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EUROPEAN  
TYRE & RUBBER  
manufacturers'  
association



# THE ECONOMIC IMPACT OF THE EU TYRE MANUFACTURING INDUSTRY

NOVEMBER 2024







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# FOREWORD

I'm pleased to introduce this report by Oxford Economics, highlighting the substantial socio-economic role the tyre industry plays in Europe. In a rapidly changing environment, this study gives a clear picture of our sector's vital contribution to Europe's industrial competitiveness, driven by economic growth, innovation, and productivity. These findings underline that tyres are not just about mobility but also keep the economy moving forward.

The numbers speak for themselves. In 2023, the tyre industry contributed €13.9 billion directly to the EU economy - an economic impact comparable to cities like Hannover or Venice. Each euro generated in the sector has a multiplier effect of 3.2, with far-reaching benefits through our factories, supply chains, and R&D centres, with a total contribution to the European GDP of €43.9 billion.

European tyre manufacturers directly employ over 112,000 workers and support additional jobs through their supply chains and wage-induced spending, totalling 498,000 jobs across the European Union (EU). This illustrates that the industry is not only rooted in Europe's rich automotive history but also continues to play a critical role in job creation in communities across Europe, with 93 plants and 17 research and development (R&D) centres.

The industry has also shown continued commitment to innovation and delivering safer and more sustainable mobility: between 2017 and 2023, €10 billion was invested in R&D. This investment is expected to yield long-term productivity benefits, contributing €4.6 billion to the EU GDP in 2035, with significant spillover effects across the economy.

However, the sector is still navigating the aftermath of the COVID-19 pandemic, which has significantly impacted the automotive industry and consumers' purchasing power. For example, consumer tyre production remained 13% below pre-pandemic levels.

Despite a positive trade balance of €0.4 billion, competing globally and within Europe is increasingly difficult due to high energy costs and evolving regulations.

With the start of a new EU legislative term, there's an opportunity to strengthen our industry's competitiveness. Support for a reliable supply of raw materials, fair competition, and a balanced regulatory approach are needed for Europe's tyre sector to thrive in a complex global market. This also includes fostering digitalisation and innovation to develop and deploy more sustainable materials, leading to more circular, safer, and smarter products and services.

This research from Oxford Economics aims to give policymakers, stakeholders, and the wider public a practical understanding of the significant economic and social contributions the tyre industry makes to Europe and recognise the strategic nature of tyres, which underpin vital aspects of logistics, agriculture and daily mobility of European citizens across the continent.



**Chris Delaney**  
President, ETRMA



# EXECUTIVE SUMMARY

**€43.9 billion**

Total GDP  
contribution of  
the EU tyre  
manufacturing  
industry.



Tyres are an important enabler of mobility, allowing the transport of people and goods within and between economies. Their quality is of great importance, determining the safety, performance, and comfort of travel. In 2023, members of the European Tyre & Rubber Manufacturers Association (ETRMA) sold over 300 million tyres from their EU facilities.

This study, commissioned by the European Tyre and Rubber Manufacturers Association, assesses the impact of the EU tyre manufacturing industry on the EU economy, focusing on three key areas. First, we quantify the core economic footprint of the EU tyre manufacturing industry in 2014, 2019, and 2023. Then, we review the importance of trade in tyres to the EU economy. Finally, we quantify the impact of R&D spending by EU tyre manufacturers on the long-term productivity of the EU economy.

## CORE ECONOMIC FOOTPRINT

**The EU tyre manufacturing industry supported an estimated total contribution to GDP of €43.9 billion in 2023.** This contribution is 13% higher than 2014 (in constant 2023 prices).<sup>1</sup> The 2023 contribution to GDP was comprised of €13.9 billion generated by the manufacturers themselves (**direct impact**), €20.0 billion supported through their supply chains (**indirect impact**), and €10.0 billion supported by the wage spending of the direct and indirect workers (**induced impact**).

**As the total GDP impact across the EU economy was 3.2 times the direct impact alone, EU tyre manufacturers can be said to have had a “GDP multiplier” of 3.2.** In other words, for every €1 million contribution to GDP the EU tyre manufacturing industry generated in 2023, it supported a further €2.2 million across the EU economy through their expenditure.

**This economic contribution is estimated to have supported almost half a million jobs across the EU in 2023.** This represented a fall of 6% since 2014. While tyre production grew over the period, the fall in the total employment supported by the industry reflects productivity improvements across the wider EU economy and changes in market dynamics, with increased competition from other parts of the world.

**In 2023, tyre manufacturers themselves employed 112,000 workers, equivalent to one in every 270 workers employed in manufacturing across the EU.** A further 259,000 jobs were supported through supply-chain impacts, and 128,000 jobs were supported through the wage-financed spending of the tyre manufacturers’ employees, and employees in their supply chains.

**498,000**

**jobs**

Total employment  
supported by the  
EU tyre manufacturing  
industry.





**In this case, the employment multiplier was 4.5.** This means that for every 1,000 people employed in the EU tyre manufacturing industry, an additional 3,500 jobs were supported in other parts of the EU economy. The larger employment multiplier than the GDP multiplier reflects the high productivity of workers in the industry. In 2023, we estimate that the productivity of tyre manufacturing workers was approximately 60% higher than the average across the EU economy.

**The total tax contribution supported by this activity was €12.2 billion through all channels of impact.** This would have been enough to pay the wages of almost 295,000 professionals in the teaching, health, and social care sectors.

## INTERNATIONAL TRADE

**In 2023, the value of EU tyre exports was €7.4 billion—equivalent to 12% of the value of total EU exports in manufactured rubber and plastic products.** At the same time, the region imported €6.9 billion in tyres, resulting in a €0.4 billion trade surplus.<sup>2</sup> There was a trade surplus for every year between 2014 and 2023, except 2022. In 2022, the trade deficit could be linked to the temporary removal of anti-dumping duties on imports of bus and truck tyres from China, which saw imports of these goods surge by around one-third.

**The tyre manufacturing industry also requires international trade for inputs into the tyre production process.** In 2023, EU tyre manufacturers spent €4.2 billion or 15% of their total spend on inputs from outside of the EU. The largest shares of this were spent on chemical products and natural rubber from countries including Cote d'Ivoire, Thailand, and Indonesia.

## R&D IMPACTS

**Companies in the tyre manufacturing industry invest heavily in R&D, driving widespread economic benefits.** Between 2017 and 2023 the tyre manufacturers in the scope of the analysis spent an estimated €10 billion on R&D in the EU. The productivity boost resulting from this spend benefits both the tyre manufacturing industry itself (**direct R&D impact**) and the wider economy (**R&D spillover effect**). Over the long term, these benefits combine to create new economic conditions across the EU, and are associated with increased productivity levels, contributing €4.6 billion to GDP across the EU in 2035.<sup>3</sup>

# €7.4 billion

Value of tyre exports from the EU in 2023.



# €4.2 billion

Procurement spending outside of the EU by the EU tyre industry in 2023.



# €4.6 billion

Productivity boost to the EU economy in 2035 from R&D spending.



<sup>2</sup> Figures do not sum due to rounding.

<sup>3</sup> Our modelling shows that R&D-stimulated productivity benefits start accruing almost immediately and grow over time, though at a decreasing rate. We expect the full extent of the gains to be realised by 2035, leading to a lasting boost to EU GDP beyond 2035.

# IMPORTANCE OF THE TYRE INDUSTRY TO THE EU

## SUPPORTING GDP & JOBS ACROSS THE EUROPEAN UNION



More than

**300 million**

tyres are sold in the EU each year.



The EU tyre manufacturing industry supported:



**€43.9 billion**  
contribution to EU GDP ...



... **up 13%** in  
2023 relative to 2014



Direct: €13.9 bn

Indirect: €20.0 bn

Induced: €10.0 bn



**3.2×** GDP multiplier

For every **€1 million** directly generated by the tyre industry, a further **€2.2 million** was supported in the EU economy.



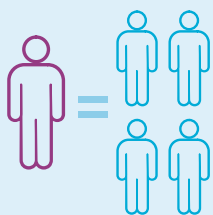
**498,000 jobs**



Direct: 112,000

Indirect: 259,000

Induced: 128,000



**4.5×** employment multiplier

For every **1,000** workers directly employed an additional **3,500** jobs were supported in the EU economy.

**Note:** Unless otherwise specified, all values in this infographic relate to 2023, and all monetary values are measured in constant, 2023 prices. In other words, the impact has been adjusted for inflation using the EU whole-economy GDP deflator.

Totals may not sum due to rounding.





**€12.2 billion** in tax revenues—enough to pay **295,000 workers** in the teaching, health, and social care sectors.

## GLOBAL TRADE



Exports

**€7.4 billion**



Imports

**€6.9 billion**



Trade surplus

**€0.4 billion**

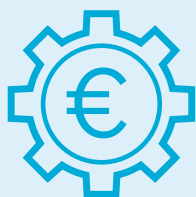


**15%** of tyre manufacturers spend (**€4.2 billion**) was on imports—such as chemical products and natural rubber—from outside of the EU.

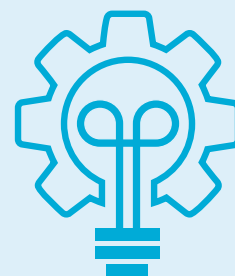
## R&D IMPACTS



The **€10.0 billion** R&D spending of ETRMA members between 2017 and 2023...



...projected to boost the productivity of the EU economy by **€4.6 billion** in 2035.



Over **20,000** patents held by ETRMA members.



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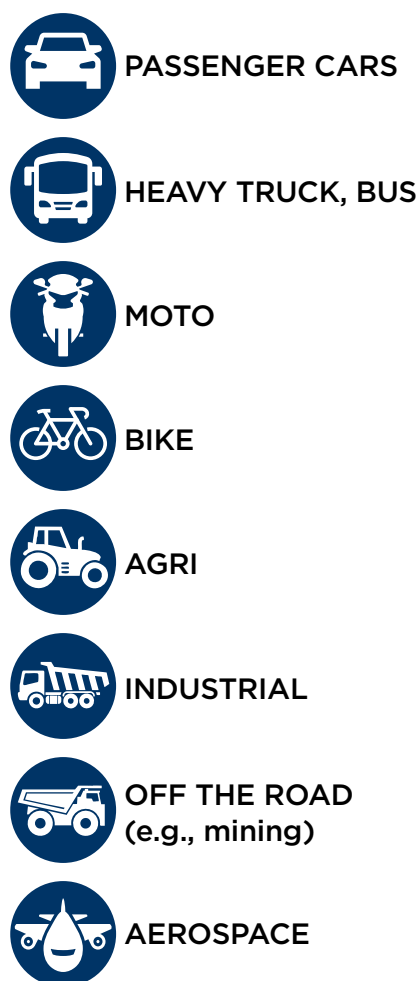


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# 1. INTRODUCTION

**From cars and trucks to airplanes and trains, tyres are a core component of a vehicle's infrastructure.** As the only point of contact between a vehicle and the road, tyres are vital to ensure the safety and other critical performances of a vehicle. This study, commissioned by the European Tyre & Rubber Manufacturers Association (ETRMA) and undertaken by Oxford Economics, examines the economic impact of tyre manufacturing in the EU.

**Fig. 1: Vehicles that use tyres**



## 1.1 INTRODUCTION TO THE EU TYRE MANUFACTURING INDUSTRY

The EU is home to some of the largest tyre manufacturing companies in the world. In 2023, ETRMA members sold over 300 million original and replacement tyres for cars and trucks, from their plants and facilities located in the EU.<sup>4</sup> These companies produce innovative and technologically advanced tyres, allowing them to remain successful in a highly competitive market. While tyres are well used in vehicles commonly found on the roads such as cars, buses, trucks and motorbikes and bicycles, they are also used in agriculture, industry, and aviation.

