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THE INDIAN AUTOMOTIVE INDUSTRY: AN INTERNATIONAL TRADE PERSPECTIVE

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Executive Summary

The automotive industry, comprising automobiles and auto components, has witnessed a continuous evolution ever since the development of the first few prototypes back in the late nineteenth century. The industry has today emerged as a dynamic one, accounting for approximately one in ten jobs in industrialized countries. Even for developing countries, the automotive sector has emerged as a catalyst for growth opportunities, especially because of the vast linkages that the auto industry has with other sectors.

Global Scenario - Automobiles

During 2015, the turnover of the automobiles industry was estimated at Euro 1.9 trillion, with production of 90.8 million vehicles (excluding two/three wheelers), recording a CAGR of 3.6% during the period 2008-15. China, USA and Japan were the largest automobile manufacturers in the world, together accounting for half of the global production during 2015. They were followed by Germany, South Korea, India, Mexico, Spain, Brazil and Canada. India holds a share of 5% in the global automobile production.

There has been a steady increase in global trade of automotive products throughout the world over the last few years. According to the data collated by the WTO, world exports of automotive products in the year 2014 were valued at nearly US$ 1.4 trillion. Global exports grew by around 3.6% in the year 2014, over the previous year; with the CAGR during the period 2010-2014 being 6.3%. Region-wise data on export of automotive products indicate that Europe's share in world's exports decreased marginally from 51.6% in 2010 to 51.5% in 2014, although the share of automotive products in EU's total merchandise exports increased to 10.5% in 2014 from 9.9% in 2010.

In terms of segments, motor cars and motor vehicles (HS code – 8703) had the highest export value at US$ 709 billion in 2014. Germany, with a share of 23% in world exports, and Japan (12%) were the leading exporters. Both the countries together exported motorcars and motor vehicles worth nearly US$ 249 billion. Major importers of motorcars and motor vehicles during the same year were USA (22%) and China (9%).

The second largest traded automobile segment was motor vehicles for transport of goods, with exports valued at 125 billion in 2014. Mexico, USA and Germany together accounted for 37% of world export of motor vehicles for transport of goods. Major importers of motor vehicles for transport of goods included USA (19%), Canada (11%) and UK (6%).

Exports of motorcycles (including mopeds) was valued at US$ 22 billion. China exported motorcycles (including mopeds) valued at US$ 5.7 billion and was the largest exporter in the world accounting for 26% of global exports. Other major exporters of motorcycles (including mopeds) were Japan (14%), India (9%) and Germany (8%). In terms of imports, USA, France and Germany were among the largest importers.

World trade in public transport type passenger vehicles was estimated at US$ 17 billion in 2014. Japan was the leading exporter in the world, with a share of 18% followed by China (17%). Major importers included France (6%), USA, Germany and Saudi Arabia (at 5% each).

World trade in tractors was valued at US$ 56 billion in 2014. Germany, Mexico and USA were the largest exporters of tractors, cumulatively accounting for more than 43% of total exports. Major importers of tractors were USA (a share of 22% in world imports), Canada (8%), Germany (6%) and Poland (4%).

Global Scenario – Auto Components

The global auto component industry involves auto component manufacturers, aftermarket parts manufacturers, suppliers, dealers and retailers in all its diversity. The trends in the auto component industry are dependent on the developments in the automobile industry as the original equipment manufacturers are the primary consumers for the auto components sector.

The manufacturing of auto components is gradually shifting toward Asian countries such as China, India, and others because of higher market potential and the low-cost manufacturing options available.

Global exports of automotive products amounted to US$ 1105 billion in 2014 and has grown over the past few years, in most sub-categories. Gear boxes, drive axles, steering wheels, road wheels, suspension shock absorbers, clutches, bumpers, radiators and brakes and servo-brakes are the main components that are traded globally. World export of gearboxes for motor vehicles was valued at US$ 59 billion in 2014, the highest among the auto-components traded in the world. Japan and Germany were the largest exporters under this product category, cumulatively accounting for more than 50% share of the world exports. Major importers of gearboxes for motor vehicles during the same year included China (a share of 20% in world imports), followed by USA (17%).

World export of drive axles was valued at US$ 22 billion in 2014. Germany was the leading exporter with a share of 21% followed by Mexico at 15%. In terms of imports, USA was the largest importer with a share of 17%. Other major importers were Mexico (10%), Germany (10%), and the United Kingdom (6%).

Global export of steering wheels was valued at US$ 20 billion in 2014. Germany and USA were the largest exporters under this product category, accounting for more than 30% share in world exports in 2014. Other major exporters were Mexico (9%), France (9%), China (7%), Japan (6%) and Poland (5%). Major importers of steering wheels included USA (a share of 20% in world imports), followed by Germany (12%), China (10%), Mexico (9%), Canada (6%) and France (6%).

World export of road wheels and their parts was valued at US$ 19 billion in 2014. China (share of 30% in world exports) and Germany (12%) were the leading exporters of auto-components under this group. Both the countries cumulatively exported products worth nearly US$ 8 billion. Major importers of road wheels included USA (21%), Germany (13%), Japan (7%), Canada (6%), Russia (6%) and Mexico (5%).

Global trade in suspension shock absorbers in 2014 was valued at US$ 17 billion. Germany, with exports of US$ 3 billion, was the leading exporter (a share of 17%). Other major exporters were USA (15%), China (14%), Japan (7%), Mexico (7%), Canada (6%) and Spain (5%). Major importers of suspension shock absorbers included USA (22%), Canada (9%), Germany (9%), Mexico (8%), Russia (6%), China and the United Kingdom (5% each).

World export of clutches and parts was valued at US$ 10 billion in 2014. Germany was, by far, the leading exporter, with a share of 29% and exports aggregating over US$ 3 billion. Other major exporters included Japan (8%), Hungary (8%), China and the USA (7% each). Major importers of clutches included USA (14%), Germany (11%), Mexico (7%), China (6%) and France (5%).

Global export of bumpers and parts thereof amounted to US$ 7 billion in 2014. Germany was again the largest exporter in the world, accounting for 20% of world exports in 2014. Other major exporters were USA (10%), Japan (6%), China and Canada (5% each). In terms of imports, USA was the largest accounting for 17% of world imports. Other major importers of bumpers included Germany (8%), China (6%), Canada and the United Kingdom (5% each).

World export of radiators was valued at US$ 7 billion in 2014. China was the largest exporter of radiators with exports amounting to US$ 1 billion (17% share in world exports). Other major exporters of radiators were Germany (15%), Poland and USA (8% each). Major importers of radiators included USA (15%), Germany (15%), China (6%), Mexico and Canada (5% each).

The swiftly globalizing world is opening up newer avenues for the automobile and auto component industry, especially while it makes a shift towards electric, electronic and hybrid cars, which are considered more efficient, safe and reliable modes of transportation. In the near future, this will lead to newer verticals and opportunities for auto-component manufacturers, who would need to adapt to the change via systematic research and development. This would catalyse even higher volumes of international trade, especially given

that new technologies would take time to establish a production base in the lower cost countries.

The Indian Scenario – Automobiles

The Indian automobile industry has grown at a fairly healthy pace, aided by robust economic activity and infrastructure development; growing middle class population with disposable income and availability of easy consumer finance facilities. The industry manufactures almost all major transport vehicles such as cars, multi-utility vehicles, light commercial vehicles, buses, trucks, tractors, motorcycles, scooters, mopeds and three-wheelers. India is currently the largest manufacturer of tractors, second largest manufacturer of two wheelers and buses, fifth largest heavy truck manufacturer, sixth largest car manufacturer and eighth largest commercial vehicle manufacturer in the world.

The last few years have seen a fluctuating trend in the production of automobiles in India, both in value and quantity terms. While growth declined during 2012-13, and recently in 2015-16, the industry registered positive y-o-y growths during other intervening periods. The volume of production of Indian automobile industry has registered a CAGR of over 6% during the period 2011-12 to 2015-16. By 2026, India is expected to be the third largest automotive market by volume in the world. A growing working population and an expanding middle-class are expected to remain key demand drivers.

The two-wheelers segment constituted a major share of the total production of automobiles in the country, accounting for 79% of the production in the year 2015-16, followed by the passenger vehicles segment, with a share of around 14%. The three-wheelers constituted around 4% followed by the commercial vehicles at 3%. The production of two-wheelers has grown consistently every year during the period between 2010-11 and 2015-16. On the other hand, the production of passenger vehicles segment faltered in 2013-14 while that of commercial vehicles and three wheelers recorded negative growths in three years during this five year period.

Domestic sales of automobiles in India have followed an increasing trend during the period 2010-11 to 2015-16. The buoyant economy, rising income, easy availability of finance, together with several other factors have contributed to the growth in automobile sales in India during this period. During the first three quarter of 2016-17 (April-December), year-on-year domestic sales of passenger vehicles increased by 8.6 percent while commercial vehicles registered a growth of 3.5 percent. Sales of three wheelers and two wheelers recorded growth of 1.9 and 10.0 percent, respectively during the same period. Going forward, the implementation of the Seventh Pay Commission is expected to boost income levels as it will enhance the income of 4,700,000 serving government employees and 5,200,000 pensioners. This will result in higher disposable income which is expected to spur passenger vehicles sales. Favourable factors such as softening interest rates, stable fuel prices and higher disposable income are expected to drive sales in the near future.

Exports of automobiles have grown steadily aggregating to 3.6 million units during 2015-16. Exports as a percentage of production has increased from 12.97% in 2010-11 to 15.20% in 2015-16, indicating the growing capability of the Indian automobile industry to meet the international standards and the increasing acceptance of automobiles manufactured from India in the global market.

In terms of segments, the production of commercial vehicles has increased from 7.61 lakh vehicles in 2010-11 to 7.83 lakh units in 2015-16. Exports during the same period increased from 74,043 units to 101,689 units. The production of passenger vehicles increased from 29.83 lakh units in 2010-11 to 34.14 lakh units in 2015-16. Export of passenger vehicles during the same period increased from 4.44 lakh units to 6.54 lakh units. The production of two-wheelers has increased from 133.49 lakh vehicles in 2010-11 to 188.30 lakh units in 2015-16. Export of two wheelers increased from 15.32 lakh units to 24.81 lakh units during the same period. The production of three wheelers increased from 7.99 lakh units in 2010-11 to 9.34 lakh units in 2015-16. Exports during the same period increased from 2.70 lakh units to 4.04 lakh units.

India exports almost all types of vehicles; among the major categories, two wheelers accounted for more than two-third share in terms of number of units

exported in 2015-16. In fact, over the years, two wheelers have been the top most exported item among the various automobile segments, in terms of number of units. In value terms, India's cumulative exports of select automobiles (HS Codes: 8701, 8702, 8703, 8704, 8705, and 8711) amounted to US$ 9.5 billion in 2015-16, having increased from US$ 6.6 billion in 2010-11, thereby registering a CAGR of 7.6%. Passenger cars (motor cars and other motor vehicles for transport of persons – HS Code – 8703) were the largest export item in 2015-16, followed by motorcycles (including mopeds) (HS Code – 8711), tractors (HS Code – 8701) and motor vehicles for transport of goods (HS Code – 8704). During the last few years, passenger cars have consistently been the largest export item among India's vehicle exports, in value terms, followed by two wheelers and tractors.

Export of passenger cars (motor cars & other motor vehicles – HS Code – 8703) during the year 2015-16 was valued at US$ 5612 million. Mexico was the largest market for passenger cars with a share of 18 percent in total exports from India. A substantial percentage of passenger cars are also being exported to South Africa (10 percent), UK (6 percent), Italy (6 percent), Sri Lanka (5 percent) and Saudi Arabia (4 percent). Egypt, Spain and UAE with shares of 3 percent each in Indian exports of passenger cars are also important destinations.

Two wheelers (Motorcycles including mopeds – HS code – 8711) were the second largest export item, in value terms, in the automobile export basket of India with exports aggregating US$ 1778 million in 2015-16. A large part of this segment is exported to countries like Colombia (13 percent), Sri Lanka (12 percent) and Nigeria (12 percent). Other significant destinations in 2015-16 included Bangladesh (7 percent), Nepal (6 percent), Philippines (6 percent), Mexico (5 percent), Iran (4 percent) and Guatemala (3 percent).

India's export of tractors (HS code – 8701) was valued at US$ 991 million in 2015-16. Exports to USA constituted more than 31 percent of the total. This was followed by exports to Turkey (12 percent), Bangladesh (6 percent), Nepal (5 percent), Algeria (5 percent) and Sri Lanka (4 percent).

India's export of motor vehicles for transport of goods (HS Code – 8704) was valued at US$ 836 million in 2015-16. Bangladesh and Sri Lanka were the leading markets for India with shares of 17 and 16 percent respectively, followed by UAE (7 percent), Nepal (6 percent), South Africa (6 percent) and Kenya (5 percent).

India's export of buses (public transport type passenger motor vehicles – HS code – 8702) were valued at US$ 237 million in 2015-16. Sri Lanka accounted for 19 percent of India's total export of buses, followed by Senegal (12 percent), UAE (11 percent), Qatar (9 percent), Saudi Arabia (8 percent) and Kuwait (8 percent). Nepal, Tanzania and Ghana were also important destinations for Indian buses.

The Indian Scenario – Auto Components

The Indian auto-components industry has experienced a healthy growth over the last few years. A buoyant end-user market, improved consumer sentiment and return of adequate liquidity in the financial system are some of the factors attributable to this growth. The auto-components industry accounts for almost seven per cent of India's GDP and employs as many as 19 million people, both directly and indirectly. A stable government framework, increased purchasing power, large domestic market, and an ever-increasing development in infrastructure have made India a favourable destination for investment.

The Indian auto-components industry manufactures almost all kinds of products. Production of automotive components depends on consumption by different end-user segments: original equipment manufacturers (OEM), exports and the replacement market. During the year 2015-16, engine parts accounted for the bulk of production in the Indian auto-components industry, followed by driving transmission and steering parts. The combined production in these two categories was around 50% of the total value of the production.

The turnover of the auto-components industry, over a period of time has grown more or less steadily. According to ACMA, the Indian auto-components industry is expected to register a turnover of US$ 100

billion by 2020, up from US$ 39.0 billion in 2015-16. This vibrant growth is expected to be backed by strong exports ranging between US$ 80 billion and US$ 100 billion by 2026, from the current US$ 10.8 billion. On a larger time horizon, exports recorded a healthy CAGR of 10.0%, increasing from US$ 6.7 billion in 2010-11 to US$ 10.8 billion in 2015-16. In fact, the export orientation of the Indian auto-component industry has increased significantly from 16.2% in 2010-11 to 27.7% in 2015-16, implying that for every unit of production, nearly a third is exported. India exports its auto components to almost every part of the world, the major markets being developed countries such as the USA, Germany and the UK. Some of the important Asian markets for auto components include Sri Lanka, Bangladesh and Thailand.

Exports of gear boxes and parts (HS code – 87084000) from India to the world were valued at US$ 342 million in 2015-16 and were the largest item of auto component exports. Thailand was the largest export market for gear boxes from India with a share of 21 percent, followed by Brazil (15 percent), USA (15 percent), Turkey (9 percent), Mexico (7 percent), UK (6 percent), China (4 percent), Colombia and Japan (3 percent each).

Exports of new pneumatic tyres, of rubber used on buses or lorries (HS code – 40112090) from India were valued at US$ 312 million in 2015-16 and were among the major items of auto component exports. Philippines was the largest export market for pneumatic tyres for India with a share of 14.9 percent, followed by Bangladesh (11.7 percent), Indonesia (10.9 percent), Pakistan (10.0 percent), UAE (6.7 percent), Ethiopia (6.1 percent).

Exports of brakes and servo brakes and their parts (HS Code – 87083000) from India to the world were valued at around US$ 309 million in 2015-16. USA was, by far, the largest export market for brakes for India with a share of 57.4 percent, followed by Germany (7.4 percent), UK (5.6 percent), Russia (3 percent), Mexico and Japan (2.6 percent each).

India's export of drive axles (HS Code – 870850) was valued at US$ 193 million in 2015-16. USA (30 percent), Turkey (17 percent) and UK (10 percent) were the major markets for India for drive axles.

Export of road wheels and parts and accessories thereof (HS code – 84831092) from India amounted to US$ 139 million in 2015-16. USA was the predominant market for India for export of transmission shafts, with a share of 57.7 percent, followed by Germany (9.1 percent), UK (8.0 percent), Italy (6.7 percent) and China (4.3 percent).

Export of reciprocating piston engines used in vehicles with cylinder capacity exceeding 1,000 cc (HS code – 84073410) was valued at US$ 121 million in 2015-16. Turkey was, by far, the largest market for India for export of piston engines used in motor cars, with a share of 72.3 percent. Thailand (13.6 percent), Vietnam (4.0 percent) and Colombia (3.3 percent) were the other major destinations for India's exports of piston engines.

Exports of bumpers (HS Code – 87081010) from India were valued at around US$ 111 million in 2015-16. USA was the largest market for export of bumpers from India with a share of 52.0 percent, followed by Mexico (19.1 percent) and Brazil (7.2 percent).

Export of road wheels and parts and accessories thereof (HS code – 870870) was valued at US$ 93 million in 2015-16. USA was the largest market with a share of 31 percent, followed by France (9 percent), Belgium (9 percent), UK (8 percent), Mexico (7 percent), Egypt (7 percent), Morocco (4 percent), Thailand (4 percent) and Japan (3 percent).

India's export of suspension and shock absorbers (HS Code – 870880) was valued at US$ 83 million in 2015-16. USA was again the largest market for India with a share of 29 percent, followed by China (10 percent), Germany (9 percent), Turkey (7 percent), Brazil (6 percent), Japan (5 percent), Italy (4 percent), Bangladesh and Egypt (3 percent each).

Radiators (HS Code – 870891) – worth US$ 40 million were exported from India during 2015-16 – a healthy increase of 16.2 percent as compared to 2014-15. Majority of the exports were to developed economies like the USA (24 percent) and the Netherlands (13 percent). UAE and Poland were also major export destinations with shares of 7 percent each followed by Japan (6 percent), Thailand (5 percent), Belgium (4 percent), Germany and Saudi Arabia (3 percent each).

Steering wheels, steering columns and steering boxes (HS Code – 870894) worth US$ 44 million were exported from India during 2015-16. Majority of the exports were to developed economies like the USA (38 percent), Japan (13 percent) and France (9 percent). Egypt (8 percent), Mexico and Thailand (4 percent each), Brazil (3 percent), Indonesia and Poland (2 percent each) were also important export destinations.

India's export of clutches & parts thereof (HS Code – 870893) was valued at US$ 42 million in 2015-16. In this segment as well, the USA was the largest market for India with a share of 17 percent followed by Indonesia and the UK (11 percent each), Japan (9 percent), Turkey (8 percent), Bangladesh and China (6 percent each), Germany and Sri Lanka (5 percent each).

On the whole, exports by the Indian automotive industry have increased significantly over the years. Among automobiles, though two wheelers formed the largest export item in terms of volume (number of units), passenger-type motorcars category was the largest exported item in terms of value. In the auto components industry, gearboxes and their parts have remained as the largest export item in terms of value even during 2015-16. It is also worth noting that India's automobile exports are mainly confined to the developing nations whereas India's auto components are skewed towards the developed nations of Europe and the USA.

CHALLENGES

Fuel Price Volatility

Volatility in fuel prices affects the growth of the automotive industry all over the world. Many nations, in recent years, have implemented policies towards more fuel efficient vehicles in order to address pollution concerns and also to reduce the dependence on imported oil. As a result of these policies, manufacturers had, assuming stronger demand for improved fuel efficiency, invested heavily in technologies that improve fuel economy and lower carbon emissions. These product options were offered at a price premium with the expectation that the higher fuel economy would result in lower operating costs. However, lower fuel prices change the return on investment calculation for consumers dramatically, and with oil prices staying relatively low over the last couple of years, demand for these technologies has fallen as well. Lower fuel prices raise the consumer's payback period – the time needed to earn back the investment in the fuel saving technology – and many consumers are unlikely to pay the premium, thereby posing a challenge for manufacturers.

Environmental Issues & Compliance

The automobile sector affects the environment in multiple ways, starting from the use of materials that causes environmental degradation, and ending with the management of scrap. However, it is estimated that much of the environmental damage during the lifespan of a vehicle happens during the time it is driven, and thus is associated with fuel emissions. That is why many countries are discouraging sale of fuel-inefficient cars, as also polluting cars, through suitable taxation policy. There are estimates that the automobile industry accounts for approximately one-fourth of global anthropogenic GHG emissions. Therefore, in order to combat the environmental challenge, firms are focussing on avoidance of polluting substances in production, in addition to concentrating on fuel efficiency and emission standards and owners. The industry is also contributing to combat this challenge by undertaking research in improving fuel efficiency and reducing CO2 emissions.

Growing Competition

Competition in India's automobile and auto-parts industry has been growing in the recent years. Earlier, the regulatory framework and market conditions positioned the Indian OEMs in an oligopolistic market structure. With the opening up of market and deregulation, many new players have entered the fray. Indian players are entering into joint ventures with foreign companies to gain access to their technological advancement and design engineering. In the auto-parts segment, though there are vibrant units producing high-quality products and supplying to global OEMs, the market has attracted global players who have been expanding their product portfolio and enhancing their production capacities, thereby increasing the competition among the domestic players.

Changing Consumer Preferences

There has been a continuous change in consumer demand in the motor vehicle industry, encouraging the companies to focus on innovation, continuously. With growing purchasing power among Indian consumers, the demand for better and comfort vehicles with greater efficiency is growing. Intense industry competition has led to design of hybrid vehicles and development of new vehicle concepts. Apart from customers, new technology also allows the designers to change every aspect of car design. Typically, product quality, cost reduction, new technologies and environmental issues, influences the consumer demand for vehicles and thereby innovation in the automotive industry.

Low R&D Orientation

It is being realized all over the world that the competitiveness is not dependent on factors like availability of skilled labour, low-cost operations and infrastructure. The sustained competitiveness in the automotive industry comes through improvement in productivity, which calls for continuous innovation by the players. However, Indian automobile companies spend a relatively low amount on R&D; thus, their R&D orientation is low relative to the global standards. Developing new designs is expensive, unless the market for the new design is on a global scale. Indian firms are mainly focussing on, and designing the vehicles for domestic market or for other developing country markets, but not designing for a truly global market, to create a niche for themselves and compete with international brands. Further, the efforts of Indian automobile manufacturers are mainly oriented towards value engineering or modification in the existing models to improve performance, and not on new models.

Infrastructure Constraints

Insufficient road infrastructure and traffic congestion could be a bottleneck in the growth of the automotive industry. In India, capacity addition in roads has been lagging behind the traffic growth. It is reported that China witnessed a phenomenal growth in automotive industry due to rapid development in road infrastructure. Poor port connectivity is another bottleneck faced by the industry, especially when it comes to automobile exports. The Chennai and Mumbai Ports handle bulk of the vehicle export. In addition to the insufficient port handling infrastructure, there are also challenges associated with space especially for parking and setting up of repair shops in the port yard.

Incidence of Levies/Duties

Due to the multiplicity of taxes, elaborate compliance obligations and tax cascading, the current indirect tax regime in India provides for a complex tax environment. To top that, the automobile industry has its own complexities. Longer investment cycles, development of vendors/part makers, outsourced processes, and market complexities are to name a few. The Indian automotive industry is reportedly 'highly taxed'. At present, the excise duty for vehicles is divided into four slabs, in which the smallest tax rate is applicable to small cars. However, with the expected implementation of GST, taxes levied by the Centre like excise duty and state level taxes like sales tax, road and registration tax would all be subsumed into one. Assuming that the proposed tax rate of 18-20 percent is accepted, the vehicle prices are expected to become more affordable, thereby fuelling demand.

Minimum Import Price on Steel

The government had imposed a minimum import price (MIP) on steel which has reduced the benefit of lower commodity prices for automobile companies. The impact has been adverse especially for manufacturers of commercial vehicles including truck and tractors where steel constitutes a large chunk of raw material. Exports-focused automobile manufacturers have also been hurt as their export contracts are linked to international prices. The Government has been extending the validity of MIP as a measure to boost the sales of domestic steel manufacturers ever since it was introduced in February 2016. The MIP was valid till February 2017, afer which it has reportedly been discontinued.

Low ICT Interface

While automobiles were traditionally perceived as mechanical devices, they are increasingly metamorphosing into highly complicated electronic

machines. Digitization and connectivity have emerged as key parameters for consumer preferences. As customers increasingly aim to be very well and always connected, relationships are poised to shift from OEMs towards the information and communication technology sector. As customers across regions become more and more aware about the importance of their data, they will look for a trustworthy source that offers the most interesting benefits in return for their data. Connectivity will pave the way for an entirely new data and service driven business model in the automotive sector. Thus, the centre of gravity of the customer relationship will shift towards companies in the ICT sector. The connected car along with app based transportation service providers like Uber and Ola are forcing disruption and innovation with the latter prompting consumers to shift away from ownership of cars. This is both a challenge and a huge opportunity for the automotive sector.

Exports of Auto Components Dominated by Low Value Added Products

A large proportion of auto components currently being exported still comprise traditional mechanical parts such as parts for engines, gear boxes, brakes etc; value added products such as high-end safety and advanced electronic parts form less than 10 percent of auto component exports. There is therefore a need to focus on higher value added products which would not only showcase the capabilities of Indian firms but will also result in greater per unit realization for the enterprises. The need will only be felt more in the future given the challenges the component manufacturers will face owing to tightening fuel efficiency, safety and emission norms in the export markets, especially of North America and the EU.

Human Resource Challenges

One of the critical enablers for the growth in the Indian Automobile industry would be adequate availability of trained manpower. It is estimated that the industry would require huge numbers of trained personnel, if our country has to become an auto-manufacturing hub for the world. Countries in North America and Europe, which had been the hub for automotive industries over the years, are increasingly feeling the pinch of the aging workforce impacting the employment levels from factory workers to middle and top-level management, thereby creating a talent vacuum in the industry. This crunch in manpower in these economies is slowly luring the much-required human capital from India. This challenge needs to be addressed on priority basis so that the country does not lose out on critical talent that may be important for India to become an important automotive hub.

STRATEGIES

R&D on Alternate Energy Sources and Hybrid Vehicles

The share of automobiles on road, using petroleum products as fuel, has almost remained the same (at over 90%) in the past several decades. This is despite the fact that the vehicles on road have been evolving in every other aspect. In other words, product development has happened in all other aspects, except in utilization of alternate energy sources. The Government has taken certain measures to encourage purchase of electric and hybrid vehicles through the FAME (Faster Adoption and Manufacturing of Hybrid and Electric Vehicles in India) - India Scheme. The Phase 1 of the scheme is being implemented over a period of 2-year i.e. FY 2015-16 and FY 2016-17 commencing from 1st April 2015 with an approved outlay of Rs. 795 Crore. Under the scheme, the demand incentive is available for buyer in the form of an upfront reduced purchase price to enable wider adoption depending on type of vehicles/ type of technology to the purchaser of electric / hybrid vehicles. However, no subsidy is given to any manufacturing companies. Further, there is no provision for giving 50% excise duty concession under FAME-India Scheme. The Government, could perhaps consider including excise duty concessions while also providing incentives to manufacturers on their investments in cleaner technologies. This would provide greater thrust on development of products that uses alternate energy sources, and R&D on hybrid vehicles.

Enhancing Competitiveness

Cost efficiency is necessary for Indian automobile industry to enhance its global competitiveness. Many global auto-majors, especially from Japan, have initiated cost reduction exercises. Some firms have also shifted from standard costing to Kaizen costing and target costing. Some of them have even established target-costing offices across the world and established office structure for implementing Kaizen. Cost containment strategies may also include working with suppliers to reduce the costs in their processes, implementing low cost designs/segments of the product, or through reduction of wastages. Strengthening the lean manufacturing practices, being adopted in India as also across the world, would also help improve competitiveness of Indian industry. Such practices show greater efficiencies in machine utilization, fewer labour hours per machine, shorter machine setup times and identification of bottlenecks and cost reduction opportunities swiftly.

Both the automobile and the auto component industry are interlinked and are dependent on each other for survival, and hence the hub and spoke model may be another approach for both of them to contain the cost. In a country like India, where customers are highly price sensitive, localization of industries are of paramount importance. In the hub and spoke model, the automobile industry help in establishment of auto-component units around its assembly plants, and help them in technological improvement, R&D, and identification of machineries and equipment. The auto-component units concentrate on on-time supply and servicing of orders and cost containment in production, and thereby promote competitive pricing among the industry players.

Addressing Consumer Preferences

The dynamics of Indian automobile market is changing with the changing consumer preferences. For example, earlier, the two-wheeler segment was dominated by scooter, which has been taken over by motorcycles. The change in consumer preference was mainly due to fuel efficiency, as also design and technological improvement. Though, the newer versions of scooters are slowly reviving the market for scooters, the market share may not reach to the previous level. Similarly, consumer preferences have changed the demand pattern in other vehicle segments too, driven mainly by design and technology. Indian auto-majors need to address the changing consumer preferences and suitably modify the design or technological improvement to augment their market share.

Environmental Compliance

Environmental challenges in automobile manufacturing does not relate to emission standards alone. There are also challenges associated with end-of-life in vehicles, especially waste management. Though sufficient steps are being taken in India towards achieving international emission standards, adequate steps are still required to be taken in environmental compliance in vehicle manufacturing. Significant amount of resources are required as investment to undertake R&D programmes to address these environmental challenges. The industry needs to develop a similar strategy of designing vehicles for environment, especially if India is to emerge as a global manufacturing hub for vehicles. The automotive industry needs to accelerate its readiness for a low-carbon world to stay on the track of prosperity. Climate change specialists must be put on boards and vehicle makers should invest more heavily in low emission cars to deal with the environmental compliance aspect.

