

INDEPENDENT RESEARCH

8th February 2017

Tires & Rubber products

CONTINENTAL	SELL	FV EUR172
	Coverage initiated	
Bloomberg	CON GY	Reuters CONG.F
Price	EUR189.15	High/Low 201,85/160,1
Market cap.	EUR37,831m	Enterprise Val EUR43,467
PE (FY1e)	13.1x	EV/EBIT (FY1e) 10.7x
MICHELIN	HOLD	FV EUR118
	Coverage initiated	
Bloomberg	ML FP	Reuters MICP.PA
Price	EUR102.2	High/Low 106,9/78,43
Market Cap.	EUR18,403m	Enterprise Val EUR23,523m
PE (FY1e)	12.7x	EV/EBIT (FY1e) 8.8x

Tires & Rubber products

Flat prospects

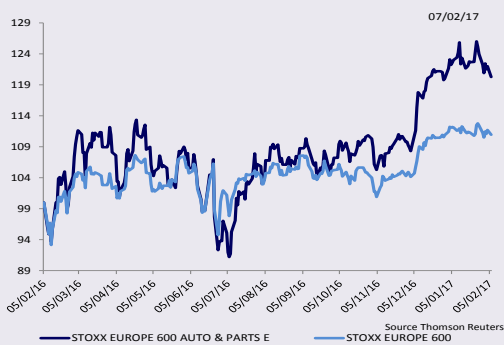
We initiate coverage of the tyres sub-sector via Michelin and Continental, both of which are positioned in the « upmarket » segment, European and very high-tech. Limited potential in terms of margins and FV have prompted us to adopt a Neutral stance on Michelin and Sell on Continental. We expect a scissors effect on margins to penalize both groups in the near term.

An increasingly competitive market... Until quite recently, the traditional tyre makers, **Bridgestone**, **Michelin** and **Continental**, were the dominant players with over **54% market share** in 2004. However, the arrival of Asian players has forced them to restructure and to cut their production costs in order to defend their margins. The three groups now have only **37%** of the market and we cannot rule out mergers between Asian groups in the years ahead.

...that is still a source of growth: Since replacement tyres account for over **70%** of annual sales, growth should be driven by strong demand for PC and LCV tyres in 2017-20 thanks to catching-up in the OEM since 2012 post the financial crisis, as well as a positive mix effect arising from strong demand for large tyres ($\geq 17"$) in Europe and China. The recovery in industry may also have a positive impact on the market for truck and specialty tyres, which would benefit margins at **Michelin** and **Bridgestone**. Overall, we estimate that the tyre market will grow **3%** in value terms in 2017 and 2018.

We see little scope to leverage margins: Having risen **119bp/year** on average from the low of 2007, potential for further improvement of the sector's margin (currently at a high of 14%) looks limited to us in the near term, especially at **Michelin** and **Continental** where it is difficult to see how production processes can be improved further.

We are cautious on near-term prospects: Although the rise in natural rubber prices should be quite positive for the « upscale » tyre producers, and puts pressure on the Chinese players who have invaded western markets in recent years, we expect a **scissors effect** to squeeze margins in the short term. Limited potential for margins and for FV prompt us to adopt a **Neutral** rating on **Michelin (EUR118)** and **Sell** on **Continental (EUR172)**.



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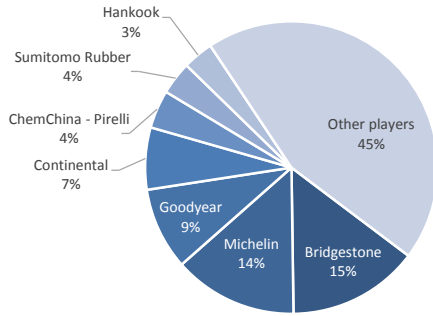
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Continental ranks both no. 4 in the tyre market and no. 4 in original equipment car components and is a unique vehicle in the sector. Present in the main auto businesses, the group is a means of playing the market transformation with no danger, albeit with the risk of slower growth and less efficiency than its pure player rivals. The share's growth potential looks limited. Sell. FV of EUR172.....	55
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Michelin seems to be the perfect stock to play in 2017 in view of its very premium reputation in the tyres business, high dollar exposure and strong presence in the mining segment that is expected to grow over 2017-20. However, short term pressure on margins, combined with low potential to improve them over the medium term and a fairly unattractive valuation prompts us to remain cautious on the share. We are initiating coverage of the stock with a Neutral recommendation and a Fair Value of EUR118.....	101
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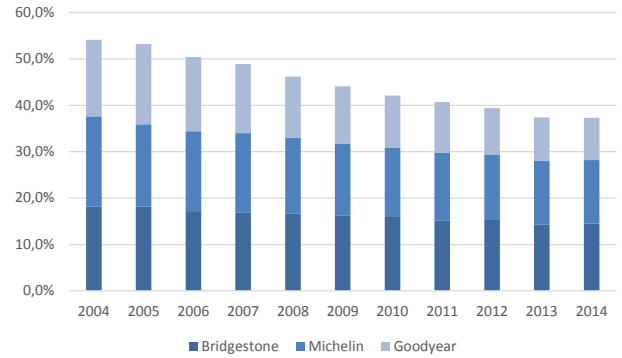
1. The tyre segment in six charts

Fig. 1: A market dominated by western groups – but for how long?

Market shares of main players (USD, 2015)



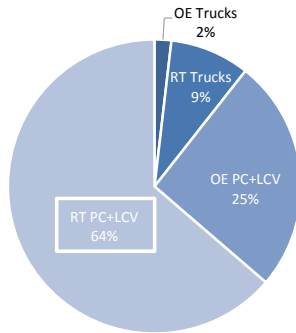
Change in market shares of western groups (2004-15)



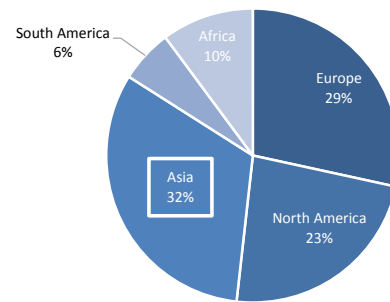
Source: Tire Business; Bryan, Garnier & Co ests.

Fig. 2: Replacement tyres are 70% and Asia represents >30%

Breakdown of car, van and truck volumes (2016e)



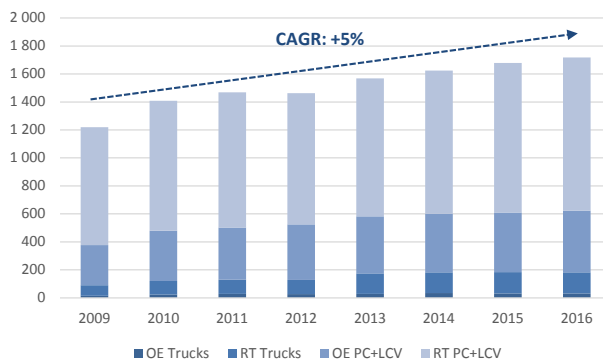
Breakdown of car, van and truck markets by region (2016e)



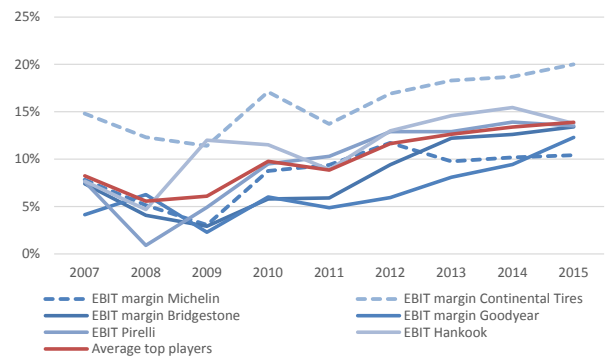
Source: Michelin; Bryan, Garnier & Co ests.

Fig. 3: Despite being defensive, the market is growing – and very profitable

Although defensive, the market is growing (millions of tyres) ...



... and very profitable



Source: Companies Data; Bryan, Garnier & Co ests.

2. Flat prospects

In 2004, the traditional tyre manufacturers, **Bridgestone**, **Michelin** and **Continental**, dominated the market with **over 54% market share**. However, the arrival *en masse* of Asian and Indian players forced them to restructure and to lower their production costs, mainly by moving plants to emerging markets in order to defend their margins. These three groups are still the market leaders, but today they have only **37%** of the global market, and we expect this share to continue to decline in the years ahead as the market's long-term growth should be driven by Asia where they have a relatively weak foothold (*apart from Bridgestone*). Moreover, we cannot rule out M&A between Asian and Indian group in the coming years.

The tyre sector is undoubtedly a **growing market**, even though it is defensive and resilient as **replacement is compulsory** and necessary for mid-range tyres after **30-40,000 kilometres**, implying on average four changes over the life of a vehicle. With **over 70%** of annual sales for private cars and vans, we estimate that growth in the market for replacement tyres in 2017-20 should be driven by western countries, thanks to a **catch-up phase in OEM demand since 2012**, but also thanks to a positive mix effect arising from **strong demand for large tyres ($\geq 17'$) in Europe and China**. The recovery by industry could also have a positive impact on the market for truck and specialty tyres, thus boosting margins at Michelin and Bridgestone, for example. Overall, we estimate that the tyre market should grow **3%** in value terms in **2017** and **2018**.

Having risen **119bp/year** on average from the low of **5.8%** in 2007 to **14% today**, near-term upside potential for the sector's margin looks sadly limited to us - especially for groups like **Michelin** and **Continental** for whom further adjustments to production processes would be difficult as they have already pruned their operations in developed countries. Although higher natural rubber prices are slightly positive for producers of premium tyres (*because raw materials account for a smaller percentage of their production costs than for makers of cheaper tyres*) and puts pressure on the Chinese players who have moved into in the West in recent years, we expect a **scissors effect** to squeeze margin in the near term.

A price war, aggravated by falling rubber prices in recent years, now appears to be behind us. However, we expect some of the new competitors to turn to the premium segment. **Hankook** is the perfect example of a new entrant who is obliging the traditional players to innovate constantly in order to offer better-quality products, while continuing to cut their production costs.

In this report, we initiate coverage of France's **Michelin** (*No.2 globally*) and of Germany's **Continental** (*No.4*). The weak outlook for growth and profitability, coupled with a scissors effect on margins in early 2017 and unattractive multiples prompt us to initiate at Neutral on **Michelin** with a FV of **EUR118** and at Sell on **Continental** with a FV of **EUR172**.

















































3. A global market that is highly competitive

3.1. A sector dominated by the traditional players...

The global tyre market, which is estimated to weigh in excess of USD180bn, is still dominated by **Bridgestone, Michelin and Goodyear**, which together have **over 37% market share** in value terms and roughly **30% of volumes**. These groups have four characteristics in common:

- They are all **venerable**, the youngest being just 14 years short of its 100th birthday: France's **Michelin** was set up in **1889**, U.S. firm **Goodyear** in **1898** and Japan's **Bridgestone** in **1931**;
- They have **large portfolios of brands that mainly comprise premium products** carrying their flagship labels (*Bridgestone and Potenza in the case of Bridgestone; Michelin only sells premium tyres sold under its own name; Goodyear and Dunlop for Goodyear*).
- They are present on all continents via a network of dependent and independent distributors and they also sell via e-commerce websites.
- A large share of their past growth stemmed from M&A (*acquisition of brands*) to enter **new markets and new segments**.

Fig. 4: The main players in the tyre sector (market share in % of value)

Bridgestone	14.5%	        
Michelin	13.7%	      
Goodyear	9.1%	    
Continental	6.9%	        
ChemChina	4.2%	    
Sumitomo	3.6%	  
Hankook	3.4%	   
Yokohama	2.5%	
Cheng Shin	2.2%	
Cooper	1.8%	  
Kumho	1.7%	
Toyo	1.5%	 
Triangle	1.1%	
Nokian	0.9%	

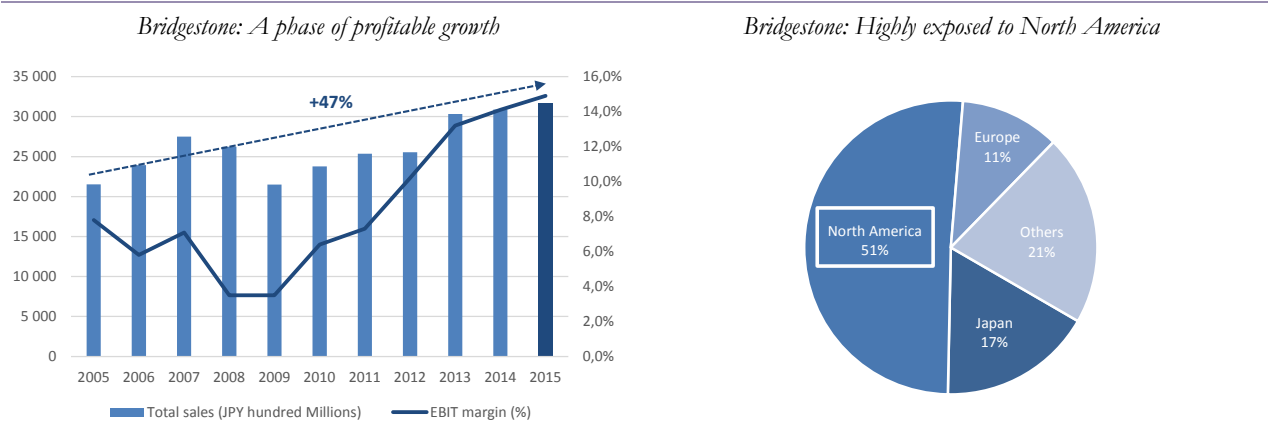
Source: Company Data; Bryan, Garnier & Co ests.

3.1.1. Bridgestone – America first

Set up in 1931 by **Shōjirō Ishibashi** in **Kurume, Japan**, **Bridgestone** is the world’s biggest tyre producer – not just in terms of revenues, but also in terms of volume (*measured in tons*).

Bridgestone has a strong presence in the **U.S.** (*51% of its total revenues*), especially since the **1988** acquisition of America’s second-largest tyre producer, **Firestone Tire and Rubber Company**. Today, Bridgestone has **25 plants in the U.S.** compared to only **20 in Japan**, **18** in other Asian countries, and **14** in Europe. The group’s share of the global market (*cars, vans and trucks*) exceeds **15%** and its revenues are **70%** higher than Michelin’s and nearly **three times** Continental’s. However, Bridgestone remains under-exposed to Europe, where its sales are **three times lower** than those of Michelin and Continental, who dispute the leadership position.

Fig. 5: A global leader with a very light presence in Europe



Source: Bridgestone; Bryan, Garnier & Co ests.

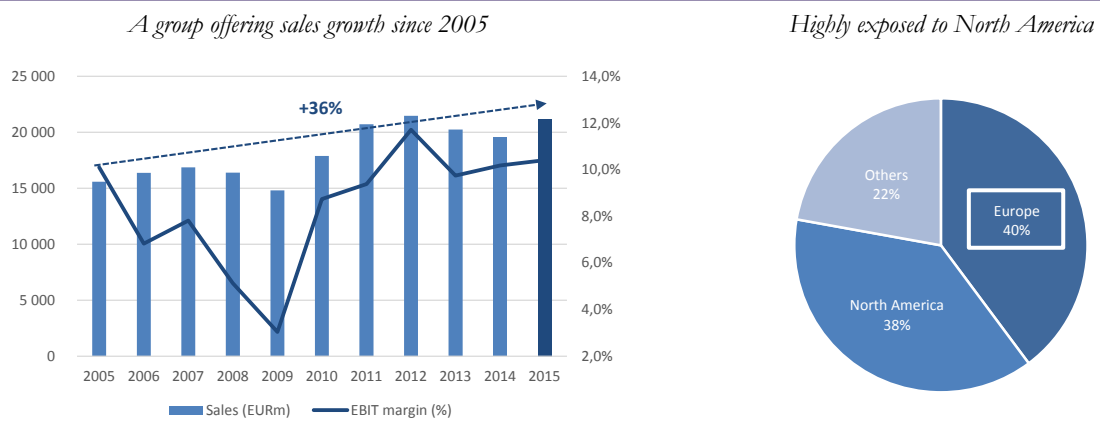
Like **Michelin**, **Bridgestone** operates in a market that is highly profitable, but also very cyclical: tyres for mining vehicles. This explains its operating margin of **14-15%**, which puts the group at the high end of the sector range (*excluding specialised players such as Nokian Tyres*).

3.1.2. Michelin – focused on Europe

Set up in 1889 by brothers **André** and **Edouard Michelin** in **Clermont-Ferrand**, France, **Michelin** is one of the world’s oldest tyre producers. Thanks to state-of-the-art innovation, it patented the **radial tyre** for private cars in **1946**, a technique that was gradually extended to other segments (*trucks, civil engineering and agricultural vehicles, aircraft and motorcycles*). The radial tyre is now Michelin’s flagship product. Relative to tyres with a diagonal structure, the radial tyre offers less rolling resistance, better absorption of shocks and reduced petrol consumption.

The group is currently No.2 in the world behind Bridgestone on revenues of **EUR21bn**. Despite a strong presence in the **U.S.** since the **1989** acquisition of **Uniroyal-Goodrich**, Michelin remains highly dependent on the European market which still accounts for **40%** of its sales

Fig. 6: A French group that is very European, with thinner margins than rivals



Source: Michelin; Bryan, Garnier & Co ests.

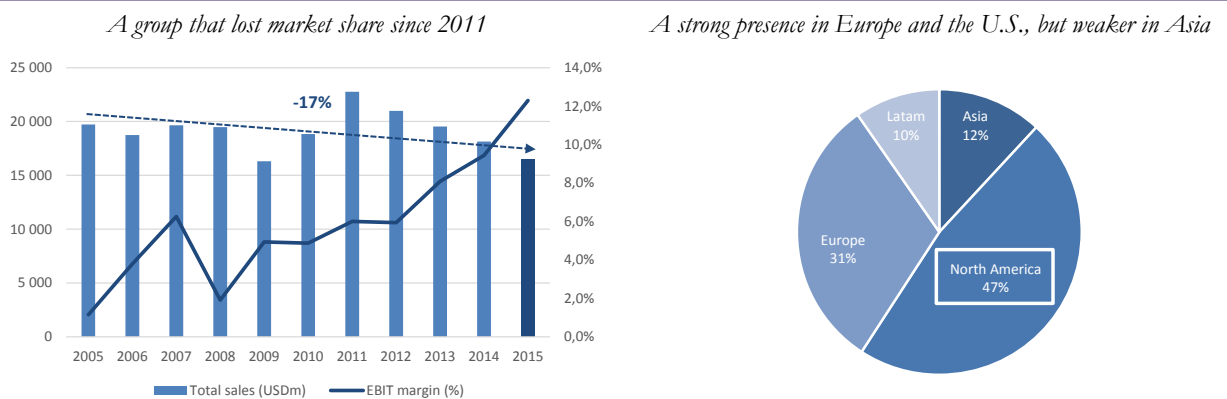
Although lagging rivals in terms of profitability (*10.4% margin including restructuring costs in 2015*), we think Michelin can at least come into line with the sector average of **13-14%** within the next three years.

3.1.3. Goodyear - Behind on all continents

Set up in **1898** by **Frank Seiberling** in Ohio, the U.S. group is No.3 in the world with revenues of **USD16.5bn** and **166m tyres** sold globally. The name Goodyear honours **Charles Goodyear** who, in **1839**, discovered the vulcanisation process which made it possible to produce a rubber tyre. Contrary to the two other sector leaders, Goodyear has engaged in little M&A apart from the acquisition of **Dunlop Tire** from Japan's **Sumitomo Rubber Industries** in **1999** for **USD1bn**.

The U.S. group is one of the few players in the sector to have seen its revenues decline (*by 17%*) between **2005** and **2015**, even though global tyre volumes rose over **30%**. This was because Goodyear withdrew gradually from the agricultural segment, having sold its European and South American activities to **Titan** in 2010-11.

Fig. 7: A U.S. group that lags behind Bridgestone and Michelin



Source: Goodyear; Bryan, Garnier & Co ests.

In spite of a 2% fall in revenues in 2011-15, notably due to a poor commercial performance in the U.S. and in Latam, the group has managed to more than double its operating margin since 2012 (to **over 13%** in 2016^e), thanks to cost cutting.

The U.S. group aims to post operating profit in excess of **USD3bn** in 2020 (*very similar to Michelin's EUR3bn target*), implying **58%** growth from 2015 (*versus +16% for Michelin*) and a margin of exceeding **14%**.

3.2. ...but for how long?

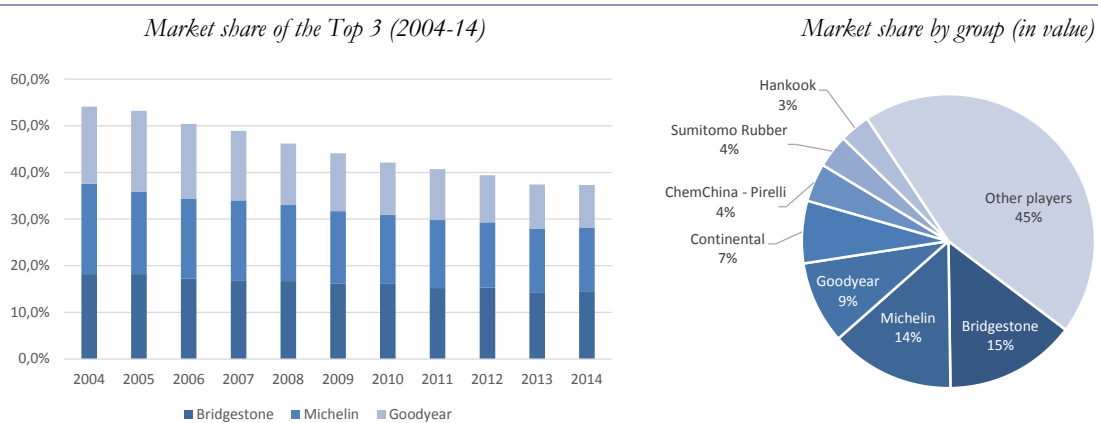
3.2.1. An invasion of low-cost Asian producers...

Leadership of the traditional players is under pressure

China's economic miracle has made the country the world's largest car markets, with a **9%** share in **2007** and over **30%** in **2016**. China's progress has also allowed Asian groups to expand at the expense of the traditional western groups.

Tyre makers from **Japan** (*Sumitomo, Yokohama, Toyo*), **Korea** (*Hankook, Kumho, Nexen*), **Taiwan** (*Cheng Shin, Nankang*), **China** (*Triangle, Giti*) and even **India** (*Apollo*) have staked their claim to a share of the global market, undermining the leadership of the traditional heavyweights. In **2004**, the **Top 3**, **Bridgestone** (*Japan*), **Michelin** (*France*) and **Goodyear** (*USA*), accounted for over **54%** of the global market, but today they have only **37%** following market share losses by all three (*-3.7pp for Bridgestone, -5.7pp for Michelin and -7.4pp for Goodyear*).

Fig. 8: Top 3 tyre makers' share of the global market



Source: Company Data; Bryan, Garnier & Co ests.

In addition to a **strong presence in Asian countries** such as Japan, India and especially China, these new players have also **eaten into market share of the traditional leaders in the U.S. and Europe**, mainly by offering more attractive prices at the risk of lower quality and thus less security.

To prove the quality differential between low-cost Asian imports and premium tyres produced by the traditional market leaders, Michelin has estimated that a **premium tyre has a lifespan of 40-50,000km versus only about 15,000km to 20,000km for a low-cost Asian product**, while the **braking distance on a wet surface may be up to 15% longer for cheap Asian imports**.

Taking France as an example, it would appear that the 16-inch (16") summer tyres marketed by Asian companies that are considered low-grade producers (*Taiwan's Nankang and the Korean's Nexen and Kumho*) sell for an average of **EUR58** including VAT. This average price is over **30%** below the average price of premium brands supplied by the three leading tyre makers (*Bridgestone, Goodyear and Michelin*). And if we compare the highest priced products of these two categories of tyre manufacturer, the spread exceeds **66%**.

Fig. 9: Comparison of retail prices of replacement tyres (EUR incl. VAT)*

PC summer (inc. 4 seasons tires) 205/55 R16	Low price	High price	Average price
Historical brands:	60	122	76
Bridgestone	63	96	72
Goodyear	60	115	77
Michelin	46	122	79
Asian low-cost brands:	46	74	58
Nankang	46	74	53
Nexen	46	71	60
Kumho	49	68	58
Gap	30.8%	66.3%	32.6%

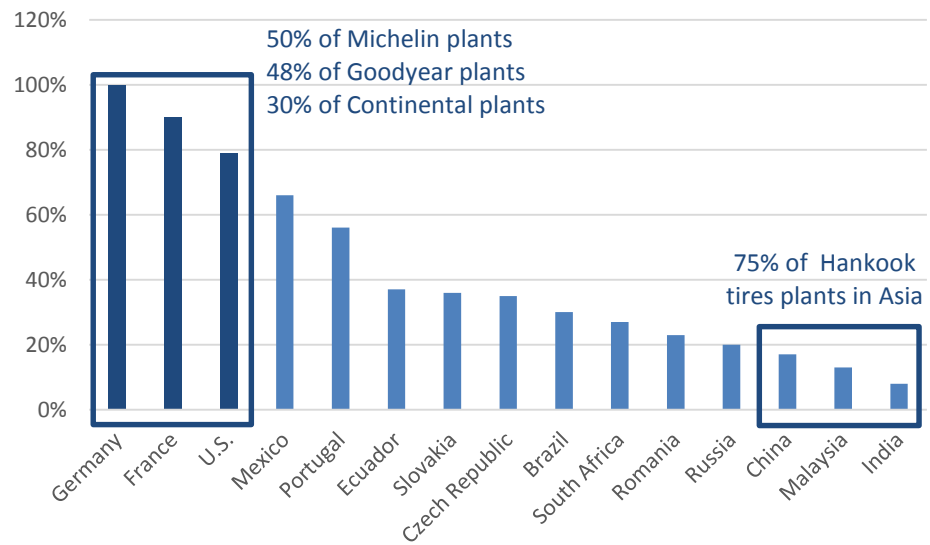
Source: Allopeus; Bryan, Garnier & Co ests. *Comparative study dated 20 January 2017

Price differences of this magnitude between the traditional leaders and their new Asian rivals, at a time of economic crisis and reduced spending on cars which are considered discretionary (*an Ipsos study found that 56% of car owners in western Europe say that price is the main factors in their choice of tyre*), stem mainly from the structure of **raw material costs** and **direct production costs** which vary from one producer to the next. Asian tyre makers have lighter cost structures. Apart from lower labour costs, their tyres contain **less natural rubber** (*thus more synthetic rubber*) than those of their western competitors.

Taking German labour costs as a benchmark, **Continental** ranks China, Malaysia and India among the countries where labour costs for tyre production are lowest (*respectively 17%, 13% and 8% of Germany's*). And the plants of Korea's **Hankook** (*a group that symbolises Asia's expansion in tyres and which currently has 3.4% market share*) are largely based in Asia and more precisely in China, Malaysia and India (*six of the group's seven plants are in these countries*). On the other hand, a traditional player focused on premium tyres such as **Michelin or Goodyear** have respectively **50% and 48% of their production capacity in Germany, the U.S. and France**, where labour costs are higher.

This **lighter cost structure** allows Asian tyre makers: **1/** to offer much lower prices; **2/** to benefit more from cheaper raw material (*which account for a larger share of their costs than for European and U.S. producers*). However, this same **raw material effect** (*rubber prices have fallen 58% since January 2011*) has recently enabled these Asian groups – particularly **Hankook** – to take market share by getting ahead of falling prices. Some groups – mainly Chinese ones – are also suspected of receiving government grants which allows them to practice dumping in European and North American markets.

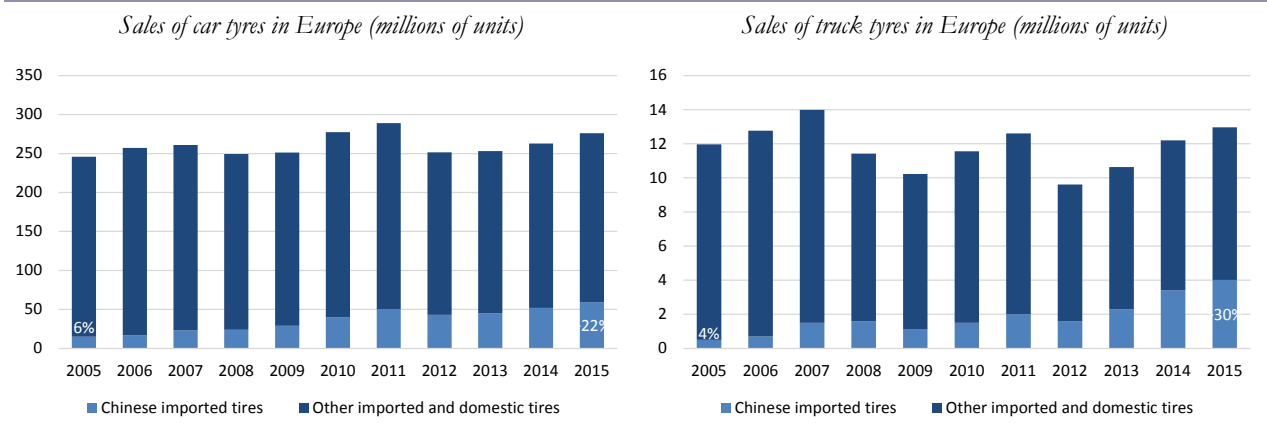
Fig. 10: Continental's labour cost index



Source: Continental; Hankook; Bryan, Garnier & Co ests.

In Europe, sales of Chinese-made tyres increased fourfold from 2005 to 2015, to 59m units for private cars (over 20% of sales) and more than eightfold over the same period to 4m units (more than 30% of sales) in the truck tyres segment. The impact on the retreaded tyres segment has also been significant (see 3.2.2... which is tending to move upmarket) obliging some western players to restructure.

Fig. 11: Rising sales of Chinese-made tyres in Europe



Source: ETRMA; Bryan, Garnier & Co ests.

Case in point: Hankook

Korea's **Hankook**, set up in **1941**, illustrates perfectly the stunning progress of Asian tyre manufacturers in recent years. This « pure player » benefited from Korea's economic boom and from expansion of the car sector in the **1960s** and **1970s**, before gradually internationalising operations by exporting to the rest of Asia and to the Middle East, and then expanding its production network in China and in Indonesia. After originally focusing on **replacement radial tyres and on OE for Hyundai and Kia**, since the late the 1990s Hankook has turned to European market (*29% of the global car and van market*) by signing **its first contract with a European car maker, VW**.

Since 1999, Hankook's sales have **increased fourfold** and now stand at roughly **USD5.7bn** per annum of which **30%** in Europe and **23%** in the Americas, making it **the world's seventh largest car producer**. Although the group's ranking has not changed since **2007**, Hankook's market share has risen from 2.7% to 3.4% over the period. Like other Asian players, therefore, it has made progress at the expense of western groups, who have remained the leaders despite lower market share. The Korean group hopes to move into **fifth place by 2020**, thanks to massive expansion of its production capacities (*135m tyres by 2020e, up 30% versus 2015*). Using the same logic that prompted it to open a plant in Hungary (*built in 2007 and enlarged in 2011 when the traditional groups were adjusting their facilities*) to serve the European market, Hankook opened its first plant in the U.S. in late 2016 at a cost of **USD800m** and with capacity to produce **11m** tyres a year.

Fig. 12: Production adjustments announced in Europe since 2007

Tiremaker	Plant	Country	Adjustment (m tyres)	Date
Michelin	Lasarte	Spain	-2.0	2007
	Toul	France	-3.0	2007
	Turin	Italy	-5.0	2008
	Bourges	France	-2.4	2009
	Budapest	Hungary	NA	2015
	Oranienburg	Germany	NA	2016
	Fossano	Italy	NA	2016
	Ballymena	UK	NA	2017
Bridgestone	Bari	Italy	-7.0	2014
Continental	Clairoix	France	-8.0	2009
	Stocken	Germany	-2.0	2009
Goodyear	Amiens	France	-5.5	2013
Pirelli	Manresa	Spain	-6.5	2009
	Turin	Italy	-0.6	2010
Hankook	Racalmas	Hungary	+6.0	2007
	Racalmas	Hungary	+6.0	2011
Nexen	Zatec	Czech Republic	+12.0	2018

Source: Companies Data; LesEchos; Bryan, Garnier & Co ests.

Acquisition of Pirelli by a Chinese group

Set up in **1872**, **Pirelli** is one of the jewels in Italy's industrial crown. Since its acquisition by Chinese group **ChemChina** in 2015, the new entity has become **the world's fifth tyre maker**. This acquisition also reflects the rising prominence of Asian players in this very competitive market. It is also the first time that a leading global tyre maker (*Pirelli has sales in excess of EUR6bn and 20 plants employing over 35,000 people*) has fallen into Chinese hands. The chemicals conglomerate **ChemChina** (*sales of EUR37bn*) also owns **China National Tire & Rubber** and **Aeolus Tyres**.

Valued at the time at **EUR7.1bn** by the purchaser (*EUR8.1bn EV implying a valuation equal to 129% of revenues and 9.5x operating profit*), Pirelli was delisted in early November 2015 after ChemChina had acquired **26%** of the capital from Russian investor Rosneft and gained full control via an OPA at **EUR15/share**. For the Asian conglomerate, this deal provided **access to the complex technology of the light premium tyres segment** (*55% of sales were from light premium tyres in 2014, a share that has since risen to 60%*), ranging from Formula 1 to private cars. Pirelli's truck assets will be transferred to the Aeolus specialised subsidiary in order to double production capacity.

The acquisition made **ChemChina** one of the **top 5 global tyre producers** and enabled it to become a credible player in the race between Asian groups to unseat the traditional leaders.

Note that India's **Apollo Tyres** is currently jostling with China's **Shandong Linglong Tyre** and **ChemChina** to acquire **Kumho Tire** for an estimated USD900m. Kumho Tire is a Korean group with revenues of **USD2.6bn** (*mainly generated in Korea and Asia*) and a **4.4% operating margin**. Apollo also tried (*unsuccessfully*) to acquire U.S. player Cooper in 2014 for **USD2.5bn**. Stay tuned...

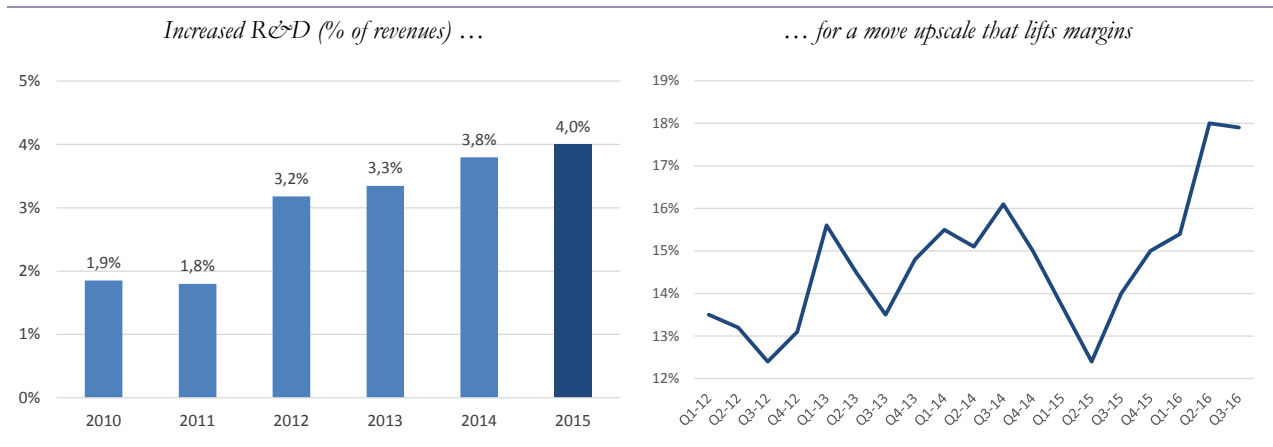
3.2.2. ...who are eyeing premium segment

Does the acquisition of Pirelli – a group that traditionally focused on high-quality tyres – reflect an attempt by the Asians (*who gained entry to developed markets by offering unbeatable prices*) to play in the premium segment?

Hankook scored a winning goal by signing OEM contracts with all the German premium brands – a first for an Asian producer. Of the 37 car brands equipped by the group in OEM in 2015, **six were high-end: Audi** since 2008 (*Audi A3, A4, TT and TTS*), **Lincoln** since 2011 (*notably the Lincoln MKT*), **BMW** since 2012 (*BMW 1 Series, 3 Series and 5 Series*), **Porsche** (*Porsche Macan*), **Daimler** (*S Class, E Class*) and **Mini** (*Mini One and Cooper*) since 2014. Note that Hankook was also selected by **Tesla** to supply OE tyres for its new **Model 3** electric car, marketing of which begins in 2018. The Korean group is recognised for its expertise in tyres for electric/hybrid vehicles (*Hankook has equipped the Hyundai Ioniq Electric and the Mercedes C Class hybrid*).

Hankook's move into premium tyres is the result of **significant investment in R&D** (*4% of 2015 revenues versus less than 2% in 2010*) notably to develop higher-quality, higher-performance tyres. As a result, Ultra High Performance Tyres (UHPT) suitable for speeds in excess of **240km/hour** and generally fitted on imposing sports cars, are increasingly important in Hankook's product mix (*over 35% of revenues in recent quarters, versus 25% in 2012*). This progress by the group is also reflected in margins, as **profitability is comparable to that of the best western premium tyre makers** (*18% EBIT margin in Q2 and Q3 2016 versus 20% for Continental and 21.8% for Nokian*) and even higher than that of the two sector leaders (*11% EBIT margin at Goodyear, 12.2% at Michelin*).

Fig. 13: Hankook turns to premium tyres



Source: Hankook; Bryan, Garnier & Co ests.

Following Hankook’s example, Korea’s **Kumho** has for several years been trying to attract a more premium client notably by developing high-quality tyres. Today, of its eight tyres brands four are premium: **Wintercraft** (*winter tyres*), **Solus** (*for light cars*), **Ecsta** (high-performance tyres for fast driving) and **Crugen** (*for SUVs*). This refocusing has enabled Kumho to sign OEM contracts with **Daimler** (*Mercedes A Class, B Class since 2007*), **BMW** (*BMW 3 Series, 5 Series since 2012*) and more recently with **Audi** (*Audi A4*). It is equally important to note that for several years the OEM has been a highly competitive market in which tyre suppliers’ margins are thin. For this reason, it has been deliberately abandoned by some of the traditional groups.

Apart from a desire to acquire market share in premium OE market and to improve margins, a **premiumisation strategy also provides protection against politically-motivated protectionist reprisals** which have occurred in several countries including India, Brazil, Turkey, Colombia, Egypt and especially **the U.S.** The Obama administration imposed anti-dumping taxes on Chinese tyre imports from 2009 following complaints from the rubber industry. These taxes have been raised and extended recently and currently range from **50% to 130%**, depending on the supplier. Truck tyres imported from China are also taxed at rates that exceed **40%**.

Fig. 14: Customs duties on light car tyres imported from China

Brands	Countervailing duty tariffs	Anti-dumping tariffs	Regular tariffs	Total maximum tariffs (ex. potential offsets)
Cooper	20.7%	25.3%	4.0%	50.0%
Giti	37.2%	30.0%	4.0%	71.2%
Sailun	30.6%	14.4%	4.0%	49.0%
Bridgestone	30.9%	25.3%	4.0%	60.2%
Cheng Shin	30.9%	25.3%	4.0%	60.2%
Hankook	30.9%	25.3%	4.0%	60.2%
Kumho	30.9%	25.3%	4.0%	60.2%
Toyo	30.9%	25.3%	4.0%	60.2%
Triangle	30.9%	25.3%	4.0%	60.2%
Shandong Yongheng	100.8%	25.3%	4.0%	130.1%
Chinese-wide rate (over all other groups)	30.6%	88.0%	4.0%	122.6%

Source: U.S. Department of Commerce; Bryan, Garnier & Co ests.

Please see the section headed “Important information” on the back page of this report.

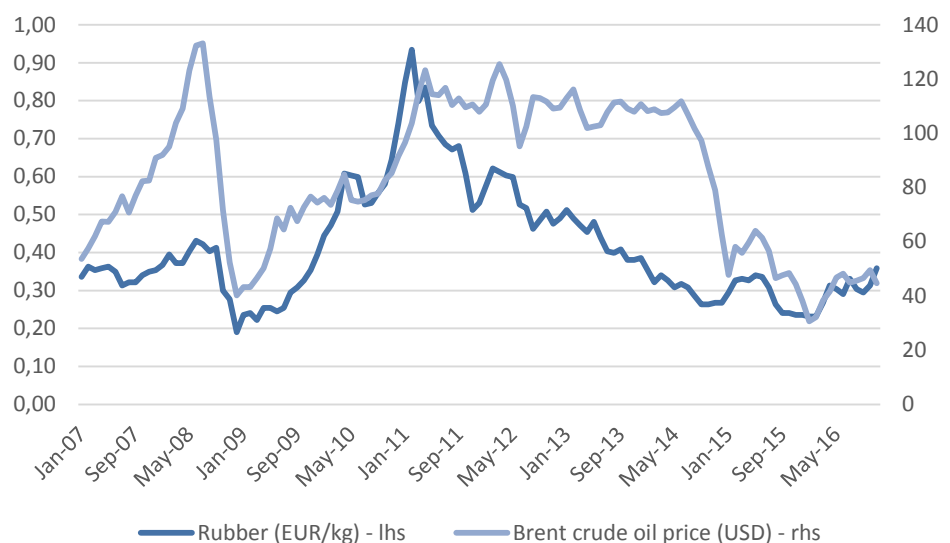
In spite of measures taken by the U.S., the **EU** has for the moment kept its import duties (4.5%) **extremely low compared to the U.S.**, even though its rubber industry has been hard hit by the rise in unfair competition. The replacement truck tyre segment suffered so much from cheap imports that **remoulds** (*i.e. worn-out tyres that are re-threaded with a band of rubber, as the carcass is still good*) became less competitive than new Chinese tyres, in the eyes of the truck owners.

In the years 2007-2015, remould volumes in Europe fell **19%** while Chinese truck tyre imports soared **168%**. **This negative correlation is very easy to explain: the Chinese imports are twice as cheaper as a premium tyre** that carry western brand names (*a Michelin 295/80 22.5 truck tyre sells for over EUR700 including VAT compared to EUR196 for Double Star's low-cost equivalent, according to 123pneus estimates dated 31 January 2017*). Such a large price difference makes the retreaded tyres (*on average 30-40% cheaper than a comparable new tyre*) less attractive than a new Chinese tyre, obliging the western groups to restructure in order to protect their margins. For example, Continental and Goodyear have announced plant closures and **Michelin** said in **March 2016** that it would close its truck tyre remoulding centre at **La Combaude (France)**, due to weak demand. In France, for example, about **48%** of truck tyres were remoulded in 2012, but only **39%** in 2015.

However, low-cost Chinese products cannot usually be remoulded and have a life expectancy of **120,000km** according to EY. On the other hand, high-quality tyres whose life expectancy exceeds **200,000km** can be remoulded twice and can be used for a total lifespan of over **600,000km**.

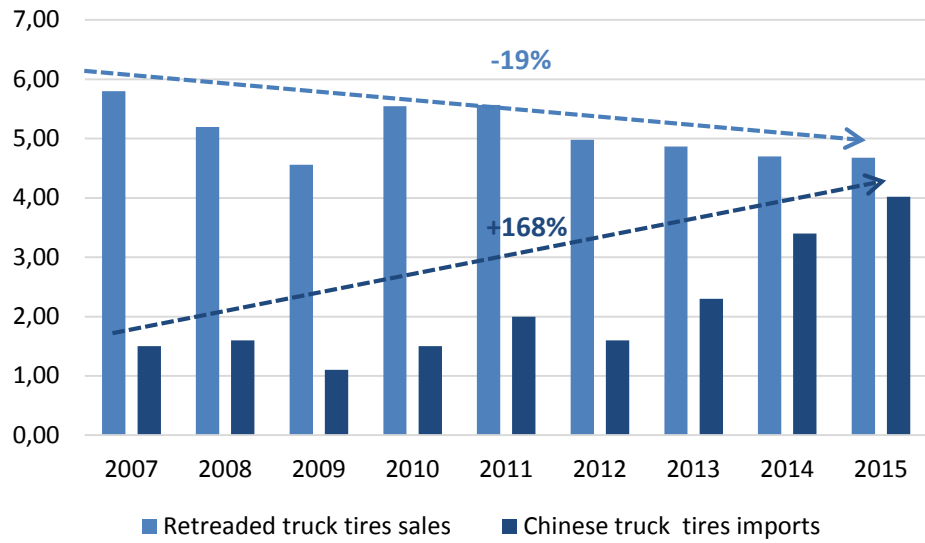
Strong demand for new truck tyres imported from China is partly explained by: **1/** the economic slowdown in Europe in recent years, which has prompted road haulage companies – especially the small and medium-sized ones which account for 50% of the sector in France – to turn to mono-life tyres whose low purchase price may be positive when cash is scarce, but which incur an additional long-term cost, and by **2/** the sharp fall in raw material prices; it is logical to think that the improvement in the world economy coupled with higher rubber prices would be positive for the remould market, and thus for the traditional players still present in this segment.

Fig. 15: Oil and rubber prices since 2007



Source: Datastream; Bryan, Garnier & Co ests.

Fig. 16: Chinese imports have squeezed out demand for retreaded tires in Europe (m units)



Source: ETRMA; Bryan, Garnier & Co ests.

4. A market that should grow 2.8% pa in volume

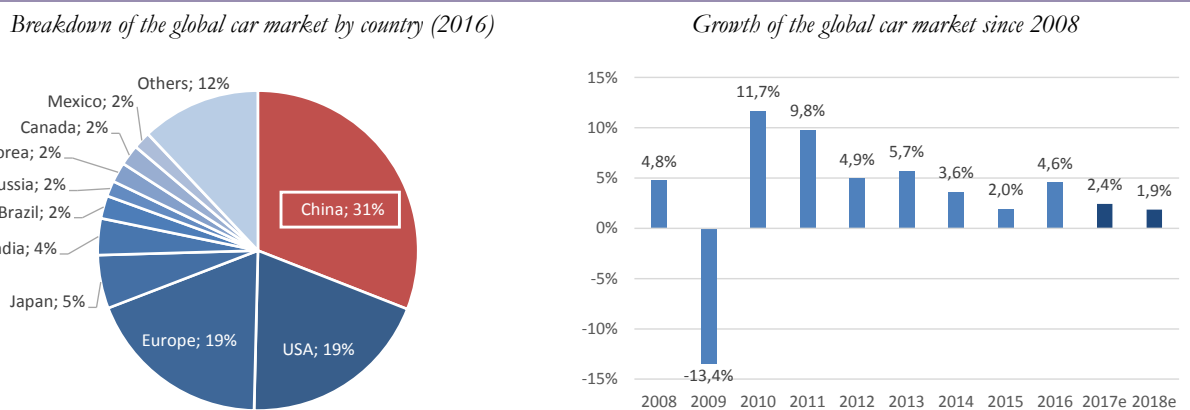
4.1.1. Growth of the PC&LCV segment will be largely driven by the replacement market

OEM hit by reduced car production from 2017...

Since the crisis of 2007/08, the OE market (i.e. tyres purchased by car makers) has benefited from a recovery in car production, which is estimated at 441m worldwide units in 2016 (or 28.7% of the total car and van tyre segment).

However, the global car market is now experiencing sluggish growth, both in terms of final demand (registrations) and production. Having enjoyed double-digit growth in 2010, we estimate that global output will rise only 2.4% in 2017 to 93.5m cars, before normalising at 1.9% from 2018.

Fig. 17: Global demand driven by China and the mature markets



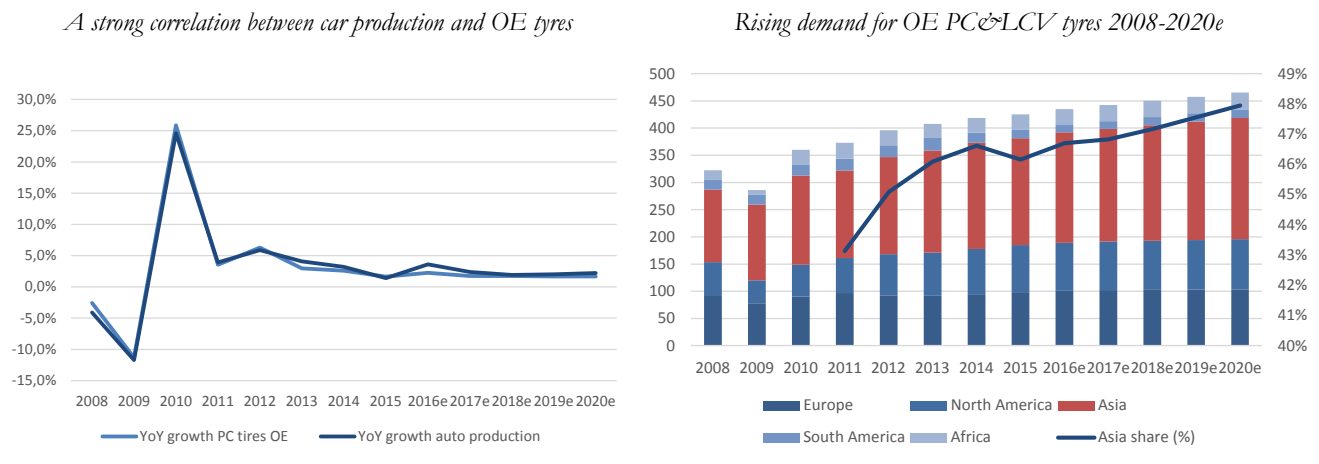
Source: Renault; Bryan, Garnier & Co ests.

