that due to its strong backward and forward linkages, the auto industry has grown in clusters of inter-connected companies, which are linked by commonalities and complementarities (Ministry of Heavy Industries and Public Enterprises 2006a). While automobile manufacturing units are located in all regions of the country, there have been certain concentrations in some pockets. Following global trends, the Indian automotive sector also has most auto suppliers located close to the manufacturing locations of Original Equipment Manufacturers (OEMs), forming regional automotive clusters. Broadly, the three main clusters are centered around Chennai, Mumbai and Delhi. However, Pune is also developing as a new cluster in the country.

The efficiency of vehicle production is closely linked to that of the supplier base (Singh 2004). In India the auto component industry is one of the important key sectors of the auto industry.

The freeing of the industry from restrictive environment has on the one hand helped it to restructure, absorb newer technologies, align itself to the global developments and realize its potential; on the other hand, this has significantly increased industry’s contribution to overall industrial growth in the economy. The firms have resorted to common platforms, modular assemblies and systems integration of component suppliers and e-commerce (CII-DSIR-IIFT 2004). The total numbers of auto component companies, which are member of Automotive Component Manufacturers Association (ACMA), are 536 at present and more than 10,000 firms in unorganized small sector, in tierized format (Ministry of Heavy Industries and Public Enterprises 2006b). The industry is however dominated by a few industrial business houses. The industry in the country has made rapid strides and is growing at a fast pace, which may be summarized in the following Figure 2. The industry has grown at annual compound growth rate of 17% over the last few years from 2000-01 to reach a size of around US $10 billion in 2005-06, while component exports have grown at around 25 % per annum (IBEF 2006).
The auto component industry has the potential of becoming export driver of the auto industry due to increasing globalization of the supply chains and cost advantage in many component groups supported by relatively (compared to other developing markets) well-developed labour skills and engineering base (Khisty 2000). This will help the industry to mark its global presence.

The automotive industry is one of the largest industries in India and is of high strategic importance to the Indian manufacturing sector overall. The industry has been growing at a fast and steady pace over the past five years registering a CAGR of 17 per cent. According to the Indian Brand Equity Foundation (IBEF), India is envisaged to be the third largest automobile market in the world by 2030 only behind USA and China.19 According to the UNIDO International Yearbook of Industrial Statistics 2008, India ranks 12th among the world’s top 15 automotive nations. Given below are some of the key features of the automotive industry in India that indicate the size of the Indian automotive industry:

• Fourth largest market for passenger cars in Asia
• Second largest manufacturer of two-wheelers worldwide
• Fifth largest manufacturer of commercial vehicles worldwide
• Largest manufacturer of tractors and three-wheelers worldwide

Figure 2: Size and Export of Indian Auto Component Industry
(In US $ billion)

Source: ACMA 2007
PRODUCTION TRENDS ACROSS INDUSTRY SEGMENTS:

The growth of the automotive industry has been due to increase in production across segments. The most notable increases in growth have been seen in the passenger cars segment, commercial vehicles segment and the three-wheelers segment. The largest volume in production is in the two-wheelers segment, followed by the passenger cars segment and the commercial vehicles segment in that order.

During the last few years, certain macroeconomic conditions have helped the automotive industry to grow. The GOI has undertaken supportive policies for the automotive industry, there is easier availability of finance as compared to the 1990s and the real income of the Indian consumer is increasing. This is leading to increased purchasing power which is driving demand in the passenger cars segment and the two-wheelers segment. Demand for commercial vehicles has increased due to further development of the manufacturing sector, more trade and commerce between regions, increased road transport (passenger and freight) owing to the construction of more national highways and better roads. The table on the next page shows the production trends across segments in the industry from the year 2002–2003 till 2006–2007.

### PRODUCTION FIGURES FOR EACH SEGMENT SHOW STEADY GROWTH RATES

The details of production are for the years 2002–2003 till 2006–2007. All numbers are in ‘000 units while growth rate is in percentage.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger cars</td>
<td>609</td>
<td>843</td>
<td>128</td>
<td>1 113</td>
<td>1 323</td>
</tr>
<tr>
<td>Utility vehicles</td>
<td>114</td>
<td>146</td>
<td>182</td>
<td>197</td>
<td>222</td>
</tr>
<tr>
<td>Commercial vehicles</td>
<td>204</td>
<td>275</td>
<td>354</td>
<td>391</td>
<td>520</td>
</tr>
<tr>
<td>Two-wheelers</td>
<td>5 076</td>
<td>5 623</td>
<td>5 530</td>
<td>7 609</td>
<td>8 442</td>
</tr>
<tr>
<td>Three-wheelers</td>
<td>277</td>
<td>356</td>
<td>374</td>
<td>434</td>
<td>556</td>
</tr>
<tr>
<td>Grand total</td>
<td>6 280</td>
<td>7 244</td>
<td>8 468</td>
<td>9 744</td>
<td>11 065</td>
</tr>
<tr>
<td>Growth rate</td>
<td>18.13</td>
<td>15.34</td>
<td>16.90</td>
<td>15.06</td>
<td>13.56</td>
</tr>
</tbody>
</table>

Source: Ministry of Heavy Industries and Public Enterprises

### Passenger cars and utility vehicles

The passenger cars and utility vehicles segments grew by 18 per cent in 2006–2007, and have been growing at 12 per cent CAGR over the last decade. The passenger cars segment grew by 18.35 per cent, utility vehicles segment grew by 13.26 per cent and the Multi-Purpose Vehicles (MPVs) segment grew by 27 per cent in 2006–2007.
Leading small car market

The Indian passenger car market is known to be one of the most price sensitive car markets in the world. The small car sub-segment is hotly contested by several car makers. India is the third largest producer of small cars in the world after Brazil and Japan. Small cars account for 71 per cent of the domestic market of passenger cars. Global automotive majors such as Hyundai and Suzuki already have establishments to produce small cars in India, and companies like Honda, Ford, Renault, and Volkswagen are finalizing their small car plans. For instance, Toyota has announced plans of setting up a new small car manufacturing plant by 2010 with an annual production capacity of 100,000 units.