Augmenting R&D Orientation

Fundamental research, designing and engineering of new vehicle models, and development – are the three key areas of R&D upon which the country's ecosystem is focused on. The country's research and innovation ecosystem presents a significant opportunity for companies globally to explore the talent available here. India's R&D centres serve both the local markets and also help parent companies globally in the development of next-generation innovative products. Notwithstanding this, the Indian automotive industry needs to develop a proactive culture with regard to investments in R&D

rather than responsive culture. This would help the industry to understand the complexities of vehicle users and bring in product innovation through changes in design and vehicle engineering. The R&D orientation in the Indian auto-component industry is not comparable with world standards. However, a few firms that are having large operations are increasing their stake in innovation to compete in the global map. Typically, large auto-component suppliers have better understanding of the relationship between R&D orientation and business development. SME auto component units, especially those with low man-power strength, low management skills, and low turnover, have not fully understood the power of innovation. Thus, there is a need to initiate a programme for research and development in the Indian automotive industry, concentrating on development of intelligent vehicles adhering to safety standards, energy efficiency and emission norms, and alternate fuels.

Infrastructure Development

Infrastructure constraints are common to all industry; however, there are a few specific infrastructure constraints affecting the growth of Indian automotive industry. Poor road infrastructure and traffic congestion can be a bottleneck in the growth of vehicle industry. Therefore, in general, good road infrastructure would help enhance the demand for automobiles in India. Secondly, road infrastructure associated with last-mile port connectivity would help enhance supply chain management strategies of the vehicle manufacturers. More importantly, there is a need for building vehicle terminals in India for smoother handling of vehicle exports. Countries like South Africa (Durban), South Korea (Ulsan) and Mexico (Lazero Cardinas) have already established exclusive vehicle terminals for handling vehicles meant for exports. In India, several initiatives have been announced by the industry, both by vehicle manufacturers and private port developers, to construct vehicle terminals.

Increase in dialogue with manufacturers and oil marketing companies to establish a better infrastructure for greener vehicles is the way ahead. The government could consider finalizing a short, mid and long-term blueprint for the development of such infrastructure, encompassing elements such as battery recharge stations, wider network of CNG pumps, perhaps through public-private partnerships.

Integrating ICT Interface

IT sector has a major role to play in development of Indian automotive industry to achieve its global aspirations through enhanced productivity and product efficiency. In addition, ICT interface help the manufacturers to interact frequently with vendors and consumers also, and leverage their ideas/preferences into vehicle design. Increased IT adoption in the automotive industry not only enhances the competitiveness of the industry in the existing markets, but also creates new markets for the Indian automotive industry.

Human Resources Development

The cost pressure on global auto majors, who are mainly present in developed countries, viz., the USA, Europe and Japan, is making the industry shift to developing nations. In addition, these countries are facing shortage of skilled manpower, which is expected to grow multi-fold in the years to come. India has large human resource base; however, India needs to enhance the skill-sets that are required for the industry in order to become a global automotive hub. The Automotive Mission Plan, drawn by the Government of India, has given thrust on human resources development and skill upgradation through development of training modules and special courses.

The Government and industry need to come together and address the challenges related to skill development and workforce shortages, both in terms of quantity and quality. In this regard, it may be mentioned that the USA has established, over three decades ago, a National Institute for Automotive Service Excellence, to provide training testing, and certification of auto service and repair professionals to ensure continuous availability of trained technicians for the industry.

1. Introduction

The automotive industry has been a progressive industry, both globally as well as in India. The industry has witnessed consistent development across all parameters such as efficiency, design, safety, performance et al. In addition, the industry has experienced significant expansion in terms of sheer numbers. It is projected that by the end of 2017, the annual global light vehicle assembly volume would cross the 100 million mark and by 2020, light vehicle assembly could top 107 million units .

But along with record growth, unprecedented challenges have also surfaced. Consumer expectations and choices are rapidly changing. New technologies are radically altering vehicles. From enhanced driver support to better fuel efficiency and a move towards greener and driverless vehicles, automotive manufacturers and suppliers are confronted with ever greater complexity. Shorter technology cycles, increasing pressure to innovate, emission norms and global supply networks are among the other key challenges faced by the industry.

Servicing both domestic demand and increasingly export opportunities, India's automotive sector is poised for a healthy growth. Rising prosperity, easier access to finance, a predicted increase in the working age population and increasing affordability are all likely to stimulate the demand for private vehicles. In terms of segmentation, buoyed by greater appetite from rural areas, the youth and women, two wheelers are likely to remain the primary choice for the majority of the purchasers in India.

In the auto components sector, driven by the need for access to better technology, manufacturing facilities, service and distribution networks, domestically, some consolidation or alliances might be expected in the near future. The auto components sector is in a strong position to cash-in on India's cost-effectiveness, profitability and globally-recognized engineering capabilities.

Current low car penetration, rising prosperity and the increasing affordability of private vehicles offer a healthy projection for the Indian automotive industry. The companies benefiting most from this evolving landscape are likely to be those who invest in innovative technologies, taking cognizance of the emerging technological landscape and the need for energy efficiency and the importance of green technologies.

2. Global Automobile Industry: An Overview

Introduction

The turn of the twentieth century saw the emergence of the global automobile industry with the first prototypes developed during the late nineteenth century.

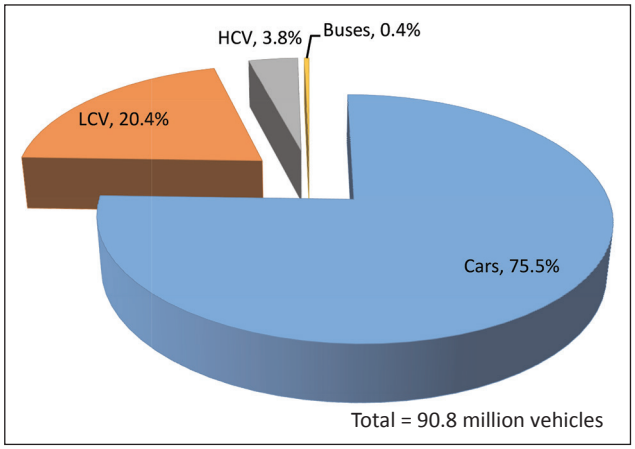
The industry has evolved considerably and each region in the Triad – North America, Europe, and Asia – has made significant contributions to the development throughout the twentieth century, largely owing to innovative technologies. These innovations together have shaped the competitive structure of the automotive industry that exists today. The organization of production inputs such as labour and raw materials as well as the configuration of distribution channels have emerged as important dimensions of the growth and evolution of the auto industry. Furthermore, various extraneous forces outside the industry have impacted industry structure and strategies. These include trade flows; regional and international movement of capital; regional and global policies on trade, environmental regulation, and intellectual property, particularly in the emerging economies; and the infusion of information technology throughout the procurement, production, and distribution systems.

The automotive industry today is dynamic and vast, accounting for approximately one in ten jobs in industrialized countries. Even for developing countries, the automotive sector has emerged as a catalyst for growth opportunities, especially because of the vast linkages that the auto industry has with other sectors.

Production

The global automotive industry has rebounded appreciably in the aftermath of the economic crisis and witnessed a period of relatively strong growth in some regions, although uncertainty about future remains, given the heterogeneous nature of the industry across geographies. The world production and exports of automobiles have increased consistently since 2010. According to the International Organization of Motor Vehicle Manufacturers (OICA), in the year 2015, the turnover of the industry was estimated to be Euro 1.9 trillion, with the production of 90.8 million vehicles (excluding *two/three wheelers*).

Exhibit 1: Product-wise Share in World Production of Automobiles (2015)

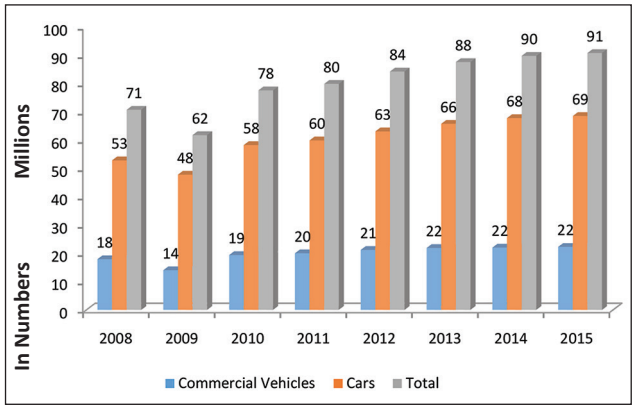


Source: World Motor Vehicle Production, OICA; EXIM Bank Research

According to OICA classifications, Passenger cars are motor vehicles with at least four wheels, used for the transport of passengers, and comprising no more than eight seats in addition to the driver's seat.

Light commercial vehicles are motor vehicles with at least four wheels, used for the carriage of goods. Mass given in tons (metric tons) is used as a limit between light commercial vehicles and heavy trucks. This limit depends on national and professional definitions and varies between 3.5 and 7 tons. Buses and coaches are used for the transport of passengers, comprising more than eight seats in addition to the driver's seat, and having a maximum mass over the limit (ranging from 3.5 to 7 tonnes) of light commercial vehicles.

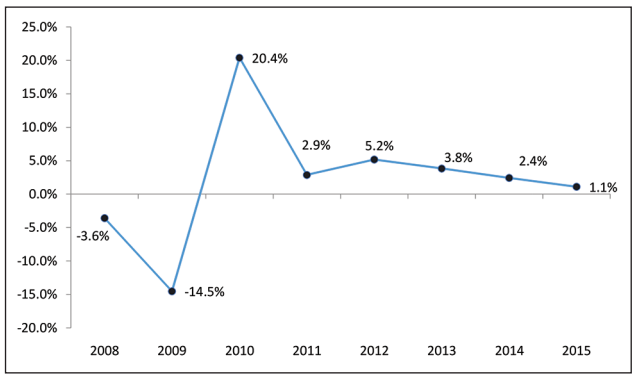
Exhibit 2: Trends in Global Production of Automobiles



Source: World Motor Vehicle Production, OICA; EXIM Bank Research

An analysis of the production trends over the last eight years shows that there has been a fairly decent growth in global automobile production barring 2009 – the year immediately following the eruption of the Lehman Crisis of 2008. Global automobile production recorded a Compounded Annual Growth Rate (CAGR) of 3.6% during the period 2008-15, although during the latest year (2015), it registered a muted year-on-year growth of 1.1%.

Exhibit 3: Percentage Change in Global Automobile Production (2008-2015)

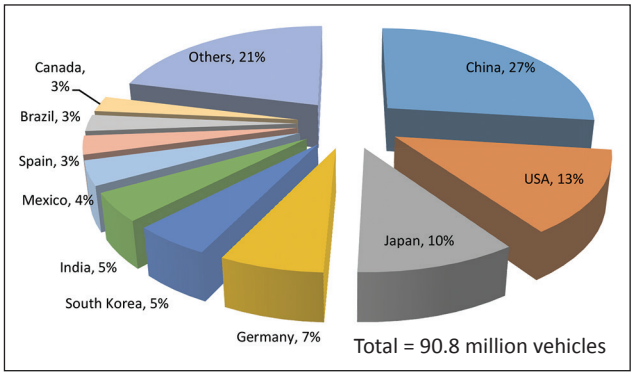


Source: World Motor Vehicle Production, OICA; EXIM Bank Research

The production of automobiles is concentrated within a few regions of the world. China, the USA and Japan were the largest automobile manufacturers in the world, together accounting for half of the global production during 2015[1]. They were followed by Germany, South Korea, India, Mexico, Spain, Brazil and Canada. India holds a share of 5% in global automobile production.

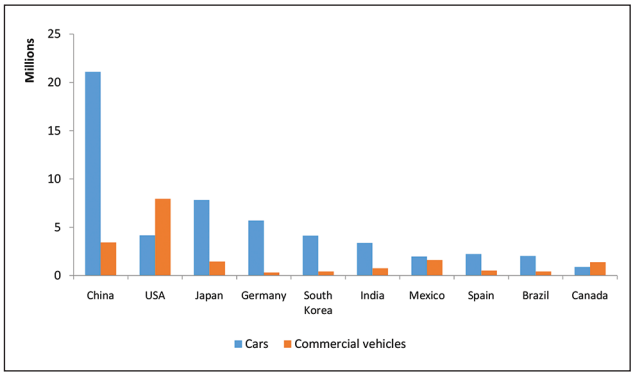
As per the data sourced from OICA, China was the largest producer of cars in the world followed by Japan, Germany, USA and South Korea. India ranked sixth in the world ahead of Spain, Brazil, Mexico and Canada. USA was the largest producer of commercial vehicles. Close competitors were China, Mexico, Japan and Canada. India was ranked sixth globally in the production of commercial vehicles too and was ahead of countries like Spain, South Korea Brazil and Germany.

Exhibit 4: Country-wiseShare in Global Vehicle Production for the year 2015



Source: World Motor Vehicle Production, OICA; EXIM Bank Research

Exhibit 5: Production of Motor Vehicles of Top Ten Countries in 2015



Source: World Motor Vehicle Production, OICA; EXIM Bank Research

[1]OICA production data does not include two/three wheelers, in which India accounts for a significant volume of production

Investment in Automobile Industry

The automobile industry can be a barometer for the performance of the global economy, given that it is a main driver of macroeconomic growth and stability and technological advancement in both developed and developing countries, and begets many ancillary industries. Thus, increased investments in the sector have spin-off benefits for a larger part of the real economy.

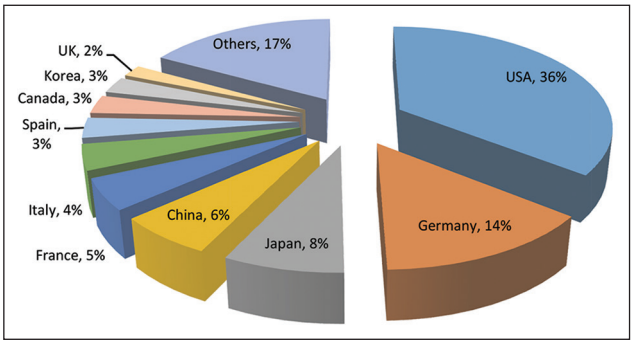
The major countries investing in the automobile industry in 2015 were the USA, Germany and Japan. The USA invested approximately Euro 30 billion in 2015, followed by Germany (Euro 11 billion), Japan and China.

Table 1: Leading Countries Investing in Automobile Industry (2015)

		Million Euros
Country	**Turnover**	**Investments**
USA	425,106	30,416
Germany	227,666	11,900
Japan	435,610	6,450
China	86,984	5,330
France	111,901	4,196
Italy	54,135	3,450
Spain	75,104	2,740
Canada	77469	2,496
Korea	62,993	2,239
UK	58,238	1,590
Total (including others)	1,889,840	84,801

Source: Economic Facts, OICA

Exhibit 6: Share of Countries in Investments made in the Automobile Industry (2015)



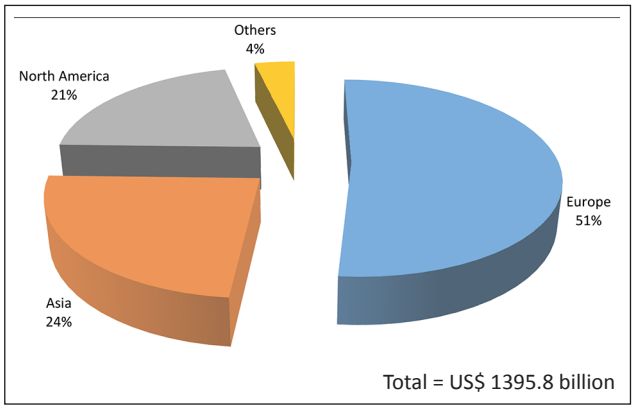
Source: Economic Facts, OICA

Trade

There has been a steady increase in global trade of automotive products throughout the world over the last few years. According to the data collated by the WTO, world exports of automotive products in the year 2014 were valued at nearly US$ 1.4 trillion. Global exports grew by around 3.6% in the year 2014, over the previous year, with the CAGR during the period 2010-2014 being 6.3%.

Region-wise data on export of automotive products indicate that Europe's share in world's exports decreased marginally from 51.6% in 2010 to 51.5% in 2014, although the share of automotive products in EU's total merchandise exports increased to 10.5% in 2014 from 9.9% in 2010. A large part of the EU's exports is intra-Europe constituting 68.9% of the total in 2014. Exports from Europe to other regions (and their corresponding share) include Asia (12.0%), North America (9.6%), CIS (2.9%), Africa (2.9%), the Middle East (2.3%) and South & Central America (1.3%). The annual percentage change in exports of automotive products from Europe in 2014 stood at 5.9% over the previous year.

Exhibit 7: Region wise Share in World Exports of Automotive Products (2014)



Source: International Trade statistics 2015, World Trade Organization; EXIM Bank Research

Asia exported automotive products valued at around US$ 334 billion in 2014. Asia's share in world automotive exports decreased from 25.3% in 2010 to 23.9% in 2014. North America has been a major importer of automotive

products from Asia. The Asian market has largely been dominated by Japan with exports worth US$ 145 billion in 2014. Though the share of Japan in world exports was 10.4% in 2014, the share has decreased from the year 2010, when Japan's share was 13.7%.

Exports of automotive products from North America aggregated to around US$ 291 billion in 2014, accounting for a share of 20.9% of world exports. Exports were predominantly intra-regional, which constituted a share of nearly 74.8%.

The European Union as a bloc, was one of the largest importers of automotive products in the world with a share of 40.3% in the year 2014, with imports in value terms being US$ 573 billion. In terms of individual countries, the United States was the largest importer with a share of 19.3%, valued at US$ 274 billion, in 2014, followed by China, at a distant second position, with imports worth US$ 93 billion, with a share of 6.6%. Other top importers of automotive products were Canada (5.0%), Mexico (3.0%), the Russian federation (2.3%) and Australia (1.7%).

Profiles of Select Automobile Producing Countries

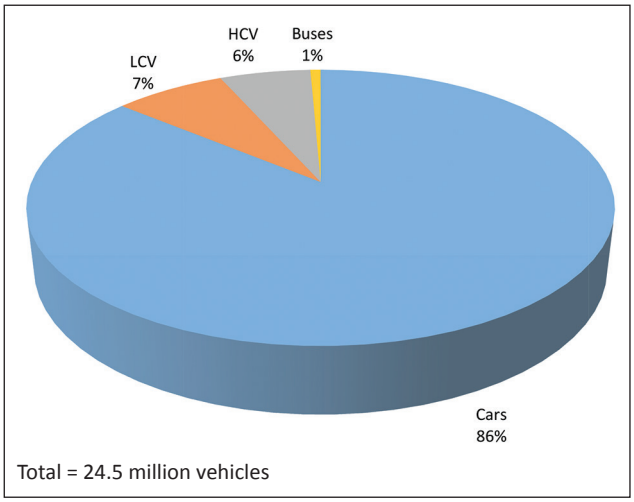
China

The automotive industry in China has remained the largest in the world measured by automobile unit production since 2008 with annual production of automobiles in the country exceeding that of the European Union or that of the United States and Japan combined.

A total of 24.5 million cars, LCVs, HCVs and buses were sold during 2015 in China, a 3.25 percent increase over 2014. While passenger car sales grew by a respectable 5.8 percent for the year, a decline of 17.1 percent and 4.2 percent respectively in the production of HCVs and LCVs brought down the overall growth rate. In terms of the number of vehicles sold, passenger cars accounted for 21.07 million, or 86 percent of the total.

China's share in world export of automotive products, which was once negligible has increased from 0.3% in 2010 to 3.6% in 2014. Export share of automotive products in total merchandise exports of China has increased from 1.8% in 2010 to 2.2% in 2014. This indicates growing share of China in world export of automotive products. Unlike the developed countries, motorcycles (including mopeds) (HS code-8711) formed a significant portion of exports of automobiles by China, in terms of value, in the year 2014, followed by Motor cars and other motor vehicles (HS code-8703), at a distant second. The total exports of automobiles from China aggregated to US$ 20.5 billion in 2014, up from US$ 17.5 billion in 2011[2].

Exhibit 8: Segment wise Production of Automobiles in China (2015)



Source: World Motor Vehicle Production, OICA; EXIM Bank Research

[2]Trade data has been sourced from UN Comtrade henceforth (unlike the earlier data which was sourced from WTO and may not strictly match this data, as the data collated by WTO also includes auto-components; similarly, data collated from COMTRADE includes other motor vehicles such as Tractors, Special purpose vehicles etc, which are not included in WTO data)

Table 2: Export of Automobiles from China: By Type of Vehicles

					US$ Million
ITC HS Code	**Commodity Name**	**2011**	**2012**	**2013**	**2014**
8711	Motorcycles (including mopeds)	5821.90	5504.63	5820.98	5728.99
8703	Motor cars and other motor vehicles	3739.01	4768.43	4623.37	4547.59
8704	Motor vehicles for the transport of goods	3878.04	4717.61	4021.79	4156.33
8702	Public Transport type passenger motor vehicles	1536.32	1935.45	2141.16	2819.08
8701	Tractors	1388.08	1488.28	1323.11	1645.83
8705	Special purpose motor vehicles	1182.86	1727.96	1722.04	1601.32
	TOTAL	**17546.21**	**20142.36**	**19652.45**	**20499.14**

Source: UN Comtrade Database; EXIM Bank Research

The United States of America

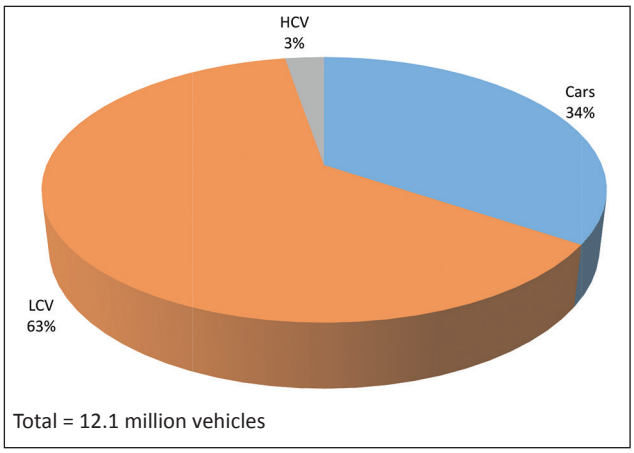
The motor vehicle industry in the United States began in the 1890s and rapidly evolved into the largest in the world, until 1980s, when the United States was overtaken by Japan, and subsequently by China in 2008, which emerged as the largest automobile producer.

The USA produced nearly 12.1 million vehicles in the year 2015, as compared to 11.6 million vehicles produced in the year 2014, thereby indicating a positive growth of 3.8%. Light Commercial Vehicles (LCVs) constituted 63% of the total production followed by Cars at 34% and Heavy Commercial Vehicles (HCVs) at 3%. Production of LCVs increased by around 7.0% from 7.1 million units in 2014 to 7.6 million units in 2015. Production of Heavy Commercial Vehicles too rose by 11.6% over the two years. However, the production of cars declined by around 2.1% during the year 2015 as compared to 2014.

The United States' contribution to the world automotive exports was 9.9% in 2014. Automotive exports constituted around 8.5% share in USA's total merchandise exports, which in 2010 stood at 7.8%.

[3]Source: Centre for Automotive Research

Exhibit 9: Segment wise Production of Automobiles in The USA (2015)



Source: World Motor Vehicle Production, OICA; EXIM Bank Research

Motor cars and other motor vehicles (HS code-8703) formed a significant portion of exports of automobiles in terms of value in the year 2014 (total automobile exports aggregated US$ 86.1 billion), followed by motor vehicles for transport of goods (HS code-8704).

Despite recent economic hardships, auto manufacturers, suppliers and dealers employ over 1.5 million people and indirectly contribute to the creation of another 5.7 million jobs[3].

Table 3: Export of Automobiles from the USA: By Type of Vehicles

US$ Million

ITC HS Code	Commodity Name	2011	2012	2013	2014
8703	Motor cars and other motor vehicles	48425.41	54584.71	57299.62	61675.66
8704	Motor vehicles for the transport of goods	16017.79	17332.48	15810.96	14093.61
8701	Tractors	6578.07	8112.28	6204.89	6073.68
8705	Special purpose motor vehicles	3041.59	2370.00	2445.28	2151.04
8711	Motorcycles (including mopeds)	1250.02	1283.70	1380.99	1415.59
8702	Public Transport type passenger motor vehicles	608.38	700.54	626.57	711.80
	Total	**75921.26**	**84383.71**	**83768.31**	**86121.38**

Source: UN Comtrade Database; EXIM Bank Research

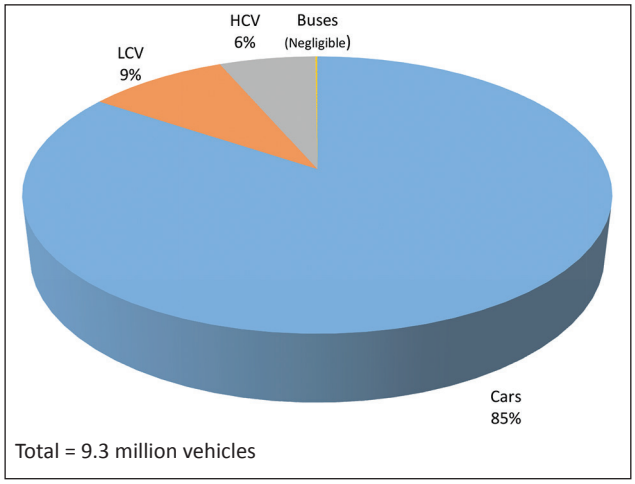
Japan

The Japanese automotive industry is one of the most prominent and largest industries in the world. Japan has been among the top three countries with most cars manufactured since the 1960s and is currently the third largest automotive producer in the world with an annual production of 9.3 million vehicles in 2015. The country is home to a number of companies that produce cars, construction vehicles, motorcycles, and engines. Major Japanese automotive manufacturers include Toyota, Honda, Nissan, Suzuki, Mazda, Mitsubishi, Subaru, Isuzu, Kawasaki, Yamaha and Mitsuoka.

The share of cars in the total vehicles production in Japan stood at a staggering 85%, although the country's production of cars during 2015 decreased by 5.4% year-on-year. Production of LCVs and HCVs too showed a decline of 3.8% and 3.0%, respectively in the year 2015. However, production of buses rose by a sharp 21.5%. Overall, the Japanese production of automobiles fell by 5.1% in 2015 over the previous year.

Japan's economy is highly dominated by the automotive sector though, in recent times its contribution to world

Exhibit 10: Segment wise Production of Automobiles in Japan (2015)



Source: World Motor Vehicle Production, OICA; EXIM Bank Research

exports has declined. The share of Japanese automotive sector in world export of automotive products declined from 15.3% in 2010 to 10.4% in 2014. Nonetheless, the Japanese automotive sector contributed a significant 21.2% share in the country's total merchandise exports in 2014, which aggregated to US$ 107.39 billion. Of this, motor cars and motor vehicles (HS code-8703) contributed nearly 82.5% of exports in terms of value.

Table 4: Export of Automobiles from Japan: By Type of Vehicles

US$ Million

ITC HS Code	Commodity Name	2011	2012	2013	2014
8703	Motor cars and other motor vehicles	87337.87	97460.22	91688.81	88542.76
8704	Motor vehicles for the transport of goods	11267.31	12512.86	10105.11	10492.52
8702	Public Transport type passenger motor vehicles	2915.73	3420.48	3187.42	3070.02
8711	Motorcycles (including mopeds)	3340.12	3122.98	2838.14	2985.76
8701	Tractors	2220.28	2313.63	1894.53	2102.23
8705	Special purpose motor vehicles	288.62	364.15	280.01	194.67
	Total	**107369.9**	**119194.3**	**109994**	**107388**

Source: UN Comtrade Database; EXIM Bank Research

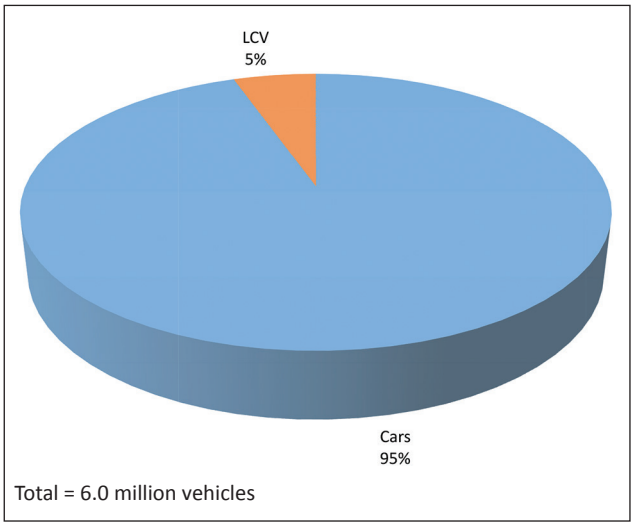
Germany

Germany is considered as the birthplace of automobile. Currently, nearly six million vehicles are produced in Germany. Alongside China, the United States and Japan, Germany is one of the top 4 automobile manufacturers in the world. The Volkswagen group is one of the three biggest automotive companies of the world (along with Toyota and General Motors).