Until recently, production was underpinned by demand from mature markets (Europe, USA, Canada and Japan), as their economies went through a catch-up phase at a time when the oil exporting countries were suffering from low oil prices, but **we expect the situation to reverse in 2017**.

Europe is getting very close to its all-time high and the catch-up phase cannot go on forever (BG estimates registrations +1.5% in 2017) while in the **U.S.** car sales appear to have reached a plateau (BG estimates registrations -1% in 2017), forcing heavyweight manufacturers like **Ford** and **General Motors** to cut their production. In **Japan**, the market remains depressed by the economic recession and deflation, but should soon stabilise (BG estimates registrations +1.5% in 2017) after hitting a low in 2016. In **China**, the other locomotive for car production thanks to strong GDP growth, demand for cars among the newly-emerged middle class has been artificially spurred by a tax break for car with small engines. This was recently raised to **7.5%** (from 5%) and should return to its initial level of **10%** in 2018. Our estimates see this market growing another **4%** in 2017 and then about 2.5% per annum in **2018-2020**.

As regards the oil exporting countries such as **Russia** and Latin American – most notably **Brazil** – we expect them to enjoy an economic upswing thanks to more stable oil prices in recent quarters. With the help of an extremely favourable comparison base (registrations in Brazil and Russia are expected to fall 25% and 12% respectively this year) these two countries, which alone account for **5% of global sales**, should enjoy solid growth in the coming years. **We expect the Brazilian and Russian markets to grow by 5% in 2017 and 4% in 2018.**

Fig. 18: Demand for OE car and van tyres is powered by car production and Asia



Source: Renault; Bryan, Garnier & Co ests.

Given the strong correlation (*over 99%*) that exists between car production and OE tyres, the current slackness in the former market implies a similar slowdown in demand for OE tyres for light vehicles.

We have based our forecasts for OE tyres for light vehicles on global *PC&LCV* output, although there are variations to the method depending on the region. Whereas the overall picture is one of sluggish demand in 2016, we expect the growth to stem from a less severe slowdown in South America, as well as stronger car demand in China.

In our models for Continental and Michelin, we assume annual growth of the global OEM to be 2.4% in 2017 and 1.9% in 2018.

Fig. 19: Global demand for OE PC&LCV tyres - BG estimates (millions of units)

OE business (m units)	2010	2011	2012	2013	2014	2015	2016e	YoY	2017e	YoY	2018e	YoY
Europe	91	97	93	92	95	99	104	6,0%	106	2,0%	108	1,5%
North America	59	64	76	79	83	86	88	2,0%	87	-0,7%	88	0,2%
Asia	164	161	179	188	195	196	206	5,0%	214	3,7%	219	2,6%
South America	21	22	22	23	19	16	13	-18,0%	13	3,5%	14	3,2%
Africa	27	29	28	26	27	29	30	5,0%	31	4,0%	32	4,0%
Total	360	373	396	408	419	425	441	-	452	-	461	-
YoY growth	-	3,6%	6,3%	3,0%	2,6%	1,6%	3,8%	-	2,4%	-	2,0%	-

Source: Michelin; Bryan, Garnier & Co ests.

...while the replacement market should benefit from strong growth in OEM since 2007

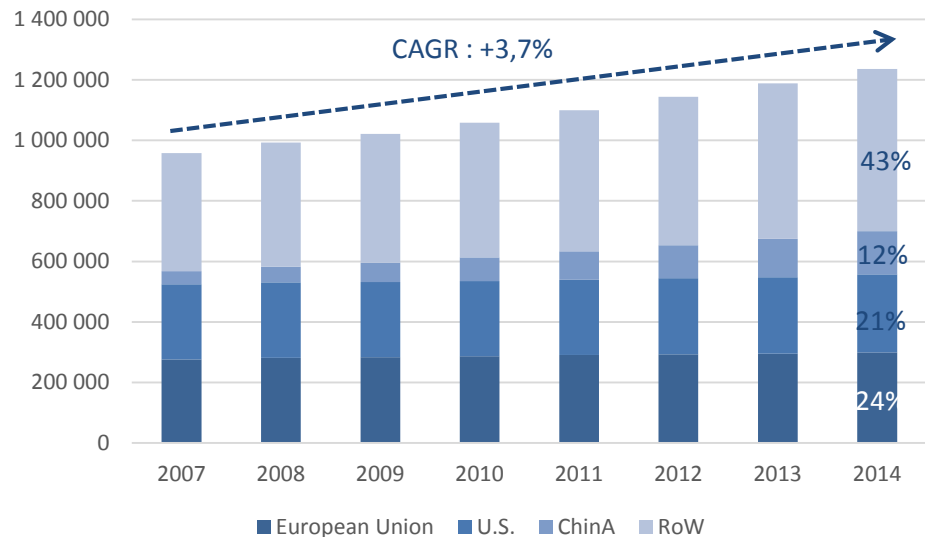
Demand for replacement tyres stems exclusively from consumers who already own a car, so **growth depends on two factors:**

- 1/ The **number** of cars in circulation;
- 2/ The **life expectancy** of tyres (*excluding accidents and malicious damage*) which depends mainly on how the car is driven (*sporty driving, annual mileage, condition of roads used etc.*)

Unlike the OE market which should be hit by an expected slowdown in car production, the **market for replacement tyres is ideally placed to benefit from the post-2007 upturn in demand for new cars.**

Firstly, rising registrations (*CAGR of 3% in 2007-2014*) have increased the global car fleet by an average of roughly **3.7%** a year from 2007 to 2014, when there were **1.2bn units in circulation worldwide** (*versus 958m in 2007*) according to OICA. This near-**300m** increase implies a similar number of future clients for the replacement tyre segment. The remaining growth in the global car fleet stems from the **ageing of cars in circulation**, notably thanks to technological improvements and increasing time that car owners keep their vehicle. As a result, the fleet of light vehicles in circulation in Europe has an average age of **9.7 years** compared to **11.5 years** for the U.S. fleet.

Fig. 20: Global vehicle fleet in circulation (millions of units)



Source: OICA; Bryan, Garnier & Co ests.

The life expectancy of tyres is also an important variable in the replacement market. According to Michelin, **drivers replace their tyres on average every 30,000 km for mid-range products**, but high-quality tyres last for **40-50 000 km** whereas cheap ones should be changed after roughly **20,000 km**. In the U.S., cars are driven an average of **21,700 km per annum**, according to the U.S. Transportation Department. Assuming mid-range products are used, this implies that it is necessary to buy replacement tyres every **1.38 years or 17-18 months**. Note, however, that this theoretical (*and recommended*) lifespan varies depending on the type of driving done during the 30,000 km, the type of vehicle and the condition of the roads.

The U.S. and China are the countries where drivers change their tyres most frequently. However, the lifespan of tyres, which is estimated at 1.38 years in the **U.S.**, 1.54 years in **China** and two years in **Europe**, is expected to contract in all three regions for structural as well as economic reasons.

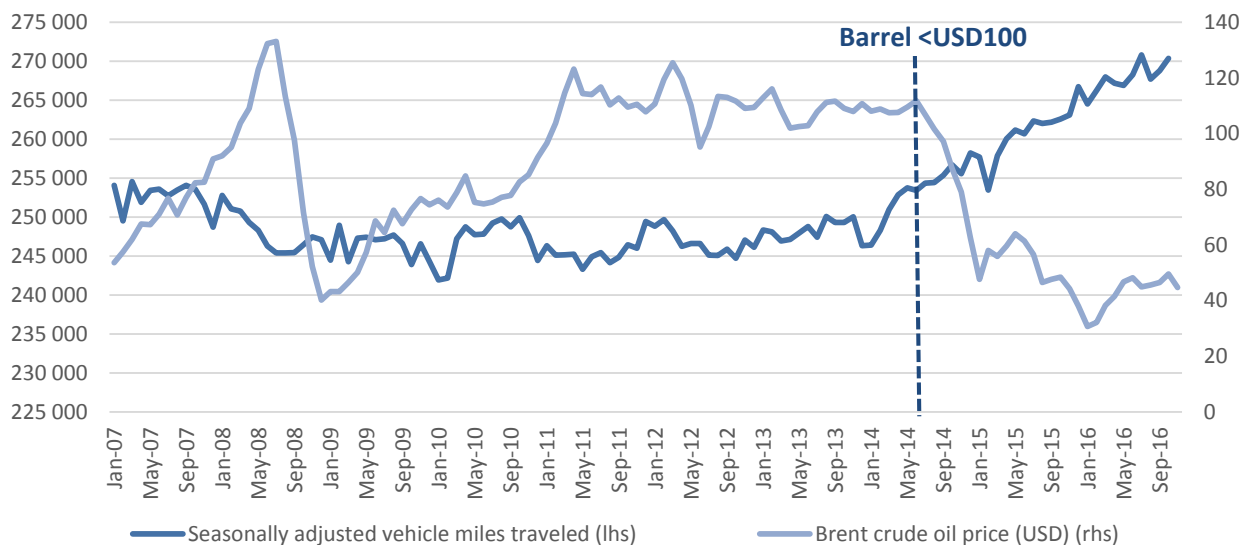
Fig. 21: Theoretical average life expectancy of a mid-range tyre

-20% discount due to rougher roads	U.S.	China	Brazil	Europe	France	UK
Mid-range tyre life expectancy (km)	30,000	30,000	24,000	30,000	30,000	30,000
Average km driven per year/vehicle	21,700	19,000	10,000	15,000	17,400	13,000
Tyre life expectancy (years)	1.38	1.58	2.40	2.00	1.72	2.31

Source: U.S. NHTSA; Ford; Michelin; L'Argus; Bryan, Garnier & Co ests.

In the **U.S.**, the replacement market is **highly correlated to oil prices**. Consequently, demand could suffer as a result of the December 2016 agreements between the 11 Opec members and the non-member countries to reduce oil production by 1.8m barrels per day from January 2017. This negative correlation between oil prices and distances driven saw the latter reach a 10-year high following the fall in oil prices since late 2014 (*the price per barrel fell from over USD100 to under USD40 in a few months*). In 2015, the NHTSA estimated that U.S. motorists drive an average of **21,700 km per annum**, which is more than in any other large country.

Fig. 22: A strong correlation between car use and oil prices in the U.S.



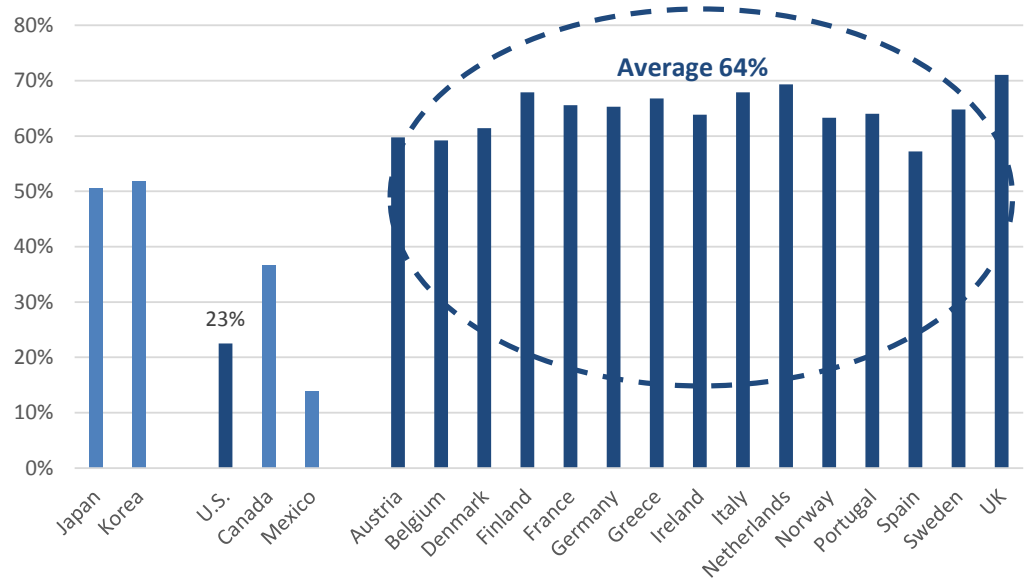
Source: Federal Reserve of Saint Louis; Bryan, Garnier & Co ests.

Please see the section headed "Important information" on the back page of this report.

This sensitivity to oil prices stems from **lower taxation of petrol the U.S.**, where taxes only account **for 23%** of the total price per litre. According to the IEA, a litre of petrol cost only **USD0.63** in the U.S. in 2015, versus **USD1.42/L** in France (*66% tax*) or **USD1.47/L** in Germany (*65% tax*). Taxes on products such as petrol are generally a fixed sum applied to a volume rather than a percentage. As a result, a change in the oil price has an almost direct and visible impact on the retail price if the petrol is lightly taxed.

However, this does not hold for regions such as Europe, where taxation of petrol is much higher (*roughly two-thirds of the retail price*) and where the price of crude oil has only a marginal impact on retail prices, and thus on car use by the motorist.

Fig. 23: Weight of taxes in total retail price of petrol

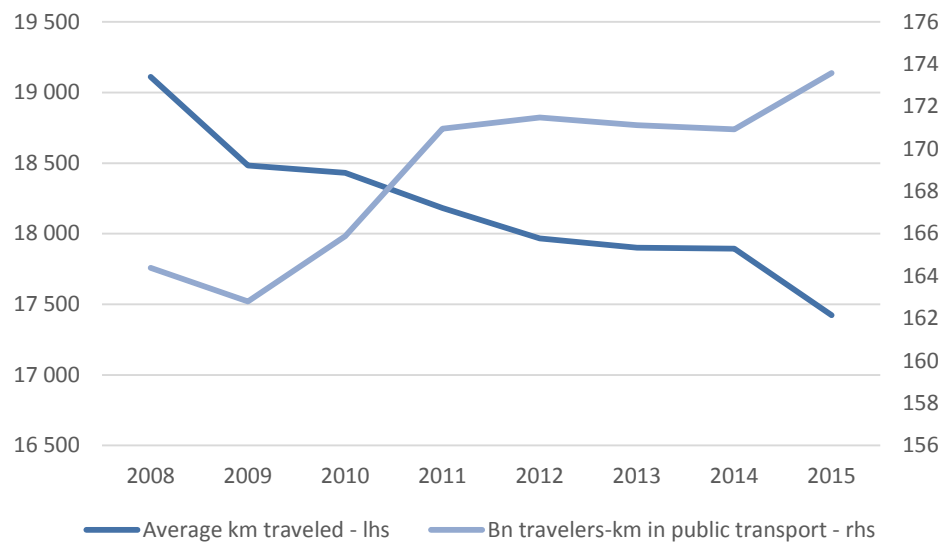


Source: IEA; European Commission; Bryan, Garnier & Co ests.

In spite of European motorists’ low sensitivity to oil prices, we still expect **a slowdown in demand for replacement tyres, mainly due to reduced car use**. The reasons for this are both cultural and infrastructural, Europe being the region where ecologists are most present in media and in politics. As a result, efforts to protect the environment and to improve public health have led to investment in public transport networks (*usually non-road transportation*) in recent decades, have reduced car usage.

France is an excellent example of the **see-saw relationship that can exist between private and public transport** (*i.e. between km driven in a car and travellers/km in public transport*). While French motorists averaged only **17,400km** in 2015 versus **19,100km (-8.8%)** in 2008, the ratio of travellers/km in public transport **increased by 5.6%** over the same period, according to the *Observatoire de la Mobilité en Ile-de-France*.

Fig. 24: French example of symmetry between car usage and public transport



Source: L'Argus; OMNIL; Bryan, Garnier & Co ests.

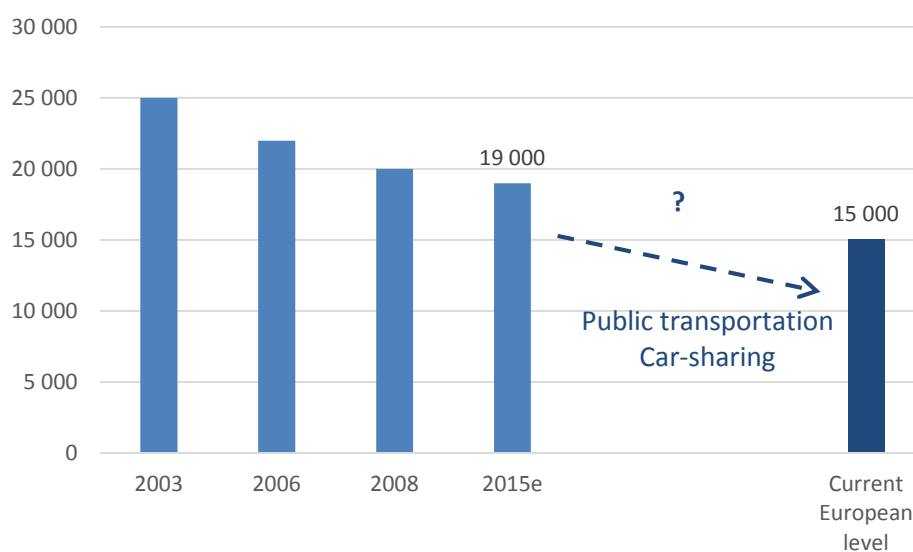
Recent peaks in pollution levels in French cities and in Europe too have obliged local and national governments to limit or ban the use of some vehicles at certain times. This should increase public transportation usage at the expense of private cars.

On the other hand, the **Chinese** replacement market benefit from strong growth of the OE market over the past five years and from the record number (*over 142m*) of vehicles in circulation. However, falling car usage and a rising generation of millennials (*people born in the years 1980-2000*) in the country cannot be overlooked longer term.

In China, cars are driven about **19,000km** a year, according to estimates published by a local university. Although China is still considered a developing market, car usage is currently among the highest. This is largely due to the size of the country and the long distances between cities. However, if we look at historical trends since 2003, we find that **the number has been falling steadily**, and that the downward trend is particularly steep in big cities like Beijing where pollution levels have obliged the authorities to devise lottery systems and to hold auctions for registration plates, in an effort to slow car sales. The rise of the **millennials** is also changing vehicle ownership trends, given this generation's love of technology and need for freedom and flexibility, as well as a rejection of the notion of ownership.

Car-sharing is expected to be the next disruptive trend in the Chinese car market, according to the Boston Consulting Group which bases this forecast on two numbers: **1/ 70% of mid-range cars do less than 16,500km/year**, which means that the cost of owning and running the vehicle exceeds the cost of renting or sharing one; **2/ millennials now number over 385m or 28% of the population** in China, and they are the driving force behind a cultural shift away from cars towards **car-sharing, on-demand transport services and public transportation**.

Please see the section headed "Important information" on the back page of this report.

Fig. 25: Average distance travelled by a car in China (km/vehicle)


Source: Urban Transport Planning Institute and Surveys China; Bryan, Garnier & Co ests.

Conclusion: In view of tyre volumes sold, the global replacement market for light vehicles should be underpinned by **strong growth of the car fleet in China (+18.4% CAGR in 2007-14)**. This fleet is currently over **145m** vehicles, implying a growing replacement market in spite of an expected fall in the frequency of tyre changes. The same logic applies to **Africa**, although to a lesser extent due to lower volumes. Mature regions such the **U.S. and Europe should see growth normalise at around 1.5%/year** with the development of public transport in Europe, a potential increase in petrol prices in the U.S. and more generally a regulatory and climate environment that encourages changes of tyres from one season to another. **Our models assume that the global market will grow 3% in 2017.**

Fig. 26: Global demande for replacement PC&LCV tyres – BG est. (million units)

RT business (m units)	2010	2011	2012	2013	2014	2015	2016e	YoY	2017e	YoY	2018e	YoY
Europe	321	338	311	321	325	349	354	1,4%	363	2,5%	372	2,5%
North America	266	263	254	268	281	280	283	1,1%	290	2,5%	299	3,0%
Asia	194	213	223	237	249	262	274	4,5%	286	4,5%	299	4,5%
South America	58	62	63	70	73	75	76	0,8%	76	0,5%	76	0,5%
Africa	88	91	88	90	95	104	108	3,9%	112	4,0%	117	4,0%
Total	927	967	939	986	1 023	1 070	1 095	-	1 128	-	1 163	-
YoY growth	-	4,3%	-2,9%	5,0%	3,8%	4,6%	2,3%	-	3,0%	-	3,2%	-

Source: Michelin; Bryan, Garnier & Co ests.

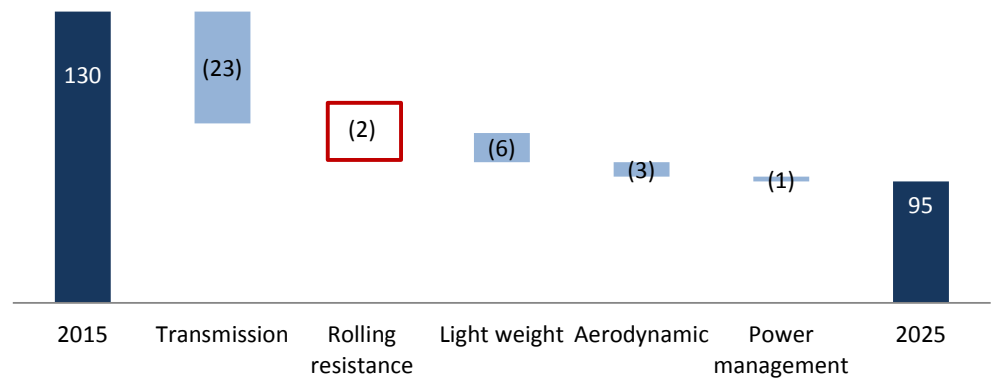
The positive mix effect should fuel strong growth of the market

As a counter-attack to Asians marketing cheap products in the 2000s (led by Korea's *Hankook* and soon followed by Chinese players), the large U.S. and European manufacturers moved upmarket by: 1/ offering **better performance** tyres with greater road resistance and lower rolling resistance; 2/ increasing **innovation** and; 3/ focusing on **large tyres**, with a notable breakthrough in the $\geq 17''$ segment.

In response to the demands of their car manufacturing clients, the tyre makers made **regular improvement to rolling resistance** of their products in order to **reduce fuel consumption, which is the direct cause of CO₂ emissions**. At every turn, the tyre is deformed by the shape of the road, the materials that it is made from get hot and absorb some of the energy produced by the motor. During normal driving, it is estimated that **one fifth of the fuel is absorbed by rolling resistance**.

In the case of Europe, it is estimated that lowering **rolling resistance reduces CO₂ emissions by 2g per km**, which is **6%** of the reduction demanded by the EU by **2025** (*95g/km vs 130g/km in 2015*). In response to these stricter regulations concerning CO₂ emissions, the big tyre makers (*Michelin from 2008, followed by Goodyear, Pirelli and Bridgestone*) focused their efforts on low-resistance tyres whose the capacity to reduce fuel consumption is estimated at **4%**, or **0.2L/100km**, for a yield per km that is **30% higher**.

Fig. 27: Contribution of components to the reduction in CO₂ emissions (g/km)



Source: Plastic Omnium; Bryan, Garnier & Co ests.

Innovation has also played a key role in the « **premiumisation** » of western tyres and remains central to their strategy of differentiation. These innovations are aimed at both new segments such as **electrics** (tyres that can generate electricity during driving in order to recharge the vehicle's battery), and at greater comfort during driving especially in case of a **puncture** (tyres that can repair themselves without human intervention thanks to a substance that makes them airtight; airless tyres) or **changing of seasons** (tyres that the makers claim offer an equally good performance whatever the season or the weather).

Fig. 28: Examples of the most disruptive innovations

Goodyear's BH03 connected tyre



Bridgestone's « Air Free » tyre



Source: Goodyear; Bridgestone.

Lastly, **new car models tend to use larger tyres** (17+ inches). Some **small models** only use tyres ≥ 17 " (e.g. **BMW's i3** electric car all versions of which used **19-inch** tyres), while larger ones such as **sedans and SUVs** have tyres between **17 and 20 inches**.

These changes to the offering of the car manufacturers took place in just a few years. For example, **VW's Golf**, a compact car, was fitted with 15-inch tyres six years ago, but now has **17-inch** ones. **Peugeot 3008** SUV was initially equipped with 16-inch tyres, but was switched to **18-inches** in 2013, while **Renault's Grand Scenic** is the most striking example, having been launched with 16 inch tyres it was changed to 20-inches six years later. This choice is not always justified by an increase in the weight or size of the car in question.

Fig. 29: Examples of adjustments to tyres over time

	Weight (kg)	Vehicle width (m)	Tires diameter (inch)
Electric small car:			
BMW i3 BVA 2013 - 3doors	1,270	1.78	19
BMW i3 94 2016 - AH 3doors	1,390	1.78	19
Compact:			
Volkswagen Golf VI 1.4 2010 - 5doors	1,142	2.05	15
Volkswagen Golf VI 1.2 2013 - 5doors	1,154	2.05	16
Volkswagen Golf VII 1.4 2016 - 5doors	1,205	1.80	17
SUV:			
Peugeot 3008 1.6 2010 - 5doors	1,421	2.11	16
Peugeot 3008 Feline 1.6 2013 - 5doors	1,423	1.84	18
Peugeot 3008 Feline 1.6 2016 - 5doors	1,450	1.84	18
MPV:			
Renault Grand Scenic III 1.4 2010 - 5doors	1,420	2.08	16
Renault Grand Scenic III 1.5 2013 - 5doors	1,525	1.85	18
Renault Grand Scenic III 1.5 2016 - 5doors	1,503	1.87	20

Source: La Centrale; Bryan, Garnier & Co ests.

This shift to larger tyres comes in response to three requirements: **1/ heavier modern cars** with ever larger braking disks and thus bigger wheels; **2/ larger tyres that offer better road holding** on both dry and wet surfaces, as well as **lower fuel consumption**; **3/a purely aesthetic concern**, tyres that reach to half the vehicle’s height being the current fashion in car design.

The democratisation of large premium tyres has accompanied the rise of the SUV (*Sport-Utility-Vehicle*) which are a cross between a hatchback and a four-wheel drive and which are equipped with large tyres suitable for a 4x4 or pickup of ≥ 17 ". Introduced in the U.S. under the Jeep brandname, the SUV was slow to make its presence felt in the major auto markets, but the car makers focused on this type of vehicle which corresponded to the expectations of many consumers. It is suitable for urban use given its modest size, but equally suitable for long family journeys with features similar to those of a monospace (*five seats, spacious interior, large trunk*). Note that very attractive design and height played a major role in the successful marketing SUVs.

In **France**, two SUVs figured among the five best-selling private cars in 2016: the **Renault Captur** and the **Peugeot 2008** (*combined market share of almost 7%*), whereas in 2011 the Top 5 spots were occupied by four compacts and a monospace.

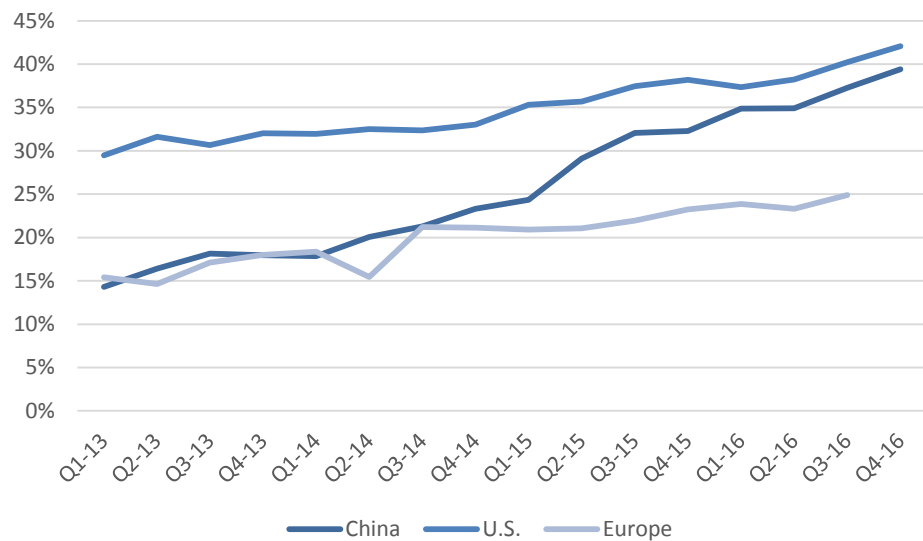
Fig. 30: Top 5 best-selling private cars in France (units)

Ranking	Model	Segment	2011	%	Ranking	Model	Segment	2016	%
1	Renault Clio	City compact	149,044	6.8%	1	Renault Clio IV	City compact	112,152	5.6%
2	Peugeot 207	City compact	147,501	6.7%	2	Peugeot 208	City compact	97,830	4.9%
3	Renault Mégane	City compact	145,221	6.6%	3	Peugeot 308 II	Sedan compact	75,509	3.7%
4	Citroën C3	City compact	110,901	5.0%	4	Renault Captur	SUV	70,769	3.5%
5	Citroën C4	MPV compact	93,373	4.2%	5	Peugeot 2008	SUV	65,986	3.3%

Source: CCFA; Bryan, Garnier & Co ests.

From a global point of view, the SUV’s success story concerned all markets: first the U.S., then Europe, and even developing markets such as China where consumers seem to appreciate the novelty aspect of the size and the design of these models. As a result, **sales mix has changed greatly in these regions**. In just over three years, the share of SUVs in registrations of private cars in Europe has risen from **15%** to **25%** today. The increase is even more impressive in China, where market share recently hit **39%** versus **14%** in early 2013.

Fig. 31: Share of SUVs in private car registrations (PC & LCV in the U.S.)



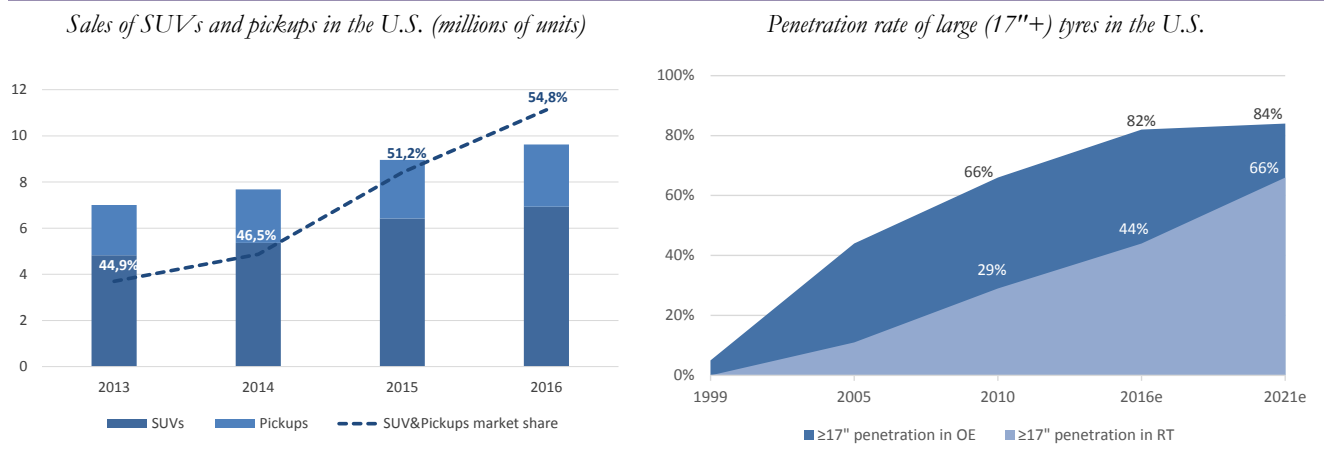
Source: ACEA; CAAM; GoodCarBadCar; Bryan, Garnier & Co ests.

The U.S. is one of the highest growth markets for 17+ inch tyres. The explanation lies in a cultural factor that is stronger than in Europe or China: the **popularity of large vehicles** such as SUVs and pickups. These two segments have accounted for **over 54% of total light vehicle (below 6T) sales** in the U.S. since the beginning of 2016 (*i.e. more than 9.6m vehicles*).

This product mix notably accounts for the high penetration rate of large tyres (*roughly 80%*) in the OE market in the U.S.

However, Goodyear expects this **penetration rate to stagnate in the region of 85%**, as demand for 17+-inch tyres depends more on growth of the SUV segment than on democratisation of these products for use in other vehicle segments. This high penetration rate in new cars implies stronger demand for large replacement tyres. Having barely accounted for one third of sales in 2010, **the big tyre manufacturers should dominate the replacement market with market share of 66% in 2021e**, according to Goodyear.

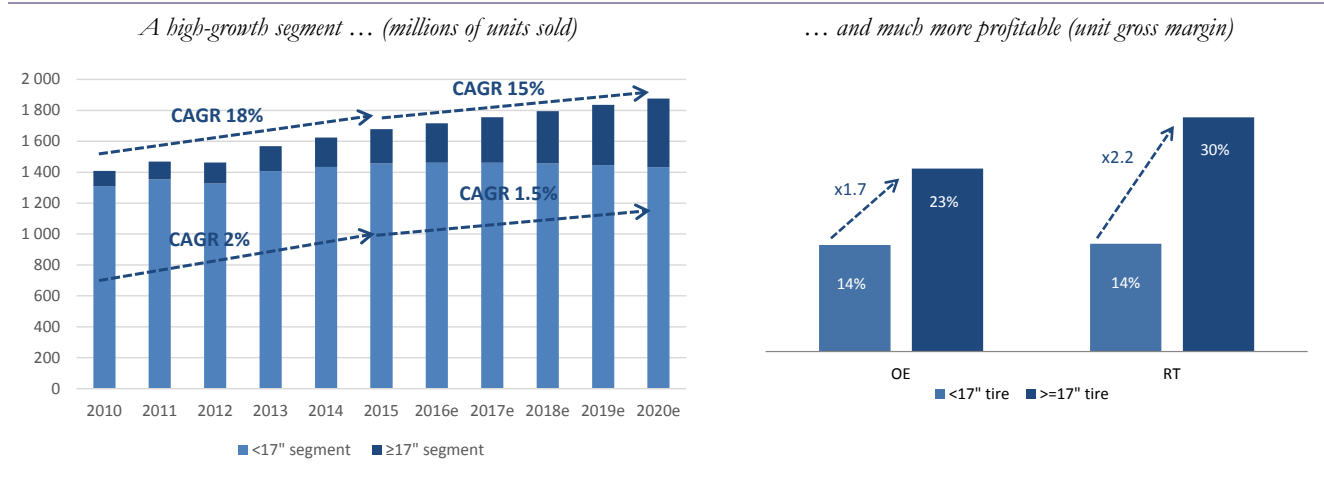
Fig. 32: USA: A growing market



Source: Goodyear; GoodCarBadCar; Bryan, Garnier & Co ests.

Apart from satisfying the technical and aesthetic requirements of car makers, this new range of tyres is proving to be a **major source of growth and profit**. Surfing on a fashion in all light vehicle categories and the popularity of SUVs and crossovers, 17-20 inch tyres are expected to enjoy a **CAGR of 15% in 2020 to 444m units** (~24% of total tyre volumes, versus 13% in 2015 and only 7% in 2010).

Fig. 33: Large tyres (17+ inches)



Source: Goodyear; LMC Automotive; Bryan, Garnier & Co ests.

Destined mainly for expensive models such as sedans, SUVs and premium vehicles whose owners can generally afford the higher cost of large tyres, the tyre makers supplying these products enjoy **considerably higher margins**. A small/medium tyre (*under 17 inches*) sells for around **EUR55** in the OE market and for **~EUR70** in the replacement market, but these figures rise to **EUR80** and **EUR100** respectively for tyres of 17+ inches, so **the gross margin is multiplied by 1.7 in the OEM and by more than two in replacement, according to data supplied by Goodyear.**

Conclusion: We expect the global market for car tyres to grow 2.8% in 2017, with a slightly more dynamism in replacement (+3%) than in the OE market (+2.4%). The slowdown in car production, in spite of the expected recovery in Brazil and Russia, should negatively impact OE tyres, while the strong rise in China's fleet should fuel replacement demand. But irrespective of the segment, growth in mature markets such as the U.S. and Europe should normalise as the catch-up phase ends and public transport systems are improved.

The market should grow more rapidly in value than in volume mainly due to: **1/** the larger market share of premium manufacturers in OE, and thus mechanically in the replacement market; and **2/** the increased share of **17+ inch tyres**.

Fig. 34: Global demand for PC&LCV tyres – BG estimates (millions of units)

OE + RT Business (m units)	2010	2011	2012	2013	2014	2015	2016e	YoY	2017e	YoY	2018e	YoY
Europe	412	435	404	413	420	448	458	2,4%	469	2,4%	480	2,3%
North America	325	327	330	347	364	366	371	1,3%	378	1,7%	387	2,3%
Asia	358	374	402	425	444	458	480	4,7%	500	4,1%	518	3,7%
South America	79	84	85	93	92	91	88	-2,4%	89	0,9%	90	0,9%
Africa	115	120	116	116	122	133	138	4,1%	144	4,0%	149	4,0%
Total	1 287	1 340	1 335	1 394	1 442	1 495	1 536	-	1 580	-	1 624	-
YoY growth		4,1%	-0,3%	4,4%	3,4%	3,7%	2,7%	-	2,8%	-	2,8%	-

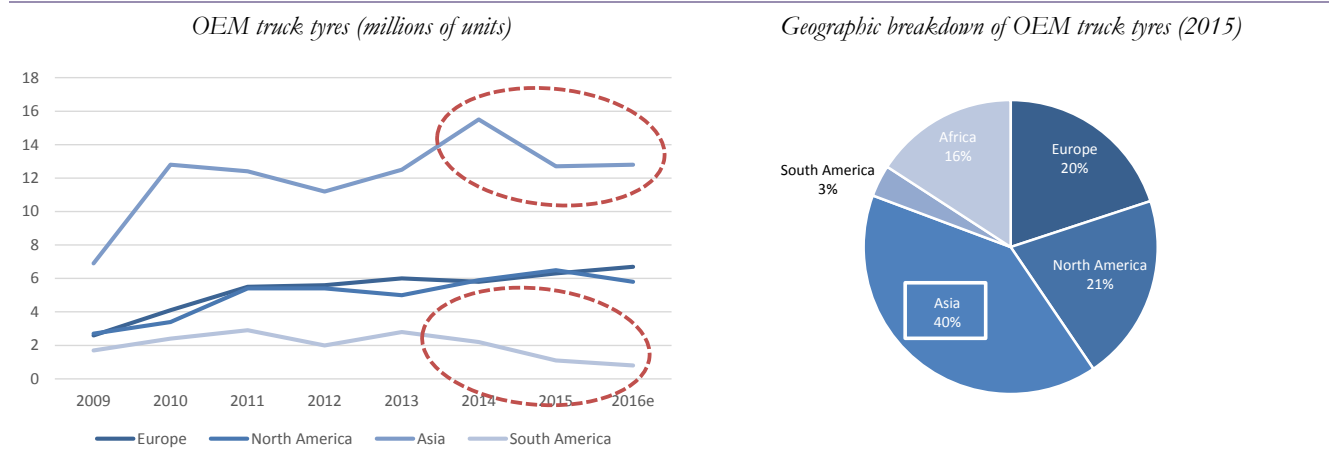
Source: Company Data; Bryan, Garnier & Co ests.

Of the two tyre stocks that we cover, **Michelin** and **Continental**, the French group has higher exposure to the market for large tyres, as **45%** of volumes carrying the Michelin brand (*80% of volumes sold by the group*) are **17+ inches**, versus only **31%** for Continental.

4.1.2. Is the truck market set to recover in 2017?

Like the light vehicles segment, the **heavy vehicles** (*over 6T*) market benefited greatly from catching up post the financial crisis of 2008-2009. **Truck production is highly exposed to changes in a country's GDP**, as these vehicles are generally used to transport merchandise.

Fig. 35: A return to normal in Asia and recovery in South America?

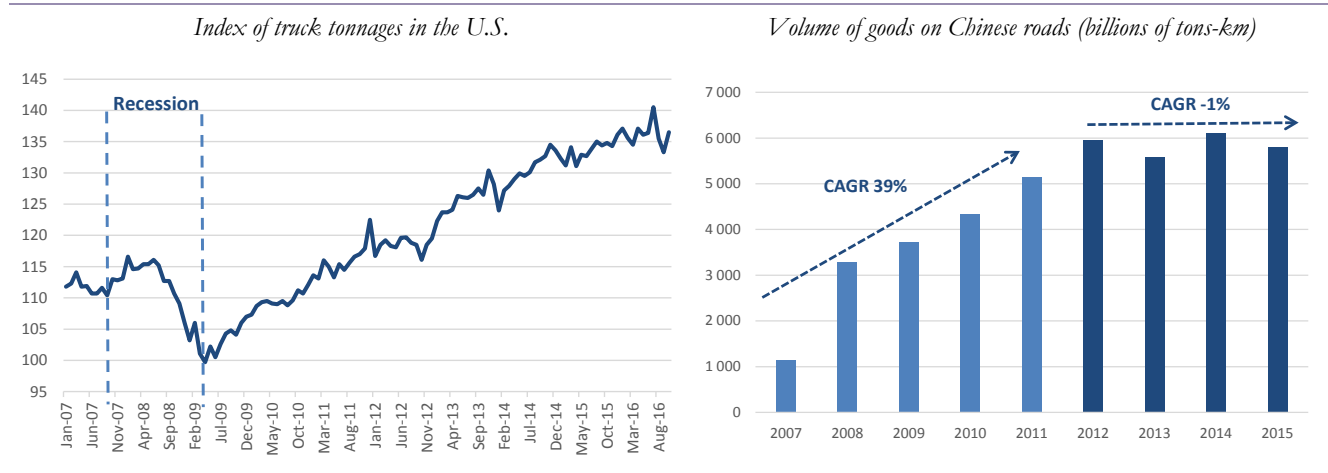


Source: Michelin; Bryan, Garnier & Co ests.

The economic recovery in the **U.S.** and **significant progress in the non-oil developing economies** have underpinned growth of the OEM in recent years. Nevertheless, the **high-growth regions look set to change**, as the U.S. economy has reached a cyclical peak with the index of truck tonnages at an all-time high of over 135 points. This index, which is calculated by the American Truck Association (ATA), measures the weight of goods transported on U.S. roads each month and is the reference for transportation activity in the country. The U.S. recession, which lasted all through 2008 and into early 2009, was the only time that this index fell, but the peak of late 2016 should precede a period of stagnation or decline in transportation of merchandise which in turn should cause truck production to decrease, despite the measures announced by the President Trump to stimulate U.S. growth.

The **slowdown in China, where growth is bound to normalise** with the complicated move from a manufacturing to a service economy, is another **source of concern for the goods transportation sector**. Having grown almost **40%** a year from 2007 to 2012, the volume of merchandise transported in China has reached a plateau. As a result, companies are tending to postpone investment in growth or in new trucks.

Fig. 36: The U.S. and China: Past growth rates



Source: FRED; Statista; Bryan, Garnier & Co ests.

Meanwhile, **Europe's** economic recovery continues to lag that of the U.S., mainly because the recession began later there, but also because the region suffered a second shock in 2012 with the euro zone debt crisis. This explains ongoing strong growth in the trucks markets, where the catch-up phase continues. However, the real growth avenue is the **developing oil economies**, which have until recently been hit by the fall in oil prices from late 2014. These countries – of which Russia is a prime example – harbour significantly greater potential than mature market like the EU, as illustrated by a post-crisis CAGR of **12%** in Russia in 2010-2012 compared with stagnation in Europe.

Taking a closer look at **Brazil**, we find that the fleet of trucks in circulation is very old. Trucks of 8T have an average **age of 14 years** and there are over **570,000 trucks** of 8-29T whose age is **16.5 years**. The rest of the fleet mainly comprises trailer and semi-trailer trucks whose age exceeds 12 years, according to data supplied by Brazil's National Agency for Land Transportation. This high average age reflects a tendency among Brazilian companies to rationalise investments as much as possible. It also suggests a potential for significantly higher production when the Brazilian economy shows tangible signs of recovery.

Note too that **road freight accounts for 58% of volumes transported in Brazil** and that the country's more extensive road network (*roughly 1.5m km – +300% in 20 years – of which 160,000km is tarred*) should encourage truck transportation in the future.

Fig. 37: Some regions still have growth potential



Source: Eurostat; Statista; Bryan, Garnier & Co ests.

IMF estimates suggest that **Brazil** and **Russia** could return to growth in **2017**, with GDP increasing **0.5%** and **1%** respectively. These projections foreshadow an end to the crisis in the Truck OEM in these countries. Note too that the agreement of December 2016 between Opec members and 11 other oil-exporting countries should reduce oil production by **1.8m barrels a day** from January 2017 thus boosting oil prices.

Oil sector experts estimate that oil and gas accounted for **35% of Russia's GDP** in 2013, compared to only **13% of Brazil's** in 2014. Concerning the political environment, the outlook appears to have improved in both countries, with less economic instability in Brazil now that the president **Dilma Rousseff** has been removed from office and replaced by **Mr Temer** until next year's presidential and legislative elections, and geopolitical tensions between Russia and the West have eased with the election of Donald Trump.

Fig. 38: Annual GDP growth in the large developing countries

GDP annual growth	2010	2011	2012	2013	2014	2015	2016e	2017e
Brazil	7.5%	3.9%	1.9%	3.0%	0.1%	-3.7%	-3.3%	0.5%
Russia	4.5%	4.3%	3.4%	1.3%	0.6%	-3.7%	-1.2%	1.0%
India	10.2%	5.5%	5.6%	6.6%	7.2%	7.5%	7.6%	7.7%
China	10.6%	9.5%	7.7%	7.7%	7.3%	6.9%	6.7%	6.4%

Source: FMI; Bryan, Garnier & Co ests.

In the **replacement** segment (*mostly the trucks market in terms of volumes, with 83% and over 150m units sold in 2015*), **all regions are expected to grow slightly in 2017**, given an upturn in production in recent years, and the low age of trucks in mature markets which implies replacement demand for these models in the near term.

The competitive environment in truck tyres has also been affected by **cheap Asian imports** and is deteriorating in both the **U.S.** (*despite 40% customs duties*) and in **Europe** where low-cost tyres are winning increasing market share, mainly at the expense of re-threads.

Please see the section headed "Important information" on the back page of this report.

In view of the expected economic upturn in the oil exporting countries from 2017 and good prospects for the replacement market given the young fleet in the U.S., Europe and China, we assume an annual decrease on 0.6% in global volumes in 2016 and +1.8% in 2017 and 2018.

Fig. 39: Global demand for OE and replacement truck tyres – BG est. (m units)

	2010	2011	2012	2013	2014	2015	2016e	YoY	2017e	YoY	2018e	YoY
Europe	21	23	20	26	26	29	30	4.4%	30	1.2%	30	1.2%
North America	22	25	26	26	29	30	30	0.0%	31	0.6%	31	0.6%
Asia	55	56	55	76	80	75	74	-2.3%	75	2.0%	77	2.0%
South America	11	13	12	18	17	14	12	-13.3%	13	4.8%	13	4.8%
Africa	12	14	15	30	31	35	37	3.4%	37	2.0%	38	2.0%
Total RT PC & LCV	120	129	128	175	183	184	183	-	186	-	189	-
YoY growth	32.2%	7.8%	-1.0%	36.8%	4.2%	0.7%	-0.6%		1.8%		1.8%	

Source: Michelin; Bryan, Garnier & Co ests.

The OE market and replacement tyres account for 29% of Michelin's revenues and about 30% of Continental's tyre sales (c8% of group revenues).

4.1.3. The specialty market is struggling to recover

The global market for specialty tyres currently weighs an estimated **USD40bn** (21% of the total tyre market) and serves three large sectors which have two features in common: the past five years have been difficult and they are struggling to get back on their feet. The three client sectors are:

- **Maker of two-wheeled vehicles**
- **The mining industry**
- **Agriculture**

The **off-road** segment, which includes heavy mining equipment, farm machinery and construction vehicles, generally offers **higher margins** than car tyres due to specific needs (*diameter adapted to the size of the machine, and more rubber required to ensure greater resistance to shocks and to the weight of the vehicle*).

Fig. 40: Examples of specialty tyres

Motorcycle tyre



Agricultural machinery tyre



Mining vehicle tyre



Source: Michelin; Bryan, Garnier & Co ests.

Most of the innovations in specialty tyres stem from the car industry, which has a scale advantage. The innovations are subsequently extended to truck tyres and finally to the specialty segment (*excluding mining and aircraft*). As a result, we can expect mining, agriculture and construction equipment to show reduced rolling resistance and lower fuel consumption in the **next 10-20 years**. The development of captors for intelligent tyres is also a possibility.