Tata Motors is launching a car called Nano by end 2008, priced at USD 2,500 making it the world’s cheapest car. Given the current projections for the Nano, India can become the world’s second largest market for small cars soon. India’s second largest motorcycle manufacturer, Bajaj Auto is also bringing out a small car by 2010–2012 in collaboration with Renault and Nissan in the same price range.
Growing luxury car market

However, this does not mean that the luxury car market is not growing. Car manufacturers such as Audi, BMW, Volvo, Bentley and Mercedes-Benz have a big portfolio of luxury cars in India that are growing in popularity. As an indication, Mercedes Benz recorded a growth of 59 per cent in sales in the first quarter of 2008. This segment is expected to witness several launches of luxury cars and Sports Utility Vehicles (SUVs). In fact Paul de Voijs, Managing Director of Volvo India said, “India is a very exciting market and the luxury car market is growing exponentially.” He added, “We see the luxury car market here more than doubling by 2009 on organic growth, upgraders, new launches, and because this segment grows faster in emerging markets”.

Commercial vehicles

The commercial vehicles segment in India can be divided into two sub-segments, medium and heavy commercial vehicles, and light commercial vehicles. Commercial vehicles production has grown at an average rate of 21.4 per cent between 2003–2004 and 2006–2007. Growth in this segment is driven by factors like general economic trends, improvement in infrastructure and replacement period of vehicles. The highway network expansion is expected to improve road conditions and impact the commercial vehicles market positively.
Medium and heavy commercial vehicles

The medium and heavy commercial vehicles sub-segment consists of rigid trucks, tractor trailers, semi-trailers, bulkers and tippers. These vehicles may have a range of two to twelve axles and they mostly run on diesel. Manufacturing in this sub segment is dominated by Indian companies, Ashok Leyland, Eicher Motors and Tata Motors. In India, there are certain regulations for entry and exit of trucks and for operation of trucks in certain areas depending on the time. It can be possible, that to beat the regulation, large consignments are broken up so that smaller commercial vehicles can be used that may not have as many applicable regulations as there are on heavy commercial vehicles.

The two largest manufacturers of buses in India are Tata Motors and Ashok Leyland. Due to an increasing focus on environmental issues and emission norms, buses in some cities run on Compressed Natural Gas (CNG). In the capital city of New Delhi for example, it is mandatory for public transport buses to run on CNG. Another vehicle included as part of medium and heavy sized commercial vehicles is the tempo. Tempos are smaller than full sized trucks that cater to the rural and urban areas where big trucks cannot travel. Manufacturing in this sub-segment is taking place between Indian companies and global companies through joint ventures as well. Eicher Motors of India has recently tied-up with Volvo to manufacture trucks, Force Motors has tied up with MAN of Germany to manufacture tempos, Nissan and Ashok Leyland announced plans of manufacturing commercial vehicles, Mercedes-Benz and Hero Group have also tied up to manufacture commercial vehicles.

The commercial vehicles segment is expected to grow at a strong rate. Increasing Competition in the commercial vehicle segment is expected to boost its growth further, the same way increasing competition had a positive impact on the passenger car segment. The fastest growth though is expected in the heavy trucks sub segment.
Light commercial vehicles

In India, apart from the medium and heavy trucks, there is growing popularity of light commercial vehicles as well. The light commercial vehicles are popular in rural areas (which form the majority part of India) where due to infrastructural constraints like bad and narrow roads, only small trucks can operate. For example, Tata Motors produces India’s first mini truck called Tata Ace. Tata Ace is a big hit both in the city as well as in the rural areas where it can travel easily carrying light weight products effectively, thus providing more penetration.

Two-wheelers

The two-wheeler is the most common mode of transport in India where the two wheeler market mainly consists of scooters, motorcycles and mopeds. In terms of number of units produced, the two-wheeler segment is the largest. The market for luxury two-wheelers i.e. super bikes and other high performance motorcycles does not exist in India. BMW imported its sports motorcycles in the 1990s and failed miserably. There were talks of Harley Davidson entering the Indian market but those plans have been put on hold.

Promising growth of the two-wheeler segment in India:
Two-wheeler sales have grown at a CAGR of 11 per cent over the last decade and are expected to maintain strong growth rates as more and more people rise from poverty in India. Most of the population lives in rural and semi-urban areas where most people use cycles as a mode of transport. So when income levels increase in those areas, the first vehicle purchased is the two-wheeler. Hence, at its current growth rate, with increasing incomes, the number of two-wheelers being purchased will increase manifold. Rapid urbanization of semi-urban and rural areas, easy availability of finance, and new innovations in manufacturing of two-wheelers is resulting in a large number of new models being introduced each year, which will facilitate growth in this segment.

Production trends show maximum growth in the motorcycles sub-segment:

Between the years 2005–2006 and 2006–2007, production of scooters has decreased whereas production of motorcycles has increased. In fact, motorcycles make up 84 per cent of two-wheeler production and have displayed the highest increase in growth rates. There have been no changes in the production figures of mopeds and production of electric two-wheelers has begun recently in India.

### Production Figures of the Two-Wheelers Segment

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scooters</td>
<td>1,021</td>
<td>943</td>
</tr>
<tr>
<td>Motorcycles</td>
<td>6,207</td>
<td>7,112</td>
</tr>
<tr>
<td>Mopeds</td>
<td>379</td>
<td>379</td>
</tr>
<tr>
<td>Electric two-wheelers</td>
<td>–</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total two-wheelers</strong></td>
<td><strong>7,607</strong></td>
<td><strong>8,442</strong></td>
</tr>
<tr>
<td>Growth rate</td>
<td>–</td>
<td>10.98</td>
</tr>
</tbody>
</table>

Source: The ITP Division, Ministry of External Affairs

India houses the world’s largest motorcycle manufacturer, Hero Honda. In India, the market for motorcycles is different from that in developed countries, where motorcycles are powered by big engines and cater to a niche market. The most popular motorcycles are in the sub–150 CC category and the next category of motorcycles is the 150 CC–500 CC category. Neither are there many available models nor are there many customers in the 500 CC plus category.

