ATMA
Automotive Tyre Manufacturers' Association

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Indian Tyre Industry

Turning the Wheels of PROGRESS

Automotive Tyre Manufacturers ' Association (ATMA)

About this Report

This report has been prepared by Thought Arbitrage Research Institute (TARI) for Automotive Tyres Manufacturers' Association (ATMA).

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About Thought Arbitrage Research Institute (TARI)

TARI is a not-for-profit organisation set up under Section 25 of the Indian Companies Act, 1956, to bridge the gap between policy initiatives and common perception through evidence-based research and comprehensive data-based reasoning. TARI is a privately-funded, independent, non-partisan Indian think-tank and works with government, industry, civil society and other stakeholders on Corporate Governance, Sustainability, Economics and Public Policy.

About Automotive Tyre Manufacturers' Association (ATMA)

Headquartered in New Delhi (India), ATMA is amongst the most active and well known national industry bodies in the country. Being a representative body of 11 large tyre companies in India accounting for over 90% of tyre production, ATMA has been accorded status as the true voice of the Indian tyre industry.

Foreword

Tyre Industry is one of the mature and seasoned sectors in India. The industry has been a prominent ally in the Government's developmental agenda ever since independence and especially after economic liberalization. If you look closely, you can't miss the untiring wheels that have kept rolling incessantly, helping India achieve this size and scale notwithstanding teething problems of an emerging economy.

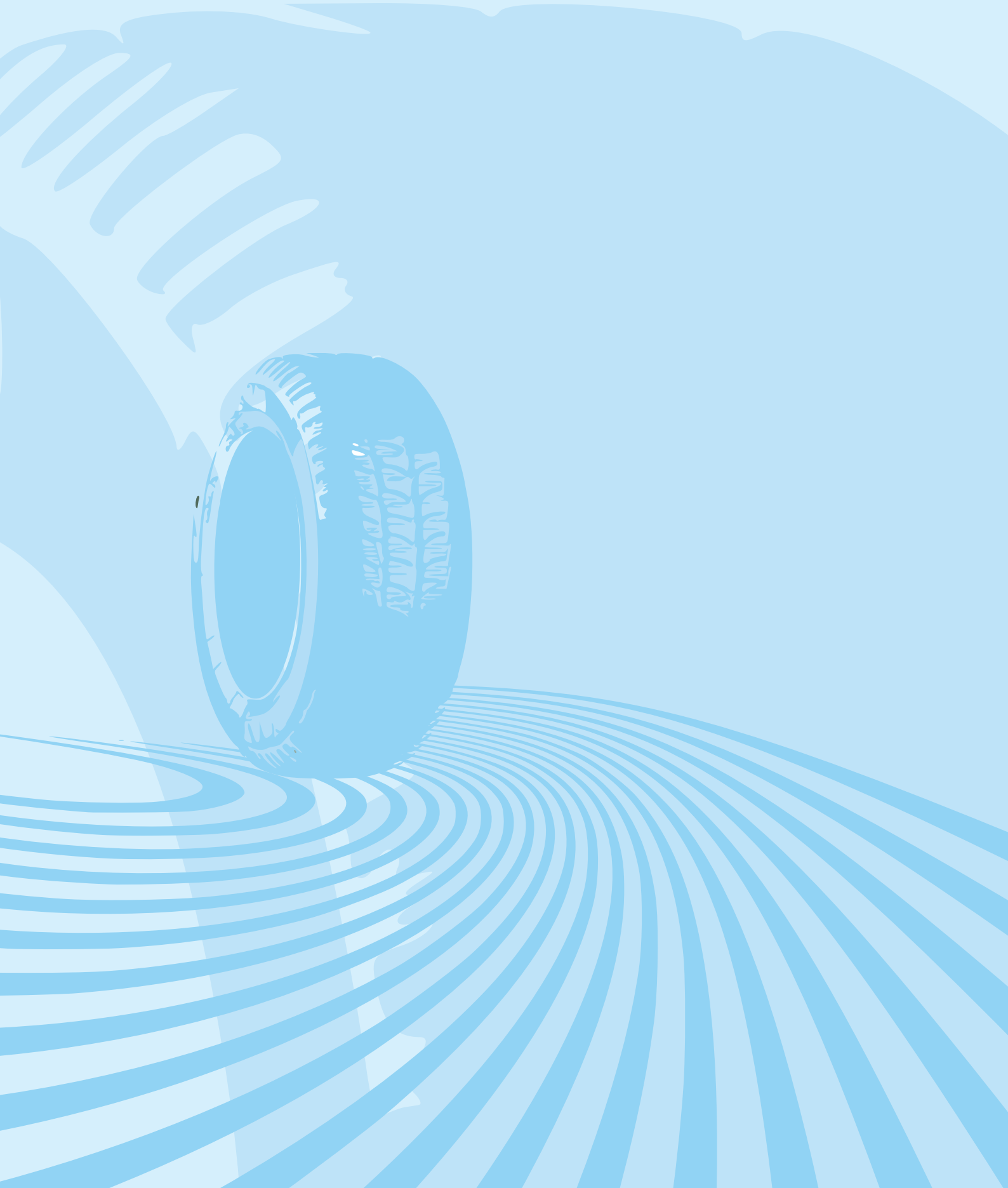
Unfortunately, though, tyre industry has been a less celebrated success story of India. Not many will know that India produces one of the largest varieties of tyres produced anywhere in the world. That tyre industry provides employment to more than two million people. That Indian tyres are exported to more than 100 countries in the world and 20% of the revenues come from exports. That tyre has been in the forefront amongst private sector to go for mega investments at a time when private capex has remained muted. The list is endless.

At the same time, the industry has a long way to go. The achievements by the industry so far may just be the tip of the iceberg and the large potential still needs to be harnessed. For instance, Indian tyre industry is capable of doubling its exports in a span of 3-4 years, if certain policy enablers are in place.

With a view to understand industry's existing realities, competencies and domestic and global opportunities, Thought Arbitrage Research Institute has undertaken this comprehensive study of the tyre sector. The report provides a research-based roadmap for the benefit of both, the industry and the Government.

Given the Government's unmistakable emphasis on manufacturing and job creation, a sharpening of focus on sectors such as tyres with rich economic linkages is vital. I am sure the report unfolds new vistas in which Tyre Industry's potential can be unraveled leading to wide spread achievement of nations' goals.

Satish Sharma
Chairman
Aautomotive Tyre Manufacturers' Association (ATMA)



Message

सुरेश प्रभु
SURESH PRABHU

सत्यमेव जयते

वाणिज्य एवं उद्योग मंत्री
भारत सरकार, नई दिल्ली
MINISTER OF COMMERCE & INDUSTRY
GOVERNMENT OF INDIA, NEW DELHI

स्वच्छ भारत
एक कदम स्वच्छता की ओर

MESSAGE

I am happy to learn about the growth witnessed by the Tyre Industry in the last few years, especially its export performance and radial tyre manufacturing. Rubber plantations also, to a large extent, are dependent on tyres. It is, therefore, important that India has a robust tyre manufacturing set up.

I understand that the Industry has put in substantial investments in capacity expansion for giving a fillip to manufacturing and job growth. It is, therefore, important to study the industry and its potential.

In this regard, launch of a Research Report - *"Indian Tyre Industry – Turning the Wheels of Progress"* assumes much significance. Government of India is committed to manufacturing excellence and the Ministry of Commerce & Industry will be keen to collaborate with the industry in all its developmental ventures.

I congratulate ATMA for undertaking this research study and would invite actionable findings/suggestions which help this vital sector achieve its potential.

My best wishes to the Indian tyre industry.

(SURESH PRABHU)

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Preface

The tyre industry provides the wheels on which an economy rides. Itconstitutes end of the chain for the natural rubber industry andis vital for the automotive industry. It also steers optimisation of returns from infrastructure and trade.

Indian tyres are truly a competitive global productwith a turnover of ₹ 53,000 crores and exports of ₹ 10,500 crores in 2015-16, making it an industry capable of drivingthe Make in India programme and augment India's exports basket.It has a significant inflow of private capital and involves about 1.7 million people who directly and indirectly derive their livelihood from the industry, including farmers, agriculturalists, factory workers and a large number of others providing sales and after-sale services.

On a standalone basis,the industry contributes 3% ofIndia's manufacturing GDP and 0.5% of the total GDP. Its output multiplier effect is estimated at 2.47 due to the linkages with other sectors of the economy such as rubber plantations, petroleum, chemical, capital goods and packaging materials, etc. resulting in a total economic contribution of 1.5% of the GDP when direct, indirect and induced impacts are considered.

In recent years, the industry has, however, faced slow growth and stiff challenges, primarilydue to cheap imports from overseas. High volatility in price and supply of raw materials,inverted tax structure and a host of other factors have impacted its export competitiveness.

This study analyses the Indian tyre industry's economic potential, its key growth drivers and challenges in the current business environment. A benchmark analysis of India vis-à-vis other top tyre exporting and importing countries on key performance parameters helps inassessing the strength and weakness of our industry,identify strategies to improve competitiveness, both domestic and international, and interventions required from government and regulators.

We hope that the perspective provided in this study will result in a fruitful dialogue among various stakeholders,positively impact the initiatives to make Indian tyre industry a bright spot in the global trade and contribute to sustainable growth and development of the country.

Kaushik Dutta

Director

Thought Arbitrage Research Institute (TARI)

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Executive Summary

Tyre industry: A force multiplier with value linkages across the economy

The tyre industry provides the wheels on which an economy rides. The growth multiplier in an economy is derived from its ability to move goods over a geography in optimum time. In relation to roads, it is estimated that this return on public capital in India ranges between 34% and 100%, making it a key determinant of the economic growth.

The outlay on infrastructure, the roads and highways, in 2017 fiscal is ₹18.92 lakh crore (about 10.7% of GDP) and the cumulative investment in the past five years is 65.8 lakh crore.[1] Economic returns on these investments will be driven by the ability to move goods, materials and people in the most efficient and optimum manner.

The tyre industry, being the wheels of economic growth, needs the impetus to be globally competitive and help the nation sustain its growth over 7%.

The growth of the tyre industry, represented by turnover, has doubled in five years from ₹25,000 crore in 2009-10 to ₹53,000 crore in 2015-16

Why should the tyre industry be a policy focus area?

Growth, investment and value multipliers

- The tyre industry on a standalone basis contributes 3% of the manufacturing GDP of India and 0.5% of the total GDP. However, its estimated output multiplier effect is 2.47 due to linkages with other sectors of the economy including rubber plantations, petroleum, chemical, capital goods and packaging materials, etc. resulting in a total economic contribution of 1.5% of the GDP when direct, indirect and induced impacts are considered.[2]
- The growth of the tyre industry, represented by turnover, has doubled in five years from ₹25,000 crore in 2009-10 to ₹53,000 crore in 2015-16, which is faster (9.3%) than the growth of the mother industry, i.e. the automobile industry (5.3%), in the same period.[3]
- The tyre industry exports about 9-10% of its total production to over 100countries and contributes about 0.53% of the country's total exports with average annual net foreign earnings of about $1 billion for the last five years.[4]
- Capital investment has grown by over 25% to ₹36,000 crore in 2015-16 from ₹12,000 crore in 2010-11, making it one of the most invested industries by private business in India.[5] By 2018-19, the industry is expected to complete projects worth ₹7,000 crore, contributing an additional 12 million units in capacity. Such investments in capacity create better economies of scale, employment and value addition for the economy.[6]

Capital investment has grown by over 25% to ₹36,000 crore in 2015-16 from ₹12,000 crore in 2010-11, making it one of the most invested industries

[1]Mid-term Appraisal of 11th Five Year Plan, Planning Commission, GOI
[2]ASI, MOSPI, NSSO Input-Output Tables, TARI Calculations
[3]Industry Estimates, TARI
[4]Source: DGCIS data, Ministry of Commerce and Trade
[5]ATMA, Industry Estimates
[6]Tyre Industry: Wheeling Around. CARE Ratings, Industry Research. April 11th 2017.

- Tyres have a high manufacturing value addition (MVA) of 21.5% as against a median of 14% for the manufacturing industry with corresponding value added multiplier effect of 3.42, implying that an unit of increase in demand for tyres has a multiplying and cascading effect of 3.42 on the overall economy and hence should be a flagship sector that requires greater attention under the "Make in India" programme.[7]
- Tax multiplier, which is a rise in indirect tax collections generated in the economy because of rise in demand, of the rubber products (including the tyre industry) is 2.77—which is one of the highest among all manufacturing sectors. For example, the automobile industry stands at 1.96 while tax multiplier for the general manufacturing industry is 2.02.[8] A high tax multiplier of rubber (tyre) industry underscores that it is an important sector for the Government from the tax collection perspective.

Tyres have a high manufacturing value addition (MVA) of **21.5%** as against a median of **14%** for the manufacturing industry

Employment and livelihood

- Estimated employment multiplier of the rubber industry indicates that it will rise by a factor of 4.3 for every increase of ₹1 in demand for tyres. The total direct and indirect employment generated by the tyre industry has an estimated multiplier effect on 2.8 million jobs.[9]
- Direct employment generated by the tyre industry is more than 0.15 million out of which about 0.12 million jobs are in the organised sector[10], indicating high productivity and global competitiveness.
- In addition, it generates large scale employment in the linked MSME and unorganised sector by providing livelihood to over 1 million people such as the retreaders, dealers and repairers directly and indirectly associated with this industry.[11] Further, employment generated by the industry in services such as tyre repairing, air filling, etc. is also very significant.

Direct employment generated by the tyre industry is more than **0.15** million out of which about **0.12** million jobs are in the organised sector

Inclusion and linkages with agriculture

The Indian tyre industry is integrated with agriculture and creates a viable value discovery process through both long-term and short-term price protection to the small, marginal and tribal population and also to large farmers.

The geographical spread of natural rubber used by the industry spans from Kerala to the states in the North East of India which makes it a unique platform for inclusive and sustainable development across India with natural linkages to local manufacturing in those areas.

India imports nearly 45% of its natural rubber consumption and any enhancement in output will greatly improve the lives of farmers across the country and create a higher value proposition for the rubber industry; growth in production and acreage in the North East States is key to the growth of this symbiotic relationship.

The tyre industry consumes around two-thirds of the total Natural Rubber (NR) produced in the country involving over a million growers (farmers), a majority of them being small and marginal growers.[12]

[7]ASI, MOSPI, NSSO Input-Output Tables, TARI Calculations
[8]MOSPI, NSSO Input-Output Tables, TARI Calculations
[9]MOSPI, NSSO Input-Output Tables, TARI Calculations
[10]Annual Survey of Industries, MOSPI
[11]RSDC Skill Gap Study: Introduction About Rubber Industry, 2013
[12]RSDC Skill Gap Study: Introduction About Rubber Industry, 2013

Innovation and Research

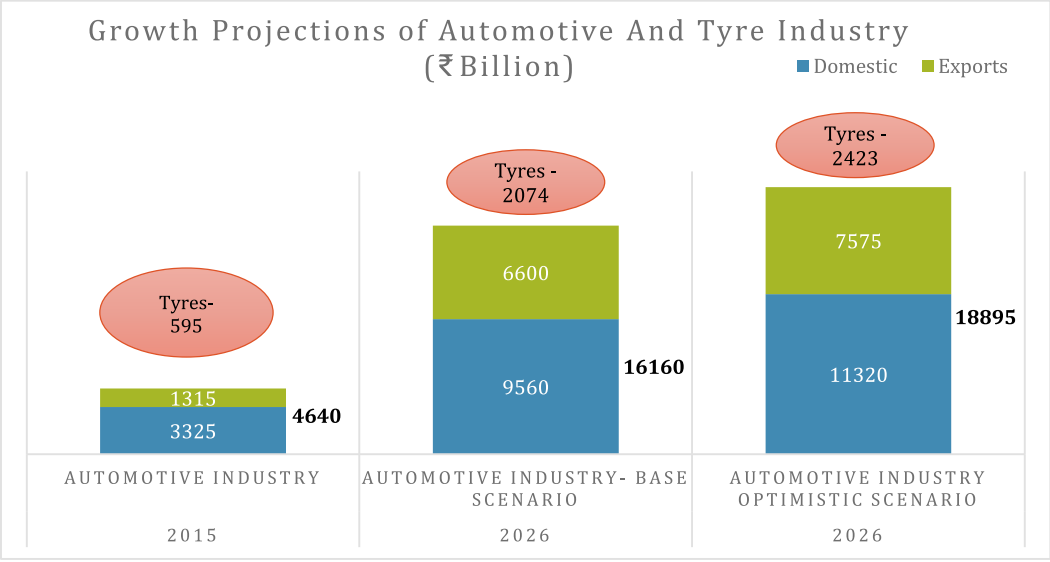
The total factor productivity (TFP), which measures the invisibles in the form of processes, results of R&D, human capital, etc. has a growth rate of 0.88, which is higher than the Indian industry median of 0.63, signifying the levels of sophistication in the sector.[13]

The tyre industry is an innovation driven industry that needs to meet consumers' demands for safety, performance and quality. By investing 1-2% of its revenues in innovation and technology upgradation, India is one of the few countries worldwide which has attained self-sufficiency in manufacturing a wide range of tyres for global markets.[14]

India is one of the few countries worldwide which has attained self-sufficiency in manufacturing a wide range of tyres for global markets.

What will drive the demand for the tyre industry?

The Government of India and Indian Automotive Industry's vision plan referred to as **"Automotive Mission Plan 2016-26 – AMP 2026"** highlights that the automotive industry with a growth at CAGR of 13% (base case) and 15% (optimistic case) will have an output of ₹16,160 billion and ₹18,895 billion in 2026. The tyre industry being an integral part of the automotive industry is likely to follow the same growth trajectory and expected to reach levels of ₹2,074-2,423 billion in the next 10 years.



There is a huge headroom for growth of exports from India, where it can increase its share to 4-5%

The following are the segments on which India can focus for increasing its export share:

- Currently, India's contribution to the global tyre trade is $1.5 billion (1.72%) out of the $80 billion market.[15] There is a huge headroom for growth of exports from India, where it can increase its share to 4-5%, particularly in car/bus/truck and industrial tyres, which constitute 90% of the markets where the country's share is currently only 1.2%. This can be achieved through Government and private partnership through trade and fiscal stimulus.

[13]Report on Estimates of Productivity Growth for the Indian Economy 2014, RBI
[14]DIPP Annual Report 2016-17, page 77
[15]UN Comtrade, TARI Calculations

- India is one of the most attractive markets with rising incomes of the middle class—India has only 10 cars per 1,000 population as compared to the world average of 125—and rapid urbanisation. Average household incomes are expected to triple over the next 20years and India will become the fifth largest consumer economy in the world by 2025.[16] The emergence of the middle class will drive the automobile industry, which will subsequently drive the tyre industry.
- Radialisation is only 36% in the truck/bus segment and 40% in light commercial vehicles (LCV). Backed by growing awareness of cost benefits, continuously improving road infrastructure and new radial capacities going on-stream, radialisation levels in the commercial vehicle space are likely to reach to 65-70% over the next four years and create a new innovated and safe alternative.[17]

Radialisation levels in the commercial vehicle space are likely to reach to **65-70%** over the next four years

What parameters drive competitiveness in the global markets?

The tyre industry needs to excel in the key parameters of competitiveness in international markets for increasing its share in the global trade. A benchmark analysis of India with other countries: China, Czechia, Indonesia, Japan, Republic of Korea, Thailand, Turkey, and Vietnam on some key parameters reflects that India is competitive in some of the parameters but is lagging behind in a few parameters compared to benchmark countries.

Key Determinants of International Competitiveness		China	Czechia	India	Indonesia	Japan	Rep. of Korea	Thai-land	Turkey	Vietnam
Revealed Comparative Advantage	Industry Specific	8	2	**7**	3	4	6	1	5	9
Price Competitiveness		1	9	**2**	4	8	7	5	6	3
Natural Rubber Availability and Price Competitiveness		4	7	**5**	2	6	6	1	7	3
Protection of Domestic Market: Tariff and Non-Tariff Barriers		1	6	**5**	3	7	7	4	6	2
Access to Export Markets: Trade Agreements with Preferential Tariffs	Macro- Economic Specific	4	3	**5**	4	2	1	4	3	4
Labour Cost Competitiveness		5	7	**2**	1	9	8	4	6	3
Ease of Doing Business - Trading Across Borders		7	1	**9**	8	3	2	4	5	6
Real Effective Exchange Rate		8	3	**7**	6	4	2	5	1	9
Corporate Income Tax and Incentives		4	1	**7**	5	6	3	2	2	2

Enablers for improving the Indian tyre industry's global impact

Correcting duty structure and other fiscal measure

- India is the only country among the benchmark countries that has an inverted duty structure for the tyre industry. Even when basic duty is 10% for tyres, it is actually much lower under various Trade Agreements when compared with the basic duty of its principal raw material, natural rubber.
- Correcting the inverted duty structure on tyres by increasing the customs duty on tyres from the existing rate of 10% to 25% to keep it at par with the duty attracted by natural rubber will help the domestic industry to be competitive in international markets.