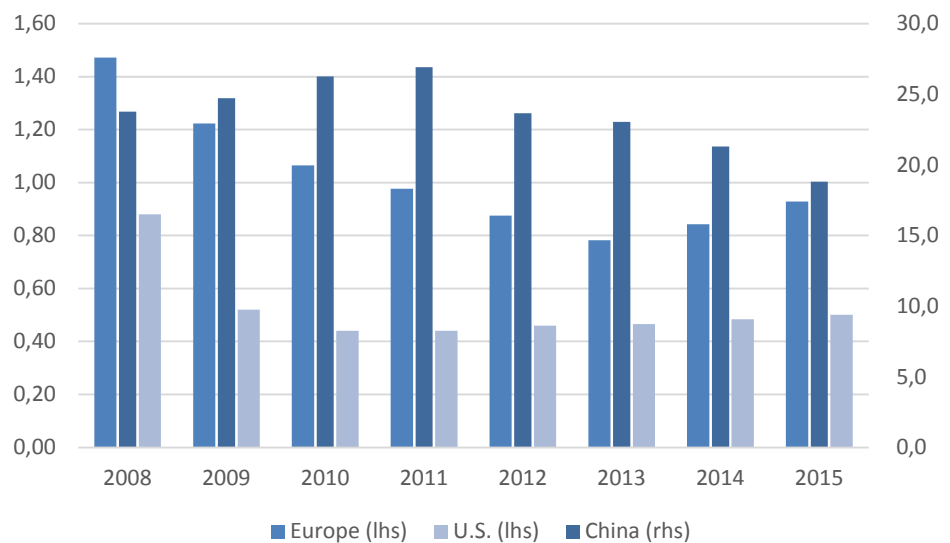
Motorcycle sales struggle to recover

Sales of two-wheeled vehicle tyres (*motorcycles, scooters and bicycles*) have tumbled in recent years, mainly due to reduced demand for these vehicles since the crisis of 2007-2008. Sales of two-wheelers have fallen most in mature markets such as the U.S. and Europe (*similar to the car market*), as **the purchase of these vehicles is more a question of pleasure than necessity**. Nevertheless, motorcycle sales have been very slow to recover, even though demand for cars is very close to its pre-crisis level.

Registrations of motorcycles and scooters totalled only **929,000** units in **Europe (EU + EFTA)** in 2015 and **501,000** units in the **U.S.** in 2015. Although volumes have been rising again since 2012 in the U.S. and since 2014 in Europe, they remain far below the levels of 2008 (*37% below in Europe and 43% in the U.S.*).

This timid improvement illustrates a cultural change among users of two-wheeled vehicles in mature countries, where these products are not viewed anymore as **discretionary leisure spending**. Only in large cities are motorcycles and scooters still seen as an efficient means of transportation – one that allows the user to travel rapidly through traffic jams.

Fig. 41: Registrations of two-wheeled vehicles (millions of units)



Source: ACEM; CAAM; Statista; Bryan, Garnier & Co ests.

The emerging markets have also experienced a slowdown in sales of two-wheelers for cultural and structural reasons. Today, **China is the world’s largest market, with 18.8m motorcycles and scooters** sold in 2015 (*almost equal to the number of private car registrations*). However, the market faces two challenges: **the new middle class prefers a small car** to a motorcycle or scooter, and the increasingly dramatic **pollution problem** has prompted authorities to limit or forbid the use of **motorcycles and scooters in the big cities**.

These restrictions have increased in recent years, as rural regions are developed and fall under the jurisdiction of municipal authorities, who extend the ban on two wheelers to the new roads. As a result, there were only **18.8m registrations** in China in 2015, still **21% below the level of 2008**.

The situation in **India, the second-largest market** with more than **15.4m** motorcycles and scooters sold in 2015, is very similar, with a rising middle class that prefers a small car to a two-wheeler. However, growth has remained positive (*+1.2% in 2015*) thanks to scooters, for which sales remain very resilient – especially in cities. We believe that the current situation in China can be extrapolated to India, where pollution may soon prompt local authorities to restrict the use of two-wheelers, thus hitting the market for scooters which is still growing.

We expect an **upturn in the European market**, while the **U.S. should normalise at current levels**. The emerging markets are facing a transformation of their modes of transport (*from two wheels to four*) and government pressures to protect the environment are leading to **restrictions on two-wheelers in India and even more in China**.

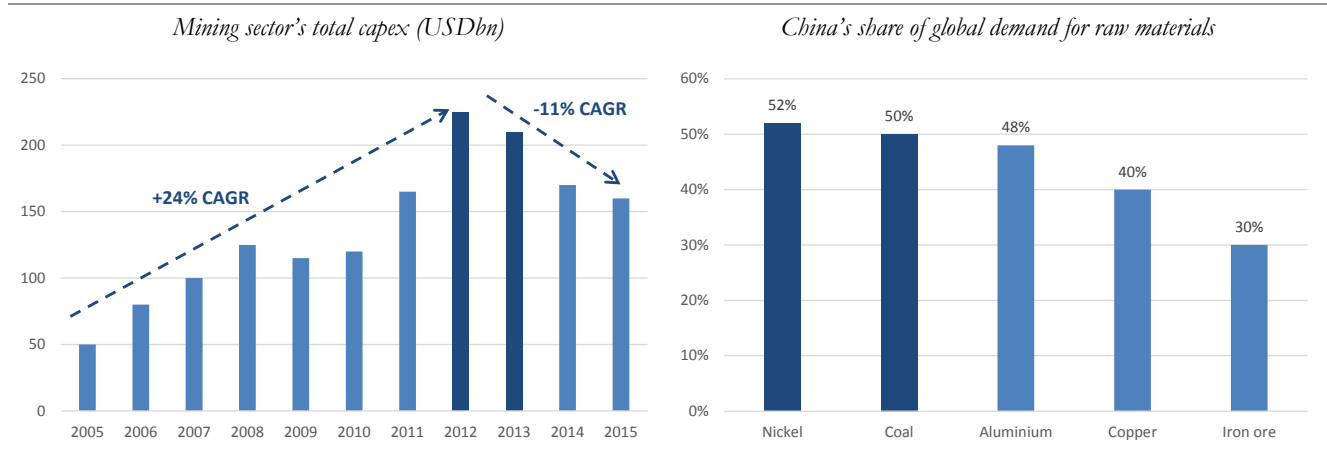
Still waiting for a cyclical upturn in mining

The golden age of mining – underpinned by the rise of emerging markets which require large quantities of metal – is now a distant memory. The slump in raw material prices, which has lasted for the past four years and recently aggravated by the oil counter-shock of 2014, suffocated the mining sector supercycle.

This **supercycle depended largely on one country: China**. The country's incredible rise led to huge demand for commodities such as **coal, aluminium** and even **copper**, to such an extent that in 2013 that China became the biggest consumers of these products in the world (*absorbing roughly 50% of global nickel, coal and aluminium production*). This major shake-up in the level and origin of demand obliged large mining groups to raise their production capacities by investing massively in exploration. At the same time, commodity prices soared: **copper** rose from **USD5,700** per ton in 2007 to **USD9,500** in mid 2011; **iron ore** increased fivefold over the same period to **USD179 a ton**, and **coal** rocketed from **USD55 à USD131**.

Since the **highs of 2012** when the sector invested over **USD225bn**, capex has collapsed. Investment in growth (*brownfield and greenfield exploration*) has fallen over **40%**, while maintenance spending has decreased just **34%**. These figures suggest that the mining groups first cut their growth investments in an effort to survive, and postponed major projects around the world.

Fig. 42: The mining sector depends heavily on China

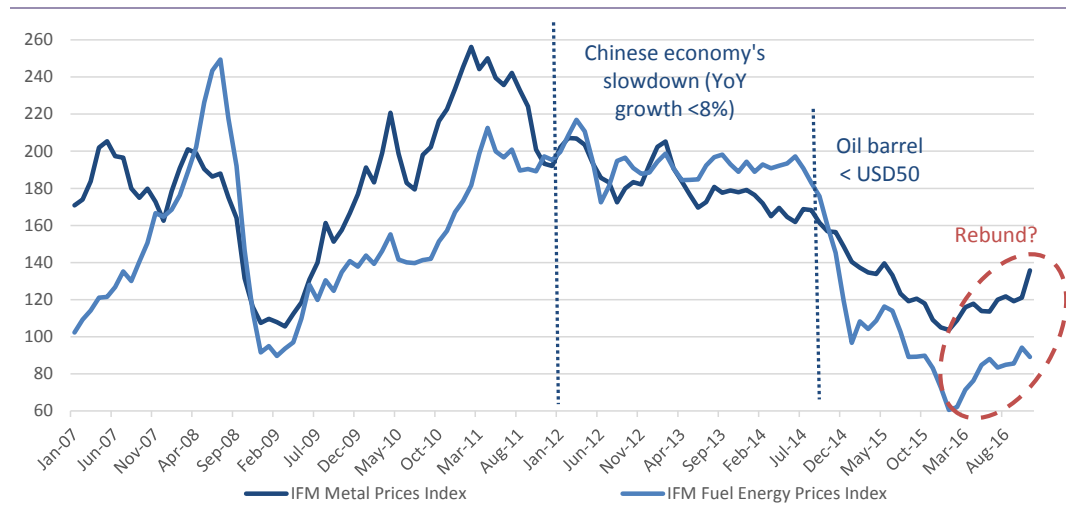


Source: SNL Research; U.S. Department of Industry; dedicated study groups; Bryan, Garnier & Co ests.

This postponement of investments follows the **economic slowdown in China**, where growth is tending towards more sustainable levels. As China was previously the world's largest consumer of metals, **the fall-off in demand has inevitably created a vacuum that no other market has filled for the moment**. What's more, the fall in oil prices from late 2014 has pulled down coal prices, which competes with oil as an energy source. The deterioration was so strong that global demand for coal fell **1.8%** in 2015, the steepest fall ever recorded according to BP.

Metal and coal prices thus came under pressure, especially **iron ore** (-71% from January 2012 to January 2016) and **nickel** (-57%). **Coal** (-57%) also suffered due to reduced Chinese investment in construction, energy infrastructure and railway lines. These steep price decreases in such a short time prompted mining groups to postpone projects. For example, **BHP Billiton**, the world's largest mining group, had only **four development projects in 2015** versus **18 in 2013**.

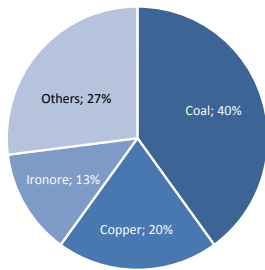
Fig. 43: Index of metal prices



Source: Indexmundi; Bryan, Garnier & Co ests.

This raises the question of when the mining sector will recover. During the previous crisis from 1996 to 2000, the decrease in maintenance spending was similar to the one since 2012. However, investment in growth continued to fall until 2002, because the mining groups were reluctant to resume massive investment. Taking the last cycle as a proxy, **we estimate that there remains at least two years of restricted growth investment (2018 at the earliest)** before mining sector investment takes off again.

Mining tyre demand by commodity (2013):



Source: Michelin

A change of trend appears to have taken place in recent months, driven by an increasingly weak base effect and investment announcements from China and the U.S. The Chinese government stated in May 2016 that it plans to invest **CNY4.7trn (i.e. EUR647bn)** in more than 300 **infrastructure and transport projects over three years**. In the U.S., Donald Trump has announced a vast **USD1trn** project to renovate transport infrastructure such as roads, bridges, airports, as well as public service infrastructure like hospitals, water treatment plants and electricity networks. For the moment, the sale of unprofitable assets and cost-cutting are keeping the mining sector's head above water. On the other hand, ongoing under-investment in maintenance or in exploration is fertile ground for a new supercycle when metal prices stage a real recovery.

We estimate that a recovery in this market, which is highly profitable for tyre makers, should take place in **2018**. The **upturn in commodity prices** looks to be gaining momentum and mining groups may wait at least a year before resuming spending on exploration and thus on their machinery.

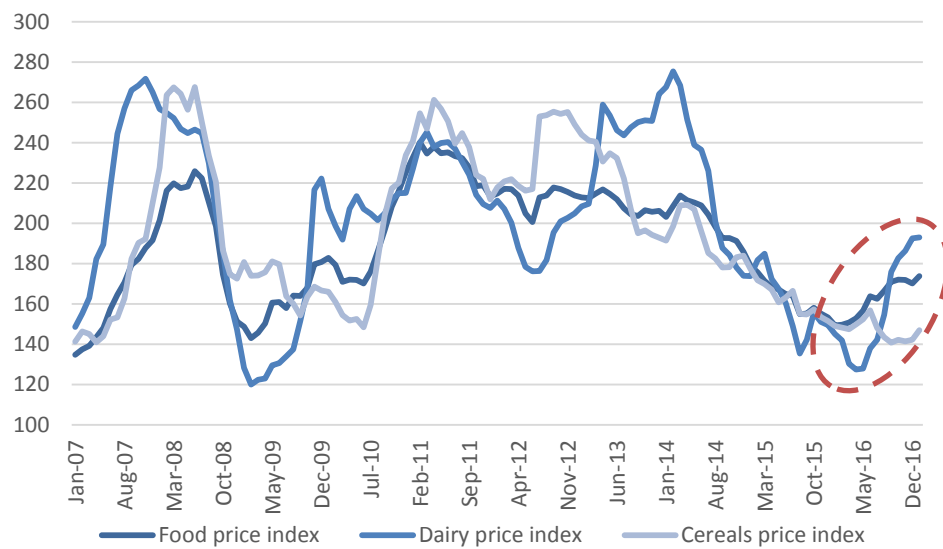
Only Michelin has significant exposure to the mining sector (*5-6% of the group's revenues*), unlike Continental which is only exposed to industrial tyres.

Signs of improvement in agriculture

The agricultural sector comprises tractors and big farm machinery which need tyres that are both very large and resistant. These requirements make the segment more profitable for tyre makers, just like mining and civil engineering.

The agricultural sector has been hard hit in recent years by **severe downward pressure on produce prices**, similar to the pressure on other commodities like oil and metals. The **volatile nature of agricultural prices has been aggravated by concern about the slowing global economy** especially in developing countries, while better-than-expected harvests have lowered prices even further. From January 2011 to 2016, the index of agricultural prices calculated by the FAO fell **36%**. The slippage was even greater for sugar, which tumbled over **52%**, while cereals were down **38%**.

Fig. 44: Price trends for a sample of food items



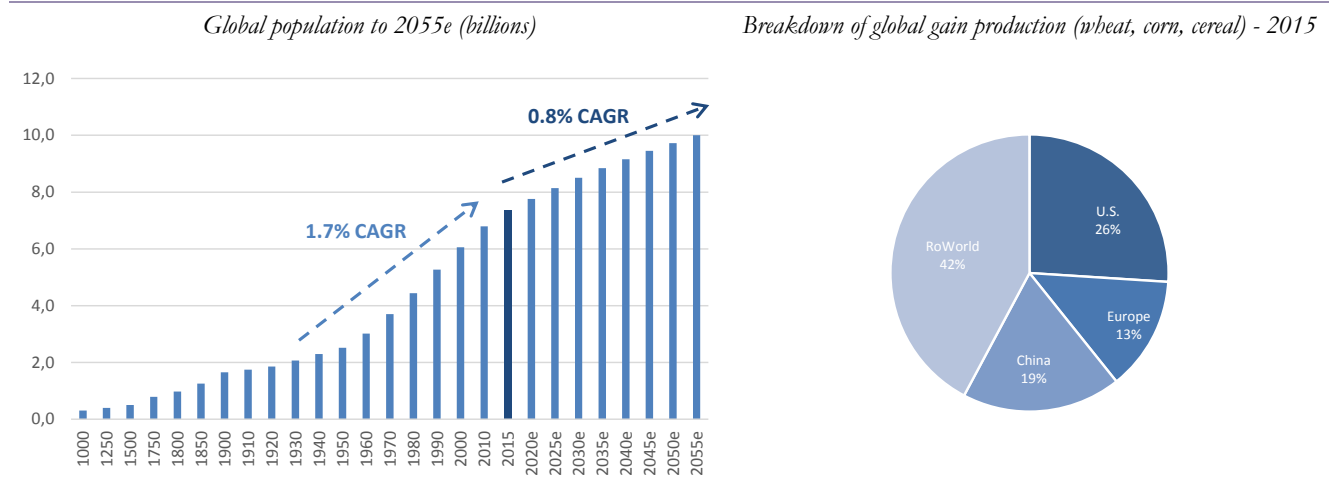
Source: FAO; Bryan, Garnier & Co ests.

However, prices seem to have bottomed out in 2016 and recent price rises for milk and meat may foreshadow a recovery for the whole sector. This change of trend should be helped by a **very favourable comparison base, coupled with strong structural factors fueling growth.**

The **need to raise productivity** in agriculture in response to rising populations worldwide encourages **mechanisation of farms** and demand for ever bigger and more efficient farm machines. The population of the world was **7.3 billion in 2015** and, at the projected compound growth rate of **0.8%**, should reach 10 billion by 2055 according to the UN division that studies population. Although this growth rate is low compared to the explosion between 1950 and 2015, the global population is set to reach unprecedented levels. However, it will be necessary to raise agricultural production to feed these 2.7 billion additional people.

In spite of the geographic order established between the **U.S. and Europe**, representing respectively **26%** and **13%** of global agricultural production in volume, **growth of production is expected in developing countries, where the increase in populations should be greatest.** These countries, led by China (*with 19% of the world's population today*), should industrialise their agriculture rapidly in order to meet increased demand, democratisation of certain genetically-modified organic products and reduced acreages of agricultural land as cities expand.

Fig. 45: A rising population requires increased food production



Source: United Nations Population Division; Worldometers ; U.S. Department of Agriculture; Bryan, Garnier & Co ests.

The potential rebound in farm produce prices, coupled with the expected rise in demand for modern equipment, should boost sales of agricultural tyres in 2018.

Overall, we expect the global market for tyres to increase 3% in value terms in 2017 and again in 2018. Growth should be largely driven by the cars and vans segment (+2.8%) and by specialty tyres (+5.2%).

Fig. 46: BG estimations – Tyres market evolution (2016-22e)

	2016e	2017e	2018e	2019e	2020e	2021e	2022e
Total market growth in value	-1,3%	3,0%	3,0%	2,6%	2,3%	2,3%	2,3%
Total market growth in volumes	-2,3%	2,8%	2,8%	2,6%	2,3%	2,3%	2,3%
o/w PC & LCV	2,7%	2,8%	2,8%	2,7%	2,7%	2,7%	2,8%
o/w OE	3,8%	2,3%	2,0%	2,0%	2,0%	2,0%	2,0%
o/w RT	2,3%	3,0%	3,2%	3,0%	3,0%	3,0%	3,0%
o/w Trucks	-0,6%	1,8%	1,8%	1,8%	1,9%	1,9%	1,9%
o/w OE	0,2%	1,8%	1,8%	1,8%	1,8%	1,8%	1,8%
o/w RT	-0,8%	1,8%	1,8%	1,9%	1,9%	1,9%	1,9%
o/w Specialties	-3,0%	3,1%	3,4%	3,6%	2,0%	2,0%	2,0%

Source: Bryan, Garnier & Co ests.

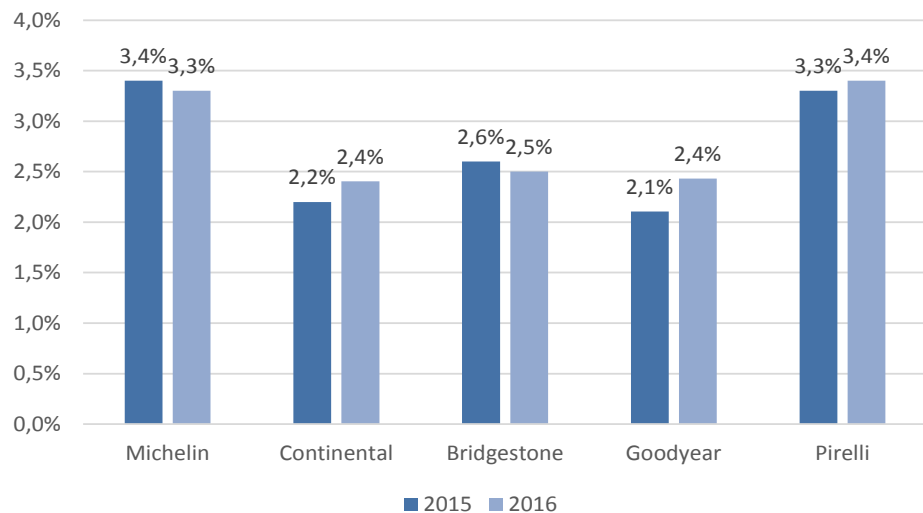
5. Innovate and optimise – or go home!

5.1. Innovate for higher quality

Product innovation has become indispensable for traditional tyre makers focused on the high-end segment, in order to **maintain pricing power**. The latter has been undermined by the arrival of low-cost Asian producers (*for details, section 1.2.1*). A fairly resilient positive price effect should also allow the tyre manufacturers to resist higher raw material prices (*notably natural rubber and butadiene*), by passing on part of the additional cost to the end client. **We expect raw material prices to have a negative impact on margins from first-half 2017.**

A strong brand name with a reputation for high-quality products makes it possible to raise prices without a severe negative impact on demand. This **reputation depends on innovation, which is the only way to improve tyres, raise their life expectancy and increase security**. The groups that operate in the premium segment have thus had to raise their R&D budgets in recent years, in order to supply ever more innovative products. The slight increase in R&D (*currently 2.8% of revenues on average for the five leaders, versus 2.6% in 2007*) was largest at Goodyear (+50bps) and Pirelli (+40bps). **Michelin and Pirelli seems to be the most focused on innovation, as their R&D budgets exceed 3% of revenues.** On the other hand, the Asian groups which started the price war in Europe only spend an average of **1.5-2% of revenues** on innovation.

Fig. 47: R&D spending as % of sales



Source: Company Data; Bryan, Garnier & Co ests.

This increase in the ratio of R&D spending is also visible in renewed competition in tyres for sports vehicles, especially in **Formula 1**.

Note that **most innovations in the car and tyre sectors stem from sports cars**, where performance must be very high (exemplary energy efficiency, optimal road holding) and where test budgets are substantial.

The sports car is thus an open-air laboratory for car parts suppliers. For example, they developed the semi-automatic gear box and more recently the energy recuperation system on racing prototypes. The sports car also allowed Michelin to design and test the first radial tyres.

All the large tyre makers had turned their backs on this niche segment which was fertile ground for innovation in the early 2000s. Michelin and Goodyear did so to lower costs and R&D spending. But the **competition now seems to be heating up**. **Pirelli** returned to Formula 1 in 2010 after a 20-year absence and is now the exclusive supplier (*replacing Bridgestone for the 2011 season*). In 2015, Michelin announced that it would return to the segment when Pirelli's exclusive contract expires in **2019**. Note that Michelin already has positions in other sports cars, such as the **Formula E** electric championship. Technologically, innovations have mostly concerned:

- **Energy consumption:** in order to meet pollution norms (*rolling resistance should account for 4% of the CO² emissions reduction demanded by the EU by 2025*) and to respond to the needs of companies managing their fleets (*fuel accounts for as much as 40% of running costs in Europe and 20% of consumption is due to rolling resistance*);
- **Punctures:** tyres that can repair themselves without human intervention thanks to a substance that makes them airtight and fills the hole (*Pirelli's Seal Inside, Michelin's SelfSeal or Continental's ContiSeal*), or tyres that can be driven even when punctured thanks to a rigid carcass (*Bridgestone's Drive Guard*), or even the airless tyre developed by Bridgestone;
- **Change of seasons:** tyres that can adapt to the season and to weather conditions (*Michelin's CrossClimate, Continental's ContiCrossContact, Goodyear's Vector 4Season*) which avoid the need to change tyres twice a year and to stock spares.

In addition to product innovation, the tyre manufacturers have **innovated their production processes**, in order to supply unique and/or less expensive products. In late 2015, **Michelin** announced the creation of a JV with the **Fives** industrial engineering group for **3D metal printing**. For several years, Michelin has been testing 3D printing techniques in its workshops to produce moulds that cannot be made with traditional production methods. Its extension to the whole assembly line in the longer term should allow greater flexibility, reduce waste of raw materials and almost infinite personalisation of parts.

Continental also scored points for innovation in 2016 with **tyres made with dandelion**, whose roots contain a substance that has **properties similar to latex**. Continental believes that this substance can replace natural rubber, and transgenic plants will be grown near its factories with a view to beginning mass production in **2020-2025**.

5.2. Optimise for greater flexibility

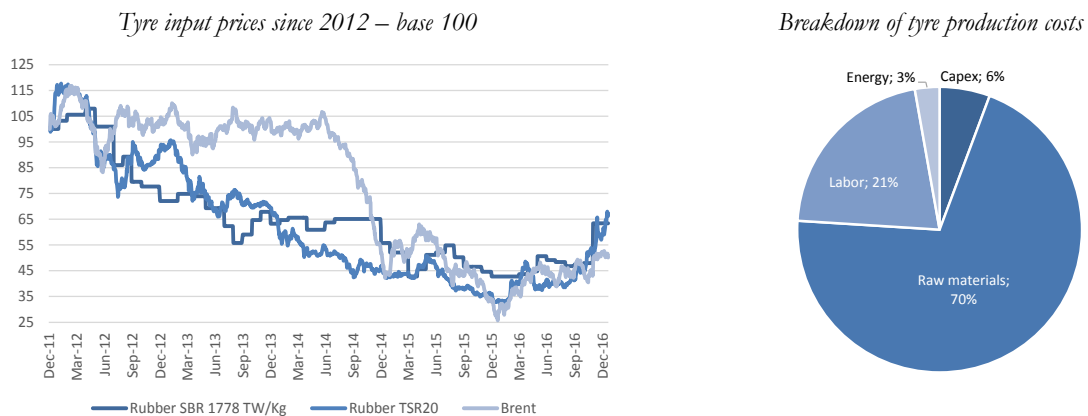
Western leaders and Asian rivals have very different production networks ...

While the invasion of Asian groups was disruptive for the tyre industry, price competition should remain an important driver in the replacement market (*56% of motorists in Western Europe say price is the main factor behind a choice of tyre, according to a report by Ipsos*).

The tyre manufacturers are, therefore, striving for greater flexibility in the cost base, in order to protect their margins and reduce the price gap relative to low-cost Asian products. Let's not forget that the tyre sector has experienced a period of falling rubber prices (*-60% from the peak of 2013*) which aggravated competition from Chinese players in Europe and (*to a lesser extent*) in the U.S., but which also allowed many cheap and mid-market brands to **improve their price appeal**.

Since 2016, rising oil prices have pushed up the cost of oil-based raw materials such as synthetic rubber, which the price of natural rubber has been rising quite sharply for several quarters due to Chinese demand. Confirmation of these opposing forces could oblige many tyre makers to accept lower margins or to raise their prices.

Fig. 48: Natural rubber prices down 60% from the peak of 2013



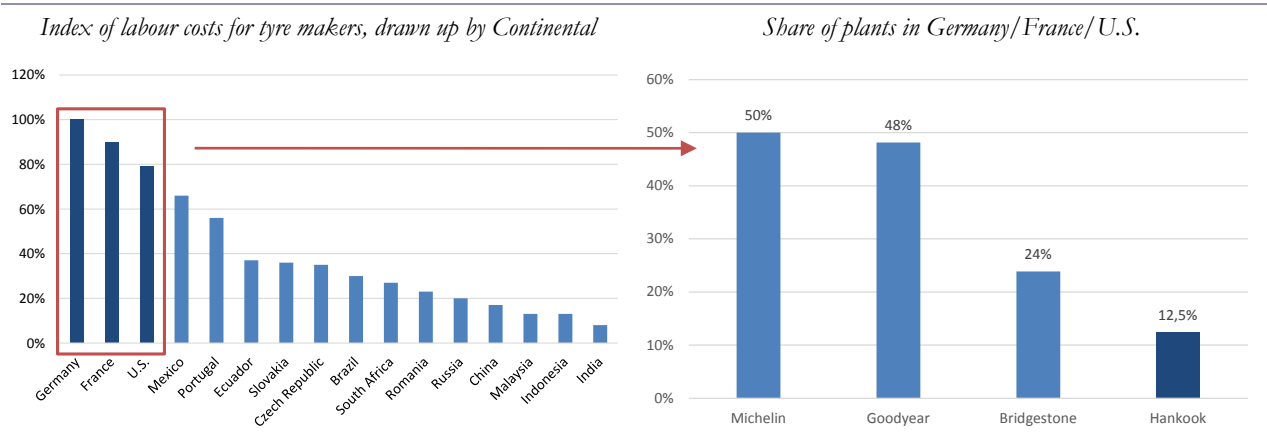
Source: Datastream; U.S. Annual Survey of Manufacturers; Bryan, Garnier & Co ests.

Manufacturers of premium tyres who enjoy a good brand image should be able to factor part of this increase in raw material costs into prices (*natural rubber accounts for about 60% of tyre production costs for an upmarket producer such as Michelin, versus 80% for low-cost producers*).

But to offset the negative impact on their mid-market and low-cost brands for which price elasticity is higher, the tyre makers are obliged to make **cost structures more flexible**. And the western leaders badly need to do so!

According to an index of tyre-sector labour costs drawn up by **Continental**, the traditional groups are highly exposed to the three countries where labour costs are highest: Germany, France and the U.S. **Michelin** and **Goodyear** have the highest exposure, with half of their factories located in these countries.

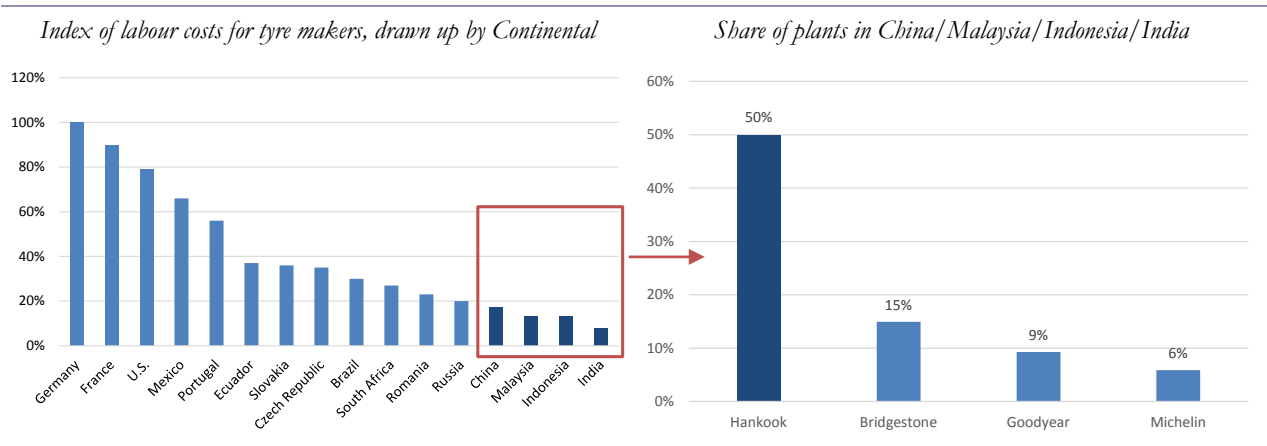
Fig. 49: Traditional tyre makers are exposed to high labour costs...



Source: Continental; Michelin; Bridgestone; Hankook; Bryan, Garnier & Co ests.

On the other hand, **Hankook** has very low exposure to these countries, with only one plant in the U.S. (opened in late 2016), while Europe is largely served by its plant in **Hungary**. Most of its production being located in **China, Indonesia** and **India** (50% of plants), the Korean group has the most competitive labour costs in the global sector.

Fig. 50: ...unlike their Asian challengers



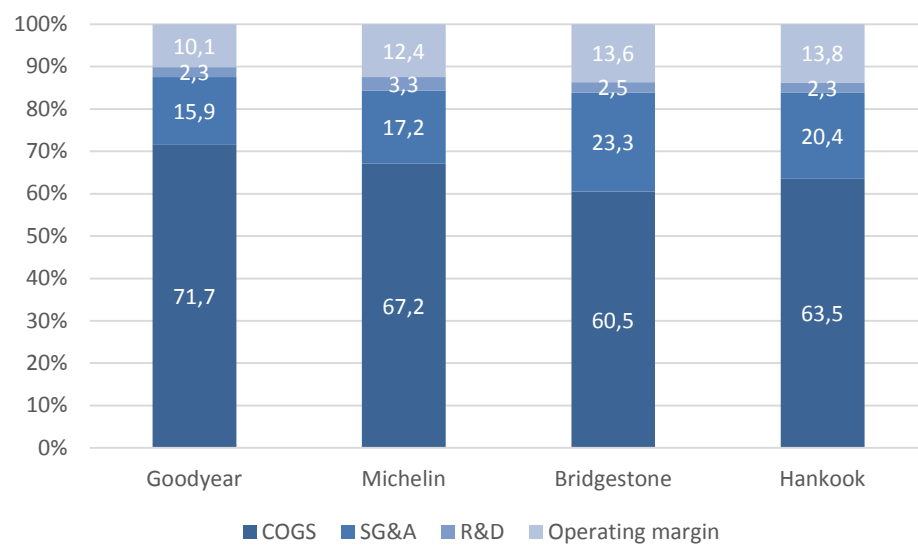
Source: Continental; Michelin; Bridgestone; Hankook; Bryan, Garnier & Co ests.

... which is reflected in their cost structures

The industrial exposure of each player determines its cost structure. For example, **Goodyear** and **Michelin**, top-of-the-range tyre producers whose production takes place mainly in the **U.S.** and **Europe**, have cost of goods sold in the region of **70%**, but it is only about **60%** for their Asian rivals **Bridgestone** and **Hankook**.

This accounting item, which mainly comprises raw material purchases and labour costs, largely explains the difference between operating margins at **Michelin** (12.4% excluding restructuring costs), **Goodyear** (10.1%) and **Hankook** (13.8%).

Fig. 51: Tyre makers' cost structures - 2015



Source: Company Data; Bryan, Garnier & Co ests.

What's more, this gap should widen in 2016 as Hankook posted operating margins of **15.4%**, **18.0%** and **17.9%** respectively in the first three quarters of 2016. This high profitability appears to stem from a reduction in cost of goods sold as a percentage of revenues (less than 61% of revenues in the last two quarters, versus 63.5% in 2015).

Cut costs - or pay the price

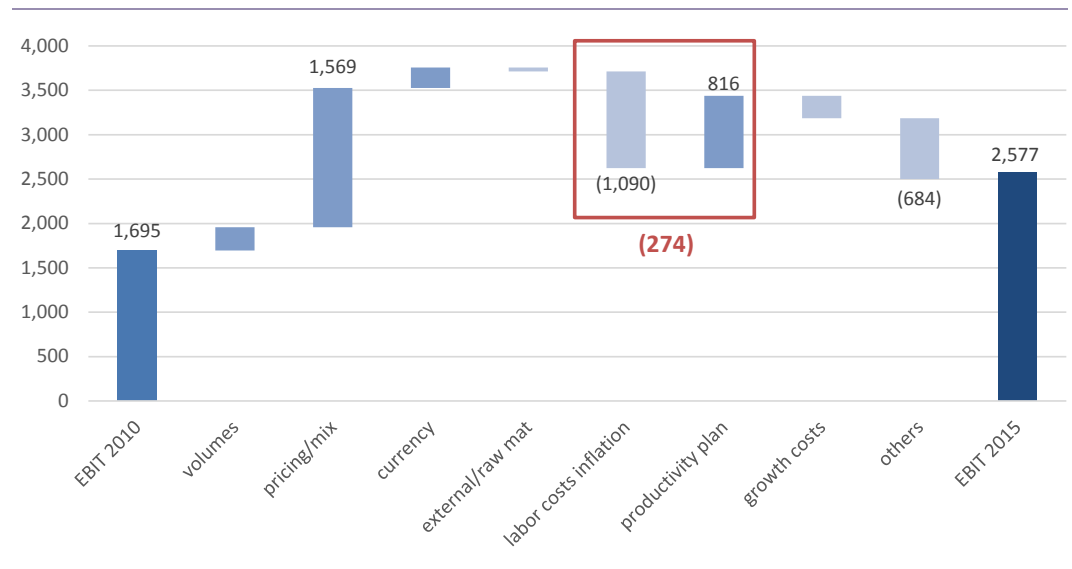
In response to cost structures burdened with high labour costs, the traditional tyre manufacturers are constantly seeking to reduce their expenses. Leaders **Michelin** and **Goodyear** have the lowest in the sector. Their cost-cutting programmes have taken aim at the main sources of expense in tyre production: **raw materials** (about 70%) and **labour** (over 20%).

The objective of this strategy is to restructure production networks by increasing the number of plants in developing countries, in order to **serve the local market and eliminate costly imports**. **Tyres are easy to transport**, production in low-labour-cost regions is inexpensive, so exporting to mature markets (for example *Mexico*) also makes sense.

Better management of inputs – especially raw materials – can lower unit production costs, while higher utilisation of plants improves operating leverage.

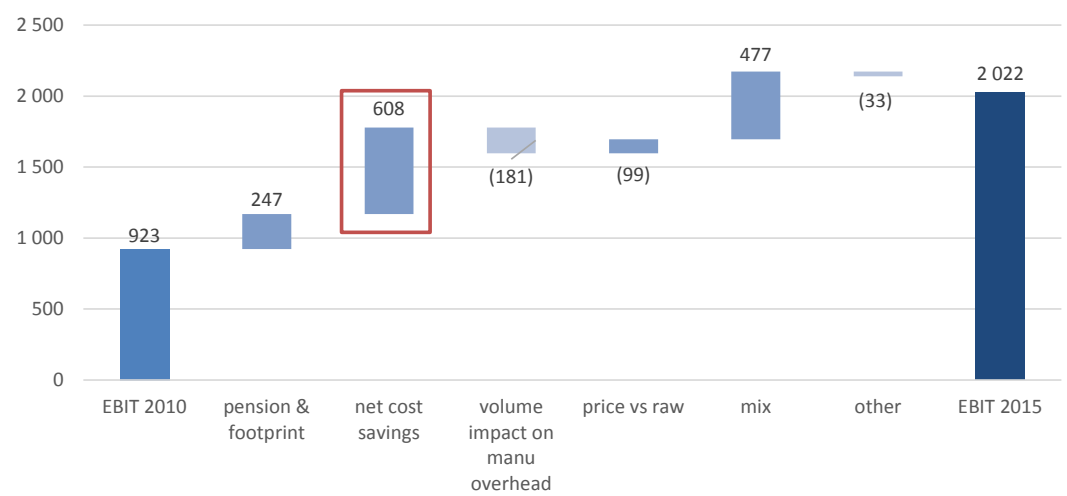
Taking **Goodyear** as an example again, it would appear that its plans to cut costs net of inflation played a considerable role in the group’s higher operating margin since 2010 (over 55% increase in the margin). On the other hand, **Michelin’s** productivity plan did not fully offset the rise in its costs, and the net result was negative to the tune of **EUR274m**.

Fig. 52: Improvement in Michelin’s operating profit (EUR million) in 2010-15



Source: Michelin; Bryan, Garnier & Co ests.

Fig. 53: Improvement in Goodyear’s operating profit (USD million) in 2010-15



Source: Goodyear; Bryan, Garnier & Co ests.

We expect these cost reduction plans should to largely determine in the tyre sector’s profitability to 2020. Goodyear expects the positive impact on its EBIT (*net of inflation*) to be about **USD500m**, thanks to productivity gains exceeding **27%** of 2016e EBIT, while Michelin hopes to save **EUR1.2bn** before inflation and **EUR200m** net of inflation (*only 7.5% of 2016e EBIT*) over the same period.

6. E-commerce: the solution of the future – or just necessary?

6.1. Understanding the client and his purchase

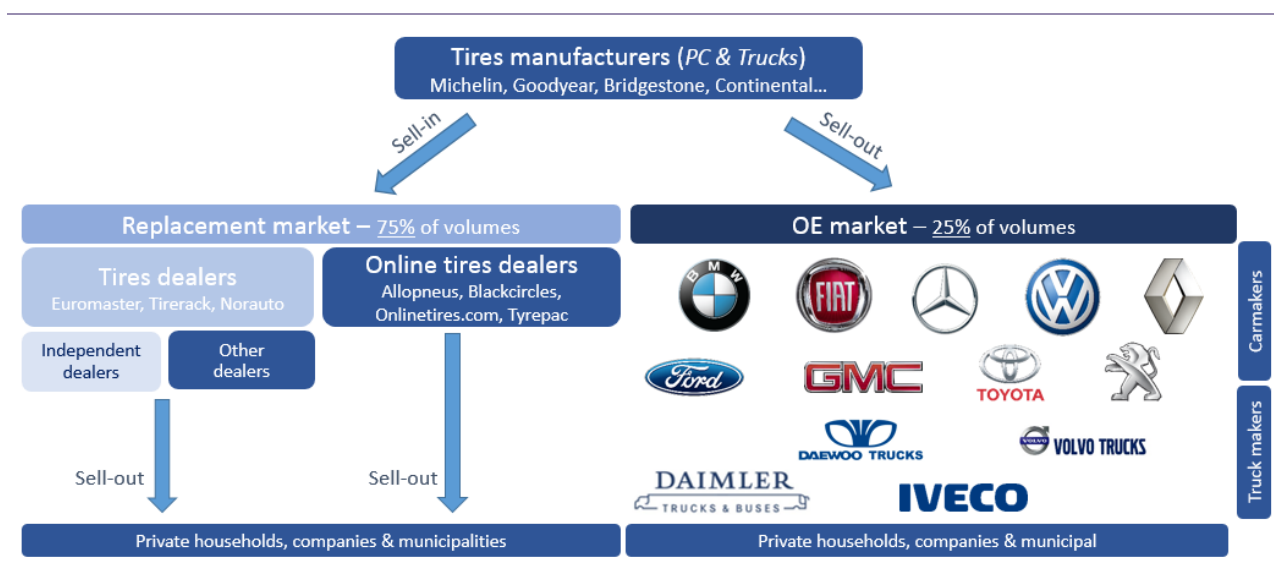
Although the cost of replacing a tyre is marginal in terms of a motorist's car budget (*EUR200-250 per annum from a total cost of EUR3,500, or 6.5% per annum*), tyre replacement is one of the few decisions that remains at the discretion of the consumer. Contrary to other maintenance costs, changing a pair of tyres (*we generally change them in pairs, rather than changing a single tyre*) can easily be postponed, as a tyre has a long theoretical life expectancy (*20-30,000km for a low-cost product and 40-50,000 km for a premium 16-inch tyre*). The motorist's budget and his sensitivity to questions of security will determine when he decides to change tyres.

We change a tyre when it is **damaged**, **old** or **worn-out**.

- A tyre can be **damaged** by an accident, a shock or a malicious act.
- A tyre is **old** when it has been used for several years, or when the car has been put away and not driven for several years.
- A tyre is **worn-out** when it has been driven extensively. Although usage differs depending on the type of vehicle, the way the vehicle is driven and the type of road used, it is estimated that mid-range/premium tyres should be changed after **30-50,000km**.

6.2. A traditional business based on distributor lines: the example of France

Fig. 54: Business model of the tyre sector



Source: Bryan, Garnier & Co ests.

In our opinion, the example of France is perfect to allow us to understand and to analyse the tyre sector in mature markets, because of its size (*6% of European tyre sales and 1.6% of the global sector*), but also because of the very competitive environment. This market, which absorbs over **25m tyres per annum** (*one third OE and two-thirds replacement tyres*) is crucial for **Michelin**, but also for **Continental**, which aims to double its French rival and become the No.1 player in France.

In France, car, van and 4x4 tyres are sold via **four distribution channels**:

- **Specialised distributors** (*Euromaster, Point S, Profil Plus, Vulco, Firststop*)
- **Car centres** (*Norauto, Feu Vert*) and ‘fast fitters’ (*Speedy, Midas*)
- **Car sales outlets and agents** (*Renault, Peugeot...*) and garages (*AD Distribution...*)
- **Pure internet distributors** who do not have physical stores (*Allopneu, 123 Pneu*)

In this market, **Michelin** has **Euromaster** (*8% with 411 sales points for about 3m tyres sold each year*), **Bridgestone** has **Firststop** (*280 sales outlets*) while **Goodyear** has **Vulco** (*250 centres*). Following the July-2014 acquisition of **Massa Pneus**’ 138 sales points in the south-east of France, German car parts maker Continental is not far behind Euromaster with 400 centres in France.

This very mature market is the scene of a ‘no-prisoners-taken’ battle between the world’s leading tyre producers: **Michelin, Bridgestone, Goodyear and Continental**. Control of the network of physical distributors is crucial to reach the numerous French clients.

We also think it is worth noting that France is **largely a premium market**, unlike the French car market which is not very premium compared to other European markets.

6.3. The French market is increasingly virtual

Like many BtoC markets that are gradually being shaken up by the rise of e-commerce and its modes of doing business (*extensive supply at the best price, no distribution network, and very tight inventories*), the replacement tyre market has to deal with pure internet competitors. These rivals, who sell exclusively via internet, can put downward pressure on prices all year long as they have less constraints (*low investment in premises and people*). Following strong growth, the web now accounts for about 12% of tyre sales in France. The French online market is dominated by **Allopneu** (*over 50% market share*) which has been 40%-owned by **Michelin** since April 2015 (*this acquisition cost EUR60m implying an equity/sales multiple of 72%, versus over 90% for Michelin today*). With a network of tyre fitters (*over 5,500 partner centres, mainly garages that have been audited by Allopneu’s agents*) the group can also have tyres fitted at the motorist’s home under its own brand.

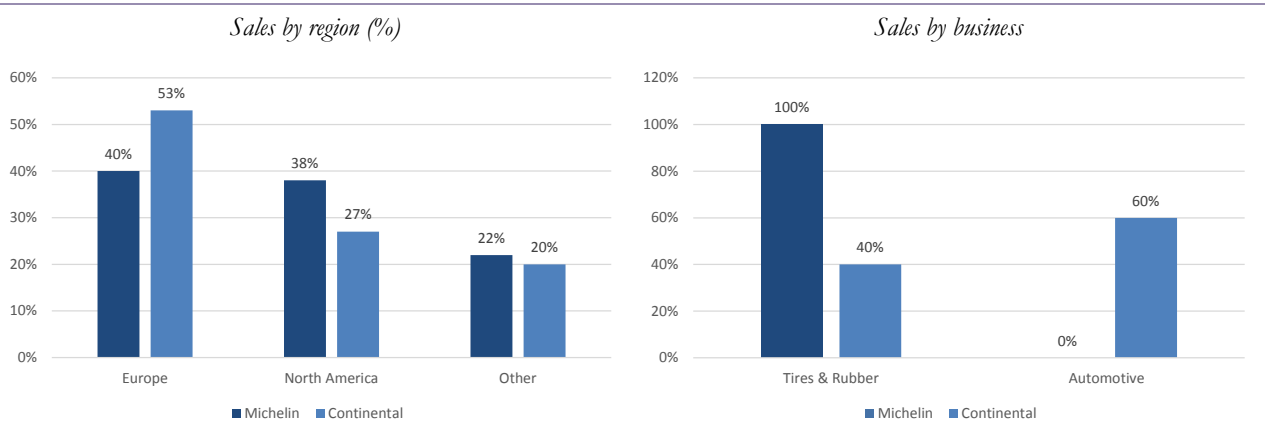
With sales of **EUR3m** in 2014, this website has a **c.7%** share of the replacement market in France. Michelin also paid **GBP50m** for Blackcircles, the leading tyre website in the UK this is growing over **20%** a year.

This progress by internet tyre distributors has **disrupted the sector**, obliging the traditional tyre suppliers to offer other services related to tyres to offset their heavy investments in plants and in people: vehicle maintenance as part of the maker's guarantee, technical services (*oil change, security check, MOT etc.*) in addition to their traditional business of supplying tyres.