The country's world-class R&D infrastructure, complete industry value chain integration, and highly qualified workforce create an internationally competitive automotive environment. Germany produced 6 million vehicles in 2015, an increase of around 2.1% over the previous year. The production share of cars was at a staggering 95% of the total production of vehicles. Production of cars in Germany increased by 1.8% in 2015 year-on-year while production of LCVs witnessed a growth of over 7.1% during the same period.

During the year 2014, Germany, with exports aggregating US$ 188.6 billion, was the largest exporter of automobiles in the world contributing to more than 20% of world exports. Motor cars and other motor vehicles (HS code-8703) formed a significant portion of exports from Germany contributing to ~85% of the exports.

Exhibit 11: Segment wise Production of Automobiles in Germany (2015)



*Some EU countries do not provide data on HCVs
Source: World Motor Vehicle Production, OICA; EXIM Bank Research

Table 5: Export of Automobiles from Germany: By Type of Vehicles

US$ Million

ITC HS Code	Commodity Name	2011	2012	2013	2014
8703	Motor cars and other motor vehicles	154289.70	146850.98	148591.87	160306.32
8704	Motor vehicles for the transport of goods	11925.29	10948.81	11126.78	10880.75
8701	Tractors	9975.23	9419.08	10551.11	10152.57
8705	Special purpose motor vehicles	3769.77	4105.42	3969.79	3956.99
8711	Motorcycles (including mopeds)	1354.32	1276.63	1403.66	1742.60
8702	Public Transport type passenger motor vehicles	1599.53	1289.57	1399.13	1582.49
	Total	**182913.8**	**173890.5**	**177042.3**	**188621.7**

Source: UN Comtrade Database; EXIM Bank Research

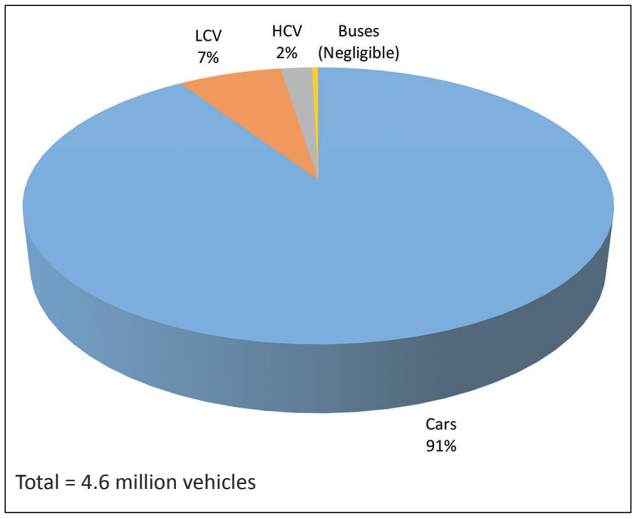
South Korea

The automotive industry in South Korea is the fifth largest in the world measured by automobile unit production and the fifth largest by automobile export volume. While its initial operations involved merely in assembling of parts imported from foreign companies, South Korea has today emerged as one of the most advanced automobile producing countries in the world.

South Korea's production of automobiles increased modestly by around 0.7% in 2015, over the previous year. Apart from HCVs, which declined by 1.6%, from 95,560 units in 2014 to 94,029 units in 2015, production increased in all other categories during 2015. Production of LCVs witnessed a growth of 7.3% in 2015 while that of buses increased by 3.7% and cars by 0.3% in 2015.

In terms of exports, the total value amounted to US$ 48.86 billion in 2014, up from US$ 45.34 billion recorded in 2011. Exports of automobiles from South Korea were predominated by motor cars and other motor vehicles which accounted for more than 91 percent of the country's exports in 2014.

Exhibit 12: Segment wise Production of Automobiles in South Korea (2015)



Source: World Motor Vehicle Production, OICA; EXIM Bank Research

Table 6: Export of Automobiles from South Korea: By Type of Vehicles

US$ Million

ITC HS Code	Commodity Name	2011	2012	2013	2014
8703	Motor cars and other motor vehicles	40909.86	42387.54	44283.43	44816.38
8704	Motor vehicles for the transport of goods	2433.05	2524.38	2392.66	2294.06
8702	Public Transport type passenger motor vehicles	1329.60	1525.90	1145.63	797.18
8701	Tractors	421.38	515.27	509.58	662.84
8705	Special purpose motor vehicles	169.26	204.67	249.58	255.49
8711	Motorcycles (including mopeds)	79.79	54.77	54.17	41.93
	Total	**45342.94**	**47212.53**	**48635.05**	**48867.88**

Source: UN Comtrade Database; EXIM Bank Research

Category-wise Export of Automobiles in the World

The growth in global trade of automobiles throughout the last few years has been moderate. Whilst other vehicles grew at a modest pace, exports of motor cars and other motor vehicles registered a CAGR of 3.3% during the period 2011-2014. Overall, cumulative world exports of select automobiles (HS Codes 8703, 8704, 8701, 8711, 8702 and 8705) increased from US$ 856 billion in 2011 to US$ 942 billion in 2014, thereby recording a CAGR of 3.25%.

Table 7: Category-wise Exports of Automobiles in the World

US$ Billion

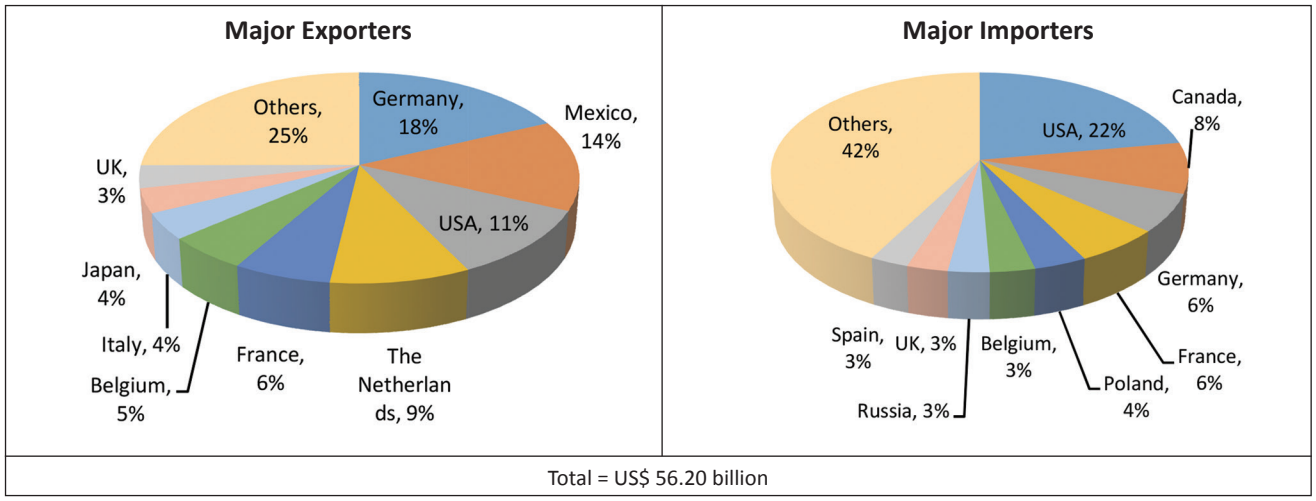
ITC HS Code	Commodity Name	2011	2012	2013	2014
8703	Motor cars and other motor vehicles	638.71	649.79	678.24	708.73
8704	Motor vehicles for the transport of goods	114.60	123.91	122.76	124.92
8701	Tractors	54.18	54.58	54.49	56.20
8711	Motorcycles (including mopeds)	20.05	19.69	20.69	21.65
8702	Public transport type passenger motor vehicles	14.74	15.47	15.91	17.02
8705	Special purpose motor vehicles	13.75	14.36	14.48	13.85
	Total	**856.03**	**877.80**	**906.57**	**942.37**

Source: UN Comtrade Database; EXIM Bank Research

Tractors – HS Code – 8701

World trade in tractors in the year 2014 was valued at US$ 56.20 billion. Germany, Mexico and USA were the largest exporters of tractors, cumulatively accounting for more than 43% of total exports in 2014, in terms of value. Export value of these three countries amounted to around US$ 24.00 billion in 2014. Other major exporters included the Netherlands (9%), France (6%) and Belgium (5%). Major importers of tractors were the USA (a share of 22% in world imports), Canada (8%), Germany (6%) and Poland (4%).

Exhibit 13: Global Trade in Tractors– HS Code – 8701



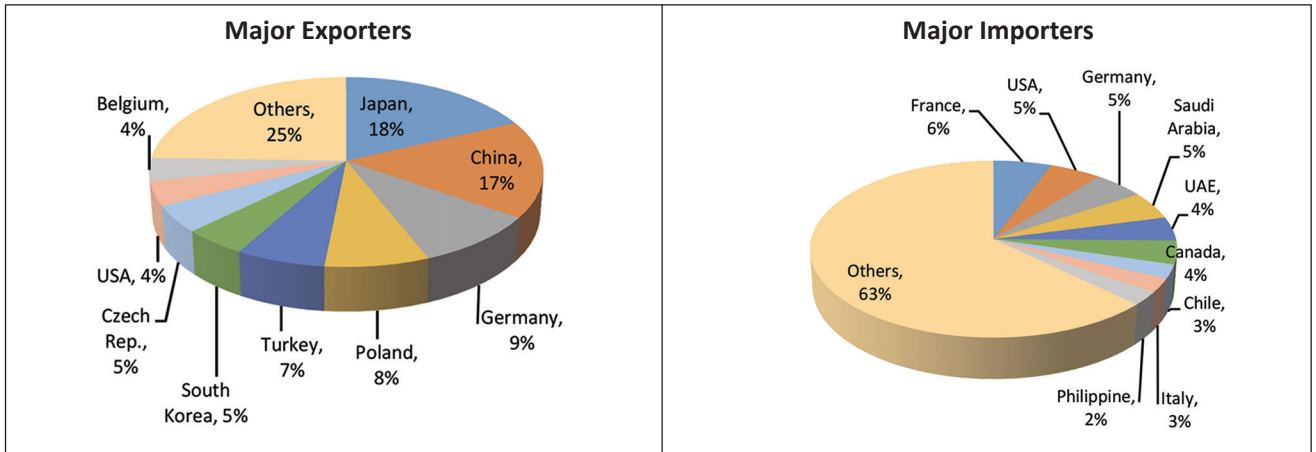
Total = US$ 56.20 billion

Source: UN Comtrade Database; EXIM Bank Research

Public Transport type Passenger Vehicles – HS Code – 8702

World trade in public transport type passenger vehicles (HS code – 8702) was estimated at US$ 17.02 billion in 2014. Japan was the leading exporter in the world, with a share of 18%, and an export value of US$ 3.07 billion. In the year 2014, China exported over US$ 2.82 billion worth of public transport type passenger vehicles with a global export share of 17% in terms of value. Other major exporters were Germany (9%), Poland (8%) and Turkey (7%). Major importers during the same year included France (6%), USA, Germany and Saudi Arabia (at 5% each).

Exhibit 14: Global Trade in Public Transport Type Passenger Vehicles – HS Code – 8702



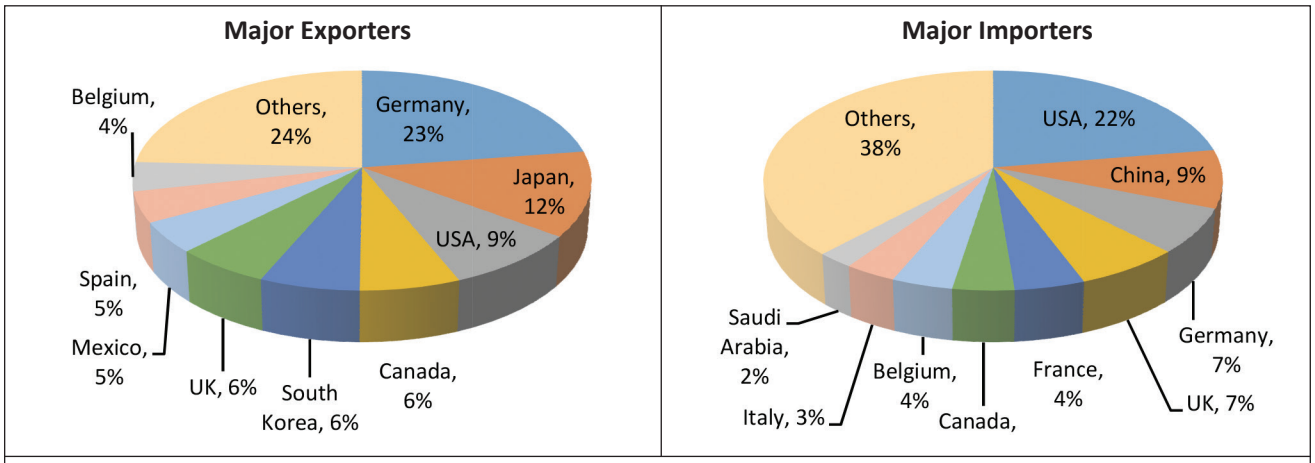
Total = US$ 17.02 billion

Source: UN Comtrade Database; EXIM Bank Research

Motor Cars and Motor Vehicles – HS Code – 8703

World exports of motor cars and motor vehicles (HS code – 8703) was valued at US$ 708.73 billion in 2014. Germany, with a share of 23% in world exports, and Japan (12%) were the leading exporters in 2014. Both the countries together exported motorcars and motor vehicles worth nearly US$ 248.85 billion. Other major exporters were USA (9%), Canada, South Korea and UK (at 6% each) followed by Mexico (5%), Spain (5%) and Belgium (4%). Major importers of motorcars and motor vehicles during the same year were USA (22%), China (9%), Germany (7%) and UK (7%) followed by France, Canada and Belgium (at 4% each).

Exhibit 15: Global Trade in Motor Cars and Motor Vehicles – HS Code – 8703



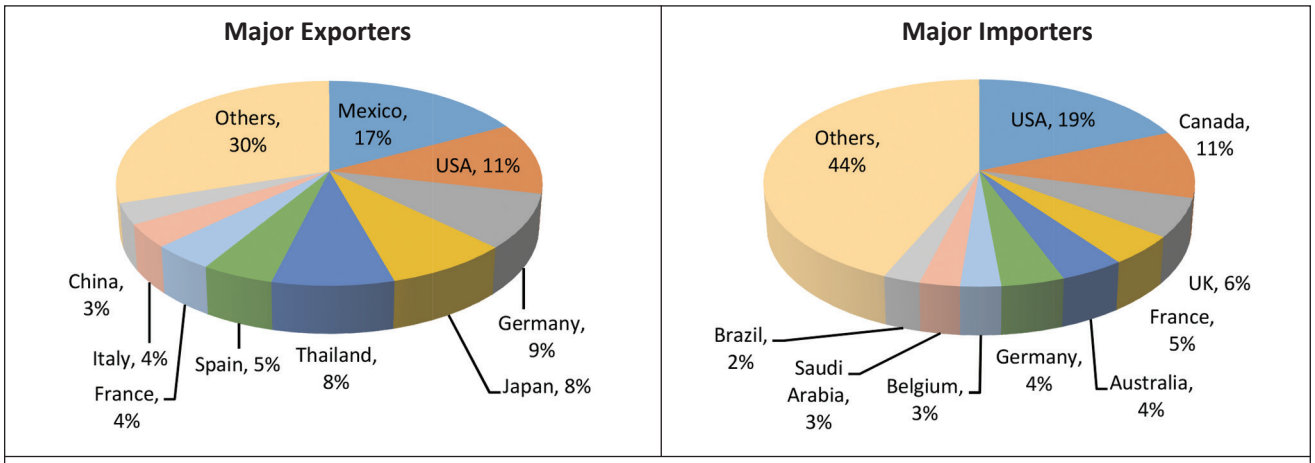
Total = US$ 708.73 billion

Source: UN Comtrade Database; EXIM Bank Research

Motor Vehicles for Transport of Goods – HS Code – 8704

World exports of motor vehicles for transport of goods was valued at US$ 124.92 billion in 2014. Mexico, USA and Germany together accounted for 37% of world export of motor vehicles for transport of goods, in terms of value. Other major exporters included Japan (8%), Thailand (8%) and Spain (5%) followed by France and Italy (4% each). Major importers of motor vehicles for transport of goods included USA (19%), Canada (11%), UK (6%) followed by France (5%), Australia and Germany (at 4% each).

Exhibit 16: Global Trade in Motor Vehicles for Transport of Goods – HS Code – 8704



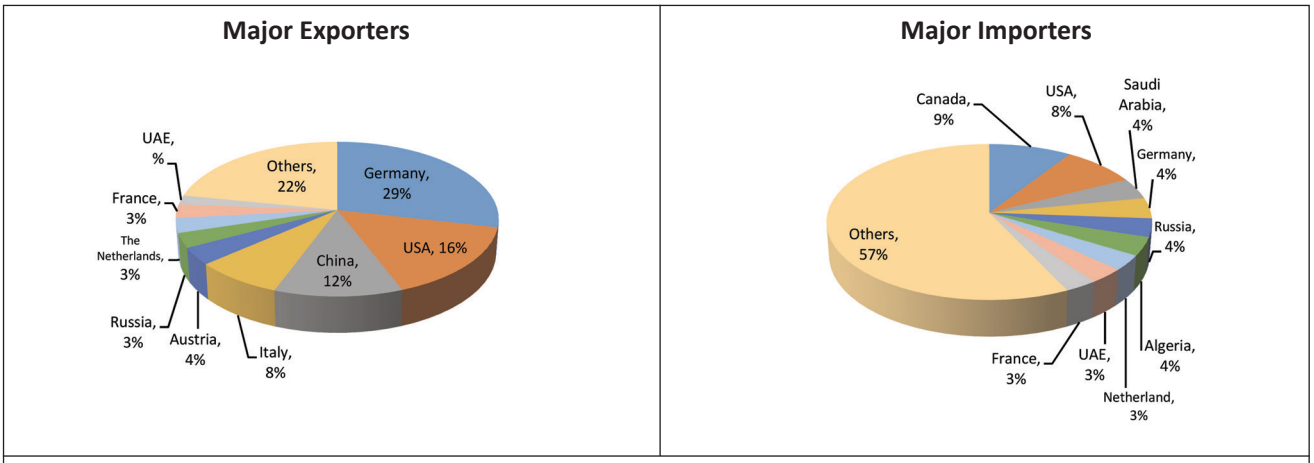
Total = US$ 124.92 billion

Source: UN Comtrade Database; EXIM Bank Research

Special Purpose Motor Vehicles– HS Code – 8705

World exports of special purpose motor vehicles (HS code 8705) was valued at US$ 13.85 billion in 2014. Germany was the largest global exporter under this category with a share of 29% in 2014. USA and China were the other major exporters accounting for 16% and 12% of world export share, respectively. Major importers of special purpose motor vehicles were Canada and USA (9% and 8% share each in world imports, respectively), followed by Saudi Arabia, Germany, Russia and Algeria (4% each).

Exhibit 17: Global Trade in Special Purpose Motor Vehicles – HS Code – 8705



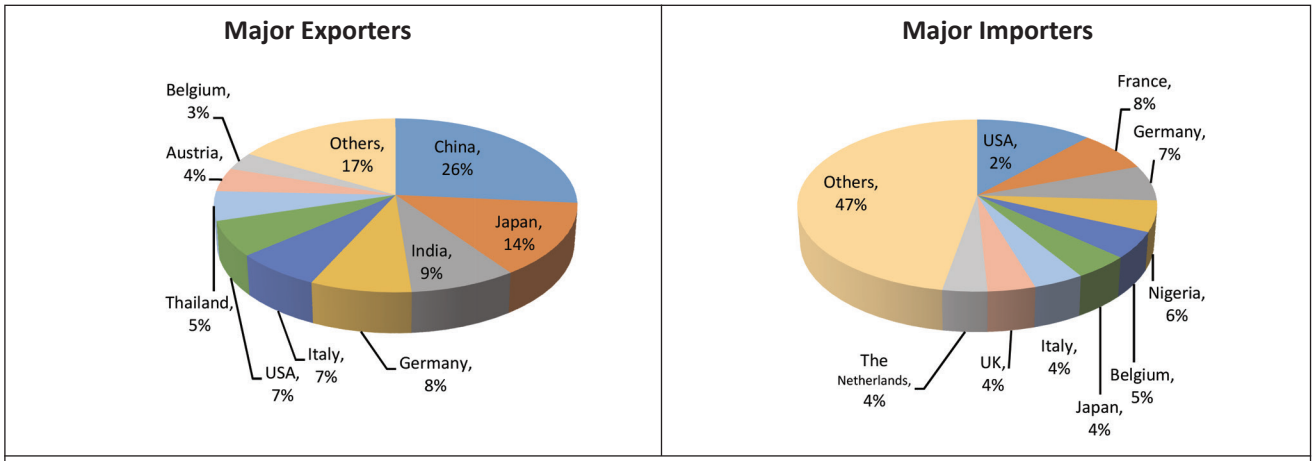
Total = US$ 13.85 billion

Source: UN Comtrade Database; EXIM Bank Research

Motorcycles (Including Mopeds) – HS Code – 8711

In the year 2014, world exports of motorcycles (including mopeds) under HS code 8711 was valued at US$ 21.65 billion. China exported motorcycles (including mopeds) valued at US$ 5.73 billion and stood as the largest exporter in the world accounting for 26% of the world exports. Other major exporters of motorcycles (including mopeds) were Japan (14%), India (9%) and Germany (8%). USA, France and Germany were among the largest importers of motorcycles (including mopeds) in the world. In the year 2014 alone, USA imported US$ 2.11 billion worth of motorcycles (including mopeds), and accounted for 12% of world imports.

Exhibit 18: Global Trade in Motorcycles (Including Mopeds) and Cycles – HS Code – 8711



Total = US$ 13.85 billion

Source: UN Comtrade Database; EXIM Bank Research

3. Global Auto-Components Industry

The global auto component industry involves auto component manufacturers, aftermarket parts manufacturers, suppliers, dealers and retailers in all its diversity. The trends in the auto component industry are dependent on the developments in the automobile industry as the original equipment manufacturers (OEM) are the primary consumers for the auto components sector. Historically, the automobile industry has been concentrated in the developed parts of the world; so has the auto component industry. But the trends are changing and transitioning fast. The manufacturing of auto components is gradually shifting toward Asian countries such as China, India, and others because of higher market potential and the low-cost manufacturing options available.

Growing complexities and demand in automobile industry coupled with the growing importance of suppliers and their recognition as partners as well as increase in opportunities for mega suppliers are the main factors driving the growth of the auto components industry. Noteworthy trends and developments of this industry include the shifting focus on R&D, increasing consolidation of the industry through mergers & acquisitions and the emergence of online sales.

Production

The production and demand of the auto component industry are closely linked to that of the automobile industry, implying that the industry has witnessed a surge in production over the years, in line with the growth of the automobile sector. Although the major portion of components production is meant to cater to the demand of the OEMs, the aftermarket or the replacement market is also making its mark as an important source of revenue for the industry. The size of the replacement market can be gauged from the estimate that in the year 2014 there were over 900 million[4] passenger cars in the world, while around 67 million[5] new cars were added during that year to the market. Thus, it can be fairly concluded that there is a growing replacement market for auto-components in the world.

Trade

Global exports of autocomponents amounted to US$ 1104.9 billion[6] in 2014 and has grown over the past few years, in most sub-categories. Gear boxes and drive axles were the two key segments that are globally exported. The next section provides a brief analysis of the trends in the international trade of major sub-categories of auto components.

[4]https://www.statista.com/statistics/281134/number-of-vehicles-in-use-worldwide/
[5]http://www.oica.net/category/production-statistics/2014-statistics/
[6]This has been calculated at HS-6 digit level and may be an over-estimation given that some products at HS6-digit level classification may not strictly belong to the auto components sector

Table 8: Category-wise Global Exports of Auto-Components

US$ Billion

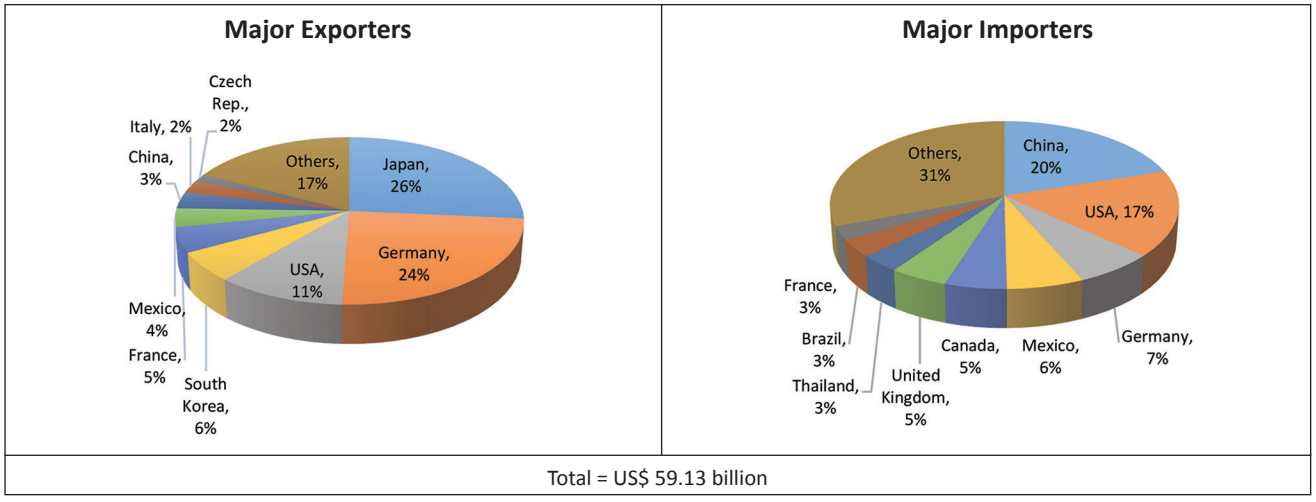
ITC HS Code	Commodity Name	2011	2012	2013	2014
870840	Gear boxes	50.60	53.69	57.47	59.13
870850	Drive axles with differential whether or not provided with other transmission components	20.10	20.97	21.76	22.35
870894	Steering wheels, steering columns & steering boxes	16.28	17.21	18.91	19.97
870870	Road wheels & parts & accessories thereof	17.16	17.20	17.93	18.65
870880	Suspension shock absorbers	14.00	14.70	15.92	16.68
870893	Clutches & parts thereof	8.91	8.92	9.68	10.42
870810	Bumpers and parts thereof	6.04	6.26	6.70	6.90
870891	Radiators	6.47	6.57	6.70	6.86
870839	Other brakes & servo-brakes & parts thereof	0.75	0.10	0.38	0.09
870831	Mounted brake linings	0.00	0.01	0.01	0.01
870860	Non-driving axles & parts thereof	0.00	0.00	0.00	0.00
870829	Other parts & accessories of body	54.64	56.44	61.12	63.90

Source: UN Comtrade Database; EXIM Research

Gear Boxes for Motor Vehicles – HS Code – 870840

In the year 2014, world export of gearboxes for motor vehicles (HS code 870840) was valued at US$ 59.13 billion, largest among the auto-components traded in the world. Japan and Germany were the largest exporters under this product category, cumulatively accounting for more than 50% share of the world exports in 2014. Export value of these two countries amounted to around US$ 30 billion in 2014. Other major exporters were the USA (11%), South Korea (6%), France (5%), Mexico (4%), China (3%), Italy and Czech Republic (2% each). Major importers of gearboxes for motor vehicles during the same year included China (a share of 20% in world imports), followed by USA (17%), Germany (7%) and Mexico (6%).

Exhibit 19: International Trade in Gear Boxes– HS Code – 870840



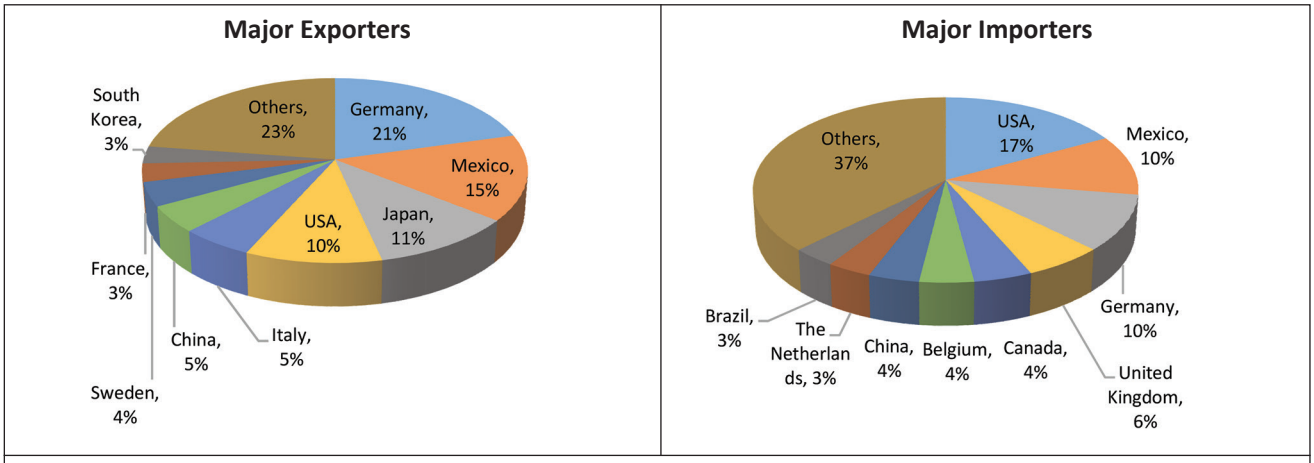
Total = US$ 59.13 billion

Source: UN Comtrade Database; EXIM Bank Research

Drive Axles – HS Code – 870850

World export of drive axles (HS code 870850) was valued at US$ 22.35 billion in 2014. Germany was the leading exporter of drive axles to the world, with a share of 21%. Mexico, the second largest exporter of drive axles had a share of 15% in world exports – valued at over US$ 3.35 billion. Other major exporters included Japan (11%), USA (10%), Italy (5%), China (5%), Sweden (4%), France and South Korea (at 3% each). the USA, on the other hand, was the largest importer of drive axles with a share of 17% in 2014; its import value being US$ 3.74 billion. Other major importers were Mexico (10%), Germany (10%), and the United Kingdom (6%).