**We estimate that the value of output of the EU tyre manufacturing industry was €40.0 billion in 2023.** This was up 14% relative to 2014 (in constant 2023 prices).<sup>5</sup> As a consequence, the industry supports significant economic activity, international trade, jobs, and tax revenues across the EU, which we quantify in Sections 2 to 4 of this report.

**Demand for tyres is driven by production of motor vehicles, and purchases by consumers, fleets, and businesses to replace tyres in their existing vehicles.** In 2023, the EU produced 12.4 million cars, and 2.2 million commercial vehicles, requiring 58.4 million tyres.<sup>6</sup> In the same year, over 208 million replacement consumer tyres were sold in the region by ETRMA members.<sup>7</sup>

**Road safety laws play an important role in how often consumers in Europe replace their tyres.** A 2021 survey of four key tyre markets (Great Britain, the United States, Germany, and Australia) revealed that Germans are the most likely to change their tyres regularly, with one in five stating that they would change their tyres once a year or more.<sup>8</sup> This likely reflects the variations in weather in the country which can require winter and non-winter sets. In seven EU countries, winter tyres are mandatory, and in nine additional EU countries (including Germany), they are mandatory in certain weather conditions.

**In the European market, price is also a key factor influencing consumers' choice of tyre.** While there is evidence of a marked improvement in the quality of premium tyres between 2013 and 2020, the share of budget products in the market increased from 39% to 62% for passenger car tyres, and from 13% to 30% for truck and bus tyres.<sup>9</sup> This is driven by an increasing supply of cheaper tyres from China.

<sup>4</sup> 'ETRMA Tyre sales 2021', ETRMA, January 2022, accessed April 2024

<sup>5</sup> Unless otherwise stated, all monetary values in this report are measured in constant, 2023 prices. In other words, the impact has been adjusted for inflation using the EU whole-economy GDP deflator.

<sup>6</sup> Oxford Economics Global Industry Databank

<sup>7</sup> ETRMA, 'European replacement tyre sales continue negative trend in last quarter of 2023', accessed August 2024

<sup>8</sup> YouGov, 'How often do consumers in major markets change their tyres?', 2021, accessed April 2024

<sup>9</sup> LIZEO, 'European Tyre Labelling 2012-20, Approaching the New Label', 2021, accessed May 2024

**Fig. 2: ETRMA member organisation locations in the EU**

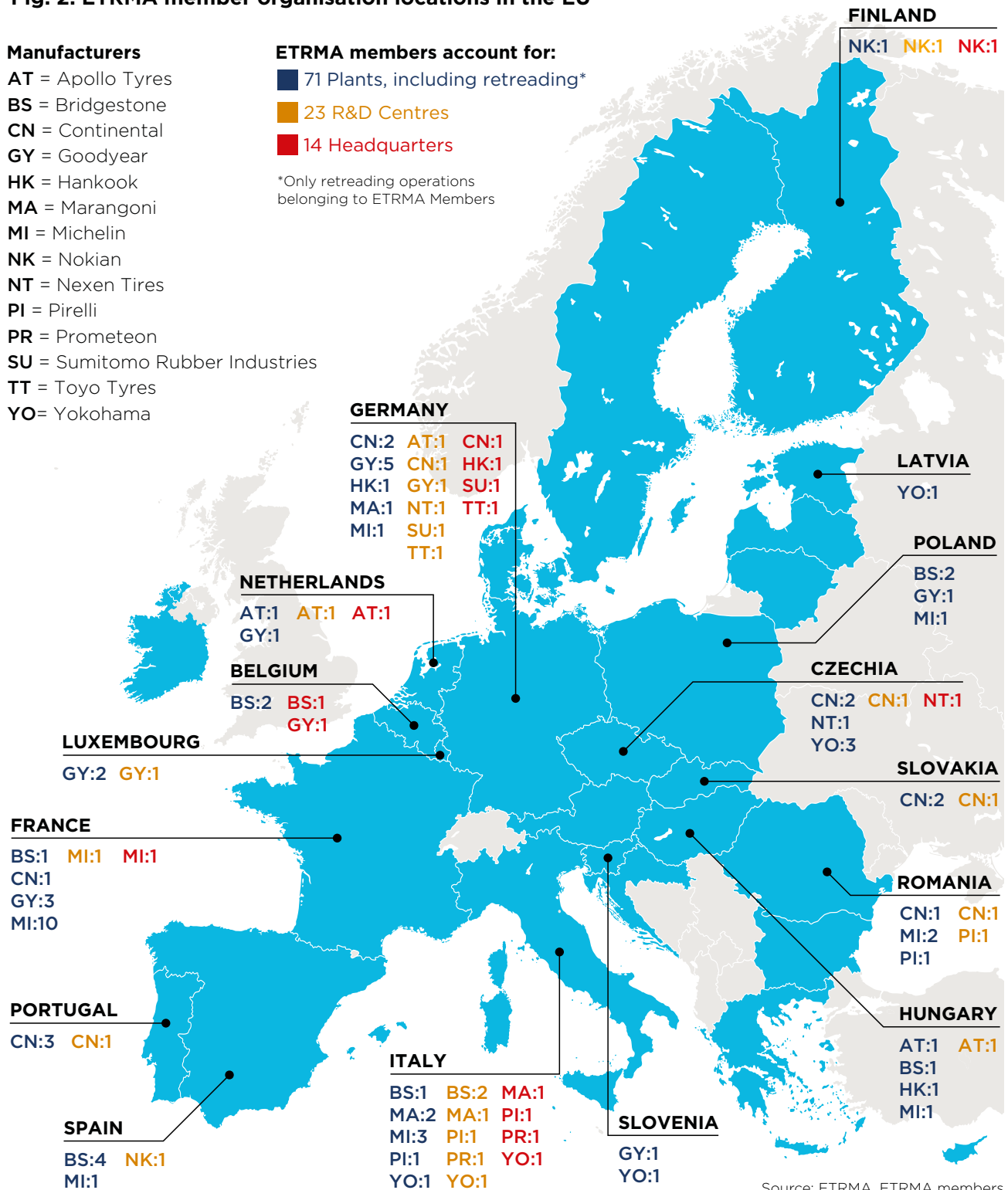
**Manufacturers**

AT = Apollo Tyres  
BS = Bridgestone  
CN = Continental  
GY = Goodyear  
HK = Hankook  
MA = Marangoni  
MI = Michelin  
NK = Nokian  
NT = Nexen Tires  
PI = Pirelli  
PR = Prometeon  
SU = Sumitomo Rubber Industries  
TT = Toyo Tyres  
YO = Yokohama

**ETRMA members account for:**

- 71 Plants, including retreading\*
- 23 R&D Centres
- 14 Headquarters

\*Only retreading operations belonging to ETRMA Members



Source: ETRMA, ETRMA members



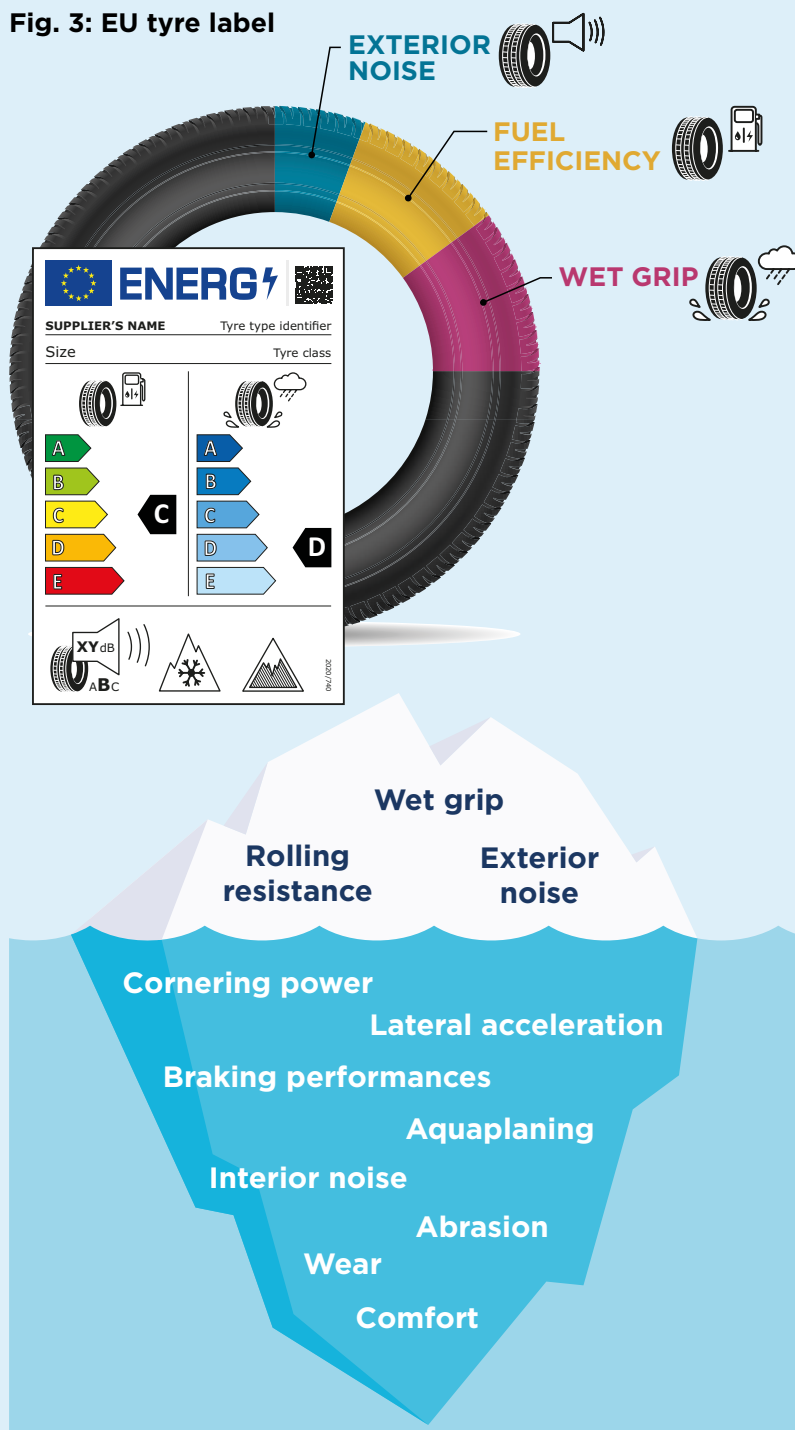
## THE TYRE 'PERFORMANCE TRIANGLE'

Tyres are a technically complex product, manufactured to guard against wear and tear, provide a firm grip in wet conditions, and counter the poor fuel efficiency caused by rolling resistance.

However, the laws of physics and material science result in a tyre "performance triangle" where high performance in one of these areas comes at the expense of the others. Tyres can account for 20% to 30% of the fuel consumption of vehicles, and a tyre with lower rolling resistance will reduce a vehicle's energy consumption, resulting in better fuel efficiency and lower CO<sub>2</sub> emissions.<sup>10</sup> But, this must be balanced against reduced traction on wet or slippery surfaces.

Manufacturers carefully combine materials to optimise the "performance triangle" dependent on the purpose of the tyre. The optimal material composition of the tyre will vary between those designed for use in the summer, winter, and all seasons.<sup>11</sup> While vehicle manufacturers will typically consider around 15 performance criteria, tyre manufacturers evaluate around 50, to optimise overall tyre performance.

Fig. 3: EU tyre label



<sup>10</sup> European Commission, "A Consumer's Guide to Energy Efficient Tyres", accessed September 2024

<sup>11</sup> These materials include rubber compounds, synthetic polymers (artificial materials produced in laboratories), steel, textiles, fillers (sealants), and antioxidants and antiozonants (compounds resisting the negative impact of reactions with oxygen and ozone respectively). The optimal curing system—the chemical cross-linking of rubber and vulcanising agents (rubber-strengthening compounds)—will also vary by type of tyre.