However, the nerve centre is still tyre production, which generates higher margins than in resale. The next battle in the sector could take place in distribution, as e-commerce gains momentum. Access to the final client is crucial, especially as it can be done at little cost on-line. **We would not be surprised to see other acquisitions in the sector, mainly by the big traditional players.**

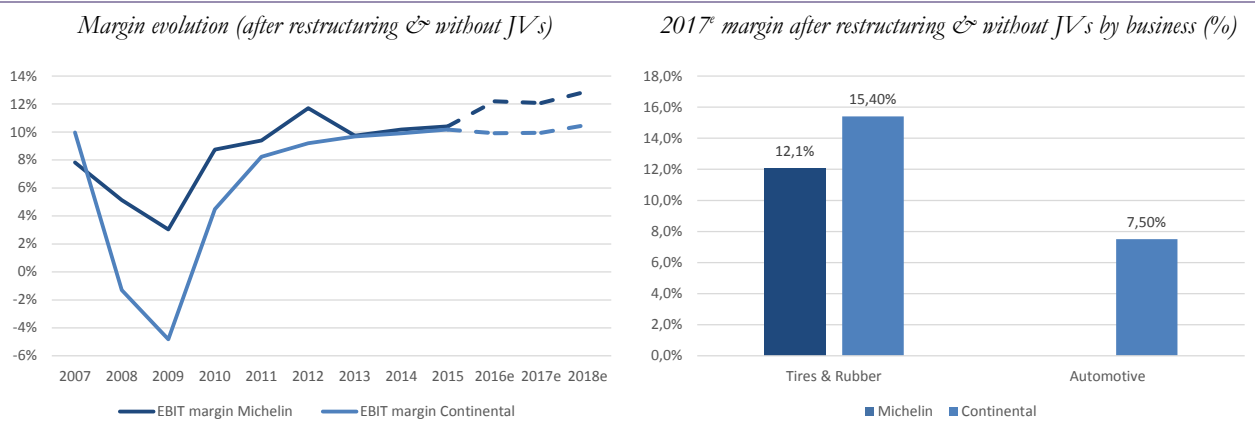
7. The match Continental - Michelin

Fig. 55: Sales comparison



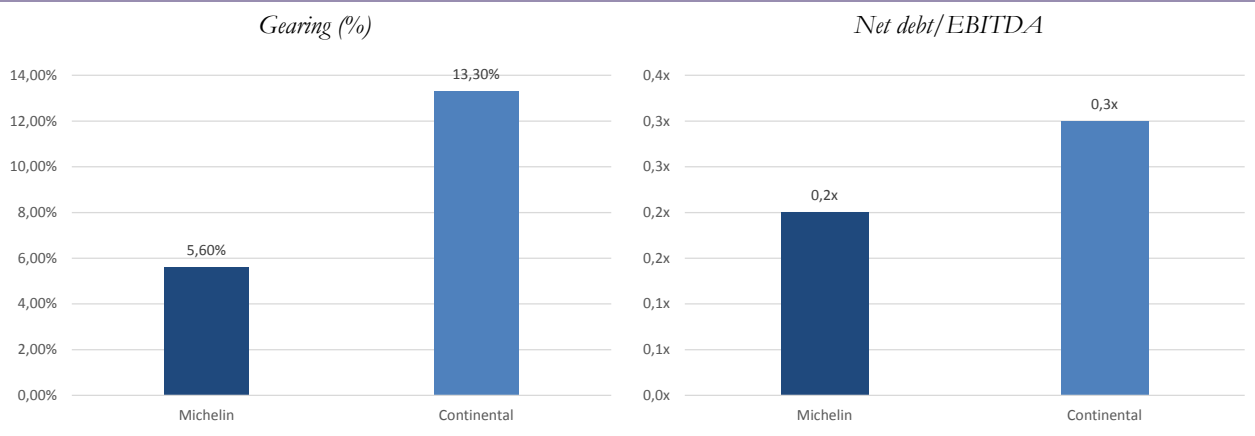
Source: Continental; Michelin.

Fig. 56: Margin comparison



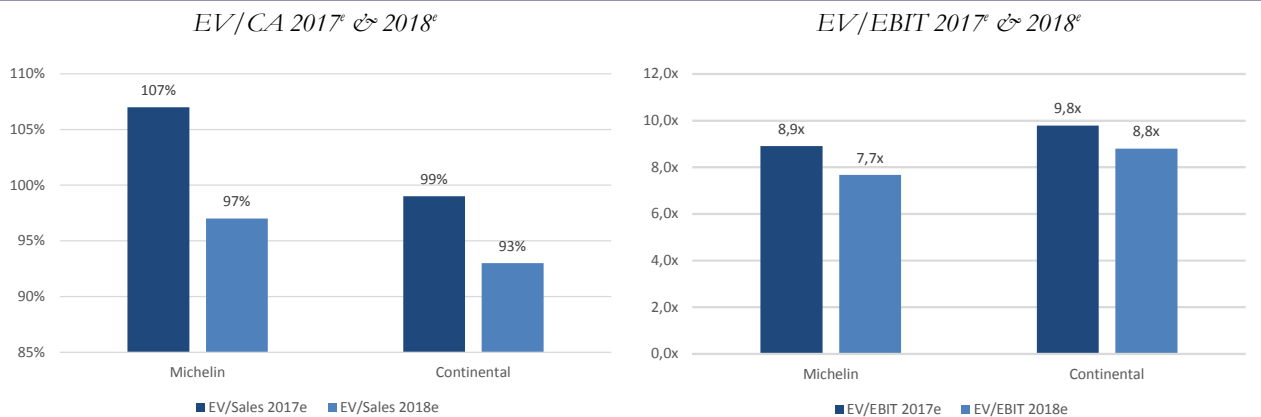
Source: Continental; Michelin

Fig. 57: Balance sheet comparison



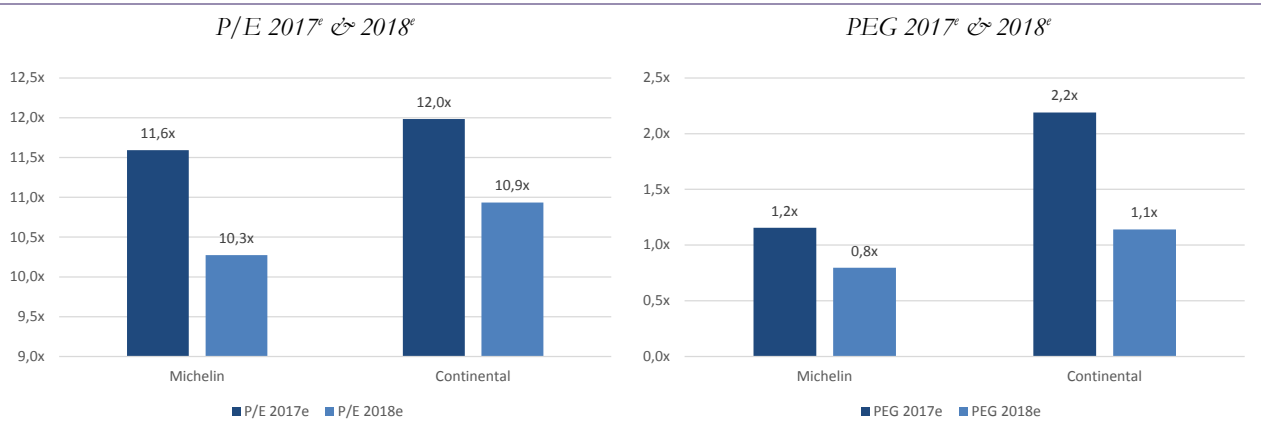
Source: Continental; Michelin

Fig. 58: EV/CA & EV/EBIT 2017^e/2018^e multiples



Source: Bryan, Garnier & Co ests.

Fig. 59: P/E & PEG 2017^e/2018^e multiples



Source: Bryan, Garnier & Co ests.

8. Sum-up FV

Fig. 60: Michelin – FV @ €118

Michelin - FV Sum-up	Multiples	FV
EV/Sales (2017-26) – 25%	100%	€124
EV/EBIT (2017-26) – 25%	8,5x	€136
P/E (2017-26) – 25%	12,0x	€97
DCF model (2017-26) – 25%		€114
o/w WACC	7,2%	
o/w LTG	1,8%	
o/w Average EBIT margin	12,9%	
o/w LT EBIT margin	11,0%	
Implied FV		€118
Current price		€102,2
Upside		15,4%

Source: Bryan, Garnier & Co ests.

Fig. 61: Continental – FV @ €172

Continental - FV Sum-up	Multiples	FV
EV/Sales (2017-26) - 25%	108%	€166
EV/EBIT (2017-26) - 25%	9,5x	€159
P/E (2017-26) - 25%	13,5x	€172
DCF model (2017-26) - 25%		€191
o/w WACC	8,4%	
o/w LTG	2,5%	
o/w Average EBIT margin	11,0%	
o/w LT EBIT margin	10,5%	
Implied FV		€172,0
Current price		€189
Upside		-9%

Source: Bryan, Garnier & Co ests.

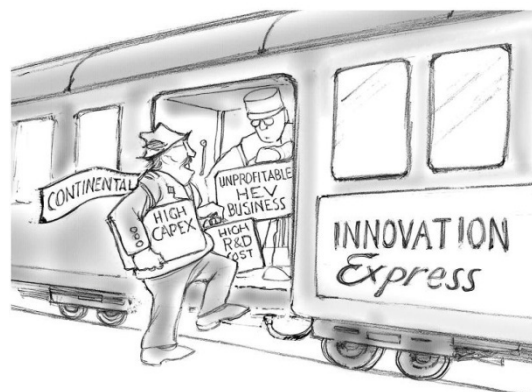
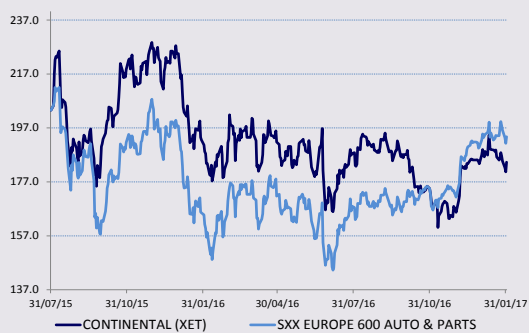
INDEPENDENT RESEARCH

8th February 2017

Automotive

Bloomberg	CON GY
Reuters	CONG.F
12-month High / Low (EUR)	201.9 / 160.1
Market capitalisation (EURm)	37,831
Enterprise Value (BG estimates EURm)	43,467
Avg. 6m daily volume ('000 shares)	420.8
Free Float	1.4%
3y EPS CAGR	53.9%
Gearing (12/15)	27%
Dividend yields (12/16e)	2.29%

YE December	12/15	12/16e	12/17e	12/18e
Revenue (EURm)	39,232	40,532	43,015	44,873
EBIT(EURm)	4,054	4,081	4,321	4,747
Basic EPS (EUR)	4.55	14.42	15.14	16.56
Diluted EPS (EUR)	4.55	14.42	15.14	16.56
EV/Sales	1.14x	1.07x	1.01x	0.96x
EV/EBITDA	7.5x	7.0x	6.7x	6.2x
EV/EBIT	11.0x	10.7x	10.0x	9.0x
P/E	41.6x	13.1x	12.5x	11.4x
ROCE	24.3	25.0	25.3	26.6



Continental


A hybrid vehicle

Fair Value EUR172 (price EUR189.15)

SELL
Coverage initiated

Continental ranks both no. 4 in the tyre market and no. 4 in original equipment car components and is a unique vehicle in the sector. Present in the main auto businesses, the group is a means of playing the market transformation with no danger, albeit with the risk of slower growth and less efficiency than its pure player rivals. The share's growth potential looks limited. Sell. FV of EUR172.

- **The perfect resilient stock:** The group's very specific positioning with **60% of sales generated by the original equipment auto segment and 40% by the tyre businesses** enables Continental to better resist the various sector cycles and easily generate a margin far higher than the average of components players (*10% vs. 8.6%*). However, the difference in margins between the two businesses (*around 20% for tyre and 8% for auto*) makes Continental a group very exposed to the tyre business (*>65% of EPS*).
- **Growth yes, but not at any cost:** Like other parts suppliers present in growth markets, **high R&D requirements** are likely to weigh on the group's auto segment margin in the short term, thereby limiting its improvement potential over 2017-19. **ADAS** should continue to drive growth like the **HEV** segment although this is unlikely to be profitable before the end of 2019.
- **Margin in tyres under pressure in 2017:** The **rise in natural rubber prices** is also set to create a scissors effect on the tyre segment margin, which was at an all-time high level (*>20%*), which we consider unsustainable over the short term. With little exposure to the U.S. market and totally absent from the mining segment that is set to grow over 2017-20, **Continental's tyre business is unlikely to fare as well as Michelin's over the period.**
- **Sell, EUR172:** we are initiating coverage of Continental with a **Sell** recommendation and a **FV of EUR172 (-9%)**. None of our valuation methods (*historical multiples, DCF and SOTP*) indicate clear upside potential for the share in the short term.

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Continental



Company description

Continental is an international automotive supplier, tire manufacturer, and industrial partner provides sustainable, safe, comfortable, individual, and affordable solutions. In 2015, the corporation generated sales of €39.2 billion with its five divisions, Chassis & Safety, Interior, Powertrain, Tires, and ContiTech. Continental currently employs around 215,000 people in 55 countries.

Simplified Profit & Loss Account (EURm)	2013	2014	2015	2016e	2017e	2018e	2019e	2020e
Revenues	33,331	34,506	39,232	40,532	43,015	44,873	46,829	48,888
Change (%)	1.8%	3.5%	13.7%	3.3%	6.1%	4.3%	4.4%	4.4%
Adjusted EBITDA	5,095	5,134	6,001	6,180	6,440	6,960	7,318	7,748
EBIT	3,264	3,345	4,054	4,081	4,321	4,747	5,007	5,338
Change (%)	6.2%	2.5%	21.2%	0.7%	5.9%	9.9%	5.5%	6.6%
Financial results	(804)	(265)	(246)	(82.4)	(119)	(147)	(144)	(139)
Pre-Tax profits	2,459	3,080	3,809	3,999	4,202	4,600	4,863	5,199
Exceptionals	(342)	(507)	(568)	(527)	(559)	(583)	(609)	(636)
Tax	(450)	(622)	(1,090)	(1,120)	(1,177)	(1,288)	(1,362)	(1,456)
Profits from associates	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minority interests	(86.7)	(82.2)	(52.2)	(54.7)	(57.5)	(60.0)	(62.6)	(65.4)
Net profit	1,923	2,375	2,727	2,885	3,028	3,312	3,499	3,738
Restated net profit	1,923	2,375	2,727	2,885	3,028	3,312	3,499	3,738
Change (%)	2.1%	23.5%	14.8%	5.8%	5.0%	9.4%	5.6%	6.8%
Cash Flow Statement (EURm)								
Operating cash flows	3,722	4,168	4,854	4,373	3,713	3,991	4,180	4,431
Change in working capital	64.2	(124)	134	631	(77.2)	(50.1)	(75.1)	(72.3)
Capex, net	(2,024)	(2,110)	(2,265)	(2,276)	(2,628)	(2,748)	(2,855)	(2,968)
Financial investments, net	(154)	(129)	(1,257)	0.0	0.0	0.0	0.0	0.0
Dividends	(513)	(546)	(713)	(750)	(865)	(908)	(994)	(1,050)
Other	(1,384)	(185)	(2,304)	27.4	28.8	30.0	31.3	32.7
Net debt	4,289	2,824	3,542	2,167	1,919	1,555	1,191	745
Free Cash flow	1,698	2,058	2,589	2,098	1,085	1,242	1,326	1,463
Balance Sheet (EURm)								
Tangible fixed assets	7,728	8,446	9,539	9,635	10,057	10,503	10,953	11,413
Intangibles assets	558	443	1,687	1,785	1,885	1,989	2,096	2,206
Cash & equivalents	2,045	3,244	1,622	2,996	3,245	3,609	3,972	4,418
current assets	11,251	13,318	13,169	14,248	15,157	16,008	16,906	17,908
Other assets	5,239	4,790	6,819	5,501	5,345	5,047	4,754	4,384
Total assets	26,821	30,241	32,836	34,165	35,689	37,155	38,681	40,330
L & ST Debt	6,638	6,432	5,245	5,245	5,245	5,245	5,245	5,245
Others liabilities	10,861	12,785	14,377	14,759	15,397	15,874	16,376	16,906
Shareholders' funds	9,011	10,672	12,786	13,707	14,563	15,523	16,515	17,602
Total Liabilities	26,821	30,241	32,836	34,165	35,689	37,155	38,681	40,330
Capital employed	18,663	18,663	19,985	23,331	22,985	23,759	24,486	25,254
Ratios								
Operating margin	9.79	9.69	10.33	10.07	10.04	10.58	10.69	10.92
Tax rate	18.28	20.20	28.63	28.00	28.00	28.00	28.00	28.00
Net margin	5.77	6.88	6.95	7.12	7.04	7.38	7.47	7.65
ROE (after tax)	21.34	22.26	21.33	21.05	20.79	21.34	21.19	21.23
ROCE (after tax)	25.58	23.93	24.34	25.02	25.29	26.65	26.95	27.56
Gearing	46.01	25.61	26.80	15.88	13.29	10.20	7.46	4.55
Pay out ratio	26.00	27.37	27.50	30.00	30.00	30.00	30.00	30.00
Number of shares, diluted	200	200	200	200	200	200	200	200
Data per Share (EUR)								
EPS	3.21	3.96	4.55	14.42	15.14	16.56	17.49	18.69
Restated EPS	3.21	3.96	4.55	14.42	15.14	16.56	17.49	18.69
% change	2.1%	23.5%	14.8%	217%	5.0%	9.4%	5.6%	6.8%
EPS bef. GDW	3.21	3.96	4.55	14.42	15.14	16.56	17.49	18.69
BVPS	15.02	17.79	21.31	68.53	72.82	77.61	82.57	88.01
Operating cash flows	18.61	20.84	24.27	21.87	18.56	19.95	20.90	22.15
FCF	2.83	3.43	4.32	10.49	5.42	6.21	6.63	7.32
Net dividend	0.83	1.08	1.25	4.33	4.54	4.97	5.25	5.61

Source: Company Data; Bryan, Garnier & Co ests.

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1. Investment Case

Why the interest now?



The reason for writing now

Under the framework of our report on tyre manufacturers, we are initiating coverage of the **world no. 4** in the sector, German parts supplier **Continental**, which is also known in the industry for its positions in the **electronics, transmission and interior systems segment**. The two complementary businesses provide the group a degree of resilience in such a cyclical and volatile industry. Like other parts suppliers present in growth markets, **high R&D requirements** are likely to take a toll on the auto segment margin in the short term, whereas **the upturn in natural rubber prices** could create a scissors effect on the tyre segment margin.

Cheap or Expensive?



Valuation

Like other car parts groups that we initiated in our sector note in September 2016 (*Faurecia, Hella, Plastic Omnium and Valeo*), we value **Continental** via two methods: **EV/sales, EV/EBIT** and **P/E** multiples and a **DCF valuation**. As such, we value Continental at **EUR172 per share**, pointing to **9%** downside. We have also undertaken an SOTP valuing Continental at **EUR187** in order to better assess the group's various businesses.

When will I start making money?



Catalysts

Continental is unlikely to benefit from catalysts in the short term, since it only reports 2016 figures on **2nd March 2017**. The organisation of an investor day during H2 should help us better understand the group's positioning relative to sector challenges and their implications for its growth and profitability.

What's the value added?



Difference from consensus

We are **6%** below the market in terms of 2017 EPS and **4%** for 2018 EPS.

Could I lose money?



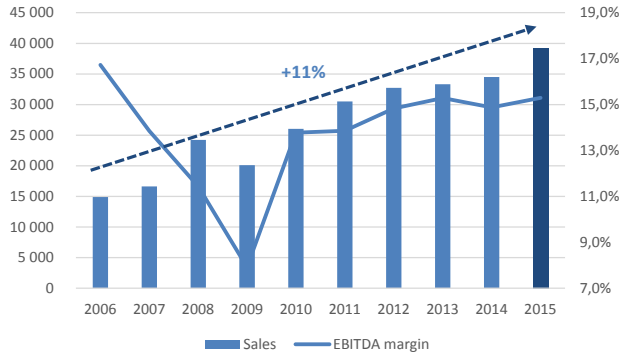
Risks to our investment case

A higher than expected acceleration in end-demand for hybrid and electric vehicles could boost the group's growth in the Hybrid Electric Vehicle (*HEV*) segment, favouring an improvement in EBIT margin. A productivity improvement plan combined with a decline in R&D spending could also have a beneficial impact on the group's margins.

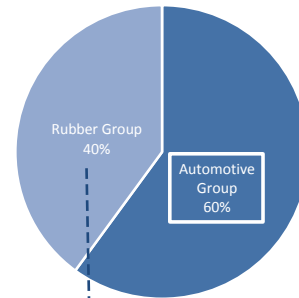
2. Continental in six charts

Fig. 1: An increasingly large group, especially thanks to acquisitions

Continental – sales & EBITDA margin since 2006



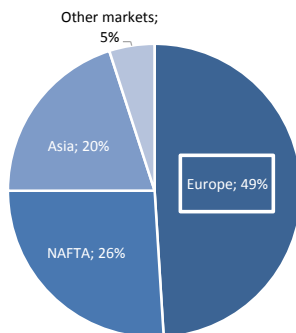
Continental – sales by business (2015)



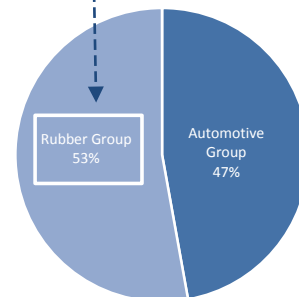
Source: Continental

Fig. 2: A very European group, very dependent on the tyre segment

Continental – sales by region (2015)



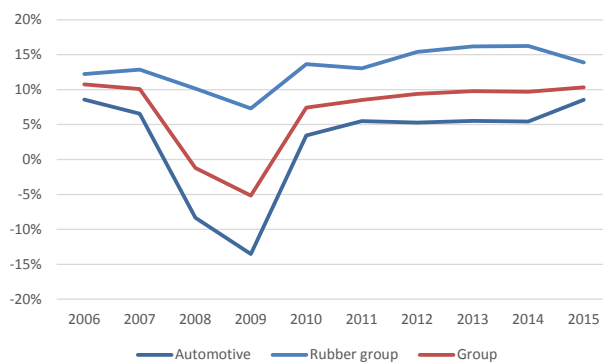
Continental – EBIT by business (2015)



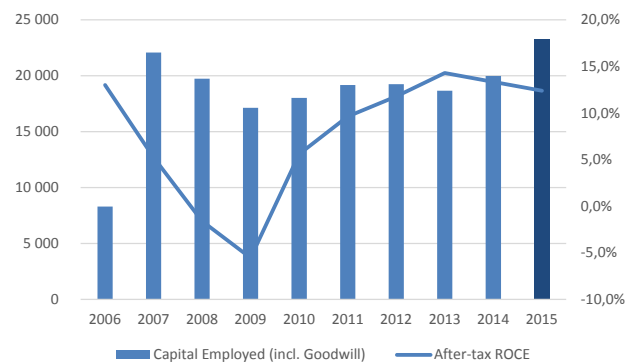
Source: Continental

Fig. 3: Margins close to a plateau level?

Continental – Change in EBIT margin by segment



Continental – Capital employed and ROCE



Source: Continental

3. A hybrid vehicle

Both **no. 4 in the tyre market** and **no. 4 in the original equipment car parts industry**, German components supplier **Continental** is a unique vehicle in the sector. Present in the main automotive businesses (*transmission interiors, safety, exhaust systems, infotainment etc.*), its positioning is a means of playing the market transformation without danger, at the risk however of growing more slowly or of being less performant than its pure-player rivals.

Boasting expertise in its main automotive businesses, especially the growth markets set to shake up the industry in coming decades (*electric and autonomous vehicles*), **Continental** is in a delicate position since the investments necessary for remaining a precursor in automotive innovation imply **extensive R&D spending** that is likely to limit the group's margin growth potential in coming years. **ADAS** should continue to drive growth, like the **HEV** segment even if this is unlikely to be profitable before the end of 2019.

The group's high exposure to the tyre sector (*only 40% of sales, but more than 50% of EBIT margin and more than 60% of EPS*) implies that the **increase in natural rubber prices** is also likely to create a scissors effect on the margin during 2017. The margin in this segment is set to come under pressure over 2017-18. With low exposure to the U.S. market and a total absence from the mining segment, which is expected to grow over 2017-20, we estimate that the **group's tyre business is likely to perform less well than Michelin's over the period**.

We are initiating coverage of **Continental** with a **Sell recommendation and a FV of EUR172 (-9%)**. None of our valuation methods (*historical multiples, DCF and SOTP*) imply genuine upside potential for the share in the short term. Among the tyre manufacturers, **Michelin** remains our Top Pick despite our **Neutral** recommendation on the share (*FV at EUR118 nevertheless implying 15% upside*).

4. A positioning that is both defensive and growth

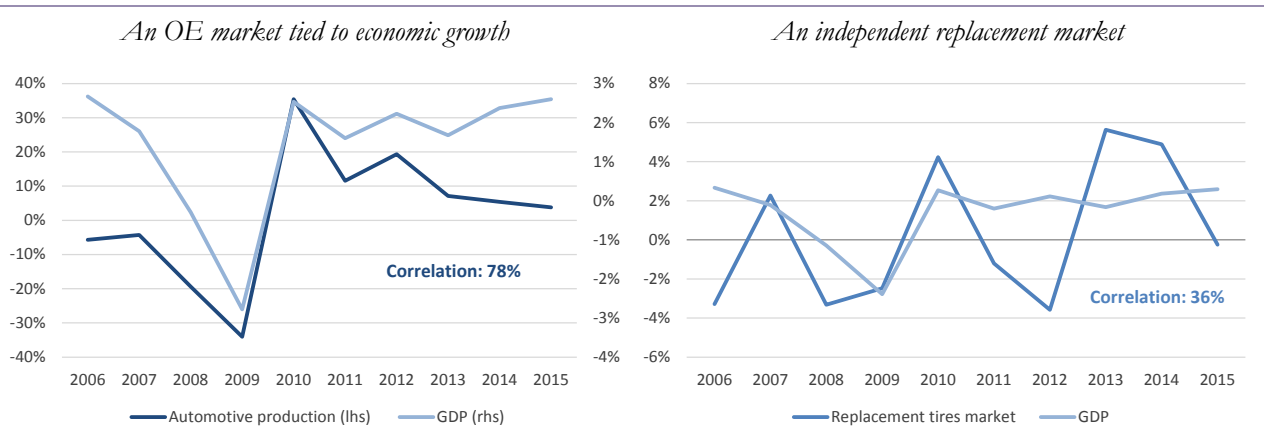
4.1. Two complementary businesses that ensure a degree of resilience

Continental has an unusual business model, based on two auto businesses with few synergies:

- The **sale of auto parts** via Continental Automotive Group (60% of the group's sales and 50% of group EBIT), which above all concerns original equipment parts and is therefore destined for carmakers (around 97% of sales in the division). In this market, Continental ranks world no. 4 in terms of sales behind **Bosch, Denso** and **Magna** and competes directly with French group **Valeo**.
- The sale of **tyres and other rubber based products** via Continental Rubber Group (40% of the group's sales and 50% of EBIT), the majority of whose offering meets replacement requirements from specific customers (around 64% of sales in the division). In the tyre segment, Continental ranks no. 4 in the world behind Bridgestone, Michelin and Goodyear.

Whereas the auto parts business is very sensitive to auto production and hence economic cycles, **the rubber business stands out for its counter-cyclical nature**. Indeed, Continental Rubber benefits from **the tyre business**, with the majority of tyres sold in the replacement market where **purchase is more obligatory rather than discretionary**. As an example, the U.S. market has shown a correlation of **78%** between GDP growth in the country and auto production since 2006 whereas this coefficient falls to **36%** when this same change in GDP is compared with the replacement tyres market.

Fig. 4: The case of the US (annual changes in %)



Source: Michelin; Statista; Bryan, Garnier & Co ests.

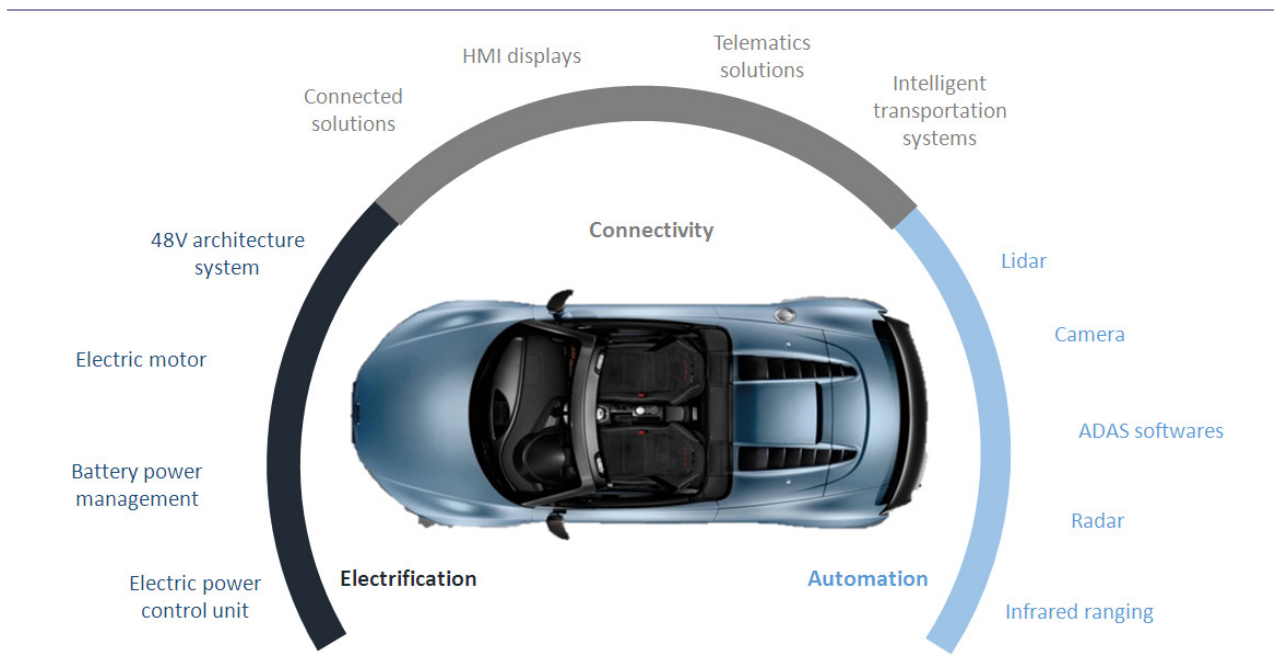
This mix of BtoC and BtoB, stemming from the complementary nature of the group's customer bases, provides Continental a degree of **resilience in its business on a group level**, in terms of both sales and margins (*tyres generate better profitability*) during recession periods. In contrast, during periods of economic recovery, the auto BtoB segment takes over and has far higher growth rates.

4.2. A solid positioning in long-term sector trends

Via its three auto businesses (*Continental Interior, Continental Chassis & Safety, Continental Powertrain*), the **Continental Automotive** division should benefit over the long-term from the three major trends likely to transform the auto industry as we know it today, namely:

- An increasingly **connected vehicle**
- Momentum in **autonomous vehicles**
- The widespread use of **electrical vehicles**

Fig. 5: Selection of products in the Continental Automotive portfolio



Source: Continental; Bryan, Garnier & Co ests.

4.2.1. Continental and connected vehicles

4G/5G networks have now become vital to enable **vehicles to gather and exchange data on driving conditions**. Automotive players (*joined by new entrants*) have therefore invested heavily with the aim of introducing more in-car connectivity, focusing especially on the cockpit dashboard. These investments have also been made from a longer-term perspective of developing the autonomous car. The vehicles architecture needs to be rethought in order to integrate smartphones and tablets, while sensors for data collection are also vital, therefore requiring far more electronics.

This transformation, which aims to place the car at the heart of an ecosystem in which all objects can communicate between each other, **is set to increase the amount of equipment necessary in vehicles**. Connected devices and embedded communication technologies (*in-vehicle infotainment*) as well as information exchange technologies (*vehicle-to-vehicle/vehicle-to-infrastructure communication*) should make the most of this transformation. In this market, whose development we consider vital to and a precursor of the autonomous vehicle, **Continental should be capable of maintaining its position among the top three global suppliers of driver-side displays**.

The group should also be capable of rivalling Harman, Bosch and Panasonic in infotainment and connectivity via an extremely large and innovative product portfolio created by its division Continental Interior (*21% of group sales*).

Over the long term, the group should therefore benefit from its expertise in display screens installed in the cockpit (*also known as the Human Machine Interface*) the number of which could easily reach five per vehicle according to the group (*vs. around two today: a central screen and a driver screen*). The technological level of these display screens is also set to intensify with **the integration of smartphones and other services requiring internet access**.

Telematic solutions and intelligent fleet management assistance systems developed by Continental should be driven by the switch in the automotive industry towards BtoB and momentum in vehicle fleets managed by carpooling companies and on-demand transport services such as **Blablacar, Uber** and **Lyft**. In China alone, the Millennial generation represents virtually **30%** of the population and is likely to trigger a radical cultural change in terms of mobility. However, this generation stands out for its strong appeal for technology, flexibility and its disinterest in ownership.

Fig. 6: Continental products capable of meeting connectivity needs in vehicles

Product	Status	Description
Access control system	Commercialised	PASE (<i>Passive Start and Entry</i>) keyless entry and start system
Telematics control unit	Commercialised	Communication centre notably allowing eCall, automated accident alert, local-support service calls, traffic reports, telediagnosics
AutoLinq	Commercialised	Connects vehicles to operate functions such as e-mail, social media, video portals
Tire information system	Commercialised	System monitors the tire's inflation pressure and alerts the driver in the event of a loss of pressure
Smart device integration	Commercialised	Multifunctional terminal allowing the use of various features in the vehicle through smartphones
High quality 3D display surface	New	Three dimensional display surface, smaller than current displays but easily designable
Biometric recognition	New	Innovative access system with fingerprint authentication and face recognition
Intelligent glass control	New	Refined and enhanced version now allowing the glass to dynamically adjust itself to different traffic situations

Source: Continental; Bryan, Garnier & Co ests.

4.2.2. Continental and the autonomous vehicle

In the race for the development of autonomous vehicles, a number of carmakers and certain technological groups have already announced the launch dates for their first autonomous model (2020 for the majority and 2018 for the earliest), some of which in partnership.

Fig. 7: Groups developing their own autonomous vehicles

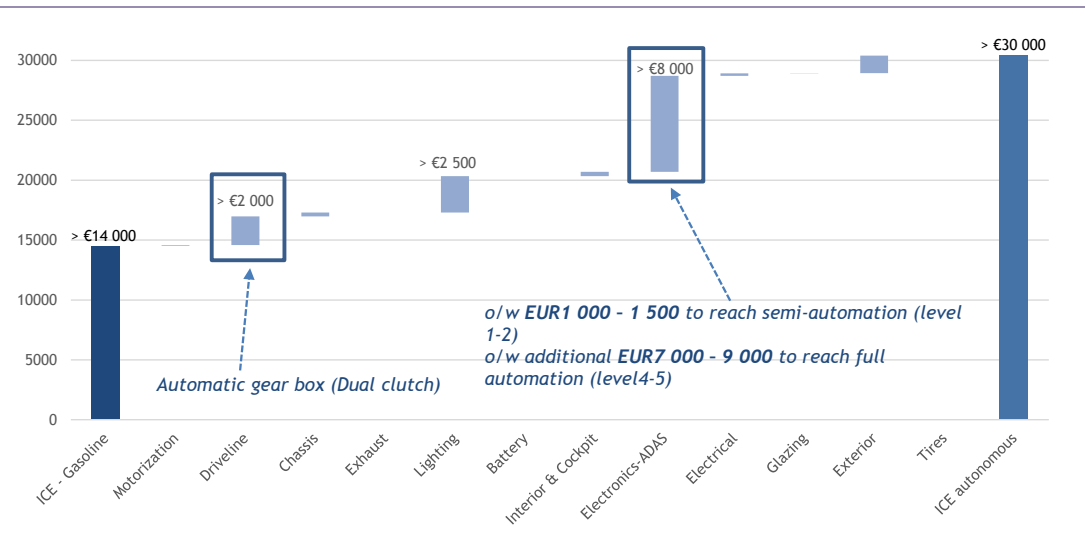


Source: Companies Data; Bryan, Garnier & Co ests. *Google's unit dedicated to self-driving technology

Momentum in the autonomous vehicle should represent a considerable catalyst for components makers over the long-term, in terms of both sales and margin. Potential for widespread among production is huge and the multiplication of technological components should help parts makers increase their pricing power with carmakers. Indeed, we estimate the production cost (excluding VAT) of an autonomous category C petrol vehicle should be **twice as high** as for a traditional petrol car (more than EUR30,000 vs. >EUR14,000). This gain in value stems primarily from:

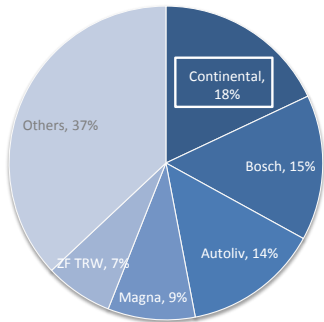
- **1/the ADAS (+EUR8,000)** with the number of sensors rising from two to 20 with lidars, radars, cameras, infrared and ultrasonic sweeping. Continental is now present in the entire value chain, except ultrasonic, and is also developing assistance systems such as adaptive cruise control, traffic sign assist, surround view and emergency brake assist.
- **2/ lighting systems (+EUR2,500)** with the installation of smart LED headlights capable of automatically adapting the reach and slant of the light projected depending on other vehicles and pedestrians. Continental provides the software that analyses the data collected by the sensors and directs the light beams accordingly.
- **3/ transmission (+EUR2,000)** stemming above all from the incorporation of an automatic gear box, which should become systematic in autonomous vehicles. Here again Continental offers this product in its vehicle transmission range.

Fig. 8: Production cost (excl. VAT) of a category C vehicle - autonomous vs. traditional



Source: Idaho National Laboratory; Continental; Valeo; Hella; Bryan, Garnier & Co ests.

ADAS - 2015 global market

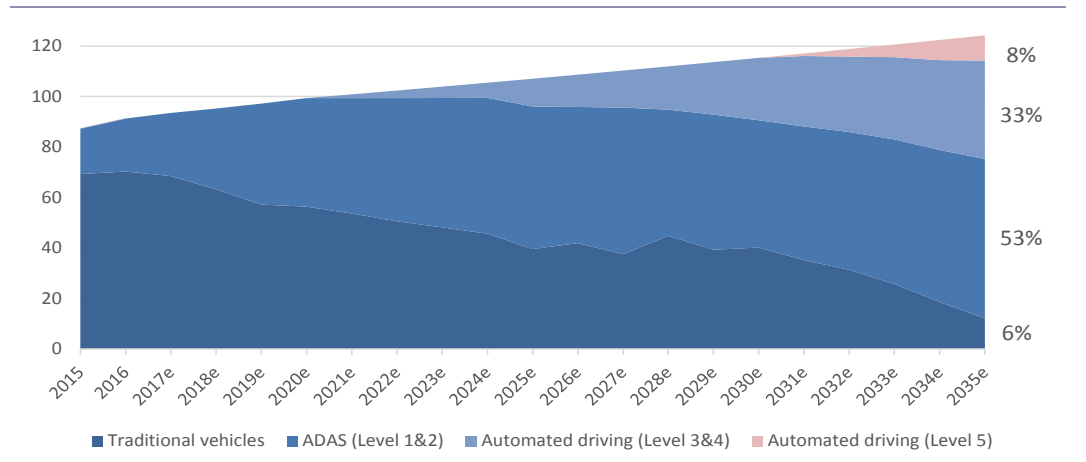


Source: Semicast Research

Despite Continental's leadership in the ADAS segment (18% global market share with around EUR540m in sales), which is expected to be the main beneficiary of the autonomous vehicle, the **impact on the group's sales is unlikely to be felt for several years**. Indeed, we do not expect the first models sold to reach level 5 automation (no human intervention whatever the environment), but rather level 3, equivalent to the autopilot of the Tesla Model S, or level 4 (the vehicle ensures transport in the majority of driving and weather conditions except in exceptional circumstances such as places like the Place de l'Etoile in Paris or in fog).

We only expect a genuine take-off in the fully autonomous vehicle in around 2030, once the regulatory framework has been adjusted and once drivers are prepared to get into an autonomous car. In the meantime, semi-automated vehicle (level 1 and 2 autonomy that highlight the functionalities already known today such as parking assistance or adaptive cruise control), are set to have the greatest impact on the sales mix. However, reaching this low level of autonomy requires around EUR1,000-1,500 in additional equipment and software relative to a level 0 vehicle.

Fig. 9: Global demand for vehicles in volume terms (m units) by technology



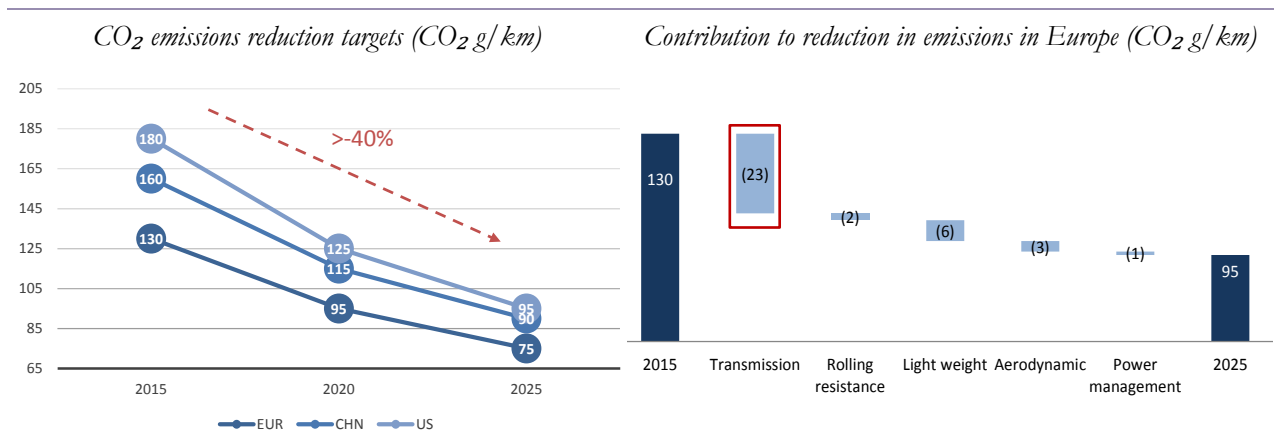
Source: McKinsey; IHS; Bryan, Garnier & Co ests.

4.2.3. Continental and the electric vehicle

Governments in mature countries have implemented strict regulations to reduce CO₂ emissions to preserve the impact of these polluting emissions on the environment and people's health. The auto sector is indeed one of the main ones concerned by the fight against pollution bearing in mind that the **transport sector represents around a third of CO₂ emissions** in the world. The European Union is aiming to reduce emissions of CO₂ grams per km by **42%** out to 2025, while the level stands at **47%** in the US.

Carmakers have **five main levers they can use to reach these emissions standards**: **1/** electrification and engine downsizing (*66% of the reduction requested by the European standard*), **2/** reducing vehicle weight (*17%*), **3/** aerodynamics (*9%*), **4/** tyre rolling resistance (*6%*) and **5/** energy management (*3%*).

Fig. 10: Electrification is the perfect way to reducing polluting emissions



Source: Faurecia; Plastic omnium; Bryan, Garnier & Co ests.

Despite a backdrop of tougher legislation, widespread usage of electric cars is paradoxically low, accounting for only **~1% of global car registrations** in the case of fully electric vehicles and **2-3% for hybrid vehicles**. This situation stems notably from the still very high price of these vehicles at present. We estimate that the cost of production (*excl. VAT*) of a fully electric category C car is **twice as high** as that of a petrol engine car (*more than EUR39,000 vs. >EUR14,000*).

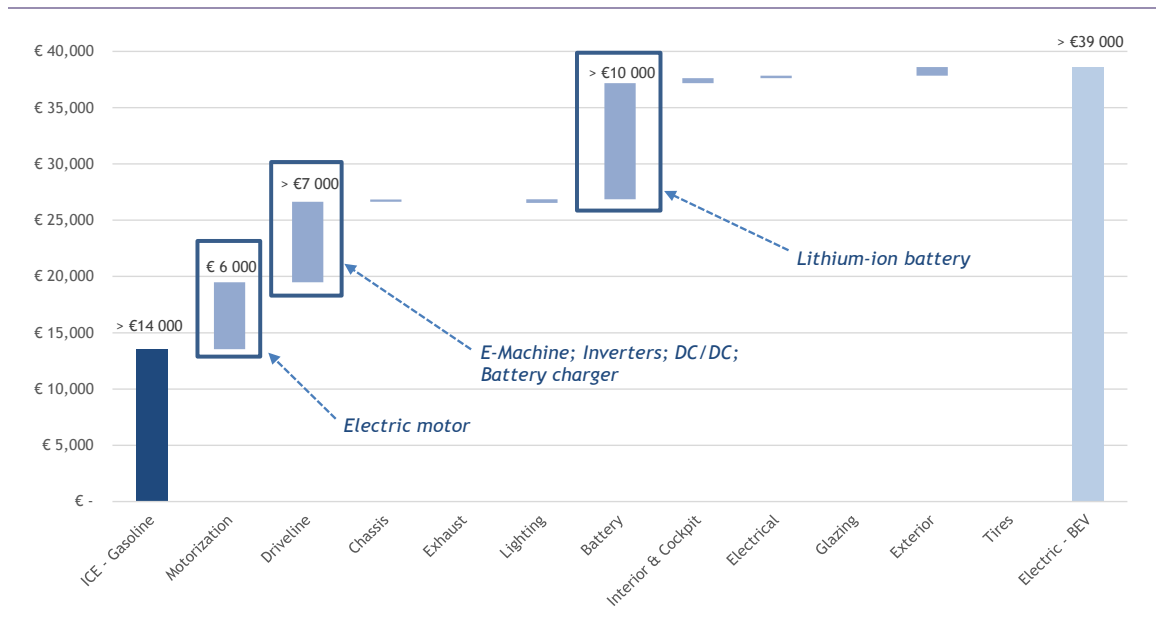
This huge increase in value is mainly due to:

- **1/ The battery (+EUR10,000)** whose actual autonomy must reach 200km at least (*prompting standard autonomy of around 300km according to New European Driving Cycle - NEDC - standards*), implying power of 25-35kWh for a lithium-ion battery (*with its 400km in autonomy, the Tesla Model S is currently equipped with a 60kWh lithium-ion battery at the entry-level*), in order to get over drivers' fears that they could run out of power with no recharge station nearby. Although Continental ended its joint venture with SK Innovation in 2014 (*via which it produced lithium-ion batteries*), due to excessively low demand, **we estimate that the group could easily return to this segment in the future by joining forces with a new electronics player.**
- **2/ transmission (+EUR7,000)** with the incorporation of voltage converters as well as systems capable of bearing higher voltages, all factors that have become vital in an overcharged electric architecture by the multiplication of electronics systems in the vehicle.

Here Continental supplies a wide range of products including DC/DC voltage converters, inverters and battery chargers.

- **3/ the engine (+EUR6,000)** which needs to be entirely electric and whose design cost has yet to produce economies of scale given the low level of demand. Continental **has produced electric engines since 2011** alongside other major players such as Johnson Controls, Japanese group Denso, German group Bosch and more recently Valeo, in partnership with Siemens since 2016.

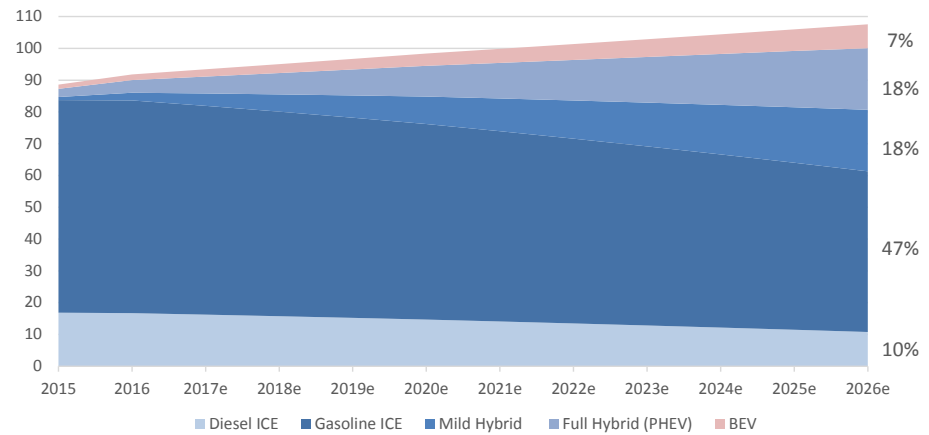
Fig. 11: Production costs (HT) of a category C petrol car vs. electric



Source: Idaho National Laboratory; Continental; Valeo; Hella; Bryan, Garnier & Co ests.

However, electric cars should only be seen as a **growth engine over the long term given that momentum currently remains restricted by two factors: 1/ price**, with a cost of production more than 2.5x higher than a petrol car, despite the government subsidies in place (*up to around EUR15,000 in China or EUR18,500 in Korea for the purchase of a fully electric vehicle*), **2/ still-low autonomy**, unlikely to prompt drivers to abandon thermic engines in a backdrop of insufficient recharging infrastructure.

Fig. 12: Global demand for vehicles in volume terms (m units) per technology



Source: McKinsey; IHS; Bryan, Garnier & Co ests.