Exhibit 20: International Trade in Drive Axles – HS Code – 870850



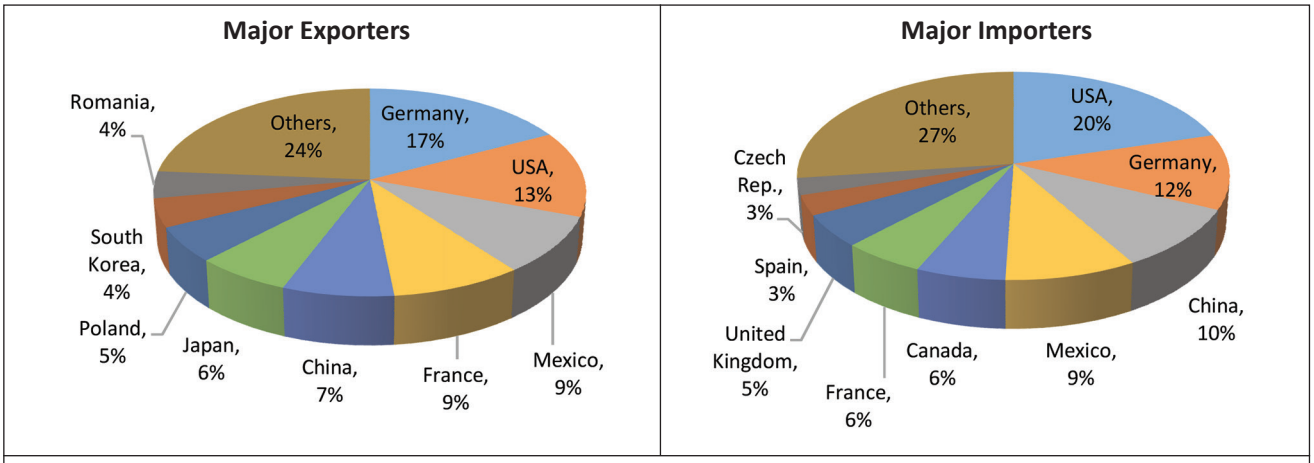
Total = US$ 22.35 billion

Source: UN Comtrade Database; EXIM Bank Research

Steering Wheels – HS Code – 870894

Global export of steering wheels (HS code 870894) was valued at US$ 19.97 billion in 2014. Germany and USA were the largest exporters under this product category, accounting for more than 30% share in world exports in 2014. Other major exporters were Mexico (9%), France (9%), China (7%), Japan (6%) and Poland (5%). Major importers of steering wheels during the same year included the USA (a share of 20% in world imports), followed by Germany (12%), China (10%), Mexico (9%), Canada (6%) and France (6%).

Exhibit 21: International Trade in Steering Wheels in the World – HS Code – 870894



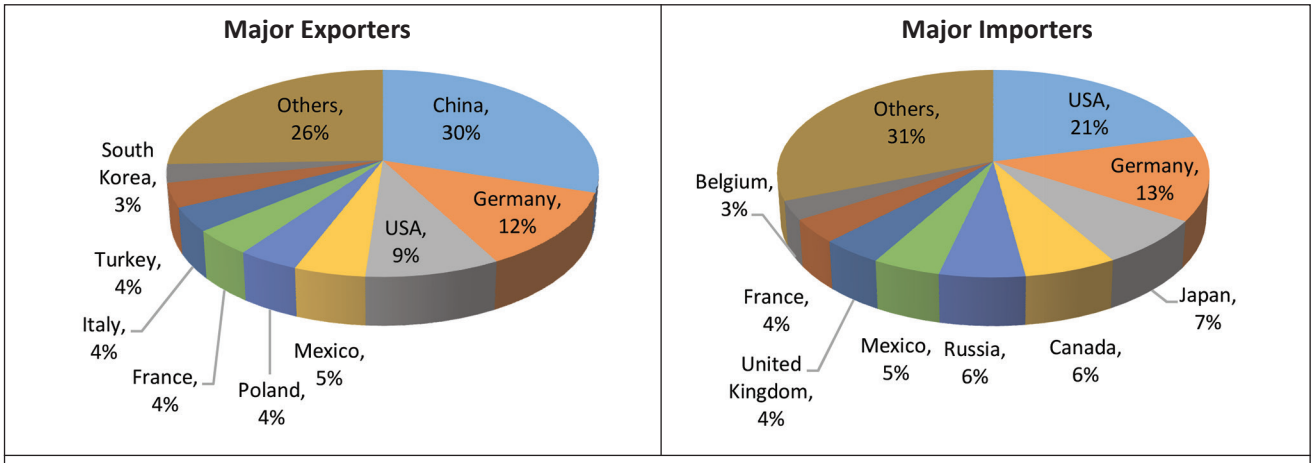
Total = US$ 19.97 billion

Source: UN Comtrade Database; EXIM Bank Research

Road Wheels & Parts & Accessories Thereof – HS Code – 870870

World export of road wheels and their parts (HS code 870870) was valued at US$ 18.65 billion in 2014. China (share of 30% in world exports) and Germany (12%) were the leading exporters of auto-components under this group in 2014. Both the countries cumulatively exported products worth nearly US$ 7.86 billion. Other major exporters included the USA (US$ 1.67 billion), Mexico (US$ 0.88 billion), Poland and France (US$ 0.75 billion each). Major importers of road wheels & parts & accessories during the same year included the USA (21%), Germany (13%), Japan (7%), Canada (6%), Russia (6%) and Mexico (5%).

Exhibit 22: International Trade in Road Wheels & Parts & Accessories Thereof – HS Code – 870870



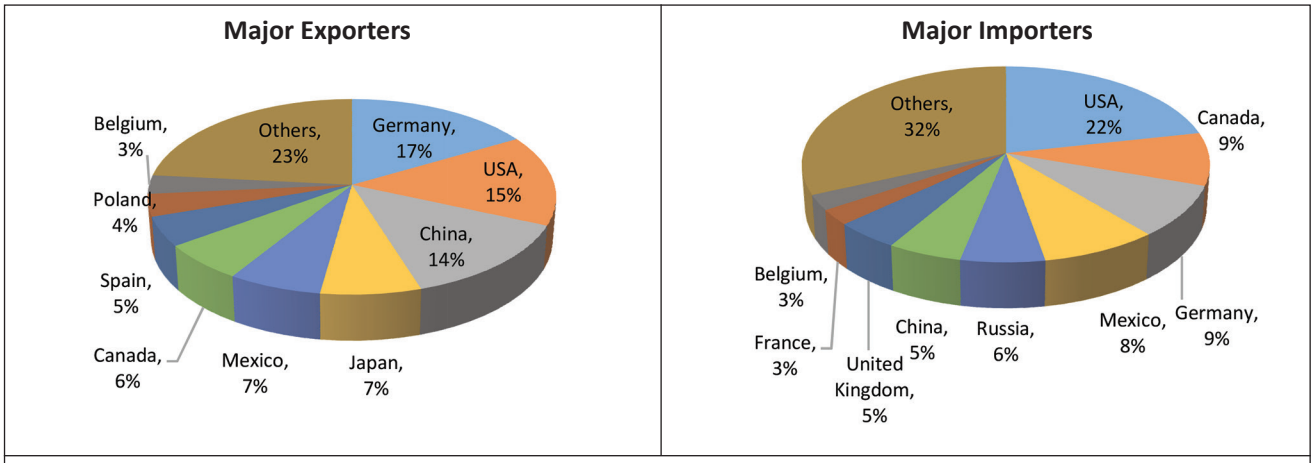
Total = US$ 18.65 billion

Source: UN Comtrade Database; EXIM Bank Research

Suspension Shock Absorbers – HS Code – 870880

World export of suspension shock absorbers in 2014 was valued at US$ 16.68 billion. Germany, with exports of US$ 2.76 billion, was the leading exporter of suspension shock absorbers in the world (a share of 17%). Other major exporters were the USA (15%), China (14%), Japan (7%), Mexico (7%), Canada (6%) and Spain (5%). Major importers of suspension shock absorbers included the USA (22%), Canada (9%), Germany (9%), Mexico (8%), Russia (6%), China and the United Kingdom (5% each).

Exhibit 23: International Trade in Suspension Shock Absorbers – HS Code – 870880



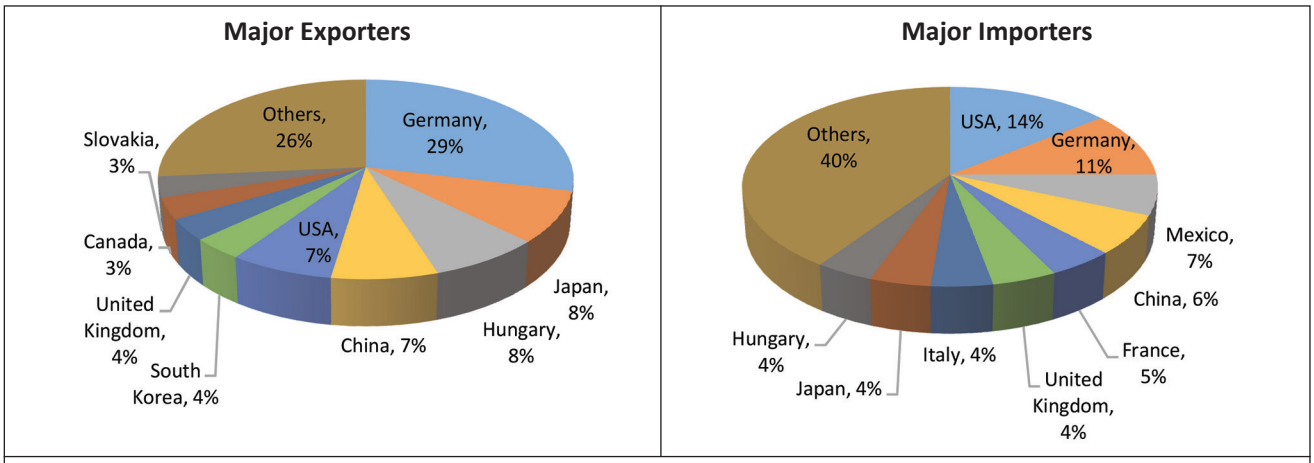
Total = US$ 16.68 billion

Source: UN Comtrade Database; EXIM Bank Research

Clutches & Parts Thereof – HS Code – 870893

World export of clutches and parts (HS code 870893) was valued at US$ 10.42 billion in 2014. Germany was, by far, the leading exporter, with a share of 29% and exports aggregating over US$ 3 billion. Other major exporters included Japan (8%), Hungary (8%), China and the USA (7% each). Major importers of clutches and parts thereof included the USA (14%), Germany (11%), Mexico (7%), China (6%) and France (5%).

Exhibit 24: International Trade in Clutches & Parts Thereof – HS Code – 870893



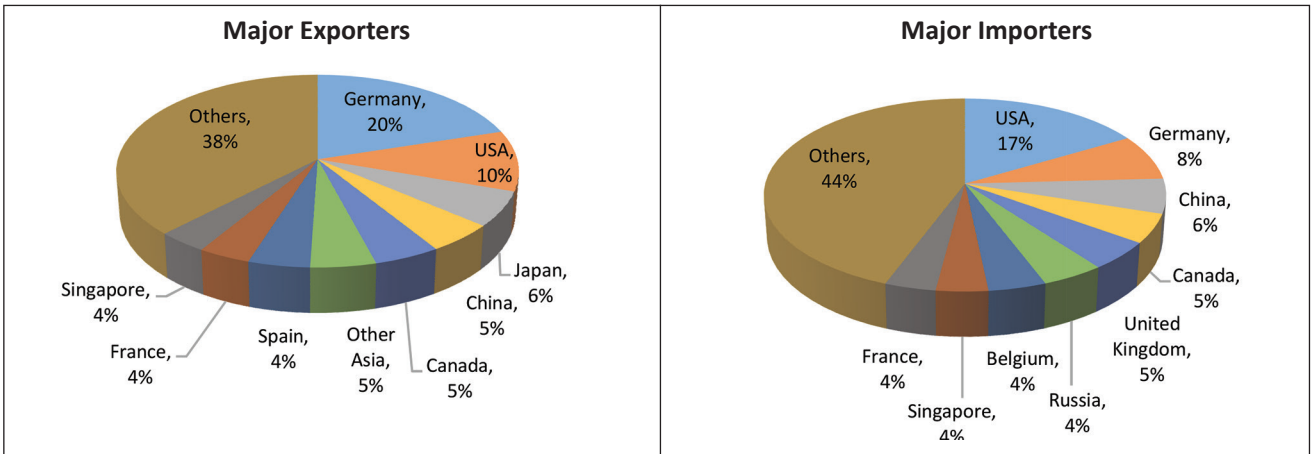
Total = US$ 10.42 billion

Source: UN Comtrade Database; EXIM Bank Research

Bumpers & Parts Thereof – HS Code – 870810

World export of bumpers and parts thereof (HS code 870810) amounted to US$ 6.90 billion in 2014. Germany was again the largest exporter in the world, accounting for 20% (US$ 1.38 billion) of world exports in 2014. Other major exporters of bumpers and parts thereof were USA (10%), Japan (6%), China and Canada (5% each). USA was the largest importer of bumpers and parts thereof in 2014 with imports amounting to US$ 1.14 billion, (share of 17% of world imports). Other major importers included Germany (8%), China (6%), Canada and the United Kingdom (5% each).

Exhibit 25: International Trade in Bumpers and Parts Thereof – HS Code – 870810



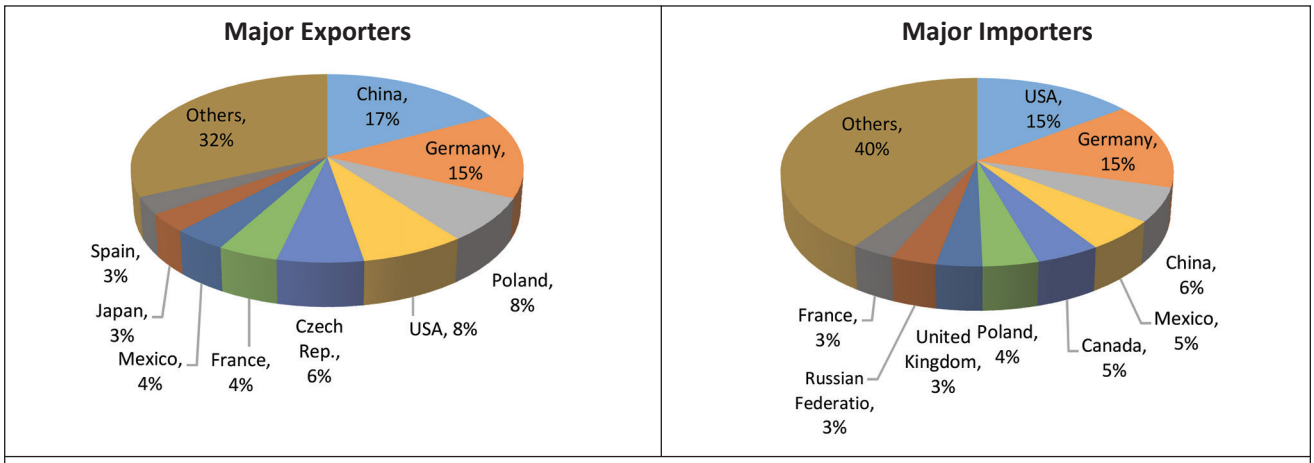
Total = US$ 6.90 billion

Source: UN Comtrade Database; EXIM Bank Research

Radiators – HS Code – 870891

World export of radiators in the year 2014 was valued at US$ 6.86 billion. China was the largest exporter of radiators with exports amounting to US$ 1.18 billion (17% share in world exports). Other major exporters of radiators were Germany (15%), Poland and the USA (8% each). Major importers of radiators included the USA (15%), Germany (15%), China (6%), Mexico and Canada (5% each).

Exhibit 26: International Trade in Radiators – HS Code – 870891



Total = US$ 6.86 billion

Source: UN Comtrade Database; EXIM Bank Research

In Sum

The swiftly globalizing world is opening up newer avenues for the automotive and auto component industry, especially while it makes a shift towards electric, electronic and hybrid cars, which are considered more efficient, safe and reliable modes of transportation. In the near future, this will lead to newer verticals and opportunities for auto-component manufacturers, who would need to adapt to the change via systematic research and development. This would catalyse even higher volumes of international trade, especially given that new technologies would take time to establish a production base in the lower cost countries.

Over the years, there has been a gradual shift in the production base of auto components to developing countries from their developed country counterparts. With increasing need to cut costs, and developing nations providing the engineering skills at competitive cost, the industry has a good future.

4. The India Scenario

Historical Background

It was in 1897 that the first car ran on an Indian road. Through the 1930s, cars were imported only, and in very small numbers. The evolution of the Indian automobile manufacturing began with the launching of Hindustan Motors in 1942, Premier in 1944 (building Chrysler, Dodge, and Fiat products), and Mahindra & Mahindra in 1945.

Following the country's independence in 1947, the Government of India and the private sector launched efforts to create an automotive-component manufacturing industry to supply to the automobile industry. In 1953, an import substitution programme was launched resulting in restriction on the import of fully built-up vehicles. This was also a period of slow growth, owing to nationalization and the license raj that hampered the growth of Indian private sector.

It was during the 1970s, with restrictions on the import of vehicles firmly in place, that the automotive industry started to grow; but the growth was mainly driven by tractors, commercial vehicles and scooters, while the cars had remained a major luxury item. Eventually, following liberalization, multinational automakers, such as, Suzuki and Toyota of Japan and Hyundai of South Korea, among others, were allowed to invest in the Indian market, furthering the establishment of an automotive industry in India. Maruti Suzuki was the first, and the most successful of these entrants.

During the 1990s, as the country entered into the era of privatization and liberalization, a number of foreign automobile firms formed joint ventures with existing Indian companies. The variety of options available to the consumers began to multiply, and by the turn of the new millennium, there were 12 large automotive companies who had established manufacturing set up in the Indian market.

Status of Indian Automobile and Auto-Components Industry

The Indian automobile and auto-components industry in the last few years has grown at a fairly healthy pace, aided by robust economic activity and infrastructure development; growing middle class population with disposable income and availability of easy consumer finance facilities. The Indian automobile and auto-components industry currently produces a wide range of models and products. The industry has witnessed respectable progression in the last few years with the turnover and exports surging, promising a bright future for the industry and the country.

Box 1: Make In India: Sector Survey – Automobile

OVERVIEW

The automobile sector of India is one of the largest in the world and accounts for over 7.1% of India's gross domestic product (GDP)[7]. It also contributes to nearly 22% of the country's manufacturing GDP[8]. The sector was first opened to foreign direct investment (FDI) in the year 1991 during the liberalization of the Indian economy and has come a long way since.

PRESENT SITUATION

Today, 100% FDI is allowed in the sector through the automatic approval route which means that foreign investors do not require the prior authorization of the Government of India. The impact of this decision can be seen in the data released by the Department of Industrial Policy and Promotion (DIPP) which states that the industry has attracted FDI worth USD 15.79 billion during the period April 2000 to September 2016[9].

Thus, it can be reasonably concluded that India has emerged as one of the key global players (both as a consumer and a producer) in the automobile industry. It has witnessed tremendous growth, especially in the last few years and has become a base for global manufacturers. Volkswagen, Nissan, Fiat, Renault, General Motors, Ford, Honda, Suzuki, Hyundai, Daimler, BMW, Skoda, Audi are all present in India and are manufacturing and assembling locally. Mercedes-Benz recently decided to make the entry level GLA-class Sport Utility Vehicle (SUV) in India. Japanese two-wheeler manufacturer Honda Motorcycle and Scooter India (HMSI) opened its 4th and world's largest scooter plant in Gujarat while Fiat Chrysler has planned to invest USD 513.5 million in Maharashtra, to manufacture Jeep Grand Cherokee model.

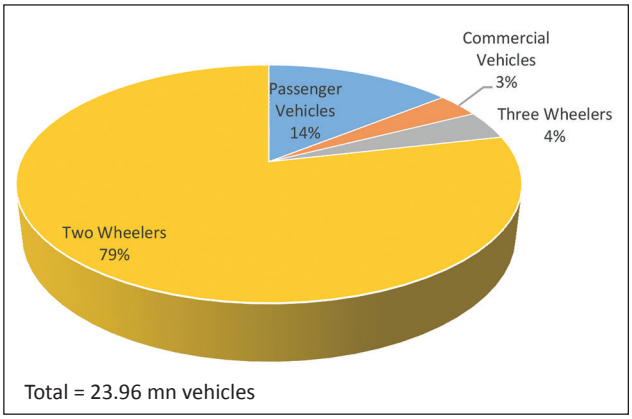
Source: Make in India (www.makeinindia.com); EXIM Bank Research.

[7]http://www.ibef.org/industry/india-automobiles.aspx
[8]http://www.investindia.gov.in/automobile-sector/
[9]http://dipp.nic.in/English/Publications/FDI_Statistics/2016/FDI_FactSheet_April_Sep_2016.pdf

Indian Automobile Industry

The Indian automobile industry manufactures almost all major transport vehicles such as cars, multi-utility vehicles, light commercial vehicles, buses, trucks, tractors, motorcycles, scooters, mopeds and three-wheelers. At present, India is the largest manufacturer of tractors, second largest manufacturer of two wheelers and buses, fifth largest heavy truck manufacturer, sixth largest car manufacturer and eighth largest commercial vehicle manufacturer in the world.

Exhibit 27: Category-wise Share in Automobile Production in India (2015-16)

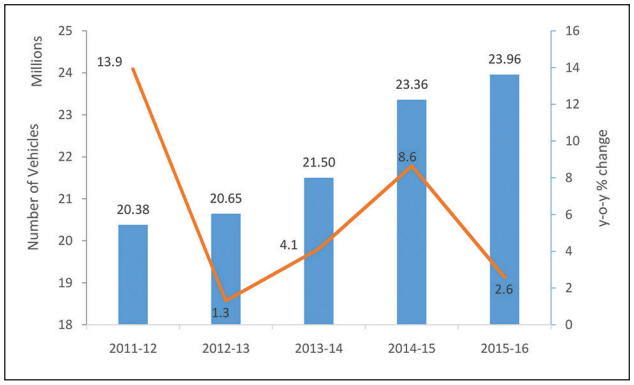


Source: SIAM; EXIM Bank Research

Trends in Production

The last few years have seen a fluctuating trend in the production of automobiles in India, both in value and quantity terms. While growth declined during 2012-13, and recently in 2015-16, the industry registered positive y-o-y growths during other intervening periods. The volume of production of Indian automobile industry has increased at a CAGR of over 6% during the period 2011-12 to 2015-16. By 2026, India is expected to be the third largest automotive market by volume in the world. A growing working population and an expanding middle-class are expected to remain key demand drivers. GDP per capita has grown from USD 1,432 in 2010 to USD 1,500 in 2012, and is expected to reach USD 1,869 by 2018[10].

Exhibit 28: Automobile Production in India: Recent Trends



Source: SIAM; EXIM Bank Research

Production in Individual Categories

As the demand has grown over the years, so has the production of automobiles. However, sub-segments such as commercial vehicles and three-wheelers have witnessed a decline in production for couple of years. Passenger vehicles and two-wheelers have seen a significant rise in the years under consideration, thus implying demand growth in these segments.

The two-wheelers segment constituted a major share of the total production of automobiles in the country, accounting for 79% of the production in the year 2015-16, followed by the passenger vehicles segment, with a share of around 14%. The three-wheelers constituted around 4% followed by the commercial vehicles at 3%. The production of two-wheelers has grown consistently every year during the analyzed period (2010-11 to 2015-16). On the other hand, the production of passenger vehicles segment faltered in 2013-14 while that of commercial vehicles and three wheelers recorded negative growths in three years during this five year period.

[10]http://www.makeinindia.com/sector/automobiles

Table 9: Category-wise Production of Automobiles in India

(No. of Units)

Category	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Passenger Vehicles	2,982,772	3,146,069	3,231,058	3,087,973	3,221,419	3,413,859
Commercial Vehicles	760,735	929,136	832,649	699,035	698,298	782,814
Three Wheelers	799,553	879,289	839,748	830,108	949,019	933,950
Two Wheelers	13,349,349	15,427,532	15,744,156	16,883,049	18,489,311	18,829,786
Grand Total	**17,892,409**	**20,382,026**	**20,647,611**	**21,500,165**	**23,358,047**	**23,960,409**

Source: SIAM

Domestic Sales of Automobiles

Domestic sales of automobiles in India have followed an increasing trend over the past few years (2010-11 to 2015-16). The buoyant economy, rising income, easy availability of finance, together with several other factors have contributed to the growth in automobile sales in India during this period. During the first three quarters of 2016-17 (April-December), year-on-year domestic sales of passenger vehicles increased by 8.6 percent while commercial vehicles registered a growth of 3.5 percent. Sales of three wheelers and two wheelers recorded growth of 1.9 and 10.0 percent, respectively during the same period. Going forward, the implementation of the Seventh Pay Commission is expected to boost income levels as it will enhance the income of 4,700,000 serving government employees and 5,200,000 pensioners. This will result in higher disposable income which is expected to spur passenger vehicles sales. Favourable factors such as softening interest rates, stable fuel prices and higher disposable income are expected to drive sales in the near future.

During the period analyzed i.e. from 2010-11 to 2015-16, there has been an increasing trend in the sales of all categories of automobiles. While two wheeler sales have steadily grown, other categories of vehicles have seen bumpy rides in terms of domestic sales.

Individual categories have mostly shown an increase except for commercial vehicles which had three consecutive years of decline in sales (2012-13 to 2014-15) before rebounding strongly in 2015-16 to post a healthy y-o-y growth of 11.5%. Two wheelers was one segment that witnessed consistent growth during each of the last five years.

