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**Publication Director and Chief Economist:** Ludovic Subran

Macroeconomic Research and Country Risk: Ana Boata, Stéphane Colliac, Georges Dib, Mahamoud Islam, Dan North, Manfred

Sector and Insolvency Research: Maxime Lemerle (Head), Marc Livinec, Didier Moizo, Sergey Zuev (Sector Advisors)

**Support:** Laetitia Giordanella (Office Manager), Ilan Goren (Content Manager), Julien Aymé-Dolla, Nada Benslimane, Nathan Carlesimo, Marco Hauschel (Research Assistants)

Editor: Martine Benhadj Graphic Design: Claire Mabille

Stamer (Country Economists)

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For further information, contact the Economic Research Department of Euler Hermes Group at 1, place des Saisons 92048 Paris La Défense Cedex – Tel.: +33 (0) 1 84 11 50 46 – e-mail: research@eulerhermes.com > Euler Hermes Group is a French limited liability company (société anonyme) with a Board of Management and a Supervisory Board, with a share capital of EUR 13,645,323.20. Nanterre Trade and Companies Register no: 552 040

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# Making Cars Cool Again

**LUDOVIC SUBRAN** 

Last year, a colleague of mine went twice to the Paris Motor Show. The first time, as an industry expert, he was invited along with the press to discover the brand new models - before the show even started. He came back to the office with stars in his eyes: the electric car was the star of the event and finally making it to the center stage. Skeptics and cynics could crawl back into the hole they came from - me included! The second time, a week after, he took his wife to see the concept cars. Yet, he could only show her humongous SUVs which had replaced the edgy electric vehicles. That was a year after the Dieselqate.

This year, in Frankfurt, at the International Motor Show, car lovers may be a bit antsy. After a record year for car sales in 2016, the market is still growing, in sync with the economic recovery, but the US, the UK and China are disappointing. Families prefer affordable second-hand cars, and the end of tax breaks, and rising interest rates make it harder to invest in a car. If you add to this a series of bad news and scandals, spin doctors should hold their annual convention in a location nearby.

The industry is doing OK. They are just having a hard time squaring the circle. Their customers are asking for the moon, or as we say in French, a five-legged sheep. They want their auto to be connected, green, fast, cheap and cool. They want a different experience altogether. They may not even know what they want. In the meantime assembly lines have to get

ready. The industry is in Renaissance mode and it is quite bewildering, for everyone. Not a day goes by without a new report about the car of the future: your Al-driven, self-parking, and always heated ride; your fast-charging, fast-going, fasteverything machine; Hyperloop, hyper car, hyper-almosttransportation-like knight-rider. Cars in James Bond movies look so cheap compared to what these reports promise. Let's make a pit stop. In our auto world championship report, car makers have to compete for sales, profits, green technology and innovation at the same time. Pole position is no guarantee for success. Agility and speed matter but are no conditions for success. However, tough decisions have to be made and it looks like car manufacturers have spent more money and time on new mobility services and technology upgrades to make cars cool again. They have invested less in changing the engines or the infrastructure around it. Public subsidies continue to be the main driver for electric vehicles - not climate consciousness, but the grid is massively underinvested. In the end, the experience is what matters. Innovation is important but not disruptive enough to make all the promises come true. What a hard awakening it'll be when in five years from now we'd still be complaining about too elitist electric cars. Easier (robotized) driving will be a small consolation prize. It is time to really move up a gear if we want to make cars great again.

In the meantime, let the auto world championship begin.



# The **Auto** World **Championship**

The Race for Sales, Electric cars, Profitability and Innovation

MARCO HAUSCHEL, NATHAN CARLESIMO AND MAXIME LEMERLE



- The Sales Cup. Worldwide vehicle sales are forecast to reach 95.8 million in 2017 (+2.1% annual growth rate) and 98.2 million in 2018 (+2.5%), boosted by sales growth in China and India. The auto market is on course to reach a milestone in 2019, when 100 million units are expected to be delivered to clients. Yet, compared to 2016, the rate of growth is lower due to the decline in sales in the US and the UK.
- The Electric Cup. Electric Vehicles (EV) enjoy a strong growth momentum: the worldwide stock could exceed 3 million cars in 2017 after crossing the 2 million unit threshold in 2016. China, the US, the UK, France, and Germany are in pole position. The magnitude of government subsidies, the expansion of the charging network, and battery prices will drive the growth of the electric car market.
- The Profitability Cup. The industry enjoys strong profitability with an average EBIT margin of 6.0% in 2016, up from 5.5.% in 2015. Japanese manufacturers and Italian suppliers take the lead. With the exception of American and Italian car makers, the debt burden of manufacturers is now lower than their pre-crisis levels. Working capital requirements and capital expenditures are stable.
- The Innovation Cup. Innovation will rely on R&D expenditure, patentable technology, and M&A. Traditional manufacturers in Germany, Japan and the US lead the first two categories, while China automotive sector is the world leader for ICT M&A, totalling USD6.2bn over 2012-2017.