[16]McKinsey Global Institute. 2012. Manufacturing the Future: The Next Era of Global Growth and Innovation

[17]Sector Outlook- Tyres, www.indiratrade.com, Sep 30, 2015

- A DIPP report highlights that rubber (tyres) is one manufacturing industry that has been affected by large imports from China.[18] Due to a slowdown in the Chinese economy, their tyre manufacturers often dump their products in Indian markets. The share of China in imported tyres has gone up to 51% from 18% in the last five years . This has affected the domestic industry as the production of tyres in India has declined and the capacity utilisation of plants has remained subdued.
- To control the dumping of Chinese tyres in India at prices that hurt economically or are uncompetitive for the domestic industry, the Government has imposed Anti-dumping duty (ADD), but that is based on loss of profit and is not a deterrent. In case of Chinese truck and bus radial (TBR), injury margin is higher than dumping margin but as ADD is imposed on dumping margin, a part of the injury remains uncovered. The Government should look at correct anti-dumping duty measures to protect the interests of domestic manufacturers.
- Import of natural rubber needs a prior licence and declaration, which increases holding costs that makes tyre industry non-competitive.
- No input credit is viable on Petroleum consumption, which constitutes a significant input costs in tyre industry in Goods and Service Tax (GST) regime. Equalisation for such credits need to be made for tyres to make it more competitive.

Rationalisation of existing trade agreements

- Trade agreements affect the domestic tyre industry by providing concessions on customs duty on finished tyres. Tyres can be imported into India at preferential/ concessional duties under various FTAs/RTAs but provide no concession on import duty of the natural rubber, which falls in the negative list (except with Sri Lanka), thereby increasing the product costs of tyres made in domestic markets.
- To ensure the tyre industry's competitiveness, natural rubber should be removed from the negative list of all FTA/RTA which relies largely on imported natural rubber.

Stimulating growth through new trade agreements

- New capacity being commissioned involving capital costs of over ₹7,000 crore in the next two years along with current level of capacity utilisation of around 70% needs a concerted push from the Government to reach out to export markets, where our share can be significantly enhanced through trade agreements.
- The Government of India should push to have trade agreements with top export destinations like US and EU countries which can provide concessional tariff for tyres, which is available for Korea, China.

The top 15 destinations: USA, Germany, France, UK, Italy, Spain, Turkey, Netherlands, Australia, Brazil, Peru, Saudi Arabia, UAE, Nepal, and Pakistan comprise 66% of the total Indian tyre exports.

The top 15 destinations: USA, Germany, France, UK, Italy, Spain, Turkey, Netherlands, Australia, Brazil, Peru, Saudi Arabia, UAE, Nepal, and Pakistan comprise 66% of the total Indian tyre exports. However, most of the key destinations for Indian tyre exports attract the highest general duty tariff in the absence of any trade agreements.[19] Establishing trade agreements with these countries should be a priority for India to improve competitiveness of Indian tyres in these markets.

[18]Impact of the Surge in Chinese Import on Indian Manufacturing Sector, Jitender Singh, Assistant Director, DIPP
[19]UN Comtrade and WITS database

- India should also have a strategy for FTA/RTA keeping in view the tyre and entire automobile industry to target markets like Algeria, Egypt, Nigeria, South Africa, Peru, Chile, Colombia,Philippines, Myanmar, Vietnam, Brazil, Iran, Argentina and Russia that do not have a large manufacturing base.[20] This will give stimulus to the industry's exports and have a big impact on growth in the long term.
- Specific clauses for use of Indian loans, grant and aid to African and other nations against imports from India, including tyres, sustain and boost domestic investments and employment.
- Trade agreements with countries like Germany, France, Saudi Arabia, Australia and Peru with whom India has a negative trade balance and who import tyres significantly.

Natural rubber markets and inclusive development

- India imports about 45% of its natural rubber requirements in a high import tax regime. Synthetic rubber and crude derivatives are also largely imported and heavily taxed. Besides, natural rubber price in India is volatile and about 10-20% higher than world rubber prices (Bangkok). All this reduces the competitiveness of the industry.
- Policy focus to increase the country's natural production including financial incentives to the industry to enhance backward integration with rubber plantations will reduce import dependence, keep quality check and generate significant livelihood for rubber growers.
- Development of North East States, Orissa and other alternative production sources will create new and sustainable sources of natural rubber that do not rely overly on the traditional sources. This will also ensure the goal of inclusive growth across India.
- Research with participation from private stakeholders, including academic institutions, should look at improving yield and costs of producing natural rubber. Global projects and cross learning from other countries can play an important role in this.
- To develop the natural rubber industry, a rubber policy as demanded by all stakeholders needs to be developed by the Ministry of Commerce and Industry.

India imports about 45% of its natural rubber requirements in a high import tax regime.

Industry-specific enablers

- Countries like Thailand give eight-year corporate income tax exemption, accounting for 100% of investment (excluding cost of land and working capital) for promoting the tyre industry, which has been key in improving its revealed comparative advantage (RCA) in global tyre trade. To increase India's share in world exports and have better RCA, some tax and other financial incentives should be given to export oriented tyre manufacturing units.
- The tyre industry has invested heavily to increase its tyre production capacity. However, high debt and cost of capital is putting pressure on the competitiveness of the industry. A comparative assessment of real effective interest (RER) in 2015 shows that India's RER is high (8.8) compared to that of China (4.8) and other benchmark countries. To reduce the high interest burden on Indian tyre industry which makes it globally disadvantaged, either longer term loans with fair interest rates or accelerated depreciation benefit should be given to the industry.
- In addition, weighted deduction on the cost of new employees hired in new manufacturing facilities should be given as relief measure for tyre manufacturers.

The tyre industry has invested heavily to increase its tyre production capacity. However, high debt and cost of capital is putting pressure on the competitiveness of the industry.

[20] Automotive Mission Plan 2026

- The tyre industry has shown more TFP growth compared to the industry median. To ensure industry competitiveness with global peers, weighted tax deduction for R&D expenditure should be continued and may be extended to outsource R&D expenditure as well.
- Brand Building costs overseas should be given multiplier deduction in ratio of increased exports
- India needs to protect the intellectual property rights (IPR) and keep a check on the steadily growing illicit market for the counterfeited products or smuggled products. It is imperative to protect the legal manufacturers and protect their losses by proactively taking action against those supplying illicit or smuggled products.

Lack of adequate infrastructure (India ranks 90 among 140 countries) in comparison to other countries reduces the competitiveness of the manufacturing industry.

Macro-economic enablers

- Lack of adequate infrastructure (India ranks 90 among 140 countries) in comparison to other countries reduces the competitiveness of the manufacturing industry. To improve the physical infrastructure, investment in infrastructure needs to go up from 6% of GDP to 10% of GDP.
- India ranks low in Ease of Doing Business (although improved from 130 to 100 in the latest ranking) and Trading Across Borders (143). Improvement in ease of doing business through faster administrative clearances, transparent regulatory processes and cutting compliance burden will reduce time and cost in trading across borders and improve India's ranking on Trading Across Borders and also its export competitiveness.
- Corporate income tax in India is higher than in the benchmark countries, which reduces the competitiveness of the Indian tyre industry. The direct tax on profit in India is 33%, which is about 10% more than other developing countries. Further, complexity of the tax regime, along with recurrent changes in tax laws, augments the problem. There is a need to rationalise direct taxes in relation to international benchmarks and a more transparent tax regime.

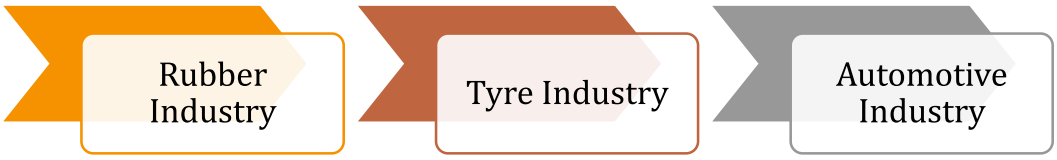
Corporate income tax in India is higher than in the benchmark countries, which reduces the competitiveness of the Indian tyre industry.

Indian Tyre Industry:
An Economic Force Multiplier

Indian Tyre Industry: An Economic Force Multiplier

The tyre industry provides the wheels on which an economy rides. It provides the end of the chain for the natural rubber industry in India and is vital for the automotive industry – both original equipment manufacturers and those in after markets. The tyre industry also has a large dependency on the petroleum industry as a significant proportion of synthetic rubber and other petroleum products is also used for tyre production.

The industry involves about 0.5 million people who directly and indirectly derive their livelihood from the industry, involving farmers and agriculturalists, 0.15 million in manufacturing and about 1 million in service and after markets.



Growth multiplier in an economy is derived from its ability to move goods over a geography in optimum time. In relation to roads, it is estimated that this return on public capital ranges between 34% and 100%, making it a key determinant of the economic growth. The outlay on infrastructure, being the roads and highways, in 2017 fiscal is ₹18.92 lakh crore (about 10.7% of GDP) and the cumulative investment in the past five years is ₹65.8 lakh crore.[21] *Economic returns on these investments will be driven by our ability to move goods, materials and people in the most efficient and optimum manner.*

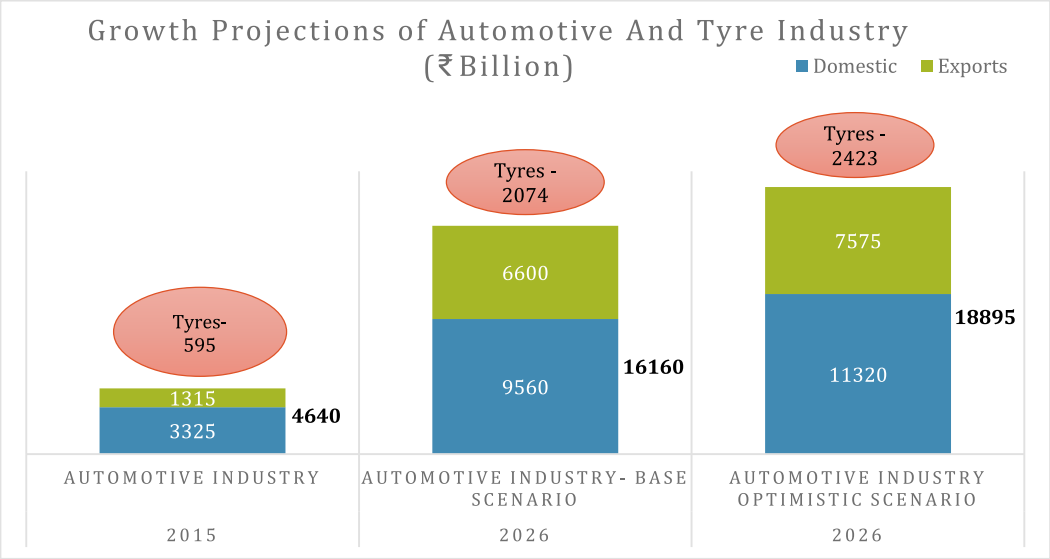
The Government of India and Indian Automotive Industry has developed a collective vision plan referred to as **"Automotive Mission Plan 2016-26 – AMP 2026".** The AMP 2026 aims to propel the Indian Automotive Industry to be the **"Engine of the Make in India Programme".**

The objective of AMP 2026 is "where the vehicles, auto components and tractor industry should reach over next ten years in terms of size, contribution to India's development, global foot print, technological maturity, competitiveness and institutional structure and capabilities". AMP 2026 has set some specific targets for the year 2026:

- 12% of the country's GDP (from 7% at present)
- 40% of manufacturing GDP
- Output of ₹16,160-18,885 billion for economic growth at the rate of 5.8-7.5%
- 65 million new jobs
- ₹7,575 billion of exports

[21] Mid-term Appraisal of 11th Five Year Plan, Planning Commission, GOI

AMP 2026 also seeks to define the trajectory of the evolution of the automotive ecosystem in India including the guide path of specific regulations and policies that govern research design, technology, testing, manufacturing, import/export, sale, use, repair and recycling of automotive vehicles, components and services. The tyre industry as an integral part of the automotive industry is set to follow the same growth trajectory and expected to reach levels of ₹2,074-2,423 billion in the next 10 years.

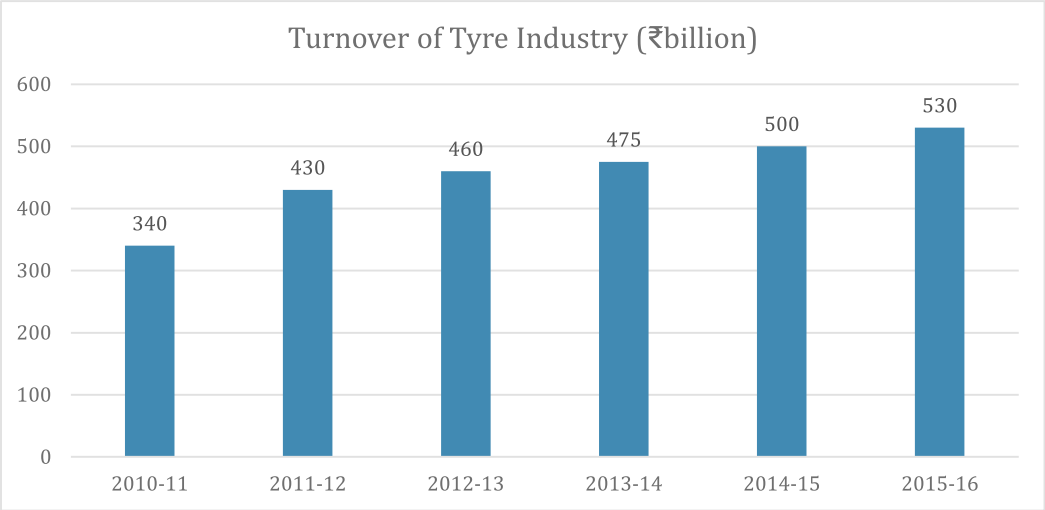


The tyre industry as the wheels of the movement needs the impetus to be economic and globally competitive and help the nation sustain its growth over 7%.

The tyre industry as an integral part of the automotive industry is expected to reach levels of ₹2,074-2,423 billion in the next 10 years.

Economic Contribution of the Tyre Industry

- Turnover has doubled in five years from ₹25,000 crore in 2009-10 to ₹53,000 crore in 2015-16 and has grown faster (9.3%) than its mother automobile industry (5.3%) in the last five years.
- Tyres are 3% of the manufacturing GDP of India and 0.5% of the entire GDP of the nation.
- The rubber and plastic industries, to which tyres are significant contributors, weigh in at 2.7% on the manufacturing index against the automotive industry's weightage of 5.4%.
- Statistical analysis of the IIP growth of the two industries shows that the tyre industry has a correlation of 0.78 with the automobile industry, implying strong linkage between the two industries.
- Private investment in the industry today stands at ₹36,000 crore, making it one of the most invested industries by private business in India.

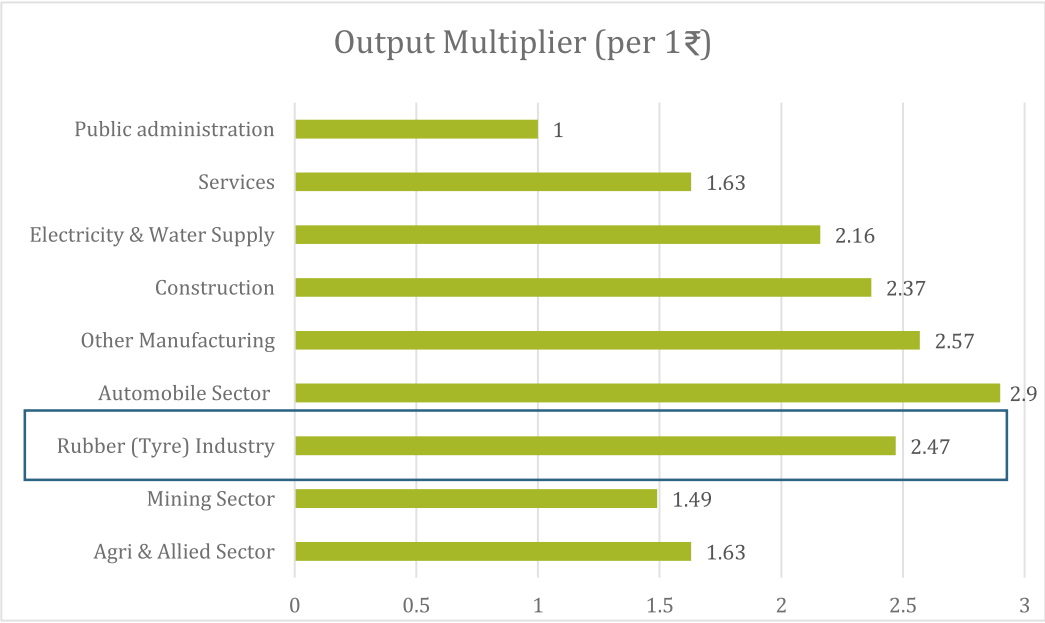


Source: Industry Estimate, ATMA

The multiplier effect of this industry on the economy is much higher due to its direct and indirect linkage with other sectors of the economy.

The multiplier effect of this industry on the economy is much higher due to its direct and indirect linkage with other sectors of the economy. The estimated output multiplier of the rubber (tyre) industry is 2.47, which means an increase of 1 in the final demand for the rubber tyres will lead to an increase of the overall output of the economy by about 2.47 times.

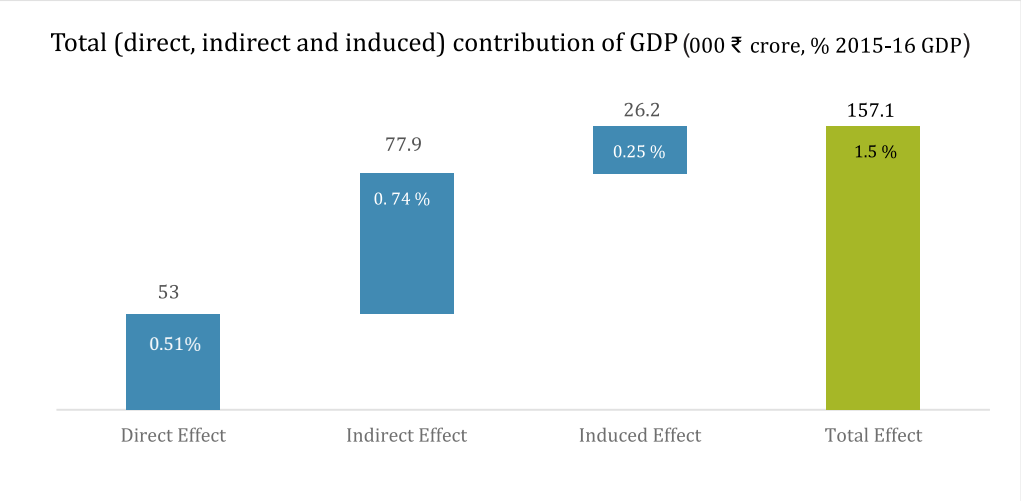
The multiplier effect, a scientific and widely used method involving the "Input-Output Table" established by Leontief, has been used based on the input-output tables of NSSO, Ministry of Statistics and Programme Implementation (MOSPI), Government of India (Refer Annexure – I for detailed methodology multiplier estimation).



Source: MOSPI, NSSO Input-Output Tables, TARI Calculations

The tyre industry directly uses inputs from the rubber plantation industry/petroleum sector and has linkages with ancillary industries, such as chemical, capital goods and packaging materials, etc. It also has other linkages with trade and services of tyre products all over the country. Hence, when the demand for products from the tyre industry rises, the demand for the products of these ancillary and other industries will go up, resulting in an indirect impact on the economy.

With increased demand, employment and income also rise which leads to rise in spending power and hence consumption, culminating in the demand for other related segments, say consumer goods. In addition, the tyre industry prompts productivity gains through the use of automobiles which in turn increases individual productivity. On the other hand, tyres, through their use in agriculture, mining, aviation, industrial and construction spawn economic productivity and efficiency. This is known as induced effect.