## 1.2 HOW THE EU TYRE MANUFACTURING INDUSTRY SUPPORTS THE EU ECONOMY

The tyre manufacturing process in the EU involves skilled employment, associated with the production of valuable goods and services, and the generation of tax revenues. But the economic benefits of the industry's activity extend well beyond that, by supporting work and wealth creation in other parts of the European economy.

**To capture the various strands of economic benefit provided by the EU tyre manufacturing industry, this study applies a standard means of analysis called an economic impact assessment.** More specifically, we quantify the impact of tyre manufacturing on the EU economy in

2014, 2019, and 2023. The analysis is underpinned by official statistics on national economies and transactions between industries and countries across the EU, as well as a bespoke survey of the financial and employment performance of ETRMA members.

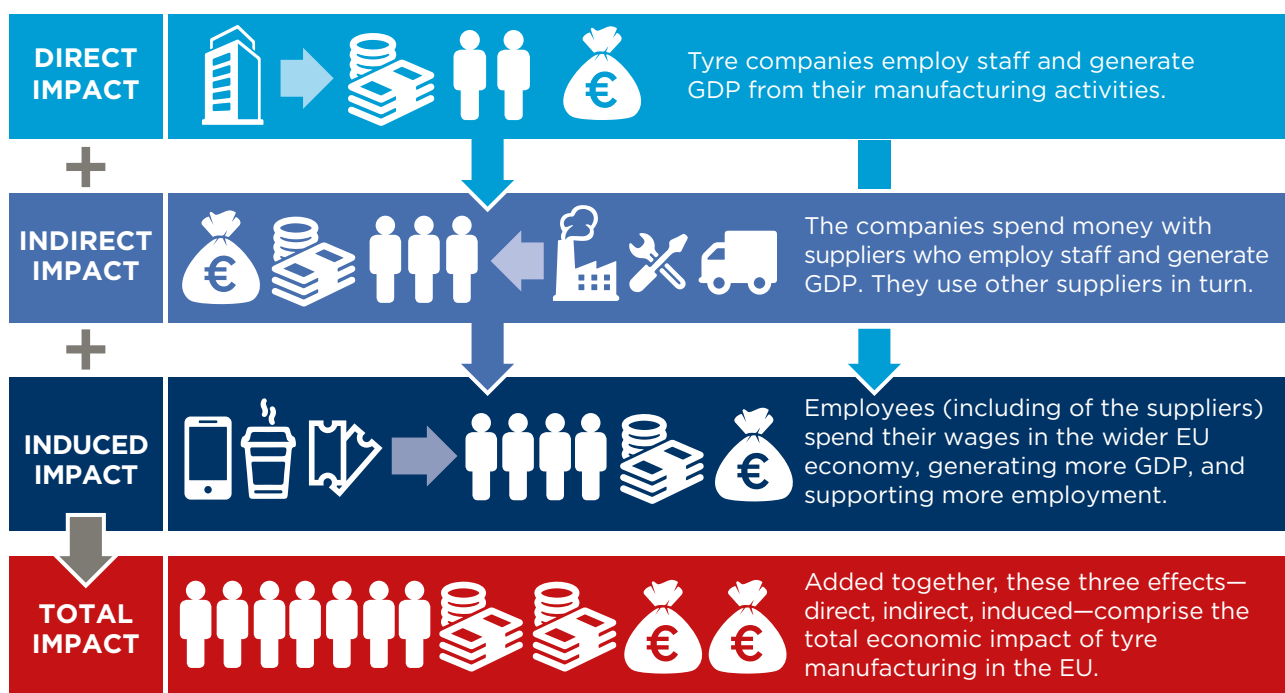
The standard impact assessment framework considers three channels through which the tyre manufacturing industry contributes to the EU economy:

- The **direct impact**, which relates to the value of tyre manufacturing in the EU, and the associated employment.

- The **indirect impact**, or supply chain impact, which occurs when companies in the industry buy inputs of goods and services from businesses in the EU, and their suppliers (or businesses in their supply chains) buy inputs of goods and services from other EU businesses.
- The **induced impact**, or wage-financed spending impact, which is the economic activity stimulated from both the industry's and the industry's suppliers' wage payments to employees.

The **total economic impact**—or core economic “footprint” as it is also known—is the sum of these three impacts (Fig. 4).

**Fig. 4: Channels of impact assessed for the core economic footprint**



The economic impact is measured by three metrics: the gross value-added contribution to GDP (hereafter the “GDP contribution”), as well as the employment headcount, and tax revenues supported.

**We also quantify the wider “catalytic” economic impacts,** through which the companies’ R&D spending contributes to long-run productivity growth. Since the benefits of R&D are realised over the long run, we look at total spending on R&D over several years—

between 2017 and 2023—to build a full picture of the impacts. Identified from our in-house R&D model, the boost to productivity comes from both new innovations and from enhancing the skills of the labour force. The model includes two channels of benefits supported by this investment:

- Those which accrue **directly** to the tyre manufacturers undertaking the research; and
- The **spillover** benefits generated as firms **in other sectors** of the economy apply the resulting knowledge and innovations to develop new products and improve operational efficiency.

### 1.3 STRUCTURE OF THE REPORT

The remainder of this report is structured as follows:

- **Section 2** assesses the 2023 core economic footprint of the tyre manufacturing industry in the EU, through the direct, indirect, and induced channels of impact.
- **Section 3** explores how the core economic footprint changed between 2014 and 2023.
- **Section 4** sets out the importance of international trade in tyres to the EU economy.
- **Section 5** quantifies the impact of ETRMA members’ R&D activities on the EU economy’s productive capacity.
- **Section 6** qualitatively discusses the downstream economic impacts of tyre manufacturing, and the “circular economy” for tyres.
- The **Appendices** provide a detailed description of the methodology.







## 2. THE CORE ECONOMIC FOOTPRINT OF EU TYRE MANUFACTURING

**The EU tyre manufacturing industry generates an economic footprint across the EU.** This core economic footprint is realised through the blending, milling, building, and curing processes required for making tyres, as well as through their supply chain spending and the spending supported by their wage payments and the wages along their supply chains.

### 2.1 VALUE OF PRODUCTION OF TYRE MANUFACTURING

**We estimate that the value of production of tyre manufacturing in the EU was €35.1 billion in 2023.** Almost three-quarters (or €26.1 billion) of this value reflected expenditure on goods and services. Employment costs and capital procurement made up the remaining shares of 19% and 6%, respectively.

### 2.2 DIRECT IMPACTS

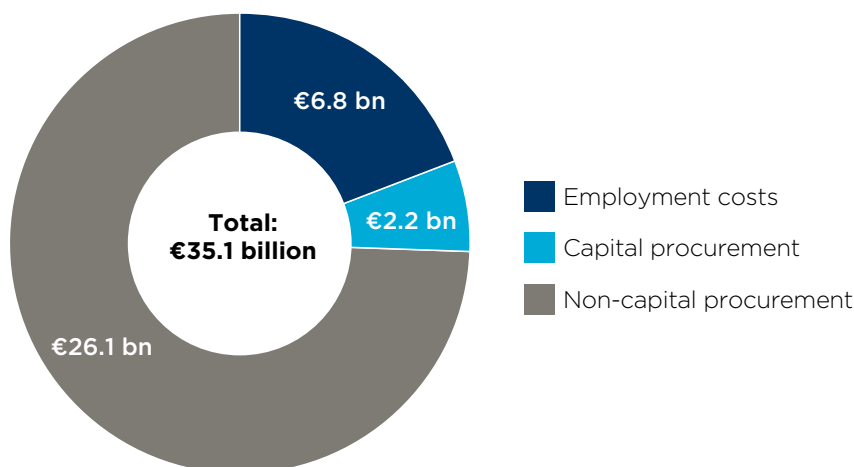
**The EU tyre manufacturing industry generated an estimated €13.9 billion direct contribution to GDP across the EU economy in 2023.** Its GDP contribution is calculated by summing employment costs (€6.8 billion) and profits (€7.1 billion).<sup>12</sup>

- **The EU tyre manufacturing industry employed 112,000 workers across the EU during 2023.** This was equivalent to one in every 270 workers employed in manufacturing in the Union. Workers in the industry are highly productive. In 2023, they generated an estimated economic value of €124,600 per worker.<sup>13</sup> This was 58% higher than the average across all sectors in the EU and contributes to improving living standards across the region. Further to this, it

was approximately 50% greater than the productivity of EU manufacturing as a whole, while also being higher than several other productive manufacturing sub-sectors including basic metals, machinery, motor vehicles, and other transport equipment.

- **Additionally, we estimate that the tyre manufacturing industry directly contributed €3.5 billion to the tax authorities in the EU in 2023.** Labour taxes accounted for more than half—or €1.9 billion—of this impact, followed by taxes on products which accounted for just under one-third—or €1.1 billion. The remaining contribution was comprised of taxes on production and corporation tax.

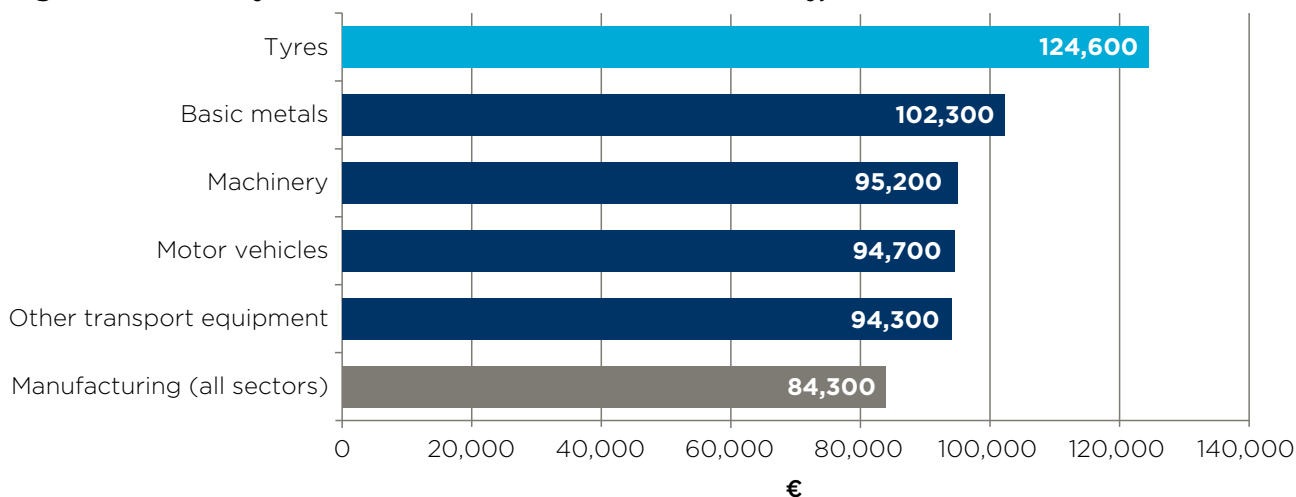
**Fig. 5: Value of production of tyre activity in the EU, 2023**



Source: Oxford Economics, Eurostat, ETRMA members

<sup>12</sup> Profits are measured as gross operating surplus.

<sup>13</sup> Productivity is calculated as GDP per worker.

**Fig. 6: Productivity GDP of other sectors in the EU economy, 2023<sup>14</sup>**

Note: Manufacturing sub-sectors (excluding tyres) are estimated based on 2021 values grown in line with productivity in the manufacturing sector as a whole.