### Three-wheelers

Three-wheelers are light vehicles also known as auto-rickshaws that are mostly used as small taxis, pick-up vans and delivery vans for short distances in India. They are driven by two stroke or four stroke engines on petrol, CNG or Liquefied Petroleum Gas (LPG). There are few manufacturers of this type of
vehicle, but the three-wheeler segment has witnessed strong growth rates of 9 per cent CAGR over the past decade and a growth rate of 28 per cent in the year 2006–2007. A total of 434,000 three-wheelers were produced in the year 2005–2006, and 556,000 three-wheelers were produced in the year 2006–2007.

Shown herewith is a picture of the autorickshaw. Autorickshaws are very useful modes of transport given the road conditions and infrastructure in India. They are very popular in the form of small taxis in urban areas also. The autorickshaw is also used across India in the form of a goods carrier for delivering small consignments.

**Tractors**

India is the second largest tractor manufacturer in the world. In terms of market size, India is the largest, followed by USA and China. Growth in the tractor producing segment is directly related to growth in agricultural output and exports to neighboring countries. Production of tractors was 352,827 in the year 2006–2007 growing by more than 20 per cent. Indian tractors are gaining acceptance in international markets. In the past three years, exports of Indian tractors have grown by a CAGR of 55 per cent. The USA is the main market for exports but exports to other Asian countries and African countries is also increasing. In the year 2006–2007, 33,813 tractors were exported in all. Manufacturing facilities for tractors are mostly located in Punjab and Maharashtra. Out of 14 manufacturers, Mahindra & Mahindra is the market leader. One of the initiatives taken by the GOI to boost the tractor manufacturing segment includes setting up the National Centre for Testing of Tractors and Off
Road Vehicles in the state of Uttar Pradesh, which will be responsible for conducting research and for testing of tractors.

COMPETITIVE ADVANTAGES
India has several competitive advantages in the automobile sector, which have been analyzed using the following framework. Availability of skilled manpower with engineering and design capabilities India has a growing workforce that is English-speaking, highly skilled and trained in designing and machining skills required by the automotive and engineering industries. In a combined assessment of manpower availability and capabilities, India ranks much ahead of other competing economies (see figure).

Many Indian and global players are leveraging this advantage by increasingly outsourcing activities like design and R&D to their Indian arms. The Society of Indian Automobile manufacturers (SIAM) estimates that automotive vehicle manufacturers are expected to invest US$ 5.7 billion in the Indian market from 2005 to 2010. Of this, about US$ 2.3 billion will be on research and development and the rest probably on capex. Some examples of investment in areas leveraging the engineering and design capabilities of India include:

• MICO, the Indian operation of Bosch and a key player in fuel injection equipment, ignition systems and electricals, has invested in the MICO Application
Centre (MAC) for R&D. It has emerged as a key global R&D competency centre catering to the entire Bosch Group. It is the first of its kind in India and the Bosch Group’s first outside Europe.

- GM set up a technical centre at Bangalore that became fully operational in September 2003. The centre focuses on both R&D and engineering, and takes up high-value work to complement current research programmes, as well as new exploratory research projects.

- Ford set up Ford Information Technology Services India (FITSI) in Chennai, which caters to the software requirements of Ford Motor Company in the region and around the world. FITSI develops solutions for Ford worldwide. For example, it developed web-based customer relationship services for Ford India, Australia and South Africa. In addition, Ford has shifted the CAD/CAM development, e-mail processing and application development from worldwide operations to India’s FITSI.

**COMPETITIVE INDUSTRY, WITH GLOBAL PLAYERS**

<table>
<thead>
<tr>
<th>Segment</th>
<th>Key Players</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Vehicles</td>
<td>Tata Motors, Ashok Leyland, Swaraj Mazda, Mahindra &amp; Mahindra,</td>
</tr>
<tr>
<td></td>
<td>Bajaj Tempo, Eicher Motors</td>
</tr>
<tr>
<td>Passenger Vehicles</td>
<td>Tata Motors, Maruti Udyog, Honda Motors,</td>
</tr>
<tr>
<td></td>
<td>Hyundai Motors, Toyota, Skoda, Mahindra &amp; Mahindra,</td>
</tr>
<tr>
<td></td>
<td>Daimler Chrysler, Hindustan Motors</td>
</tr>
<tr>
<td>Two Wheelers</td>
<td>Hero Honda, Honda Motors, Bajaj Auto, TVS Motors,</td>
</tr>
<tr>
<td></td>
<td>Yamaha, Kinetic Engineering</td>
</tr>
<tr>
<td>Three Wheelers</td>
<td>Bajaj Auto, Piaggio India</td>
</tr>
</tbody>
</table>

The Indian automobile industry is highly competitive with a large number of players in each industry segment. Most of the global majors are present in the passenger vehicle and two wheeler segments. In the components industry too, global players such as Visteon, Delphi and Bosch are well established, competing with domestic players.

The presence of global competition has led to an overall increase in capabilities of the Indian auto sector. Increase in competition has led to a pressure on margins, and players have become increasingly cost efficient. Quality levels have gone up, and there is an increasing focus on compliance to TPM, TQM and Six Sigma processes. This has led to an increased confidence among domestic players, who are now focusing on opportunities.
abroad. Key players in the components sector like Bharat Forge and Sundaram Fasteners have become key global suppliers in their categories.