Fig. 13: Continental present in major long-term automotive trends

	Gasoline thermic vehicle	Electrical (BEV)	Autonomous thermic vehicle
Motorization	Internal combustion engine	Electric engine	Internal combustion engine
o/w Engine	Gasoline engine @Continental ↴	@Continental ↴	Gasoline engine @Continental ↴
o/w Fuel tank	Plastic/metal tank		Plastic tank
Driveline			
o/w Starter	√ @Continental ↴		√ @Continental ↴
o/w Alternator	√ @Continental ↴		√ @Continental ↴
o/w Belt starter generator		√ @Continental ↴	
o/w E Machine		√ @Continental ↴	
o/w Clutch	√ @Continental ↴		√ @Continental ↴
o/w Automated transmission		√ @Continental ↴	
o/w Engine actuators	√ @Continental ↴	√ @Continental ↴	√ @Continental ↴
o/w Engine sensors	√ @Continental ↴	√ @Continental ↴	√ @Continental ↴
o/w Damper	√ @Continental ↴	√ @Continental ↴	√ @Continental ↴
o/w Inverter		√ @Continental ↴	
o/w DC/DC		√ @Continental ↴	
o/w Battery management		√ @Continental ↴	
Chassis		Lighter chassis	Lighter chassis with sensors
o/w Steering system	Hydraulic/Electronic power steering @Continental ↴	Electric power-assisted steering @Continental ↴	Electronic power steering @Continental ↴
o/w Suspension	√ @Continental ↴		√ @Continental ↴
o/w Braking system	√ @Continental ↴	√ @Continental ↴	√ @Continental ↴
o/w Dedicated sensors			√ @Continental ↴
Exhaust			
o/w Catalyst	√ @Continental ↴		√ @Continental ↴
o/w Particulate filter	√ @Continental ↴		√ @Continental ↴
o/w Nox trap			
o/w SCR filter			
o/w SCR/ASDS system			
o/w Low pressure EGR	√ @Continental ↴		√ @Continental ↴
o/w Energy recovery			
Lighting			
o/w Headlamps	Halogen/Xenon/LED	LED/OLED/Matrix	LED/OLED/Matrix
o/w Rear & daytime lamps	Halogen/Xenon/LED	LED/OLED	LED/OLED
o/w Small & interior lamps	Halogen	LED	LED
Battery		High capacity	
Interior & Cockpit			
o/w Seats		Lighter seats	Smart seats headed to wellness
o/w HMI		Connectivity @Continental ↴	Smart surface decor, high connectivity @Continental ↴
o/w Instrument panel	Touchscreen, sat nav @Continental ↴		
o/w Door modules & HVAC	@Continental ↴		
ADAS	Level 2-3 automation (6 sensors)	Level 2-3 automation (6 sensors)	Full automation (>20 sensors)
o/w Lidar	√ @Continental ↴	√ @Continental ↴	√ @Continental ↴
o/w Radars	√ @Continental ↴	√ @Continental ↴	√ @Continental ↴
o/w Cameras	√ @Continental ↴	√ @Continental ↴	√ @Continental ↴
o/w Infrared ranging			√ @Continental ↴
o/w Ultrasonic systems			√ @Continental ↴
Electrical	12V architecture	60V+ architecture	48V architecture
12V architecture	√ @Continental ↴		
48V architecture			√ @Continental ↴
60V+ architecture		√ @Continental ↴	
Glazing			Smart glass appearance
Exterior			
o/w Car body frame	Steel	Steel/aluminium	Composite
o/w Car body modules	Metal/plastic	Aluminium/plastic/composite	Composite
Tires	4 tires @Continental ↴	4 tires @Continental ↴	4 tires @Continental ↴

Source: Continental; Bryan, Garnier & Co ests.

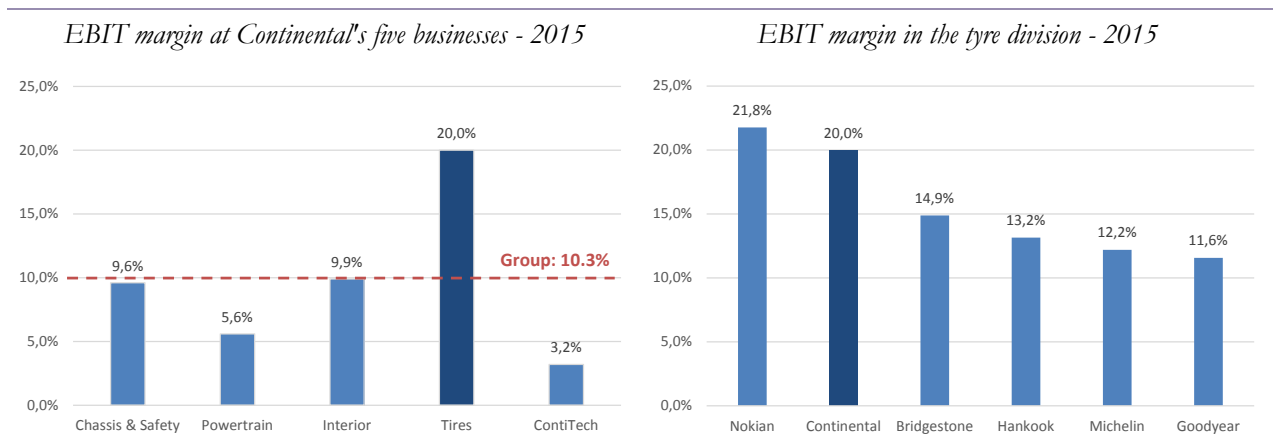
5. Profitability underpinned by the rubber division...

5.1. Business boosting the group's margin

With **Continental Tires**, which generated EBIT margin of **20%** in 2015, or virtually double the group average margin (*10.3%*), the design, manufacture and sale of **tyres seems to be Continental's cash cow**. Tyres have historically generated around **50% of the group's EBIT for a contribution to group sales of no more than 30%**.

Beyond the fact that tyre-makers generate structurally higher profitability than automotive parts makers, note that Continental Tires is at the top of the group of these tyre-makers just behind Finnish player **Nokian**, which is positioned in the premium segment of winter tyres.

Fig. 14: EBIT margin of 20%, a record for the sector



Source: Continental; Companies Data; Bryan, Garnier & Co ests.

These performances stem notably from Continental's strategy to offer premium products and more specifically via its key eponymous brand whose price positioning is well ahead of that of rivals. If we focus on 16-inch summer replacement tyres sold on the Allopneus website (*prices dated 7th January 2017, without taking account of promotional offers*), the **range of tyres offered by Continental is 28% more expensive than the range of its direct rivals (historical brands focused on upscale) and 86% more expensive than a panel of entry-level and midscale brands.**

This price difference shows that Continental is perfectly capable of leveraging the quality of its tyres to increase prices. French customers therefore seem inclined to pay **EUR107** incl. VAT on average for a Continental tyre (*summer - 16"*) compared with EUR80 at Michelin, EUR77 for a Goodyear product and EUR72 at Bridgestone. Note that this currently concerns the four core brands of the four leading global tyre-makers, with Continental ranking in no. 4 position with a **global market share of 6.9%**.

Fig. 15: Selling prices for 205/55 R16 summer tyres (EUR incl. VAT)

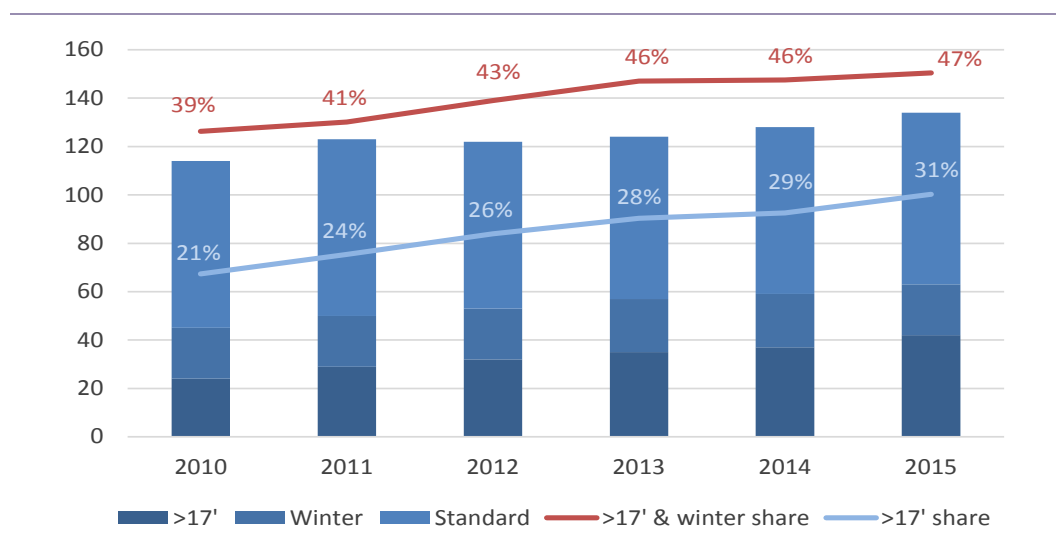
	Low price	High price	Average price	Gap
Historical brands:	60	127	84	28%
Bridgestone	63	96	72	49%
Goodyear	60	115	77	39%
Michelin	69	122	80	33%
Continental	101	127	107	0%
Mid to entry range brands:	46	74	58	86%
BFGoodrich	59	74	66	63%
Falken	57	65	61	75%
Kleber	60	74	67	59%
Nankang	46	74	53	103%
Nexen	46	71	60	79%
Kumho	49	68	58	85%
All brands	46	127	76	41%

Source: Allopneus; Bryan, Garnier & Co ests. (prices noted on 7th January 2017)

Beyond its core Continental brand, the group has started to "premiumise" its brand portfolio (primarily made up of Continental, Uniroyal in Europe, Barum, General Tire, Semperit, Gislaved, Enzokadi, Matador and Viking) with a mix increasingly focused on large-sized tyres (diameter of more than 17 inches) and to a lesser extent, winter tyres.

Whereas in 2010, large-sized tyres (which require increased expertise and more rubber to the benefit of margins), only accounted for 21% of the group's sales volumes at 24m units, Continental now sells more than 42m (31% of the mix). In comparison, Michelin has a higher sales mix with 17" tyres at 45%. Note nevertheless that **improvement in the product mix stems above all from the rising momentum of large-sized tyres**, with winter tyres tending to stagnate.

Fig. 16: Sales mix of Continental tyres – light vehicles (m units)



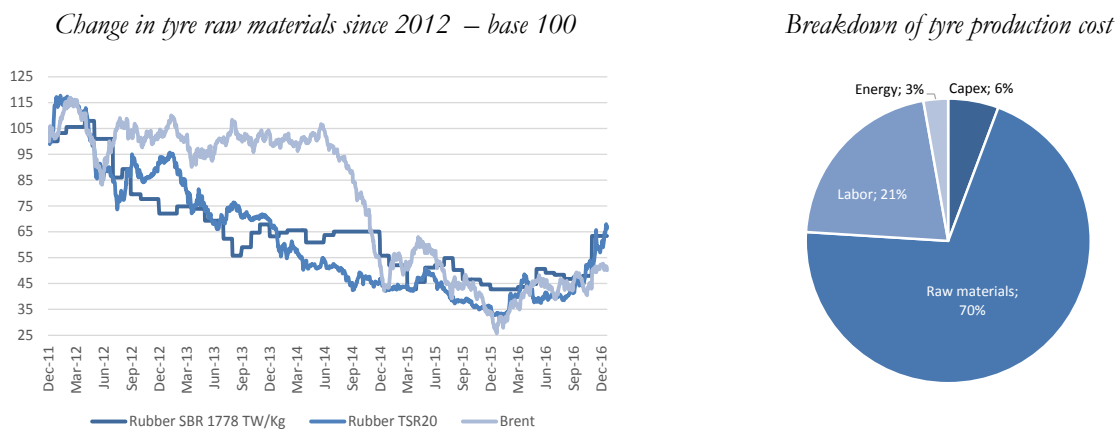
Source: Continental; Bryan, Garnier & Co ests.

5.2. Industrial exposure focused on low wage cost countries

With raw materials prices having started to pick up since 2016 and natural rubber leading the way, **tyre-makers need more than ever to focus on making their cost base more flexible if they hope to maintain their margins.** Indeed, the tyre industry is emerging from a sharp decline in rubber prices (-60% since the peak of 2013), which exacerbated competition from Chinese players in Europe, and to a lesser extent in the U.S., but which also helped a number of entry and mid-range brands improve their price appeal.

However, an **uptrend in rubber prices started in 2016** prompted by increasingly strong demand from emerging markets, as well as the efforts made by the four leading global producers, namely Vietnam, Thailand, Indonesia and Malaysia, to reduce production of natural rubber. Confirmation of these headwinds is therefore likely to oblige a number of tyre brands to reduce their margins or increase prices.

Fig. 17: Natural rubber prices down 60% since the peak of 2013

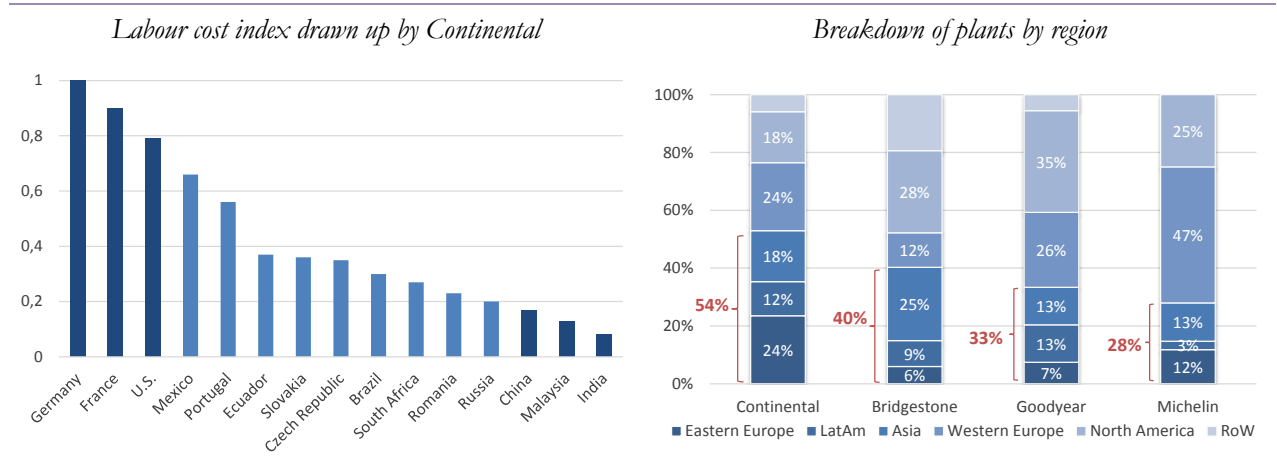


Source: Datastream; U.S. Annual Survey of Manufacturers; Bryan, Garnier & Co ests.

The most premium players, which benefit from a good brand image, should be capable of passing on some of the increase in raw materials prices (*natural rubber represents around 60% of the tyre production cost for a player more focused on upscale such as Michelin*). However, to offset the negative impact on its brands, which are more inclined to be able to pass on the raw materials effect to customers (*five mid-range brands with General Tire, Uniroyal, Semperit, Gislaved and Enxkadi, four entry-level brands with Barum, Matador, Viking, Mabor, Simex and Tecnotread*), **Continental can rely on its cost structure which is among the most flexible in the sector.**

Continental makes the most of a **production network highly focused on low wage cost countries** with **54%** of its plants located in **eastern Europe** (*cost of labour more than 2x lower than in Germany according to an index drawn up by Continental Tires*), in **Latin America** (*labour costs 3x lower than in Germany*) and in **Asia** (*labour cost around 10x lower than in Germany*). In order to be more precise, we now look at Continental's volume production, a similar share of which (**52%**) is generated in these same low wage cost regions.

Fig. 18: Tyre-makers looking for cheaper labour



Source: Continental; Companies Data; Bryan, Garnier & Co ests.

Continental therefore clearly seems to be the tyre-maker the best exposed industrially to making its cost base more flexible among the four industry leaders. In addition to staff costs that are lower (23% of sales for Continental Group vs 27% for Michelin), this strategy currently enables the group to produce tyres closely in line with demand. In the case of Asia, which represents 41% of global tyre demand for light vehicles and trucks, the group avoids customs duties and additional costs and delays for transport.

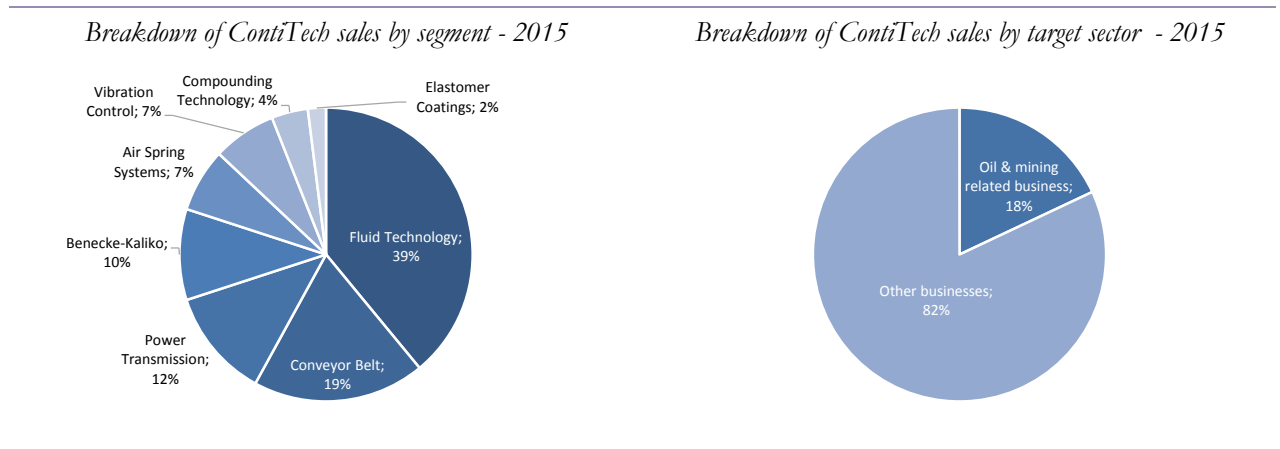
In terms of the auto division, this flexibility is just as important for offsetting hefty R&D investments for electrification and automation, which are currently weighing on margins.

5.3. Digesting Veyance should boost margins at ContiTech

Acquired in February 2015 for EUR1.4bn after almost a year of consultation by competitions authorities, the industrial group Veyance Technologies has enabled ContiTech (whose business focuses on products derived from rubber destined for industrialists) to hoist itself to the top position among rubber groups excluding tyre activities with more than EUR5bn in sales. This operation also aimed to reduce Continental's exposure to the auto segment, while making the most of Veyance's positions in North and South America.

However, the takeover of the conveyer belts, pipes and cables, and propulsion systems manufacturer increased ContiTech's exposure to mining and oil groups (18% of ContiTech sales) during a difficult year for these two sectors. The mining sector was in its fourth consecutive year of decline in capex in 2015, with investments down 29% relative to the peak of 2012. Meanwhile the oil sector was also affected by a more than 50% plunge in oil prices from USD100 at end-2014 to under USD40 at the end of 2015.

Fig. 19: Business exposed to cyclical customers



Source: Continental; Bryan, Garnier & Co ests.

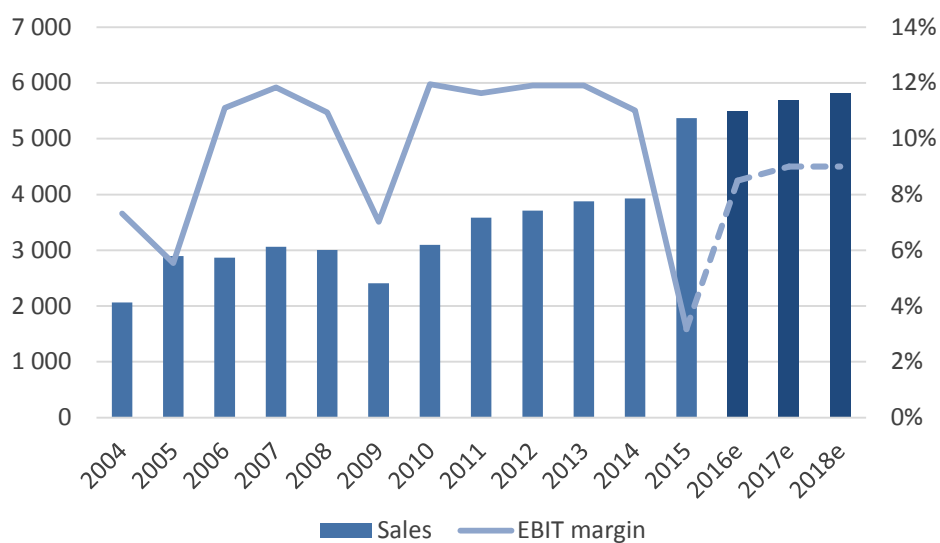
ContiTech therefore saw its EBIT margin narrow massively from **11% to 3% over 2015** under the weight of two factors:

- Exposure of the business to **very cyclical customers** especially **mining groups**, which have suffered and in turn placed sharp pressure on margins (*140bp narrowing in ContiTech's EBIT margin prior to the acquisition of Veyances in 2015*).
- The integration of **Veyance Technologies**, whose product portfolio primarily addresses mining and oil groups thereby increasing ContiTech's exposure to a sector in crisis, and which required hefty restructuring. Veyance's contribution to ContiTech's accounts in 2015, showed a negative EBIT margin of **20.3% at -EUR233m**, affected primarily by **EUR89m** in restructuring costs and **EUR72m** in integration costs.

The restructuring costs shouldered by ContiTech since 2015 in order to align capacity to demand for its conveyor belts (*seven plants concerned out of 25 exposed*) as well in industrial fluids systems while integrating Veyance should help it restore an EBIT margin closer to its historical average (*10% over the 2004-14 period*) at **9%**.

The short term is nevertheless set to remain difficult in a backdrop where exploration investments are unlikely to pick up again for at least a year. **As such, we see EBIT margin reaching 9% in 2017**, admittedly still below the historical level, but posting a **580bp improvement** from 2015.

Fig. 20: ContiTech sales and EBIT margin



Source: Continental; Bryan, Garnier & Co ests.

6. ... for which improvement potential now looks limited

Whereas Continental's profitability relies primarily on the tyre business (*49% in 2015*), it seems that Continental Tires' profitability has reached an all-time high with EBIT margin at 20%. **We now see little room for further improvement in the margin generated by the rubber division and more specifically, the tyre business** in view of three factors:

- **Under-exposure** to the very premium **U.S.** tyre market
- The group's absence from the very profitable **mining sector, which is expected to grow over the next four years**
- A rise in raw materials prices that Continental is unlikely to be able to pass on fully to its customers, at least **without a delay**.

In our model, this fact results in a low improvement in EBIT margin of just **90bp for Continental over 2015-2020** vs **300bp for Michelin**, which we consider better placed to benefit from the growth potential offered by the US and mining markets.

6.1. Little exposure to the U.S.

Despite the structural and economic characteristics of the U.S. market in terms of the tyre sector, **Continental remains structurally under-exposed to the region**, from both an industrial and commercial perspective. We nevertheless consider that the U.S. is a one of the most **buoyant markets for a premium focused tyre-maker such as Continental**, especially via:

- The **robust car registrations seen since 2010** that should benefit the replacement market as a whole.
- A "premiumisation" of the market with **increasingly large tyres**, favouring margins.
- Beneficial exchange rates in view of the stronger dollar against the euro. Our models are based on a **USD/EUR of 1.06** corresponding to the average since the beginning of the year and the latest price extrapolated to the rest of the year for 2017, vs. an average of **1.107** and **1.11** in 2015.
- A potential cut to the federal corporate tax rate from **35% to 15%** promised by **Donald Trump** (*35% to 20% according to the current proposal by the Chamber of Representatives*).

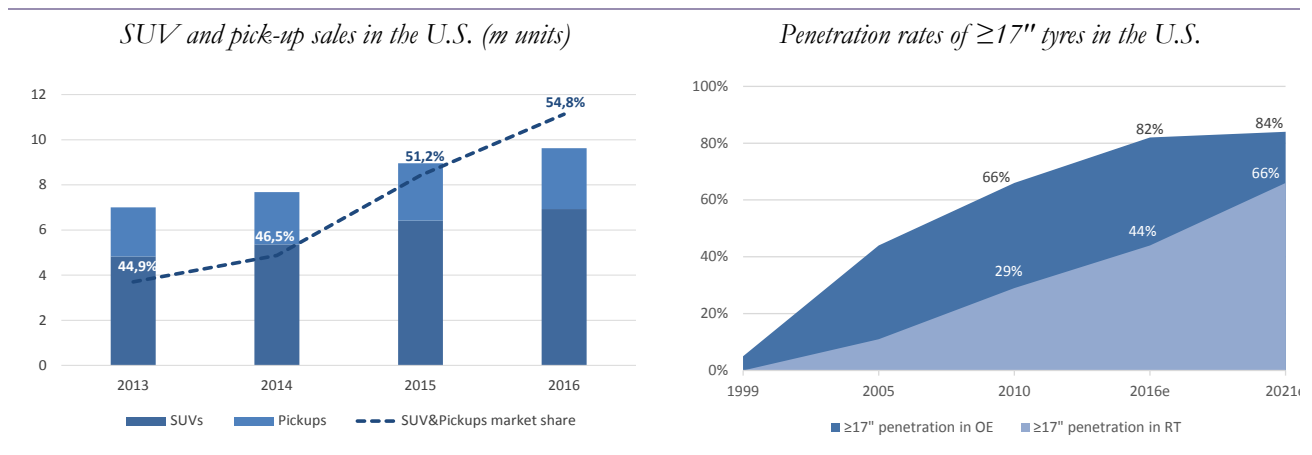
The surge in car registrations in the U.S. noted since 2010 (*+54% v. a global market at +25%*) should automatically benefit the replacement market with a **two/three year time-lag**. As such, we estimate that between **2017 and 2020, the U.S. market should grow by around 12% in volume terms** (*i.e. around 4% a year*), or 100bp more every year than the global tyre market and 150bp more than the auto market.

The U.S. currently seems to be one of the most buoyant markets for **17-inch + tyres**, given the clear cultural trend relative to Europe or China namely, the appeal of large cars (*SUVs and pick-ups*). These two segments alone represented virtually **55%** of total light vehicle sales (<6 tonnes) in the U.S. over 2016 as a whole (*i.e. more than 9.6 million vehicles*).

This product mix notably explains the current high penetration rate of large-sized tyres in the original equipment segment (*around 80%*) in the U.S. Goodyear nevertheless estimates that the rate could stagnate at around 85%, thereby associating demand for OE tyres of 17" and more to the sole growth in the SUV and pick-ups segment and no longer to the increasingly widespread use of these products in other vehicle segments. This utilisation rate for new vehicles also implies robust expansion in the replacement market for this range of tyres. Whereas these tyres accounted for barely a third of 2010 sales, **large tyres are set to drive the replacement market with a market share set to total 66% by 2021** according to Goodyear.

The U.S. market is also fairly well protected from **low-cost Asian, and especially Chinese, products via customs duties** specific to all tyre importers suspected of dumping operations. We estimate these high rates (*from 50% to more than 130% for some Chinese manufacturers*), which were recently increased by the US Trade Department, could protect pricing power for premium players (*primarily Goodyear and Michelin which have market shares of 13% and 9% of the light vehicles segment respectively via their core upscale brand*).

Fig. 21: U.S.: market now driven by the ≥17" segment



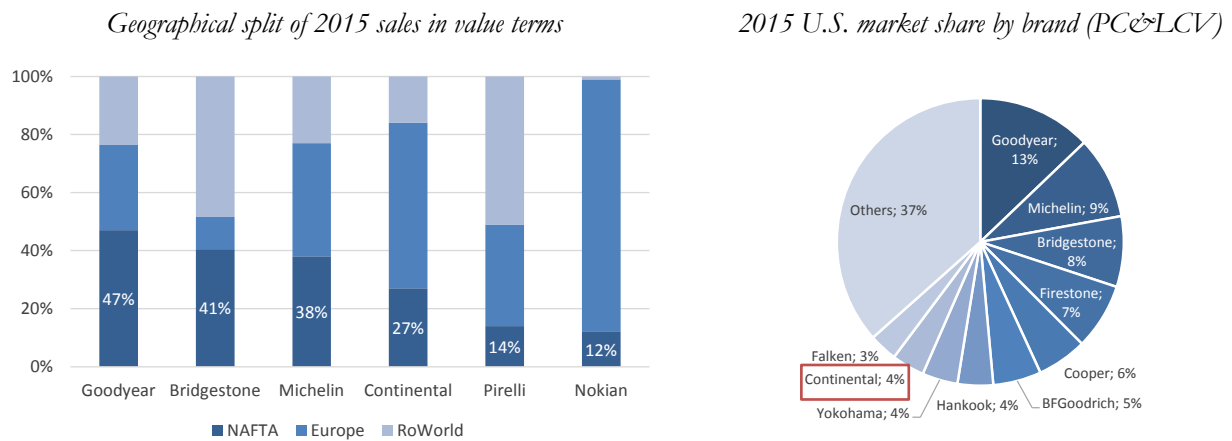
Source: Goodyear; GoodCarBadCar; Bryan, Garnier & Co ests.

In a U.S. market expected to grow and with a stronger dollar against the euro, both of which boost sales and margins, **Continental shows a sizeable lag relative to peers in terms of both industrial and commercial exposure.**

Among the four global players, Continental Tires is the group the least exposed to North America (*Canada, US and Mexico*) with just **27%** of sales generated in the region whereas exposure stands at **41%** for **Bridgestone**, **47%** for **Goodyear** and **38%** for **Michelin**. In absolute value terms, Continental only had tyre sales of **EUR2.8bn** in North America, vs. **EUR7.1bn** for **Goodyear**, **EUR8bn** for **Michelin** and **EUR9.9bn** for **Bridgestone** (*by converting local currencies into euros*), or three times less than the top three global players in the sector.

Looking at the visibility of Continental's brands, only two brands had market share of more than 1% in replacement volumes in 2015, with Continental (4% market share in passenger cars, 1.5% in light commercial vehicles) and its mid-range brand General Tire (3% market share in PC, 5% in LCV).

Fig. 22: Under-exposure to the U.S. market



Source: ModernTireDealer; Companies Data; Bryan, Garnier & Co ests.

Despite Continental's "Vision 2025" plan which is targeting **8m units** in additional annual capacity in passenger cards and **400k** in trucks by 2018 in the U.S., and reflects the group's stated aim to make up its lag in the US, **we do not expect the group to benefit in full from potential in the U.S. market.** To demonstrate this, in our model, we have factored in a **CAGR of around 2% between 2016 and 2021e for Continental Tires** on a global level whereas the replacement market for 17" tyres is expected to show a CAGR of **12%** over the same period in the U.S. **The group is unlikely to benefit from this growth potential contrary to its rivals Goodyear, Bridgestone and Michelin.**

6.2. Recovery in specialty tyres of little benefit to Continental

Based on the detailed sales by segment published by Continental Tires until 2012, we estimate its share of sales generated in commercial vehicles (*trucks, motorbikes and specialty machinery*) at around **20%**, such that it has historically little exposure to the industrial and specialty tyres market. In this sub-segment of specialty machinery, the range of customers remains low with Continental, Barum and General Tire tyres mainly equipping only farm, construction and lifting vehicles.

The group seems to be entirely absent from the mining sector, notably because this very specific business is controlled by a **duopoly consisting of Japanese group Bridgestone and French group Michelin**. The very complex nature of these tyres (*measuring up to four metres in diameter and 1.48m in width, subject to very high yields and extreme conditions, requiring a lifespan as long as possible*), combined with demanding customers, explains the high profitability of the segment (*more than 30% EBIT margin*).

In Q4 2013, following a slowdown in demand for ores due to a decline in Chinese consumption, companies in the sector (*Rio Tinto, BHP, Vale*) entered a significant stock rundown phase, which has dented sales and margins in the segment. The phase seems to be behind us (*end to stock rundowns in Q4 2016*) thereby implying, in view of the spending undertaken by major groups in the sector and the recent increase in raw materials prices, an improvement in mining tyre demand as of 2017 in favour of the leaders Michelin and Bridgestone.

Fig. 23: Sales of mining players (USDbn) and tyres for the mining tyre



Source: Company data; IBES; Bryan, Garnier & Co ests.

However, we **regret the absence of Continental Tires in the mining segment, which is set to grow in value terms at a CAGR of 6% over 2016-2020e.**

As such, investor attention is likely to focus more this year on the difference in growth generated between **Continental** and other players better positioned to make the most of the rebound in the mining sector such as **Michelin**. Differences in EBIT margin improvement are also likely to be

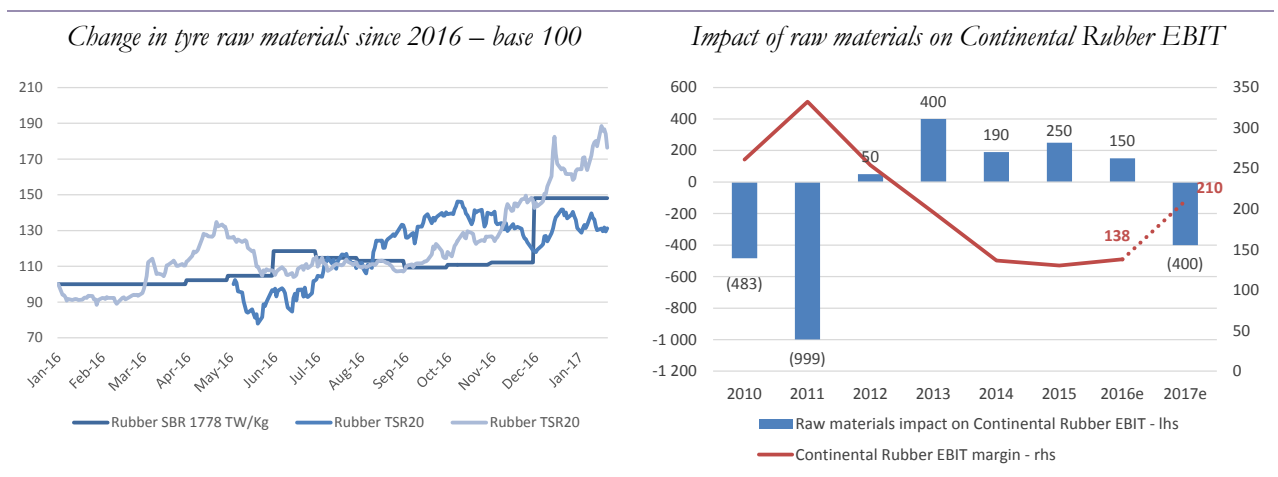
noticed. As an indication, in our report initiating coverage of Michelin (*“Heading for a margin of 13%, and then what?”*), we estimate that a **5pp** improvement in the mining market should have a **10bp** impact on the group's EBIT margin.

Continental is indeed present in the oil and mining sectors that are closely correlated to raw materials, via **ContiTech**, which essentially provides rubber derived conveyor belts to mining groups. However, **exposure in terms of sales is limited** given that ContiTech only generates 18% of its sales in the oil-mining segment (*representing 6% of the rubber division and 2.5% of the Continental group*). **The impact on profitability is likely to be even smaller** if we take account of the fact that ContiTech historically generates (*before the takeover of Veyance Technologies in 2015*) EBIT margin of 11-12%, well below the level that could be generated on tyre sales in the segment (*more than 30%*).

6.3. Heading for a hike in raw materials prices

We are now entering a period of **sharp increase in raw materials prices** (*rubber prices doubled over one year*) given the stronger demand for rubber, especially from China. With rubber accounting for around **60% of the production cost for tyres** for a player more focused on the upscale segment, it is clear that the uptrend started in 2016 is set to become a **major issue for margins at tyre-makers in 2017**.

Fig. 24: Rubber prices picking up since early 2016



Source: Datastream; Bryan, Garnier & Co ests.

Even if this hike in raw materials prices should restore a certain advantage at Continental relative to its low-cost Asian rivals whose cost structures are more sensitive to changes in raw materials, the group's margin is nevertheless expected to come under pressure in coming years. In view of its positioning, the group should pass part of the increase onto end clients via a rise in end prices. **We are forecasting an increase in prices in the entire rubber division of around 3% for 2017 and 1.5% for 2018.**

Reflecting directly the rise in raw materials costs, the start of 2017 is likely to be difficult bearing in mind that the price increases applied to offset the raw materials impact are taking place gradually and with a time-lag. As such, over 2017 as a whole, the group expects a **negative impact of EUR400m on EBIT margin in its rubber division**, stemming from a natural rubber price that should rise from EUR138/100kg on average over 2016 to EUR210/100kg in 2017.

Continental

These expectations contrast with what has been seen in recent years. The positive impact of raw materials represented an average of **9%** of margin generation at Continental Rubber over 2012-2016e. We therefore expect a decline in EBIT margin at **Continental Rubber to 15.4%** in 2017e and **16.1%** in 2018e (*vs. 16.6% for 2016e*) with headwinds that the group cannot fully pass on or not immediately.

7. Whereas the auto division remains weakened in the short term by the aim to innovate

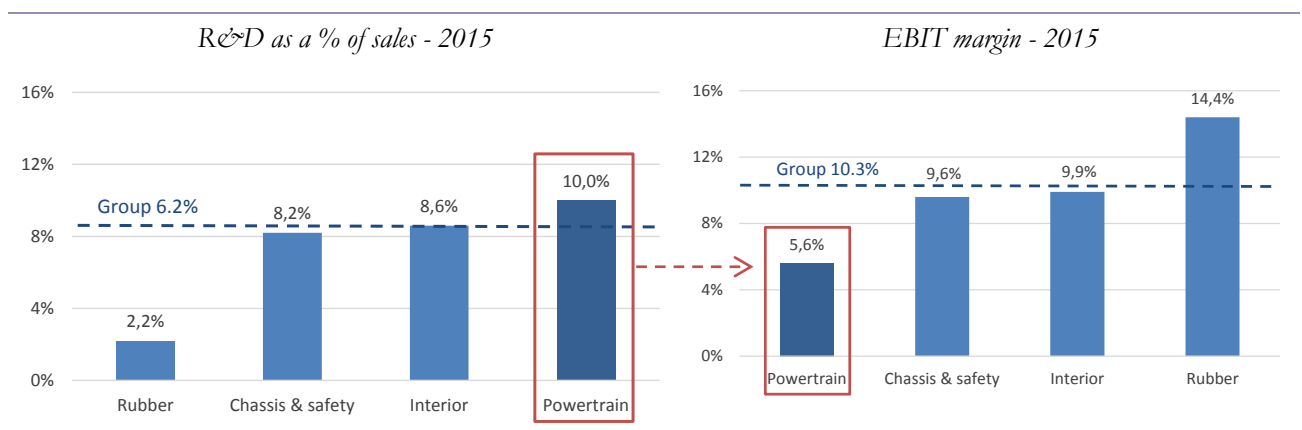
7.1. The powertrain business continues to weigh on the group's margin

With an average **EBIT margin more than 500bp lower** than that in the Continental Automotive division **since 2010** and with an even more noticeable lag relative to the Continental group margin (*more than 800bp*), the **Powertrain** business (*Continental Powertrain*) has the lowest margin in the group at **5.6%** in 2015.

This business is specialised in the development of powertrain components, systems to control polluting emissions and components destined to integrate engines. At present, it seems fairly unprofitable for Continental for two reasons: the **hefty R&D spending** it requires, and the **lack of volumes necessary to cover development costs for new products**. After adjusting Continental Powertrain's adjusted EBIT margin for hybrid and electric products, the margin works out to **8.2% vs 6.1%** initially.

Indeed, development of powertrain components and systems for new hybrid and electrical vehicles requires huge investment spending (*10% of sales spent on R&D in the powertrain business vs. 8.9% for the Continental Automotive division and 6.2% for Continental Group*). At the same time, these new products are struggling to find immediate profitability given the lack of sales volumes (*sales of EUR135m in 2015 for adjusted EBIT of -EUR135m*). Around **10%** of new orders in the powertrain business concerned products destined for hybrid and electric vehicles as of 31st December 2015.

Fig. 25: Hefty R&D spending taking a toll on margins



Source: Continental; Bryan, Garnier & Co ests.

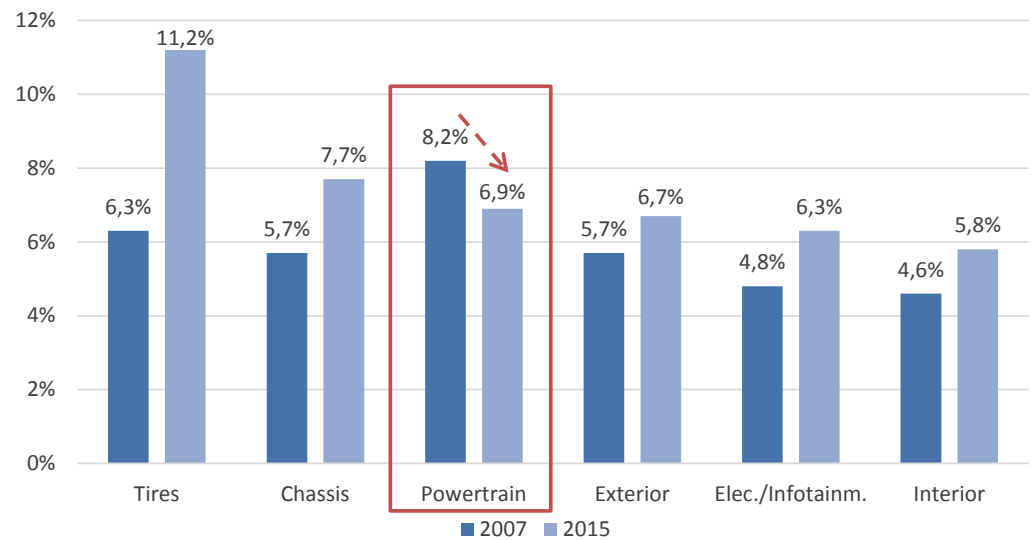
Commercial development of the hybrid and electric segment in new car registration therefore remains restricted by the **overly high price** of models, and to a lesser extent by the still **low level of autonomy** of the vehicles to attract customers that live outside cities.

Note that we estimate that the **cost of producing a plug-in hybrid vehicle category C is double that of a petrol thermic car, while a fully electric car costs more than 2.5x to make.**

These factors mean that electric cars are still marginal in new car registrations (~1% for the BEV and 2-3% for hybrid cars) and are growing at a slower pace than many players in the sector expected. As an example, in 2014, Continental and South-Korean player SK Innovation ended their joint-venture to produce lithium-ion batteries. At the time, the group stated that the market was less buoyant than it had initially expected.

In the auto industry, powertrain is the only business that has seen margins deteriorate over recent years (6.9% EBIT margin in 2015 vs. 8.2% in 2007). This deterioration reflects a more intense competitive backdrop, high pressure on margins from new players entering the segment as well as hefty investments in innovation.

Fig. 26: EBIT margins generated in the auto industry



Source: Roland Berger; Bryan, Garnier & Co ests.

We therefore estimate that the **EBIT margin generated by the powertrain business should remain structurally lower than the auto division margin, by 200-300bp, to reach 8% in 2020 (at the low-end of the 8-10% guidance announced by Continental).**

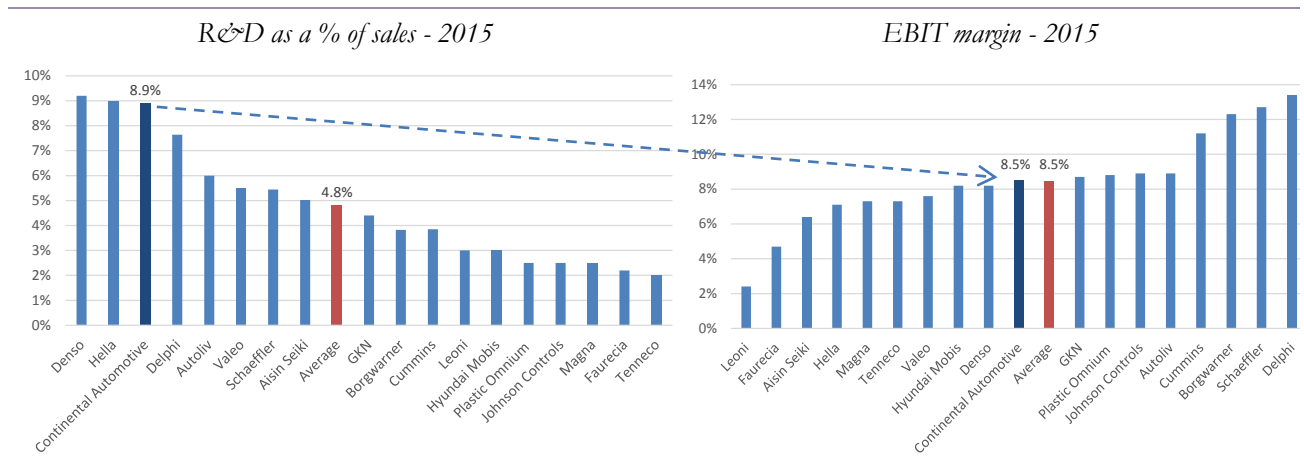
Note that management only expects products for hybrid and electric vehicles to break even in **2019**.

7.2. Status as a precursor in innovation taking a toll on short-term profitability

From a wider perspective than just powertrain, the profitability of the Continental Automotive division as a whole is currently penalised by the group's aim to innovate, especially in connected, autonomous and electric vehicles as described in section 4.2. "A solid positioning in long-term sector trends".

Continental Automotive is one of the car components suppliers that spends the most on R&D in terms of percentage of sales (8.9%), or virtually **double the sector average**, which stood at 4.8% in 2015. In contrast, Continental's division barely generates the sector average in terms of EBIT margin at 8.5%.

Fig. 27: Innovation to the detriment of EBIT margin



Source: Company Data; Bryan, Garnier & Co ests.

For the short term, we do not believe that Continental is capable of optimising resources allocated to R&D and improve the rate of R&D expenses passed on to carmakers. These innovation expenses are above all focused on the powertrain business (*more than EUR700m in 2015*), which develops products in a very competitive segment (*with an increasing number of new entrants*) and with very low volumes, **thereby reducing Continental's operating leverage.**

This strategy focused on innovation is currently weighing on the margin but should nevertheless boost sales growth and pricing power over the longer term.

R&D investments in the automotive division should therefore reach **9.2% of sales in the division by 2017** to then **stabilise at around 9%**. This level is still far higher than the sector average and of other parts suppliers also focused on innovation such as **Valeo (5.5%)** and **Autoliv (6%)**.

8. Our estimates

Our model for Continental includes auto production estimates of **+2.4%** for 2017 and 2018 for the original equipment passenger car and light utilities segment (*OE PC*), which accounts for **5%** of the group's sales. We then expect market growth of around **+2%** for 2019-25.

Fig. 28: Continental – P&L statement - EURm

	2012	2013	2014	2015	2016e	2017e	2018e	2019e	2020e
Revenues	32 736	33 331	34 506	39 232	40 532	43 015	44 873	46 829	48 888
Change (%)	7,3%	1,8%	3,5%	13,7%	3,3%	6,1%	4,3%	4,4%	4,4%
Adjusted EBITDA	4 855	5 095	5 134	6 001	6 180	6 440	6 960	7 318	7 748
EBIT	3 073	3 264	3 345	4 054	4 081	4 321	4 747	5 007	5 338
Change (%)	18,3%	6,2%	2,5%	21,2%	0,7%	5,9%	9,9%	5,5%	6,6%
Financial results	(407)	(804)	(265)	(246)	(82)	(119)	(147)	(144)	(139)
Pre-Tax profits	2 667	2 459	3 080	3 809	3 999	4 202	4 600	4 863	5 199
Exceptionals	(16)	(342)	(507)	(568)	(527)	(559)	(583)	(609)	(636)
Tax	(699)	(450)	(622)	(1 090)	(1 120)	(1 177)	(1 288)	(1 362)	(1 456)
Profits from associates	0	0	0	0	0	0	0	0	0
Minority interests	(84)	(87)	(82)	(52)	(55)	(58)	(60)	(63)	(65)
Net profit	1 884	1 923	2 375	2 727	2 885	3 028	3 312	3 499	3 738
Restated net profit	1 884	1 923	2 375	2 727	2 885	3 028	3 312	3 499	3 738
Change (%)	51,6%	2,1%	23,5%	14,8%	5,8%	5,0%	9,4%	5,6%	6,8%

Source: Continental; Bryan, Garnier & Co ests.

Fig. 29: Continental – Cash flow statement - EURm

	2012	2013	2014	2015	2016e	2017e	2018e	2018e	2018e
Operating cash flows	3 784	3 722	4 168	4 854	4 373	3 713	3 991	4 180	4 431
Change in working capital	226	64	(124)	134	631	(77)	(50)	(75)	(72)
Capex, net	(2 081)	(2 024)	(2 110)	(2 265)	(2 276)	(2 628)	(2 748)	(2 855)	(2 968)
Financial investments, net	(93)	(154)	(129)	(1 257)	0	0	0	0	0
Dividends	(350)	(513)	(546)	(713)	(750)	(865)	(908)	(994)	(1 050)
Other	(406)	(1 384)	(185)	(2 304)	27	29	30	31	33
Net debt	5 320	4 289	2 824	3 542	2 167	1 919	1 555	1 191	745
Free Cash flow	1 704	1 698	2 058	2 589	2 098	1 085	1 242	1 326	1 463

Source: Continental; Bryan, Garnier & Co ests.

Fig. 30: Continental – Balance sheet - EURm

	2012	2013	2014	2015	2016e	2017e	2018e	2018e	2018e
Tangible fixed assets	7 391	7 728	8 446	9 539	9 635	10 057	10 503	10 953	11 413
Intangibles assets	945	558	443	1 687	1 785	1 885	1 989	2 096	2 206
Cash & equivalents	2 397	2 045	3 244	1 622	2 996	3 245	3 609	3 972	4 418
current assets	11 764	11 251	13 318	13 169	14 248	15 157	16 008	16 906	17 908
Other assets	4 840	5 239	4 790	6 819	5 501	5 345	5 047	4 754	4 384
Total assets	27 338	26 821	30 241	32 836	34 165	35 689	37 155	38 681	40 330
L & ST Debt	8 253	6 638	6 432	5 245	5 245	5 245	5 245	5 245	5 245
Others liabilities	9 940	10 861	12 785	14 377	14 759	15 397	15 874	16 376	16 906
Shareholders' funds	8 767	9 011	10 672	12 786	13 707	14 563	15 523	16 515	17 602
Total Liabilities	27 338	26 821	30 241	32 836	34 165	35 689	37 155	38 681	40 330
Capital employed	19 244	18 663	18 663	19 985	23 331	22 985	23 759	24 486	25 254

Source: Continental; Bryan, Garnier & Co ests.