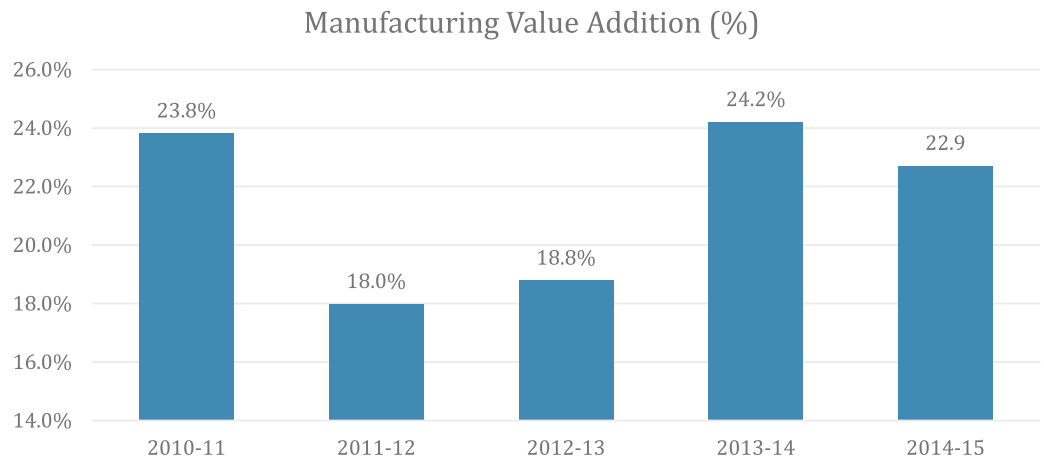
Source: MOSPI, NSSO Input-Output Tables, TARI Calculations

The total economic contribution of the tyre industry is estimated to be ₹157.1 thousand crore, which is 1.5% of the GDP when direct, indirect and induced impact are considered.

A Productive Industry for the Economy

Faster economic growth rests on high productivity activities for value addition in the manufacturing sector, which is a key factor.[22] Manufacturing value addition (MVA) is the net output of a sector and is calculated by adding all output and subtracting intermediate input from it, but without deducting depreciation of fabricated assets. It reflects the value additions that an industry makes. A higher value addition to output ratio indicates: high final usage of the industry's product and higher investment flows to the industry.

[22]Make in India. 2015. TARI and ASSOCHAM



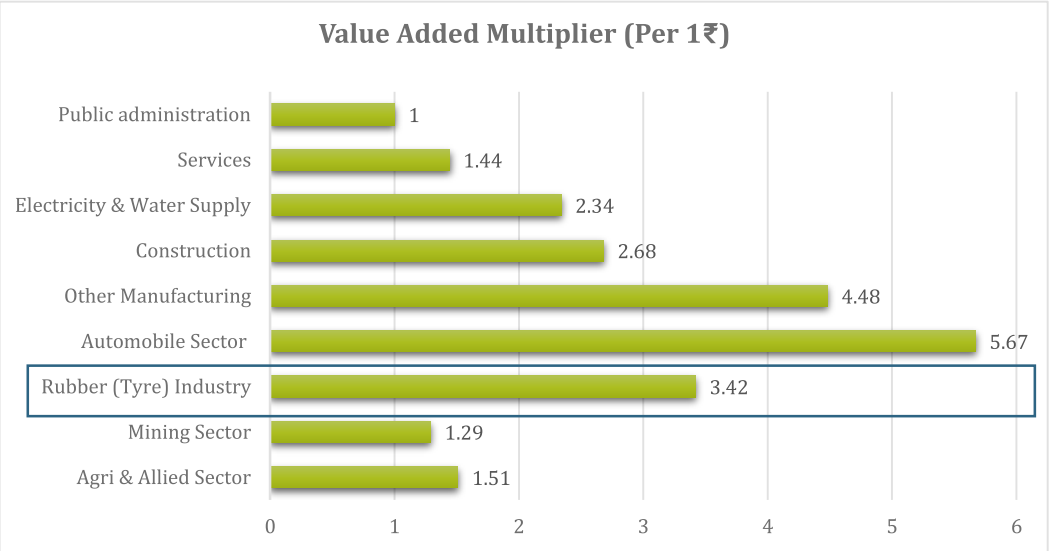
Source: Annual Survey of Industry, MOSPI

The tyre industry is one of the highly productive industries after pharmaceuticals with average MVA of 21.5% which is well above the median MVA of 14% for the manufacturing industry.

Value addition/income generation is a productivity metric which measures the relative contribution to a sector. It accounts for the amount of goods and services that have been produced, less the cost of all inputs and raw materials that are directly attributable to that production. Value added multiplier of the rubber (tyre) industry is estimated to be 3.42.[23] This means that the value added in the economy because of a ₹1 rise in demand for the rubber products (tyre industry) is almost 3.42 times.

As the tyre industry has a high MVA (21.5%) in the manufacturing sector and has a corresponding multiplier effect of 3.42, this implies that the total value addition to the economy due to increase in demand for tyres will be significant. Hence, the tyre industry requires greater attention under "Make in India" to increase contribution of the manufacturing sector to GDP.

[23]Refer Annexure – 1 for detailed methodology

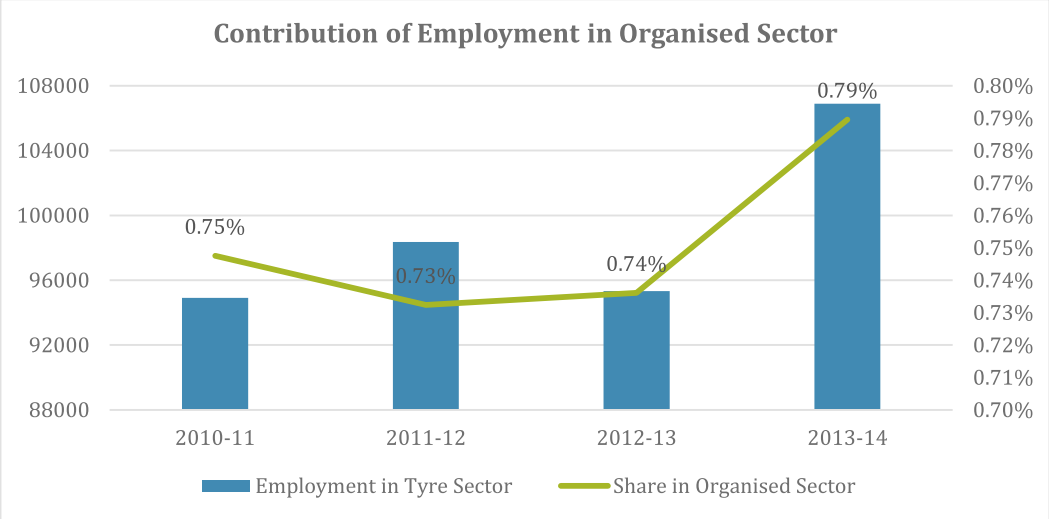


Source: MOSPI, NSSO Input-Output Tables, TARI Calculations

With the automobile industry's target to contribute 12% of the GDP from the current levels of 7% under AMP 2026, it is expected that the total economic contribution of the tyre industry will be about 5% of GDP with Government support in some key initiatives.

Contributing to Employment

The Annual Survey of Industry (ASI), MOSPI data reveals that the tyre industry provides direct employment to more than 0.15 million people, which is about 0.12 million in the organised sector. It also provides livelihood to over 1 million people such as retreaders, dealers and repairers directly and indirectly associated with this industry. The employment generated by the industry in the services such as tyre retreading, repairing, air filling, etc. when taken into account is very significant.[24]

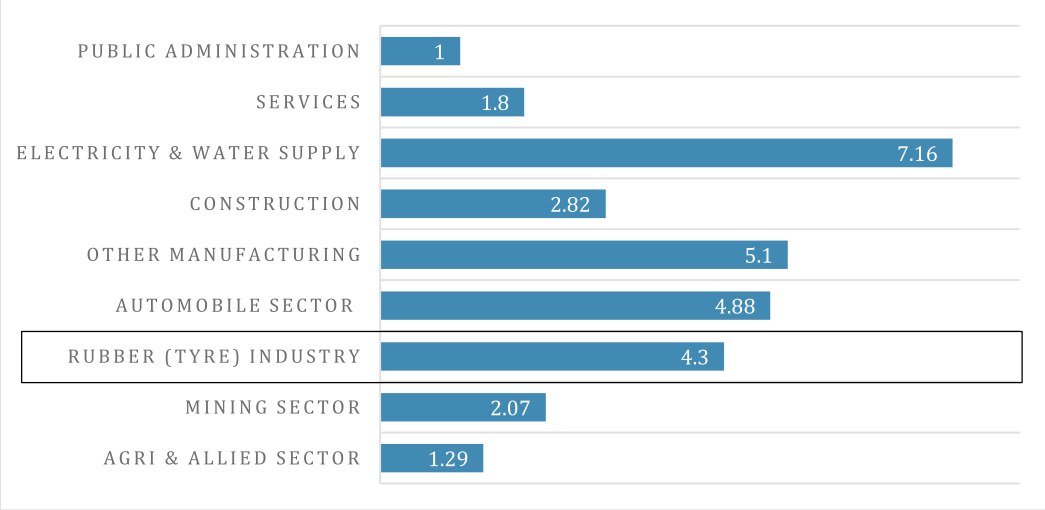


Source: Annual Survey of Industries, MOSPI

[24]RSDC Skill Gap Study: Introduction About Rubber Industry, 2013 Available at ; http://www.rsdcindia.in/kb/rsdc-skill_gap_study-Introduction%20about%20Rubber%20Industry.pdf

An employment multiplier is one of the measures used to determine the impact a particular industry will have upon a municipality when it arrives or withdraws. In its simplest terms, the employment multiplier measures the amount of direct, indirect and induced jobs created in the area.

The estimated employment multiplier of the rubber (tyre) industry based on the above methodology[25] is 4.3 which implies that total employment generated in the economy because of a rise of ₹1 in demand for the industry is roughly 4.3 times the employment created within the industry itself.



Source: MOSPI, NSSO Input-Output Tables, TARI Calculations

The estimated employment multiplier of the rubber (tyre) industry based on the above methodology is **4.3**

The total direct and indirect employment generated by the tyre industry as based on the estimated multiplier effect is about 2.8 million, which is expected to go up in 2026.

Inclusion and Linkages with Agriculture

The Indian tyre industry is integrated with agriculture and creates a viable value discovery process through both long-term and short-term price protection to small, marginal and tribal farmers and also to large farmers. The geographical spread of the natural rubber flowing into the industry from Kerala to the states in the North East of India is a unique platform for inclusive and sustainable development across India with natural linkages to local manufacturing in these areas.

India imports nearly 45% of its natural rubber consumption and any enhancement in output will greatly improve the lives of farmers across the country and create a higher value proposition for the rubber industry and growth in production and acreage in the North East States is key to such shift.[26]

[25]Refer Annexure -1 for detailed methodology
[26]RSDC Skill Gap Study: Introduction About Rubber Industry, 2013

The tyre industry consumes around two-thirds of the total Natural Rubber (NR) produced in the country involving over a million growers (farmers), a majority of them being small and marginal growers.[27]

Total Factor Productivity Growth

The growth and competitiveness of any industry depends on the efficient use of factors and resources and on technological progress. This efficiency in the use of resources apart from factors of production like machines and labour is termed as the total factor of productivity (TFP). TFP is important to increase the output and improve the industry's competitiveness in the domestic and foreign markets. Estimating TFP is important to analyse the performance of a particular industry or industries over a period of time.

The tyre industry is a technology driven industry which efficiently uses its resources and factors and the latest available technology. The technological growth of an industry reflected by TFP measures increase in output not explained by increase in total inputs. TFP is the broadest measure of productivity in manufacturing and efficiency in resource use. It decomposes change in production due to changes in inputs and other factors like technology, capacity utilisation, quality of inputs, etc. TFP growth rate is output growth rate minus input growth rate.

The TFP growth of the tyre (rubber and plastic) industry in 2000-2008 is positive and more than the industry median. The tyre industry is driven by innovation to meet the consumers' demand for safety, performance, quality and environment friendly tyres. The industry has invested 1-2% of the revenues into innovation and technology upgradation, which provided the needed impetus in creating R&D capabilities in a short span of time to create superior products that meet global quality standards. The industry has invested in adopting ways to produce innovative products such as tubeless tyres, environmental friendly tyres, greenfield tyres and anti-puncture tyres. India is one of the few countries worldwide which has attained self-sufficiency in manufacturing a wide range of tyres for all applications.[28]

The industry has invested 1-2% of the revenues into innovation

Total Factor Productivity (TFP) Rate using a Gross Output Framework: 1980-2008

Industry Description	GVO Growth	TFPG (1980-2008)	TFPG (2000-2008)
Rubber & Plastic Products	9.45	–0.23	0.88
Transport Equipment	7.86	0.42	1.72
Industry Median	6.85	0.33	0.63

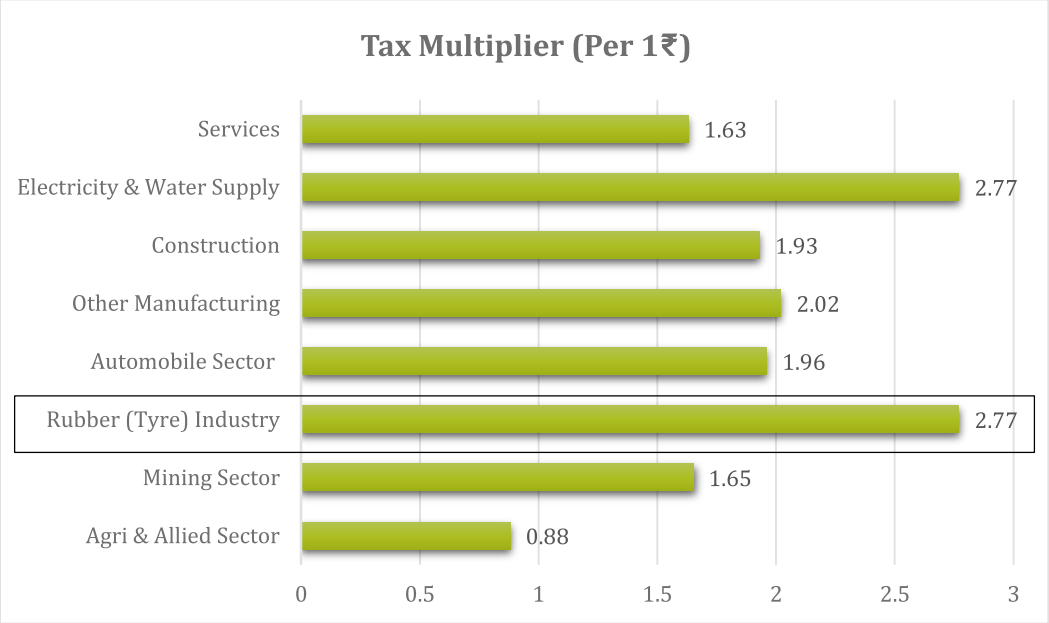
Source: Report on Estimates of Productivity Growth for the Indian Economy 2014, RBI[29]

The tyre industry is among the few industries that have shown significant improvement in productivity in the past and will continue to show in the coming years.

[27]RSDC Skill Gap Study: Introduction About Rubber Industry, 2013
[28]DIPP Annual Report 2016-17, page 77
[29]TFP growth taken from KLEMS project done by ICRIER & the RBI based on gross output methodology

High Tax Multiplier Effect

The tax multiplier can be defined as the ratio of total (direct and indirect) change in indirect taxes as a result of a ₹1 change in demand of a sector. Direct taxes are levied on individuals and entities and are, therefore, not relevant in this context.



Source: MOSPI, NSSO Input-Output Tables, TARI Calculations

Tax multiplier of the rubber products (tyre) industry per the methodology based on Government of India's NSSO input-output tables is 2.77 which implies that rise in indirect tax collections generated in the economy because of rise in demand for the rubber products (tyre industry) is 2.77 times for every rupee for the sale of tyres in India. This is one of the highest among all manufacturing sectors, i.e. automobile industry stands at 1.96 and other manufacturing industries at 2.02.

A high tax multiplier of rubber (tyre) industry corroborates that it is crucial for the Government from the tax collection perspective and has high proportion of taxes in the inputs, e.g. rubber, petroleum.

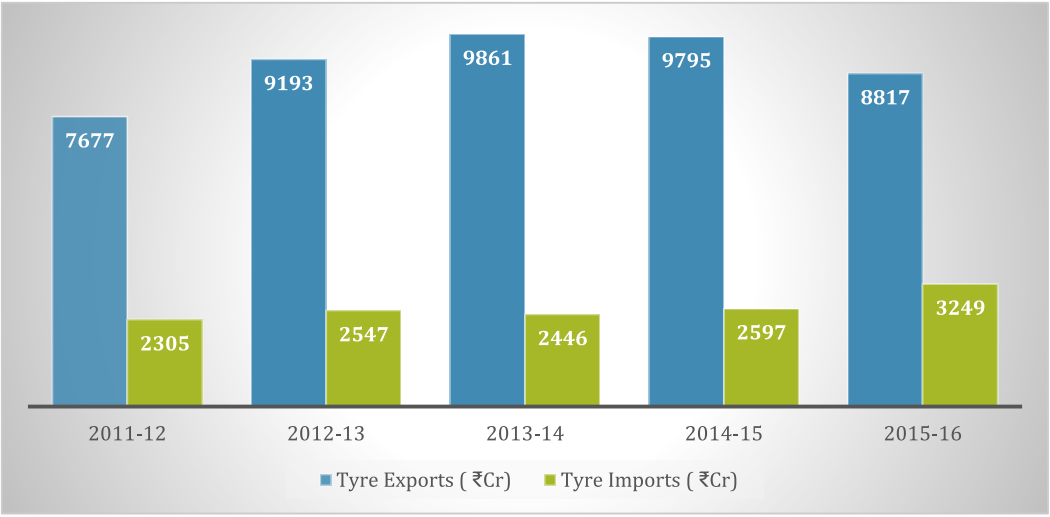
The tyre industry exports about 9-10% of its total production to over 100 countries

India's contribution to the global tyre trade is $1.5 billion (1.72%) out of a $80 billion market

Contributing to Foreign Earnings

The tyre industry exports about 9-10% of its total production to over 100 countries and contributes about 0.53% of the country's total exports with average net foreign earnings for the last five years being about $ 1.0 billion.

Currently, India's contribution to the global tyre trade is $1.5 billion (1.72%) out of a $80 billion market. Given the fact the industry is highly competitive, there is headroom for tyre exports from India, where it can increase its share to 4-5% when adequately supported.



Source: DGCIS data

Increasing the export competitiveness of this industry has the ability to provide a significant amount of foreign earnings to the country that will help Government to maintain its current account deficit.

Key Highlights

- Turnover has doubled in five years from ₹25,000 Cr in 2009-10 to ₹53,000 Cr in 2015-16.
- Tyres are 3% of the manufacturing GDP of India and 0.5% of the entire GDP of the nation.
- The total economic contribution of the tyre industry is estimated to be ₹15,710 crore which is about 1.5% of the GDP when its direct, indirect and induced impacts are considered.
- The tyre industry is one of the highly productive industries after pharmaceuticals with an average MVA of 21.5%, which is well above the median MVA of 14% for the manufacturing industry.
- The total direct and indirect employment generated by the tyre industry is based on the estimated multiplier effect, which is about 2.8 million.
- The tyre industry is technology driven with its TFP growth being more than the industry median.
- Tax multiplier of rubber products (tyres) is 2.77 times, which is one of the highest among all manufacturing sectors.
- Tyres have 0.53% share of the country's total exports and contribute on average net foreign earnings of $1.0 billion.