Source: Oxford Economics

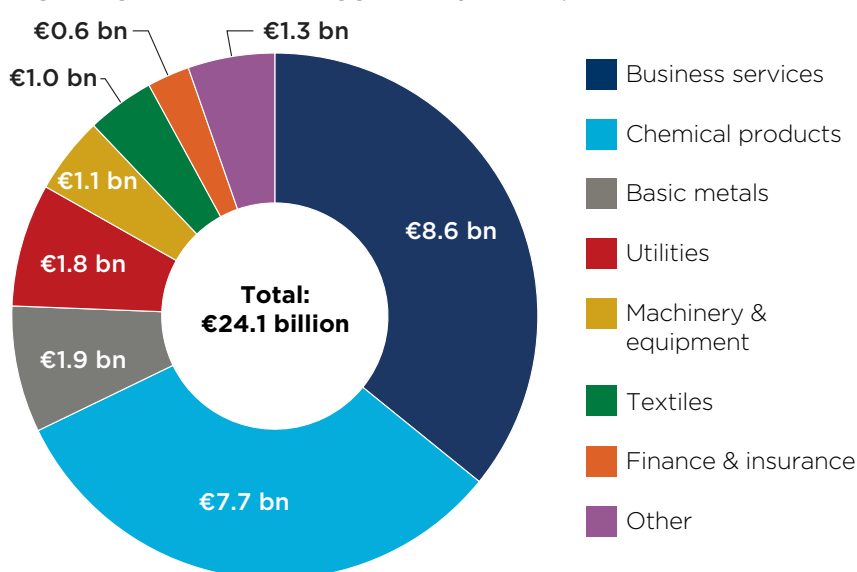
### 2.3 INDIRECT IMPACTS DUE TO SUPPLY-CHAIN SPENDING

**We also consider impacts as a result of supply-chain spending—known as the indirect impacts.** The EU tyre manufacturing industry must purchase natural and man-made materials to produce tyres, alongside a wide range of professional and business support services to ensure the smooth running of the whole enterprise. A clear majority of these services are purchased from suppliers also based in the EU, which buy inputs of goods and services from other EU suppliers in turn.

**In 2023, we estimate that the EU tyre manufacturing industry spent €28.2 billion on third-party purchases from around the world.** This included both operational and capital spending. An estimated 85%—or €24.1 billion—was

spent on inputs from EU-based suppliers, while the remaining 15%—or €4.2 billion—was spent on imports from the Rest of the World.<sup>15</sup> Importantly, around

one-third (or €1.3 billion) of these imports were on natural rubber from countries including Cote d'Ivoire, Thailand, and Indonesia.

**Fig. 7: Spend with EU suppliers by sector, 2023**

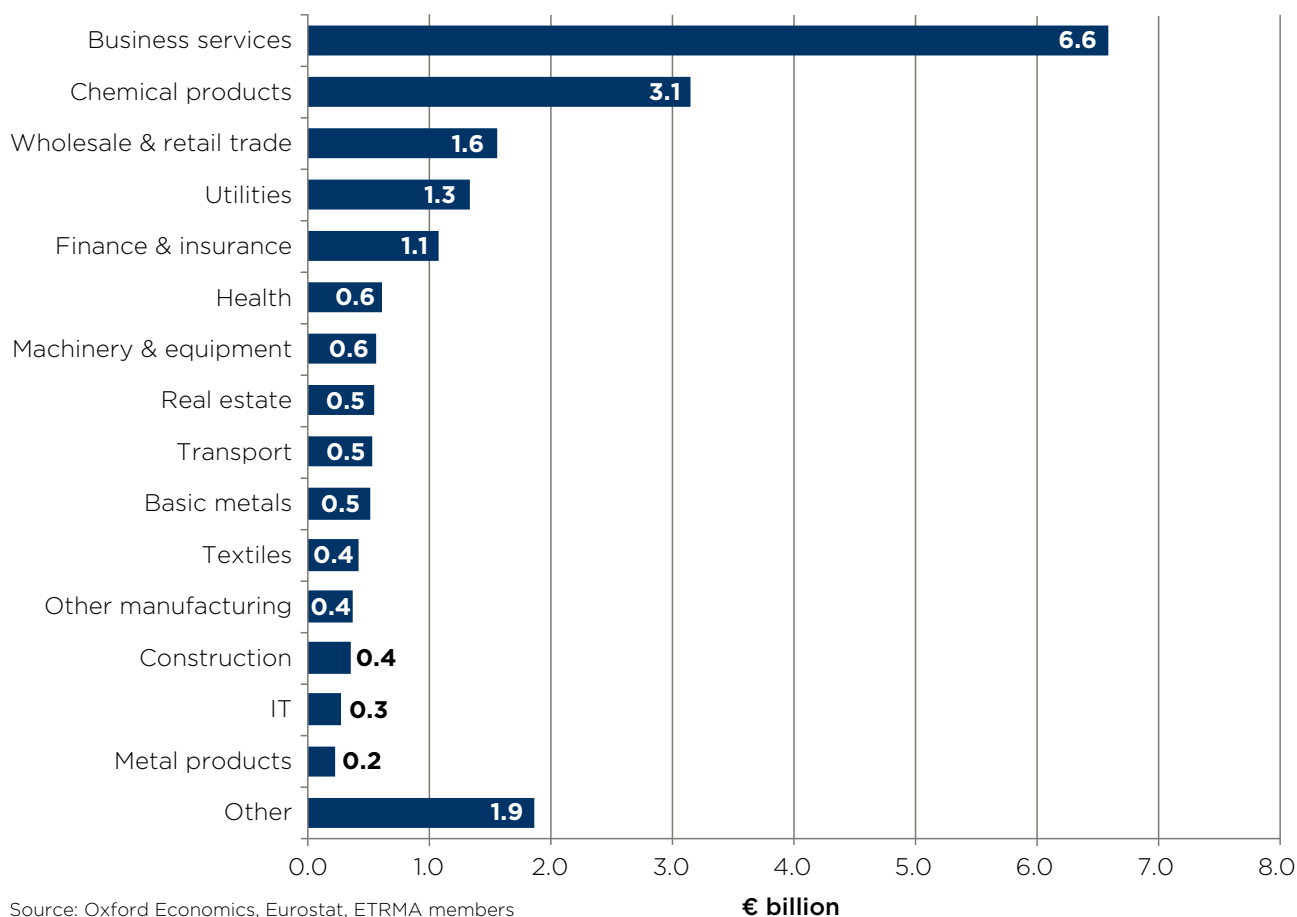
Source: Oxford Economics, Eurostat, ETRMA members

<sup>14</sup> Motor vehicles refers to the 'Manufacture of motor vehicles, trailers and semi-trailers'. This includes cars, vans, trucks, and the manufacturing of parts for these vehicles.

<sup>15</sup> Figures do not sum due to rounding.



**Fig. 8: Indirect contribution to GDP by sector, 2023**



**Of the total value of inputs purchased from EU suppliers, an estimated €8.6 billion—or 36%—was spent in the business services sector.**

This included costs related to freelance and agency staff, property management, and intellectual property rights. The next largest amount was spent on chemical products, which accounted for €7.7 billion—or 32%—of the total spend within the EU. This included vital products for tyre production such as synthetic rubber, fillers, antioxidants, antiozonants, and curing systems.

**We estimate that EU tyre manufacturing industry's supply chain spending stimulated a €20.0 billion indirect contribution to GDP across the EU.**

The business services sector, accounted for one-third—or €6.6 billion—of this impact. This was followed by chemical products with a contribution of €3.1 billion and wholesale and retail trade with a contribution of €1.6 billion. We estimate this economic activity also supported 259,000 jobs, and a tax contribution of €6.1 billion in 2023.

## 2.4 INDUCED IMPACTS DUE TO SPENDING ON WAGES

In addition, the tyre manufacturers and their suppliers will pay wages to their staff, enabling those workers to spend money in the wider consumer economy. Employees make purchases at retail, leisure, and other outlets across the EU and beyond, further stimulating economic activity.

**We estimate that, through the induced channel, the EU**

**tyre manufacturing industry sustained an additional €10.0 billion contribution to GDP across the EU, as well as around 128,000 jobs, and €2.6 billion in tax contributions.**

By sector, the real estate sector supported €2.0 billion, or around one-fifth, of the induced contribution to GDP. This was driven by

spending on rent and housing by employees, an important component of consumer spending. This was followed by the retail and healthcare sectors with contributions of €1.3 billion (13%) and €1.1 billion (11%) respectively.

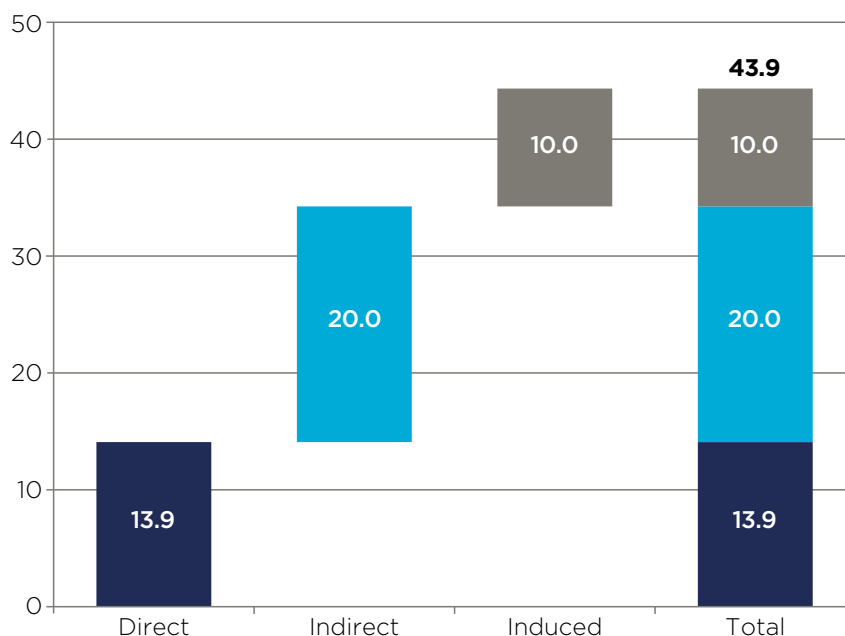
## 2.5 THE TOTAL CORE ECONOMIC FOOTPRINT

In 2023, the EU tyre manufacturing industry supported an estimated **€43.9 billion contribution to GDP across the EU economy**. This was comprised of €13.9 billion in the direct channel, €20.0 billion in the indirect channel, and €10.0 billion in the induced channel.

Since the total GDP impact in 2023 was 3.2 times the direct GDP impact alone, this means that the EU tyre manufacturing industry had an estimated **GDP multiplier of 3.2**. Put differently, for every €1 million in GDP generated by the manufacturers themselves, their expenditure on inputs and wages stimulated a further €2.2 million in GDP across the EU.

**Fig. 9: Total GDP impact of the EU tyre manufacturing industry, 2023**

€ billion



Note: Totals may not sum due to rounding  
Source: Oxford Economics, Eurostat, ETRMA members

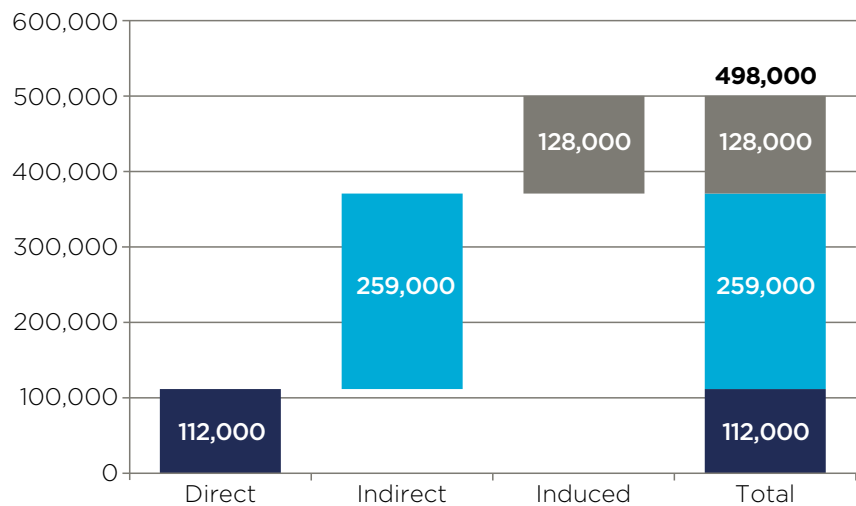
**We estimate that the EU tyre manufacturing industry also supported a total of 498,000 jobs across the EU in 2023.**

Of this, 112,000 workers were directly employed by the tyre manufacturers themselves, while 259,000 jobs were supported through the indirect channel, and 128,000 jobs were supported through the wage-induced spending of the direct and indirect employees.