Fig. 31: Continental – Ratios - %

Ratios	2012	2013	2014	2015	2016e	2017e	2018e	2018e	2018e
Operating margin	9,4%	9,8%	9,7%	10,3%	10,1%	10,0%	10,6%	10,7%	10,9%
Tax rate	26,2%	18,3%	20,2%	28,6%	28,0%	28,0%	28,0%	28,0%	28,0%
Net margin	5,8%	5,8%	6,9%	7,0%	7,1%	7,0%	7,4%	7,5%	7,6%
ROE (after tax)	21,5%	21,3%	22,3%	21,3%	21,0%	20,8%	21,3%	21,2%	21,2%
ROCE (after tax)	23,5%	25,6%	23,9%	24,3%	25,0%	25,3%	26,6%	26,9%	27,6%
Gearing	58%	46%	26%	27%	16%	13%	10%	7%	5%
Pay-out ratio	23,9%	26,0%	27,4%	27,5%	30,0%	30,0%	30,0%	30,0%	30,0%
Number of shares, diluted	200	200	200	200	200	200	200	200	200

Source: Continental; Bryan, Garnier & Co ests.

Fig. 32: Continental – Per share data - EUR

	2012	2013	2014	2015	2016e	2017e	2018e	2018e	2018e
EPS	3,14	3,21	3,96	4,55	14,42	15,14	16,56	17,49	18,69
Restated EPS	3,14	3,21	3,96	4,55	14,42	15,14	16,56	17,49	18,69
% change	51,6%	2,1%	23,5%	14,8%	217,3%	5,0%	9,4%	5,6%	6,8%
EPS bef. GDW	3,14	3,21	3,96	4,55	14,42	15,14	16,56	17,49	18,69
BVPS	14,61	15,02	17,79	21,31	68,53	72,82	77,61	82,57	88,01
Operating cash flows	18,9	18,6	20,8	24,3	21,9	18,6	20,0	20,9	22,2
FCF	2,8	2,8	3,4	4,3	10,5	5,4	6,2	6,6	7,3
Net dividend	0,75	0,83	1,08	1,25	4,33	4,54	4,97	5,25	5,61

Source: Company Data; Bryan, Garnier & Co ests.

9. Not attractively valued

As for **Faurecia**, **Hella**, **Michelin**, **Plastic Omnium** and **Valeo**, we have valued **Continental** using two methods: 1/ **historical multiples**, and 2/ **DCF**. In all, the combination of the various methods (*three Fair Values stemming from multiples and one FV from DCF, with a weighting of 25% for each method*) implies a **FV of EUR172** per share for **Continental**, in turn implying **>9%** downside risk relative to the recent share price. We have also valued the group via an SOTP calculation (*FV of EUR187*), but have not included it in our final FV calculation in order to remain coherent with the way we have valued other stocks in the sector.

Fig. 33: Continental – FV @ EUR172

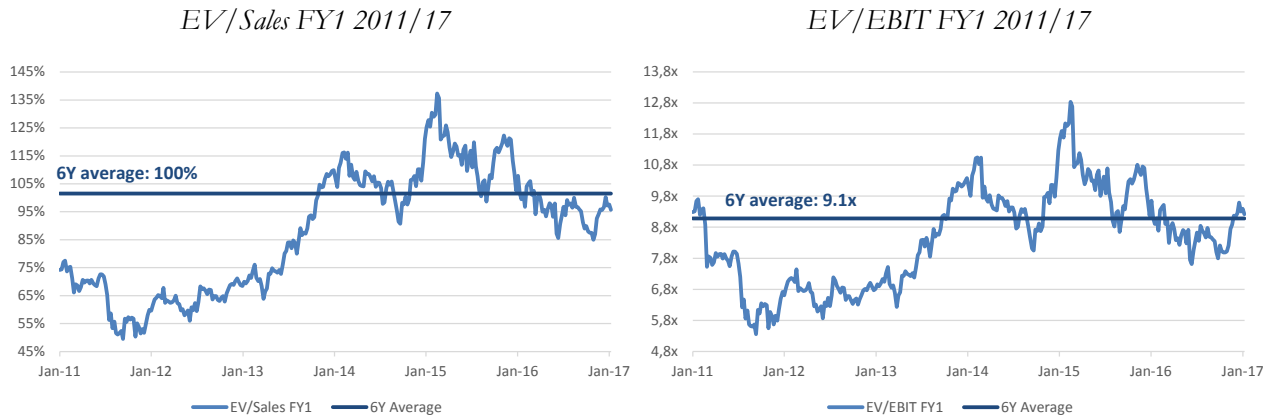
Continental - FV overview	Multiples	FV
EV/Sales (2017-26) - 25%	108%	EUR165
EV/EBIT (2017-26) - 25%	9.5x	EUR159
P/E (2017-26) - 25%	13.5x	EUR172
DCF model (2017-26) - 25%		EUR191
o/w WACC	8.5%	
o/w LTG	2.5%	
o/w Average EBIT margin	11.3%	
o/w LT EBIT margin	10.5%	
Implied FV		EUR172.0
Current price		EUR189.0
Upside		-9%

Source: Bryan, Garnier & Co ests.

9.1. Valuation using multiples

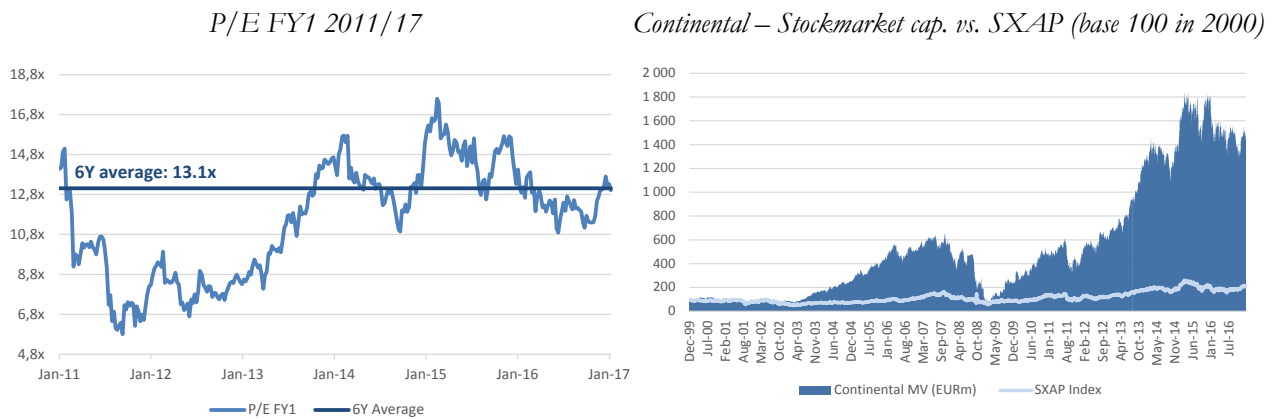
We have used the group's historical **EV/sales**, **EV/EBIT** and **P/E** multiples to value **Continental**. Our three FVs are calculated over 2017-2026 (*discounted by WACC each year*) and work out to **EUR166**, **EUR159** and **EUR172**. We value Continental on multiples of **108% sales**, **9.5x EBIT** and **13.5x P/E**, which imply **zero premium** relative to the group's historical multiples (*100% of sales, 9.5x EBIT and 13.5x P/E*) given that the group's profitability over 2017-16 is only slightly higher than the average generated over 2006-16.

Fig. 34: Continental – Historical multiples (EV/sales FY1, EV/EBIT FY1) – 2011/17



Source: Datastream; Bryan, Garnier & Co ests.

Fig. 35: Continental – Historical multiples (P/E FY1) – 2011/17



Source: Datastream; Bryan, Garnier & Co ests.

9.2. DCF valuation

We also value **Continental** at **EUR191** via DCF, based on the following estimates:

- **WACC** of **8.4%** (risk-free rate of 1.6%, risk premium of 7%, beta of 1.12)
- A **growth rate to infinity of 2.5%**, implying a **100bp** outperformance of **Continental** relative to the automotive market (+1.5%). In comparison, we have assumed **1.8%** in our model for Michelin and **2.8%** for Valeo.
- **EBIT margin** (*with restructuring and without joint ventures*) of **11.0%** on average and a margin to infinity of **10.5%**.

Fig. 36: Continental – DCF estimates - EURm

	2017e	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e	2026e
Revenues - Core business	43 015	44 873	46 829	48 888	50 354	51 873	53 447	55 077	56 766	58 516
Revenue Growth Rate	0,0%	4,3%	4,4%	4,4%	3,0%	3,0%	3,0%	3,0%	3,1%	3,1%
Operating Margin	9,9%	10,4%	10,6%	10,8%	11,0%	11,1%	11,3%	11,5%	11,6%	11,8%
EBIT (excluding associates & including restructuring charges)	4 261	4 687	4 947	5 278	5 527	5 783	6 048	6 324	6 611	6 908
Adjustment for provisions	55	41	43	45	32	33	35	36	37	39
(-) Taxes on EBIT	(1 193)	(1 312)	(1 385)	(1 478)	(1 548)	(1 619)	(1 694)	(1 771)	(1 851)	(1 934)
(+/-) Movements in working capital	(77)	(50)	(75)	(72)	(50)	(52)	(54)	(56)	(57)	(60)
(+) Depreciation and amortization	2 120	2 213	2 311	2 410	2 511	2 604	2 690	2 771	2 850	2 926
(-) Capital Expenditures	(2 542)	(2 659)	(2 761)	(2 870)	(2 932)	(2 996)	(3 061)	(3 127)	(3 196)	(3 266)
(-) Intangibles	(86)	(90)	(94)	(98)	(101)	(104)	(107)	(110)	(114)	(117)
Free Cash Flow	2 537	2 830	2 986	3 215	3 439	3 649	3 858	4 068	4 280	4 496
Present Value of Free Cash Flow	2 341	2 409	2 345	2 329	2 299	2 251	2 195	2 135	2 073	2 009

Source: Bryan, Garnier & Co ests.

Fig. 37: Continental – DCF @ EUR191

PV of Free Cash Flows	22 385
PV of Terminal Value	22 176
EV implied - EURm	44 561
- Net financial debt (N-1) - EURm	2 800
- Pensions Liabilities (N-1) - EURm	3 533
- Minority Interest value - EURm	657
+ Financial assets - EURm	720
Value of Equity	38 292
Value of Equity per share	191

Source: Bryan, Garnier & Co ests.

9.3. SOTP valuation

In order to fully assess the differences **in growth, margin and valuation in the various segments in which the group is present**, we also value **Continental** via SOTP. However, this method only serves to verify that the group's hybrid profile (*mix between a components supplier and a tyre-maker*) is fully valued by the other valuation methods and is therefore not used in our FV calculation. We prefer to remain coherent in the way we value the stocks followed in the sector.

Our SOTP points to a **FV of EUR187** for Continental, representing a difference of **9%** relative to our official FV of **EUR172**. Note that we have not factored in a **holding company/conglomerate discount** whereas it could be legitimate to apply one in view of the group's profile. In order to play the market transformation, it could be smarter to play a pure components maker such as **Valeo** whereas to play the resistance of the tyre market, investors could choose **Michelin**.

The FV yielded by our SOTP confirms our stance that the share does not offer any genuine upside for investors in the short term.

We have identified the group's various rivals in its five businesses in order to use sector multiples in our SOTP.

- **Chassis & Safety:** in this segment, the group's main competitors are **Bosch** (*not listed*), **TRW** (*not listed*), **Autoliv** and **Valeo**.
- **Powertrain:** in this segment, the group's main competitors are **Bosch** (*not listed*), **Delphi** and **Denso**.
- **Interior:** in this segment, the group's main competitors are **Hella**, **Lear**, **Visteon** and **Panasonic**.
- **ContiTech:** the group's main competitors are **Bridgestone Diversified Products** (*a Bridgestone division*), **Freudenberg** (*not listed*), **Hutchinson** (*not listed*) and **Sumitomo Riko**. Note that the multiply applied when **Continental** acquired **Veyance** in 2014 was **112%** of sales (*no EV/EBIT multiples since the group had a negative margin*).
- **Tyres:** in this segment, the group's main rivals are **Bridgestone**, **Goodyear** and **Michelin**. We have also included **Nokian Tyres** in our list since the EBIT margins generated by the Finnish tyre-maker are identical to those of Continental Tyres (>20%).

For the **Chassis & Safety** segment, our panel yields a 2017e EV/EBIT multiple of **10.3x** and have therefore assumed **10.0x** in our model.

For the **Powertrain** segment, our panel yields a 2017e EV/EBIT multiple of **9.6x**. However, given that the group's rivals currently generate EBIT margin of more than **10%** vs just **5%** for Continental, we have assumed a discount in our model.

For the **Interior** segment, our panel yields a 2017e EV/EBIT multiple of **12.5x**. Without **Visteon**, which is valued at **>25x**, the multiple falls to **8.2x**.

For **ContiTech**, our panel is only made up of **Sumitomo Riko** and yields a result of **13x** EBIT. We are maintaining **9x** in our SOTP given the dilutive integration of **Veyance**.

For the **Tyres** segment, our panel yields a 2017e EV/EBIT of **8.2x**. However, given the higher profitability of Continental Tyres relative to other players, we are integrating a premium to the multiple.

Fig. 38: Continental – Peer comparison

Continental peer group	2017e EBIT margin	EV/Sales FY1	EV/EBIT FY1
Chassis & Safety	8.3%	85.9%	10.3x
Bosch		Not listed	
TRW		Not listed	
Autoliv	8.8%	94%	10.7x
Valeo	7.9%	78%	9.9x
Powertrain	10.9%	104.9%	9.6x
Bosch		Not listed	
Delphi	13.4%	129%	9.7x
Denso	8.4%	80%	9.6x
Interior	7.0%	94.5%	12.5x
Lear	8.3%	53%	6.5x
Hella	7.4%	68%	9.3x
Visteon	8.3%	211%	25.4x
Panasonic	4.0%	45%	9.0x
ContiTech	4.0%	50.0%	13.0x
Bridgestone Diversified Products		Not listed	
Freudenberg		Not listed	
Hutchinson		Not listed	
Sumitomo Riko	4.0%	50.0%	13.0x
Tires	15.7%	140.8%	8.2x
Bridgestone	16.0%	83%	5.2x
Goodyear	11.8%	78%	6.6x
Michelin	12.7%	102%	8.1x
Nokian Tyres	22.4%	300%	13.0x

Source: Datastream; Bryan, Garnier & Co ests.

Fig. 39: Continental – SOTP @ EUR188

SOTP Continental	2017e EBIT	2017e EBIT margin	EV/EBIT	Implied EV
Automotive group	1 943	7,5%	8,8x	17 115
Chassis & Safety	839	8,8%	10,0x	8 390
Powertrain	403	5,0%	6,0x	2 415
Interior	701	8,1%	9,0x	6 310
Rubber group	2 608	15,3%	10,9x	28 508
ContiTech	512	9,0%	9,0x	4 607
Tires	2 173	19,4%	11,0x	23 901
Intragroup	(230)	-	9,5x	-2 181
Implied Continental EV	4 321	10,0%	10,1x	43 442
- Net financial debt (2017e) - EURm	2 552			
- Pensions Liabilities - EURm	3 533			
- Minority Interest value - EURm	690			
+ Financial assets - EURm	720			
Continental implied Equity value	37 387			
Shares outstanding	200			
Implied FV	187			
Price	189			
Up/Downside	0%			

Source: Bryan, Garnier & Co ests.

10. Continental – SWOT

Fig. 40: Continental – SWOT analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> • Second-largest auto parts supplier behind Bosch. • Tyre business generating high margins (49% of group EBIT for 26% of total sales). • Premium positioning in the tyre segment (>10-20% price gap relative to other players in the segment). • Expertise in the three major auto sector trends (connected, autonomous, electric vehicles). A leader in the ADAS segment. • Production tools highly exposed to low labour cost regions favouring margins. • Management of two complementary businesses in terms of customers (auto parts and rubber derivative products). 	<ul style="list-style-type: none"> • Powertrain business weighing considerably on the auto division margin. • Tyre business not very present in Asia (13% of sales in the segment) and in China. • A margin under pressure in the short term penalised by higher R&D spending than the rest of the sector (8.9% of auto sales vs. 4.7% for auto parts suppliers). • Limited margin improvement potential in the rubber division (under-exposure to the U.S., to the specialty tyre business and scissors effect stemming from hikes in raw materials prices). • An unattractive valuation: 2017 PEG of 2.2x and 2018 PEG of 1.14 vs. respectively 0.9 and 0.8 for Michelin. • A lower pay-out rate than other tyre-makers (30% for Continental vs. 35% for Michelin).
Opportunities	Threats
<ul style="list-style-type: none"> • Integration of Veyances Technologies at ContiTech to benefit from the recovery in the mining sector. • Setting up of customs barriers in Europe vs. imports of low cost tyres from China. • Cost structure less sensitive than low-cost Asian players to a hike in natural rubber prices. 	<ul style="list-style-type: none"> • Sensitivity of sales to a slowdown in auto production (<i>more than 70% of sales concerned</i>). • Reduction in subsidies underpinning development of electric vehicles. • Momentum in rival Asian tyre-makers moving upscale while benefiting from cheaper manual labour. • Momentum in car-as-a-service likely to take the replacement tyre market towards BtB to the detriment of margins.

Source: Bryan, Garnier & Co ests.

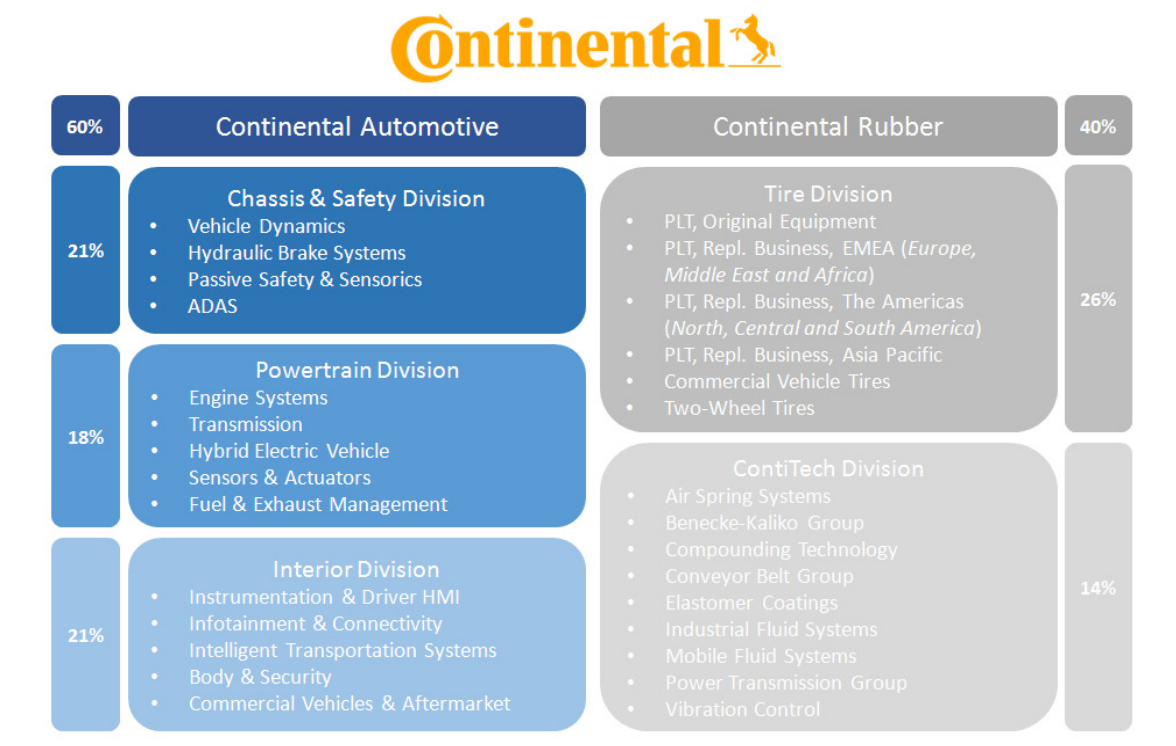
11. Continental in short

11.1. A brief history

Created in **1871** in **Hannover** as "Continental-Caoutchouc- und Gutta-Percha Compagnie" the German industrial company firstly positioned itself in the very specialised market of bicycle tyres. It was not until **1898** that Continental started to develop expertise in the automotive industry before taking on a new dimension as of the 1920s following a wave of mergers with other major players in the rubber industry and becoming "Continental Gummi-Werke AG". In **1995**, the group bought a division specialised in automotive systems in order to strengthen its commercial position with German carmakers. Combined with numerous takeovers of tyre-makers and car components suppliers throughout the world and more specifically in the U.S., Europe and Japan, this strategy enabled **Continental** to move up to **no. 2 position** in the global ranking of car components players behind German group Bosch. In **2008**, Continental was the object of a **hostile takeover bid** by German parts maker **Schaeffler**, which succeeded in owning up to **90%** of the capital given the extensive use of debt. Schaeffler now only has a **46%** stake in the group and in **2014**, ended the initial shareholding agreement that planned for a gradual merger of the two German groups.

The company is now divided into **two segments**: **Continental Automotive**, which houses the technological and electronic businesses associated with car manufacturing (*chassis, powertrain and interior systems*) and which represents **60%** of the group's sales, and **Continental Rubber**, which houses the tyre production and rubber recycling businesses for **40%** of sales.

Fig. 41: Breakdown of Continental sales by business/division (% of total group sales)



Source: Continental; Bryan, Garnier & Co ests.

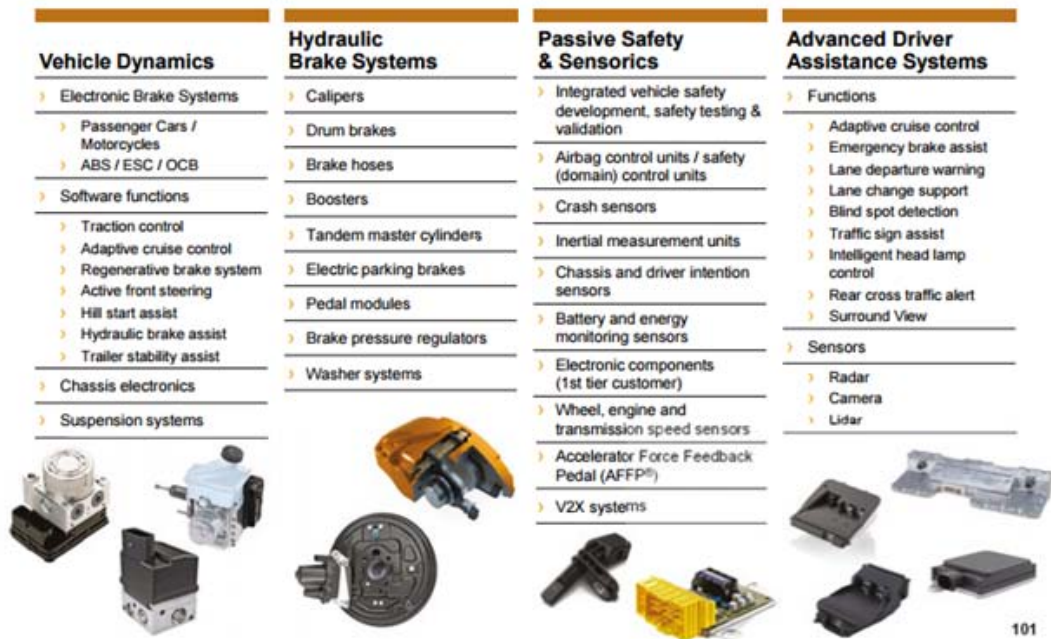
11.2. Continental Automotive – 60% of group sales and 50% of EBIT

11.2.1. Chassis and safety– 21% of group sales and 19% of EBIT

The **Chassis and Safety division** is entirely dedicated to original equipment via carmakers and focused on the development and production of smart and integrated systems in order to make future vehicles safer. With almost **EUR8.45bn** in sales in 2015 in this business, **Continental** is one of the three leaders, in competition with **Bosch** and **TRW**.

Four types of products are addressed: **1/ all electronic items and components in hydraulic brake systems** such as drum brakes, boosters and brake pedals, **2/ passive safety** and associated sensors with airbag commands, crash detection sensors, engine, speed and transmission sensors, **3/ vehicle dynamics** via electronic brake systems for passenger cars and motorbikes, suspension systems, chassis electronics and transmission assistance software such as adaptive cruise control, braking assistance and active direction, **4/ ADAS**, i.e. adaptive cruise control, emergency brake assist, blind spot detection, adaptive head-lamps or lane change support systems developed jointly with vehicle dynamics by incorporating different types of sensors ranging from radars to lidars and cameras.

Fig. 42: Continental – main products in the Chassis & Safety business



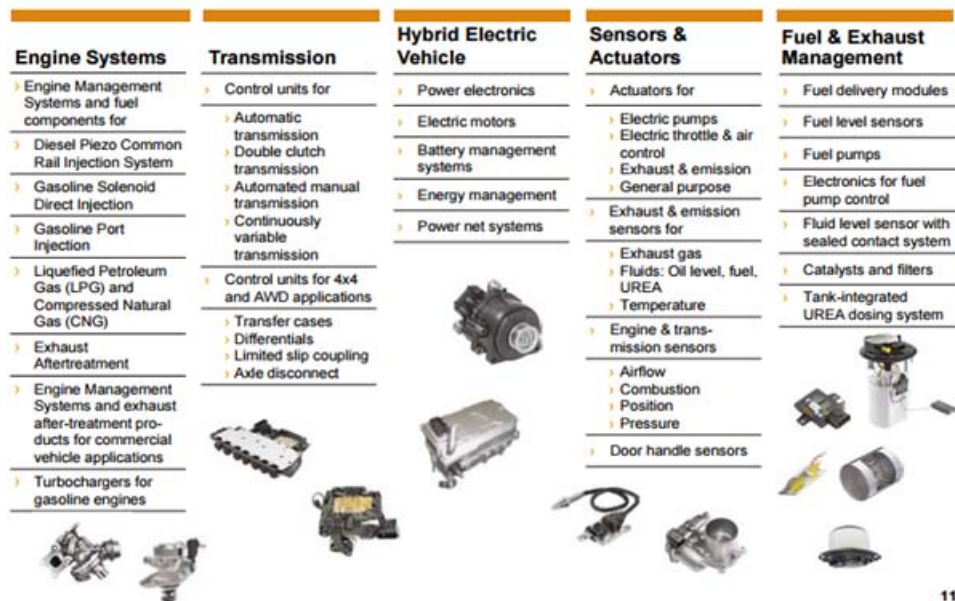
Source: Continental

11.2.2. Transmission – 18% of group sales and 9 % of EBIT

Via the **Transmission division**, Continental develops and produces a wide range of systems and components destined for use in engines and transmission systems for thermic, hybrid and electric vehicles. Carmakers are the first targets and represent virtually all of the **EUR7.1bn** in sales generated by Continental in the segment. In this very fragmented market, **Continental** is up against **Delphi**, **Denso** and **Bosch** in particular.

Continental offers five product ranges: **1/ thermic engine systems** (*turbo chargers, starters, fluid injection ports*), **2/ transmission systems** notably with automatic transmission commands, double clutch transmission, manual transmission, continuously variable transmission, differentials and axel disconnect, **3/ hybridation** systems where electric motors, battery and energy management systems account for a dominant share, **4/ actuators and sensors** for pumps, exhaust and emission systems, air conditioning also associated with transmission, the engine and door handles, **5/ management of fluids and emissions** via fluid delivery modules, pumps, catalysts and particle filters as well as UREA dosing systems.

Fig. 43: Continental – main products in the Transmission business



Source: Continental

11.2.3. Interior – 21% of group sales and 19% of EBIT

Continental's **interior** division highlights a range of products for vehicle interiors as well as commercial vehicles and replacement. The group generates more than **EUR8.1bn** in sales, the majority of which is focused on carmakers whereas the replacement market represents just **9%** of sales in the division. **Denso** and **Bosch** are the main sources of competition for Continental in this business.

Continental's offer in this division covers five fields: **1/ instrumentation and Human Machine Interface** which covers instruments clusters, display solutions, control panels, interior cameras and cockpit modules, **2/ infotainment and connectivity** via radios, multimedia systems, telematic systems, software and connectivity solutions, **3/ intelligent systems destined for transport**, including commercial fleet management systems, maintenance management and embedded payment solutions for toll roads for example, **4/ interior structures and closing systems** notably with access control, door closing and seat comfort systems and various control modules present in the cockpit and finally, **5/ systems for commercial vehicles such as** telematics, the Human Machine Interface and electronic components present in the chassis and transmission, as well as **spare parts, diagnostics services and tools** for the aftermarket.

Fig. 44: Continental – main products in the Interiors segment



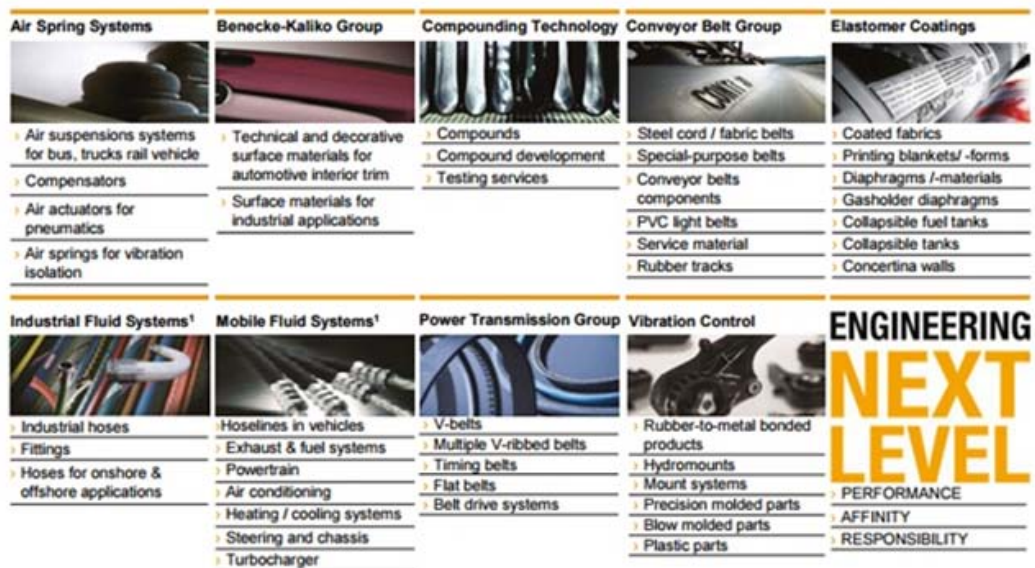
Source: Continental

11.3.2. ContiTech – 14% of group sales and 4% of EBIT

The ContiTech division is a specialist in **rubber and plastic technology**: the subsidiary develops and produces modules, components and systems for machines and engineering installations. Two types of client are targeted via this business. Firstly, the **automotive industry**: the transmission belt, the timing belt, decorations and interior mouldings, and other industries such as aerospace, agriculture, agri-food, mining, printing and rail and sea transport. Half of the division's sales concern components and systems for the OE market whereas the other half is generated in the replacement market.

ContiTech has gained a new dimension since it acquired US player **Veyance Technologies** at the start of 2015 for **EUR1.4bn**, lifting the division to the **world no. 1 position** in the rubber industry (*excluding tyres*). Following this acquisition, ContiTech generated sales of around **EUR5.4bn** in 2015, ahead of **Bridgestone** and **Freudenberg** which are the two other leaders in this field.

Fig. 46: Continental – main products in ContiTech segment



Source: Continental

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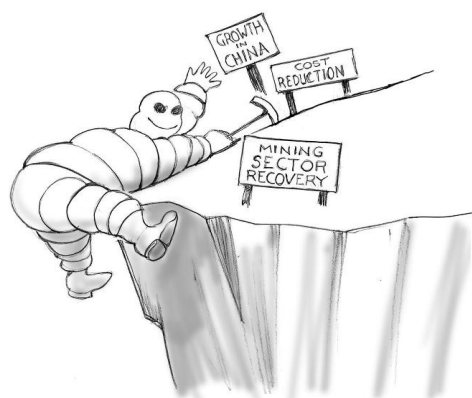
INDEPENDENT RESEARCH

8th February 2017

Automotive

Bloomberg	ML FP
Reuters	MICP.PA
12-month High / Low (EUR)	106.9 / 78.4
Market capitalisation (EURm)	18,403
Enterprise Value (BG estimates EURm)	23,523
Avg. 6m daily volume ('000 shares)	487.1
Free Float	78.7%
3y EPS CAGR	18.4%
Gearing (12/15)	11%
Dividend yields (12/16e)	2.88%

YE December	12/15	12/16e	12/17e	12/18e
Revenue (EURm)	21,199	20,676	22,014	22,975
EBIT(EURm)	2,577	2,667	2,725	3,037
Basic EPS (EUR)	6.04	8.07	8.88	10.03
Diluted EPS (EUR)	6.04	8.07	8.88	10.03
EV/Sales	1.13x	1.14x	1.06x	0.98x
EV/EBITDA	6.1x	5.8x	5.6x	5.0x
EV/EBIT	9.3x	8.8x	8.6x	7.4x
P/E	16.9x	12.7x	11.5x	10.2x
ROCE	9.3	9.9	9.9	10.8



Michelin

Heading for a margin of >13%, and then what?

Fair Value EUR118 (price EUR102.20)


NEUTRAL
Coverage initiated

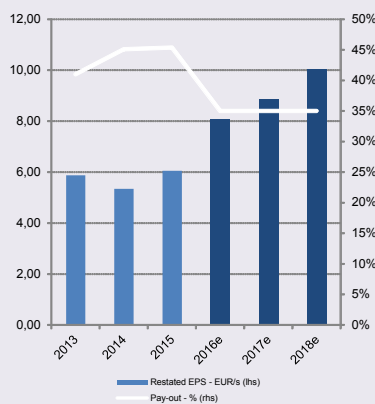
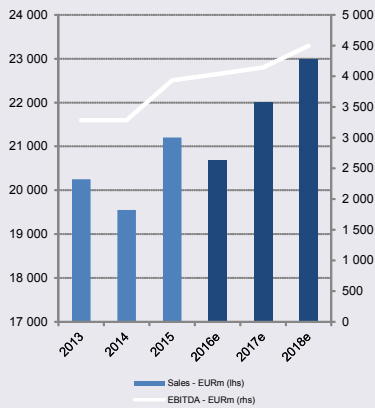
Michelin seems to be the perfect stock to play in 2017 in view of its very premium reputation in the tyres business, high dollar exposure and strong presence in the mining segment that is expected to grow over 2017-20. However, short term pressure on margins, combined with low potential to improve them over the medium term and a fairly unattractive valuation prompts us to remain cautious on the share. We are initiating coverage of the stock with a Neutral recommendation and a Fair Value of EUR118.

■ **The perfect stock for playing a rebound in the U.S. economy:** in our BG auto universe, Michelin is among the stocks the most exposed to the U.S. auto market (33% of sales), the dollar (39% of sales), and the potential economic rebound in the country prompted by the investment plan announced by Donald Trump. This high exposure should be very favourable to the group in 2017, especially if U.S. corporate tax is reduced. However, given the share's performance in 2016 (+20%), we believe investors have already priced this potential in.

■ **Growth in 2017 driven by the price mix effect:** The industry is emerging from a period of sharp decline in rubber prices, which has weighed on sales and heightened competition from Chinese players in Europe. We are now entering a period of sharp growth (x2 over one year), implying that price increases by tyre-makers will be necessary to protect margins. Michelin's very premium positioning should help it resist better than others, even if the start of the year is likely to be difficult. The improvement in the mix prompted by the strengthening of the group's market share in the ≥17" market in coming years, combined with the recovery in the mining business (>30% EBIT margin) should help the group generate a CAGR of 5.5% for the EBIT and 8.2% for EPS over 2016-20. For 2017, we are nevertheless forecasting a decline in the margin due to price increases.

■ **But little room to improve profitability thereafter:** Although we consider that the group should deliver its 2020 targets as of 2018 (EBIT >EUR3bn and FCF >EUR1bn), thereby obliging it to review its targets rapidly, potential to improve the margin beyond 13% looks limited to us. We are initiating coverage of the share with a Neutral recommendation.

	Analyst:	Research Assistant:
	Xavier Caroen	Clément Genelot
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	xcaroen@bryangarnier.com	



Company description

Present in more than 170 countries via 68 production plants in 17 different countries and with 112,300 employees, Michelin manufactures and markets tyres for all vehicle types. The group also offers digital mobility assistance services and publishes tourism guides, hotel and restaurants guides, road atlases and maps

Simplified Profit & Loss Account (EURm)	2013	2014	2015	2016e	2017e	2018e	2019e	2020e
Revenues	20,247	19,553	21,199	20,676	22,014	22,975	23,552	24,091
Change (%)	-5.7%	-3.4%	8.4%	-2.5%	6.5%	4.4%	2.5%	2.3%
Adjusted EBITDA	3,285	3,286	3,934	4,036	4,144	4,495	4,657	4,803
EBIT	2,234	2,170	2,577	2,667	2,725	3,037	3,173	3,298
Change (%)	-9.5%	-2.9%	18.8%	3.5%	2.2%	11.5%	4.5%	3.9%
Financial results	(271)	(327)	(355)	(227)	(212)	(205)	(193)	(185)
Pre-Tax profits	1,702	1,651	1,869	2,313	2,468	2,787	2,935	3,070
Exceptionals	(260)	(179)	(370)	(145)	(66.0)	(68.9)	(70.7)	(72.3)
Tax	(575)	(620)	(706)	(803)	(807)	(912)	(960)	(1,003)
Profits from associates	(1.0)	(13.0)	17.0	18.0	22.0	24.2	26.6	29.3
Minority interests	0.0	0.0	5.0	6.5	7.1	8.1	8.5	8.9
Net profit	1,127	1,031	1,168	1,516	1,668	1,883	1,984	2,075
Restated net profit	1,127	1,031	1,168	1,516	1,668	1,883	1,984	2,075
Change (%)	-32.3%	-8.5%	13.3%	29.8%	10.0%	12.9%	5.3%	4.6%
Cash Flow Statement (EURm)								
Operating cash flows	3,089	2,522	2,695	2,908	2,313	3,059	3,529	3,310
Change in working capital	726	182	24.0	77.4	(622)	(154)	166	(169)
Capex, net	(1,966)	(1,839)	(1,774)	(1,757)	(1,717)	(1,654)	(1,649)	(1,686)
Financial investments, net	(265)	(248)	(168)	0.0	0.0	0.0	0.0	0.0
Dividends	(189)	(464)	(463)	(830)	(531)	(584)	(659)	(694)
Other	(1,088)	(367)	95.0	(6.5)	(7.1)	(8.1)	(8.5)	(8.9)
Net debt	142	707	1,008	694	636	(177)	(1,390)	(2,311)
Free Cash flow	1,123	683	921	1,150	596	1,405	1,881	1,624
Balance Sheet (EURm)								
Tangible fixed assets	8,955	10,081	10,532	10,920	11,218	11,414	11,579	11,760
Intangibles assets	839	1,437	1,424	1,424	1,424	1,424	1,424	1,424
Cash & equivalents	1,563	1,167	1,552	1,866	1,924	2,737	3,950	4,871
current assets	9,330	9,284	9,959	10,080	11,055	12,234	13,408	14,616
Other assets	11,352	13,139	13,934	14,304	14,682	14,935	15,135	15,348
Total assets	20,682	22,423	23,893	24,384	25,737	27,169	28,542	29,964
L & ST Debt	2,303	2,347	2,992	2,992	2,992	2,992	2,992	2,992
Others liabilities	9,123	10,553	11,359	11,170	11,393	11,534	11,591	11,641
Shareholders' funds	9,256	9,523	9,542	10,222	11,352	12,643	13,960	15,332
Total Liabilities	20,682	22,423	23,893	24,384	25,737	27,169	28,542	29,964
Capital employed	14,824	16,600	17,353	17,641	18,620	19,012	19,036	19,410
Ratios								
Operating margin	11.03	11.10	12.16	12.90	12.38	13.22	13.47	13.69
Tax rate	33.78	37.55	37.77	35.00	33.00	33.00	33.00	33.00
Net margin	5.57	5.27	5.51	7.33	7.58	8.20	8.42	8.62
ROE (after tax)	57.81	61.26	66.33	61.69	63.12	60.56	56.58	53.35
ROCE (after tax)	9.97	8.11	9.30	9.89	9.88	10.79	11.26	11.48
Gearing	1.53	7.42	10.56	6.79	5.60	(1.40)	(9.96)	(15.07)
Pay-out ratio	41.02	45.09	45.38	35.00	35.00	35.00	35.00	35.00
Number of shares, diluted	192	193	193	188	188	188	188	188
Data per Share (EUR)								
EPS	5.86	5.34	6.04	8.07	8.88	10.03	10.56	11.05
Restated EPS	5.86	5.34	6.04	8.07	8.88	10.03	10.56	11.05
% change	-33.7%	-9.0%	13.3%	33.5%	10.0%	12.9%	5.3%	4.6%
EPS bef. GDW	5.86	5.34	6.04	8.07	8.88	10.03	10.56	11.05
BVPS	50.03	51.15	51.03	56.35	62.65	69.84	77.18	84.83
Operating cash flows	16.07	13.05	13.95	15.48	12.31	16.29	18.79	17.62
FCF	5.84	3.53	4.77	6.12	3.17	7.48	10.01	8.65
Net dividend	2.50	2.50	2.85	2.94	3.23	3.65	3.85	4.02

Source: Company Data; Bryan, Garnier & Co ests.

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1. Investment case

Why the interest now?



The reason for writing now

As part of our report on tyre manufacturers, we are initiating coverage of the world no. 2 in the sector, the family-owned French group **Michelin**. After suffering in 2016 from a slowdown in the truck and specialty tyres market, the growth cycle in both these markets should gradually improve by 2020, whereas the group's main market should benefit from an acceleration in demand, especially in the U.S. Short-term pressure on the margin, combined with low potential to improve it over the medium term and a fairly unattractive valuation nevertheless prompt us to remain cautious on the share.

Cheap or Expensive?



Valuation

As for other car parts manufacturers for which we initiated coverage in a sector note in September 2016 (*Faurecia, Hella, Plastic Omnium and Valeo*), we value **Michelin** using two methods: historical **EV/sales**, **EV/EBIT** and **P/E** multiples and a **DCF** valuation. As such, we value Michelin at **EUR118 per share**, pointing to **15% upside**.

When will I start making money?



Catalysts

The group is due to report full-year 2016 earnings on **Tuesday 14th February 2017**. The market will be keen to hear management's message for 2017, which we expect to be reassuring, especially in terms of sales and EPS growth. The group is set to suffer from a **negative price/commodities effect** in H1, although this should gradually become positive in late 2017 and in 2018.

What's the value added?



Difference from consensus

We are **1%** higher than the market in terms of 2017 EPS and **4%** for 2018 EPS.

Could I lose money?

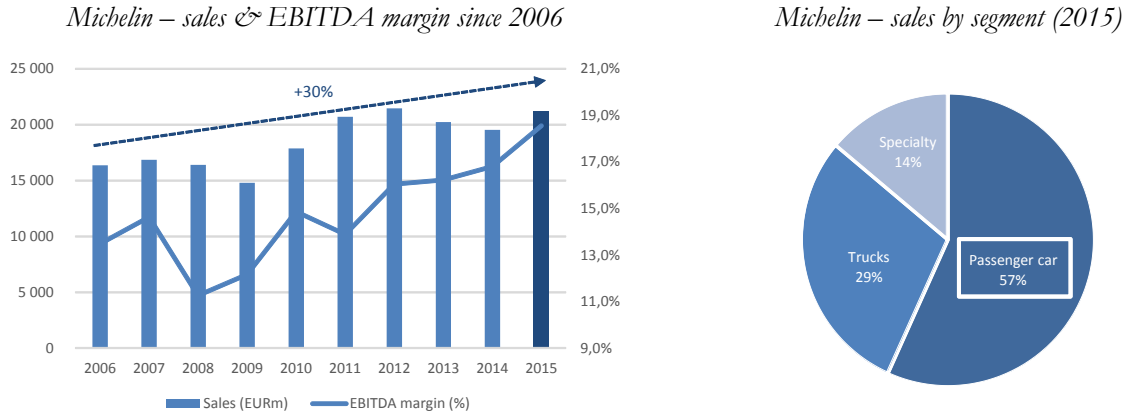


Risks to our investment case

A non-recovery in the **specialty and truck businesses** in coming years could significantly change the group's growth and profitability over the period. A sudden devaluation in the **dollar** combined with a further plunge in **natural rubber prices** could weigh on the group's sales growth.

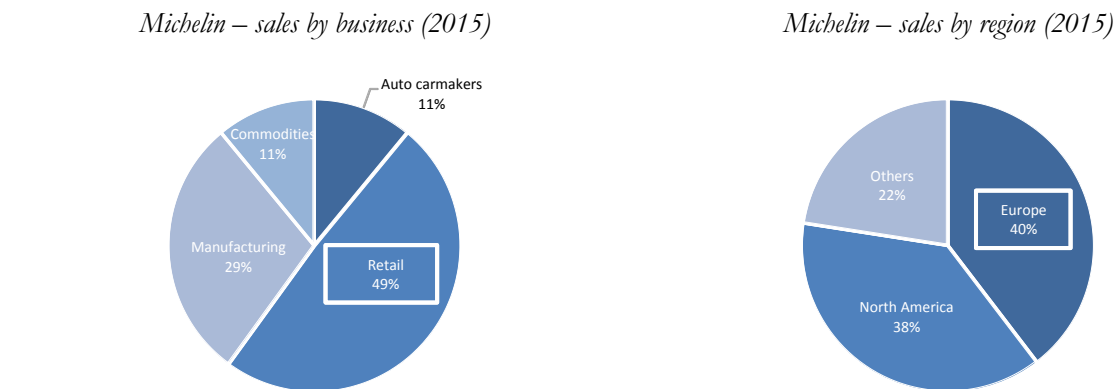
2. Michelin in six charts

Fig. 1: Profitable growth, driven by specialty and truck tyres



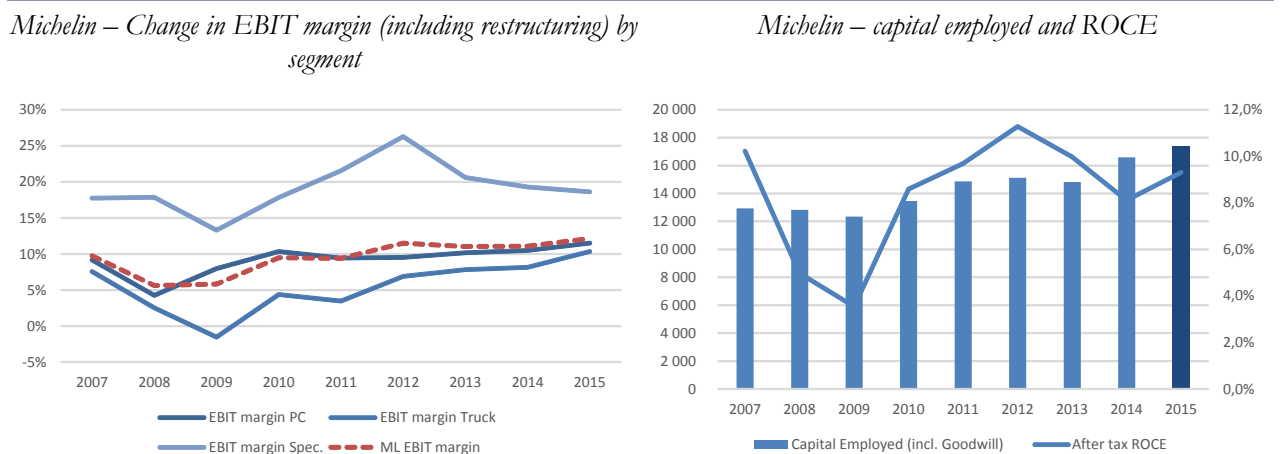
Source: Michelin

Fig. 2: A group very exposed to the BtC market and Europe



Source: Michelin

Fig. 3: Sharp increase in margins since 2007



Source: Michelin

Please see the section headed "Important information" on the back page of this report.

3. Heading for a margin of >13%, and then what?

In a tyre market considered **defensive** and **very resilient** (80% of tyre volumes sold each year stem from replacement demand), the family-owned **Michelin** group is clearly seen as a global benchmark player (no. 2 behind Japanese group Bridgestone), positioned in the upscale segment and in high value added specialty segments.

Contrary to German group **Continental** (no. 4 in the world), Michelin is a pure player in the sector, such that it can invest its **EUR700m** in **R&D** spending entirely in tyres (vs. just EUR250m spent by Continental in its tyre segment) and above all, enabling it to benefit in full from **1/** prospective acceleration in demand for replacement tyres in passenger and small utilities vehicles in the U.S. and Europe, representing **35%** of the group's sales, **2/** the gradual recovery in OEM demand and in replacement tyres for the truck segment (29% of sales) and finally, **3/** the end to the stock rundown phase in the mining segment, favouring an improvement in demand from players in the sector, and a very accretive impact for the group's EBIT margin.