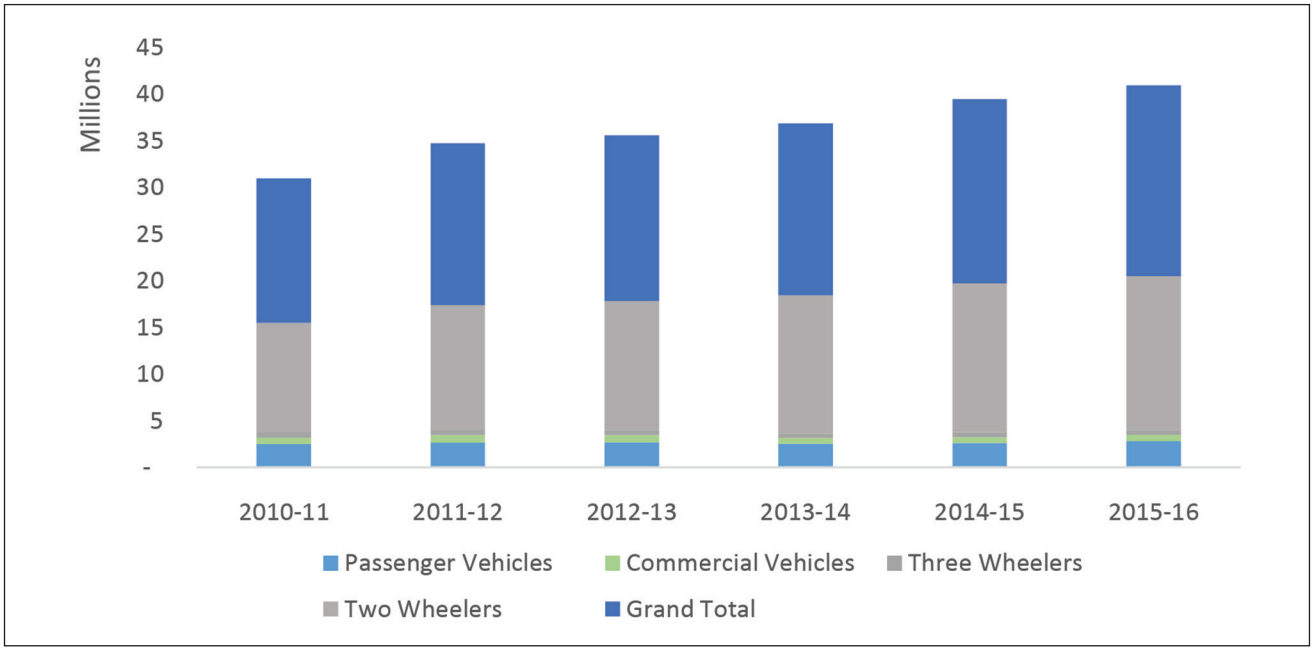
Table 10: Category-wise Domestic Sales of Automobiles in India

(No. of Units)

Category	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Passenger Vehicles	2,501,542	2,629,839	2,665,015	2,503,509	2,601,236	2,789,678
Commercial Vehicles	684,905	809,499	793,211	632,851	614,948	685,704
Three Wheelers	526,024	513,281	538,290	480,085	532,626	538,092
Two Wheelers	11,768,910	13,409,150	13,797,185	14,806,778	15,975,561	16,455,911
Grand Total	**15,481,381**	**17,361,769**	**17,793,701**	**18,423,223**	**19,724,371**	**20,469,385**

Source: SIAM

Exhibit 29: Trends in Domestic Sales of Vehicles in India: Segment wise

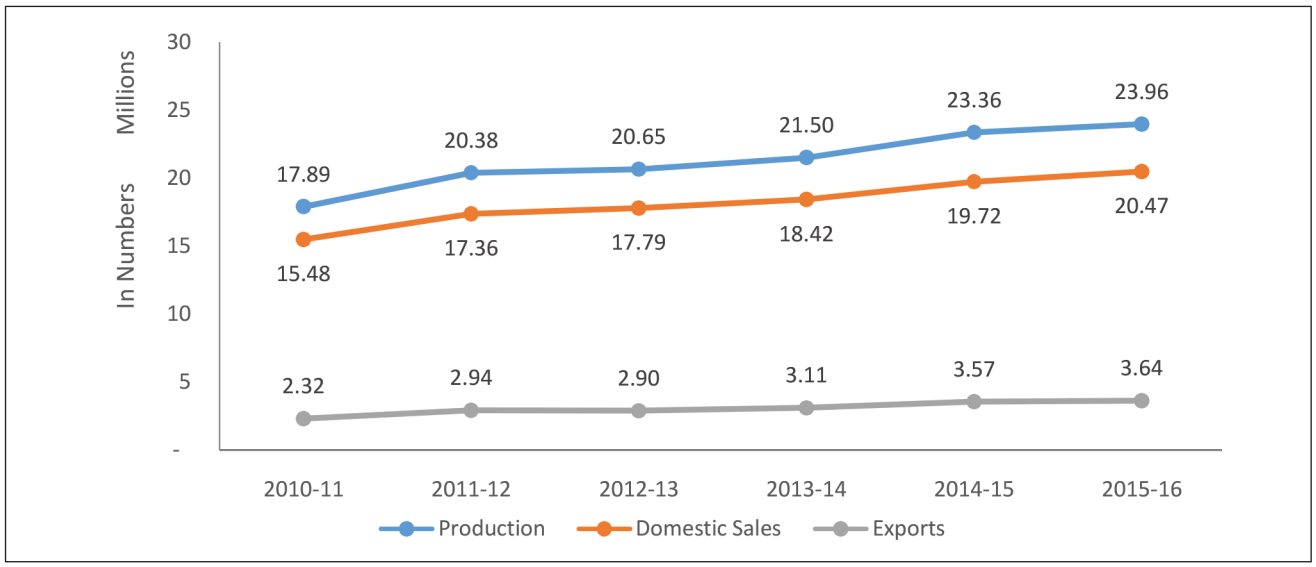


Source: SIAM; EXIM Bank Research

Trends in Exports

During the period 2010-11 to 2015-16, exports of automobiles have grown slowly and steadily. In the year 2015-16, exports were around 3.6 million units. Exports as a percentage of production has also increased consistently during the analyzed period except for the year 2012-13, when the share of exports dipped marginally from 14.41% in 2011-12 to 14.04%.

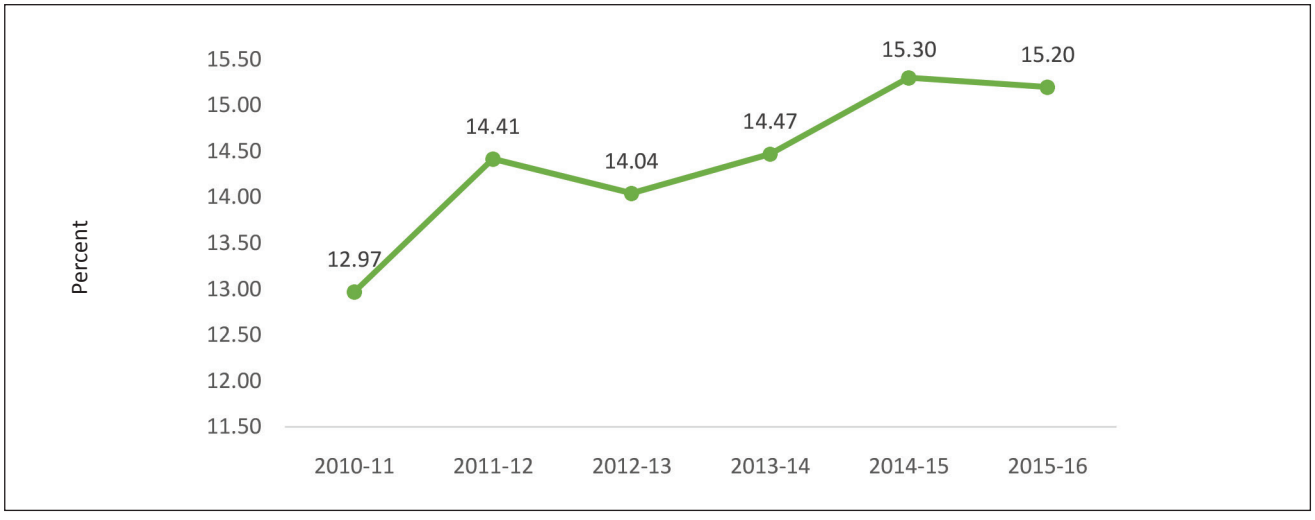
Exhibit 30: Trends in Production, Domestic Sales and Exports of Automobiles in India



Source: SIAM; EXIM Bank Research

Taking a look at the past trends, all the three parameters, viz., production, sales and exports have registered consistent growths during the last few years, the only exception being a marginal decline in exports during the period 2012-13. Exports as a percentage of production has also increased during the analyzed period – from 12.97% in 2010-11 to 15.20% in 2015-16, indicating the growing capability of the Indian automobile industry to meet the international standards and the increasing acceptance of automobiles manufactured from India in the global market.

Exhibit 31: Automobiles Exports as a Percentage of Production (Volume Terms)



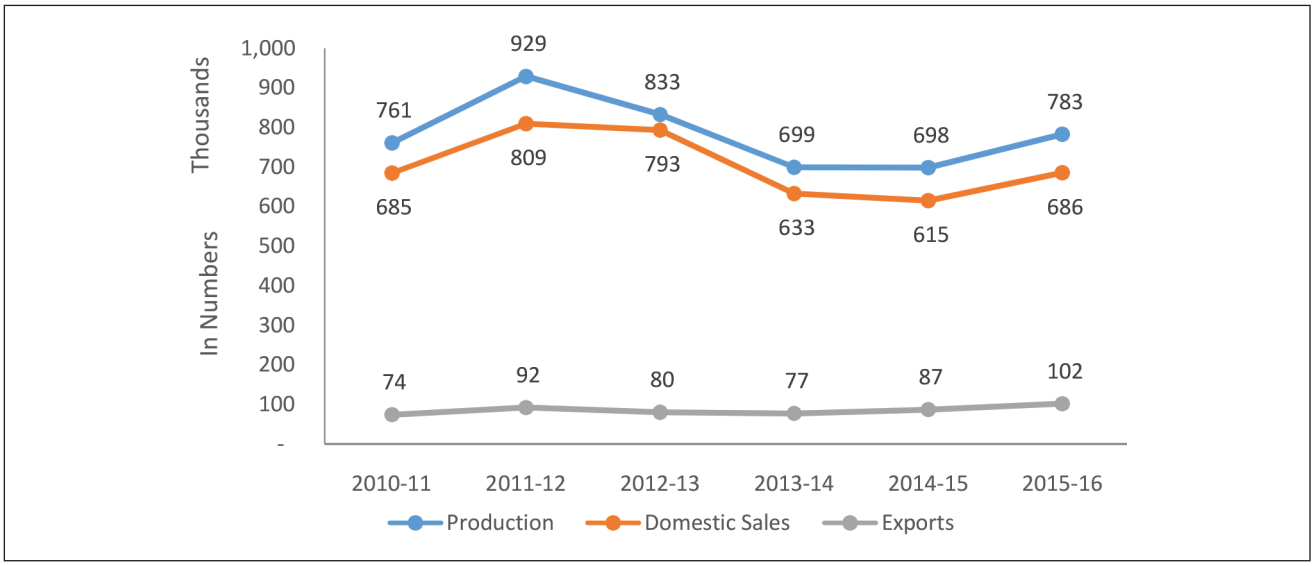
Source: SIAM; EXIM Bank Research

Segment-Wise Analysis

Commercial Vehicles

Exhibit 32 shows the trend in production, domestic sales and export of commercial vehicles in the last few years. The production has increased from 7.61 lakh vehicles in 2010-11 to 7.83 lakh units in 2015-16. Export of commercial vehicles during the same period increased from 74,043 units to 101,689 units.

Exhibit 32: Trends in Production, Domestic Sales and Exports of Commercial Vehicles in India

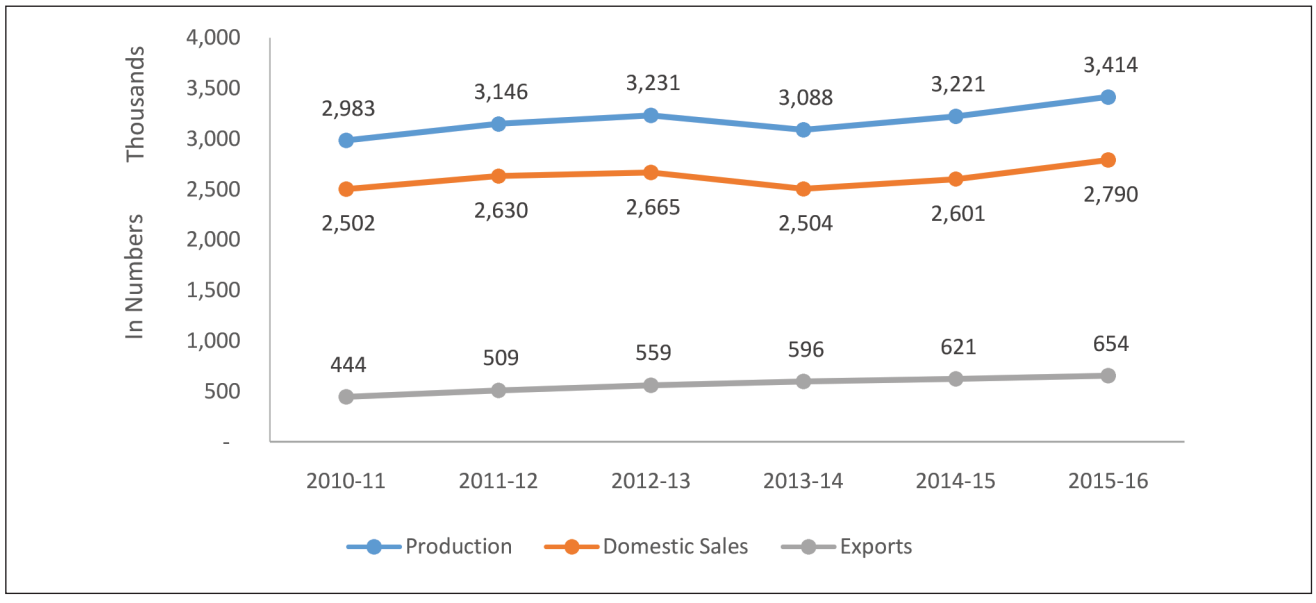


Source: SIAM; EXIM Bank Research

Passenger Vehicles

Exhibit 33 displays the production, domestic sales and export trends in passenger vehicles, during the last few years. It is noteworthy that the production of passenger vehicles increased from 29.83 lakh units in 2010-11 to 34.14 lakh units in 2015-16. Export of passenger vehicles during the same period increased from 4.44 lakh units to 6.54 lakh units.

Exhibit 33: Trends in Production, Domestic Sales and Exports of Passenger Vehicles in India

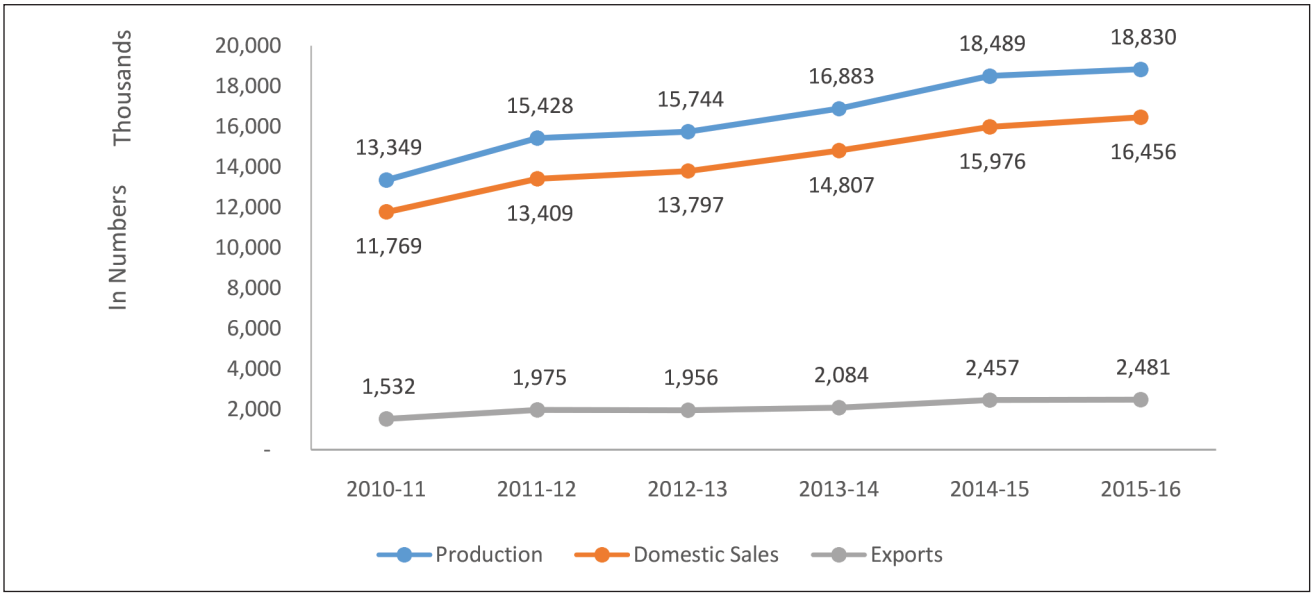


Source: SIAM; EXIM Bank Research

Two Wheelers

The trend in production, domestic sales and export of two-wheelers in the last few years is depicted in Exhibit 34. The production has increased from 133.49 lakh vehicles in 2010-11 to 188.30 lakh units in 2015-16. Export of two wheelers increased from 15.32 lakh units to 24.81 lakh units during the same period.

Exhibit 34: Trends in Production, Domestic Sales and Exports of Two Wheelers in India

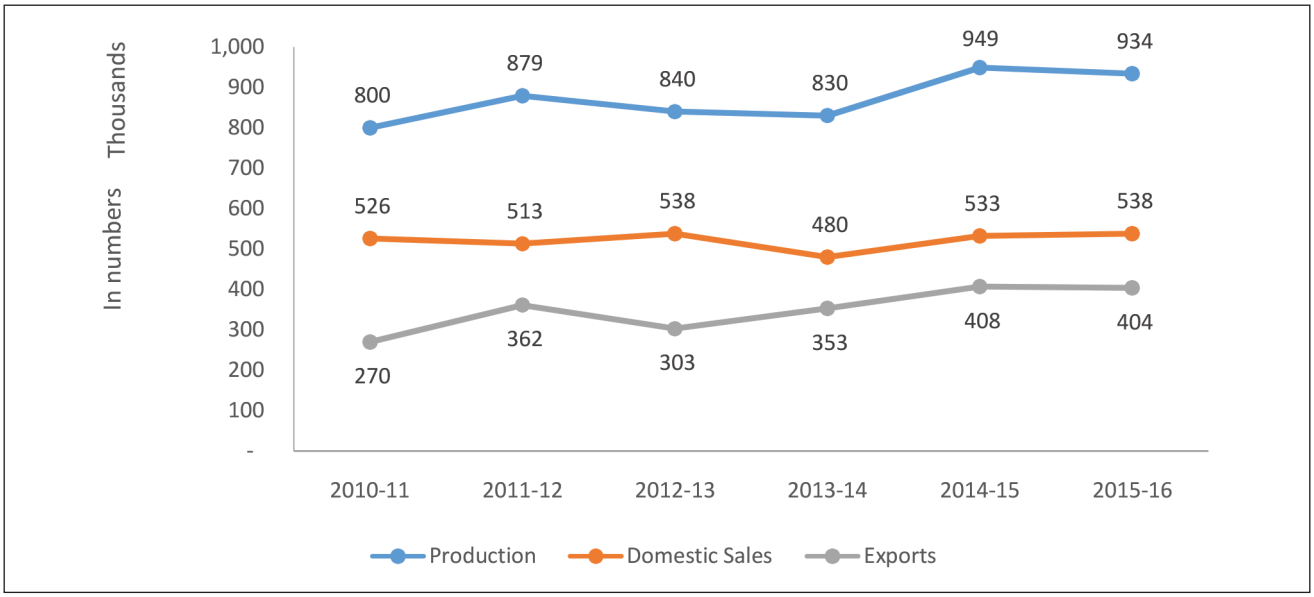


Source: SIAM; EXIM Bank Research

Three Wheelers

Exhibit 35 below displays the production, domestic sales and export trends of three wheelers, in the last few years. The production of three wheelers increased from 7.99 lakh units in 2010-11 to 9.34 lakh units in 2015-16. Export of three wheelers during the same period increased from 2.70 lakh units to 4.04 lakh units.

Exhibit 35: Trends in Production, Domestic Sales and Exports of Three Wheelers in India



Source: SIAM; EXIM Bank Research

Auto Components

The Indian auto-components industry has experienced a healthy growth over the last few years. A buoyant end-user market, improved consumer sentiment and return of adequate liquidity in the financial system are some of the factors attributable to this growth.

The auto-components industry accounts for almost seven per cent of India's Gross Domestic Product (GDP) and employs as many as 19 million people, both directly and indirectly[11]. A stable government framework, increased purchasing power, large domestic market, and an ever-increasing development in infrastructure have made India a favourable destination for investment.

Major Products

The Indian auto-components industry manufactures almost all kinds of products. Production of automotive components depends on consumption by different end-user segments: original equipment manufacturers (OEM), exports and the replacement market. The Automotive Component Manufacturers Association (ACMA) classifies the auto-components into six categories, as stated in Table 11.

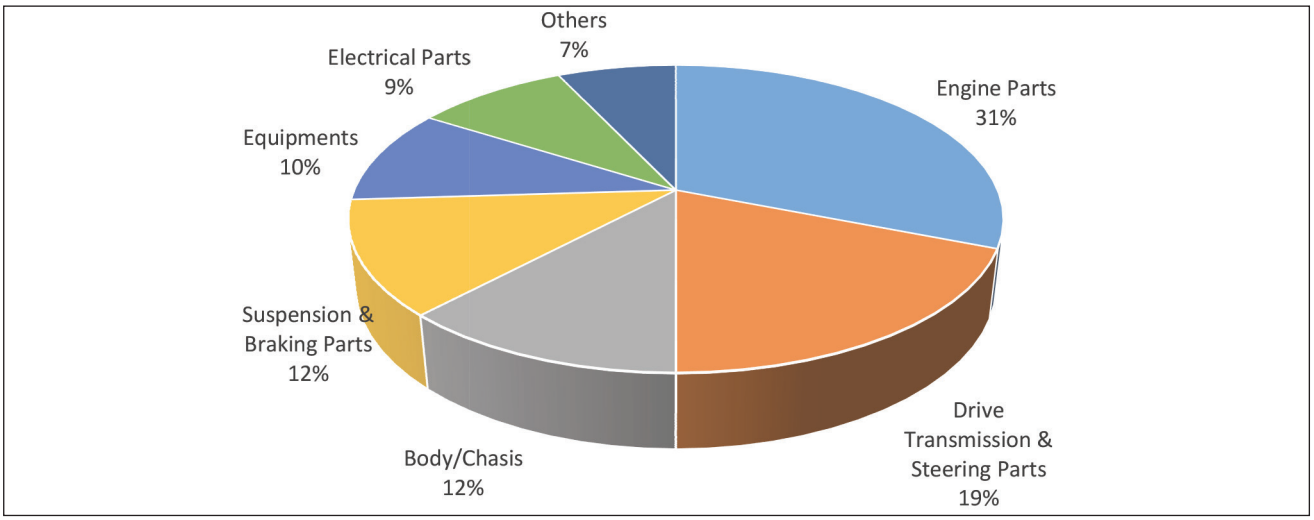
During the year 2015-16, engine parts accounted for the bulk of production in the Indian auto-components industry, followed by driving transmission and steering parts. The combined production in these two categories was around 50% of the total value of the production.

Table 11: Classification of Major Auto-Components Produced in India

Engine Parts	Pistons, piston rings, engine valves, fuel pumps, fuel ignition system, carburettor, bimetallic bearings.
Electrical Parts	Starter motor, generators, ignition system, spark plug.
Driving transmission and steering parts	Gears, steering gears and systems, clutch plates and discs, axle assembly and wheels.
Suspension and braking parts	Leaf springs, shock absorbers, brake assembly and facing.
Equipment	Head lights, wiping systems, wiping motors, electric horns and dashboard instruments.
Others	Sheet metal parts, pressure discs, castings, glass, rubber and plastic parts.

Source: ACMA

Exhibit 36: Segment-Wise Share in Production of Auto-Components in India



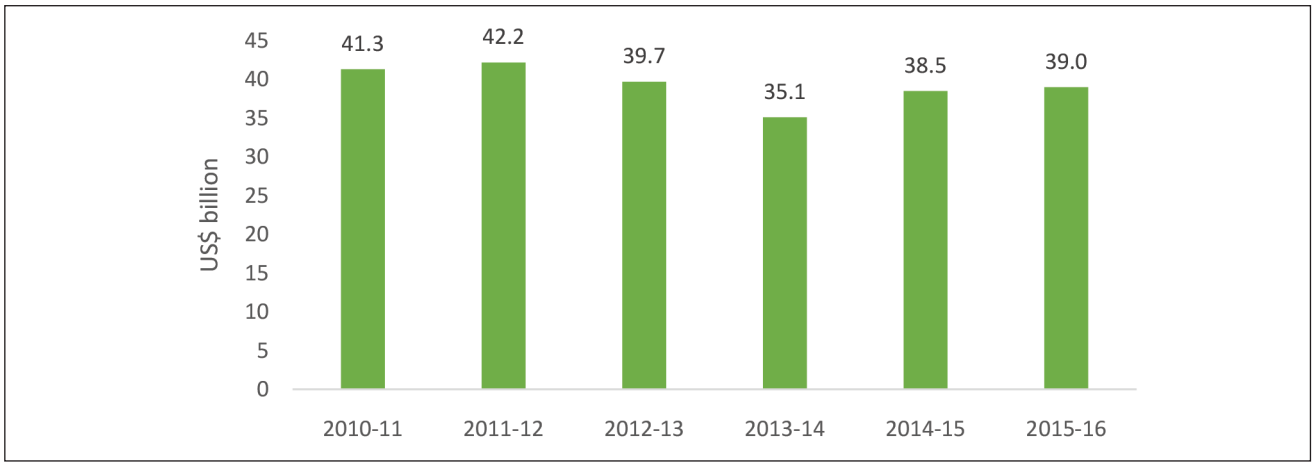
Source: ACMA; EXIM Bank Research

[11]http://www.ibef.org/industry/autocomponents-india.aspx

Turnover

The turnover of the auto-components industry, over a period of time has grown more or less steadily. According to ACMA, the Indian auto-components industry is expected to register a turnover of US$ 100 billion by 2020, up from US$ 39.0 billion in 2015-16. This vibrant growth is expected to be backed by strong exports ranging between US$ 80 billion and US$ 100 billion by 2026, from the current US$ 10.8 billion.

Exhibit 37: Turnover of Auto-Components Setcor in Inda



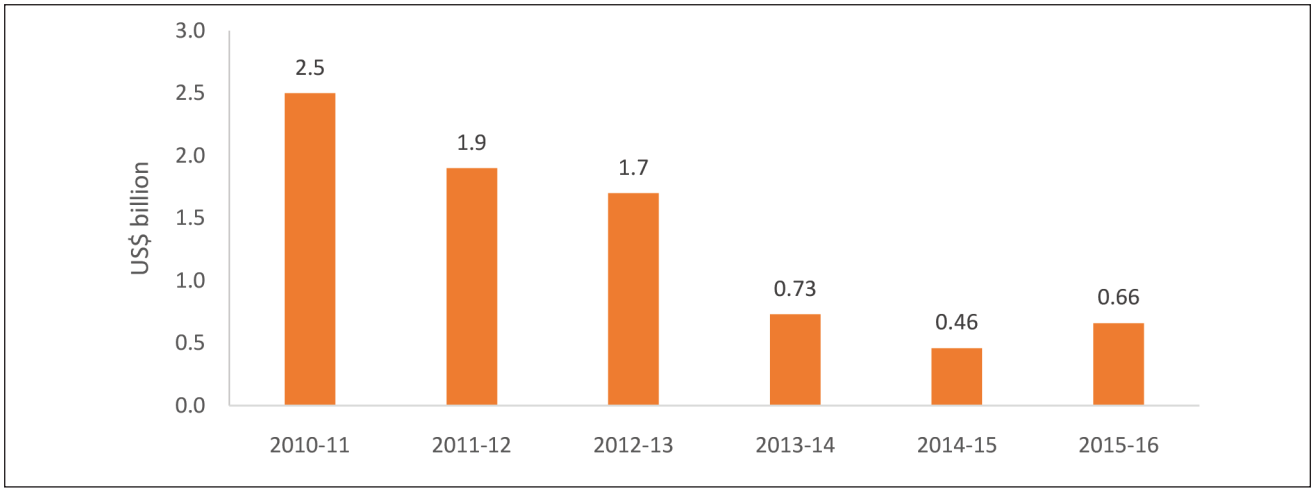
Source: ACMA; EXIM Bank Research

Investment in Auto Components industry

During the last few years, the auto-components industry has not attracted significant volumes of investment. Investments amounted to US$ 0.66 billion in 2015-16, down from around US$ 2.5 billion in 2010-11. Notwithstanding this, investments have risen during the last year and are expected to follow the increasing trajectory, going forward. The launch of National Mission for Electric Mobility (NMEM) 2020 by the Government of India in 2013 to foster adoption of electrical vehicles (including hybrid vehicles), and their manufacture in India is likely to further push up investments in this sector.

It is estimated that there will be a huge demand in India for low cost hybrid and electric vehicles that are suitable short-distance urban commutes (averaging 50-100 kms per trip) and rugged enough to perform reliably in the summer and in the monsoon season in India. It is estimated that sales for such vehicles would amount to 6-7 million units by 2020[12].

Exhibit 38: Investments in the Auto-Components Sector in India



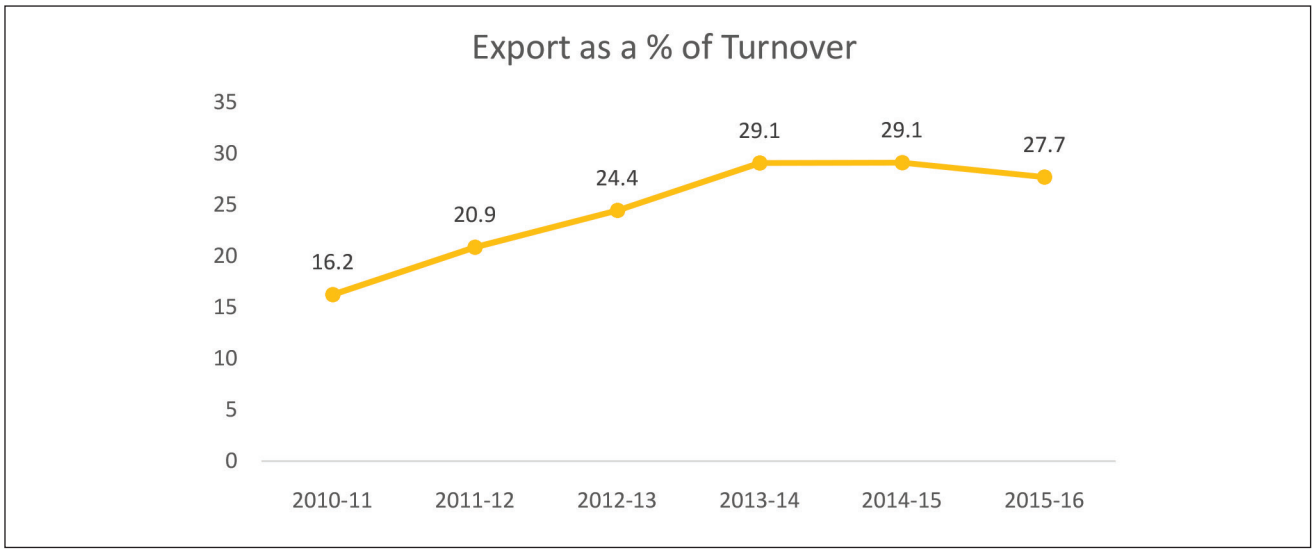
Source: ACMA; EXIM Bank Research

[12]http://www.makeinindia.com/sector/automobile-components

Exports

The exports of automotive components has been increasing at a brisk pace save for 2015-16, when they registered a year-on-year decline of (-) 3.6% to aggregate to US$ 10.8 billion. However, on a larger time horizon, exports recorded a healthy CAGR of 10.0% from US$ 6.7 billion in 2010-11 to US$ 10.8 billion in 2015-16. In fact, the export orientation of the Indian auto-component industry has increased significantly from 16.2% in 2010-11 to 27.7% in 2015-16, implying that for every unit of production, nearly a third is exported.