**This implies that the employment multiplier was 4.5 in 2023.** In other words, for every 1,000 people employed in the EU tyre manufacturing industry, an additional 3,500 jobs were supported in other parts of the EU economy in 2023. The higher employment multiplier, relative to the GDP multiplier, is stimulated by the high productivity and spending power of the industry's employees, in turn supporting more jobs, on a relative basis, in other parts of the economy.

**Fig. 10: Total employment impact of the EU tyre manufacturing industry, 2023**

Jobs, headcount



Note: Totals may not sum due to rounding

Source: Oxford Economics, Eurostat, ETRMA members

**Finally, we estimate that the total tax contribution of the EU tyre manufacturing industry was €12.2 billion in 2023.** While €3.5 billion was directly paid by the EU tyre manufacturing industry itself, the largest share, €6.1 billion, was supported through the

indirect channel, and a further €2.6 billion was supported through the induced channel. In 2023, this would have been equivalent to the wages of almost 295,000 professionals in the teaching, health, and social care sectors.







## 3. THE CORE ECONOMIC FOOTPRINT: HISTORIC TRENDS

Over the last 10 years, tyre production has made an important contribution to the EU economy. However, the scale of its impact has been affected by conditions in the wider economy, notably the Covid-19 pandemic, and increasing competition from imports from outside the EU. In this section, we present results for the EU tyre manufacturing industry's core economic footprint across three years—2014, 2019, and 2023.

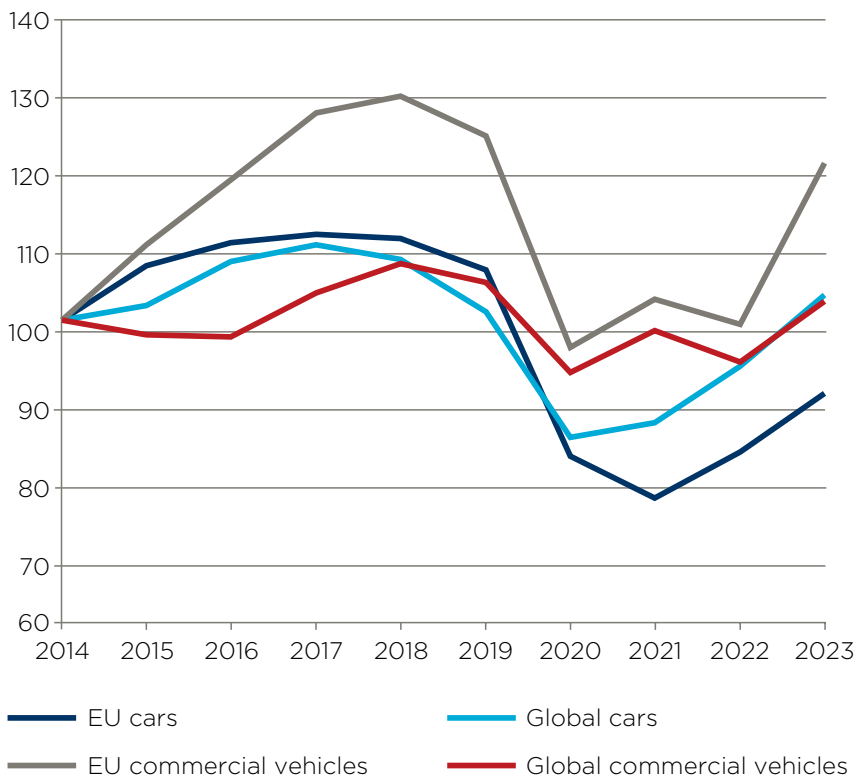
### 3.1 TRENDS IN VEHICLE AND TYRE PRODUCTION

Demand for tyres is driven by the production of new vehicles, as well as replacement tyres for existing vehicles. On the former, EU vehicle production saw steady growth rising 1.7% per year on average between 2014 and 2019 (compared with 0.4% growth per year in global vehicle production over the same period), with production of commercial vehicles outpacing that of personal vehicles (Fig. 11).

Similar to the production of cars, the production of car tyres also grew steadily between 2014 and 2019, albeit at a slower rate of 1.1% per year, on average (compared to 1.3%). Growth in the production of bus and truck tyres (1.5% per year on average between 2014 and 2019) lagged growth in the production of commercial vehicles (4.5% per year over the same period). This likely reflects the rise in imports outside of the EU, which rose almost 23% in absolute terms over the same period.

**Fig. 11: Global and EU vehicle production, 2014–2023**

Index (2014=100)

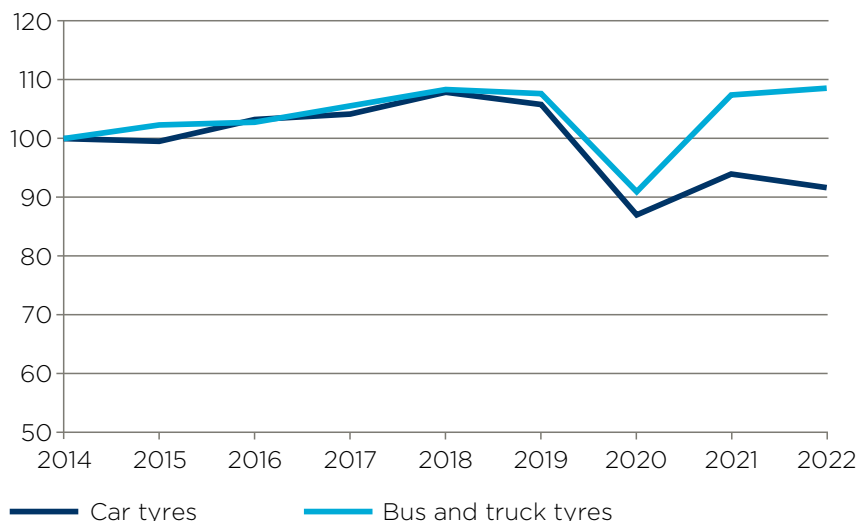


Source: Oxford Economics

The Covid-19 pandemic and the associated factory closures, supply chain constraints, and demand weakness led to a sharp 23% drop in EU vehicle production in 2020 (and a 16% drop in global vehicle production on the same basis). While EU car production continued to contract during the semiconductor shortage in 2021, global car production began to recover. In 2023, EU car production remained 15% below pre-pandemic levels, while global car production was 2% higher. At the same time, production of commercial vehicles in the EU grew faster than the global rate from 2020 and had almost reached pre-pandemic levels by 2023.

**The Covid-19 pandemic had a similarly negative impact on tyre production that it had for vehicles.** In the EU, production of car tyres fell by 18% in 2020, while production of bus and truck tyres fell by 15%, compared to 23% for both cars and commercial vehicles. Similar to trends in vehicle production, the number of car tyres being produced was still 13% below pre-pandemic levels in 2022, while bus and truck tyre production had recovered to be 1% higher.<sup>16</sup>

**Fig. 12: EU production of new and retreaded tyres, 2014–2022**  
Index (2014=100)



Source: Eurostat, Oxford Economics

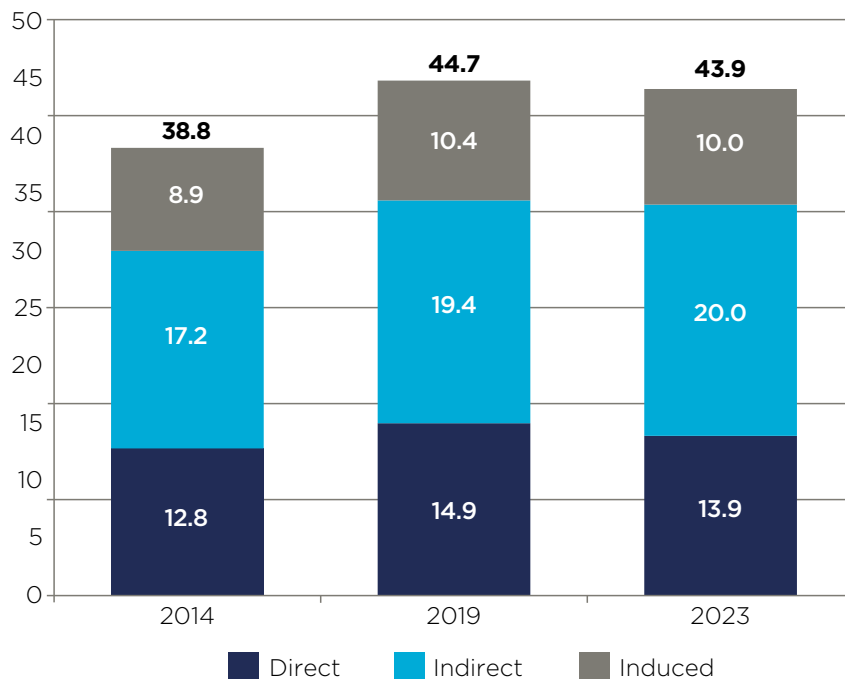
### 3.2 TRENDS IN THE CONTRIBUTION TO GDP

**We estimate that the total contribution to GDP of the EU tyre manufacturing industry increased 13% between 2014 and 2023,** from €38.8 billion to €43.9 billion, in constant 2023 prices.<sup>17</sup>

**The Covid-19 induced recession caused economic activity in tyre production to fall, although this had almost recovered by 2023,** with the total contribution to GDP of the EU tyre manufacturing industry only 2% lower than its 2019 level. This shortfall was primarily driven by a 6% dip in the direct contribution to GDP. The direct GDP contribution is comprised of profits and employments costs, and while profits showed a small increase over the period, employment costs decreased by 13%, reflecting an 18% fall in employment.

**Fig. 13: Total GDP impact, 2014–2023**

€ billion, 2023 prices



Note: Totals may not sum due to rounding

Source: Oxford Economics, Eurostat, ETRMA members

<sup>16</sup> Data for 2023 not available.

<sup>17</sup> Unless otherwise stated, all monetary values in this section are measured in constant, 2023 prices. In other words, the impact has been adjusted for inflation using the EU whole-economy GDP deflator.