Michelin's high exposure to the **U.S. auto market** (33% of sales), **the dollar** (39% of sales) and the **potential economic rebound in the country** prompted by the investment plan announced by Donald Trump should be highly beneficial to the group in 2017, especially if corporate tax is reduced as promised.

The only concern for the group, and more generally for the tyre sector, lies in the ability of the various players to increase prices to protect their margins following the gradual increase in **natural** and **synthetic rubber prices**. Indeed, the industry is emerging from a period of sharp decline in rubber prices (-60% since the peak in 2013), which has taken a toll on sales and heightened competition from Chinese players in Europe. However, we are now entering a period of sharp growth (prices doubled over one year), implying that tyre manufacturers will have to raise their prices **in order to protect margins**. We estimate that thanks to its very premium positioning, Michelin should come off better than some, even if the beginning of the year is likely to be difficult. **The group's margin is nevertheless likely to narrow slightly in 2017, especially in H1, due to price increases.**

In our view, the improvement in the mix prompted by the group's higher market share in the **≥17" tyre market** in coming years, combined with the start-up in the mining business (>30% EBIT margin) should help the group generate a CAGR of **5.5%** for its margin and **8.2%** for EPS over 2016-20. Whereas Michelin was previously capable of generating an average **EBIT margin of 8-9%**, we estimate that a margin in **excess of 13%** on a recurring basis is within the group's reach, thereby placing it among the best in the sector. Potential to improve this beyond **13%** nevertheless looks limited, especially given the group's very strong industrial presence in western countries.

Although we estimate that Michelin should deliver its 2020 estimates by 2018 (EBIT >EUR3bn and FCF >EUR1bn), thereby obliging it to review its targets rapidly, potential to improve the margin **to beyond 13% looks limited**. We are initiating coverage of the stock with a **Neutral** recommendation and a **FV of EUR118** implying limited upside of <15%.

4. What we like about Michelin

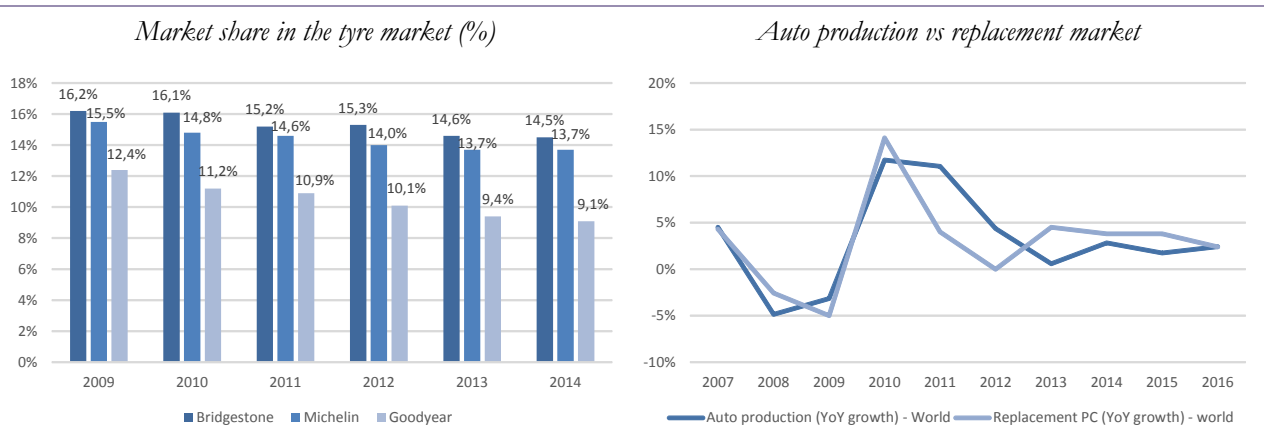
In this section, we review the factors in the Michelin investment case that we consider interesting to play in 2017-18. We have identified **five**:

- A **leadership** position in a **resilient market**
- An **increasingly premium** positioning, in **favour of growth**
- A perfect profile to play the **Trump effect**
- High exposure to the **mining industry**, where business is set to rally over 2017-2020
- High pricing power

4.1. A leadership position in a resilient market

Investors look at Michelin when they are looking for an automotive **growth** stock (*CAGR in the group's sales of +3% over the past 10 years*), with a **low beta** (*two-year beta of 1.0 vs. 1.13 for Continental, 1.18 for Valeo and 1.7 for Renault*), **low volatility** and **low exposure to the cyclical nature of the original equipment market** (*new global demand for cars*). Its position as the **world no. 2** behind Japanese group **Bridgestone** with market share of **13-14%** means the group is present in all continents, as well as in the three tyre markets, namely passenger cars, trucks, and so called specialty tyres.

Fig. 4: A dominant position in a resilient market



Source: Company Data; Bryan Garnier & Co ests.

The passenger car tyre market is by nature a replacement market (*80% of tyre volumes sold every year*), thereby implying that demand is ultimately driven by an obligatory need and not by a discretionary need. This primarily explains the group's operating resilience during the various downward cycles that have affected the automotive sector over the past 10 years.

During upcycles, Michelin has nevertheless benefited less from the rebound in the sector given its very low exposure to the original equipment market.

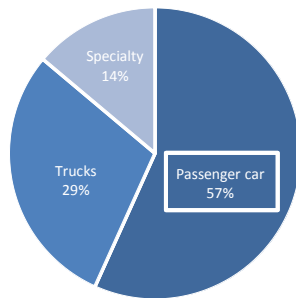
Michelin

Although Michelin does not communicate its market share by segment, in view of its revenues in the passenger car and truck segments, we estimate that the group has a very dominant position in the passenger car market, and a slightly less dominant one in the truck market. In specialty tyres, which include tyres for aeroplanes, motorbikes, farm machinery, industrial machinery and tyres for commodities extraction vehicles, the group also has a very dominant position in the mining segment (*duopoly with the Japanese tyre-maker Bridgestone*), thereby explaining its high sensitivity to disadvantageous changes in commodities prices noted since 2013.

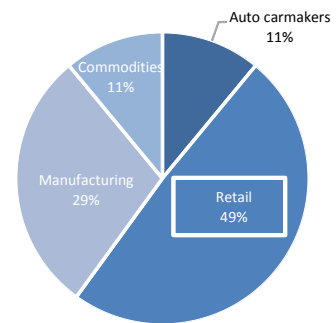
Michelin is therefore a company with **very little exposure to the original equipment market in the passenger car (PC) segment**, fairly weak exposure to the truck market and very high exposure to changes in sectors **dependent on commodities demand** (*mining sector in particular*).

Fig. 5: A group primarily present in resilient markets

Michelin – breakdown of sales by segment



Michelin – breakdown of sales by market type



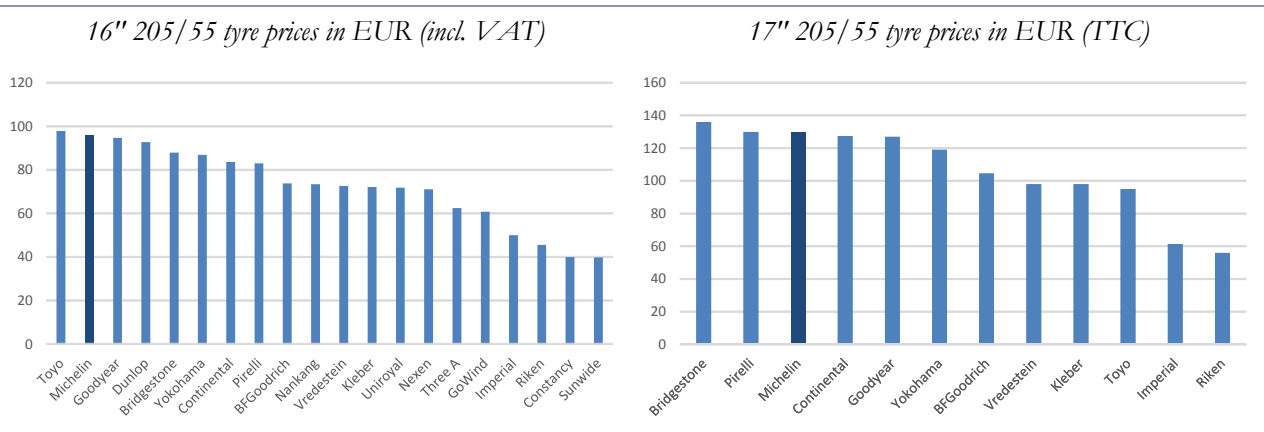
Source: Michelin

4.2. An increasingly premium positioning, in favour of growth

As indicated in our sector note, having strong positions in the premium original equipment market as well as in the replacement market enables tyre-makers such as **Michelin** to outperform the global tyre market in value terms, as well as in volume terms since demand for premium vehicles is growing faster than global demand.

Thanks to the group's upscale positioning and its commercial strategy highly focused on product quality (*a safer and more resistant tyre over time compared with the majority of rival tyres*), **Michelin** is perceived by individual customers (*49% of the group's sales*) as being a very premium brand, contrary to certain Chinese and Asian brands. Comparison of **Michelin** with the majority of its rivals using online tyre websites (*Allopneus etc.*), and in certain distribution networks in France (*Norauto, Point S and also Carrefour*), shows that for a **category C car** equipped with **16" tyres** (*205/55 for a VW Golf, a Peugeot 308 or a Renault Clio*) Michelin brand tyres (*representing 80% of the group's volumes in the TC segment*) are **5% more expensive** than the average of upscale brands (*Bridgestone, Continental, Bridgestone and Goodyear*), **20% more expensive** than the average of the mid-scale brands (*Khumo, Uniroyal, Nokian, Falken, Nexen, Kleber*) and **twice the price** of the average of low-range brands (*Riken, Imperial, Nordex...*)*

Fig. 6: Michelin brand tyres more expensive than rivals



Source: Allopneus; Bryan, Garnier & Co ests.

This very **upscale positioning is the group's very DNA** and stems primarily from Michelin's historical aim to develop high-quality tyres, with a longer lifespan than rival brands and above all, greater safety for customers. The majority of tests carried out by independent organisations (*specialised newspapers, consumer protection bodies*), clearly show a good quality of braking and/or endurance by Michelin tyres relative to **other brands whether premium or not**. This difference is partly due to Michelin's greater use of natural rubber in tyre construction (*26% of commodities costs at Michelin vs. 20% at Goodyear*) and use of synthetic rubber but can also be explained by higher annual R&D spending than at rivals. Michelin indeed spends **2.5x** more in value terms per year than Continental does on R&D and spends almost as much as Bridgestone, which generates **30%** more sales.

*Comparative study carried out on 26th January 2017

Michelin

As indicated previously, the group's upscale positioning is verified by the premium to the price that a potential buyer needs to pay to equip their vehicle with a new set of tyres, relative to other brands in the same segment.

The group does not present the breakdown of its passenger car sales in the OE market (*with carmakers directly*) by brand or by manufacturer type, such that it is difficult to assess the group's exposure to new upscale car registrations precisely, even though we guess it is sizeable.

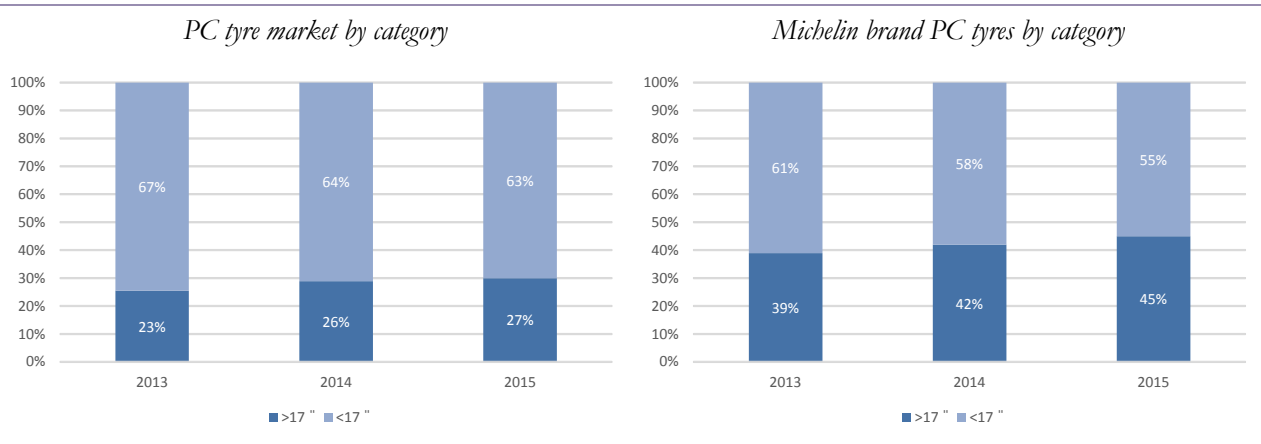
After slashing its exposure to the very competitive OE tyre market between **2010** and **2013**, Michelin has deliberately positioned itself since 2013 on higher value added contracts where competition is lower (*since innovation mostly makes the difference*), in order to protect a traditionally low margin in this type of business.

Upscale car brands generally have higher margins than midscale manufacturers and with more restrictive obligations to reduce the weight of vehicles, increase energy efficiency and reduce CO₂ and particles emissions, their need for tyres that offer more fuel savings features or a better lifespan is set to increase with time.

The rising momentum of **≥17"** tyres in the OE market (+26% between 2013 and 2015 vs. +1% for the ≤17" market), prompted by the ramp-up in the European, U.S. and Chinese markets as well as the huge success of SUVs in new registrations should also benefit Michelin and more specifically the Michelin brand (80% of volumes sold by the group), which has a dominant position with **45%** of its sales (*in volumes*) generated in this segment.

Fresh market share gains stemming from premium brands, combined with the ramp-up of SUVs in new car demand in coming years should help the **≥17" tyre market** continue to outperform the tyre market to the benefit of Michelin's sales and margins.

Fig. 7: Michelin, very present in the >17" category



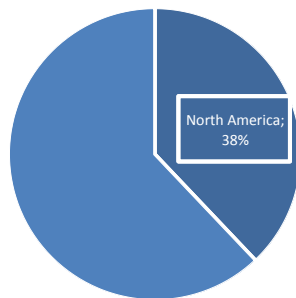
Source: Michelin; Bryan, Garnier & Co ests.

4.3. The perfect stock for playing the Trump effect

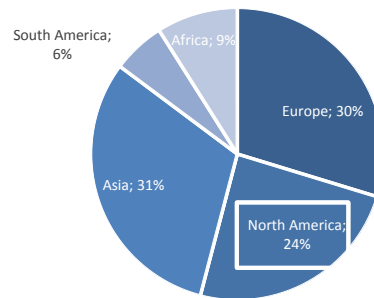
Whereas the group's high exposure to the North American car market (38% of the group's sales are derived from the region) could be seen in a negative light by investors given the rising uncertainty caused by the slowdown in new demand (the U.S. auto market is set to fall 1% in 2017), we estimate on the contrary that its high exposure is a strong asset for 2017-18.

Fig. 8: Michelin is overexposed to the US market

% of Michelin sales in North America



% of PC market by region (OE+RT)



Source: Michelin; Bryan, Garnier & Co ests.

Firstly, we estimate the group could benefit from the high growth in U.S. registrations noted since 2010 (+54% vs. +25% for the global market) since the replacement market should automatically be called on to replace OE tyres **with a two/three year delay**. As such, we estimate that between 2017 and 2020, the U.S. market should therefore increase by around **12%** in volume terms, or **4%** a year, **150bp** more than the global market each year.

Since the U.S. market is naturally more premium than the European market given the **significant share of SUVs and pick-ups**, it seems logical that the group's strong presence in this segment should enable it to outperform the market. We also estimate that the group should see its sales in the PC segment rise by around **5% a year over 2017-20**.

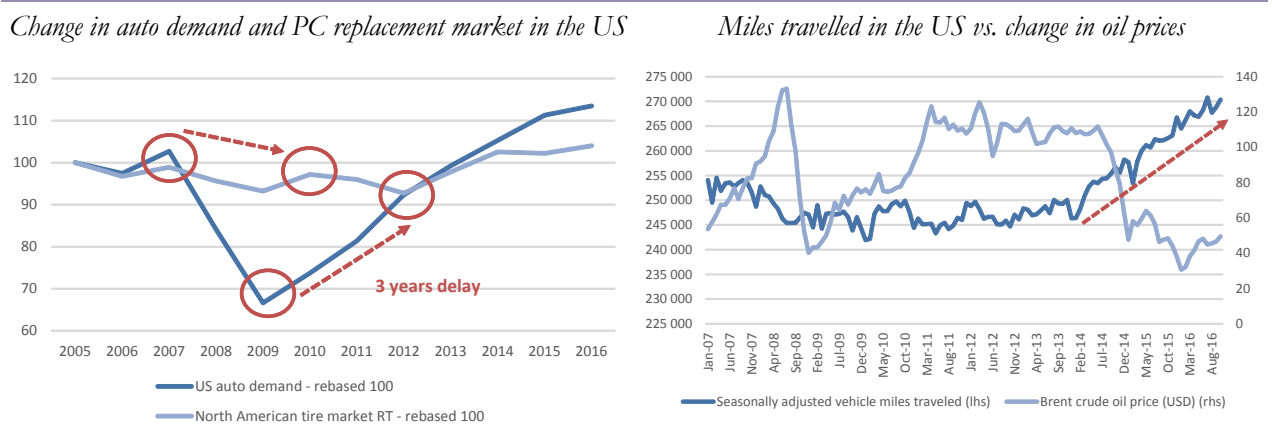
Meanwhile, the election of **Donald Trump** as President of the country and his aim to stimulate the US economy via a multitude of major public investment plans and over-protection of the US industry, the group could benefit from a recovery in the "Industrial/Infrastructure" segment, which currently represents **20%** of sales in the Specialty tyre division, or around **EUR580m**, i.e. **3%** of the group's sales.

Finally, a stronger dollar could also contribute significantly to the group's sales and EBIT growth given that the dollar represents **39%** of the group's sales (100% of the mining business, in the specialty segment generates sales directly in dollars).

4.3.1. Replacement market set to accelerate

As previously indicated, we estimate that **Michelin** should benefit from an acceleration in demand for PC tyre replacement in the U.S. not only thanks to a significant ramp-up in OE demand since 2009 (+54%), but also to the rise in the number of miles travelled by U.S. citizens since early 2015 following the plunge in oil prices, which has slashed petrol prices in the country given their very low taxation (23% of total price vs. 66% in France). We estimate that the combination of these two growth factors should help the group easily outperform growth in the U.S. auto market (registrations and production) over 2017-18.

Fig. 9: The U.S. PC replacement market is set to ramp-up



Source: Michelin; GoodCarBadCar; Bryan, Garnier & Co ests.; FRED

+/- 1,000 km in the number of km travelled by US driver should have an impact of around one month on the tyre lifespan

Taking as a reference a lifespan of **30,000 km per tyre** (or 18,640 miles for an average tyre), we therefore estimate that after the increase in the number of miles travelled over 2014-16 (+7-8% over the period), the replacement cycle in the U.S. should be reduced by around one and a half months relative to the previous cycle.

We estimate that a variation of **1,000 km** in the number of km travelled by U.S. drivers (upwards or downwards) has an impact of around one month on the lifespan of a tyre.

Tyre makers present in the mid-range segment should benefit more than those in the upscale segment given that the increase in the number of kilometres travelled should prompt drivers to change their tyres sooner.

Fig. 10: Sensitivity between no. of km travelled and lifespan of the tyre over one year – U.S.

Mid-range tyre longevity (km)	30 000	30 000	30 000	30 000	30 000
Average km/year/vehicle in the U.S.	19 700	20 700	21 700	22 700	23 700
Tyre longevity (years)	1,52	1,45	1,38	1,32	1,27
Change in number of months	1,7	0,8	0,0	(0,7)	(1,4)
Change in %	10,2%	4,8%	-	-4,4%	-8,4%
Premium-range tyre longevity (km) – Michelin brand	40 000	40 000	40 000	40 000	40 000
Average km/year/vehicle in the U.S.	19 700	20 700	21 700	22 700	23 700
Tyre longevity (years)	2,03	1,93	1,84	1,76	1,69
Change in number of months	2,2	1,1	0,0	(1,0)	(1,9)
Change in %	10,2%	4,8%	-	-4,4%	-8,4%

Source: U.S. NHTSA; Ford; Michelin; L'Argus; Bryan, Garnier & Co ests.

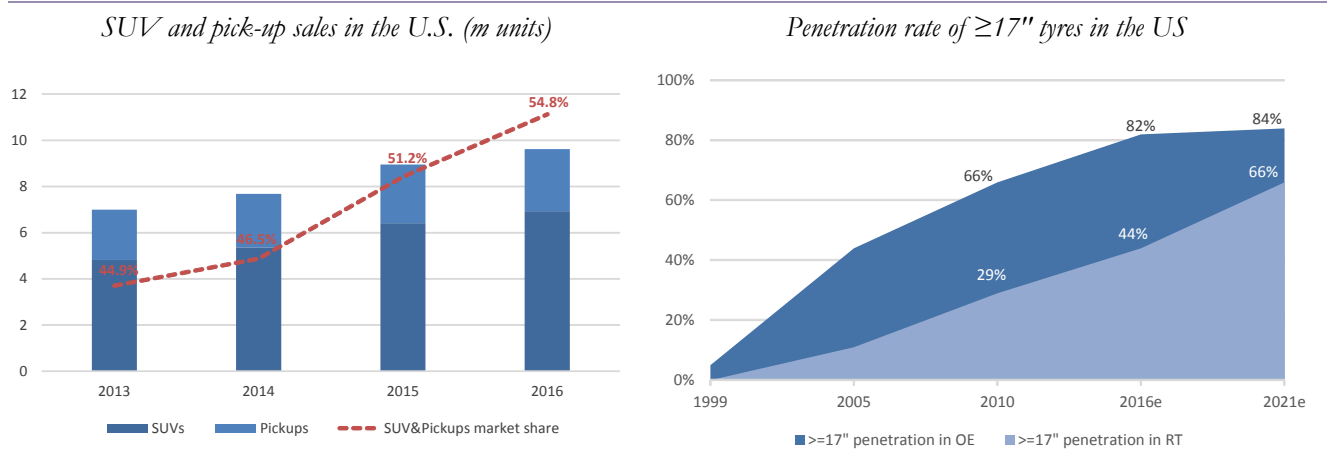
4.3.2. A very premium market

As indicated previously in our sector report, the **U.S. was one of the most buoyant markets for ≥ 17 " tyres** for a cultural reason that has spread to Europe and China more recently: the appeal of big cars (*SUVs, pick-up trucks*). These two segments alone represent close to **55% of total light car sales (<6 tonnes)** in the U.S. in 2016 (*i.e. more than 9.6 million vehicles*).

This product mix explains the current high penetration rate of large sized tyres in the OE market (*around 80%*) in the U.S. The rate is nevertheless **expected to stagnate at around 85% according to Goodyear**, Michelin's direct rival in the US market, thereby associating demand for ≥ 17 " OE tyres with the sole growth in the SUV and pick-ups segment and no longer to the spreading of these products to other vehicle segments.

This equipment rate in new cars also implies robust development in the **replacement market** for this range of tyres. Only representing barely a third of sales in 2010, **large tyres should drive the replacement market with market share expected to total 66% by 2021 (Goodyear)**.

Fig. 11: U.S.: market driven by the $\geq 17''$ segment



Source: Goodyear; GoodCarBadCar; Bryan, Garnier & Co ests.

The strong presence of the French tyre-maker in the **premium** segment and in **$\geq 17''$ tyres** (which represent 45% of the Michelin brand's global sales) should help the group benefit in full from advantageous changes in the mix in the replacement market, with a positive impact on the group's sales in the region as well as on the margin. Indeed, we estimate the average price difference between a **$\geq 17''$ tyre and a $\leq 17''$ tyre at 20%**, whereas the margin difference is estimated at between **+10% and +15%**.

The group's strong presence in this market should therefore be beneficial in terms of sales growth and margin widening over 2017-18.

4.3.3. The Trump effect on infrastructure investments

Although for the moment, details of Donald Trump's huge **infrastructure investment plan estimated at USD1tn (EUR950bn)** remain very limited, we think it is interesting to point out Michelin's exposure to the industrial and infrastructure segment

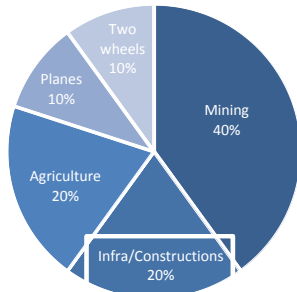
The two segments combined represent around 20% of the group's specialty tyres division, corresponding more or less to **3% of the group's total sales** and could gain from a recovery in construction and infrastructure spending destined to renovate transport infrastructure such as roads, bridges and airports, and public services infrastructure such as hospitals, water treatment centres and electricity networks.

In addition to the positive impact of this extensive investment plan on the U.S. economy, an increase in spending in the construction sector would very probably lead to significant requirements in terms of industrial vehicles and other building site machinery (*OE segment*), as well as a recovery in the replacement market during the construction period.

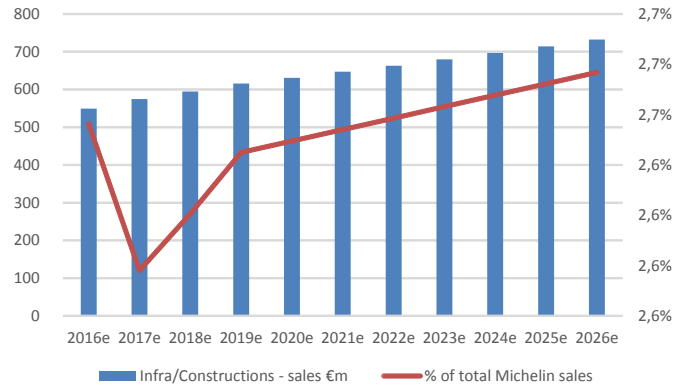
Although the real impact is difficult to assess at present, we believe Michelin could enjoy a ramp-up in sales stemming from these businesses as of 2018-19. In our model, we are forecasting annual sales growth of **3%** in 2018 and 2019 vs. just **1.5%** in 2017.

Fig. 12: Michelin could benefit from the ramp-up in construction spending in the U.S.

Breakdown of Michelin specialty tyre sales



Change in construction/infra sales at Michelin (EURm)



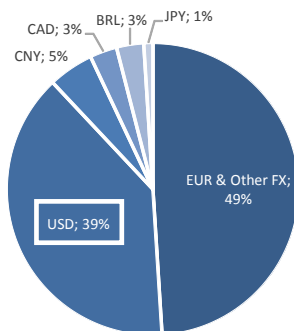
Source: Michelin; Bryan, Garnier & Co ests.

4.3.4. A strong dollar favouring sales and EBIT growth

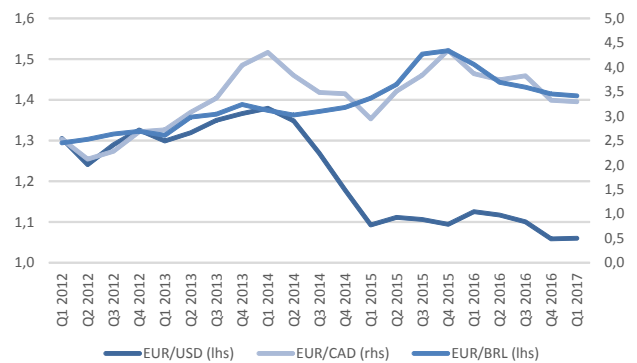
Since the dollar represents **39%** of the group's net sales, its strengthening against the euro should contribute substantially to the group's sales and EBIT growth in 2017 relative to 2016. In our model, we assume a **USD/EUR exchange rate of 1.08**, which corresponds to the average since the beginning of the year, and the last price spread over the remaining days to complete 2017. This rate compares to an average 2016 rate of **1.107** and **1.11** in 2015.

Fig. 13: High dollar exposure

Breakdown of sales by currency



Change in EUR vs. USD, BRL and CAD



Source: Michelin; Datastream; Bryan, Garnier & Co ests.

On our estimates, this dollar effect could imply a positive impact of **EUR180m** on Michelin's 2017 sales, resulting in an **EUR50m** impact on the group's EBIT, given that its sensitivity to a **1 cent change in the annual average USD/EUR exchange rate** stands at around **EUR15-20m**. Combined with other positive currency effects (*stronger BRL and CAD against the EUR*), we estimate a positive forex effect of **EUR283m** on the group's 2017 sales (+2,3%) and **EUR85m** on EBIT (+5%).

Michelin is the stock in our coverage the most exposed to the dollar

We estimate that a **10%** change in the EUR/USD exchange rate, whether upwards or downwards, should have an impact of around **5-6%** on our FV. In the universe of auto stocks that we cover, Michelin is therefore **the stock the most exposed to the dollar**.

Fig. 14: Sensitivity of Michelin to a +/-10% change in the EUR/USD exchange rate - based on the average of our various valuations

	FV with further 10% dollar depreciation	Current FV	FV with further 10% dollar appreciation
USD/EUR	1,19	1,06	0,97
Change in FX	10,0%	0,0%	-10,0%
Impact on sales vs. N-1	-2,9%	1,4%	6,4%
Impact on EBIT vs. N-1	-6,7%	3,2%	15,0%
Implied FV	111	118	126

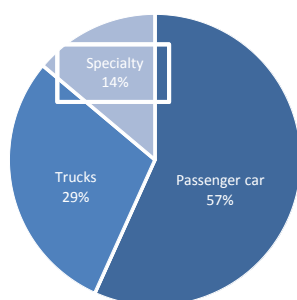
Source: Bryan, Garnier & Co ests.

4.4. High exposure to the mining industry, set to recover over 2017-20

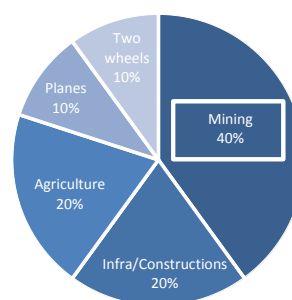
Via Michelin's specialty division, which accounts for **14%** of sales but **20%** of EBIT, the group is highly exposed to the manufacturing industry, and particularly the mining industry (*40% of sales in the specialty segment*), a business considered highly cyclical and very volatile. This very specific business in which Michelin has a **duopolistic** positioning with Japanese tyre-maker **Bridgestone**, traditionally generates between **EUR1.1bn and EUR1.5bn** in sales at Michelin depending on the investment cycle of sector players.

Fig. 15: Group exposed to the mining industry

Breakdown of group sales (2016^e)



Breakdown of sales in the specialty segment (2016^e)

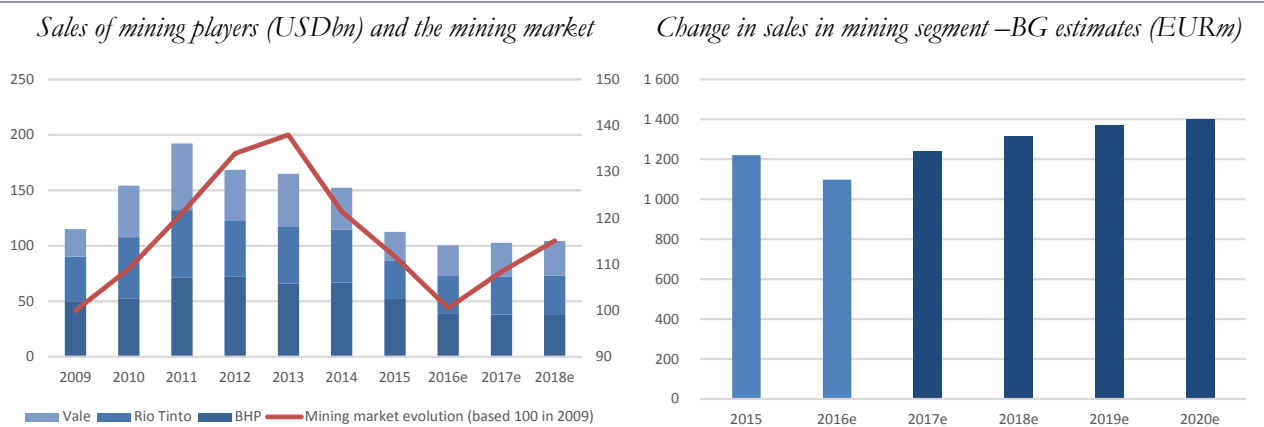


Source: Bryan, Garnier & Co ests.

The highly complex nature of products (*tyres measuring up to four metres in diameter and 1.48m in width, subject to very high yields in extreme conditions and requiring the longest lifespan possible*), combined with the demands of customers, explain why this segment is so profitable (*more than 30% EBIT margin vs. 11-15% for the passenger-utilities segment and 9-13% for the trucks segment*) and hence the importance of good health in the sector for the group.

However, since Q4 2013, following a slowdown in demand for minerals due to the decline in Chinese consumer spending, companies in the sector (*Rio Tinto, BHP, Vale*) moved into a serious destocking phase taking a harsh toll on sales and margins in the segment. These destocking moves are now behind us (*since Q4 2016*) thereby implying an improvement in demand for mining equipment tyres in favour of **Michelin** and **Bridgestone**, given the spending pledged by majors in the sector and in view of the recent increase in commodities prices.

Fig. 16: The end to the stock rundown phase?



Source: Company data; IBES; Bryan, Garnier & Co ests.

In our model, we estimate a rebound in the specialty market in volume terms of around **6%** in 2017 relative to 2016 and **4%** in 2018 relative to 2017 in favour of the group's mining business. Despite this market recovery, the market in 2018 should still be **15%** below the market in 2012, when Michelin was capable of generating EBIT margin of more than **26%** in the specialty tyre segment.

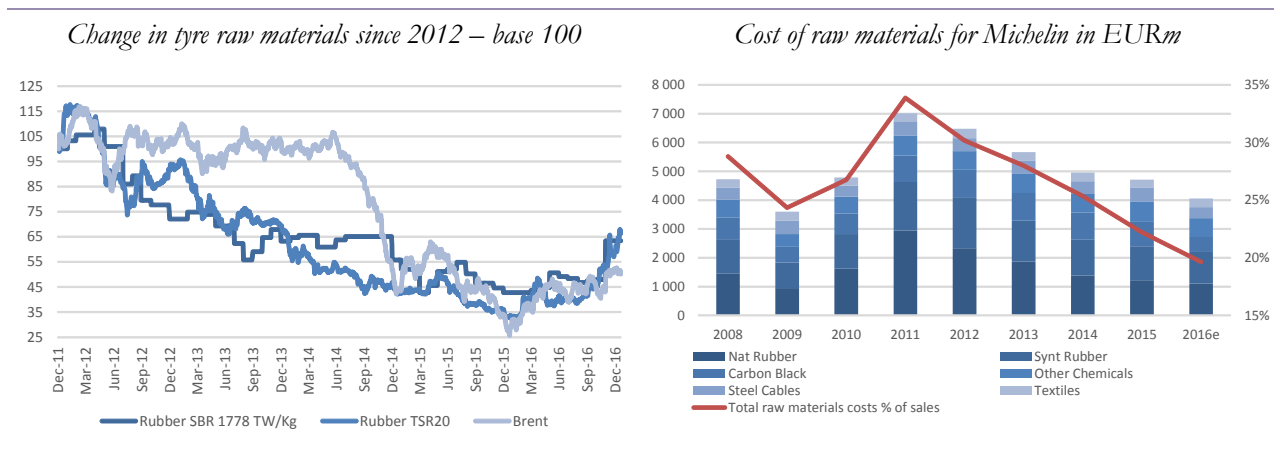
For a **5pp** decline in the mining market, we estimate the impact at **10bp** on the group's EBIT margin.

4.5. A group with high pricing power

4.5.1. Michelin suffers when rubber prices plunge

The industry is emerging from a period of sharp decline in rubber prices (*-60% since the peak in 2013*), which weighed on sales in the sector and exacerbated competition from Chinese players in Europe since, contrary to the North-American market, this market is not protected by commercial entry barriers. During the past three years, Asian tyre-makers and more precisely Chinese groups positioned in the low-end segment (*16" tyres sold for less than EUR45/unit, compared with a Michelin tyre sold at EUR80-110*), have therefore managed to make the most of the plunge in natural rubber and synthetic rubber prices to slash prices to the detriment of western tyre-makers, also present via non-premium brands in a more low-end market.

Fig. 17: Natural rubber prices down 60% since the peak in 2013



Source: Datastream; Michelin; Bryan, Garnier & Co ests.

Beyond the dumping potential of these Chinese brands, which benefit from a number of government subsidies enabling them to be attractive on a sales front, these Chinese manufacturers, which are proportionally more sensitive to changes in rubber prices (*natural rubber represents around 80% of production costs for a low-cost tyre vs. just 60% at a tyre-maker such as Michelin*), have therefore been able to pass on the decline in production costs more easily than traditional players since the margin remains better protected.

This higher competitive pressure has therefore pulled down prices generally to the detriment of a number of premium brands such as **Michelin**, **Continental** and **Goodyear**, but also reduced the market share of traditional players. As such, in 2015, more than **55 million passenger car tyres** stemming from China flooded the Europe market, or **>15%** of sales in the market vs. **<9 %** in 2007. In the truck market, the market share loss was even higher, since imports of Asian tyres represented around **30%** of the market in 2015 vs **11%** in 2007.

In cumulative terms over 2013-16e, the negative price impact on Michelin's sales stood at **EUR2bn** (*-9% relative to the group's 2012 sales*), whereas the positive impact of the fall in raw materials prices on the margin over the same period was only **EUR2.2bn**, implying a gain of **EUR200m** for the group's margin. The genuine impact of this competition on Michelin lies in the group's global volumes (*+8.7% for Michelin vs. +13% for the PC market and +0% for Michelin vs. +40% for the truck market*). The group preferred to protect its margin and risk losing customers, especially in the truck segment.

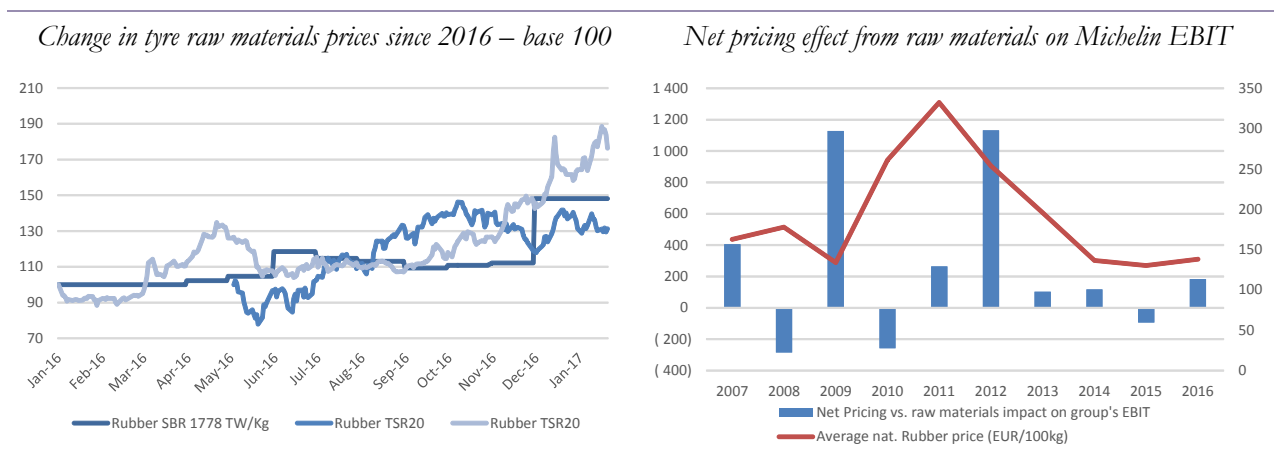
Please see the section headed "Important information" on the back page of this report.

4.5.2. Fortunately prices are now picking up

We are now entering a period of sharp growth (*rubber prices have doubled over one year*) given the higher demand for rubber stemming notably from China, which should logically be beneficial to premium players since **1/**as indicated previously, the share of natural rubber is lower in production costs than it is for Chinese players, and **2/ sensitivity** for low-range tyre customers to a change in prices is **higher** than for a customer that deliberately purchases an upscale tyre.

As seen in the past, Michelin should therefore be in a better position than it was over 2013-16, given that all players should automatically increase their prices to face the increase in production costs, thereby limiting competitive pressure from Asian players on the PC and truck segments.

Fig. 18: Rubber prices have picked up since early 2016



Source: Datastream; Michelin; Bryan, Garnier & Co ests.

The group's margin is expected to narrow in 2017 and then widen considerably in 2018

Price rises by tyre-makers will therefore be necessary to protect their margins. Thanks to its very premium positioning, Michelin should come off better than others, even if the start of the year will be difficult since price increases for the PC and truck segment will gradually take effect during the year while the negative impact of higher raw materials prices should be noted as of the start of 2017 (*especially in H1 2017*). The group just unveiled it will increase its prices in Europe and in North America for PC, LCV, trucks and for civil, agricultural engines and two-wheels as soon as in April 2017.

As such, we will watch closely for the price changes implemented by the group and its rivals over 2017. For 2017, we have modelled a price increase of around **2.2%** and then **1.7%** for 2018, implying a positive impact on EBIT in value terms of respectively **EUR480m** and **EUR395m** vs. a negative raw materials impact of respectively **EUR650m** and **EUR220m**.

The group's margin should therefore narrow slightly in 2017, and more specifically in H1, before gradually picking up at the end of the year and in 2018.

5. What we like less about Michelin

In this section, we review the factors in the Michelin investment case that could take a toll on the share price. We have identified **four**.

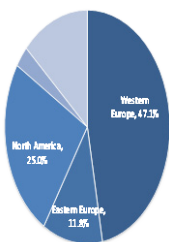
- The group is **still too present industrially in France** and in **Europe** contrary to rivals
- EBIT margin is expected to **notch up between 2018 and 2020**, but until when?
- The group is not likely to really benefit from the **transformation in the auto sector**
- The group is **underexposed** to the **Chinese** tyre market

5.1. The group is still too present industrially in France and in Europe contrary to rivals

In an increasingly competitive industry where purchases of replacement tyres remain primarily driven by the price component (*56% of car owners in western Europe confirm that price is the main motivation behind their tyre purchases according to a study carried out by Ipsos*) and where the breakthrough by Asian tyre-makers proved fairly disruptive, **adjustments in the cost base are primordial** for western groups positioned in the premium segment. As such, it seems vital to us that players such as **Michelin**, **Goodyear** and **Continental** continue to optimise their cost bases on a global level while developing and marketing products at affordable prices in emerging countries.

The majority of major historical tyre-makers have therefore constantly been adjusting their production networks by **refocusing their production facilities more on emerging markets** where manual labour is cheaper and where demand for tyres is also expected to grow driven mainly by **China** (*presenting a fleet of >140m vehicles with an annual increase of 18% since 2007*).

Geographical breakdown of Michelin plants

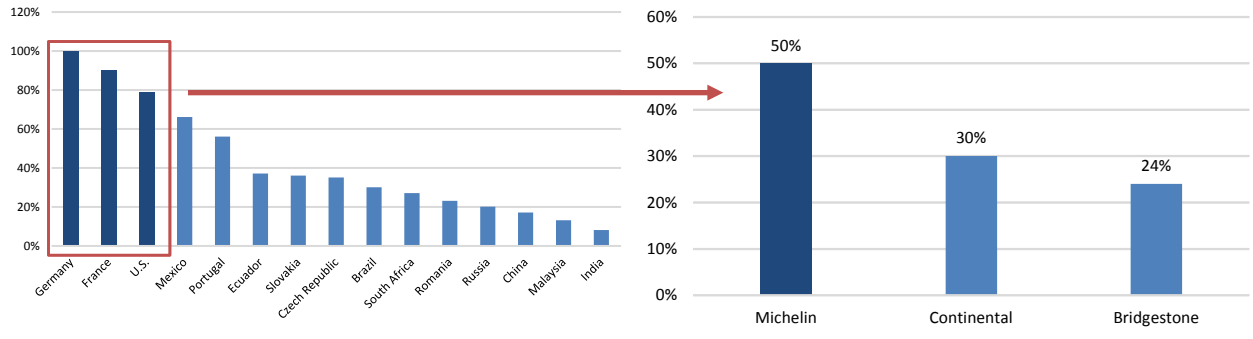


Source: Michelin.

In 2008, **Continental** unveiled its Vision 2025 strategic plan destined at projecting the tyre division into the world Top 3, especially by expanding its production capacity (*>EUR2bn in plant opening and extension*) and by focusing primarily on **BRIC** countries **Brazil**, **Russia** (2013), and **India** (2014), and more specifically **China** (*first plant opened in 2011 with three successive extensions since then*). These investments have notably enabled the German group to reduce part of its production exposed to countries where manual labour is among the most expensive (*30% of tyre production based in German, France and the US vs. 34% in 2010*) whereas at the same time the proportion of Michelin plants in these three countries remained identical (*i.e. close to 50%*).

Fig. 19: Still strong industrial exposure to high manual labour costs

Labour cost index in the tyre industry, drawn up by Continental *Share of production (no. of plants for Michelin) in Germany, France and the US*



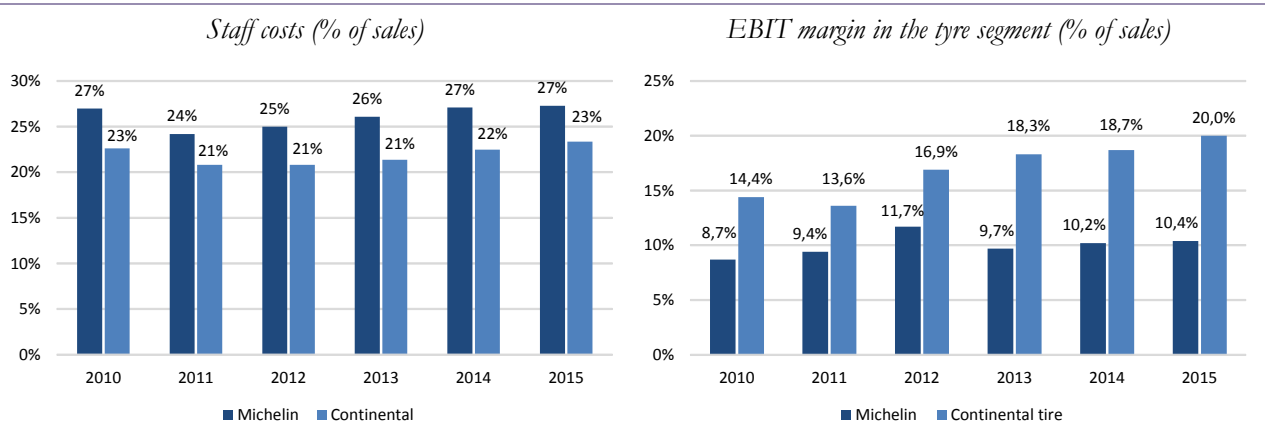
Source: Continental; Michelin; Bridgestone Bryan, Garnier & Co ests.

Since 2010, **Michelin has not really adjusted the geographical breakdown of its production network within BRIC region** except for the opening of a truck tyre plant in **India** (*representing an investment of EUR500m and destined to supply the Indian market only*), the setting up of a new mixture production unit in **Thailand** in order to strengthen the existing plants in place and the opening of a new plant in **Brazil** (PC). As a reminder the group just announced it will open a new plant in **Mexico** to address the PC OE market ($\geq 18''$) to address the Latam and North American market (*perfect timing with recent election of Trump...*).

Investments have been partly offset by the closure of other plants in low wage cost countries such as **Algeria**, where the truck tyre plant was affected by low-cost imports of Chinese products, and **Columbia**, where the two passenger car and truck tyre plants were closed under the framework of the strategic review of the group's locations aimed at focusing on the major sites generating considerable economies of scale. In Europe the group also closed 4 sites in 2016 (*Germany, Italy and UK*) yet despite that we believe its industrial positioning in the region remains too important.

As such, **Michelin's industrial over-exposure to France** (*15 plants, stable since 2010*) and more widely Europe (*40 sites, stable since 2010*) seems to be reflected in **far higher wage costs** than rivals such as Continental. Michelin spent **27%** of sales on staff costs in 2015 vs. **23%** at Continental, a difference **explained especially by the higher EBIT margin generated** by Continental Tire (*20%*) than Michelin (*10.4%*).