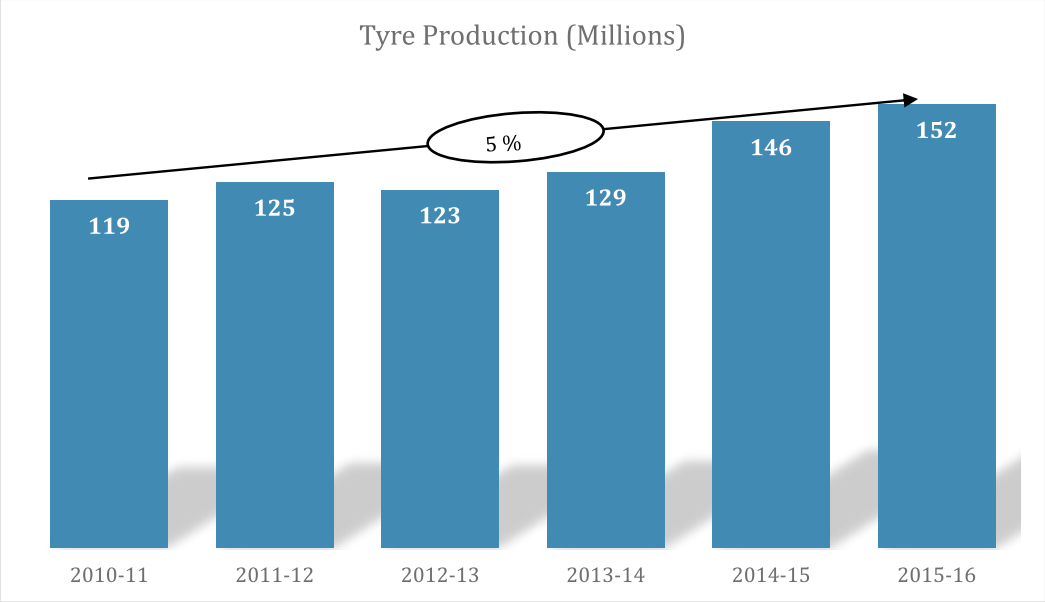
Dynamics of the Tyre Industry

II. Dynamics of the Tyre Industry

Composition of the Tyre Industry

Tyre production in India has grown significantly and it has more than doubled in the last 10 years. It has increased from 73.5 million tyres in 2006-07 to 152 million tyres in 2015-16. Almost all categories of tyres are produced by the industry with two and three-wheeler tyre categories dominating the industry's volume over a period of time.

Tyres in India are produced by 41 medium and large tyre companies in 62 plants around the country. The top 10 tyre manufacturing companies produce 90% of the tyres in India. The top three companies: MRF, Apollo Tyres and JK Tyres have 60% of the market share of the Indian tyre industry and figure among the top 25 global companies in terms of revenue. [30]



Source: ATMA and TARI Estimates

Tyre production in India has grown significantly and it has more than doubled in the last 10 years. It has increased from 73.5 million tyres in 2006-07 to 152 million tyres in 2015-16.

Tyre Market Segmentation

New tyres and retreaded tyres are the two primary segments of the tyre market with new tyres being approximately 92%. The market is organised between a number of large and medium players supplemented by a large number of cheap and at times illegal imports.

The retreaded/used tyres segment in India is still in a very nascent stage and is highly unorganised. The share of organised players is 20-30%, while small retreaders enjoy the majority share in the business. The current size of the Indian retreading business is estimated at ₹5,000 crore.

[30] Sector Update: Tyre Sector, ICICI Securities Ltd.

The tyre industry may be further segmented into the following three categories:

Based on Product Categories

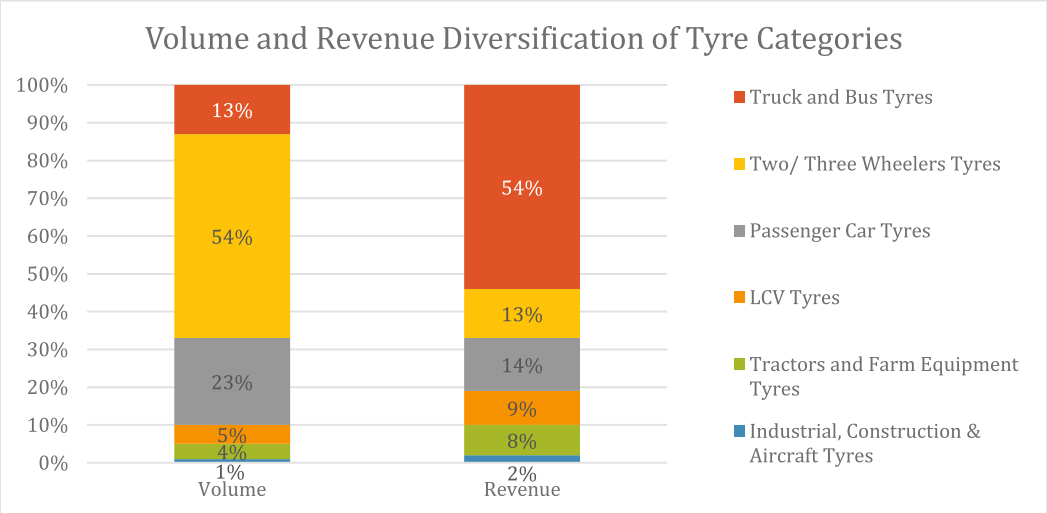
Based on Supplies

Based on Technology

Based on Product Categories

The industry can be segmented into seven broad categories based on the tyres produced for various types of vehicles. In terms of volume, two/three-wheeler tyres account for more than half the production but contribute only 13% of the industry revenues. The high share of two/three wheelers in the tyre market corresponds to the high production of two/three wheelers in the automobile industry.

The truck and bus tyre segment contributes approximately 13% to the total tyre production.However, as far as revenue is concerned, it has the highest revenue share of the industry at 54%.



Source: ATMA, Industry and TARI Estimates

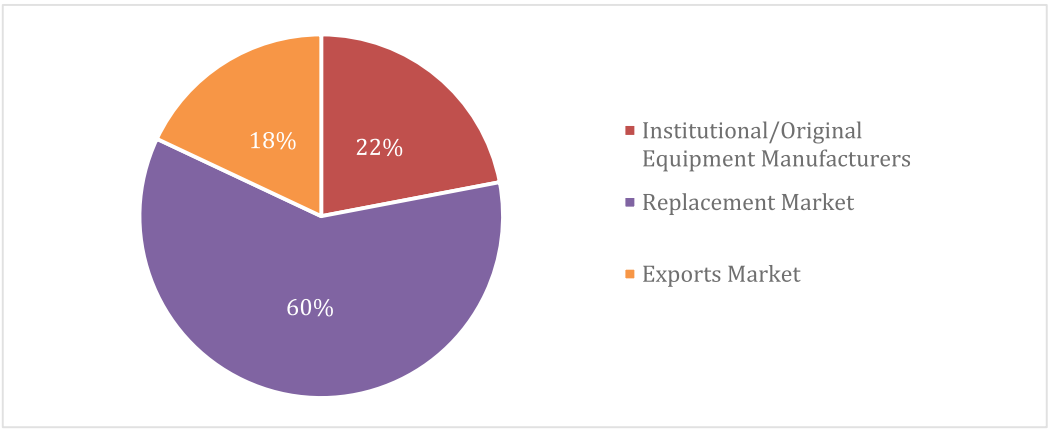
The truck and bus tyre segment contributes approximately 13% to the total tyre production.However, as far as revenue is concerned, it has the highest revenue share of the industry at 54%.

The passenger car segment at 14% in terms of revenue has the second highest share in tyre production in India. This segment is showing an increasing trend both in numbers and revenue. Tractor and LCV segments' total volume share stands at approximately 9% and this has almost doubled in revenue terms.[31]

[31]ATMA Indian Tyre Industry An Overview 2015-16

Based on the Supplies

The tyre industry based on supplies consists of three distinct markets, namely, institutional/original equipment manufacturers (OEMs), replacement and exports. By value, replacement accounts for nearly three-fifths of the market and institutional/OEM and exports make up the rest. On an overall basis, demand from the replacement segment always dominates the Indian tyre market contributing approximately 68% of demand in terms of tonnage and 60% in terms of value. The major reason for the high replacement share is due to the fact that the number of registered vehicles/annual sales ratio is 1:10. There are about 20.3 crore registered vehicles vis-à-vis approximately 2.1 crore annual vehicle sales.[32]

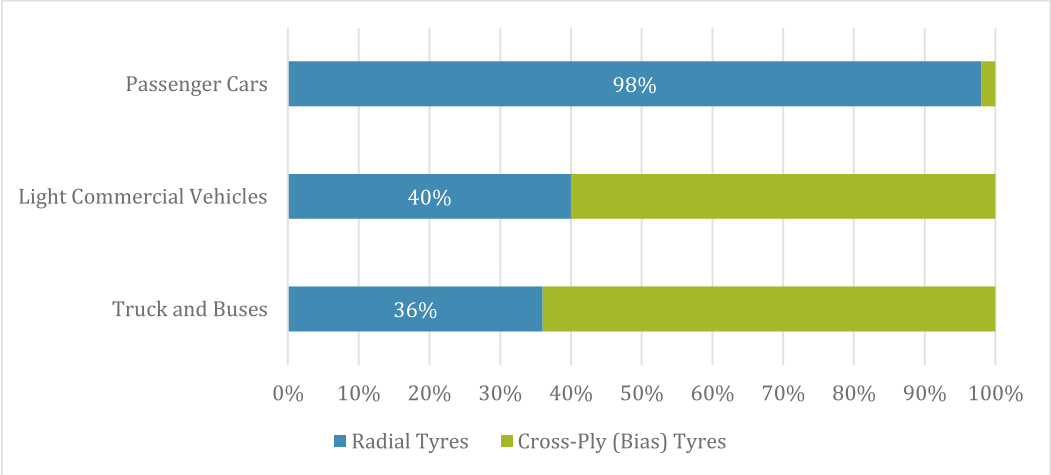


Source: Industry, ATMA, and TARI Estimates

Demand from the replacement segment always dominates the Indian tyre market contributing approximately 68% of demand in terms of tonnage and 60% in terms of value.

Based on Technology

Tyres are classified as cross-ply (bias) and radial based on the technology deployed in their manufacture. In India, the commercial tyre segment continues to be dominated by cross-ply tyres due to road conditions, loading patterns and the high initial cost of radials. Currently, radialisation is highest in passenger cars (98%) followed by light commercial vehicles (40%) and heavy commercial vehicles (36%).[33]

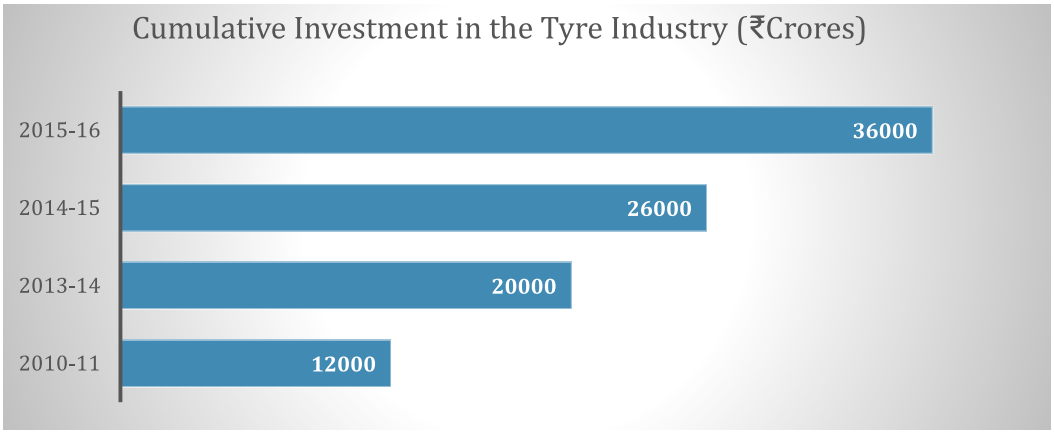


Source: Industry, ATMA and Authors' Estimates

[32]Tyre Sector Update, ICICI Securities Ltd, December 2014
[33]Indian Tyre Industry: An Overview, FY 2015-16, ATMA

Dynamics of the Tyre Industry: Key Characteristics

The tyre industry is a capital intensive industry, where a comparatively heavy investment is necessary for creating capacity. Investments in completed, greenfield and major expansion projects have grown sharply at the rate of 25% to reach the levels of ₹36,000 crore in 2015-16 from ₹12,000 crore in 2010-11.

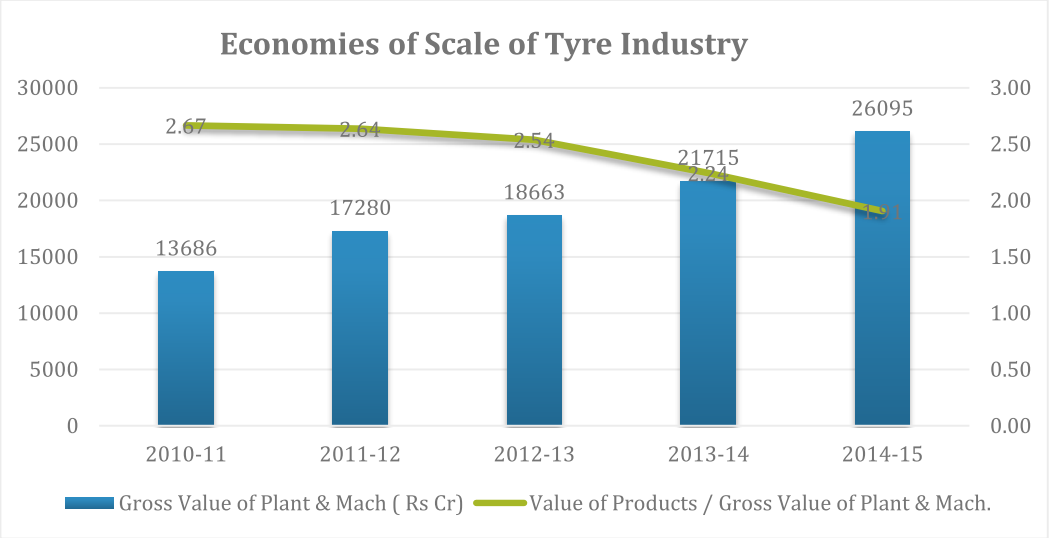


Source: ATMA, Industry Estimates

In an investment driven industry such as tyres, where the advantages of scale are paramount for being competitive, incentives to boost production capacity come into play. The asset base is a key differentiating factor with regard to margins of the tyre company. Production costs are very sensitive to the size of the production facility. The Gross Value of Plant and Machinery is a good indicator of economies of scale of the tyre industry. The ASI data reflects that the industry has invested significantly in its plant and machinery to increase its production capacity and achieve economies of scale.

The industry has completed five projects in 2016-17, which are expected to add an incremental capacity of 13.7 million units. In the next two years, i.e. by 2018-19, the industry is expected to complete projects valued at ₹7,000 crore that will add another 12 million unit capacity. [34]

[34]Tyre Industry: Wheeling Around. CARE Ratings, Industry Research. April 11th 2017.



Source: Annual Survey of Industry, MOSPI, Authors' Calculation

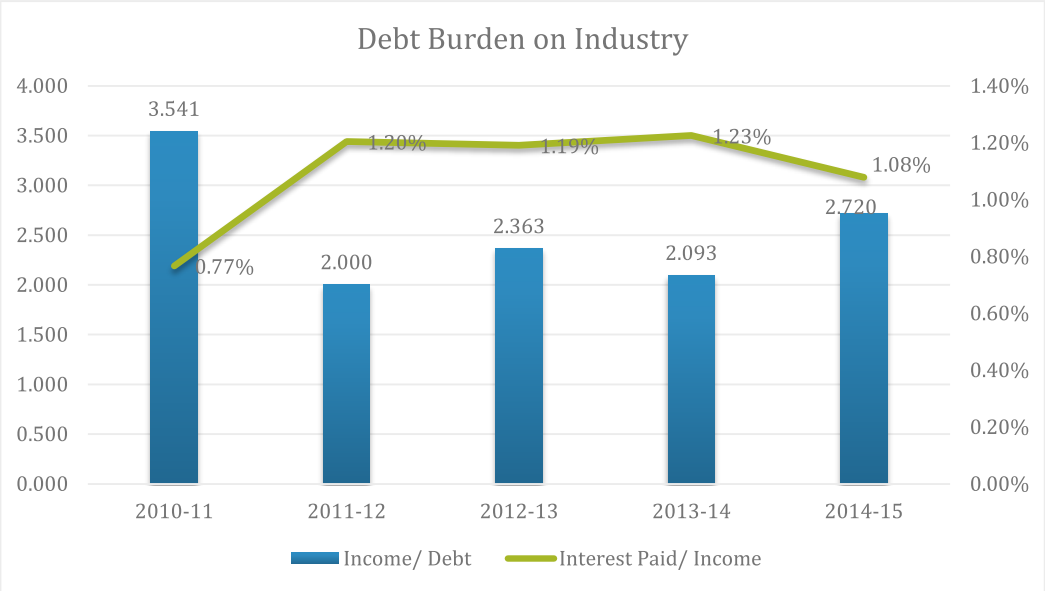
Value of Products to Gross Value of Plant and Machinery is an indicator of how efficiently industry is utilising its installed capacity. Capacity utilisation of installed capacity brings greater efficiency in operation and has a positive impact with greater price realisation. The ASI data shows asset utilisation by the industry is coming down over the years as the new installed capacity is not utilised to the maximum.

Going forward, the increased capex will put pressure on the utilisation levels and hamper the operational margins of the players. The industry operates currently at 60-70% of utilisation, which is expected to fall as additional facilities are added in 2016-17, hence the impetus for demand is critical for sustaining the industry.

The industry, due to such significant capex in the greenfield projects, has an aggregate debt to levels of ₹8,030 crore in 2015-16.[35] The ASI data also shows that the income/debt ratio and interest/income ratio of the industry is coming down, signifying significant capital infusion made by private players during this period. A high cost of capital with challenges to utilise capacity effectively will put industry margins under severe pressure.

The industry operates currently at 60-70% of utilisation, which is expected to fall as additional facilities are added in 2016-17, hence the impetus for demand is critical for sustaining the industry.

[35]Tyre Industry: Wheeling Around. CARE Ratings, Industry Research. April 11th 2017.



Source: Annual Survey of Industry, MOSPI, Authors' Calculation

A comparative assessment of real effective interest (RER) in 2015 shows that India's RER is high (8.8) compared to countries such as China (4.8), Korea (1.3), Thailand (6.3), Vietnam (7.3) and Indonesia (8.1), which may affect its export market competitiveness in the long term.

Source: World Bank database

The tyre industry has invested heavily to increase its tyre production capacity. However, high debt and cost of capital is putting pressure on the competitiveness of the industry. The industry will benefit in the long term with better capacity utilisation of installed manufacturing facilities.

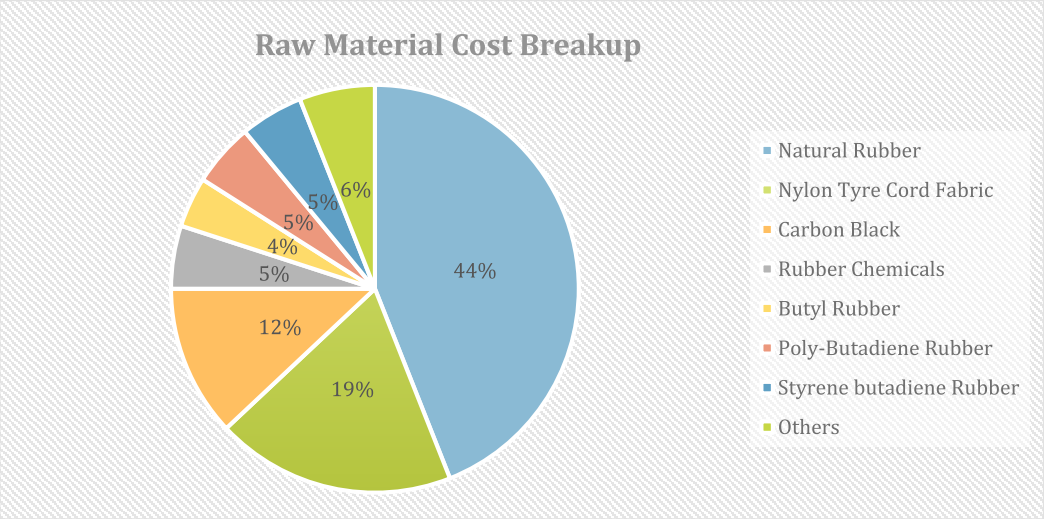
The tyre industry is a raw material intensive industry. Raw material accounts for 65-70% of the total cost. Efficiency in utilisation of raw material to a certain extent affects the variable cost efficiency and competitiveness of the domestic tyre industry.