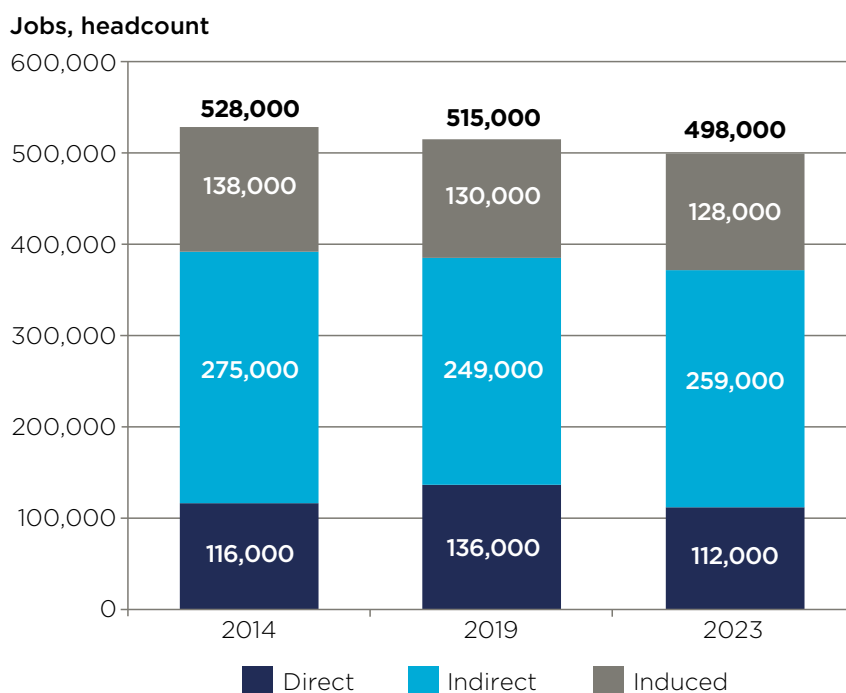


### 3.3 TRENDS IN THE EMPLOYMENT SUPPORTED

**We estimate the total employment supported by the EU tyre manufacturing industry dipped 6% between 2014 and 2023, from 528,000 workers to 498,000 workers.**

Over this 10-year period, each of the channels of impact saw a drop in the employment supported, albeit with some volatility in the trend in each of the three individual historic points analysed for this study. Or put differently, since growth in the total contribution to GDP (+13% between 2014 and 2023) outpaced that of the total employment support (-6% over the same period), we can say that productivity across all channels of impact rose 20% over the past decade. This compares to an 5% rise in EU-wide productivity over the same period.

**Fig. 14: Total employment impact, 2014–2023**



Note: Totals may not sum due to rounding  
Source: Oxford Economics, Eurostat, ETRMA members



## 4. INTERNATIONAL TRADE ANALYSIS

### The EU plays an important role in the global trade of tyres.

Consumers and businesses in the region will benefit as a result of the greater choice and lower prices that trade brings, while companies will have access to a larger market, increasing their revenues and the employment that they can support.

### 4.1 TOTAL EXPORTS AND IMPORTS OF TYRES

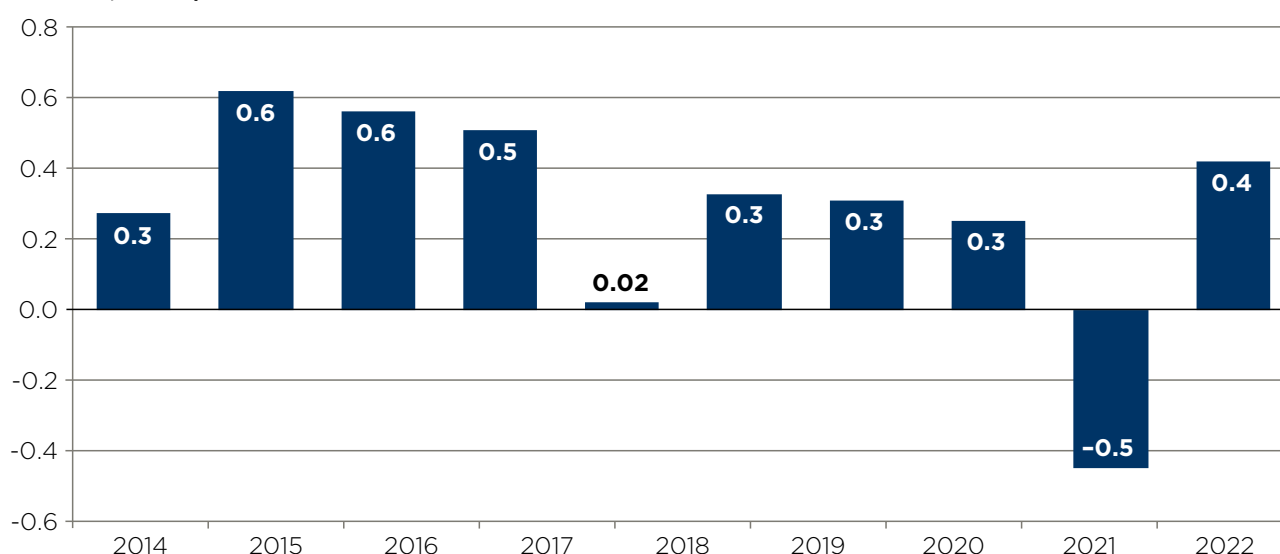
In 2023, new and retreaded car, bus, and truck tyre exports from the EU were valued at €7.4 billion—equivalent to 12% of total EU exports in manufactured rubber and plastic products. This demonstrates the importance of international trade for manufacturers in the region.

It also allows for increased competition between tyre manufacturers, reducing price, while increasing quality and innovation. Imports of new and retreaded car, bus, and truck tyres into the EU were valued at €6.9 billion in 2023. This greater choice enables firms and consumers in the EU to purchase the tyres that best reflect their requirements, whether this is a winter, summer, or all-weather tyre.

Imports and exports of tyres fell in 2020, due to the Covid-19 pandemic, which dampened the demand for tyres, and reduced the movement of goods and services across borders. In 2020, imports of new and retreaded car, bus, and truck tyres fell by 15.1% from the previous year, while exports dropped 14.6%. However, the pandemic's impact was temporary, as both imports and exports began to recover in 2021 and had surpassed pre-pandemic levels by 2022.

**Fig. 15: EU trade balance in car, bus, and truck tyres, 2014–22**

€ billion, 2023 prices

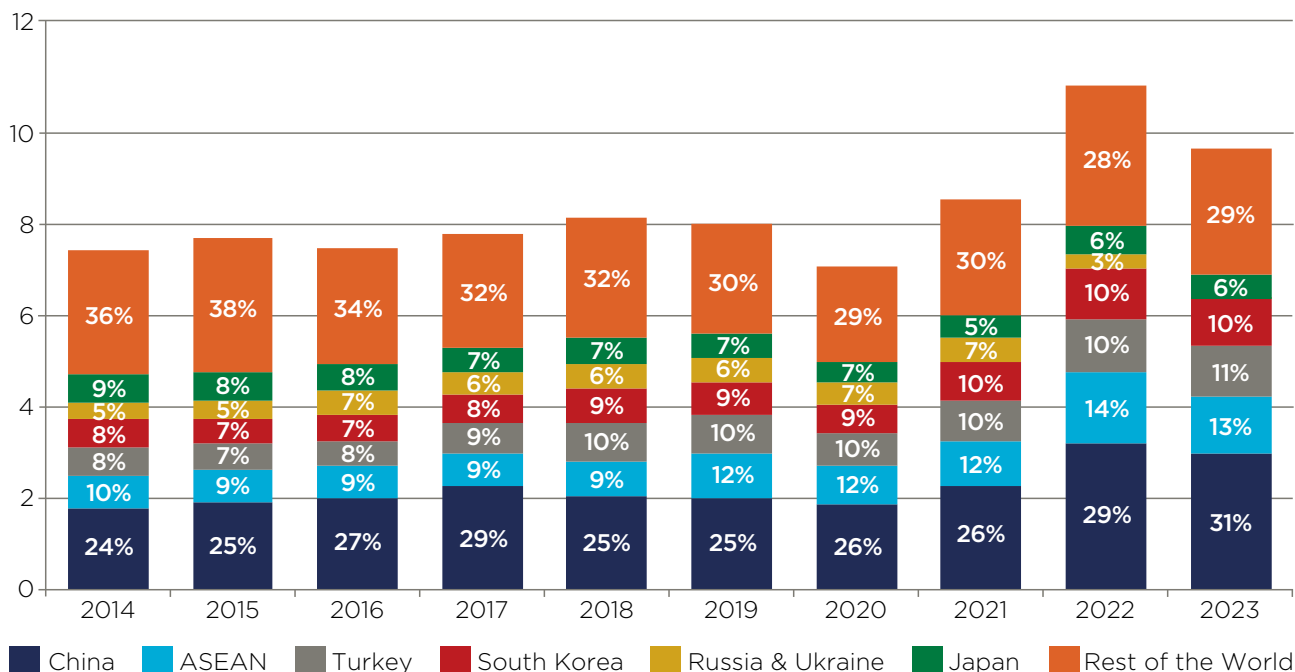


Source: Oxford Economics



**Fig. 16: Imports of tyres into the EU, 2014–23**

€ billion



Source: Eurostat, Oxford Economics

In 2023, the EU had a trade surplus in tyres, worth €0.4 billion (Fig. 15). This surplus had been seen in each year between 2014 and 2023 except 2022. This 2022 trade deficit may be linked to the temporary lifting of anti-dumping duties on imports of bus and truck tyres from China in May 2022, discussed in more detail in Section 4.2. As shown by Fig. 16, the share of tyre imports into the EU that came from China increased to 29% in 2022, up from 26% in 2021.

#### 4.2 BARRIERS TO TRADE

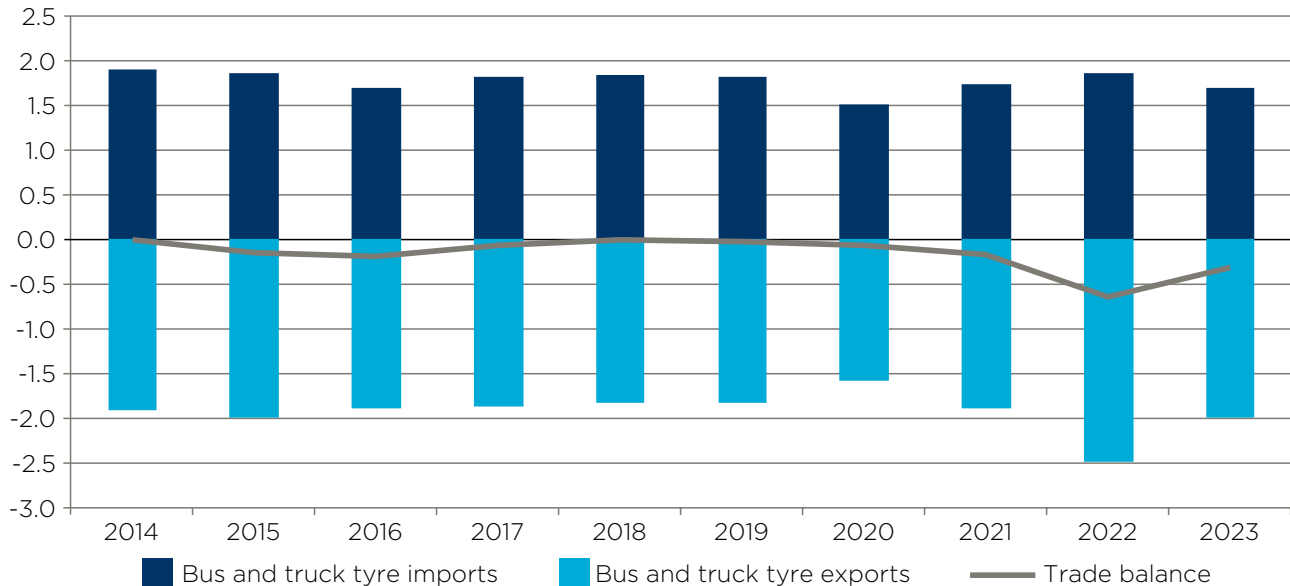
In 2018, the European Union introduced legislation imposing anti-dumping and anti-subsidy duties on imports of bus and truck tyres from China.<sup>18</sup> These were removed in May 2022 while the European Commission re-opened its anti-dumping investigation but were then retroactively re-imposed in April 2023. The European Commission found that on average, Chinese bus and truck tyre exporters were undercutting prices by 14.7%. They also found that the average price in the region decreased by 8% while costs of production decreased by 6%, having negative impacts on EU manufacturers.

Imports of new bus and truck tyres into the EU increased by almost one-third in 2022 when the anti-dumping duty was removed, while exports only increased by 7% (Fig. 15). However, it is difficult to attribute this change to the duty only, as when it was first implemented, imports decreased by 2%, while exports increased by 1%.