Fig. 20: Wage costs weighing on the group's margin



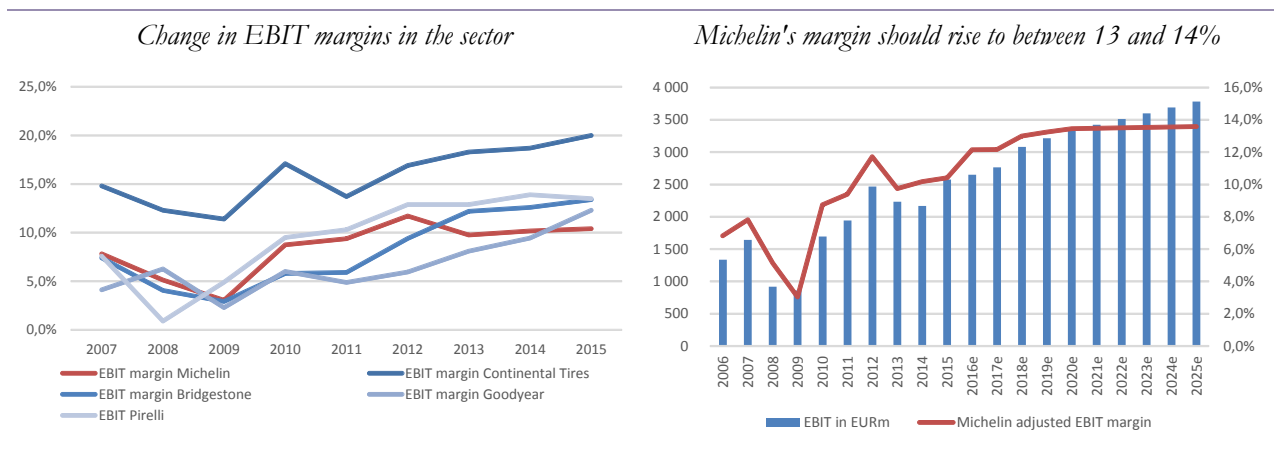
Source: Continental; Michelin; Bryan, Garnier & Co ests.

5.2. Margin widening, but until when?

We are forecasting a slight improvement in the group's EBIT margin over the next three years, to beyond **13%** thanks to the new **2017-20 plan to optimise industrial facilities**, and the recovery in the truck and specialty businesses. Never previously reached by the French group, this level of margin has been delivered by other sector players, notably **Bridgestone** and **Goodyear**, Michelin's two direct rivals in the race to become the market leader.

Among the panel of western tyre-makers (*Michelin, Continental, Bridgestone, Goodyear and Pirelli*) only **Continental** now seems capable of generating recurring EBIT margin of 15-20%, with other players having trouble exceeding **15%**.

Fig. 21: A group set to generate a margin of 13-14% by 2018



Source: Company data; Bryan, Garnier & Co ests.

Margin growth potential at the French group (*to beyond 14%*) therefore looks limited, as explained previously, given its strong industrial presence in **western Europe** and more specifically in **France** where labour costs are **two to three times** higher than in Asia or South America.

However, thanks to its **2017-20 competitiveness plan**, the group believes it can reduce its addressable cost base estimated at **EUR20bn**, by **EUR1.2bn** (*before annual cost inflation*), after having already optimised it by the same amount between 2012 and 2016 and by **EUR1bn** between 2007 and 2010. Around **45%** of the planned optimisation is set to stem from **structural costs**, whereas **production costs** are set to represent **40%** and the decline in raw materials spending should represent **15%** of these. Whereas this plan looks promising on paper, in reality it simply offsets the hefty natural inflation in Michelin's cost base since the group estimates that it can only keep around **EUR200m** out of the **EUR1.2bn** reduction hoped for, or **7.5%** of the group's prospective 2016 operating profit.

Michelin

A slight **50-80bp** narrowing in R&D spending to move into line with the average of the group's rivals could also help it generate a recurring margin of **>14%**. However, given Michelin's positioning in the upscale segment and in view of its clearly stated aim to continue to innovate more than the competition, we are forecasting just a **15-20bp** narrowing in R&D spending in our model.

In view of the negative impact on the group's accounts of the rise in rubber prices expected over 2017 (*significant impact on H1 2017*), we are forecasting a decline in underlying EBIT margin of around **45bp** relative to 2016, followed by an **80bp** widening to **13.2%** in 2018.

As such, we estimate Michelin could generate a higher level of EBIT than the 2020 target of **EUR3bn**, two years earlier in 2018 and this should oblige the group to rapidly review its targets.

The consensus also expects the group to generate EBIT of more than EUR3bn as of 2018.

5.3. A group unlikely to benefit from the transformation of the auto sector

After entertainment, information and services, the auto industry is now set to suffer the **digital era**, shaking up not only its usage but also its business model. Carmakers are therefore obliged to invest alongside components makers in connected and autonomous vehicles implying **more contents and more technology per vehicle than previously** (*more cameras, sensors and driving assistance systems*). The development of lower carbon and/or fully decarbonated vehicles should also benefit components makers offering solutions for **weight reduction** and/or a reduction in **CO₂/particles**.

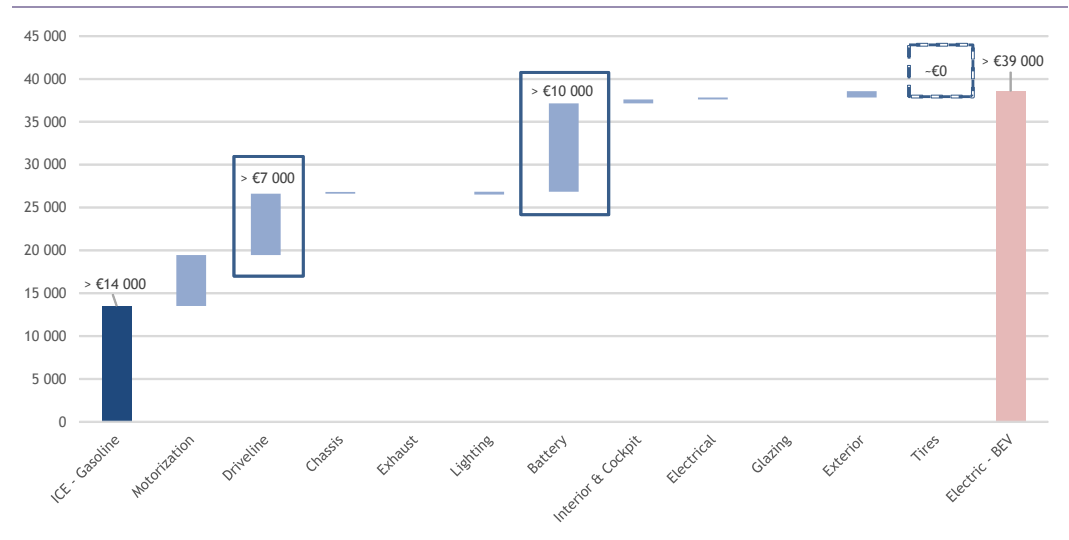
Whereas we estimate that certain components makers (*some more than others*) should benefit from the increase in the value of contents per vehicle, enabling them to generate more growth and higher margins, it seems clear to us that Michelin, via the nature of its business, is one of the groups the least exposed to the market transformation (*connected, autonomous and electric vehicle*).

The gain in the value of production for these new vehicles is more than significant with:

- A production cost for a **plug-in hybrid vehicle (PHEV)** around **EUR15,000 higher** than for a internal combustion engine vehicle today (category C car) on our estimates.
- A production cost for a **battery-electric vehicle (BEV)** around **EUR25,000 higher** than for a internal combustion engine today (category C car) on our estimates.
- A production cost for a **fully autonomous thermal vehicle (level 4-5 automation)** **EUR16,000 higher** than for a non-automated internal combustion engine vehicle today (*category C car*) on our estimates.

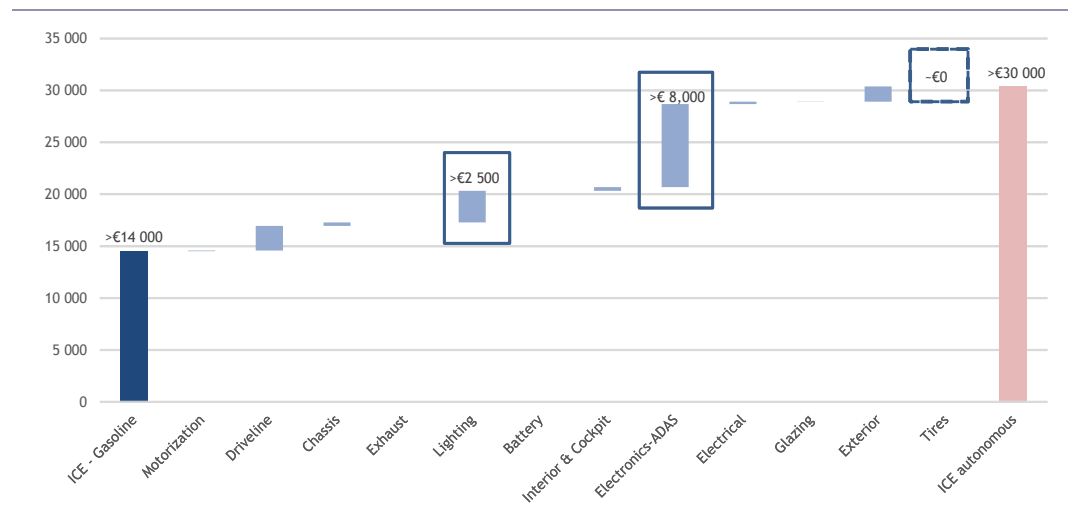
Note interestingly that among these increases in value, transmission systems and the battery are the main sources of value added (*in the case of an electric vehicle*), along with the ADAS (*in autonomous thermal vehicles*) whereas in both cases, **tyres are only likely to increase slightly in value to the detriment of players like Michelin, which are only exposed to this vehicle component**. Indeed, tyres are among the rare components that are only set to benefit slightly, if at all, from this increase in value in the design of these new cleaner and safer cars given that a **vehicle will always require just four tyres as is the case today**.

Fig. 22: Rise in production costs (EUR excl. VAT - category C car) from internal combustion engine cars to electric vehicles



Source: Bryan, Garnier & Co ests.

Fig. 23: Rise in production costs (EUR excl. tax - category C car) from internal combustion engine cars to autonomous thermal cars



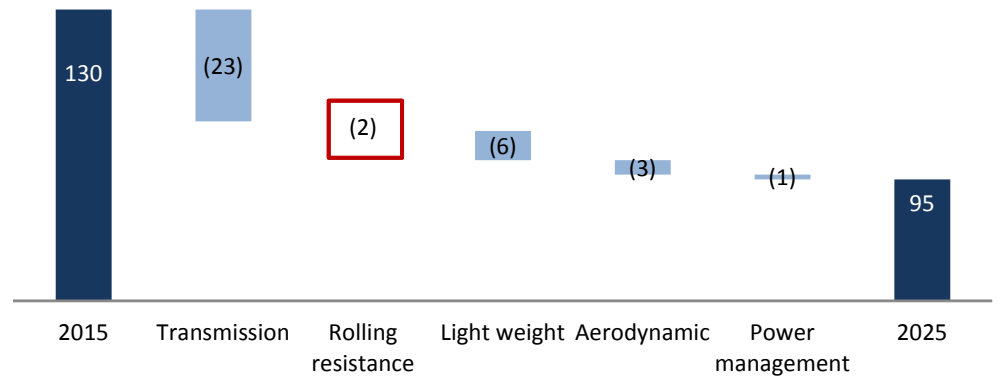
Source: Bryan, Garnier & Co ests.

The current cost of a set of four tyres in production of a category C car is close to **EUR240** (representing around 1% of the total production cost excluding VAT) with an average unit cost that we estimate at below **EUR60**. We expect a **low upgrade to the value of tyres, despite the increase in the size of tyres** (i.e. increased penetration of $\geq 17''$ tyres which are sold at higher prices) and the **improvement in their energy performances**.

In an ever more restrictive regulatory backdrop concerning polluting emissions and with the aim of offering electric cars with increasing autonomy (which is now one of the main barriers to the purchase of an electric car), carmakers have launched themselves on a quest to improve energy performances in their models. Michelin estimates that for a fully electric vehicle, **energy consumption prompted by tyre rolling resistance increased by up to 30%**. Any improvement in this resistance would therefore

have a positive impact on vehicle fuel consumption. As such, we estimate that leverage from rolling resistance can help carmakers reduce **CO₂ emissions per km by 2g**, therefore representing **6% of the decline** in emissions imposed by the European authorities **out to 2025** (95g/km vs 130g/km in 2015).

Fig. 24: CO₂ emission reduction factors (g/km)



Source: Plastic Omnium; Bryan, Garnier & Co ests.

Michelin's Energy EV tyre fully responds to this energy performance requirement for electric cars, given that it does not heat up too much when in use thereby reducing energy consumption and enabling a **near-6% gain in autonomy** according to the group. Note that the tyre is already marketed and is **fitted on all of the Renault Zoe models**. This is also the group's only offer focused on cars of the future.

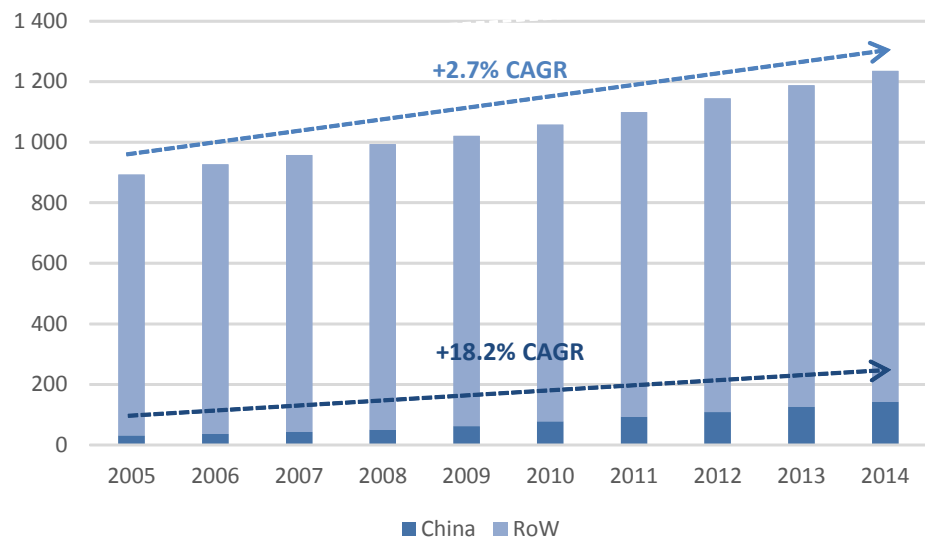
Apart from a few other isolated innovations (*not on the market*), which are beginning to emerge at rivals, such as a **Goodyear's** connected tyre (*capable of generating electricity when rolling in order to recharge an electric car*), or the **Eagle-360** (*a spherical tyre destined for autonomous vehicles presented by Goodyear in 2016*), product portfolios at tyre-makers are unlikely to witness major changes. **As such, the tyre industry, and more specifically Michelin, are not in a good position to make the most of the transformation in the auto sector in the short term.**

5.4. Under-exposure to the Chinese market

The centre of gravity in the auto industry has shifted towards China since 2009 when the country officially became the **leading global automotive market** in terms of both car registrations and production, ahead of the U.S. and Europe. Momentum in the country's middle class, its economic growth and its very low equipment rate (*104 vehicles for 1,000 inhabitants*) helped the country post a **CAGR of 14.6%** over 2008-16 to now represent **27.9m in light vehicles** (*passenger cars and light utility vehicles*) or **>30% of global registrations in 2016**.

This high growth in new vehicle sales has considerably boosted the fleet of cars in circulation in China in recent years (*+18.2% CAGR*), at a faster speed than that seen in the rest of the world. We estimate that **China has more than 142m light vehicles in circulation today**, representing as many potential clients for the replacement tyre market.

Fig. 25: Change in fleet of light vehicles in circulation (m units)



Source: OICA; Bryan, Garnier & Co ests.

The Chinese market seems to be **one of the most promising in the replacement market given the size of its fleet but also the short estimated lifespan of its tyres in the country: around 1.58 years** for a mid-range tyre compared with around two years in Europe. Note also that the poor quality of roads in the Chinese provinces and the likely predominance of entry-level tyres also has a negative impact on the life expectancy of tyres in the country.

Fig. 26: Average lifespan of a mid-range tyre

	US	China	Brazil	Europe	France	UK
Mid-range tyre life expectancy (km)	30,000	30,000	24,000	30,000	30,000	30,000
Average km driven per year/vehicle	21,700	19,000	10,000	15,000	17,400	13,000
Tyre life expectancy (years)	1.38	1.58	2.40	2.00	1.72	2.31

Source: U.S. NHTSA; Ford; Michelin; L'Argus; Bryan, Garnier & Co ests.

Despite the inherent qualities of the Chinese automotive market and its growth potential in replacement tyres, **Michelin nevertheless remains under-represented** in the country with just **three plants** (*two producing tyres for passenger cars and one destined for the truck segment*).

Whether in terms of the number of plants (*5.5%*), maximum capacity (*5.6%*) or the number of employees dedicated to tyre production (*8.3%*), Michelin currently seems to under-exploit the Chinese market, which represents **30%** of global registrations and **13%** of replacement tyre sales (*passenger and light utility vehicles*). This does not take account of the fact that maintaining under-capacity in the country which could **expose Michelin to customs duties on tyre imports** in China to meet demand that is potentially higher than its production capacity (*10% of cases in China if tyres stem from Europe*).

Fig. 27: A Chinese market currently under-exploited by Michelin

	Tires plant	Max capacity (tons/year)	Tyre manufacturing employees
Michelin worldwide	55	3,744,500	65,067
China	3	211,200	5,370
o/w Shenyang 1 & 2	2	132,200	3,162
o/w Shanghai	1	79,000	2,208
Chinese share within Michelin	5.5%	5.6%	8.3%
China among global PC&LCV registrations		~30%	
China among replacement PC&LCV tyre sales		~13%	

Source: Michelin; Continental; Bryan, Garnier & Co ests.

In our model, we have factored in a **CAGR of >5%** for the group's sales in Asia over 2017-19.

6. Our estimates

Our model for Michelin includes estimates for automotive manufacturing growth of **2.4%** for 2017 and 2018 for the original equipment passenger and light-commercial vehicle segment (*OE PC*), which represents **11%** of the group's sales. We then expect market growth of around **2%** over 2019-25.

Concerning the replacement passenger and light-commercial vehicle segment (*RT PC*), which represents **46%** of the group's sales, we expect a gradual acceleration in the global market with **3%** growth in 2017 and **3.2%** in 2018, vs. around **>2%** in 2016. The group is nevertheless set to suffer slightly from its under-exposure to Asian markets relative to the global market, but should benefit from its penetration in the **≥17" tyre segment**.

For the truck tyres division, which represents **29%** of the group's sales, we are forecasting market growth of around **1.8%** a year over 2017-18, with an outperformance of around **50pb** a year by Michelin.

The specialty tyre segment should benefit from the rebound in the mining business, as well as the healthy infrastructure, motorbike and aircraft businesses. We are forecasting sales growth of around **6.5%** in 2017 and **4.4%** in 2018. The very high growth expected in 2017 should stem from the price effect (*partly contractual*) necessary to face the increase in raw materials prices (*natural rubber in particular*).

Our model therefore includes a CAGR of **4%** in the group's sales over 2016-20 and **5.5%** in EBIT, implying a **90bp** improvement in the group's margin to **13.7%** in the middle of the group's implied guidance range for 2020. This points to EBIT of **EUR3.3bn** compared with a target for the group to generate more than **EUR3bn** in EBIT.

Fig. 28: Michelin – BG growth estimates

	2016e	2017e	2018e	2019e	2020e
Revenues	20 676	22 014	22 975	23 552	24 091
o/w Passenger car business	11 991	12 821	13 390	13 721	14 060
o/w Truck business	5 939	6 261	6 504	6 638	6 774
o/w Specialty business	2 746	2 932	3 081	3 193	3 257
Total Revenues growth	-2,47%	6,47%	4,37%	2,51%	2,29%
o/w Passenger car business	-0,31%	6,93%	4,44%	2,47%	2,47%
o/w Truck business	-4,65%	5,42%	3,89%	2,05%	2,05%
o/w Specialty business	-6,65%	6,77%	5,08%	3,63%	2,00%
YoY growth	-2,5%	6,5%	4,4%	2,5%	2,3%
o/w Volumes	1,5%	2,5%	2,5%	2,5%	2,3%
o/w Pricing/Mix	-1,7%	2,2%	1,7%	0,0%	0,0%
o/w Currency	-2,2%	1,3%	0,0%	0,0%	0,0%
o/w Scope	0,0%	0,3%	0,0%	0,0%	0,0%

Source: Bryan, Garnier & Co ests.

Fig. 29: Michelin – Income statement - EURm

	2012	2013	2014	2015	2016e	2017e	2018e	2019e	2020e
Revenues	21 474	20 247	19 553	21 199	20 676	22 014	22 975	23 552	24 091
Change (%)	3,6%	-5,7%	-3,4%	8,4%	-2,5%	6,5%	4,4%	2,5%	2,3%
Adjusted EBITDA	3 445	3 285	3 286	3 934	4 036	4 144	4 495	4 657	4 803
EBIT	2 469	2 234	2 170	2 577	2 667	2 725	3 037	3 173	3 298
Change (%)	26,9%	-9,5%	-2,9%	18,8%	3,5%	2,2%	11,5%	4,5%	3,9%
Financial results	(177)	(271)	(327)	(355)	(227)	(212)	(205)	(193)	(185)
Pre-Tax profits	2 353	1 702	1 651	1 869	2 313	2 468	2 787	2 935	3 070
Exceptional	(129)	(260)	(179)	(370)	(145)	(66)	(69)	(71)	(72)
Tax	(736)	(575)	(620)	(706)	(803)	(807)	(912)	(960)	(1 003)
Profits from associates	15	(1)	(13)	17	18	22	24	27	29
Minority interests	1	0	0	5	6	7	8	8	9
Net profit	1 664	1 127	1 031	1 168	1 516	1 668	1 883	1 984	2 075
Restated net profit	1 664	1 127	1 031	1 168	1 516	1 668	1 883	1 984	2 075
Change (%)	13,8%	-32,3%	-8,5%	13,3%	29,8%	10,0%	12,9%	5,3%	4,6%

Source: Michelin; Bryan, Garnier & Co ests.

Fig. 30: Michelin – Cash flows - EURm

	2012	2013	2014	2015	2016e	2017e	2018e	2019e	2020e
Operating cash flows	2 926	3 089	2 522	2 695	2 908	2 313	3 059	3 529	3 310
Change in working capital	543	726	182	24	77	(622)	(154)	166	(169)
Capex, net	(1 996)	(1 966)	(1 839)	(1 774)	(1 757)	(1 717)	(1 654)	(1 649)	(1 686)
Financial investments, net	207	(265)	(248)	(168)	0	0	0	0	0
Dividends	(289)	(189)	(464)	(463)	(830)	(531)	(584)	(659)	(694)
Other	(583)	(1 088)	(367)	95	(6)	(7)	(8)	(8)	(9)
Net debt	1 053	142	707	1 008	694	636	(177)	(1 390)	(2 311)
Free Cash flow	930	1 123	683	921	1 150	596	1 405	1 881	1 624

Source: Michelin; Bryan, Garnier & Co ests.

Fig. 31: Michelin – Balance sheet – EURm

	2012	2013	2014	2015	2016e	2017e	2018e	2019e	2020e
Tangible fixed assets	8 579	8 955	10 081	10 532	10 920	11 218	11 414	11 579	11 760
Intangibles assets	817	839	1 437	1 424	1 424	1 424	1 424	1 424	1 424
Cash & equivalents	1 858	1 563	1 167	1 552	1 866	1 924	2 737	3 950	4 871
current assets	10 154	9 330	9 284	9 959	10 080	11 055	12 234	13 408	14 616
Other assets	11 428	11 352	13 139	13 934	14 304	14 682	14 935	15 135	15 348
Total assets	21 582	20 682	22 423	23 893	24 384	25 737	27 169	28 542	29 964
L & ST Debt	3 297	2 303	2 347	2 992	2 992	2 992	2 992	2 992	2 992
Others liabilities	9 784	9 123	10 553	11 359	11 170	11 393	11 534	11 591	11 641
Shareholders' funds	8 501	9 256	9 523	9 542	10 222	11 352	12 643	13 960	15 332
Total Liabilities	21 582	20 682	22 423	23 893	24 384	25 737	27 169	28 542	29 964
Capital employed	15 126	14 824	16 600	17 353	17 641	18 620	19 012	19 036	19 410

Source: Michelin; Bryan, Garnier & Co ests.

Fig. 32: Michelin – Ratios - %

	2012	2013	2014	2015	2016e	2017e	2018e	2019e	2020e
Operating margin	11,5%	11,0%	11,1%	12,2%	12,9%	12,4%	13,2%	13,5%	13,7%
Tax rate	31,3%	33,8%	37,6%	37,8%	35,0%	33,0%	33,0%	33,0%	33,0%
Net margin	7,7%	5,6%	5,3%	5,5%	7,3%	7,6%	8,2%	8,4%	8,6%
ROE (after tax)	55,4%	57,8%	61,3%	66,3%	61,7%	63,1%	60,6%	56,6%	53,4%
ROCE (after tax)	11,3%	10,0%	8,1%	9,3%	9,9%	9,9%	10,8%	11,3%	11,5%
Gearing	12%	2%	7%	11%	7%	6%	-1%	-10%	-15%
Pay-out ratio	26,1%	41,0%	45,1%	45,4%	35,0%	35,0%	35,0%	35,0%	35,0%
Number of shares, diluted	188	192	193	193	188	188	188	188	188

Source: Michelin; Bryan, Garnier & Co ests.

Fig. 33: Michelin – Per share data – EUR

	2012	2013	2014	2015	2016e	2017e	2018e	2019e	2020e
EPS	8,85	5,86	5,34	6,04	8,07	8,88	10,03	10,56	11,05
Restated EPS	8,85	5,86	5,34	6,04	8,07	8,88	10,03	10,56	11,05
% change	12,2%	-33,7%	-9,0%	13,3%	33,5%	10,0%	12,9%	5,3%	4,6%
EPS bef. GDW	8,85	5,86	5,34	6,04	8,07	8,88	10,03	10,56	11,05
BVPS	46,9	50,0	51,1	51,0	56,3	62,6	69,8	77,2	84,8
Operating cash flows	15,6	16,1	13,1	13,9	15,5	12,3	16,3	18,8	17,6
FCF	4,9	5,8	3,5	4,8	6,1	3,2	7,5	10,0	8,6
Net dividend	2,4	2,5	2,5	2,9	2,9	3,2	3,7	3,8	4,0

Source: Michelin; Bryan, Garnier & Co ests.

7. Valuation

As for **Faurecia**, **Hella**, **Plastic Omnium** and **Valeo**, we value **Michelin** using two methods: **1/ historical multiples**, and **2/ DCF**. The combination of these methods (*three FVs stemming from multiples and one from DCF, with a 25% weighting for each method*) points to a **FV of EUR118** per Michelin share, implying **15%** upside relative to the last listed share price.

Fig. 34: Michelin – FV @ EUR118

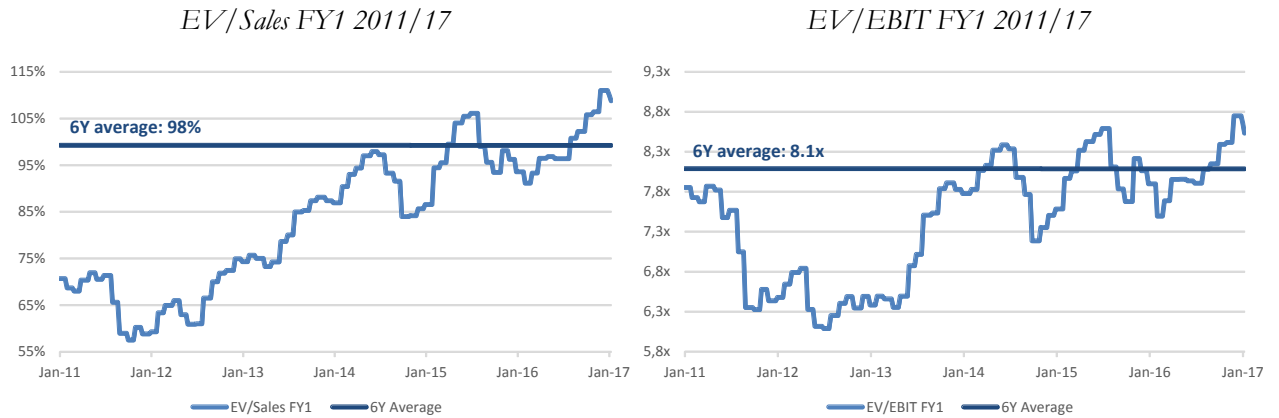
Michelin - FV overview	Multiples	FV
EV/Sales (2017-26) – 25%	100%	EUR124
EV/EBIT (2017-26) – 25%	8.5x	EUR136
P/E (2017-26) – 25%	12.0x	EUR97
DCF model (2017-26) – 25%		EUR114
o/w WACC	7.2%	
o/w LTG	1.8%	
o/w Average EBIT margin	12.9%	
o/w LT EBIT margin	11.0%	
Implied FV		EUR118
Current price		EUR102.2
Upside		15%

Source: Bryan, Garnier & Co ests.

7.1. Valuation using historical multiples

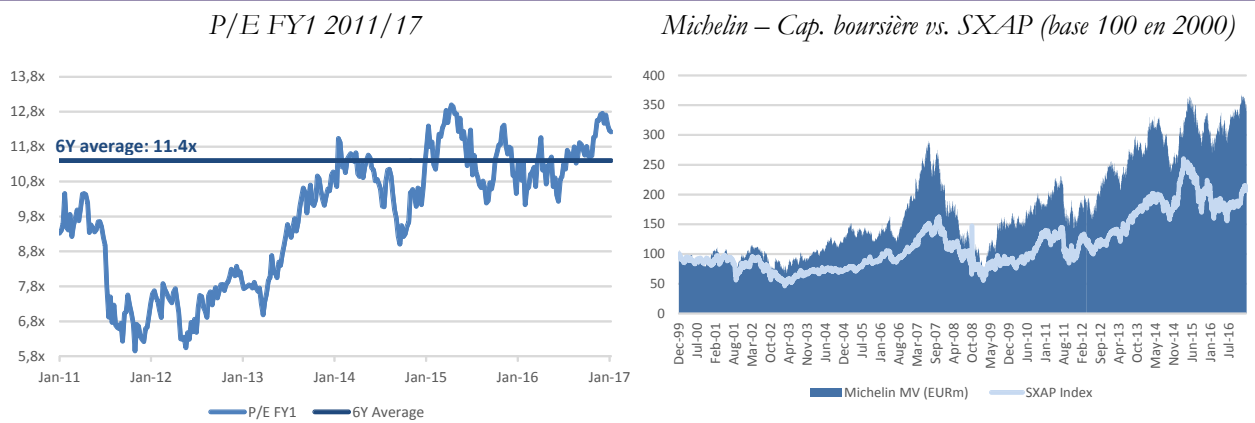
We have taken account of Michelin's historical **EV/sales**, **EV/EBIT** and **P/E** multiples to value the group. Our three FVs are calculated over 2017-2026 (*discounted by WACC each year*) and imply respectively **EUR124**, **EUR136** and **EUR97** in FV. We value Michelin on multiples of **100% of sales**, **8.5x EBIT** and **12x P/E**, which imply a **slight premium (<10%)** relative to the group's historical multiples (*98% of sales, 8x EBIT and 11x P/E*) given that the group's profitability profile is slightly better than during the last cycle.

Fig. 35: Michelin – Historical multiples (EV/Sales FY1 ; EV/EBIT FY1) – 2011/17



Source: Datastream; Bryan, Garnier & Co ests.

Fig. 36: Michelin – Historical multiples (P/E FY1) – 2011/17



Source: Datastream; Bryan, Garnier & Co ests.

7.2. DCF valuation

We also value **Michelin at EUR114** using a DCF model based on the following estimates:

- **WACC of 7.2%** (a risk-free rate of 1.6%, a risk-premium of 7%, beta to 1.0)
- A **growth rate to infinity of 1.8%**, implying a slight outperformance by **Michelin** relative to the automotive market (+1.5%)
- **EBIT margin** (with restructuring and without joint ventures) of **12.9%** on average and a margin to infinity of **11.0%**.

Fig. 37: Michelin – DCF estimates - EURm

	2017e	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e	2026e
Revenues - Core business	22 014	22 975	23 552	24 091	24 643	25 207	25 784	26 375	26 980	27 598
Revenue Growth Rate	-	4,4%	2,5%	2,3%	2,3%	2,3%	2,3%	2,3%	2,3%	2,3%
Operating Margin	12,1%	12,9%	13,2%	13,4%	13,4%	13,4%	13,5%	13,5%	13,5%	13,6%
EBIT (excluding associates & including restructuring charges)	2 658	2 968	3 102	3 226	3 307	3 390	3 475	3 561	3 650	3 741
Adjustment for provisions	(72)	(71)	(70)	(69)	(68)	(67)	(66)	(65)	(64)	(63)
(-) Taxes on EBIT	(877)	(979)	(1 024)	(1 064)	(1 091)	(1 119)	(1 147)	(1 175)	(1 205)	(1 235)
(+/-) Movements in working capital	(622)	(154)	166	(169)	(99)	(102)	(104)	(106)	(109)	(111)
(+) Depreciation and amortization	1 420	1 458	1 484	1 505	1 529	1 554	1 582	1 611	1 641	1 673
(-) Capital Expenditures	(1 717)	(1 654)	(1 649)	(1 686)	(1 725)	(1 764)	(1 805)	(1 846)	(1 889)	(1 932)
(-) Intangibles	0	0	0	0	0	0	0	0	0	0
Free Cash Flow	789	1 568	2 010	1 742	1 852	1 892	1 935	1 979	2 026	2 074
Present Value of Free Cash Flow	737	1 365	1 633	1 321	1 311	1 250	1 192	1 138	1 087	1 039

Source: Bryan, Garnier & Co ests.

Fig. 38: Michelin – DCF @ EUR114

PV of Free Cash Flows	12 074
PV of Terminal Value	13 454
EV implied - EURm	25 528
- Net industrial debt/cash (N-1) - EURm	694
- Minority Interest value (N-1) - EURm	(80)
+ Financial assets (Book value reported) - EURm	510
- Pensions Liabilities (N-1) - EURm	4 815
Value of Equity	20 609
Value of Equity per share	114

Source: Bryan, Garnier & Co ests.

Please see the section headed "Important information" on the back page of this report.

8. Michelin – SWOT

Fig. 39: Michelin – SWOT analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> • Dominant position (<i>world no. 2 with 13.7% market share</i>) • A very premium positioning • A pioneer in innovation (<i>3.3% of sales spent on R&D</i>) • A solid competitive positioning in specialty tyres and especially in mining tyres (<i>respectively 19% EBIT margin >30% EBIT</i>) • High exposure to North America (<i>38% of sales</i>) and the dollar (<i>39% of sales</i>) • An attractive dividend policy (<i>35% pay-out rate vs. 30% for Continental and for other car components makers</i>) 	<ul style="list-style-type: none"> • Gains generated by the productivity plan partly wiped out by the hike in wage costs • Too many production plants in western Europe (<i>50% of plants</i>) • Under-exposure to China (<i>main growth driver in replacement</i>) • The group is not set to benefit much from major trends in the auto market (<i>connected, autonomous and electric vehicles</i>) • In H2 2016, the group launched construction of a passenger car plant in Mexico just as the U.S. is on the verge of renegotiating the NAFTA.
Opportunities	Threats
<ul style="list-style-type: none"> • Wide-scale use of large-sized tyres (<i>>17"</i>) on compact and city cars (benefiting sales and margin growth) • Creation of customs barriers in Europe against Chinese imports • A less sensitive cost structure to the rise in raw materials costs than low-cost Asian players (<i>historically the group resists better when raw materials price rise</i>). 	<ul style="list-style-type: none"> • Momentum in Asian rivals that are moving upscale while still benefiting from cheaper manual labour • Momentum in car-as-a-service prompting a shift in the market to B2B to the detriment of margins • Delays in the start-up of the truck specialty businesses (<i>46% of group EBIT</i>) given a slower than expected recovery in the global economy

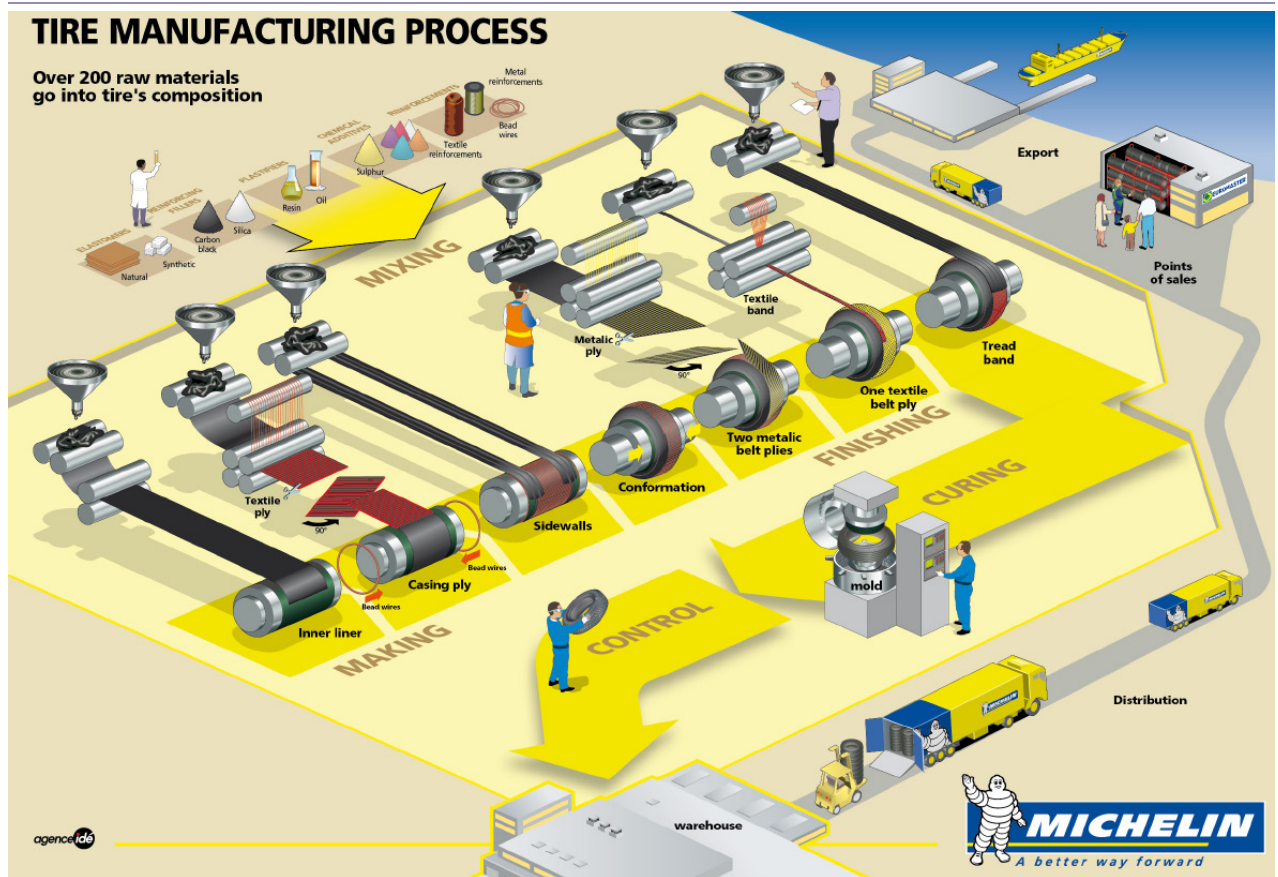
Source: Bryan, Garnier & Co ests.

9. Michelin overview

9.1. A brief history

Michelin & Cie was created in **Clermont-Ferrand** in **1889** by Jules Michelin, who only sold one product at the time: brake pads for bicycles. A short time afterwards, the two Michelin brothers Edouard and André Michelin took over the company and in **1891** filed a patent for a pneumatic removable tyre for velocipedes and other vehicles, thereby paving the way for the design of car tyres and more sophisticated industrial processes. The group diversified its businesses at the start of the 20th century with the publication of the first Michelin Guide in **1900** helping travellers on their voyages by providing practical information and a list of hotels and restaurants. This was the first step towards the offer of a genuine range of digital mobility services as we know them today (*viamichelin.com*, *the Green guide*, *the Michelin guide*). In **1908**, Michelin produced its first truck tyre, a precursor to the extension of the tyre offer to other segments than passenger cars and light vehicles, to include trucks, motorbikes, aircraft, engineering and farm machinery. Since **2001** and the launch of its online sales site, Michelin has opened itself to the internet distribution channel.

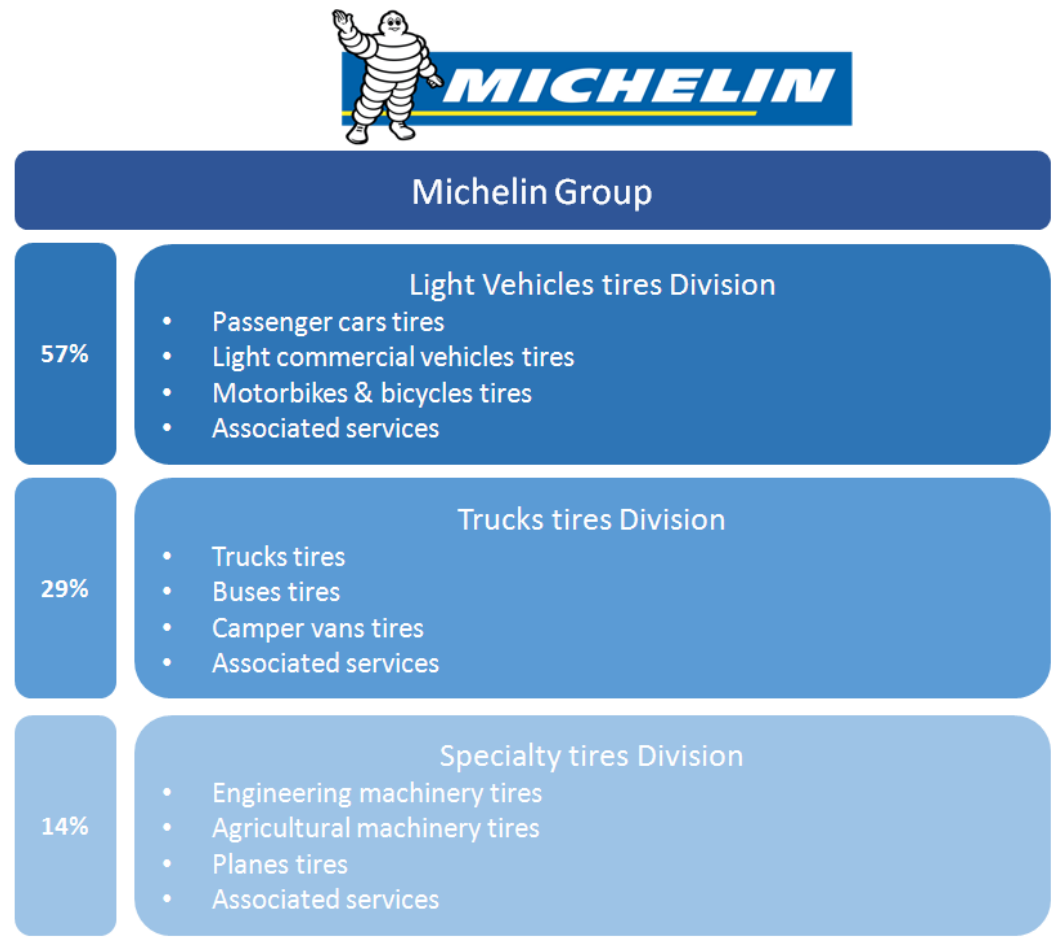
Fig. 40: Tyre manufacturing process



Source: Michelin.

The group took on an entirely new dimension during the **1980s**, when it absorbed the *Kleber* tyre plants and took over *Uniroyal-Goodrich Tire* in the U.S. These two acquisitions hoisted the group to the position of **world no. 2** tyre manufacturer with **EUR21.2bn** in sales behind Japanese group **Bridgestone** but ahead of US group **Goodyear** and German group **Continental**. Today's Michelin is divided into three segments: **1/** tyres for **passenger cars** and light utilities vehicles, **2/** truck **tyres** and **3/** **specialty tyres** for farming, building and mining machinery.

Fig. 41: Breakdown of Michelin sales by division (% of total group sales)

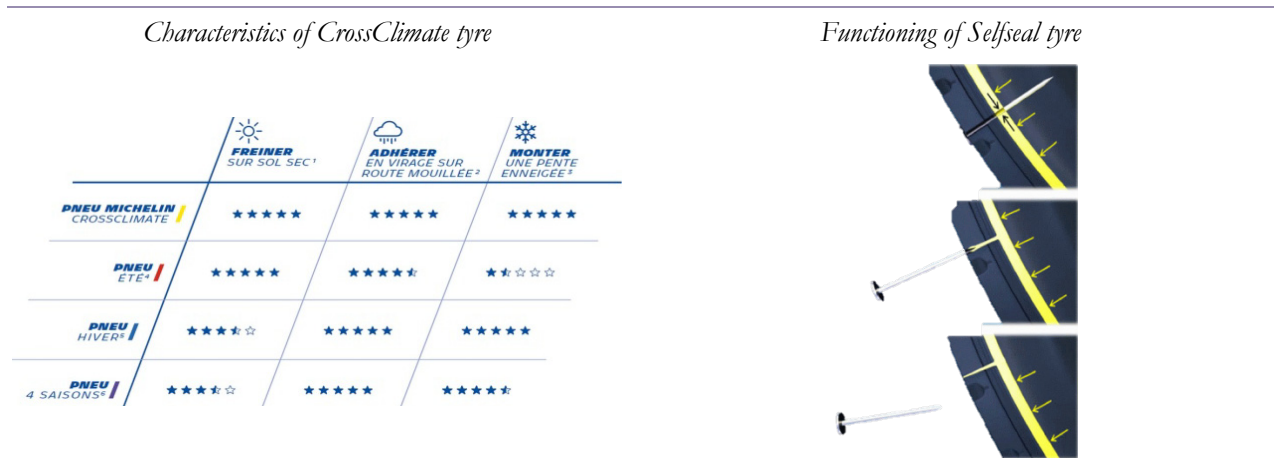


Source: Michelin; Bryan, Garnier & Co ests.

9.2. Michelin passenger tyres - 57% of sales and 54% of group EBIT

Via this segment which generates **EUR12bn** in sales, Michelin sells tyres and certain associated services for passenger cars, 4x4, SUVs, motorbikes, scooters, bicycles and light utilities vehicles. The business must deliver tyres that have multiple performance possibilities that are often contradictory, including safety, long lifespans, fuel savings or driving pleasure. In Europe, **Michelin** faces competition primarily from **Goodyear/Sumitomo** and **Continental** whereas in the U.S. it is more directly up against **Bridgestone/Firestone** and **Goodyear**.

Fig. 42: Innovations in the passenger car segment



Source: Michelin.

In order to stand out from its rivals, Michelin highlights the quality of its products and its technological edge, with, among its latest innovations, the *CrossClimate* tyre, which offers the same performances irrespective of weather conditions, and therefore prevents drivers from needing to change their tyres in winter and spring. This innovation has the advantage of a summer tyre that can grip onto a wet or dry surface while ensuring driveability on snow and when braking. Michelin has also developed the *SelfSeal* tyre capable of repairing itself with no manual intervention. This tyre has a self-adhesive material applied to the outside surface in order to keep it waterproof and maintain pressure in the event of a puncture. When the object responsible is removed, the substance acts like a puncture repair spray and fills the hole from inside the tyre.

9.3. Michelin trucks - 29% of sales and 25% of EBIT

Michelin truck tyres are destined solely for trucks, buses, camping cars and other vehicles considered as trucks. The sale of tyres and associated services such as **BtoB** solutions for fleets of trucks, buses and other vehicles generated **EUR6.2bn** in sales in 2015.

Fig. 43: Multiway 3D innovation for trucks

Michelin X Multiway 3D XZE tyre

Michelin X Multiway 3D XDE tyre



Source: Michelin.

As in the passenger car segment, Michelin develops and sells upscale tyres with a large focus on technology. The X tyre line is a perfect example with the *X Line Energy Z/D* tyre which reduces fuel consumption from the first to the last kilometre by limiting heating due to the tyre's multiple flexions when moving. The *X Multiway 3D* tyre is equipped with a new generation of treads that increase the tyre's life expectancy, reduce the vehicle's fuel consumption and braking distances and also have an increased load capacity of **eight tonnes**.

9.4. Michelin specialties - 14% of sales and 21% of EBIT

The third and last Michelin business unit, **Michelin Specialties**, is primarily dedicated to engineering equipment and to a lesser extent farming machinery and aircraft. In this offer, the range of clients includes mining, construction and farming companies as well as airline companies. This business is historically far more profitable than other types of tyre offered by the group.

Fig. 44: XDR2 tyre presented as the largest in the world



Source: Michelin.

With its considerable know-how in this very specific and technological tyre, Michelin generated **EUR2.9bn** in sales in 2015. One of the group's latest star products is the *XDR250* destined for open air mines. The tyre enables the truck to carry a load of **67 tonnes** and increases the productivity of rigid dumpers by around **25%** relative to its direct rival **Bridgestone**, with no compromise in terms of lifespan. The tyre was developed in partnership with Caterpillar and Komatsu and also functions in low temperatures. This innovative culture is not recent since Michelin was the first group to produce the world's largest tyre, the *Michelin XDR2*, in 2001. The tyre is **4 meters high** and can carry loads of up to **100 tonnes** by using a low pressure technique.

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