**Large market with significant potential for growth in demand**

India offers a huge growth opportunity for the automobile sector – the domestic market is large and has the potential to grow further in the future due to positive demographic trends and the current low penetration levels.

![Growing consuming class](chart)

*Source: NCAER*

**Large target consumer base and rising income levels:**

India has nearly 23 per cent of the global population and is one of the most attractive consumer markets in the world today. Income levels across population segments have been growing in India. According to National Council of Applied Economic Research (NCAER) data, the consuming class, with an annual income of US$ 980 or above, is growing and is expected to constitute over 80 per cent of the population by 2009-10. In addition, a large proportion of the Indian population is relatively young - in the age group of 20-59 years. This is expected to further boost the automotive domestic market as a younger population has a higher consumption index. The rise in income levels of the Indians and the emergence of the consuming class that has higher propensity to spend offers great opportunities for growth to companies across various sectors.
Changing lifestyles, driving demand for new segments

Consumers in India are now more informed, sophisticated and demanding. Urban consumers have been especially exposed to western lifestyles through overseas travel. For example, more than 5 million Indians traveled overseas last year and this number is expected to increase by 15 per cent to 20 per cent per annum. An increase in the number of working women and the prevalence of nuclear double-income families, especially in urban areas, are other trends shaping lifestyles. These changes are driving an increased need for personal transport, especially in segments like working women, young executives and teenagers. This has led to the growth in demand for motorcycles, ungeared and automatic scooters and compact cars. Across the automobile spectrum, consumer aspirations are driving demand for upper end models in all segments.

Presence of strong industry associations and supporting industries

Industry Associations

The Indian automotive industry is well served by the two industry associations

– Society of Indian Automobile Manufacturers (SIAM) that represents the OEMs and Automotive Components Manufacturers’ Association (ACMA) that represents the components industry. Both associations actively engage with industry, government and other stakeholders to promote the interests of the industry and improve competitiveness.
Supplier base
Indian automobile manufacturers are well supported by the automotive component industry. Indian companies produce a range of automotive components like engine parts, electrical parts, equipments etc. Ford is leveraging the large, high quality automotive supplier base of India and has made India a component-sourcing base. This has helped Ford reduce the cost of manufacturing and increase its exports. Ford India awarded the Q1 supplier status to 10 suppliers to help them export their products to Ford worldwide.

Government Regulations and Support

The Government of India (GoI) has identified the automotive sector as a key focus area for improving India’s global competitiveness and achieving high economic growth. The Government formulated the Auto Policy for India with a vision to establish a globally competitive industry in India and to double its contribution to the economy by 2010. It intends to promote Research & Development in automotive industry by strengthening the efforts of industry in this direction by providing suitable fiscal and financial incentives. Some of the policy initiatives include:

- Automatic approval for foreign equity investment upto 100 per cent of manufacture of automobiles and component is permitted.

- The customs duty on inputs and raw materials has been reduced from 20 per cent to 15 per cent. The peak rate of customs duty on parts and components of
battery-operated vehicles have been reduced from 20 per cent to 10 per cent. These new regulations would strengthen India’s commitment to globalisation. Apart from this, custom duty has been reduced from 105 per cent to 100 per cent on second hand cars and motorcycles.

• National Automotive Fuel Policy has been announced, which envisages a phased programme for introducing Euro emission and fuel regulations by 2010.

• Tractors of engine capacity more than 1800 cc for semi-trailers will now attract excise duty at the rate of 16 per cent.

• Excise duty is being reduced on tyres, tubes and flaps from 24 per cent to 16 per cent. Customs duty on lead is 5 per cent.

• A package of fiscal incentives including benefits of double taxation treaty is now available. These government policies reflect the priority government accords to the automobile sector. A liberalised overall policy regime, with specific incentives, provides a very conducive environment for investments and exports in the sector.
### Profile of Domestic Players

<table>
<thead>
<tr>
<th>Name of the company</th>
<th>Parent company</th>
<th>Output</th>
<th>Models</th>
<th>Plants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tata Motors Ltd</td>
<td>Largest commercial vehicle player in the country and one of the largest in the passenger vehicle segment.</td>
<td>Capacity - 160,000 units pa, Volumes - 171,870 units in 2004, Operating income: US$ 3.8 billion in 2005</td>
<td>Sierra, Sumo, Safari, Indica, Indigo</td>
<td>Pune (Maharashtra)</td>
</tr>
<tr>
<td>Mahindra &amp; Mahindra Ltd</td>
<td>Flagship company of the Mahindra Group - largest player in the tractor segment in India.</td>
<td>Capacity - 125,000 units pa, Volumes - 69,737 units in 2004, Operating income: US$ 1.47 billion in 2003</td>
<td>Armada, Bolero, Commander, Marshall, Maxx, Voyager, Scorpio</td>
<td>Mumbai, Nashik (Maharashtra)</td>
</tr>
<tr>
<td>Hindustan Motors A C K Birla Ltd</td>
<td>Group flagship and one of the oldest auto companies in India.</td>
<td>Capacity - 64,000 units pa, Volumes - 15,782 units in 2004, Operating income: US$ 159.7 million in 2004</td>
<td>Lancer, Ambassador, Contessa, Trekker, (Madhya Pradesh), RTV, Pooja, Pajero</td>
<td>Utsapara (West Bengal), Pithampur, Trivandrum (Tamil Nadu)</td>
</tr>
<tr>
<td>Ashok Leyland</td>
<td>Hinduja group</td>
<td>Operating Income - US$ 952.9 million in 2005</td>
<td>Multi axle vehicles, tractor, ecomet, engines, Viking BS-I, Viking BS-II, VST Tractor Bus, 222 castings plant at CNG bus etc</td>
<td>Ennore, two plants at Hosur, the assembly plants at Alwar, Bhandara, Hyderabad</td>
</tr>
<tr>
<td>TVS Motor</td>
<td>TVS Group</td>
<td>Operating Income - US$ 641.9 million in 2005</td>
<td>Mopeds - Excel, Champ, TVS SIDScooters etc. - ScootyMotorcycles - Max 100, Victor, Centra, Fiero</td>
<td>Hosur, Mysore</td>
</tr>
<tr>
<td>Bajaj Auto</td>
<td>Bajaj Group</td>
<td>Capacity - 2.52 million units pa, Operating Income - US$ 1.3 billion in 2005</td>
<td>Motorcycles - Boxer, CT 100, Discover, Wind, Caliber, pulsar, EliminatorScooters - Spirit, Saffire, Wave</td>
<td>3 Plants at Akurdi, Waluj, Chakan</td>
</tr>
<tr>
<td>Name of the company</td>
<td>Parent company</td>
<td>Output</td>
<td>Models</td>
<td>Plants</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------</td>
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<td>-------------------</td>
</tr>
<tr>
<td>LML</td>
<td>Lohia Group</td>
<td>Freedom,</td>
<td>Kanpur</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Graptoor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Profile of Overseas Players**