<sup>18</sup> Official Journal of the European Union, "Commission implementing regulation (EU) 2023/737", accessed April 2024

**Fig. 17: Value of EU trade in new bus and truck tyres, 2014-23**

€ billion, 2023 prices



Source: Eurostat, Oxford Economics

#### 4.3 SUPPLY CHAIN IMPORTS

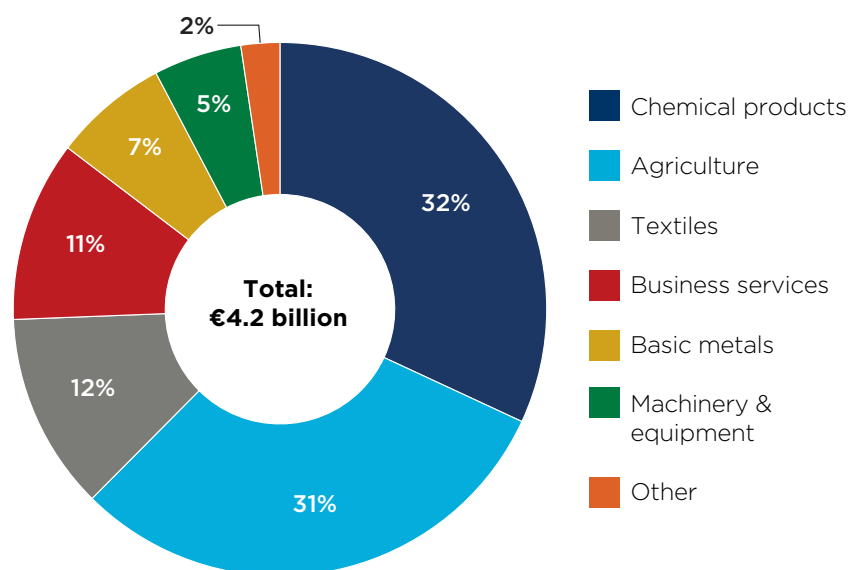
**International trade also allows firms in the EU to purchase inputs from suppliers outside of the common market, that they may not otherwise be able to access.** By processing and using these inputs, businesses add value to them, creating goods and services to sell on to firms and consumers in the EU and the Rest of the World.

**As discussed in Section 2.3, EU tyre manufacturers spent €4.2 billion or 15% of their total spend on inputs from outside of the EU in 2023.**

The largest share of this was just over €1.3 billion, spent on chemical products. This was closely followed by spending of just under €1.3 billion in the agriculture sector on natural rubber, from countries including

Cote d'Ivoire, Thailand, and Indonesia. Natural rubber is a vital input for tyre production and must be imported from outside of the EU.

**Fig. 18: Spend with Rest of the World suppliers by sector, 2023**



Source: ETRMA members, Eurostat, Oxford Economics







## 5. R&D IMPACTS

**The industry also spends a significant amount of money on investment in research and development (R&D).**

Where this is successful, the spending will boost the productive potential not just of the industry but of the EU economy as a whole. The growth in the productivity comes not only from the new products or processes developed from the EU tyre manufacturers' R&D spending but also through the stimulation of R&D activity by others in the economy, and through the dissemination of skills and knowledge across the wider economy. In this section, we consider the scale of the industry's R&D activity and quantify its long-run productivity benefits.

### 5.1 THE IMPORTANCE OF R&D

**R&D is a critical component of EU tyre manufacturers' operational expenditure.**

With environmental and sustainability concerns at the forefront of consumers' minds, continuing to develop efficient, high-performing tyres is of paramount importance. The tyre manufacturers included in this analysis have a total of 15 R&D centres across the EU.<sup>19</sup>

**Tyre innovations can take many forms.** For example, "intelligent tyre sensors" are currently being developed to register abnormal temperatures, detect small punctures, and predict hazards. While tyre pressure monitoring systems (TPMS) are already mandatory in many countries and warn drivers when to check their tyre pressure, these new smart

sensors would go further, leading to reduced repair and maintenance costs for drivers and increased tyre sustainability.<sup>20</sup>

**The gains from this R&D are not limited to the tyre manufacturing industry itself (direct impact).** A wider set of sectors benefit, both in the short term and the long term **(the spillover impact).**

These benefits arise via several channels including sharing know-how with traders and dealers, customers benefitting from innovations, innovation information disseminated through publications, and staff turnover as workers move between jobs. Over the long term, these benefits combine to create new economic conditions in the EU.

### 5.2 THE CONTRIBUTION OF TYRE MANUFACTURERS TO LONG-RUN PRODUCTIVITY IN THE EU

**Using Oxford Economics' in-house econometric models we have analysed how the R&D spending contributes to economic productivity in the sector undertaking R&D and the wider economy,** after controlling for other factors such as the levels of investment and educational attainment in the economy. We used the model to investigate both the direct R&D impact of tyre manufacturers, and their R&D spillover effects.

**Between 2017 and 2023, the nine tyre manufacturers included in this analysis spent an estimated €10.0 billion on R&D in the EU.<sup>21</sup>**

This expenditure will enhance productivity in the EU, with increasingly significant gains accruing over time.

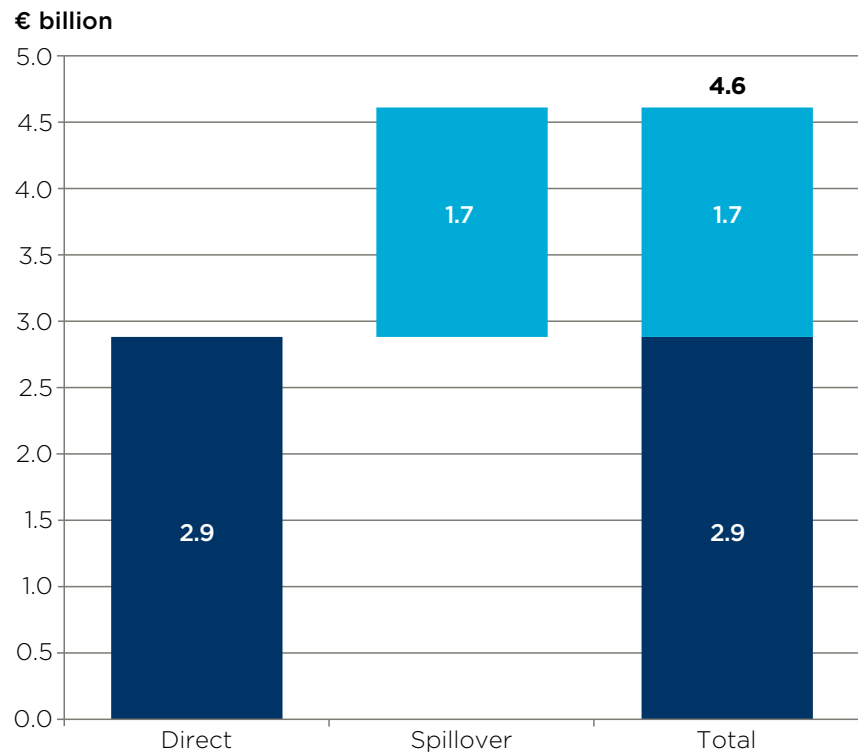
<sup>19</sup> The tyre manufacturers included in this analysis are Bridgestone, Pirelli, Yokohama, Continental, Goodyear, Nokian Tyres, Apollo Tyres, Nexen Tire, and Michelin

<sup>20</sup> ETRMA, "Tyre-as-a-Service Use Cases", accessed September 2024

<sup>21</sup> All values in this section are reported in 2023 prices.

Our modelling indicates that the productivity gains could result in a €4.6 billion boost to EU GDP in 2035.<sup>22</sup> Of this, €2.9 billion (or 62% of the benefits) is expected to be directly realised by the tyre manufacturers themselves, with €1.7 billion (38% of the benefits) realised in the rest of the economy (the spillover impact). In other words, for every €1 million that EU tyre manufacturers spent on R&D between 2017 and 2023, the EU economy's long-run productive capabilities are projected to increase by €0.5 million in 2035.

**Fig. 19: The long-run productivity impact of R&D investment by EU tyre manufacturers in 2035**



Source: ETRMA members, Oxford Economics

<sup>22</sup> Our modelling shows that R&D-stimulated productivity benefits start accruing almost immediately and grow over time, though at a decreasing rate. We expect the full extent of the gains to be realised by 2035, leading to a lasting boost to EU GDP beyond 2035.











## 6. FURTHER IMPACTS OF EU TYRE MANUFACTURING

In addition to the quantitative impacts assessed in the previous sections, we also qualitatively assess some of the additional impacts of the industry further down the value-chain, through for instance tyre retailers, replacement tyre-fitters, and the circular economy activity of tyres.

### 6.1 DOWNSTREAM ECONOMIC IMPACTS ENABLED BY EU-PRODUCED TYRES

**The production of tyres enables additional impacts further down the value chain to be realised, including the considerable economic benefits generated by the vehicle manufacturing industry.**

Mobility is only made possible by the use of tyres, as a vital part of a vehicle's infrastructure. New vehicles for sale require original equipment from the tyre manufacturing industry, and in 2023, EU car manufacturers produced over 12.4 million cars, requiring almost 50 million tyres.

**Tyre retailers and replacement tyre-fitters are also vital for the maintenance of vehicles, creating additional downstream work.**

Typical car and truck tyres need to be replaced every five to six years.<sup>23</sup> Many of these will be fitted by specialist garages, supporting skilled employment in that sector, as well as work in the wholesale and retail distribution sector.

**In addition, activity relating to the re-use, retreading, and recycling of tyres supports yet more income and employment, as well as benefitting the environment.** This so-called "circular economy" activity is investigated in the box below.

Unfortunately, a lack of available data means that we cannot robustly quantify the economic impact of these downstream activities.<sup>24</sup> The total core economic impact of tyre manufacturing assessed in Section 2.5 will therefore understate the economic benefit of all tyre-related activity taking place across the EU.

<sup>23</sup> Halfords, "[How long do car tyres last?](#)", accessed September 2024. In Automotive, "[How often should you replace your truck's tyres](#)", accessed September 2024

<sup>24</sup> One exception to this is that the impact of tyre retreading by EU manufacturers is already captured in the core analysis, although we cannot identify this element separately.

## 6.2 THE 'CIRCULAR ECONOMY' FOR TYRES

### The European tyre manufacturing industry is committed to environmental sustainability and has found innovative ways to create a circular economy for tyres.

Retreading—or replacing a tyre's worn tread with a new one—is a safe and reliable process used to extend the life of a tyre. It is mostly used for large commercial vehicles such as buses and trucks, rather than cars which require tyre replacements less frequently. As retreading uses fewer materials than the production of new tyres, it provides a more sustainable alternative to purchasing a brand-new replacement.

However, when retreading is not possible, an end-of-life tyre (ELT) can be repurposed for other activities in fields such as construction and engineering. Since 1999, it has been illegal to send ELTs to landfill in the EU, and academics argue that this new law was a key driver for improving ELT management.<sup>25</sup> These two sets of activity—retreading and repurposing of tyres—are examined in turn below.