Exhibit 39: Trends in Export Orientation of Indian Auto Components Industry



Source: ACMA; EXIM Bank Research

The top export destinations of Indian auto-components during 2015-16 were USA (23.6%), Germany (7.0%), Turkey (6.2%), UK (5.4%) and Italy (3.9%).

India is actually a net importer of auto-components – with imports amounting to US$ 13.8 billion in 2015-16. The countries from where auto-components are mostly imported include China (23.2%), Germany (14.3%), South Korea (11.2%), Japan (10.7%) and Thailand (8.1%).

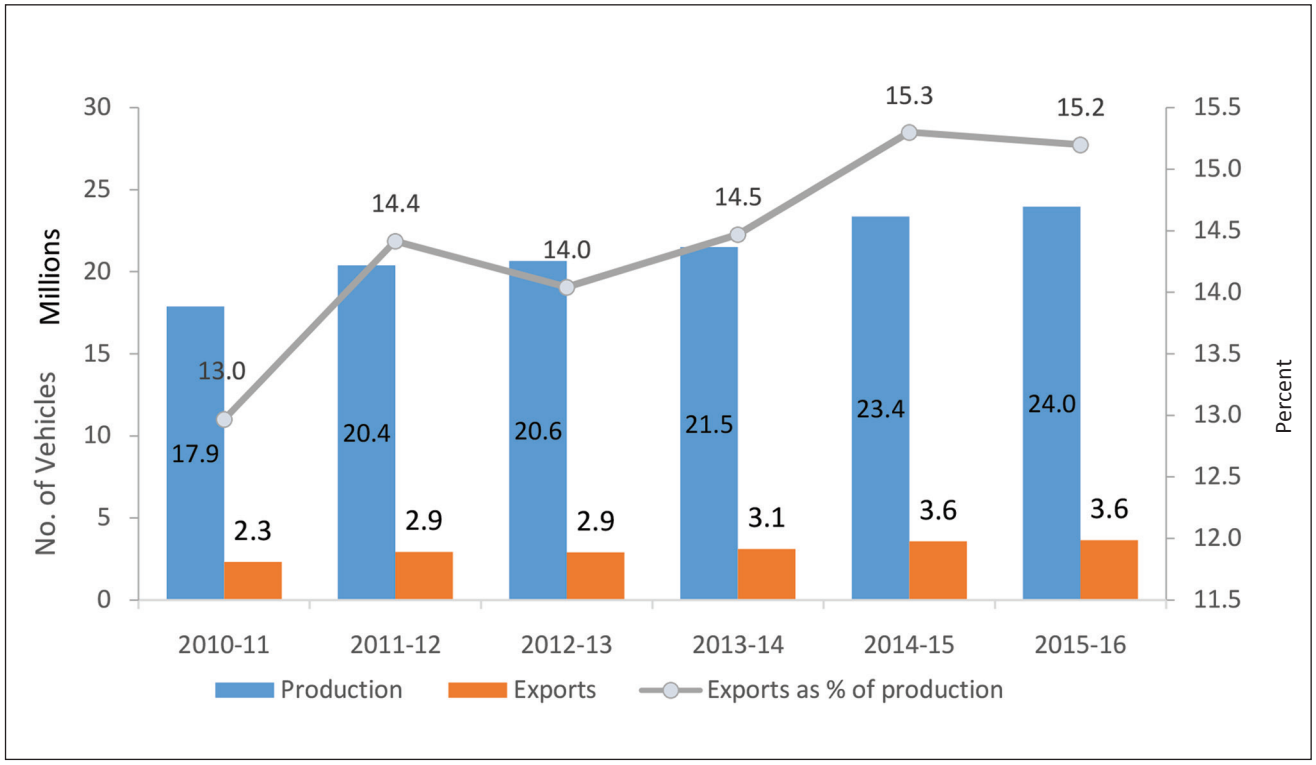
As global OEMs look at reducing costs, they will increasingly source automotive components from low-cost countries, such as India. Moreover, Indian component makers have shown their ability to adhere to stringent quality standards, thereby enhancing their perception among global automotive majors.

5. Exports of Auto and Auto Components from India: An Analysis

Automobiles

The Indian automobile industry has evolved to emerge as an important contributor not only to the country's exports but also to outward investments in terms of setting up assembly and manufacturing operations abroad. India is an exporter of all kinds of vehicles. The export orientation of the industry has grown from a level of 13 percent in 2010-11 to over 15 percent in 2015-16. This shows India's capacity in catering to the demand of not only the domestic market but also to the demand of other countries as well. The increase in exports from India corroborates the industry's efforts to upgrade the production process, adoption of high-end technologies, and meeting the international quality standards.

Exhibit 40: Export Orientation of the Indian Automobile Sector



Source: SIAM; EXIM Bank Research

Category-wise Exports

India exports almost all types of vehicles; among the major categories, two wheelers accounted for more than two-third share in terms of number of units exported in 2015-16. In fact, over the years, two wheelers have been the top most exported item among the various automobile segments, in terms of number of units. Passenger vehicles, three wheelers and commercial vehicles accounted for 18 percent, 11 percent and 3 percent share, respectively.

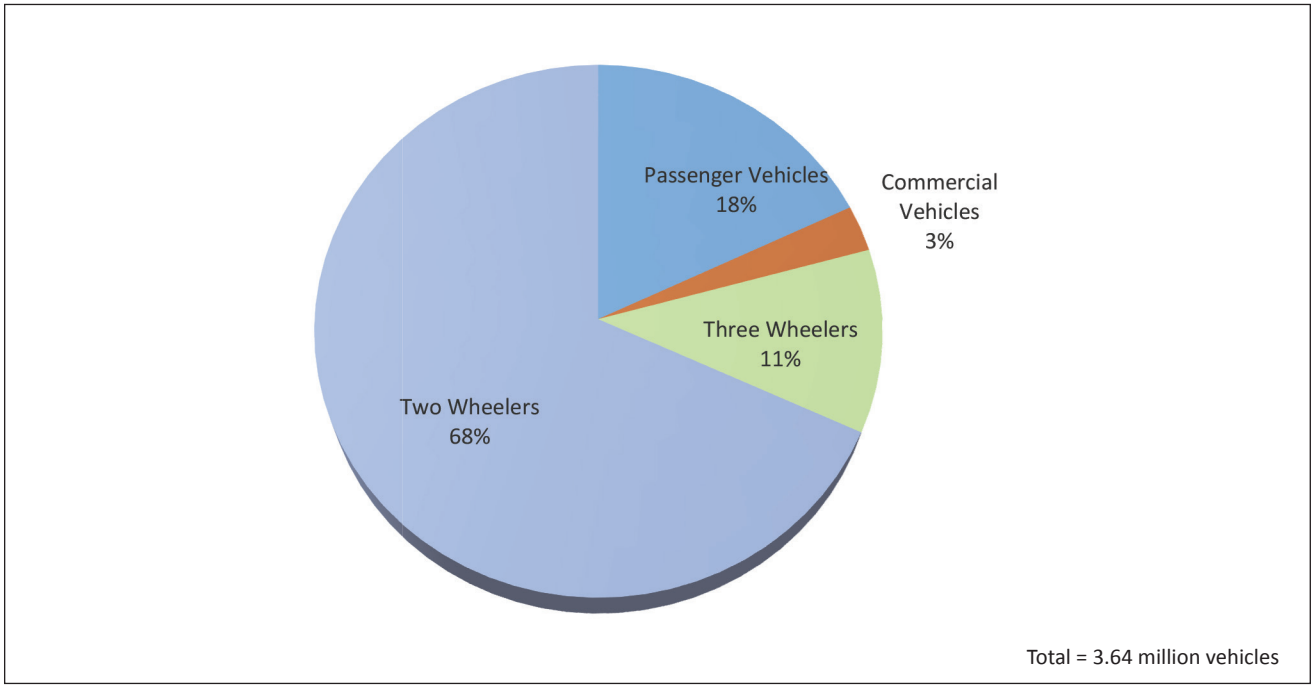
Table 12: Category-wise Exports of Indian Automobiles

(No. of Units)

Category	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Passenger Vehicles	444,326	508,783	559,414	596,142	621,341	653,889
Commercial Vehicles	74,043	92,258	80,027	77,050	86,939	101,689
Three Wheelers	269,968	361,753	303,088	353,392	407,600	404,441
Two Wheelers	1,531,619	1,975,111	1,956,378	2,084,000	2,457,466	2,481,193
Grand Total	2,319,956	2,937,905	2,898,907	3,110,584	3,573,346	3,641,212

Source: SIAM

Exhibit 41: Category-wise Share of Vehicle Exports in India (2015-16)



Source: SIAM; EXIM Bank Research

In value terms, India's cumulative exports of select automobiles (HS Codes: 8701, 8702, 8703, 8704, 8705, and 8711) amounted to US$ 9.5 billion in 2015-16, having increased from US$ 6.6 billion in 2010-11, thereby registering a CAGR of 7.6%. Passenger cars (motor cars and other motor vehicles for transport of persons – HS Code – 8703) were the largest export item in 2015-16, followed by motorcycles (including mopeds) (HS Code – 8711), tractors (HS Code – 8701) and motor vehicles for transport of goods (HS Code – 8704). During the last few years, passenger cars have consistently been the largest export item among India's vehicle exports, in value terms, followed by two wheelers and tractors.

Table 13: Export of Select Automobiles in Value-terms from India

US$ Million

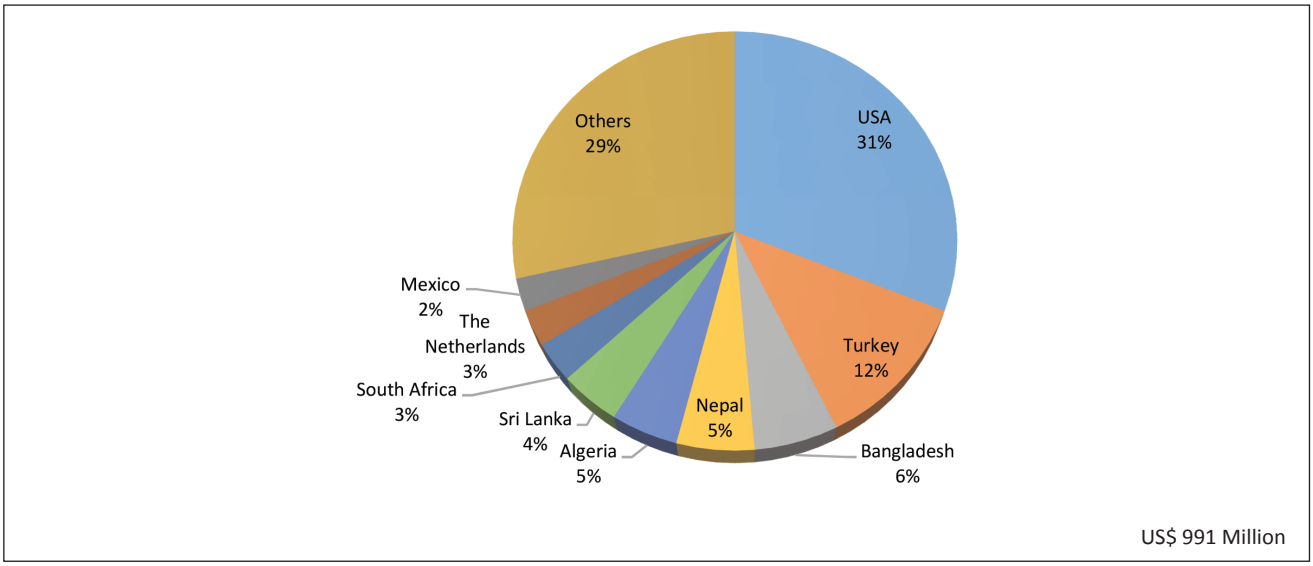
HS Code	Commodity Name	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
8701	Tractors	601.49	806.08	789.69	810.99	983.2	991.55
8702	Public transport type passenger motor vehicles	271.39	251.59	204.36	153.74	323.56	236.65
8703	Motor Cars & other motor vehicles for transport of persons	4210.29	3798.16	4349.17	5240.88	5643.52	5612.31
8704	Motor Vehicles for transport of goods	619.24	1013.28	1158.13	711.68	671.45	836.03
8705	Special Purpose Motor Vehicles	21.63	21.98	41.88	40.27	43.01	42.1
8711	Motorcycles (including mopeds)	856.3	1314.99	1345.22	1521.47	1864.34	1777.84
	TOTAL	**6580.34**	**7206.08**	**7888.45**	**8479.03**	**9529.08**	**9496.48**

Source: DGCIS, EXIM Bank Research

Tractors

India's export of tractors (HS code – 8701) was valued at US$ 991 million in the year 2015-16. Exports to the USA constituted more than 31 percent of the total. This was followed by exports to Turkey (12 percent), Bangladesh (6 percent), Nepal (5 percent), Algeria (5 percent) and Sri Lanka (4 percent).

Exhibit 42: Export of Tractors from India (2015-16) (HS Code – 8701)

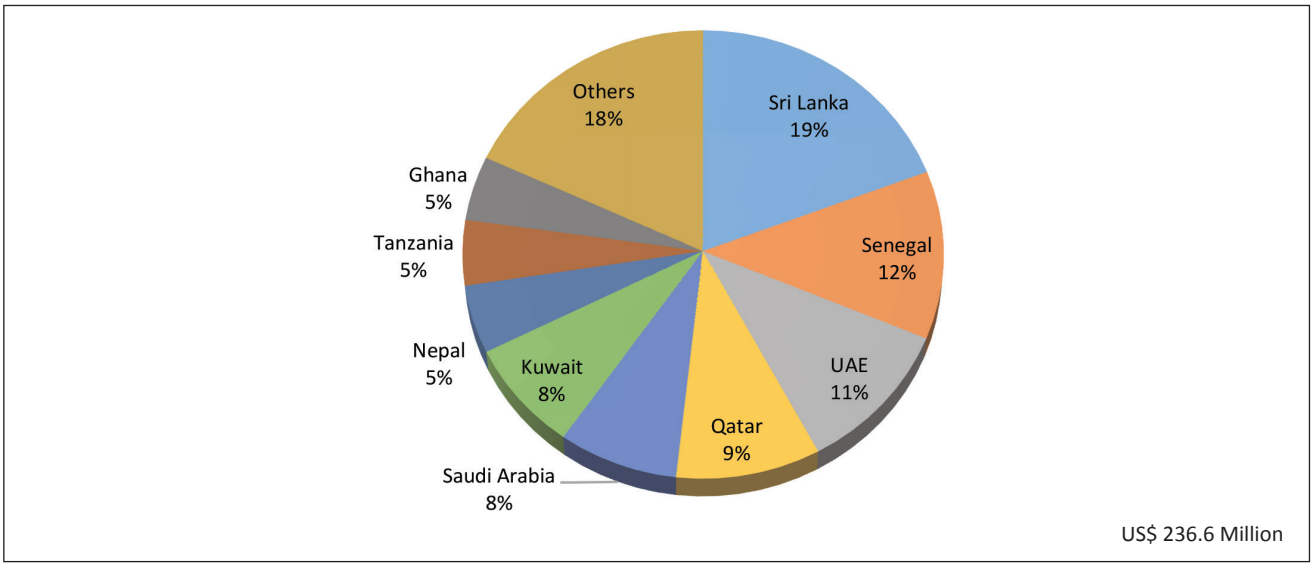


Source: DGCIS; EXIM Bank Research

Buses

India's export of buses (public transport type passenger motor vehicles – HS code – 8702) were valued at US$ 236.6 million in 2015-16. Sri Lanka accounted for 19 percent of the total export of buses, followed by Senegal (12 percent), UAE (11 percent), Qatar (9 percent), Saudi Arabia (8 percent) and Kuwait (8 percent). Nepal, Tanzania and Ghana were also important destinations for Indian buses.

Exhibit 43: Export of Public Transport type Passenger Motor Vehicles from India (2015-16) (HS Code – 8702)

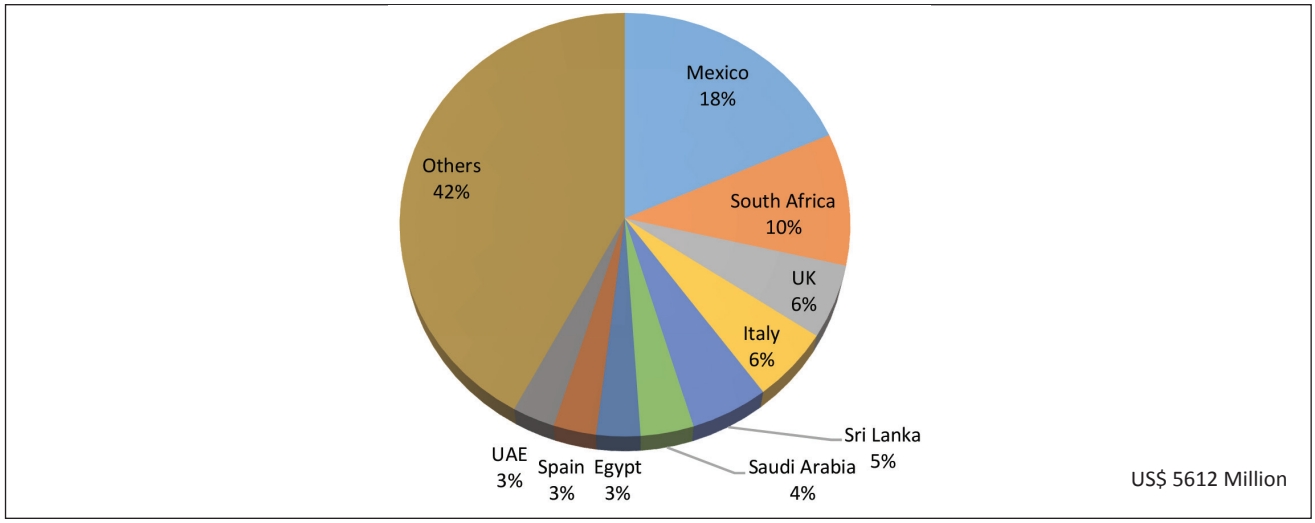


Source: DGCIS; EXIM Bank Research

Passenger Cars

Export of passenger cars (motor cars & other motor vehicles – HS Code – 8703) during the year 2015-16 was valued at US$ 5612 million. Mexico was the largest market for passenger cars with a share of 18 percent in total exports from India. A substantial percentage of passenger cars are also being exported to South Africa (10 percent), UK (6 percent), Italy (6 percent), Sri Lanka (5 percent) and Saudi Arabia (4 percent). Egypt, Spain and UAE with shares of 3 percent each in Indian exports of passenger cars are also important destinations.

Exhibit 44: Export of Motor Cars & Other Motor Vehicles from India (2015-16) (HS Code – 8703)

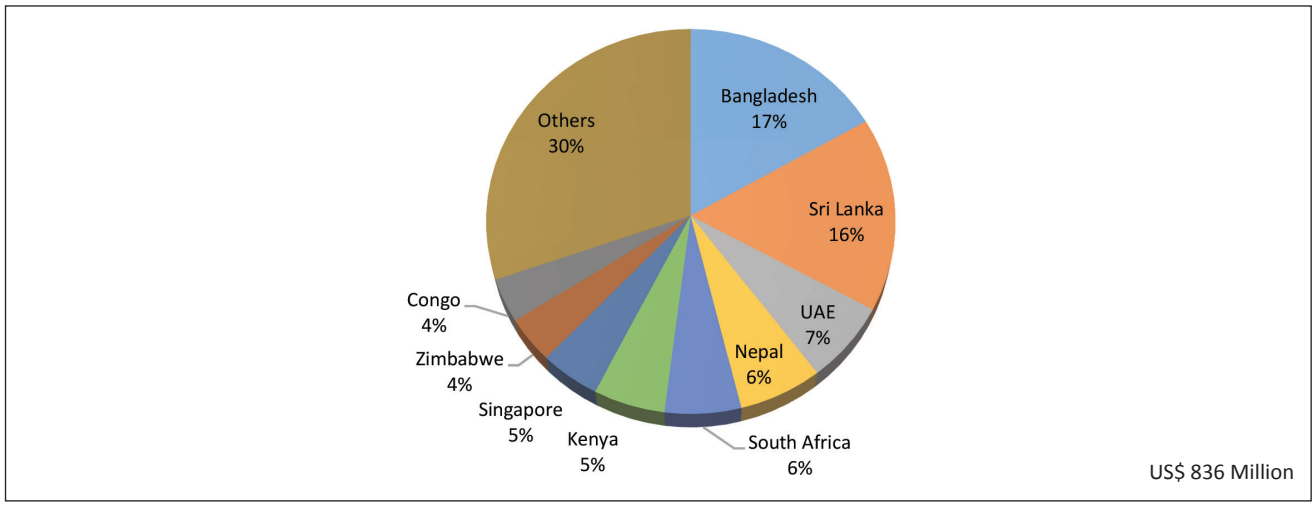


Source: DGCIS; EXIM Bank Research

Motor Vehicles for Transport of Goods

India's export of motor vehicles for transport of goods (HS Code – 8704) was valued at US$ 836 million in 2015-16. Bangladesh and Sri Lanka were the leading markets for India with shares of 17 and 16 percent respectively, followed by UAE (7 percent), Nepal (6 percent), South Africa (6 percent) and Kenya (5 percent). Singapore, Zimbabwe and Congo were also important destinations in 2015-16.

Exhibit 45: Export of Motor Vehicles for Transport of Goods from India (2015-16) (HS Code – 8704)

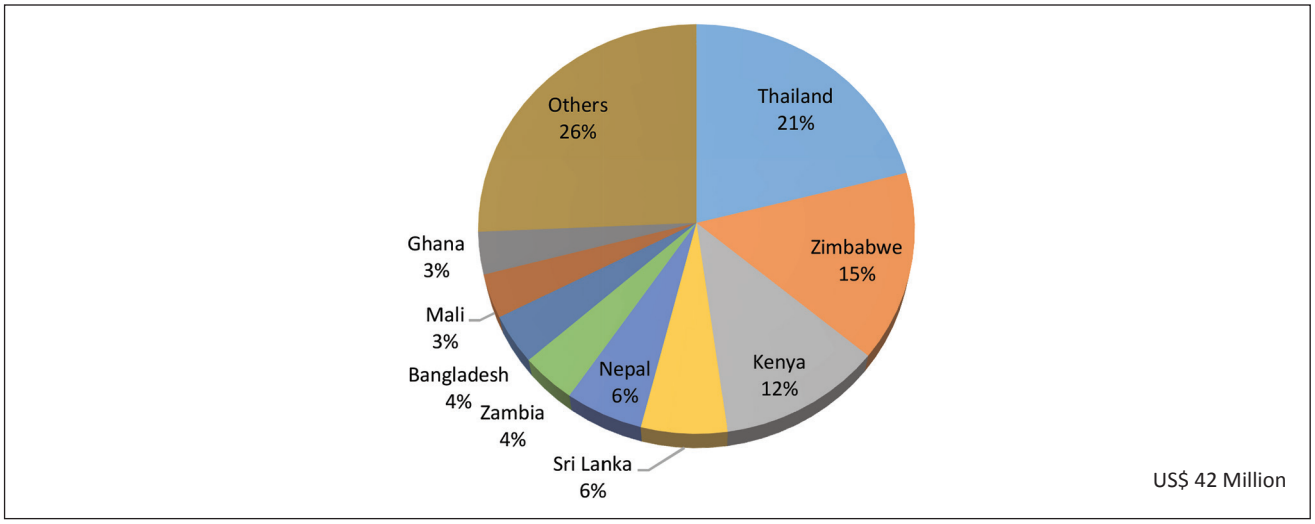


Source: DGCIS; EXIM Bank Research

Special Purpose Motor Vehicles

This category consists mainly of crane lorries, fire fighting vehicles, concrete mixer lorries, etc. Thailand remained the primary export destination with a share of 21 percent out of the total exports of US$ 42 million in 2015-16. Other major export destinations were Zimbabwe (15 percent), Kenya (12 percent), Sri Lanka and Nepal (6 percent each).

Exhibit 46: Export of Special Purpose Motor Vehicles from India (2015-16) (HS Code – 8705)

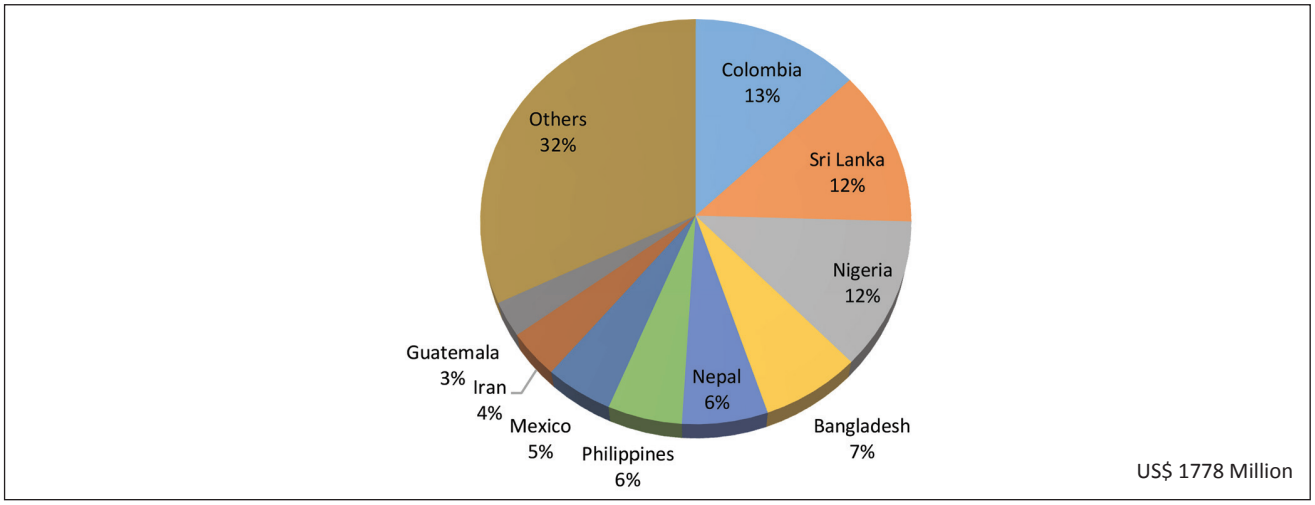


Source: DGCIS; EXIM Bank Research

Two wheelers

Two wheelers (Motorcycles including mopeds – HS code – 8711) were the second largest export item, in value terms, in the automobile export basket of India with exports aggregating US$ 1778 million in 2015-16. A large part of this segment is exported to countries like Colombia (13 percent), Sri Lanka (12 percent) and Nigeria (12 percent). Other significant importers in 2015-16 included Bangladesh (7 percent), Nepal (6 percent), Philippines (6 percent), Mexico (5 percent), Iran (4 percent) and Guatemala (3 percent).

Exhibit 47: Export of Motorcycles (Including Mopeds) and Cycles fitted with an Auxiliary Motor, with or without Side-cars; Side-cars from India (2015-16) (HS Code – 8711)



Source: DGCIS; EXIM Bank Research

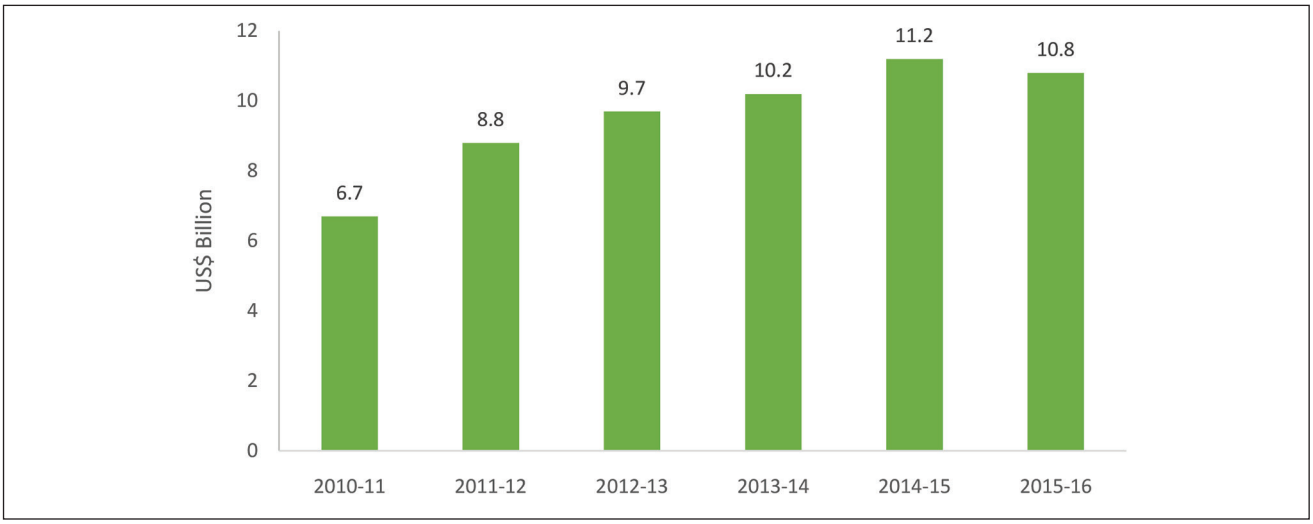
Auto Components

Exports

India has been emerging as a significant exporter of auto components since the past few years. From a level of US$ 6.7 billion in 2010-11, exports of auto-components crossed US$ 11 billion in 2014-15 before moderating to US$ 10.8 billion in 2015-16, thereby recording a CAGR of 10.02 percent during this period. India exports its auto components to almost every part of the world, the major markets being developed countries such as the USA, Germany and the UK. Some of the important Asian markets for auto components include Sri Lanka, Bangladesh and Thailand.