- **Maruti Suzuki of India Ltd:**
  - Japan holds 34.2 per cent stake in the company.
  - Capacity: 580,000 units per annum.
  - Volumes: 472,122 units.

- **UDYOOG:**
  - Company including exports in 2004.

- **Hyundai Motors India Ltd:**
  - Wholly owned subsidiary of Hyundai Motor Company, S. Korea.
  - Capacity: 150,000 units per annum.
  - Volumes: 171,905 units.
  - Models: Santro, Accent, Terracan (Tamil Nadu).

- **Daimler Chrysler India:**
  - 100 per cent subsidiary of Daimler Chrysler group.
  - Capacity: 10,000 units per annum.
  - Volumes: 1,640 units.
  - Models: E class, S class, C class, Pune (Maharashtra).

- **Fiat Motors India Ltd:**
  - Subsidiary of Fiat Auto SpA.
  - Capacity: 50,000 units per annum.
  - Volumes: 18,428 units.
  - Models: Uno, Siena, Palio, Mumbai, Palio Adventure (Maharashtra).

- **Ford Motors Ford Motor India Ltd:**
  - Company, the world's second largest automaker.
  - Capacity: 100,000 units per annum.
  - Volumes: 45,723 units.
  - Models: Ikon, Mondeo, Chengappattu (Tamil Nadu).
International trade scenario

Most of the growth in the automotive industry is domestically driven. India’s share in world trade is quite small. International sales of vehicles have been increasing gradually. India has ambitious plans to achieve USD 35 billion in exports by 2016. The GoI is taking measures to facilitate growth in the industry through development of automotive clusters that will serve as a base for automotive companies to produce and export from their manufacturing facilities. Various fiscal incentives are being offered and a strong increase in exports in the industry is expected.

Exports

The Indian automotive industry is gaining worldwide recognition with a steady increase in the rate of growth of exports. Automotive exports crossed the USD 1 billion mark in the year 2003–2004, and increased to USD 2.76 billion in the year 2006–2007. The industry exported 15 per cent of its passenger car production, 10 per cent of commercial vehicles production, 26 per cent of three-wheelers production and 7 per cent of two-wheelers production in 2006–2007.33 The key exporters for passenger cars are Maruti Suzuki, Tata Motors and Hyundai Motors, the key exporter for MUVs is Mahindra & Mahindra and the key exporters for two-wheelers are Bajaj Auto and Hero Group. Key destinations of exports are the SAARC countries, European countries, Middle East and North America.

SUBSTANTIAL GROWTH IN EXPORTS OF PASSENGER CARS AND TWO-WHEELERS

The figures are for the years 2002–2003 till 2006–2007. Figures are in ‘000 units and growth rate is in percentage.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger cars</td>
<td>71</td>
<td>126</td>
<td>162</td>
<td>171</td>
<td>194</td>
</tr>
<tr>
<td>Utility vehicles</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Commercial vehicles</td>
<td>12</td>
<td>17</td>
<td>30</td>
<td>41</td>
<td>50</td>
</tr>
<tr>
<td>Two-wheelers</td>
<td>180</td>
<td>265</td>
<td>386</td>
<td>513</td>
<td>619</td>
</tr>
<tr>
<td>Three-wheelers</td>
<td>43</td>
<td>68</td>
<td>67</td>
<td>77</td>
<td>144</td>
</tr>
<tr>
<td>Grand Total</td>
<td>307</td>
<td>480</td>
<td>630</td>
<td>806</td>
<td>1,011</td>
</tr>
<tr>
<td>Growth rate</td>
<td>86.49</td>
<td>56.17</td>
<td>31.18</td>
<td>28.05</td>
<td>25.43</td>
</tr>
</tbody>
</table>

Source: Ministry of Heavy Industries and Public Enterprises

Imports

Imports have decreased substantially over the past decade. The most notable decline in imports can be seen in the commercial vehicles segment. This can be attributed mainly to a substantial increase in production capacities of commercial vehicles in India from 2000–2001 onwards.
Imports of passenger cars declined between 1996–1997 and 2000–2001. This was due to the expansion of manufacturing facilities of cars in India during the period. However, imports of passenger cars have increased in recent years. Growth in passenger car imports took place between 2001–2002 and 2005–2006 due to increase in demand for premium and luxury cars.