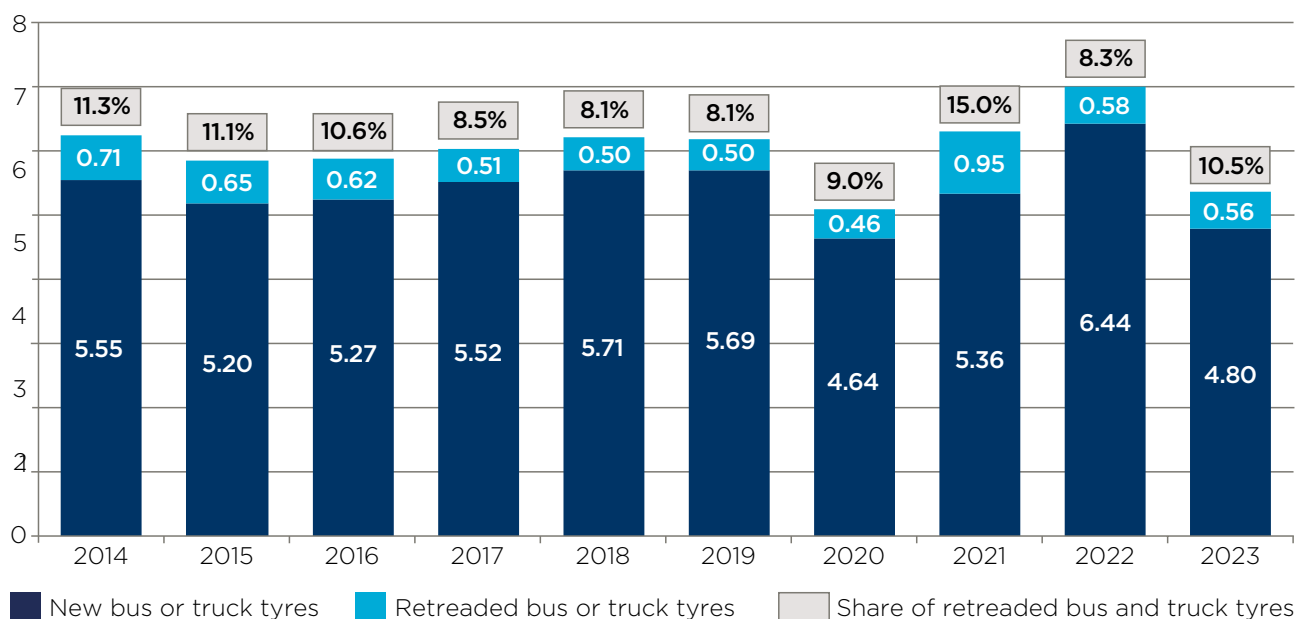
Tyre retreading has numerous environmental benefits. Compared to a new tyre, production of a retreaded tyre can reduce the use of new materials by up to 70%.<sup>26</sup> It can also require 50% less energy, 80% less water, and

up to 70% less crude oil—associated with the generation of 30% less CO<sub>2</sub>.<sup>27</sup>

Over the last 10 years, EU-produced retreaded tyres have faced tough competition from cheaper, non-retreaded alternatives from China. While they are more sustainable and can save users money in the long-run, EU-produced retreaded tyres have a higher upfront cost than cheaper non-treaded imports. However, in 2018, the EU implemented anti-dumping measures on bus and truck tyre imports from China (see Section 4), since when a trend decline in the share of retreaded tyres in all EU tyre production has been at least partially reversed.

**Fig. 20: Production of new and retreaded bus and truck tyres in the EU, 2014–23**

€ billion, 2023 prices



Source: Eurostat, Oxford Economics

<sup>25</sup> Svetlana Dabic-Miletic, et al, "End-of-life tire management: a critical review", Environmental Science and Pollution Research (2021), pp.68053-68070, accessed April 2024.

<sup>26</sup> EY for the ETRMA, "The socio-economic impact of truck tyre retreading in Europe", 2016, accessed May 2024.

<sup>27</sup> Continental, "All you need to know about commercial vehicle tyres", 2021, accessed May 2024.

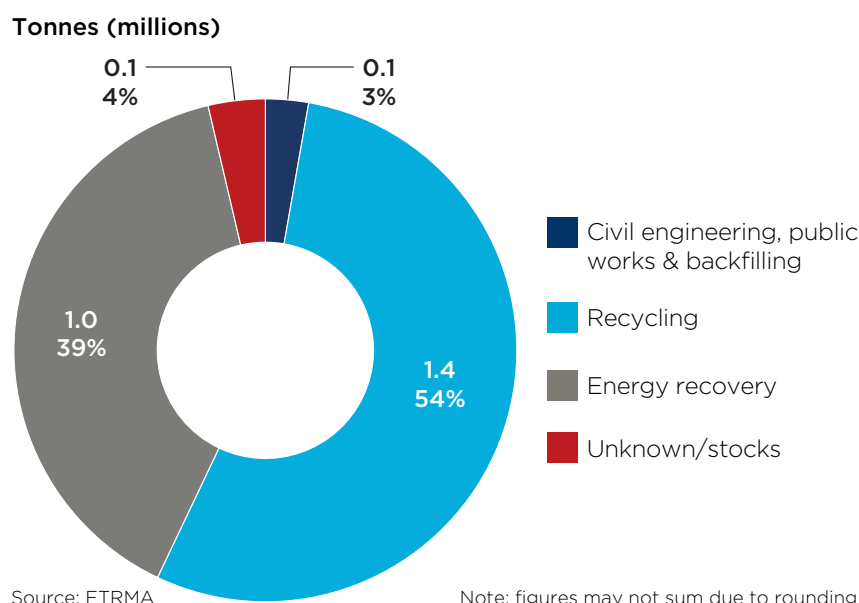
**In 2021, 96%—or more than 2.5 million tonnes—of ELTs in the EU were collected and treated for material recycling and recovery (Fig. 19).<sup>28</sup>** Over

half—or 1.4 million tonnes—of all ELTs in the EU were recycled. This included ELTs sent to material recovery used in several other industries, such as construction and automotive. A further 1.0 million tonnes were used for energy recovery, and 72,000 tonnes were used for civil engineering, public works, and backfilling. The remaining 96,000 tonnes were of unknown status or stocked and waiting for treatment.

There are a range of innovative projects underway in the EU, looking to further increase the efficiency of ELT processing and produce raw materials that can be reused in the tyre manufacturing industry. Since 2020, the BlackCycle project has been working to develop deconstruction process technologies that can recover specific types of rubber from tyres.<sup>29</sup> It has made positive progress and was recognised with the Best Tyre Recycling Research Project award at the 2023 Recircle Awards.<sup>30</sup> Another example is the Life Green Vulcan project in Italy, which has been working on

its de-vulcanisation process, to extract raw materials from ELTs, which could potentially replace almost all of the virgin rubber required for a tyre.<sup>31</sup>

**Fig. 21: End-of-life tyres treatment in the EU, 2021**



<sup>28</sup> Latest year for which data are available. Total does not match the chart due to rounding.

<sup>29</sup> 'Success story: milestone in rubber raw material definition - tyre deconstruction technology'. BlackCycle, May 2023, accessed April 2024

<sup>30</sup> 'BlackCycle won the 2023 Recircle Awards'. BlackCycle, November 2023, accessed April 2024

<sup>31</sup> 'LIFE project aims to revolutionise Europe's approach to recycling end-of-life tyres', European Commission, December 2023, accessed April 2024





# APPENDIX: METHODOLOGY

## CORE ECONOMIC IMPACT

### The Global Sustainability Model

Our approach for assessing the tyre manufacturing industry's economic footprint across the EU for 2014, 2019, and 2023 is based on the Oxford Economics Global Sustainability Model (GSM). These three years have been chosen to allow for an assessment of the industry over the past decade, including the period prior to the Covid-19 pandemic.

The GSM leverages the knowledge and techniques we have developed in mapping economic relationships between countries and industries across the world. The model includes information about global supply chains that are typically excluded from standard economic impact assessments, enabling comprehensive measurement of economic footprints.

The ability to trace how global supply chains stimulate activity in different economies is essential for developing a comprehensive measure of the tyre manufacturing industry across the region. For example, it enables us to trace how the spending tyre manufacturers in one EU country make with suppliers in the rest of the EU can stimulate supply chains that pass in and out of the EU further up the value chain. Consequently, the GSM

provides a comprehensive measure of the tyre manufacturing industry's total impact on the EU as a whole.

We assess the economic contribution of tyre manufacturing industry across the following three channels:

1. its **direct impact**: the GDP generated by the tyre manufacturing industry's operations (the sum of wage payments and profits), along with its employment and direct tax payments;
2. its **indirect impact**: encompassing the production and employment supported across the tyre manufacturing industry's supply chain; and
3. its **induced impact**: the wage-consumption multiplier effect that is supported by the wages paid by the tyre manufacturing industry and the wages paid in its supply chain.

### Inputs to the Global Sustainability Model

#### Direct impacts

Eurostat data for the "Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres" sector were used as the basis for estimating the tyre manufacturing industry's direct impact.

Direct GDP was available for most countries for 2014, 2019, and 2021. Data for 2023 were estimated for each EU-27 country using a combination of Eurostat data on turnover and production growth for the rubber and plastic products sector (or, for a select few countries the manufacture of rubber tyre and tubes sector were available), and GVA-to-output ratios from Oxford Economics' in-house models. Where data for a specific country and year were missing, estimates were calculated using the same methodology as for 2023 inputs, based on the closest year available.

A similar approach was used for direct employment. Employment data for most countries were available for 2014 and 2019. Data for 2023 were estimated using the production growth rate for the rubber and plastic products sector (or the manufacture of rubber tyre and tubes sector). Gaps in earlier years were estimated using production growth rates and the closest year available.

Total wage payments for the sector were taken from Eurostat for each EU-27 country for 2014, 2019, and 2021. To calculate 2023 wages, wage per employee for 2021 were grown in line with Oxford Economics' data on wage growth for each country and multiplied by the employment estimates, to arrive at the total wage spending of the sector.



Procurement for the sector was estimated by taking purchases of goods and services, and capital expenditure figures for each EU-27 country from Eurostat for 2014, 2019, and 2021. Estimates for 2023, and gaps in purchases of goods and services were filled in by Output – GVA. For capital purchases estimates for 2023 and gaps were filled in based on growth in output of the sector.

Finally, tax was estimated by applying ratios from Oxford Economics' in-house models to wage, GVA, and procurement estimates calculate labour taxes, taxes on production, taxes on products, and corporation tax.

### Indirect and induced impacts

The procurement estimates were used as the starting point for the indirect impacts. These were broken down by sector based on a survey of the spending patterns of eight ETRMA members. Spending by sector was then allocated to countries using OECD input-output tables. This was input in the GSM to calculate the supply chain impacts.

The wage estimates by country were also input into the GSM, and these were used to calculate the wage-induced impacts.

## R&D ANALYSIS

We used Oxford Economics' in-house econometric model to explain how R&D expenditure in the tyre manufacturing industry contributes to productivity growth. The boost to productivity identified by the model comes from both new innovations and from enhancing the skills of the labour force. The model includes two channels of benefits supported by this investment:

1. those which accrue directly to the tyre manufacturing sector undertaking the research; and
2. the spillover benefits generated as firms in other sectors of the economy apply the knowledge and innovations to help to develop new products and improve operational efficiency.

### Data inputs

Data on R&D spend were provided by six ETRMA members; Apollo Tyres, Nexen Tire, Michelin, Continental, Goodyear, and Yokohama. Both Bridgestone and Nokian Tyres provided data on their financials, and we calculated estimates of their R&D spend using this, as well as data from their annual reports. R&D spend by Pirelli was estimated based on data from its annual reports.

### Overall modelling approach

The modelling approach was adopted from Badinger and Egger (2008) who adopted a spatial econometric approach to estimate intra-industry and inter-industry productivity spillovers in TFP (total factor productivity) transmitted through input-output relations in a sample of 13 OECD countries and 15 manufacturing industries.<sup>32</sup> Our methodology follows a similar approach with a larger dataset with more countries and more recent data. To account for the spatial element, a spillover matrix is constructed using the latest Social Accounting Matrices for each country from the OECD, broadly following the approach in Coe et al (2019).<sup>33</sup>

<sup>32</sup> Harald Badinger and Peter Egger. Intra-and inter-industry productivity spillovers in OECD manufacturing: A spatial econometric perspective. No. 2181. CESifo working paper, 2008.

<sup>33</sup> David T Coe, Elhanan Helpman, and Alexander W. Hoffmaister. International R&D Spillovers and Institutions. IMF Working Paper. WP/08/104.



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