As the need for cutting down cost is increasingly being felt among the automobile firms from the developed countries, they seek to either set up their operations or source their component requirements from developing countries. Indian auto component manufacturers are increasingly gearing themselves to utilize this opportunity.

Exhibit 48: Trends in Exports of Indian Auto-Components

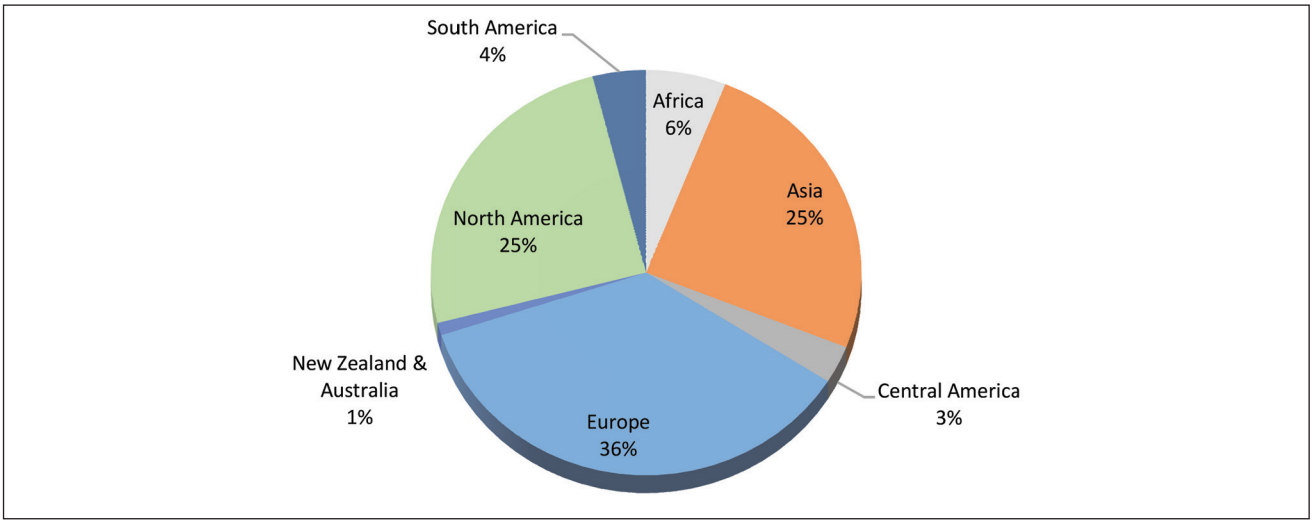


Source: ACMA

Region-wise Distribution of Indian Auto Components Exports

Europe, North America and Asia were the three major export destinations, cumulatively accounting for more than 86 percent of India's total auto components exports to OEMs and Tier I suppliers. Africa, Central America and South America accounted for shares of 6 percent, 3 percent and 4 percent, respectively. New Zealand and Australia accounted for the remaining 1 percent of India's total exports of auto components.

Exhibit 49: Region-wise Break-up of Exports by India (2015-16)



Source: ACMA

Table 14: Export of Select Auto-components in Value-terms from India[13]

US$ Million

HS Code	Commodity Name	2011-12	2012-13	2013-14	2014-15	2015-16
87084000	Gear Boxes and Parts thereof	189	225	308	336	342
40112090	New pneumatic tyres, of rubber used on buses or lorries	555	585	495	439	312
84099990	Other parts suitable for use solely or principally with the engines of heading 84.07 or 84.08	260	228	268	313	309
87083000	Brakes and servo-brakes; parts thereof	101	114	139	152	309
87085000	Drive-axles with differential, whether or not provided with other transmission components, and non-driving axles; parts thereof	105	139	190	181	194
84099941	Component Parts For Diesel Engines For Motor Vehicles, N.E	114	99	135	166	183
85443000	Ignition Wiring Sets used In Vehicles	102	137	153	163	160
84831092	Transmission shafts (including cam shafts and crank shafts) and cranks	18	62	152	178	139
84073410	Reciprocating piston engines used in vehicles with cylinder capacity exceeding 1,000 cc	6	60	135	168	121
87081010	Bumpers and parts thereof	99	112	137	133	111
	Total	**1549**	**1761**	**2113**	**2229**	**2180**

Note: Almost one-fourth of the total auto component exports (US$ 2.4 billion in 2015-16) is accounted for by the residual category HS 87089900 (Other parts and accessories of vehicles classified under heading 8701 to 8705) which is not included in this Table

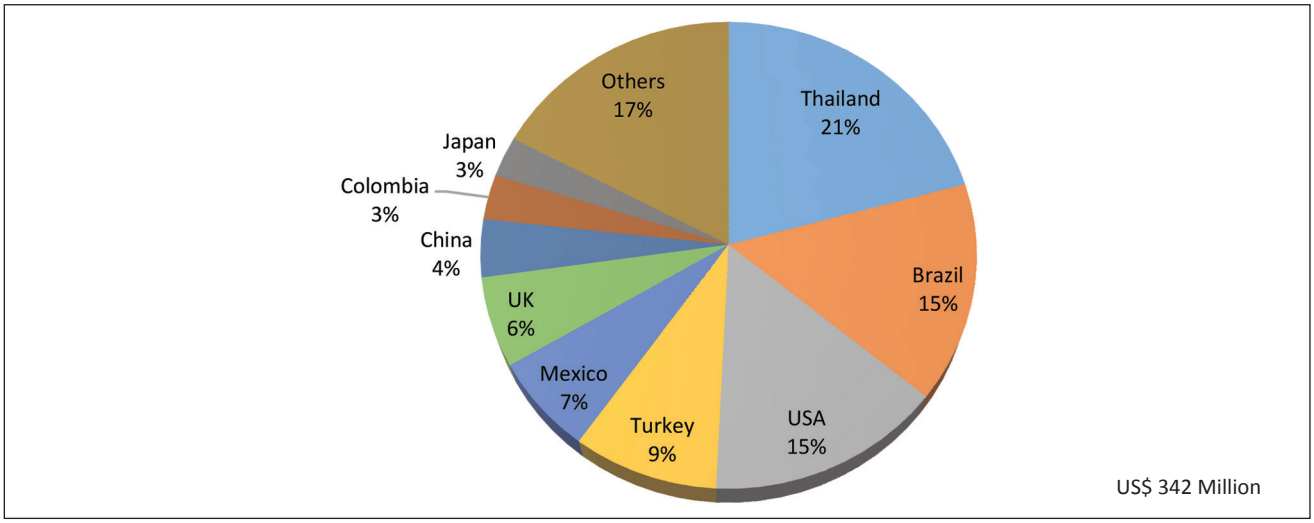
Source: DGCIS, EXIM Bank Research

[13]The data for Auto components has been generated at 8-digit level with the objective of including only those products that are used exclusively or primarily in the automotive industry. Since the data has been sourced from DGCIS, it represents Financial Years (April-March)

Gear Boxes & Parts

Exports of gear boxes and parts (HS code – 87084000) from India to the world were valued at US$ 342 million in 2015-16 and were the largest item of auto component exports. Thailand was the largest export market for gear boxes from India with a share of 21 percent, followed by Brazil (15 percent), the USA (15 percent), Turkey (9 percent), Mexico (7 percent), the UK (6 percent), China (4 percent), Colombia and Japan (3 percent each).

Exhibit 50: Export of Gear Boxes by India (2015-16)(HS Code – 870840)

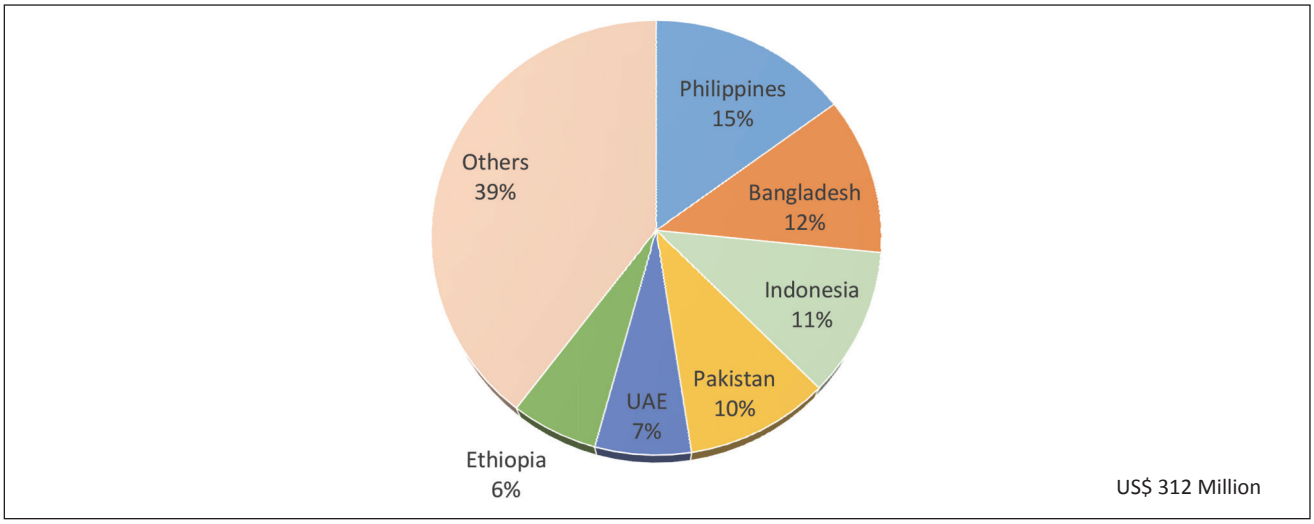


Source: DGCIS; EXIM Bank Research

Tyres used on Buses/Lorries

Exports of New pneumatic tyres, of rubber used on buses or lorries (HS code – 40112090) from India to the world were valued at US$ 312 million in 2015-16 and were among the major item of auto component exports. Philippines was the largest export market for pneumatic tyres from India with a share of 14.9 percent, followed by Bangladesh (11.7 percent), Indonesia (10.9 percent), Pakistan (10.0 percent), UAE (6.7 percent), Ethiopia (6.1 percent).

Exhibit 51: Export of Pneumatic Tyres by India (2015-16)(HS Code – 40112090)

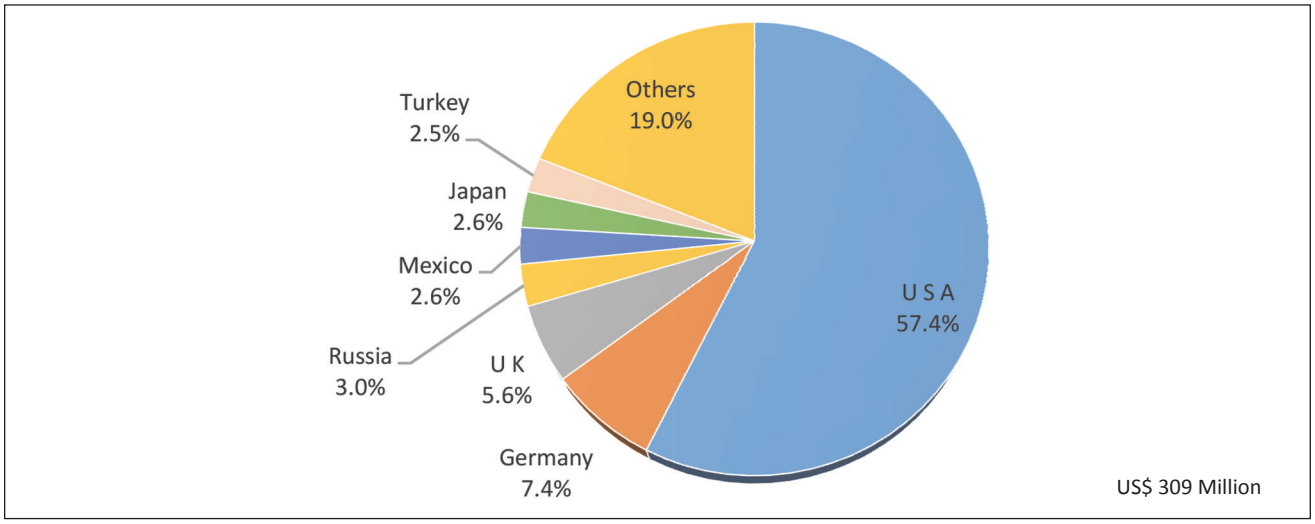


Source: DGCIS; EXIM Bank Research

Brakes / Servo Brakes and Parts

Exports of brakes and servo brakes and their parts (HS Code – 87083000) from India to the world were valued at around US$ 309 million in 2015-16. The USA was, by far, the largest export market for brakes from India with a share of 57.4 percent, followed by Germany (7.4 percent), the UK (5.6 percent), Russia (3 percent), Mexico and Japan (2.6 percent each).

Exhibit 52: Export of Brakes & Parts thereof from India (2015-16) (HS Code – 87083000)

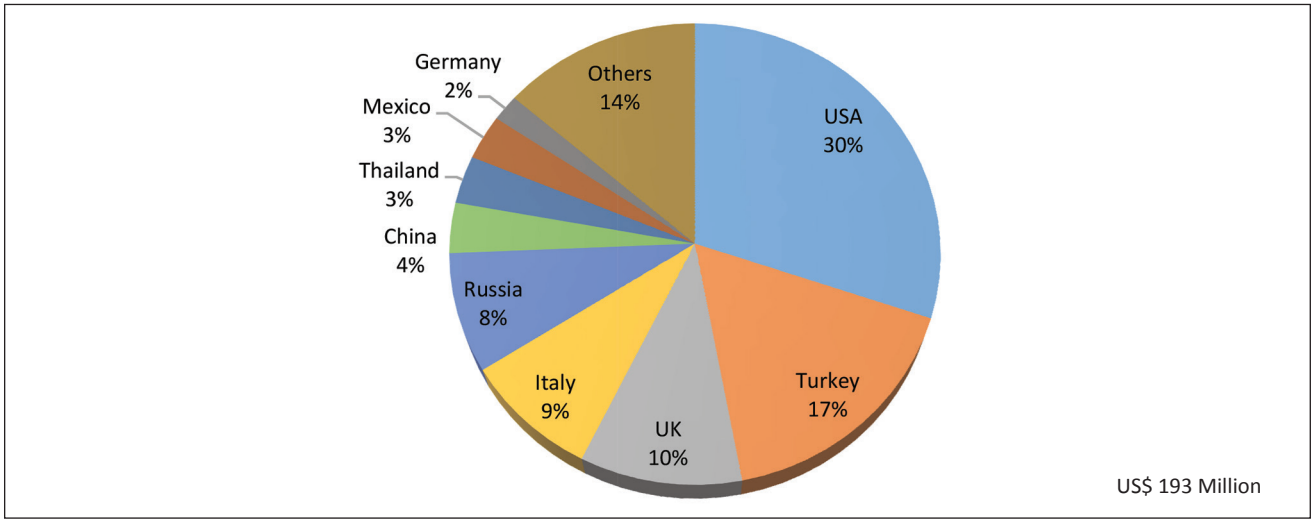


Source: DGCIS; EXIM Bank Research

Drive Axles

India's export of drive axles was valued at US$ 193 million in 2015-16. The USA (30 percent), Turkey (17 percent) and the UK (10 percent) were the major markets for India's export of drive axles. Italy, Russia, China, Thailand, Mexico and Germany were other important markets for the export of drive axles by India.

Exhibit 53: Export of Drive Axles by India (2015-16) (HS Code – 870850)

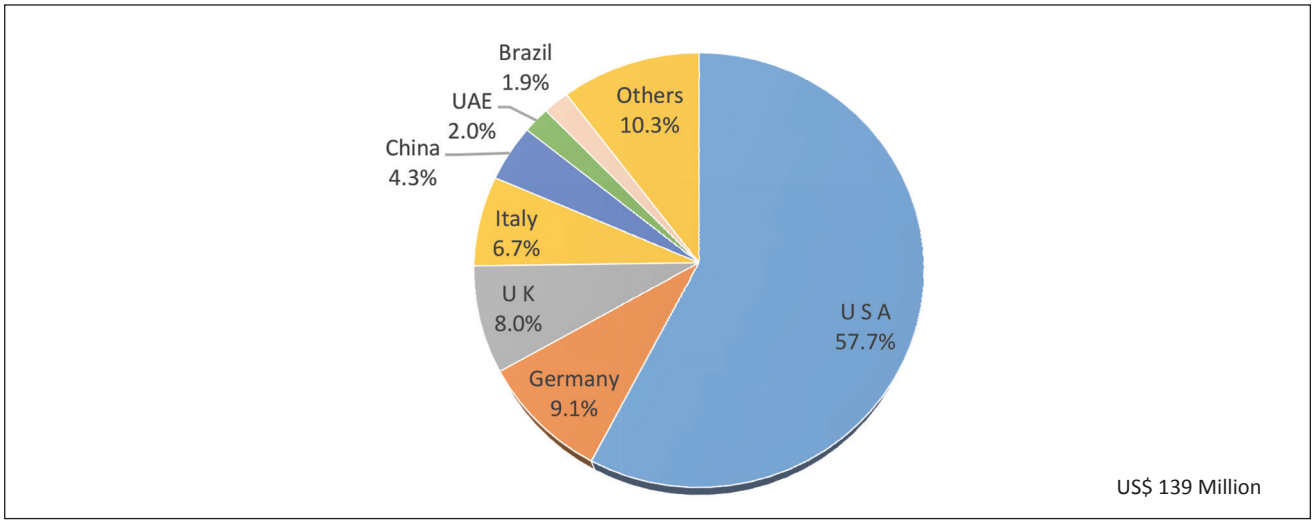


Source: DGCIS; EXIM Bank Research

Transmission Shafts and Cranks

Export of transmission Shafts and Cranks – HS code – 84831092 from India in the year 2015-16 was valued at US$ 139 million. The USA was the predominant market for India for export of transmission shafts, with a share of 57.7 percent, followed by Germany (9.1 percent), the UK (8.0 percent), Italy (6.7 percent) and China (4.3 percent).

Exhibit 54: Export of Transmission Shafts and Cranks by India (2015-16) (HS Code – 84831092)

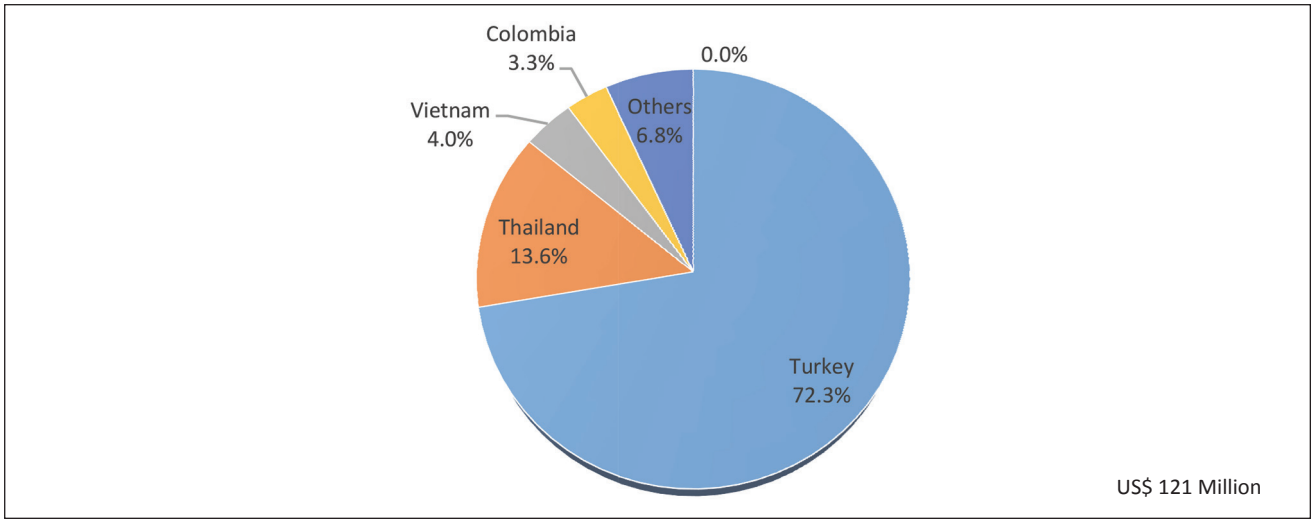


Source: DGCIS; EXIM Bank Research

Reciprocating Piston Engines

Export of reciprocating piston engines used in vehicles with cylinder capacity exceeding 1,000 cc – HS code – 84073410 from India in the year 2015-16 was valued at US$ 121 million. Turkey was, by far, the largest market for India for export of piston engines used in motor cars, with a share of 72.3 percent. Thailand (13.6 percent), Vietnam (4.0 percent) and Colombia (3.3 percent) were the other major destinations for India's exports of piston engines.

Exhibit 55: Export of Reciprocating Piston Engines by India (2015-16) (HS Code – 84073410)

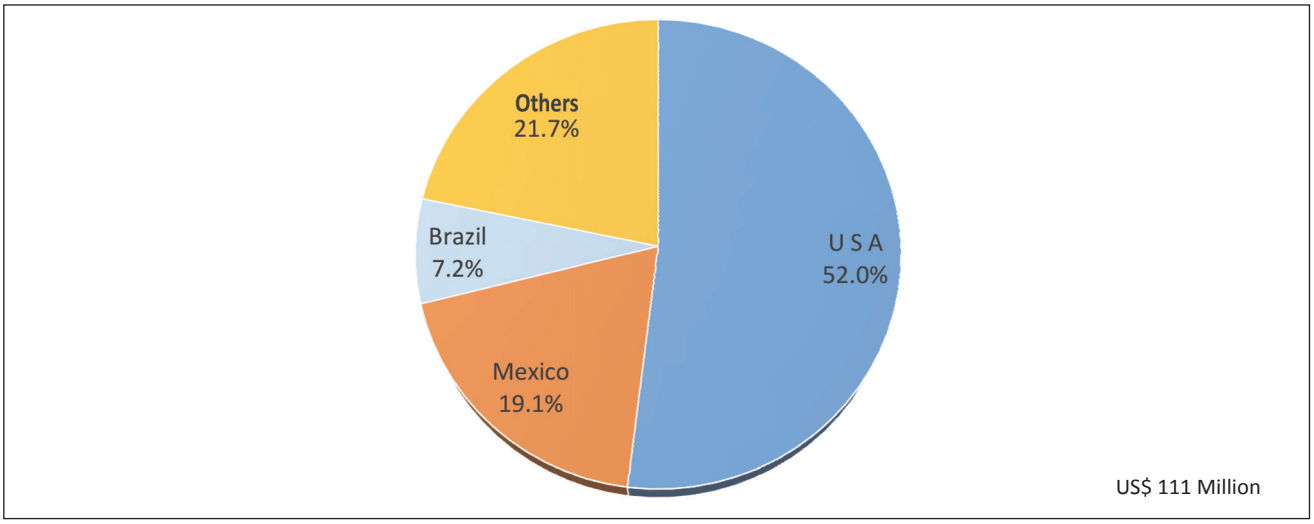


Source: DGCIS; EXIM Bank Research

Bumpers

Exports of bumpers (HS Code – 87081010) from India to the world were valued at around US$ 111 million in 2015-16. The USA was the largest market for export of bumpers from India with a share of 52.0 percent, followed by Mexico (19.1 percent) and Brazil (7.2 percent).

Exhibit 56: Export of Bumpers & Parts thereof from India (2015-16) (HS Code – 87081010)

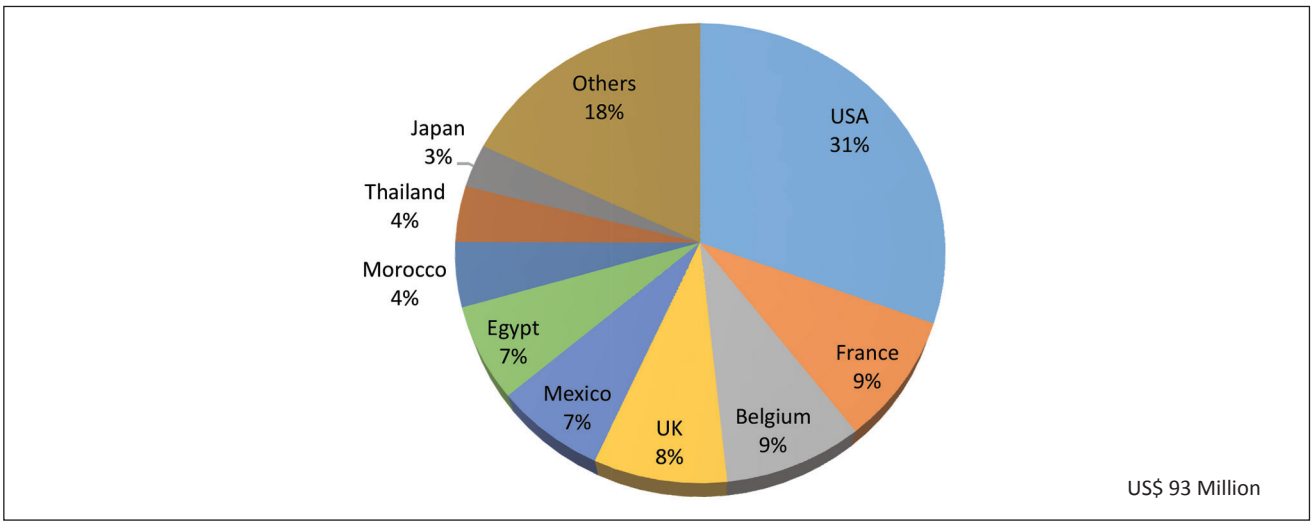


Source: DGCIS; EXIM Bank Research

Road Wheels and Parts & Accessories Thereof

Export of road wheels and parts and accessories thereof – HS code – 870870 from India in the year 2015-16 was valued at US$ 93 million. The USA was the largest market for India for export of road wheels and parts, with a share of 31 percent, followed by France (9 percent), Belgium (9 percent), UK (8 percent), Mexico (7 percent), Egypt (7 percent), Morocco (4 percent), Thailand (4 percent) and Japan (3 percent).

Exhibit 57: Export of Road Wheels & Parts & Accessories thereof by India (2015-16) (HS Code – 870870)

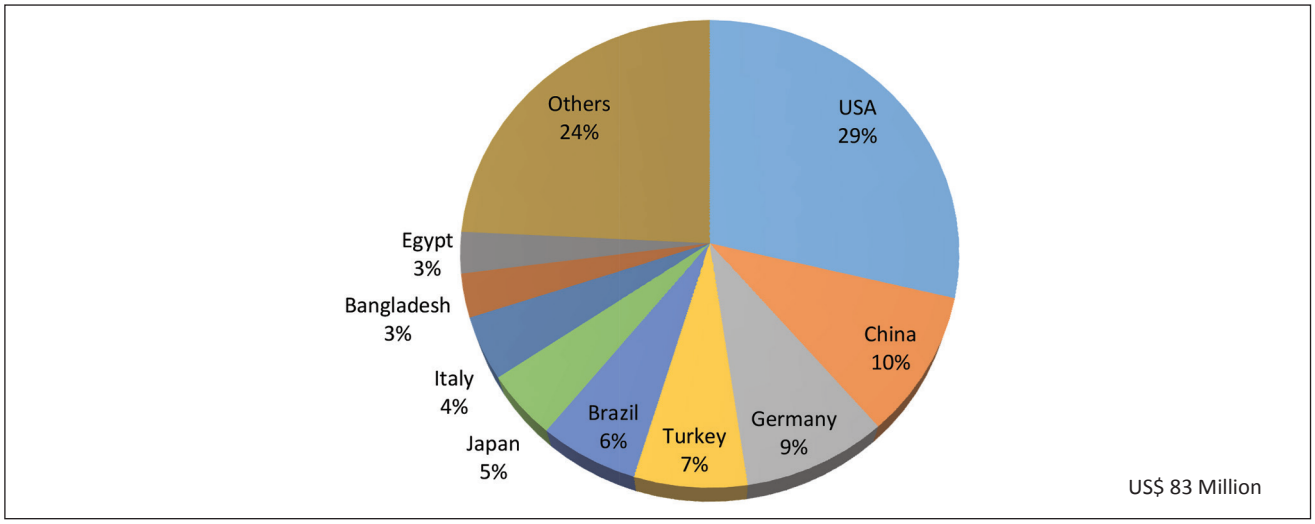


Source: DGCIS; EXIM Bank Research

Suspension and Shock Absorbers

India's export of suspension and shock absorbers was valued at US$ 83 million in 2015-16. The USA was again the largest market for India with a share of 29 percent, followed by China (10 percent), Germany (9 percent), Turkey (7 percent), Brazil (6 percent), Japan (5 percent), Italy (4 percent), Bangladesh and Egypt (3 percent each).