Inputs	2010-11	2011-12	2012-13	2013-14	2014-15
Material Consumed	65.9%	70.6%	69.9%	63.3%	61.1%
Fuels	4.4%	4.1%	4.3%	4.5%	4.3%
Labour and Other Inputs	5.9%	7.4%	6.9%	8.0%	11.6%
Total Input	76.2%	82.0%	81.2%	75.8%	77.1%

Source: Annual Survey of Industry, MOSPI, Authors' Calculation

[35]Tyre Industry: Wheeling Around. CARE Ratings, Industry Research. April 11th 2017.

The chart below shows the composition of raw material as a percentage of the total raw material cost. Natural rubber and synthetic rubber are the cost drivers of the industry. As these products are largely reliant on imports, the inverted duty structure and international price volatility affect the operational efficiency of the industry. The Department of Industrial Policy and Promotion (DIPP) of the Ministry of Commerce studied the inverted duty structure on radial tyres but no action was taken. [36]



Source: ATMA, TARI Estimates

The tyre industry is largely dependent on natural rubber; synthetic rubber and crude derivatives are largely imported and heavily taxed, which reduces the export competitiveness of the industry.

Key Highlights

- Tyre production in India has doubled from 73.5 million tyres in 2006-07 to 152 million tyres in 2015-16 with two/three wheeler tyres dominating volumes.
- The industry has 41 players, but 10 tyre manufacturing companies produce 90% of the tyres.
- The replacement tyre market drives 60% of the demand for the tyre industry, while OEMS has 22% share.
- The truck/bus segment contributes more than 50% of industry revenues and has significant scope for radialisation. The passenger car segment is almost radialised and its share in volume and revenue is increasing with the growth of the car market.
- The industry has made significant investment in capacity creation that has grown sharply at the rate of 25% to reach the levels of ₹36,000 crore in 2015-16.
- High debt levels and lack of capacity utilisation is putting pressure on the tyre industry in the near term.
- The tyre industry is raw material intensive with both natural rubber and synthetic rubber having large import dependence, where the inverted duty structure (higher imports tariffs on natural rubber than tyres) affects competitiveness of industry.

[36] DIPP Annual Report 2016-17, Report No 20, page 121

Global Marketplace for the Tyre Industry:

Benchmark Countries Analysis

III. Global Marketplace for the Tyre Industry: Benchmark Countries Analysis

Global Trade of Tyres: India's Position

India is currently a marginal player in the global trade of tyres but has significant competitive and comparative advantages, which, with the right policy impetus, can make it a major global player, especially when the manufacturing base and future usage will shift to the east.

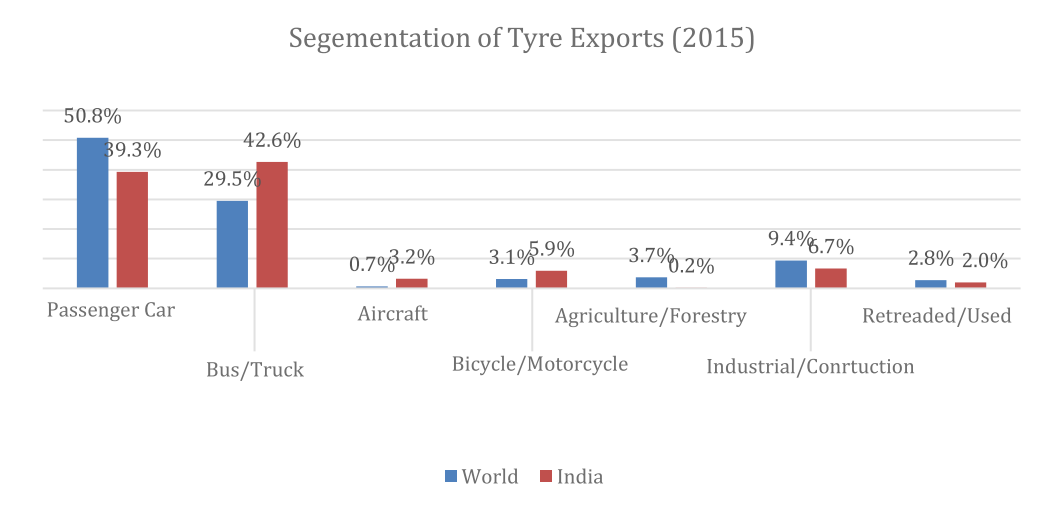
India's Position in the Global Trade of Tyres

Year	New Tyres			Used/Retreaded Tyres			Total Tyres		
	World US $ Bn	India US $ Bn	India's Share (%)	World US $ Bn	India US $ Bn	India's Share (%)	World US $ Bn	India US $ Bn	India's Share (%)
2013	84.95	1.392	1.64%	2.92	0.041	1.39%	87.87	1.43	1.63%
2014	82.59	1.481	1.79%	2.84	0.050	1.75%	85.43	1.53	1.79%
2015	72.20	1.270	1.76%	2.41	0.036	1.49%	74.60	1.31	1.75%

Source: UN Comtrade

Segment Analysis of Global Tyre Trade

Passenger cars account for more than 50% of global trade. Three segments: cars, buses/trucks and industrial/construction tyres together constitute about 90% of the world tyre trade. India's tyre exports in these segments is in line with world exports and constitute 89% of the total tyre exports.[37]



Source: UN Comtrade

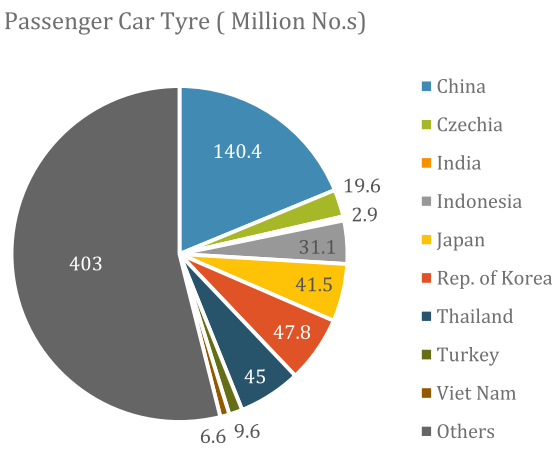
[37]HS Code 2012 for selected tyre categories for which data is retrieved from UN Comtrade database is given in Annexure -II

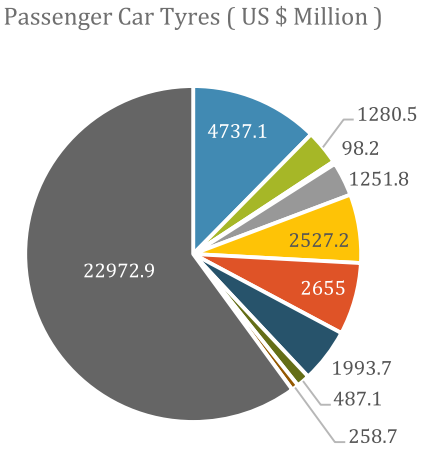
Global Tyre Trade: Analysis of the Benchmark Countries

We have analysed India's tyre trade under various segments and benchmarked it against eight other comparable countries. This provides an insight into how India is performing in comparison to its competitors in the global tyre trade. Detailed tables in each segment are given in annexure–II for reference.

Passenger Car Tyres

Benchmark countries' average contribution to global trade of passenger car tyres is 41% in terms of value and 45.9% in terms of number. China is a major contributor with about 13.8% of the world exports and 30% of the benchmark countries' exports. Republic of Korea (6.9%), Japan (6.6%) and Thailand (5.2%) are major car tyre exporting countries.





Source: UN Comtrade

India's position in car tyres exports is dismal with just 0.27% contribution. It is even lower than countries like Czechia and Vietnam. India needs to improve its share in this segment as this is the most important segment with more than 50% of the global tyre trade.

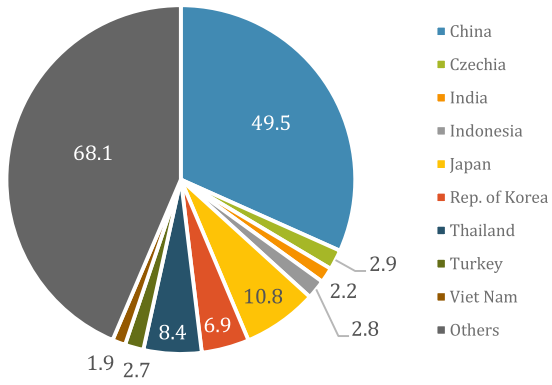
Bus/Truck Tyres

Benchmark countries' contribution to the global trade of bus/truck tyres is about 50% in terms of value and 54% in terms of number. China dominates the global trade with 25% share of the bus/truck tyre imports from other countries. It has about 52% share of imports from the benchmark countries. Based on 2015 data, Japan (7.6%), Thailand (5.3%) and Republic of Korea (4.2%) are other major countries among the benchmark countries.

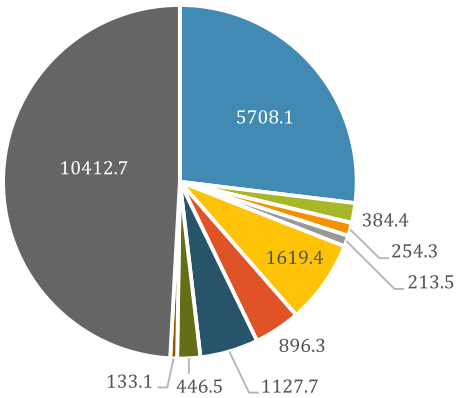
[37]HS Code 2012 for selected tyre categories for which data is retrieved from UN Comtrade database is given in Annexure -II

Benchmark Country Performance-2015

Bus/Truck Tyre Exports (Million No.s)



Bus/Truck Tyre Exports (US $Million)



Source: UN Comtrade database

India's share is only 1.2% in the global bus/truck tyre trade and effort should be made to increase the share as the segment contributes about 30% of the global tyre trade.

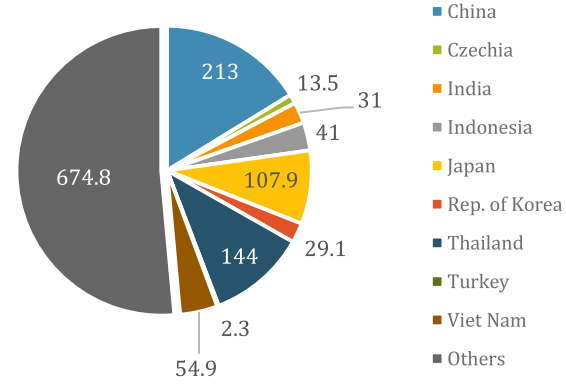
Motorcycle and Bicycle Tyres

Motorcycle and bicycle tyres have significant volume in numbers but contribute only 1.8% and 1.3% respectively of the global tyre exports in value terms. Benchmark countries' contribution to world export of motorcycle tyres is 64% in value as compared to 46% in numbers, which suggests that the benchmark countries are a source of cheap imports. China (16.2%), Thailand (11%) and Japan (8.2%) are notable motorcycle exporting countries.

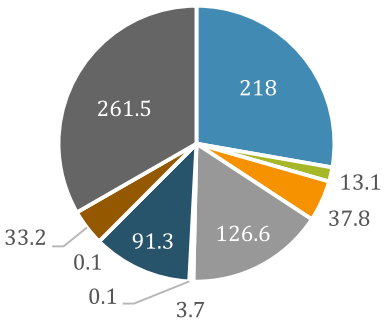
Benchmark countries are exports drivers of bicycle tyres and contribute more than two-thirds in value terms and three-fourths in volume terms. China dominates this segment having 43% share in number terms and 28% in value terms. Indonesia (16.1%) and Thailand (11.6%) are other major players in this segment.

Benchmark Country Performance-2015

Motorcycle Tyre Exports (US $ Million)



Bicycle Tyre Exports (US $ Million)

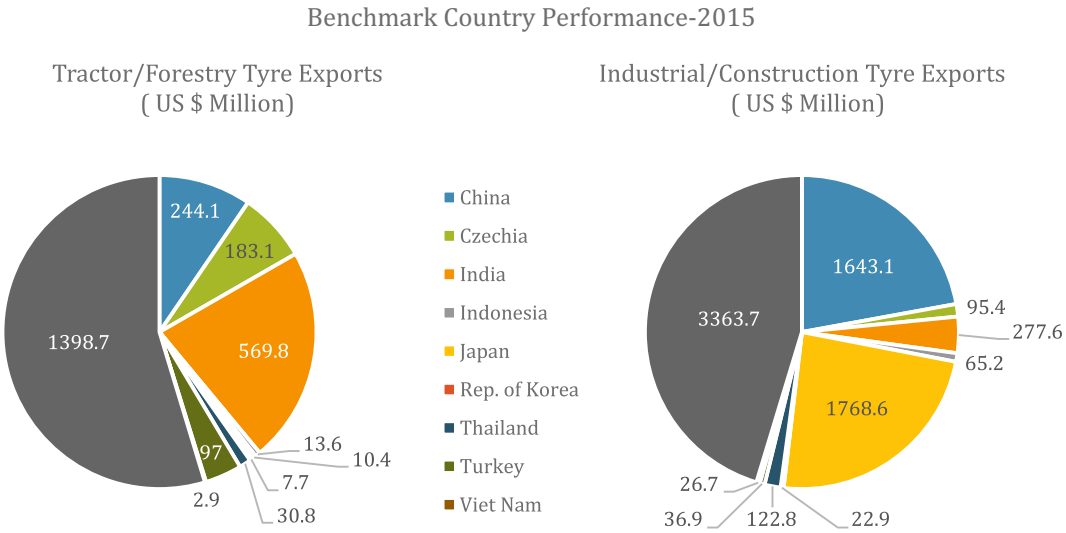


Source: UN Comtrade database

India has 2.36% share in motorcycle tyres and 4.8% in bicycle tyres. Two/three wheeler tyres have the highest production capacity in India and concentrated efforts can strengthen the country's position in the export market.

Tractor/Forestry and Industrial/Construction Tyres

Global export of tractor/forestry tyres is over 2.5 $ bn. Benchmark countries' contribution has been consistently increasing in this segment and holds a share of 45.3%. India is one of the key players in this segment and contributes about 23% of the world exports as the largest producer of tractors in the world. China is also a key player with about 9.5% share in world exports.



Source: UN Comtrade database

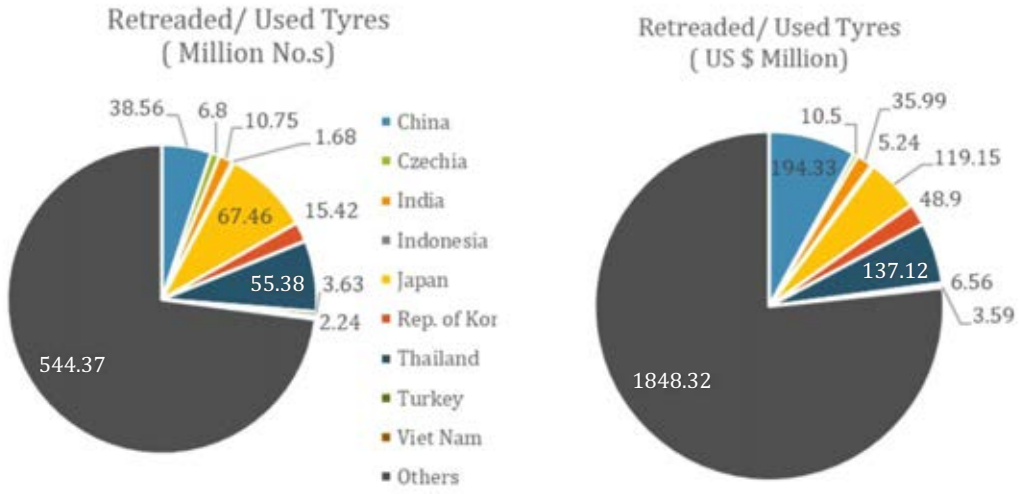
Industrial and construction tyres are the third largest segment of the global tyre trade with a value of more than 7 $ bn. Benchmark countries dominate this segment as they have a 55% share. Japan (23.8%) and China (22.1%) are the two main players in this segment. India's share in this segment is 3.74%.

Sustained efforts can make India a global hub for agricultural/forestry tyres and further boost its share in the export market of this segment.

Retreaded/Used Tyres

The global exports of retreaded/used tyres are more than 2.5 $ bn and showing a declining trend. This segment has a share of 2.77% in the global tyre exports. Benchmark countries contribute about 24% in global trade of retreaded/used tyres. China (8%), Thailand (5.7%) and Japan (5%) are key players among benchmark countries in this segment. India has a share of the pie of 1.5% in total retreaded/used tyres exports.

Benchmark Country Performance-2015



Source: UN Comtrade database

Key Highlights

- Global tyre trade is over $80 billion in which India's contribution is about $1.5 billion (1.72%).
- Passenger cars, bus/trucks and industrial/construction tyres constitute about 90% of the global tyre trade.
- India's position in car tyres exports is dismal with just 0.27% contribution and the country needs to improve its share as this segment accounts for more than 50% of the global tyre trade.
- Benchmark countries' contribution to global trade of bus/truck tyres is about 50% in terms of value and 54% in terms of number, where China has 25% share.
- India's contribution is only 1.2% in the global trade of bus/truck tyres that accounts for nearly 30% of the global tyre trade.
- India has 2.36% share in export of motorcycle tyres and 4.8% of bicycle tyres.
- India being a leader in the manufacture of tractors, has the highest share of 23% in the agricultural/forestry tyre exports.
- India has 3.74% in the industrial/construction tyres segment, which has the third largest share (9.4%) in the global tyre trade.

Key Determinants of Competitiveness in the International Market

IV. Key Determinants of Competitiveness in the International Market

Key determinants affecting the competitiveness of the Indian tyre industry in the international trade are given below. A benchmark analysis of India with other comparable countries is done on these key determinants to analyse how India is positioned against them.

- Revealed Comparative Advantage
- Price Competitiveness in the Global Marketplace
- Natural Rubber Availability and Price Competitiveness
- Protection of Domestic Market: Tariff and Non-Tariff Barriers
- Access to Export Markets: Trade Agreements with Preferential Tariffs
- Labour Cost Competitiveness
- Ease of Doing Business Across Borders
- Trade Agreements and Access to Markets
- Real Effective Exchange Rate
- Corporate Income Tax and Incentives

Revealed Comparative Advantage

Export competitiveness and tradability is one of the key factors as it provides a source of unconstrained demand for the growth of an industry for which Revealed Comparative Advantage (RCA) is a key indicator. RCA as a measure reflects the success of the exporting country relative to the world-wide norm.

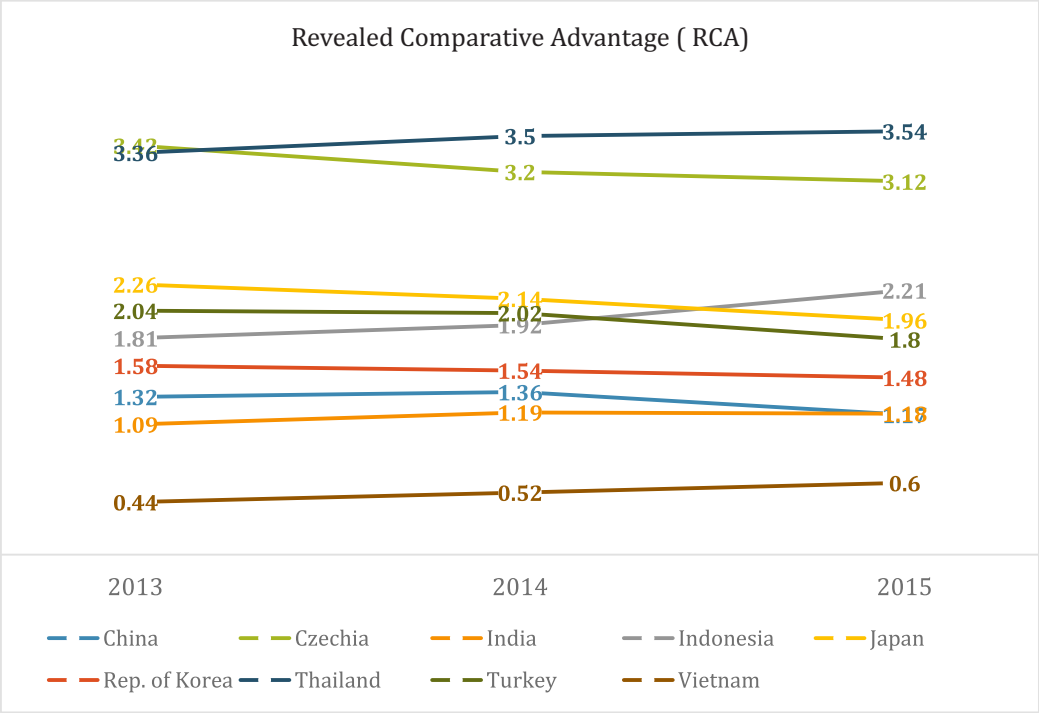
The RCA index of a country A for its product B can be measured as:

$$RCA_{AB} = (X_{AB}/W_{WB}) / (X_{AT}/W_{WT})$$

Where XAB and WWB are the values of country A exports of product B and world exports of product B, and where and XAT and WWT are the country's total exports and world total exports respectively.