**DECLINING IMPORTS ACROSS MOST SEGMENTS**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger cars</td>
<td>(8.51)</td>
<td>6.55</td>
</tr>
<tr>
<td>Commercial vehicles</td>
<td>73.96</td>
<td>(10.08)</td>
</tr>
<tr>
<td>Two-wheelers</td>
<td>13.95</td>
<td>(8.61)</td>
</tr>
<tr>
<td>Tractors</td>
<td>13.71</td>
<td>(9.35)</td>
</tr>
</tbody>
</table>

Source: Determinants of Competitiveness of Automotive Industry in India, ICRIER

**Market shares**

![2003-04 Market shares in M&H Cvs - Goods Vehicles](source: www.indainfoine.com)
**2003-04 Market shares in LCVs - Goods Vehicles**

- Mahindra & Mahindra: 38%
- Tata Motors: 50%
- Bajaj Tempo: 3%
- Swaraj Mazda: 4%
- Eicher Motors: 5%

Source: www.indiainfoline.com

**Overall share of Passenger Vehicles - 2003-04**

- Maruti Udyog: 45%
- Hyundai Motor: 17%
- Mahindra & Mahindra: 7%
- Others: 16%
- Tata Motors: 15%

Source: www.indiainfoline.com
Challenges in the Indian automotive industry

Costs, infrastructure and human resource development are the underlying concerns in the automotive industry and manufacturers are being challenged on these counts. Labour costs are rising and economies of infrastructural improvements are not being realized efficiently. Companies are searching for technological advancements that can help contain costs of production and help in using resources efficiently to increase overall productivity.

Composition of costs and productivity

Raw material costs are by far the single largest costs where steel and rubber constitute the two main materials used by manufacturers. However, the variation in cost of raw materials is not as much as that in cost of labour. Further, labour costs constitute a much higher share of the total cost in the automotive industry in American and West European countries compared to India. In addition to the absolute costs involved in the automotive industry, the tax structure also plays an important role. India has higher indirect taxes compared to some of the other countries in Asia, which reduces the cost advantages it has. A cost comparison study between Indian and Chinese automotive manufacturing companies revealed that the cost to manufacture a passenger vehicle in China is 23 per cent lower than it is in India with the main difference being higher taxes and their cascading impact in India, rather than cost of raw materials or labour costs.

Advantage of low labour costs in India

Low labour costs and easy availability of management and engineering skills is one of the prime advantages of manufacturing in India. Among the costs incurred to manufacture automotive products, it is the cost of labour that foreign companies can cut most easily by manufacturing in India. The cost per hour in India is only between 7 and 10 per cent of the cost of labour in the developed countries. However it needs to be assessed if India can maintain the cost advantage.

Low employee welfare leading to reduction in labour productivity

There is a significant increase in the number of contract workers being used in the automotive industry which helps to keep labour costs low, but this practice of hiring labour under contract also leads to exploitation in many cases. Thus, there is need for labour reforms aimed at increasing the welfare of workers. Manufacturing companies are being encouraged to retain and employ more permanent workers which will lead to higher levels of productivity. A survey conducted by Indian Council for Research on International Economic Relations (ICRIER) found that the much needed labour reforms would increase the level of productivity as reforms induce workers to work more efficiently. The survey found that between 10 and 30 per cent of the total production workers in the automotive industry are employed on contract basis. Further, wages paid to temporary
workers, are on an average only 25 to 50 per cent of wages paid to permanent workers.

**COST OF LABOUR – A COMPARATIVE ANALYSIS**
Cost of labour in USD per hour in developed and emerging economies is shown

<table>
<thead>
<tr>
<th>Developed countries</th>
<th>USD cost per hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>19.20</td>
</tr>
<tr>
<td>Japan</td>
<td>17.70</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>22.70</td>
</tr>
<tr>
<td>United States of America</td>
<td>20.30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Emerging countries</th>
<th>USD cost per hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thailand</td>
<td>1.80</td>
</tr>
<tr>
<td>India</td>
<td>1.60</td>
</tr>
<tr>
<td>China</td>
<td>1.50</td>
</tr>
<tr>
<td>Philippines</td>
<td>1.40</td>
</tr>
</tbody>
</table>

Source: India Automotive Study 2007, KPMG

**Technological advancements leading to cost reductions**

Manufacturers are looking for ways to contain costs. With decreasing cost of technology, manufacturers are exploring ways to develop low cost automation and use it to reduce labour costs. Regarding efficiency in production, according to an econometric analysis conducted by ICRIER, it has been found that increase in foreign participation is directly correlated with higher technical efficiency. Thus, the government is inducing more foreign participation, so that technologically advanced products can be developed at lower costs overall.

**Infrastructure**

Continued investment in infrastructure is essential for India to be able to realize the targets set in the AMP. There are inadequate ports, insufficient feeder
rail lines to the ports, and bad roads. Despite the bottlenecks in this regard there are companies that have made the most out of the existing infrastructure. For instance, Hyundai has setup its factory very strategically near the port in Chennai and has built a supply chain hub around surrounding areas. It has now become the second largest passenger car manufacturer in India after entering the Indian market in 1998.

Roads
With respect to roads, the Golden Quadrilateral, a corridor connecting the four metro cities of India, New Delhi in the North, Mumbai in the West, Chennai in the South and Kolkata in the East spanning 6,500 kilometers is being built. The GOI has also launched a program for the construction of 66,500 kilometers of national highways of which 50,000 kilometers is expected to be completed by 2015. With better road infrastructure, significant growth is expected in the automotive industry. For instance, better roads are leading to greater demand for multi-axle vehicles.

Railways
The Ministry of Railways is in the process of developing freight corridors in Railways. Drawn on similar lines of highway projects linking east with west and north with south, the ministry is planning for an east-west corridor and a north-south corridor. Connectivity between rails and ports (both dry and sea ports) is essential and a blueprint for railway development is being prepared.

Ports
For India to develop into a global automotive hub, port development is imperative. Specialized port infrastructure for handling vehicle exports is being developed especially near the main automotive clusters near Mumbai and Pune in the West, Chennai in the South, and Kolkata in the East. Two new deep ports are being developed that have special emphasis on the automotive industry. One is in Dhamra in the state of Orissa (East India) which will be completed by 2010, and the second is in Sutrapada in the state of Gujarat (West India).