Exhibit 58: Export of Suspension Shock Absorbers by India (2015-16) (HS Code – 870880)

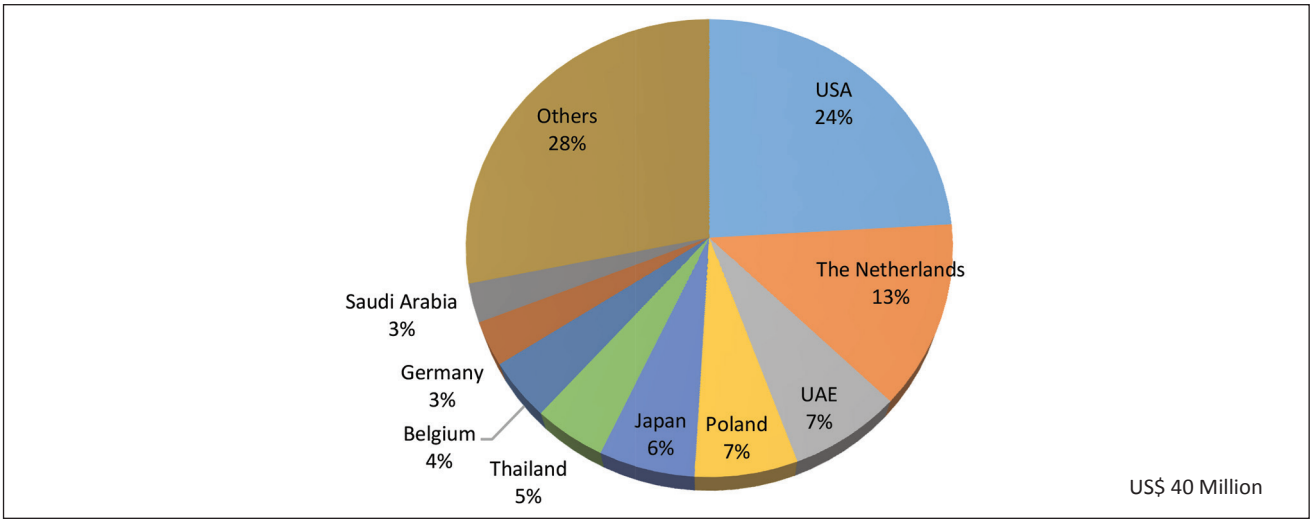


Source: DGCIS; EXIM Bank Research

Radiators

Radiators – HS Code – 870891 – worth US$ 40 million were exported from India during 2015-16 – a healthy increase of 16.2 percent as compared to 2014-15. Majority of the exports were to developed economies like the USA (24 percent) and the Netherlands (13 percent). UAE and Poland were also major export destinations with shares of 7 percent each followed by Japan (6 percent), Thailand (5 percent), Belgium (4 percent), Germany and Saudi Arabia (3 percent each).

Exhibit 59: Export of Radiators by India (2015-16) (HS Code – 870891)

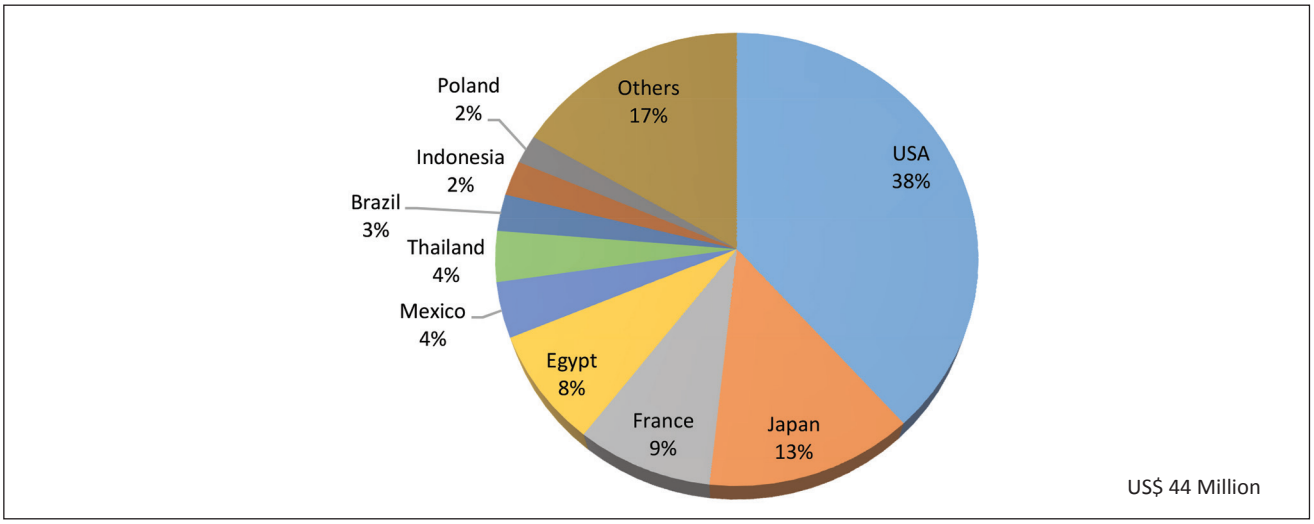


Source: DGCIS; EXIM Bank Research

Steering Wheels, Steering Columns & Steering Boxes

Steering wheels, steering columns and steering boxes – HS Code – 870894 – worth US$ 44 million were exported from India during 2015-16. Majority of the exports were to developed economies like the USA (38 percent), Japan (13 percent) and France (9 percent). Egypt (8 percent), Mexico and Thailand (4 percent each), Brazil (3 percent), Indonesia and Poland (2 percent each) were also important export destinations.

Exhibit 60: Export of Steering Wheels, Columns & Boxes by India (2015-16) (HS Code – 870894)

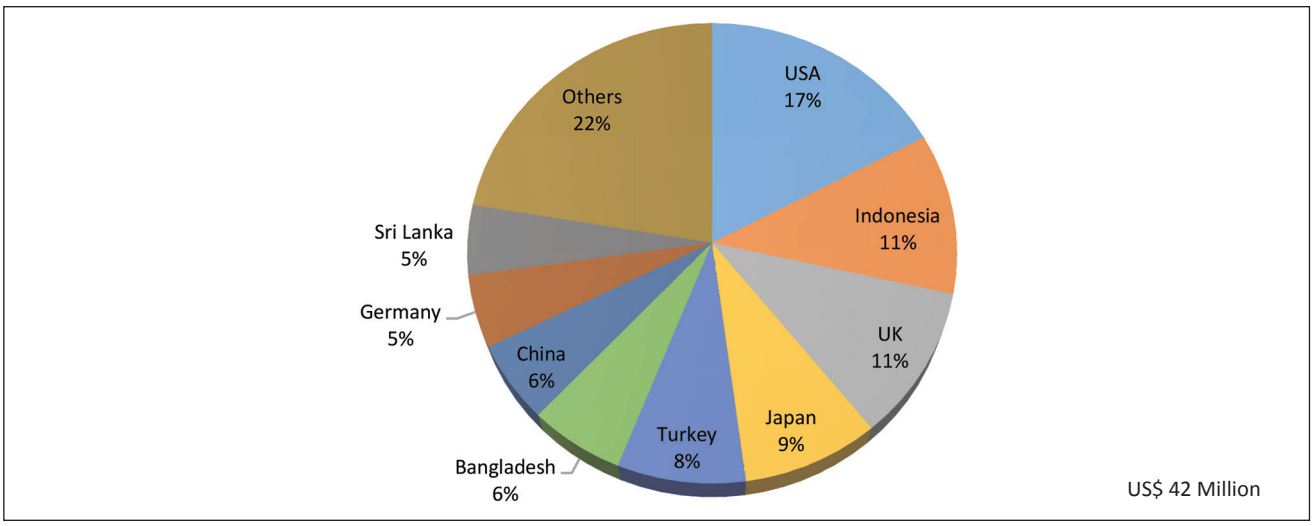


Source: DGCIS; EXIM Bank Research

Clutches & Parts thereof

India's export of clutches & parts thereof (HS Code – 870893) was valued at US$ 42 million in 2015-16. In this segment as well, the USA was the largest market for India with a share of 17 percent followed by Indonesia and the UK (11 percent each), Japan (9 percent), Turkey (8 percent), Bangladesh and China (6 percent each), Germany and Sri Lanka (5 percent each).

Exhibit 61: Export of Clutches & Parts thereof by India (2015-16) (HS Code – 870893)

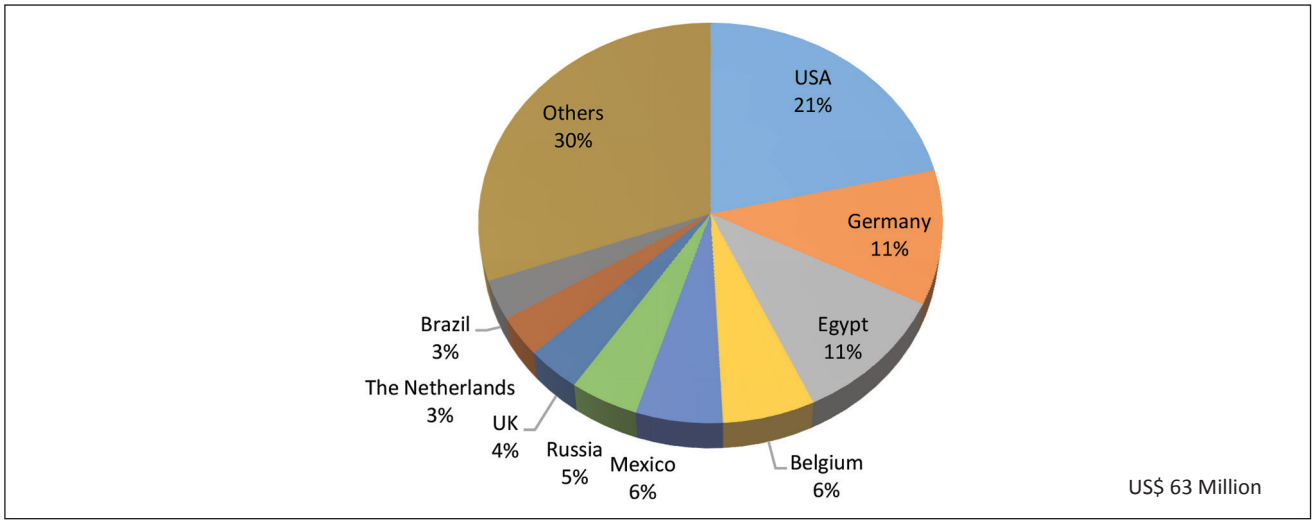


Source: DGCIS; EXIM Bank Research

Other parts & accessories of bodies

India's export of other parts & accessories of bodies was valued at US$ 63 million in 2015-16. The USA (21 percent), Germany and Egypt (11 percent each) accounted for majority of the exports, followed by Belgium (6 percent), Mexico (6 percent), Russia (5 percent), the UK (4 percent), the Netherlands (3 percent) and Brazil (3 percent).

Exhibit 62: Export of Other Parts & Accessories of Bodies from India (2015-16) (HS Code – 870829)



Source: DGCIS; EXIM Bank Research

In Sum

On the whole, exports by the Indian automotive industry have increased significantly over the years. Among automobiles, though two wheelers formed the largest export item in terms of volume (number of units), passenger-type motorcars category was the largest exported item in terms of value.

In the auto components industry, gearboxes and their parts have remained as the largest export item in terms of value even during 2015-16. It is also worth noting that India's automobile exports are mainly confined to the developing nations whereas India's auto components are skewed towards the developed nations of Europe and USA.

6. Challenges and Strategies

CHALLENGES

Fuel Price Volatility

Volatility in fuel prices affects the growth of the automotive industry all over the world. The effects of volatility in fuel prices are multipronged. Firstly, the cost of inputs in car manufacturing increases with the increase in oil prices. Polymers, one of the inputs used in manufacture of vehicles, is a derivative of crude oil. Bulk commodities, such as steel and aluminium, are also used in manufacture of vehicles, the transportation cost of which is influenced by oil prices. Secondly, oil prices have an impact on inflation, affecting the saving and disposable income of the consumers, thereby affecting the demand for automobiles. Thirdly, fuel prices influence the overall running cost of the vehicle owners which could lead to a switch in demand among the vehicle variants, engendering research in use of alternative fuels. Thus, the volatility in oil prices affects the prospects of the industry.

Many nations, in recent years, have implemented policies towards more fuel efficient vehicles in order to address pollution concerns and also to reduce the dependence on imported oil. As a result of these policies, manufacturers had, assuming stronger demand for improved fuel efficiency, invested heavily in technologies that improve fuel economy and lower carbon emissions. These product options were offered at a price premium with the expectation that the higher fuel economy would result in lower operating costs.

However, lower fuel prices change the return on investment calculation for consumers dramatically, and with oil prices staying relatively low over the last couple of years, demand for these technologies has fallen as well. Lower fuel prices raise the consumer's payback period – the time needed to earn back the investment in the fuel saving technology – and many consumers are unlikely to pay the premium, thereby posing a challenge for manufacturers.

Environmental Issues & Compliance

The automobile sector affects the environment in multiple ways, starting from the use of materials that causes environmental degradation, and ending with the management of scrap. However, it is estimated that much of the environmental damage during the lifespan of a vehicle happens during the time it is driven, and thus is associated with fuel emissions. That is why many countries are discouraging sale of fuel-inefficient cars, as also polluting cars, through suitable taxation policy. There are estimates that the automobile industry accounts for approximately one-fourth of global anthropogenic GHG emissions. Therefore, in order to combat the environmental challenge, firms (as well as environmentalists and national Governments) are focussing on avoidance of polluting substances in production, in addition to concentrating on fuel efficiency and emission standards and owners. The industry is also contributing to combat this challenge by undertaking research in improving fuel efficiency and reducing CO2 emissions.

Growing Competition

Competition in India's automobile and auto-parts industry has been growing in the recent years. Earlier, the regulatory framework and market conditions positioned the Indian OEMs in an oligopolistic market structure. With the opening up of market and deregulation, many new players have entered the fray. Though there has been a depletion of market share for Maruti Suzuki, it still dominates the passenger car segment. In the

two-wheelers segment too, foreign majors have their presence through joint ventures as also through their wholly owned subsidiaries. Hero Honda is the largest player in the two-wheeler segment. In the commercial vehicles segment, though the market is dominated by home-grown companies such as Ashok Leyland and Tata Motors, competition has increased with the entry of foreign players such as Volvo. Indian players are entering into joint ventures with foreign companies to gain access to their technological advancement and design engineering. In the auto-parts segment, though there are vibrant units producing high-quality products and supplying to global OEMs, the market has attracted global players such as Delphi Systems, Visteon, Denso and Bosch, to mention a few. These global majors have been expanding their product portfolio and enhancing their production capacities, thereby increasing the competition among the domestic players.

Changing Consumer Preferences

There has been continuous change in consumer demand in the motor vehicle industry, encouraging the companies to focus on innovation, continuously. With growing purchasing power among Indian consumers, the demand for better and comfort vehicles with greater efficiency is growing. Intense industry competition has led to design of hybrid vehicles and development of new vehicle concepts. Apart from customers, new technology also allows the designers to change every aspect of car design. Typically, product quality, cost reduction, new technologies and environmental issues, influences the consumer demand for vehicles and thereby innovation in the automotive industry.

Low R&D Orientation

It is being realized all over the world that the competitiveness is not dependent on factors like availability of skilled labour, low-cost operations and infrastructure. The sustained competitiveness in the automotive industry comes through improvement in productivity, which calls for continuous innovation by the players. However, Indian automobile companies spend a relatively low amount on R&D; thus, their R&D orientation (R&D spending as a percentage of total sales) is low relative to the global standards. Developing new designs is expensive, unless the market for the new design is on a global scale. Indian firms are mainly focussing on, and designing the vehicles for domestic market or for other developing country markets, but not designing for a truly global market, to create a niche for themselves and compete with international brands. Further, the efforts of Indian automobile manufacturers are mainly oriented towards value engineering or modification in the existing models to improve performance, and not on new models.

Infrastructure Constraints

Insufficient road infrastructure and traffic congestion could be a bottleneck in the growth of the automotive industry. In India, capacity addition in roads has been lagging behind the traffic growth. It is reported that China witnessed a phenomenal growth in automotive industry due to rapid development in road infrastructure. Poor port connectivity is another bottleneck faced by the industry, especially when it comes to automobile exports. The Chennai and Mumbai Ports handle bulk of the vehicle export. In addition to the insufficient port handling infrastructure, there are also challenges associated with space especially for parking and setting up of repair shops in the port yard.

Incidence of Levies/Duties

Due to the multiplicity of taxes, elaborate compliance obligations and tax cascading, the current indirect tax regime in India provides for a complex tax environment. To top that, the automobile industry has its own complexities. Longer investment cycles, development of vendors/part makers, outsourced processes, and market complexities are to name a few. The Indian automotive industry according to the Society of Indian

Automobile Manufacturers (SIAM) is 'highly taxed'. At present, the excise duty for vehicles is divided into four slabs, in which the smallest tax rate is applicable to small cars.

However, with the expected implementation of GST, taxes levied by the Centre like excise duty and state level taxes like sales tax, road and registration tax would all be subsumed into one. Assuming that the proposed tax rate of 18-20 percent is accepted, the vehicle prices are expected to become more affordable, thereby fuelling demand.

Minimum Import Price on Steel

The government has imposed a minimum import price (MIP) on steel which has reduced the benefit of lower commodity prices for automobile companies. The impact has been adverse especially for manufacturers of commercial vehicles including truck and tractors where steel constitutes a large chunk of raw material. Exports-focused automobile manufacturers have also been hurt as their export contracts are linked to international prices. The Government has been extending the validity of MIP as a measure to boost the sales of domestic steel manufacturers ever since it was introduced in February 2016. The MIP was valid till February 2017, after which it has reportedly been discontinued.

Low ICT Interface

While automobiles were traditionally perceived as mechanical devices, they are increasingly metamorphosing into highly complicated electronic machines. Digitization and connectivity have emerged as key parameters for consumer preferences. As customers increasingly aim to be very well and always connected, relationships are poised to shift from OEMs towards the information and communication technology (ICT) sector. As customers across regions become more and more aware about the importance of their data, they will look for a trustworthy source that offers the most interesting benefits in return for their data. Connectivity will pave the way for an entirely new data and service driven business model in the automotive sector. Thus, the center of gravity of the customer relationship will shift towards companies in the ICT sector. The connected car along with app based transportation service providers like Uber and Ola are forcing disruption and innovation with the latter prompting consumers to shift away from ownership of cars.

This is both a challenge and a huge opportunity for the automotive sector. Earlier, automotive manufacturers had to get feedback from the customers through intermediaries, such as vendors or service workshops. This trend has been changing with the introduction of customer management systems through ICT interface. Buyers are also browsing the net to know the features of a new model, evaluate them with the existing models, and compare the prices. IT firms are developing customer relationship management tools that help the manufacturers to realize and optimize individual customer value, increase the post-warranty service retention, predict model demand and provide supply chain solutions. Given this, the industry needs to increase IT adoption which will not only enhance its competitiveness in the existing markets but will also create new markets for the Indian automotive industry.

Exports of Auto Components Dominated by Low Value Added Products

A large proportion of auto components currently being exported still comprise traditional mechanical parts such as parts for engines, gear boxes, brakes etc; value added products such as high-end safety and advanced electronic parts form less than 10 percent of auto component exports. There is therefore a need to focus on higher value added products which would not only showcase the capabilities of Indian firms but will also result in greater per unit realization for the enterprises. The need will only be felt more in the future given the challenges the component manufacturers will face owing to tightening fuel efficiency, safety and emission norms in the export markets, especially of North America and the EU.

Human Resource Challenges

One of the critical enablers for the growth in the Indian Automobile industry would be adequate availability of trained manpower. It is estimated that the industry would require huge numbers of trained personnel, if our country has to become an auto-manufacturing hub for the world. Countries in North America and Europe, which had been the hub for automotive industries over the years, are increasingly feeling the pinch of the aging workforce impacting the employment levels from factory workers to middle and top-level management, thereby creating a talent vacuum in the industry. This crunch in manpower in these economies is slowly luring the much-required human capital from India. This challenge needs to be addressed on priority basis so that the country does not lose out on critical talent that may be important for India to become an important automotive hub.

STRATEGIES

R&D on Alternate Energy Sources and Hybrid Vehicles

The share of automobiles on road, using petroleum products as fuel, has almost remained the same (at over 90%) in the past several decades. This is despite the fact that the vehicles on road have been evolving in every other aspect. In other words, product development has happened in all other aspects, except in utilization of alternate energy sources. The Government has taken certain measures to encourage purchase of electric and hybrid vehicles through the FAME (Faster Adoption and Manufacturing of Hybrid and Electric Vehicles in India) - India Scheme. The Phase 1 of the scheme is being implemented over a period of 2-year i.e. FY 2015-16 and FY 2016-17 commencing from 1st April 2015 with an approved outlay of Rs. 795 Crore. Under the scheme, the demand incentive is available for buyer (end users / consumers) in the form of an upfront reduced purchase price to enable wider adoption depending on type of vehicles/ type of technology to the purchaser of electric/ hybrid vehicles. However, no subsidy is given to any manufacturing companies. Further, there is no provision for giving 50% excise duty concession under FAME-India Scheme. The Government, could perhaps consider including excise duty concessions while also providing incentives to manufacturers on their investments in cleaner technologies. This would provide greater thrust on development of products that uses alternate energy sources, and R&D on hybrid vehicles.

Enhancing Competitiveness

Cost efficiency is necessary for Indian automobile industry to enhance its global competitiveness.

Many global auto-majors, especially from Japan, have initiated cost reduction exercises. Some firms have also shifted from standard costing to Kaizen costing and target costing. Some of them have even established target-costing offices across the world and established office structure for implementing Kaizen. Cost containment strategies may also include working with suppliers to reduce the costs in their processes, implementing low cost designs / segments of the product, or through reduction of wastages. Strengthening the lean manufacturing practices, being adopted in India as also across the world, would also help improve competitiveness of Indian industry. Such practices show greater efficiencies in machine utilization, fewer labour hours per machine, shorter machine setup times and identification of bottlenecks and cost reduction opportunities swiftly.

Both the automobile and the auto component industry are interlinked and are dependent on each other for survival, and hence the hub and spoke model may be another approach for both of them to contain the cost. In a country like India, where customers are highly price sensitive, localization of industries are of paramount importance. In the hub and spoke model, the automobile industry help in establishment of auto-component units around its assembly plants, and help them in technological improvement, R&D, and identification of machineries and equipment. The auto-component units concentrate on on-time supply and servicing of orders and cost containment in production, and thereby promote competitive pricing among the industry players.

Addressing Consumer Preferences

The dynamics of Indian automobile market is changing with the changing consumer preferences. For example, earlier, the two-wheeler segment was dominated by scooter, which has been taken over by motorcycles. The change in consumer preference was mainly due to fuel efficiency, as also design and technological improvement. Though, the newer versions of scooters are slowly reviving the market for scooters, the market share may not reach to the previous level. Similarly, consumer preferences have changed the demand pattern in other vehicle segments too, driven mainly by design and technology. Indian auto-majors need to address the changing consumer preferences and suitably modify the design or technological improvement to augment their market share.

Environmental Compliance

Environmental challenges in automobile manufacturing does not relate to emission standards alone. There are also challenges associated with end-of-life in vehicles, especially waste management. Though sufficient steps are being taken in India towards achieving international emission standards, adequate steps are still required to be taken in environmental compliance in vehicle manufacturing. Significant amount of resources are required as investment to undertake R&D programmes to address these environmental challenges. The industry needs to develop a similar strategy of designing vehicles for environment, especially if India is to emerge as a global manufacturing hub for vehicles. The automotive industry needs to accelerate its readiness for a low-carbon world to stay on the track of prosperity. Climate change specialists must be put on boards and vehicle makers should invest more heavily in low emission cars to deal with the environmental compliance aspect.

But in a very price-conscious economy that India is, the shift towards greener vehicles will be slow unless stimulated by government mandates. Commercializing these technologies, even by major players, requires the green revolution to gain momentum and achievement of the market scale for commercial viability.

Augmenting R&D Orientation

Fundamental research, designing and engineering of new vehicle models, and development – are the three key areas of R&D upon which the country's ecosystem is focused on. The country's research and innovation ecosystem presents a significant opportunity for companies globally to explore the talent available here. India's R&D centres serve both the local markets and also help parent companies globally in the development of next-generation innovative products.

Notwithstanding the above, the Indian automotive industry needs to develop a proactive culture with regard to investments in R&D rather than responsive culture. This would help the industry to understand the complexities of vehicle users and bring in product innovation through changes in design and vehicle engineering. The R&D orientation in the Indian auto-component industry is not comparable with world standards. However, a few firms that are having large operations are increasing their stake in innovation to compete in the global map. Typically, large auto-component suppliers have better understanding of the relationship between R&D orientation and business development. SME auto component units, especially those with low man-power strength, low management skills, and low turnover, have not fully understood the power of innovation.

Thus, there is a need to initiate a programme for research and development in the Indian automotive industry, concentrating on development of intelligent vehicles adhering to safety standards, energy efficiency and emission norms, and alternate fuels. The Government of India has taken several steps to promote the R& D sector in the country and has declared 2010 to 2020 as the "Decade of Innovation." The following are some of the initiatives taken by the Government to drive R&D and innovation in India:

- National Institution for Transforming India (NITI): to increase the involvement of entrepreneurs, researchers to foster scientific innovations
- National Innovation Council: a think-tank council to discuss, analyze and help implement strategies and road map for innovation
- Science, Technology and Innovation (STI) Policy: Focus on increasing R&D spend, sharing risk with the private sector, providing new financing mechanisms.

Infrastructure Development

Infrastructure constraints are common to all industry; however, there are a few specific infrastructure constraints affecting the growth of Indian automotive industry. Poor road infrastructure and traffic congestion can be a bottleneck in the growth of vehicle industry. Therefore, in general, good road infrastructure would help enhance the demand for automobiles in India. Secondly, road infrastructure associated with last-mile port connectivity would help enhance supply chain management strategies of the vehicle manufacturers. More importantly, there is a need for building vehicle terminals in India for smoother handling of vehicle exports. Countries like South Africa (Durban), South Korea (Ulsan) and Mexico (Lazero Cardinas) have already established exclusive vehicle terminals for handling vehicles meant for exports. In India, several initiatives have been announced by the industry, both by vehicle manufacturers and private port developers, to construct vehicle terminals.

Increase in dialogue with manufacturers and oil marketing companies to establish a better infrastructure for greener vehicles is the way ahead. The government could consider finalizing a short, mid and long-term blueprint for the development of such infrastructure, encompassing elements such as battery recharge stations, wider network of CNG pumps, perhaps through public-private partnerships.

Integrating ICT Interface

IT sector has a major role to play in development of Indian automotive industry to achieve its global aspirations through enhanced productivity and product efficiency. In addition, ICT interface help the manufacturers to interact frequently with vendors and consumers also, and leverage their ideas / preferences into vehicle design. Increased IT adoption in the automotive industry not only enhances the competitiveness of the industry in the existing markets, but also creates new markets for the Indian automotive industry.

Human Resources Development

The cost pressure on global auto majors, who are mainly present in developed countries, viz., the USA, Europe and Japan, is making the industry shift to developing nations. In addition, these countries are facing shortage of skilled manpower, which is expected to grow multi-fold in the years to come. India has large human resource base; however, India needs to enhance the skill-sets that are required for the industry in order to become a global automotive hub. The Automotive Mission Plan, drawn by the Government of India, has given thrust on human resources development and skill upgradation through development of training modules and special courses.

The Government and industry need to come together and address the challenges related to skill development and workforce shortages, both in terms of quantity and quality. In this regard, it may be mentioned that the USA has established, over three decades ago, a National Institute for Automotive Service Excellence, to provide training testing, and certification of auto service and repair professionals to ensure continuous availability of trained technicians for the industry.

Box 2: New Initiatives & Vision For The Future

The Government of India aims to maintain this growth trend of the automobile industry and has launched several initiatives to achieve the same. The Automotive Mission Plan 2016-26 (AMP 2026) is one such initiative. It clearly lays out the government's collective vision on how the automotive sector should grow regarding size, contribution to national development, technological maturity, global competitiveness and institutional structure. It aims to make India among the top three automotive manufacturers in the world and increase exports exponentially to reach 35-40% of overall output. It also intends to increase its contribution to the GDP to over 12%, generating 65 million more jobs as well as increasing the size of the industry to USD 300 billion by 2026[14].

FAME Scheme - based on NEMMP (National Electric Mobility Plan) 2020 road map, FAME (Faster Adoption and Manufacture of Electric Vehicles in India) scheme was launched by the Department of Heavy Industries, Government of India with a capital outlay of ₹ 795 crore (approx. US$ 130 million). It will cover all segments i.e. two/three wheelers, cars, LCVs, buses etc. and all forms of hybrid and pure electric vehicles[15].

With the emergence of 5 large automotive clusters in the country i.e. the Delhi-Gurgaon-Faridabad in the North, Sanand-Halol and Mumbai-Pune-Nasik-Aurangabad in the West, Chennai-Bengaluru-Hosur in the South and Jamshedpur-Kolkata in the East, India is fast on its way in becoming one of the major automobile manufacturers in the world. The Government of India is more than willing to lead this charge and assist this sector in every way to help it achieve its full potential.

**Vehicles include passenger, commercial, three-wheelers, two-wheelers, quadricycle)*

Source: Make in India (www.makeinindia.com); EXIM Bank Research

[14]http://auto.economictimes.indiatimes.com/news/industry/automotive-mission-plan-2016-26-unveiled-here-are-the-key-highlights/48772090
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