RCA measure is used to assess a country's export potential. The RCA indicates whether a country is in the process of extending the products in which it has a trade potential, as opposed to situations in which the number of products that can be competitively exported is static. [38] A country reveals comparative advantages in products for which this indicator is higher than 1, showing that its exports of these products are more than expected on the basis of its importance in total exports of the reference area. It shows that the country has developed specialisation in that product and there is good potential for trade prospects with new partners.

[38] http://wits.worldbank.org/wits/wits/witshelp/Content/Utilities/e1.trade_indicators.htm



Source: UN Comtrade, TARI estimations

Thailand, Czechia, Indonesia, Korea, Turkey and Japan have higher RCA than India which gives them a relative advantage in comparison to India in tyre exports.

Price Competitiveness in the Global Marketplace

International export price of tyres (US$ per unit) is a key factor that determines how the tyres compete in the international trade and with domestically manufactured tyres of the importing countries. Low price per unit (US$) along with zero duty due to FTA/RTA significantly increases the price competitiveness of the exported tyres of a country.

China has the lowest average price per unit for the passenger cars (a segment which has a share of 50% in the global tyre trade). Due to its price competitiveness, China dominates the passenger car segment and supplies about 19% of the tyres by volume. Indonesia and Vietnam are the most competitive in the bus/truck tyre segment that has a share of 30% in the global tyre trade.

China dominates the passenger car segment and supplies about 19% of the tyres by volume.

Price Competitiveness of Benchmark Countries (US$ Per Unit)				
Country	**Cars**	**Bus /Truck**	**Motorcycle**	**Bicycle**
China	33.7	115.3	12.2	2.7
Czechia	65.3	134	29.2	4.0
India	33.8	117.8	19	3.4
Indonesia	40.2	76.3	18.5	4.9
Japan	60.8	150.5	38.1	8.2
Rep. of Korea	55.6	130.1	36.1	5.9
Thailand	44.3	134.7	19.9	4.8
Turkey	50.9	167.5	11.5	2.1
Viet Nam	39.1	70.2	8.9	3.0
Bench. Coun.	**44.4**	**122.7**	**16.3**	**3.4**
World	**51.2**	**135.8**	**22.2**	**4.0**

Source: UN Comtrade, Authors' calculations

India is at par with other benchmark countries in terms of the price competitiveness but its share in global trade is quite less as Indian tyres imported by other countries attract general import tariff in the absence of any significant FTA/RTAs – which are seen to attract lower tariff rates in other countries. Hence it is imperative to stimulate exports through trade agreements, investments intervention, pricing of inputs, etc. for growth and creating livelihood.

Natural rubber is the primary raw material in the production process of tyres and takes up 44% of the total raw material cost.

Natural Rubber Availability and Price Competitiveness

The tyre industry is raw material intensive as the raw material accounts for nearly more than half of the production cost. Natural rubber is the primary raw material in the production process of tyres and takes up 44% of the total raw material cost. Therefore, it is imperative for the tyre industry's competitiveness that good quality natural rubber is available to it at reasonable competitive prices. The Department of Industrial Policy and Promotion (DIPP) of the Ministry of Commerce studied the inverted duty structure on radial tyres but no action was taken.[39]

Major Producers of Natural Rubber (million kg)								
Year	World	Thailand	Indonesia	China	Malaysia	India	Vietnam	Total
2011	11,239	31.8%	26.6%	6.5%	8.9%	7.9%	7.0%	88.7%
2012	11,658	33.6%	25.8%	6.9%	7.9%	7.9%	7.5%	89.7%
2013	12,281	37.1%	26.4%	7.0%	6.7%	6.5%	7.7%	91.4%
2014	12,136	38.5%	26.0%	6.9%	5.5%	5.8%	7.9%	90.5%
2015	12,278	39.8%	25.6%	6.5%	5.9%	4.7%	8.3%	90.7%

Source: Rubber Research Institute, Rubber Authority of Thailand[40], Vietnam Rubber Association[41]

[39]DIPP Annual Report 2016-17, Report No 20, page 121
[40]http://www.thainr.com/uploadfile/20170405142037.pdf
[41]http://www.vra.com.vn/thong-tin/statistics-in-general.html

The ease of availability of raw material in South East Asian countries such as Thailand and Indonesia reduces import dependency and provides enabling conditions for the tyre industry in these countries. Even though China and India are among the top countries in natural rubber production, they still depend heavily upon imports to meet the demands of the tyre industry. China here has an advantage over India, having integrated with the ASEAN market. India also has a trade agreement with ASEAN, but natural rubber is under the negative list, which poses a challenge to the industry and reduces the cost competitiveness of the tyre industry. In addition, the quality of rubber of the East Asian countries is quite superior and their prices are lower, which gives these countries a comparative advantage.

Natural Rubber Price (USD/ Kg)	
Thai RSS 3	2.22
Thai STR 20	1.82
India RSS 4	2.17
Malaysia SMR20	1.6
Indonesia SIR20	1.74
Vietnam	1.35

Source: Global Rubber Markets[42], Rubber Board of India[43], Vietnam Rubber Association

The Indian tyre industry loses price competitiveness on account of imposition of import tariff on natural rubber to meet raw material requirements.

China has imposed good measures of tariff and non-tariff barriers for tyre imports. It has the highest customs duty of 50% on tyre imports.

Protection of the Domestic Market: Tariff and Non-Tariff Barriers

Tariff and non-tariff barriers are imposed by the countries to protect the domestic industry from exports of tyres by other countries. China has imposed good measures of tariff and non-tariff barriers for tyre imports. It has the highest customs duty of 50% on tyre imports and only under RTA like ASEAN-China and PTA with countries like Pakistan and Chile, etc. it is nil. Further, there is another significant tax, the parcel tax of 30% on imported tyres. China also imposes non-tariff measures of licensing requirements (Goods Inspection Form, Import License) controlled by the General Administration of Quality Supervision, Inspection and Quarantine of People's Republic of China (AQSIQ).[44]

The Korean Republic and Japan are the most open economies that attract zero customs duty. ASEAN countries (Thailand, Indonesia and Vietnam) have varying customs duty for tyre imports and give access to their markets FTA/RTA. Imports of tyres in Indonesia also attract additional income tax of 15% and also have to comply with labelling requirements.[45]

[42]https://globalrubbermarkets.com/49056/asian-physical-rubber-prices-april-21-2017.html
[43]http://rubberboard.org.in/rubberprice.asp?url=earlyrubberprice.asp
[44]https://www.dutycalculator.com/dc/208241393/car-parts-accessories/car-tyres-wheels/tyres-rim-diameter-15-16-inches/
[45]63/ M- DAG/ PER/ 12/2009) dated 21/12/2009 controlled by the Ministry of Trade

Import Tariff Rates on Tyre Imports (%)				
Country	**Imports Duty Rate**	**Car**	**Bus/ Trucks**	**Additional Taxes**
China	General Duty Rate	50	50	Parcel Tax (30%)
	MFN Duty Rate	10	3	
	Pref. tariff for ASEAN, Chinese Taipei	0	0	
Czechia , EU	General Duty Rate	4.5	4.5	0
	Pref. tariff for EU Countries and Turkey	0	0	
India	General Duty Rate	10	10	Cess 3%; Landing Charges 1%
	ASEAN, Malaysia	5	5	
Indonesia	General Duty Rate	15	15	Income tax (15% CIFD)
	Preferential tariff for India	12	12	
	ASEAN Free Trade Area, China, Korea Rep.	0	0	
Japan	MMFN duty rate treatment	0	0	0
Korea Republic	MFN duty rate, ASEAN FTA, AUSFTA	0	0	0
Thailand	General Duty Rate	10	10	0
	ASEAN–India Free Trade Area (AIFTA)	6	6	
	ASEAN – Japan Free Trade Area	2.7	2.7	
	Preferential tariff for AANZFTA, ASEAN,	0	0	
Turkey	General Duty Rate	4.5	4.5	Add customs duty (21.8% CIF)
	Preferential tariff for EU	0	0	
Vietnam	General Duty Rate	37.5	37.5	0
	MFN Duty Rate	25	25	
	AANZFTA -ASEAN Free Trade Area	7	7	
	ASEAN – Japan Free Trade Area	10	10	
	Preferential tariff for China	20	0	
	Preferential tariff for India	14	14	
	Preferential tariff for Republic of Korea	0	0	

Source: WITS Database, Pitney Bowes global trade solutions[46]

India can take cues from China and Indonesia to have tariff and non-tariff measures to protect the domestic tyre industry to utilise its installed capacity fully to have economies of scale and price competitiveness in the international market.

Access to Export Markets: Trade Agreements with Preferential Tariffs

The top 15 countries with trade value of about $50 billion account for two-thirds of the total tyre exports from India.[47] The top 15 destinations include USA, Germany, France, UK, Italy, Spain, Turkey, Netherlands, Australia, Brazil, Peru, Saudi Arabia, UAE, Nepal, and Pakistan where USA (18.6%) and Germany (9.1%) are the key destinations that alone have a share of 27.7% of total Indian tyre export basket.

General tariff on tyre imports for these destinations generally varies from 5% to 16%. The Korean Republic has the most access to key tyre importing countries – USA, EU countries, Australia (0%), Malaysia (20%) and Canada (5%). Exports by Czechia and Turkey among benchmark countries are at an advantageous position as they are integrated with the European Union and their exports to EU countries attract 0% duty. ASEAN – China is a large integrated market with zero duty. These countries also have foreign trade agreements (FTA) with Australia and Malaysia.

The top 15 countries with trade value of about $50 billion account for two-thirds of the total tyre exports from India.

[46]https://www.dutycalculator.com/dc/208241393/car-parts-accessories/car-tyres-wheels/tyres-rim-diameter-15-16-inches/
[47]UN Comtrade database

Tariff for Key Export Destinations				
Key Country	**General Tariff**	**Rate (%)**	**Concessional Duty for Bench. Countries**	**Rate (%)**
USA	Gen. tariff	10	Pref. tariff for Korea	0
	MFN Rate	4		
Germany, Netherlands, France, UK, Italy, Belgium	MFN rate	13.8 Euro/ 100 KG	Preferential tariff for EU countries (Turkey, Czechia)	0
			Pref. tariff for Korea	0
Canada	Gen. tariff	7	Pref. tariff for Korea	5.5
Mexico	Gen. tariff	10		
Australia	Gen. tariff	5	AANZFTA ASEAN - Australia - New Zealand Free Trade Area (Vietnam, Thailand, Indonesia	0
	Gen. tariff		Australia- Korea Free Trade Agreement	0
Russia	Gen. tariff	15		
Saudi Arabia	Gen. tariff	5		
Brazil	Gen. tariff	16	India-MERCOSUR Pref. Trade Agreement	0
Malaysia	Gen. tariff	50	ASEAN China Free Trade Area (Vietnam, Thailand, Indonesia)	0
			Malaysia-India Comprehensive Econ. Cooperation Agreement	0
			Pref tariff for Korea	20

Source: WITS database

India has trade agreements with Brazil and Malaysia that attract zero duty on tyres. However, India does not have any FTA/RTA with top destinations like the USA and EU countries that could provide concessions on tariffs for its exported tyres. Trade agreements with large export markets will open up new markets for the Indian Tyre industry. India has trade agreements with ASEAN and South Asian countries but requires FTA/RTA with large markets like the USA and EU countries.

Labour Cost Competitiveness

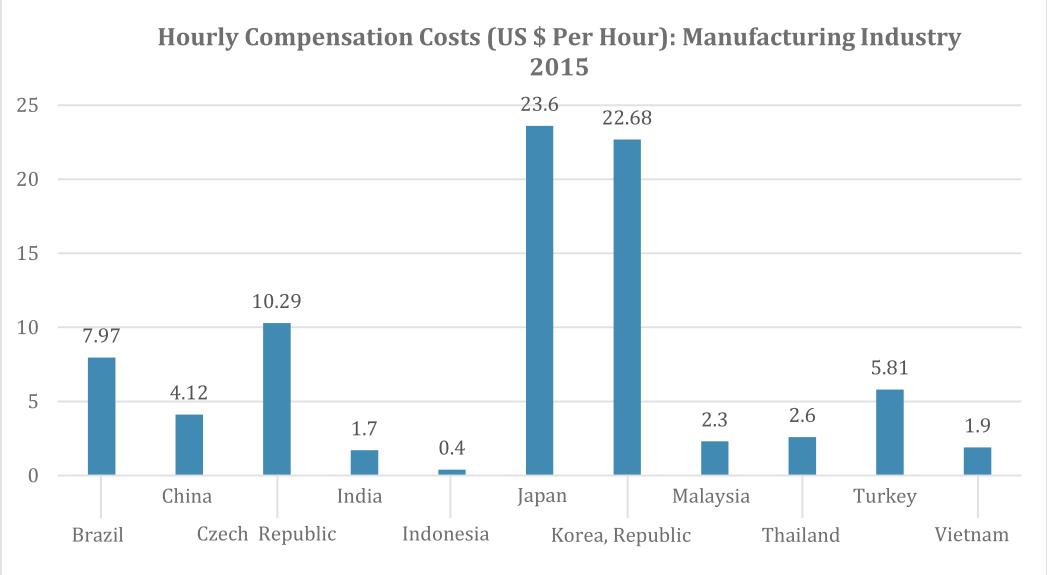
Labour cost competitiveness is the second most important driver with respect to manufacturing competitive advantage.[48] India is quite competitive in the labour cost of tyre manufacturing (rubber and plastic industry) where it fares significantly better than China and other developed countries.

Hourly Compensation Costs (US $): Rubber and Plastic Industry		
Country	**2011**	**2012**
India	1.59	1.59
China	2.62	3.07
Mexico	4.89	4.81
Taiwan	7.74	7.99
Brazil	10.70	10.21
Korea, Republic	14.19	15.08
United Kingdom	27.26	26.53
United States	29.37	29.60
Japan	32.49	31.17
Germany	38.02	37.91
Australia	50.58	57.02

Source: Bureau of Labour Statistics, US

[48]Deloitte Global Manufacturing Competitiveness Index 2016

East Asian countries including Indonesia, Vietnam, Malaysia and Thailand compete with India in the labour cost of the manufacturing industry according to the recent Deloitte Global Manufacturing Competitiveness Index 2016.



Source: Bureau of Labour Statistics, US; Deloitte Global Manufacturing Competitiveness Index 2016

The labour competitiveness of these East Asian countries along with natural rubber availability and cost advantage provides them an edge over India.

Ease of Doing Business – Trading Across Borders

Ease of doing business – trading across borders is one key factor that affects the efficiency of domestic operations and international trade. Czechia, the Korean Republic and Thailand hold a competitive advantage in faster and more efficient export processes.

[48]Deloitte Global Manufacturing Competitiveness Index 2016

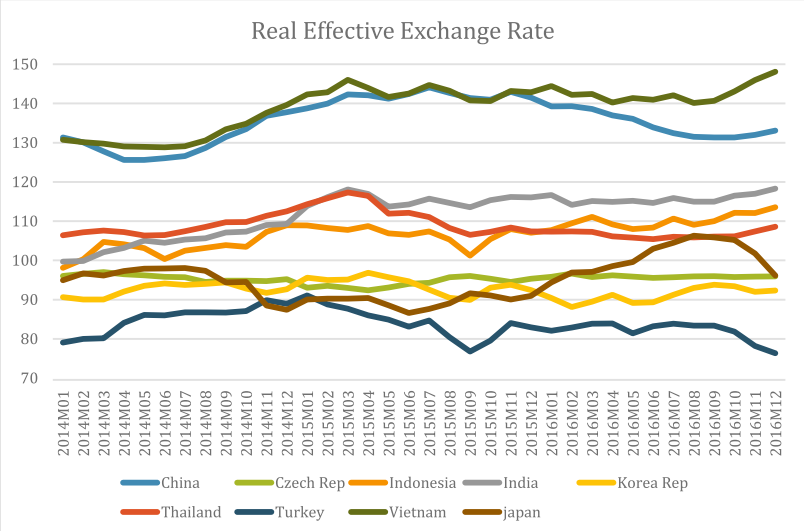
Ease of Doing Business – Trading Across Borders									
Economy	Trading Across Borders	Time to export: Border compliance (hours)	Cost to export: Border compliance (USD)	Time to export: Documentary compliance (hours)	Cost to export: Documentary compliance (USD)	Time to import: Border compliance (hours)	Cost to import: Border compliance (USD)	Time to import: Documentary compliance (hours)	Cost to import: Documentary compliance (USD)
China	96	26	522	21	85	92	777	66	171
Czech Republic	1	0	0	1	0	0	0	1	0
India	143	106	413	38	92	283	574	61	135
Indonesia	108	53	254	61	139	99	383	133	164
Japan	49	23	265	2	60	40	299	3	100
Korea, Rep	32	13	185	1	11	6	315	1	27
Thailand	56	51	223	11	97	50	233	4	43
Turkey	70	16	376	5	87	41	655	11	142
Vietnam	93	58	309	50	139	62	392	76	183

Source: World Bank

India ranks quite low in Trading Across Borders (143) among the benchmark countries. The time (hrs) and costs (US$) for exports from India are quite high compared to the other benchmark countries which affects its competitiveness in the international trade.

Real Effective Exchange Rate

REER is the nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of costs. An increase in REER implies that exports become more expensive and imports become cheaper; therefore, an increase indicates a loss in trade competitiveness. REER based on 138 trading partners for the period 2014 to 2016 shows that the REER of Turkey has declined, while it has remained stable for the other benchmark countries.[49]



Source: Darvas, Zsolt, 2012

REER of India has appreciated the most, second only to Vietnam, which impairs the export competitiveness of India in world trade in comparison to other countries.

[49] Darvas, Zsolt (2012a) 'Real effective exchange rates for 178 countries: A new database', Working Paper 2012/06, Bruegel, 15 March 2012. Available at http://www.bruegel.org/publications/publication-detail/publication/716-real-effective-exchange-rates-for-178-countries-a-new-database/

Corporate Income Tax and Incentives

High corporate income tax (CIT) affects industry operations, profitability and price competitiveness of the products. Corporate income tax in India is significantly higher than benchmark countries. High CIT reduces competitiveness of the Indian tyre industry in international trade, while maintaining price competitiveness of the products and at the same time maintaining their profitability.

Corporate Income Tax Rate of Benchmark Companies	
China	25%
Czechia	19%
Indonesia	25% with additional discount of 5% after satisfying a minimum listing requirement of 40% and certain other conditions
India	Domestic Companies: 30.9-34.60% Foreign Companies: 41.20-43.26% In certain cases, MAT @ 18.5% applicable
Japan	Effective tax rate varies depending upon the size of a company's paid-in capital. SME (Upto 100 Mn JPY) : 34.81% Large Corporation (> 100 Mn JPY) : 30.86%
Korea, Rep.	10%: upto 200 Mn KRW, 20%: 200Mn-20 Bn KRW, 22%: > 20 Bn KRW, Additional 10% tax if the company's qualified expenditures for facility investment, wage increases, and dividend payments fall short of a certain threshold level Local Income Tax: 1% on the first KRW 200 million, 2% for the tax base between KRW 200 million and KRW 20 billion, and 2.2% for the excess
Thailand	20%
Turkey	20%
Vietnam	20%

Source: PWC

High corporate income tax (CIT) affects industry operations, profitability and price competitiveness of the products.

Another perspective from the point of competitiveness is the use of differential corporate tax rates to boost investment in the industry. Through appropriate tax incentives, the Government sends signals which could attract enhanced foreign investment.

Thailand Board of Investment (BOI) gives a number of tax incentives to promote the rubber industry which has attracted many MNCs to have tyre manufacturing plants.[50]

- Eight-year corporate income tax exemption, accounting for 100% of investment (excluding cost of land and working capital)
- Exemption of import duty on machinery
- Exemption of import duty on raw or essential materials used in manufacturing export products for one year, which can be extended as deemed appropriate by the Board
- Double deduction from the costs of transportation, electricity and water supply
- Additional 25% deduction of the cost of installation or construction of facilities

A high Corporate Income Tax (CIT) reduces the competitiveness of the Indian tyre industry in international trade, while maintaining the price competitiveness of its products and at the same time maintaining its profitability.