Power

The high cost and relatively lower quality of power in many parts of India is also an issue highlighted by many manufacturers. Many companies face fluctuations in supply of power and power outages that in turn affect the quality of production. The average manufacturer in India loses 8.4 per cent in sales due to power cuts as opposed to less than 2 per cent in China and Brazil. It is estimated that the power outages alone cost India 1 per cent of GDP.40 Several companies are willing to pay more for power in return for consistent and good quality of power. The Eleventh Five Year Plan of India 2007–2012, issued by the Planning Commission of India, has set ambitious targets to generate and distribute more and better quality power.
Human resource development

Skill shortages and skill mismatches may emerge as a constraint to achieve the growth targets set in the AMP. Thus one of the main areas of focus cited by the Ministry of Heavy Industries and Public Enterprises is to develop advanced capabilities in the workforce. A large workforce consisting of both skilled and unskilled workers will be required to sustain the increased level of production. The challenge is to ensure that the demand-supply gap does not arise either in quantitative or in qualitative terms. The employment generated can be divided into direct and indirect employment. While direct employment is employment by way of workers being engaged in the production of automobiles and automotive components, indirect employment is generated in feeder and supplier industries in the areas of finance, insurance, mechanics and after-sales personnel for semi-skilled and unskilled workers in rural and semi-urban areas. According to the AMP, it is estimated that the automotive industry would require the following:

- Management and General: 28 per cent or 7 million
- Skilled workers: 62 per cent or 15.5 million
- Unskilled workers: 10 per cent or 2.5 million

The need for top level engineering and managerial manpower is being met by the Indian Institutes of Technology and Indian Institutes of Management. However more such institutes are required to impart high quality technical education to the workforce. Although there are several engineering institutes all over India, there is a growing need for more engineering institutes. The GOI has begun to take some initiatives in this regard. The National Automotive Institute is being set up that will serve as a knowledge bank for the automotive industry, conduct market research and analysis and develop training modules. The plan is to establish the institute in all the major clusters in India, so that the institute can benefit from active participation from automotive companies in those clusters.

SENTIMENTS OF THE INDIAN VEHICLE BUYER

Rising incomes and favorable demographic trends Per capita incomes in India are rising and the demographic changes taking place are expected to fuel further growth in the Indian economy through increase in demand for products. India has one sixth of the world’s total population. The median age in India was 24.8 in 2007.41 According to an analysis done by the Population Research Centre, Institute for Economic Growth in India, 67 per cent of the Indian population will be aged between 15 and 64 in 2025. Thus increasing incomes combined with a very large young population will drive growth of the automotive industry as an automobile is a symbol of increasing prosperity for the young Indian consumer.
Prices and fuel efficiency

The Indian automotive market has been characterized as a small car market. Prices of cars form a larger percentage of the disposable income in India compared to persons in the same income group in western countries. Indians are very conscious about the fuel efficiency of their cars. A safe and therefore heavy small car being sold at a competitive price giving low mileage will not sell. One example of this is the Fiat Palio. On the other hand, a light weight car like the Hyundai Santro that gave good mileage became the second largest selling car after it was launched. Safety therefore is still not one of the main concerns of the Indian car buyer and price and fuel efficiency remain the most important considerations.

Alternative fuels

Most of the vehicles in India run on Petrol and Diesel where Diesel is increasing in popularity as a fuel for personal cars because of the element of subsidy in diesel prices. The Economist Intelligence Unit (EIU) forecasts that demand for fossil fuels in India is expected to grow at a relatively high rate of 7.2 per cent annually. Given the global energy crisis, development of techniques for using alternative fuels is now high on the agenda. Bio-fuels are not used on a large scale at all in India and efforts have recently started to introduce these fuels. India is behind many other big markets in Europe and the Americas in terms of emission controls. However in order to address the emission norms being followed worldwide, India is considering the price and availability of these fuels and enforcement of new emission controls. The GOI is also promoting R&D in this area to develop low emission technologies and energy saving devices.

Research and development

Research & Development (R&D) expenditure as a proportion of turnover is low in India. In the automotive industry, spend on R&D ranges between 0.5 and 3 per cent. R&D hubs are expected to develop in three of the four main automotive clusters in the country, in the South near Chennai, in the North at Manesar, and in Pune and Ahmednagar in West India. To provide support to companies in this regard, the GOI is promoting R&D in the automotive industry by providing financial incentives. Other measures are also being taken such as relaxing tariffs for plant and equipment imports, and setting up of automotive design firms. Thus allocation towards R&D of automotive industry is being increased and the scope of activities is being widened. Facilities for carrying out R&D are also being developed. For instance, the National Automotive Testing and R&D Infrastructure Project (NATRIP) was setup in July 2005 to create testing, validation and R&D infrastructure in India. Core facilities for NATRIP will be in Indore city in Central India. Testing and validation facilities including field tracks for tractors, trailers, construction equipment and various other vehicles will be done at Rae Bareilly in
Northern India. In fact, global majors such as Toyota, BMW, Honda and Volkswagen get their vehicles tested in India and get international certification. More and more companies now prefer India over China in this regard due to a stronger Intellectual Property Rights (IPR) system in India.

India is increasingly being perceived to become a key source of R&D services in the near future. 125 Fortune 500 companies have already setup their R&D bases in India and more automotive manufacturers are expected to do the same. Earlier, manufacturers used to depend on imported designs whereas now, Tata Motors and Mahindra & Mahindra are able to develop new models entirely locally. Global Advisory firm KPMG conducted a survey in 2007 with leading industry experts and senior management of automotive companies. The study revealed that low wages were the primary driver of growth of R&D, combined with superior quality of manpower. In a survey conducted by ICRIER it was found that there is a direct correlation between turnover and the number of workers in R&D. The results of this survey indicate that as a company’s turnover increases, the proportion of R&D workers out of total workers increases.