[50] http://www.boi.go.th/index.php?page=criteria_for_granting_tax

Key Highlights

To increase its share in the global trade, the tyre industry needs to excel in the key parameters of competitiveness in international markets. A benchmark analysis of India with other countries on the key parameters shows that India is lagging behind the benchmark countries in some of the parameters but doing better in others. Thailand is the only country that satisfies all the parameters of the country's competitiveness of tyre trade in the international market and hence is a leader. China, Indonesia and Vietnam are emergent challengers to the pole position.

Key Determinants of International Competitiveness		China	Czechia	India	Indonesia	Japan	Rep. of Korea	Thai-land	Turkey	Vietnam
Revealed Comparative Advantage	Industry Specific	8	2	**7**	3	4	6	1	5	9
Price Competitiveness	Industry Specific	1	9	**2**	4	8	7	5	6	3
Natural Rubber Availability and Price Competitiveness	Industry Specific	4	7	**5**	2	6	6	1	7	3
Protection of Domestic Market: Tariff and Non-Tariff Barriers	Industry Specific	1	6	**5**	3	7	7	4	6	2
Access to Export Markets: Trade Agreements with Preferential Tariffs	Macro- Economic Specific	4	3	**5**	4	2	1	4	3	4
Labour Cost Competitiveness	Macro- Economic Specific	5	7	**2**	1	9	8	4	6	3
Ease of Doing Business - Trading Across Borders	Macro- Economic Specific	7	1	**9**	8	3	2	4	5	6
Real Effective Exchange Rate	Macro- Economic Specific	8	3	**7**	6	4	2	5	1	9
Corporate Income Tax and Incentives	Macro- Economic Specific	4	1	**7**	5	6	3	2	2	2

- RCA as a measure reflects the success of an exporting country relative to the world-wide norm. Thailand, Czechia, Indonesia, Korea, Turkey and Japan have a higher RCA than India that gives them a relative advantage in comparison to India in tyre exports.
- The tyre industry requires that good quality natural rubber is available to it at reasonably competitive prices. The industry loses price competitiveness on account of the imposition of import tariff on natural rubber to meet raw material requirements.
- Countries like China, Indonesia and Turkey have imposed additional tariff and non-tariff barriers to protect their domestic industry from competitive export markets.
- India does not have any FTA/RTA with top destinations like the USA and EU countries that could provide concessions on tariffs for its exported tyres.
- The labour competitiveness of the East Asian countries along with natural rubber availability and cost advantage provides them an edge over India.
- India ranks quite low in Trading Across Borders (143) among the benchmark countries. Time (hrs) and cost (US$) for exports from India are higher than for the other benchmark countries.
- REER of India has appreciated the most second only to Vietnam, which impairs the export competitiveness of India in world trade in comparison to other countries.

Opportunities and Challenges for the Indian Tyre Industry

V. Opportunities and Challenges for the Indian Tyre Industry

India holds certain advantages and opportunities which are crucial for the growth of the tyre industry. However, there are a number of roadblocks to its growth which need to be overcome, as the industry looks to contribute to the Government's "Make in India" programme. This section focusses on these opportunities, and the challenges are discussed here in detail.

Advantages and Opportunities for the Tyre Industry

Rising Income Levels

A study by the McKinsey Global Institute suggests that if India continues on its current high growth path, over the next two decades, the Indian market will undergo a major transformation. Average household incomes will triple over the next 20 years and India will become the fifth largest consumer economy in the world by 2025.[51] Another report by PwC[52] estimates that by 2021, India's emerging and middle-class segments combined will comprise nearly 900 million people.

India's Population – Economic Distribution

Household Income /year (₹)	Economic Class	Population – 2010 (1,180 Million)	Estimated population 2021 (1,350 Million)
>850,000	Upper Middle	80 (6.8%)	190 (14.1%)
300,000-850,000	Middle	170 (14.4%)	300 (22.2%)
150,000-300,000	Emerging Middle	470 (39.8%)	570 (42.2%)
<150,000	Lower	460 (39.0%)	290 (21.5%)

Source: Profitable growth for the emerging middle, PwC 2012

India is one of the most attractive markets with the rising incomes of the middle class. Emergence of the middle class will drive the passenger car industry which will subsequently fuel the growth of the industry.

Penetration Levels of Passenger Cars

Passenger car penetration levels in India are in a very nascent stage compared to the emerging and developed countries. India has only 10 cars per 1,000 population compared to the world average of 125. For China, this figure is 50 and for other emerging and developed countries it is more than 200. Coupled with the rise of the middle and upper middle classes in the coming years, the penetration levels of passenger cars among the Indian population are expected to increase manifold. This will be a key driving factor for the Indian tyre industry.

Passenger Car Penetration Levels

Countries	Numbers Per 1,000 Population
World	125
Europe	500
Japan	450
United States	425
Russia	250
Mexico	200
China	50
India	10

Source: Global Tyre Industry: Outlook, Opportunities and Challenges

India has only **10** cars per 1,000 population compared to the world average of **125**.

[51] McKinsey Global Institute. 2012.Manufacturing the Future: The Next Era of Global Growth and Innovation

[52] PwC. 2014. Future of the India: The Winning Leap

Increasing Urbanisation

India is witnessing an increasing rate of urbanisation with a large number of people shifting to the cities and towns for better livelihoods. According to Census 2011, the current rate of urbanisation in India stands at 31.16% in 2011 rising from 27.86% in 2001 and 25.72% in 1991. According to a McKinsey report, it is estimated that by 2030, the share of the urban population will reach 40%.[53]

Trends in Urbanisation in India (1961-2011)

Census Year	Urban Population (in ₹ Million)	Rate of Urbanisation (%)
1981*	159.46	23.34
1991**	217.18	25.72
2001	286.12	27.86
2011	377.10	31.16

Source: Census of India, various years; *Includes projected figures for Assam;
** Includes projected figures for Jammu & Kashmir

With urbanisation, families are becoming single and nuclear. Female participation in the workforce is increasing rapidly with growing realisation among urban families and among women themselves that women should work, contribute to the family income and secure their financial future. With increasing income, lack of good public transport and safety of women, there is perceptible inclination towards passenger cars and two-wheelers which again is a push factor for the tyre industry.

Moreover, a large section of the working population in these new age cities is expected to be young as more than 50% of India's population is below the age of 25, and more than 65% is below the age of 35.[54] This young population has a great propensity for passenger cars and two wheelers that have a strong potential to drive the growth of the automobile and tyre industries.

The growth of the agricultural sector and opportunity for farm mechanisation can drive agricultural tyres.

Faster Economic Growth

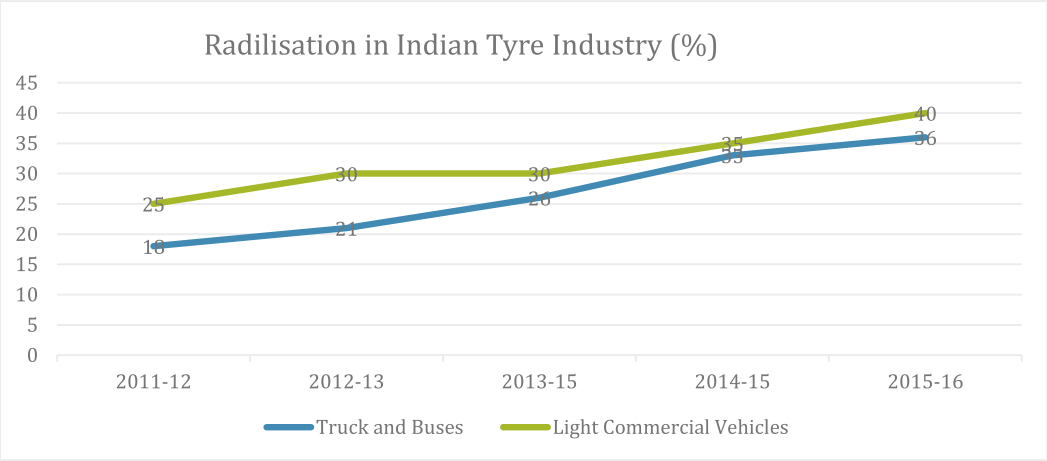
India is among the fastest growing economies in the world and is witnessing sustained economic activity in various sectors. Infrastructure development, construction and the housing sector are some of the key areas for which the Government of India has formulated various policies and given certain incentives to drive this sector. In addition, the Make in India programme will attract investment in the manufacturing sector and spur higher industrial activity. All this will result in a greater demand for industrial and construction tyres.

The growth of the agricultural sector and opportunity for farm mechanisation can drive agricultural tyres. The aviation sector in India is still at a nascent stage and the Government of India is planning to push it in the second and third tier cities. This will drive demand for aircraft tyres in the coming years.

[53] Indian Urbanization Econometric Model, McKinsey Global Institute Analysis. Businessworld Marketing, Whitebook 2012-13.
[54] Basu, Kaushik (25 July 2007). "India's demographic dividend". BBC News.

Growing Radialisation of Tyres

Radialisation has emerged as a key factor contributing to the Indian tyre industry growth. The passenger cars tyre segment has radialisation to the extent of 98%, while only 36% vehicles in truck and bus (T&B) segment and 40% in light commercial vehicles (LCV) have radialised tyres. Backed by a growing awareness of the cost benefits, continuous improvement in the road infrastructure and stringent implementation of overloading norms and new radial capacities going on-stream, radialisation levels in the commercial vehicle space are likely to reach 65-70% over the next four years.[55]



Source: Industry Estimates and ATMA

Given the global phenomenon of radialised tyres, there is an enormous scope for radialisation in India and increased investments in radial capacities are expected to yield significant benefits for this industry moving ahead.

Challenges for Tyre Manufacturing in India

The tyre industry in India, as discussed above, has several opportunities to grow; however, it still has a long way to go in order to compete in the global marketplace. This section analyses key challenges faced by the Indian tyre industry that sway growth and competitiveness in the global marketplace.

Inverted Duty Structure

Inverted duty structure is a key challenge for the Indian tyre industry. Inverted duty structure is where the key raw material (natural rubber) attracts higher customs duty than its finished product (tyres). The table below shows that India is the only country that has an inverted duty structure for the tyre industry. Even when basic customs duty is 10% for tyres, it is actually much lower than that under various trade agreements for the duty (on tyres) when compared with the basic custom duty of its principal raw material, natural rubber.

Even when basic customs duty is 10% for tyres, it is actually much lower than that under various trade agreements for the duty (on tyres) when compared with the basic custom duty of its principal raw material, natural rubber.

[55] Sector Outlook- Tyres, www.indiratrade.com, Sep 30, 2015

Duty Structure on Tyre/Natural Rubber		
Country	**Tyres**	**Natural Rubber**
China	50	Lower of 20% or 1,500 yuan/ton
Czechia, EU	4.5	0
India	**10**	**25% or ₹ 30/Kg**
Indonesia	15	5
Japan	0	0
Korea, Republic	0	0
Thailand	10	0
Turkey	4.5	0
Vietnam	37.5	4.5

Source: WITS database

The Department of Industrial Policy and Promotion (DIPP) of the Ministry of Commerce studied the inverted duty structure on radial tyres but no action was taken. [56]

The inverted duty structure reduces the competitiveness of the domestic industry and encourages volumes of cheap imported tyres despite adequate domestic capacity already in place.

Foreign trade agreements (FTAs) and regional trade agreements (RTAs) of India will negatively affect the Indian tyre industry and add to its challenges.

Negative Impact of Trade Agreements

Foreign trade agreements (FTAs) and regional trade agreements (RTAs) of India will negatively affect the Indian tyre industry and add to its challenges. Trade agreements affect the domestic tyre industry by providing concession on customs duty on finished tyres. Although tyres can be imported into India at preferential/concessional duties under various FTAs/RTAs, they practically provide no concession on import duty of the natural rubber.

Trade Agreements	Tyres	Natural Rubber
General Duty	**10%**	**25% or ₹ 30/Kg**
ASEAN FTA	6%	No Concession
APTA	8.6%	20%
India-Sri Lanka	Nil	No Concession
SAFTA	5% (Pakistan, Sri Lanka)/Nil (Others)	No Concession
India-Singapore	Nil	No Concession
India-Malaysia	6%	No Concession

Source: WITS database

Natural rubber falls in the negative list across all FTAs/RTAs except with Sri Lanka which holds very little significance and tyre industry competitiveness. Therefore, it is affected due to the higher input cost of key raw material.

High Tariff Rates on Indian Exported Tyres

The top 15 destinations given in the table comprise 66% of total Indian tyre exports. India has few trade agreements such SAARC preferential trade agreement (SAPTA), India-MERCOSUR Pref. Trade Agreement among its top destinations.

[56] DIPP Annual Report 2016-17, Report No 20, page 121

Key Export Destination For Indian Tyres			
Countries	**3-Yr. Exports (US $ Mn)**	**General Tariff**	**Tariff for India**
USA	554.4	10%	10%
Germany	312.8	13.8 Euro/100 KG	13.8 Euro/100 KG
Netherlands	185.2	13.8 Euro/100 KG	13.8 Euro/100 KG
Brazil	178.7	16%	India-MERCOSUR Pref. Trade Agreement - 0
France	163.4	13.8 Euro/100 KG	13.8 Euro/100 KG
UAE	154.3	5%	5%
UK	147.9	13.8 Euro/100 KG	13.8 Euro/ 100 KG
Italy	123.1	13.8 Euro/100 KG	13.8 Euro/100 KG
Saudi Arabia	110.8	5%	5%
Nepal	91.8	10%	Indo-Nepal Treaty of Trade - 0%
Australia	86.9	5%	5%
Pakistan	81.7	20%	SAPTA: 5%
Turkey	73.6	4.5%	4.5%
Spain	72.8	13.8 Euro/100 KG	13.8 Euro/100 KG
Peru	69.3	16%	India-MERCOSUR Pref. Trade Agreement – 0%

Source: UN Comtrade and WITS database

Most of the key destinations of Indian tyre exports attract the highest general duty tariff. Absence of any trade agreements with these countries reduces the competitiveness of the Indian tyre industry in relation to other countries.

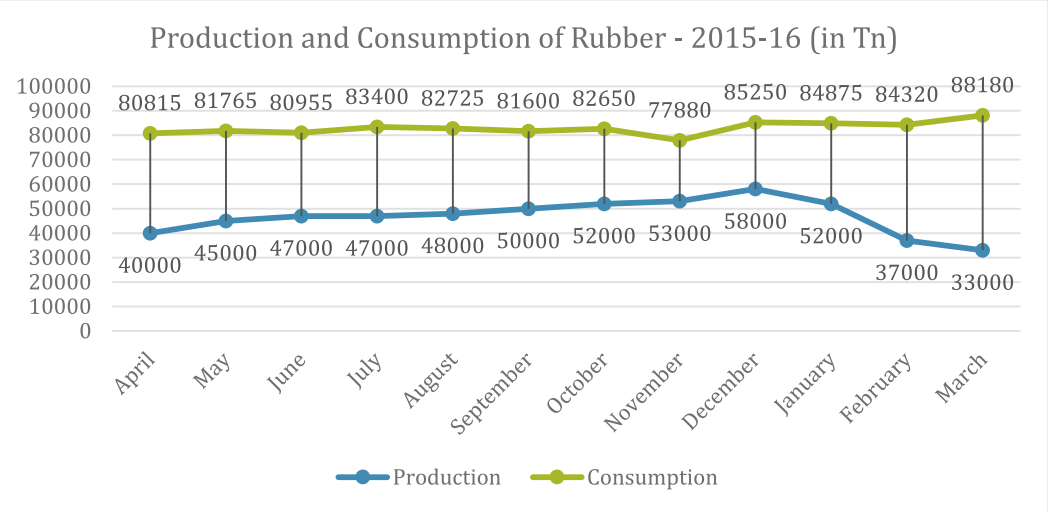
Greater Import Dependence on Raw Materials

The tyre industry is a raw material intensive industry. Raw materials account for nearly 72% of the total production cost. Natural rubber is the primary raw material in the production process of tyres and results in 44% of the total raw material cost. However, the Indian tyre industry has to depend upon the imported natural rubber due to a mismatch between production and consumption of domestic natural rubber. India consumes more than 80,000 tons of natural rubber, out of which the tyre industry consumes about two-thirds of the natural rubber. In relation to this, only 40,000-50,000 tons of natural rubber is produced in India. [57]

In addition, both natural rubber and crude prices are controlled by the external environment and little can be done to control the raw material price movement internally.

The tyre industry is a raw material intensive industry. Raw materials account for nearly 72% of the total production cost.

[57] Union Budget: 2016 – 17 Pre–Budget Memorandum, Issues, Concerns & Submissions of Indian Tyre Industry, ATMA

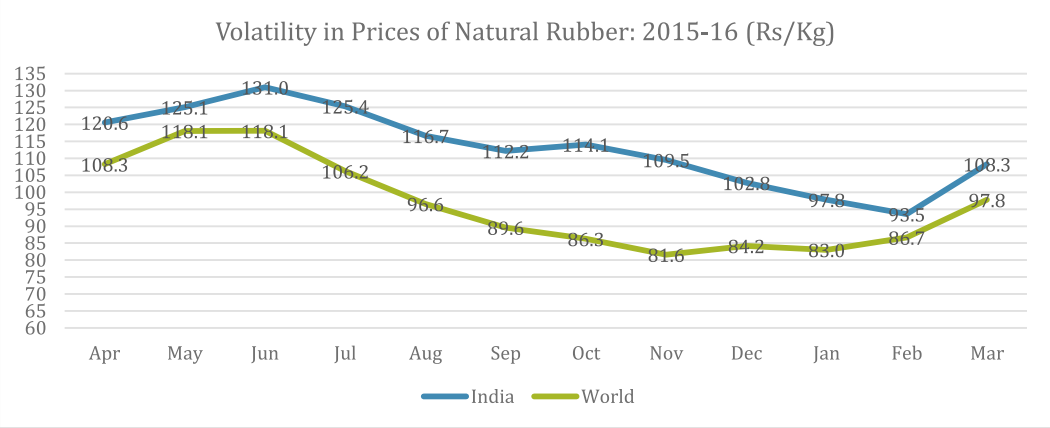


Source: Rubber Board, GOI

Greater import dependence on raw material and volatility in the prices imposes challenges for the Indian tyre industry.

Price Arbitrage of the Natural Rubber

The price of natural rubber in India is quite volatile and is higher than world rubber prices (Bangkok benchmark). The prices of natural rubber are about 10-20% higher than the prices in the international market which is a challenge for the tyre industry.



Source: Rubber Board, GOI

Price arbitrage of natural rubber reduces the competitiveness of the Indian tyre industry in the international market.

Tyre Imports from China

China has been experiencing a slowdown in its economy in the aftermath of the global financial crisis which has adversely affected the automobile industry. Its tyre industry further experienced a slowdown in 2015 with sales coming down by more than 20%.58 So the tyre manufacturers in China had no other option but to dump the excess produced tyres. USA is one market for tyres that is targeted by Chinese tyre exports. According to the US commerce department, the tyres were being dumped at the margins of around 20.87-22.57%.[59]

With USA taking such strict actions against the dumping of Chinese imports, India is the next prospective market for Chinese tyres. Hence, India has witnessed a surge in tyre imports from China. A DIPP report also highlights that rubber (tyres) is one of the manufacturing industries that has been affected by large imports from China.[60]

The share of China in imported tyres has gone up to 51% from 18% in the last five years . Imports of truck and bus radials increased from 40,000 units per month in 2013-14 to 57,000 units per month in 2014-15.[61] In addition, a FICCI and TARI report points out that illegal or illicit imports are also a cause for concern.[62]

Share of Chinese Imports in Total Tyre Imports

Year	China (₹ Billion)	%Growth	Total Tyre Imports (₹ Billion)	% Growth	% Share of China
2012-2013	4.69		25.47		18.4
2013-2014	6.14	31.09	24.46	-3.94	25.11
2014-2015	9.65	57.16	25.97	6.17	37.17
2015-2016	16.00	65.79	32.50	25.14	49.25
2016-2017	16.89	5.52	32.82	1	51.45

Source: Export – Import database, Ministry of Commerce

Due to the increase in the cheap imports of tyres from China, the production of tyres in India has declined and the capacity utilisation of plants has remained subdued. This has adversely affected the competitiveness of the tyre companies in India with the turnover in 2015-16 being the same as in 2014-15 as imports from China were cheaper than the domestically produced tyres.

The Global Competitiveness Report of 2014-15 depicts India poorly among the BRICS and other developing countries on the quality of infrastructure with a score of 3.7 (out of 7)

Quality of Infrastructure

The Global Competitiveness Report of 2014-15 depicts India poorly among the BRICS and other developing countries on the quality of infrastructure with a score of 3.7 (out of 7), and ranks it 90 among 144 countries. Lack of adequate physical infrastructure (roads, ports, airports, railways, water and energy, etc.) has been identified as one of the biggest challenges that India faces. The mid-term appraisal of the 11th Five-Year plan noted that the country has been adversely impacted on an average by 1-2% points due to infrastructure bottlenecks.

An empirical study by Gupta et al. reveals that the manufacturing sectors that are largely dependent upon the availability of infrastructure are hurt. Indian states with poor infrastructure have not performed well in the manufacturing sector.[63]

[58] https://tax.thomsonreuters.com/blog/onesource/global-trade/china-tire-industry-is-facing-a-storm/
[59] http://www.reuters.com/article/us-usa-trade-tires-idUSKCN1142AS
[60] Impact of the Surge in Chinese Import on Indian Manufacturing Sector, Jitender Singh, Assistant Director, DIPP
[61] http://www.business-standard.com/article/companies/tyre-industry-urges-govt-to-check-cheap-chinese-imports-115111500122_1.html
[62] FICCI CASCADE and TARI. 2016. Invisible Enemy: A Threat to our National Interests, Top five smuggling products
[63] Gupta, PR Hasan, and U. Kumar. 2009. "Big Reforms but Small Payoffs: Explaining the Weak Record of Growth in Indian Manufacturing" in S. Bery, B. Bosworth, and A. Panagariya (eds), India Policy Forum, volume 5, pp 59-108.

Quality of Infrastructure 2014-15		
Country	Score	Rank
Brazil	3.98	76
China	4.66	46
Germany	6.09	7
India	3.7	90
Japan	6.13	6
Korea, Rep	5.74	14
Malaysia	5.46	25
Russia	4.82	39
UK	6.01	10
US	5.82	12

Source: Global Competitiveness Report, 2014-15

Infrastructure constraints add a cost disadvantage of 6-8% for Indian manufacturers, which reduces their competitiveness in comparison to other countries.

Key Highlights

- Emergence of the middle class and its rising income, scope for penetration of passengers cars, increasing urbanisation, growing radialisation of bus/truck and LCV tyres, and faster economic growth are key growth drivers for the tyre industry in India.
- Growth of the tyre industry is constrained by some challenges faced by the industry:
  - Inverted duty structure reduces the competitiveness of the domestic industry and encourages volumes of cheap imported tyres despite adequate domestic capacity already in place.
  - Negative impact of trade agreements where tyres can be freely imported whereas natural rubber is in the negative list across all FTAs/RTAs except with Sri Lanka.
  - Most of the key destinations of Indian tyre exports attract the highest general duty tariff and the absence of any trade agreements with these countries reduces the competitiveness of the Indian tyre industry in relation to other countries.
  - Greater import dependence on raw material (natural rubber and crude oil) and volatility in their prices imposes challenges for the industry.
  - Due to an increase in the cheap imports of tyres from China, the production of tyres in India has declined and the capacity utilisation of plants has remained subdued.
  - Lack of adequate infrastructure (India ranks 90 among 140 countries) in comparison to other countries reduces the competitiveness of the manufacturing industry.

Enablers for Sustaining Competition in the Global Marketplace: The Way Forward

VI. Enablers for Sustaining Competition in the Global Marketplace: The Way Forward

The growth potential of the Indian tyre industry and its current contribution to industrial output, employment generation and export earnings paints a promising future for the industry. However, the sector faces obstacles on the road to growth and development. Given the potential it has to contribute to the Government's "Make in India" initiative, concerted efforts by Government and industry bodies will go a long way in paving a smooth path for its success to achieve the targets envisaged in the broader automotive mission plan of 2026.

Based on an analysis of the growth drivers of the industry and the challenges faced by it, identified earlier in the report, here are some enablers and recommendations which will give a fillip to the growth of the tyre industry and the economy as a whole.

The Government of India can increase the customs duty on tyres from the existing rate of 10% to 25% to keep it at par with the duty attracted by natural rubber.

Industry-Specific Enablers

Correcting the Duty Structure and Other Fiscal Measures

The tyre industry is one of the industries impacted by the inverted duty structure. The Department of Industrial Policy and Promotion (DIPP) of the Ministry of Commerce studied the inverted duty structure on tyres but no action was taken.[64] The Government of India can increase the customs duty on tyres from the existing rate of 10% to 25% to keep it at par with the duty attracted by natural rubber.

No input credit is viable on Petroleum consumption, which constitutes a significant input costs in tyre industry in GST regime. Equalisation for such credits need to be made for tyres to make it more competitive. In additions, import of natural rubber needs a prior licence and declaration, which increases holding costs that makes tyre industry non-competitive and requires positive impetus.

Correcting Trade Agreements

Foreign trade agreements (FTAs) and regional trade agreements (RTAs) of India will negatively affect the Indian tyre industry. Natural rubber falls in the negative list across all FTAs/RTAs except with Sri Lanka which holds very little significance. To ensure the tyre industry's competitiveness, natural rubber should be removed from the negative list of all FTAs/RTAs to ensure the tyre industry's competitiveness which relies largely on imported natural rubber.

Capital/Interest Relief

The tyre industry has invested heavily in plant and machinery, creating huge capacity. The high interest rate reduces the competitiveness of the industry. There is need to provide either longer term loans or accelerated depreciation to ensure the competitiveness of the industry.

In addition, weighted deduction on the cost of new employees hired in new manufacturing facilities should be given as relief measure for tyre manufacturers.

[64] DIPP Annual Report 2016-17, Report No 20, page 121

Restricting Cheap Imports from China

Cheap imports of tyres from China are hurting domestic manufacturers more than anything else. Due to the economic slowdown in China, manufacturers there are dumping their products at very low prices that are not competitive. To control the dumping of Chinese tyres in India at prices that hurt economically or are uncompetitive for the domestic industry, the Government has imposed Anti-dumping duty (ADD), but that is based on loss of profit and is not a deterrent. In case of Chinese truck and bus radial (TBR), injury margin is higher than dumping margin but as ADD is imposed on dumping margin, a part of the injury remains uncovered. The Government should look at correct anti-dumping duty measures to protect the interests of domestic manufacturers.

Tax Incentives for Export Units

Countries like Thailand give eight-year corporate income tax exemption, accounting for 100% of investment (excluding cost of land and working capital) for promoting the tyre industry. This has given Thailand a significant comparative advantage in the global tyre trade.

To increase the country's share in world exports and have better RCA as compared to its competitors, some tax and other financial incentives should be given to export oriented tyre manufacturing units. Brand building costs overseas should be given multiplier deduction in ratio of increased exports.

A backward integration of the tyre industry with the rubber industry is a good idea as the industry is raw material intensive.

Reducing Import Dependence on Natural Rubber

The Indian tyre industry depends significantly upon the imported natural rubber due to a mismatch between the production and consumption of domestic natural rubber. Policy focus is required to increase the country's production of natural rubber. This will not only reduce import dependence but also help control balance of payment.

Some financial incentives should be given to increase investment in the rubber plantations. A backward integration of the tyre industry with the rubber industry is a good idea as the industry is raw material intensive. This will not only promote growth of the industry but also improve productivity and growth of the rubber industry.

Natural Rubber Production and Inclusive Development

Development of North East States, Orissa and other alternative production sources will create new and sustainable sources of natural rubber that do not rely overly on the traditional sources. This also builds on the path of national inclusive growth across India.

Research with participation from private stakeholders including academic institutions should look at improving yield and costs of producing natural rubber. Global projects and cross learning from other countries can play an important role in this. To develop the natural rubber industry, a rubber policy as demanded by all stakeholders needs to be developed by the Commerce Ministry.

Imposing Non-Tariff Barriers on Tyre Imports

Countries like China and Indonesia have non-tariff barriers to check quality of tyres or labelling requirements of imported tyres through a Government regulatory body. India may look to impose certain quality check requirements to keep a check on cheap and inferior quality tyres from China.

Macro-economic Enablers

Trade Agreements

Global trade is now increasingly shaped by the FTA/RTA. Currently, India has FTA/RTA with countries with low export potential. The Government of India should push to have trade agreements with top export destinations like US and EU countries which can provide concessional tariff for tyres, which is available for Korea, China. The top 15 destinations: USA, Germany, France, UK, Italy, Spain, Turkey, Netherlands, Australia, Brazil, Peru, Saudi Arabia, UAE, Nepal, and Pakistan comprise 66% of the total Indian tyre exports. However, most of the key destinations for Indian tyre exports attract the highest general duty tariff in the absence of any trade agreements. Establishing trade agreements with these countries should be a priority for India to improve competitiveness of Indian tyres in these markets.

India should also have a strategy for FTA/RTA keeping in view the tyre and entire automobile industry to target markets like Algeria, Egypt, Nigeria, South Africa, Peru, Chile, Colombia, Philippines, Myanmar, Vietnam, Brazil, Iran, Argentina and Russia that do not have a large manufacturing base.[65] Trade agreements with countries like Germany, France, Saudi Arabia, Australia and Peru with whom India has a negative trade balance and who import tyres significantly. This will give stimulus to the industry's exports and have a big impact on growth in the long term.

In addition, specific clauses for use of Indian loans, grant and aid to African and other nations could be added for imports from India, including tyres, sustain and boost domestic investments and employment.

Most of the key destinations for Indian tyre exports attract the highest general duty tariff in the absence of any trade agreements.

Improving the Physical Infrastructure

Empirical evidence shows that an improvement in the quality of infrastructure significantly improves growth and productivity. For example, a World Bank study66 finds that a unit change in transport index (improvement in transport infrastructure) leads to 19% improvement in productivity of manufacturing sector firms.

To improve physical infrastructure, investment in infrastructure needs to go up from 6% of GDP to 10% of GDP. Pension and insurance funds being long-term investments, can be mobilised for infrastructure spending. PPP model should be redesigned through the engineering, procurement and construction (EPC) model.[67] Physical infrastructure needs to be developed by facilitating land acquisition and rationalising labour and tax laws.

Lack of regular power supply is one of the major constraining factors for the manufacturing industry.[68] An empirical study by Gupta and others[69] shows that manufacturing industries that are more dependent on power infrastructure have grown less compared to other industries. India needs reforms in the way it manages the power infrastructure and outputs. Energy is a key determinant of the success of the Make in India initiative, and therefore, power generation and distribution need to be viable and adequate.

Energy is a key determinant of the success of the Make in India initiative, and therefore, power generation and distribution need to be viable and adequate.

[65] Automotive Mission Plan 2026

[66] Jens Matthias Arnold, Beata Javorcik, Molly Lipscomb, and Aaditya Mattoo. 2012. Services Reform and Manufacturing Performance: Evidence from India. World Bank, Policy Research Working Paper 5948

[67] ASSOCHAM and TARI. (2015). Make in India: The Next Leap.

[68] OECD Economic Survey 2014; Xu, Beina and Eleanor Albert .2014. Governance in India: Infrastructure.

[69] Gupta,P., R. Hasan, and U. Kumar.2008. "What constrains Indian manufacturing?"ICRIER.Working Paper no. 211.

Tax Rationalisation

Corporate income tax rates in India are significantly higher than in the benchmark countries, which reduces the competitiveness of the Indian tyre industry in international trade. The direct tax on the profit in India is 33%, which is about 10% more than these developing countries. Further, the complexity of the tax regime, along with recurrent changes in tax laws, augments the problem. There is need to rationalise direct tax in relation to international benchmarks and have more transparency in the tax regime.

India ranks 100th in the World Bank's annual Doing Business Report (DBR) 2018, up from 130th in DBR 2017.

Ease of Doing Business

Business regulations, two-thirds of which apply to typical manufacturing firms, are made and administered by the states. To make India an investment hub, the most important step would be to create efficient administrative machinery. Delay and non-transparency in approvals increases the cost of a project. India ranks 100th in the World Bank's annual Doing Business Report (DBR) 2018, up from 130th in DBR 2017.

Government is taking the necessary steps to boost the business regulatory environment and to improve ease of doing business in the country. Improvement in the country's ease of doing business and its ranking globally will improve business efficiency. Among the measures that could improve the business environment include faster administrative clearances to reduce the time needed for starting and exiting a business, making the regulatory process more transparent and cutting compliance burdens. [70]

Ease of Trading Across Borders

India ranks quite low in Trading Across Borders (143) among the benchmark countries. Time (hrs) and money cost (US$) for exports from India are quite a bit higher than for the other major players in tyre exports. Government has taken several steps to improve ease of trade across borders such as launch of the ICEGATE portal, simplification of border and documented procedures and 24x7 customs clearance.

More measures by the Government to reduce time and cost in trading across borders will improve India's ranking and its competitiveness, which will stimulate the export growth of the country.

Research and Development Support

The tyre industry has shown more TFP growth compared to the industry median. Industry produces all kinds of tyres suitable for all weather and terrain conditions. To ensure industry competitiveness with global peers, necessary policy support for R&D is required. Currently, weighted tax deduction for R&D expenditure (200% under section 35 (2AB) of IT Act 1961) for in-house R&D facility and 175% for weighted deduction on outsourced R&D is allowed from approved institutions. The benefit for R&D should be continued and may be extended to outsourced R&D expenditure as well. [71]

Strong Intellectual Property (IP) Regime

India needs to protect the intellectual property rights (IPR) and keep a check on the steadily growing illicit market for the counterfeited products or smuggled products so as to enable manufacturers to protect their rights. A conducive environment for R&D will boost innovation and a strong intellectual property (IP) regime implemented through cohesive legal framework without overlap, conflict or inconsistencies among the different ministries will augment industry growth.72 It is imperative for protection to be given to the legal manufacturers to protect them from loss by proactively enforcing and taking actions against those supplying illicit or smuggled products.

To ensure industry competitiveness with global peers, necessary policy support for R&D is required

[70] ASSOCHAM and TARI. (2015). Make in India: The Next Leap. [71] Automotive Mission Plan 2026
[72] ASSOCHAM and TARI. (2015). Make in India: The Next Leap.

Annexures

Annexures

Annexure I-Methodology of Multiplier Estimation & Data Sources

For the purpose of calculating the multiplier effect, a scientific and widely used method involving the "Input-Output Table" established by Leontief is being used. The input-output table basically shows the transactions taking place between consumers and producers. It is prepared in a manner so as to give a user an idea of:

- The demand for inputs from a particular sector; and
- The demand of the sector for immediate and final consumption simultaneously.

In simpler words, the Input-Output (I-O) table helps to analyse the demand for any product for intermediate consumption & final use, thus allowing for the study of inter-sector linkages. As the I-O table is in matrix form, the entries in the rows and columns of the matrix have different interpretations. Column entries represent inputs requirement, gross value added and net indirect tax. Hence the sum of the columns represents the total output of the sector. In order to obtain I-O coefficient matrix, each entry in a column of the matrix is divided by the sum total of that column, i.e. total output of the sector/industry.

For e.g. consider aij denotes the I-O coefficient which represents how much input sector j is taking from sector i per unit output of sector j. This relationship is presented below:

$$Xi = ai1\ xi1 + ai2\ xi2 \ldots\ldots\ldots + ain\ xin + yi,\ i = 1, 2\ldots\ldots n,\ xij = aij\ Xj$$

In the matrix notation, this can be represented as

$$X = AX + Y \qquad Y = (I-A)^{-1} X$$

Where:

- A is the input-output coefficient matrix;
- (I-A) is the Leontief Matrix;
- (I-A)-1 is the inverse of the Leontief Matrix;
- X is the total/gross output; and
- Y is the final demand of X.

The diagonal of the Leontief Matrix (I-A) gives the net output for each sector with positive coefficients while the rest of the matrix gives the input requirements with negative coefficients. The inverted Leontief matrix (I-A)-1 shows how direct and indirect requirements change with change in final demand by one unit.

Once the inverted Leontief matrix is estimated, it is easier to calculate multipliers. Multiplier estimation is based on the estimation of the inverted Leontief Matrix, which is derived using the I-O coefficient matrix.

A I-O coefficient matrix is estimated using the I-O table, which summarises the demand and the supply side transactions that are taking place in the economy. The input-output coefficient can be interpreted as the input requirement of a particular sector from other sectors, to produce one unit of output of that sector. Such a matrix can be obtained by dividing column entries by total output of the sector, where column entries show the input requirement of a sector.

Total output is the sum total of total input, gross value added and net indirect taxes. Hence the sum of input coefficient, indirect tax coefficient and income coefficient should be one. Once the I-O coefficient matrix is obtained, the Leontief Matrix is obtained by subtracting the I-O coefficient matrix from an identity matrix of the same order. The diagonal of the Leontief Matrix gives the net output for each sector with positive coefficients while the rest of the matrix gives the input requirements with negative coefficient. The matrix thus obtained, the 'Leontief Matrix', is then inverted to estimate the multipliers.

Data Sources

In India, the Central Statistics Office (CSO), of the Ministry of Statistics & Programme Implementation prepares the input-output table which is updated every five years. NSSO's report on employment and unemployment for the year 2007-8,[73] has been used for obtaining employment data.[74]

The latest available input-output table is for the year 2007-08. Considering the structure of the economy does not change significantly in a span of 5-7 years, we can safely use the estimates derived from the latest available table.

The CSO matrix, however, is a "commodity X commodity" matrix for 130 commodities. To simplify the analysis, for this study, eight broad sectors were identified based on economic activity. The entries in the I-O table were then aggregated on the basis of the economic activities so identified and NIC-2008 codes, to convert the 130 X 130 commodity X commodity matrix into a 9 X 9 sector X sector matrix.

Aggregation of 130 Commodities into Nine Sectors

Sectors	Commodities in I-O Table-2007-08
Agriculture & Allied Activities	1-26
Mining	27-37
Rubber (Tyre Products)	61
Automobiles and Transport Equipment)	83, 97-100
Other Manufacturing	38-105, except 61, 83, 97,98, 99, 100
Construction	106
Electricity, Water Supply	107-108
Services	109-129
Public Administration	130

Source- TARI Research Team, based on NIC 2008

[73] In order to make the data comparable across the factors, employment data for the year 2007-08 has been used despite the fact that it was thin round of the NSSO survey.

[74] Report titled "Employment and Unemployment Situation in India,2007-08"

Annexure – II HS Code of Tyre Segments

4/6 HS Classification of Tyres	
New Tyres	**4011**
Passenger Cars	401110
Buses/Trucks	401120
Aircraft	401130
Motorcycles	401140
Bicycles	401150
Tractor/Forestry	401161, 401192
Industrial/Construction	401163, 401169, 401193,401194, 401199
Retreaded/Used Tyres	**4012**(401211,401212,401213, 401219, 401220, 401290)

Source: WITS Database

Annexure – III Top 15 Countries of Tyre Imports

Key New Tyre Export Destinations (US $ Bn)				
Countries	**2013**	**2014**	**2015**	**Total**
USA	14.80	15.10	14.74	44.64
Germany	7.76	7.64	6.32	21.72
France	4.21	4.01	3.39	11.61
Canada	3.39	3.31	3.12	9.81
Mexico	3.09	3.38	3.23	9.71
United Kingdom	3.08	3.08	2.53	8.69
Netherlands	2.56	2.68	2.40	7.64
Italy	2.55	2.50	2.12	7.17
Australia	2.59	2.21	1.83	6.63
Russian Federation	2.68	2.21	1.30	6.19
Belgium	2.24	2.07	1.63	5.94
Spain	1.92	1.91	1.70	5.54
Saudi Arabia	1.79	1.78	1.68	5.25
Brazil	1.64	1.35	0.92	3.91
United Arab Emirates	1.38	1.52	0.91	3.81
Key Countries	55.68	54.77	47.82	158.27
World Total	84.95	82.59	72.20	239.74
Key Countries/World	65.5%	66.3%	66.2%	66.0%

Source: UN Comtrade

ATMA Member Companies

apollo TYRES
BIRLA TYRES Unbeatable
BRIDGESTONE
CEAT
Continental The Future in Motion
GOODYEAR
JK TYRE
MICHELIN A BETTER WAY FORWARD
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