**Future Outlook**

“To emerge as the destination of choice in the world for design and manufacture of automobiles and auto components with output reaching a level of USD 145 billion accounting for more than 10 per cent of GDP and providing additional employment to 25 million people by 2016” is the vision put forward by the Ministry of Heavy Industries and Public Enterprises. Going forward it is evident that the automotive industry in India offers immense potential in terms of sales and employment opportunities. Growth in the economy is expected to continue which is also going to help the automotive industry to expand. Rising disposable incomes and the new wave of consumerism arising out of it are going to be key drivers. Foreign direct investments are pouring into India in large numbers and manufacturing companies including global majors are going to setup manufacturing facilities first and then develop R&D services, both on a large scale. Companies are confident that productivity can be increased through low cost automation and management efficiency. After productivity, the major concern among manufacturers is the relatively poor infrastructure in the country. The slow pace of development of roads, railways and ports is a disadvantage, but continuous improvements are being made in this regard also.

The automotive industry in India has been crossing record milestones and is one of the world’s fastest growing markets. The strengths of the Indian economy – large pool of skilled human resources, high quality engineering skills, strategic position combined with the strong growth trends in the economy and vast investments by global companies, are expected to drive the automotive industry to great heights. The outlook for India’s automotive sector appears bright. The outlook for India’s automotive sector is highly promising. In view of current
growth trends and prospect of continuous economic growth of over 5 per cent, all segments of the auto industry are likely to see continued growth. Large infrastructure development projects underway in India combined with favorable government policies will also drive automotive growth in the next few years. Easy availability of finance and moderate cost of financing facilitated by double income families will drive sales in the next few years.

India is also emerging as an outsourcing hub for global majors. Companies like GM, Ford, Toyota and Hyundai are implementing their expansion plans in the current year. While Ford and Toyota continue to leverage India as a source of components, Hyundai and Suzuki have identified India as a global source for specific small car models.

At the same time, Indian players are likely to increasingly venture overseas, both for organic growth as well as acquisitions. The automotive sector in India is poised to become significant, both in the domestic market as well as globally.

Production, Domestic Sales and Export Trends:

Automobiles

![Production of Automobiles Graph]

Source: SIAM
While Domestic Sales have been growing strongly since 2000-01, Exports have nearly tripled in the last 5 years.
Commercial Vehicles:

**Production of Commercial Vehicles (number)**

Source: SIAM

**Domestic Sales of Commercial Vehicles (number)**

Source: SIAM
Rapid growth in Exports signals the increasingly global outlook of these segments.
Two wheelers:

**Domestic Sales of Two Wheelers**

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales (number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>3,500,000</td>
</tr>
<tr>
<td>2001-02</td>
<td>4,000,000</td>
</tr>
<tr>
<td>2002-03</td>
<td>4,500,000</td>
</tr>
<tr>
<td>2003-04</td>
<td>5,000,000</td>
</tr>
<tr>
<td>2004-05</td>
<td>6,000,000</td>
</tr>
</tbody>
</table>

Source: SIAM

**Exports of Two wheelers**

<table>
<thead>
<tr>
<th>Year</th>
<th>Exports (number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>100,000</td>
</tr>
<tr>
<td>2001-02</td>
<td>150,000</td>
</tr>
<tr>
<td>2002-03</td>
<td>200,000</td>
</tr>
<tr>
<td>2003-04</td>
<td>250,000</td>
</tr>
<tr>
<td>2004-05</td>
<td>300,000</td>
</tr>
</tbody>
</table>

Source: SIAM
While domestic sales have been growing steadily over the years, exports have boomed over the last 5 years.

**CONCLUSION:**

The US$ 6.8 billion Indian automotive industry has grown at a staggering pace over the last few years at 25% growth from $ 2.2 billion in 1995 to $ 8.9 billion in 2005. The industry is projected by ACMA (Auto Components Manufacturers Association of India) to further increase at a 15% CAGR until 2012.
FAST FACTS

- The first automobile in India was rolled out in the city of Bombay in 1897.
- Foreign players are continually adding to their investments in Indian auto industry.
- Within the two-wheel segment, motorcycles account for some 80% of the market.
- Tata Motors dominate the commercial vehicle market with a 60% market share.
- Two third of auto component parts are produced by Indian OEMs.
- India is the largest producer of two-wheeled transport in the world.
- India hosts the largest production of motorcycles in the world.
- India is the fourth largest car market in Asia – and recently achieved a 1 million domestic annual sales volume.
- India is the fifth largest producer of commercial vehicles in the world today.
Comprehensive Production Range

- Engine Parts: 31%
- Drive Transmission & Steering Parts: 19%
- Body & Chassis: 12%
- Suspension & Braking Parts: 12%
- Equipments: 10%
- Electrical Parts: 9%
- Others: 7%
India has the potential to become one of the top 5 automotive economies based on its present growth potential.

Steered by the country’s high engineering skills, established production lines, a thriving domestic automobile industry and competitive costs, global auto majors are rapidly ramping up the value of components they source from India.

The industry is poised to jump from exports of US$ 1.8 billion in 2004-05 to US$ 5.9 billion in 2008-09.

According to the Automotive Component Manufacturers Association of India, more than a third (36 per cent) of Indian auto component exports head for Europe, with North America a close second at 26 per cent.

In 2006, components worth US$ 2 billion were exported by Indian companies, 75 % of which were bought directly by car companies.
The original equipment manufacturers (OEMs) include firms like General Motors, Ford Motor Company, Cummins International, Bosch, Volkswagen, BMW, MAN (trucks) and JCB (earthmoving equipment) amongst others. Over 20 OEMs have set up their International Purchase Offices (IPOs) in India to source components. This number is expected to double by the year 2010.

India enjoys a definite cost advantage with regard to castings and forgings. The manufacturing costs in India are 25 to 30% lower than western counterparts. India’s competitive advantage does not derive from costs alone, but from its full service supply capability.