**Chart 1** The Automotive Industry — Racing Season 2017 Competitors: China, France, Germany, India, Italy, Japan, the UK and the US



Number of registrations

Growth (y/y)







28.6mn

10.7%



5.0mn



Share of subsidies\*

Number of fast chargers per EV



18.0%

18.0%

136 0‰

40 0%

190‰



Manufacturer

Supplier



9.0%



8.6%





## Innovation Cup

R&D (2015) (EUR)

Automotive-ICT M&A deals (2012-17) (USD)

37.0bn



29.4bn



16.7bn



6.2bn



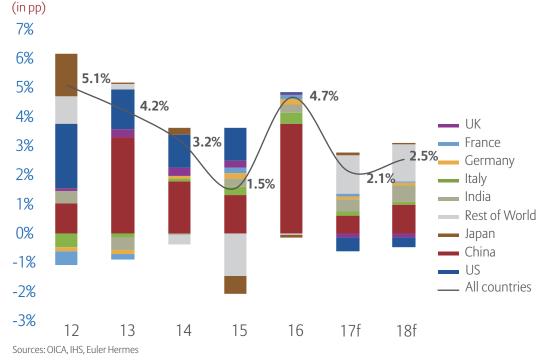
4.5bn



2.1bn

<sup>\*</sup> in % of Total EV Retail Price Source: Euler Hermes

#### Chart 2 Contributions to Growth in Global Vehicle Sales



# 100 million Vehicle sales in 2019

# The Sales Cup: Incentives, Electric Cars, and Second-Hand Market

Euler Hermes forecasts that worldwide vehicle sales will reach 95.8 million in 2017 and 98.2 million in 2018. Sales are expected to cross the 100 million units' threshold in 2019. This corresponds to an annual growth rate of +2.1% in 2017 and +2.5% in 2018.

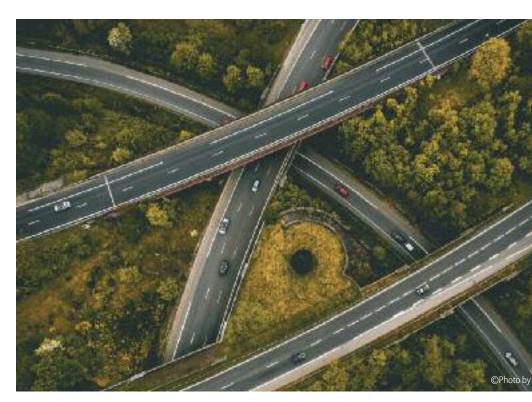
Three reasons explain why new vehicle registrations are expected to grow twice as slowly in 2017 compared to 2016, and accelerate only slightly in 2018 – in spite of a broad-based economic recovery worldwide:

1. First, changing incentives in top markets. China stopped tax incentives in early 2017, financial conditions tightened in the US, and the consumer confidence in the UK suffers from Brexit consequences. The good momentum in European countries (e.g. Italy ) and the rest of the world will not suffice to offset the overall deceleration. In 2018, the tightening of financial conditions across the world will raise borrowing costs for households, and drive up the opportunity cost of holding inventories for manufacturers. According to the NY Fed (2015), a 100 basis point parallel shift in rates in the US, could reduce vehicle sales by -3.25% (equivalent to 170,000 US vehicles), while annual production would fall at an annual rate of 12%.

2. Secondly, the booming used-car markets in the US and UK and burgeoning second-hand market in China will contribute to decelerating sales growth of new vehicles on a global scale. Used-car sales in China are expected to double from approximately 12 million today to 24 million in 2020. In mature markets such as the US, the ratio of used-vehicle to new-vehicle sales typically lies between 2 and 2.5. In China, this ratio currently stands at 0.4. This presents a

medium-term risk for car manufacturers and suppliers, which have made massive investments in the Chinese market.

**3.** Last, though the growth momentum of electric vehicles (EV) is good, it is the demand for new mobility services, and the rise of autonomous driving which are making cars cool again. Their effect on boosting global car sales is yet to be accounted for.



# The top 8 markets represent 70% of global sales

These three market trends affect country dynamics differently:

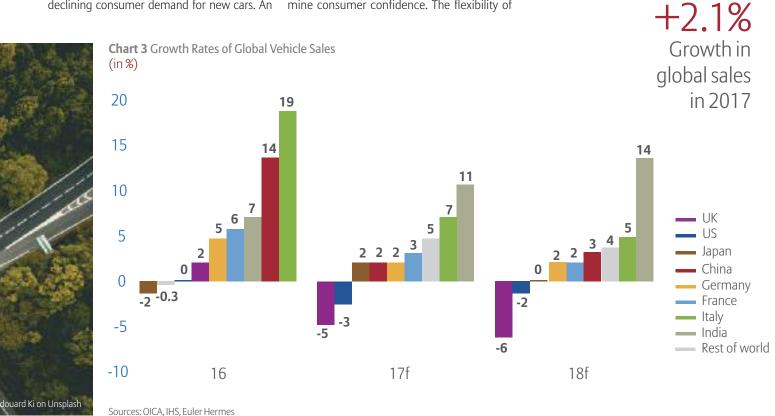
- 1. China, the largest automotive market, is forecast to expand by +2.0% in 2017 and +3.2% in 2018. This corresponds to sales of 28.6 million and 29.5 million units respectively. By 2019, more than 30 million vehicles will be sold in China each year. Despite decelerating growth as a consequence of the elimination of tax advantages in early 2017, new sales will continue to grow at a moderate pace. They stem from lower-tier cities and rural areas. In the medium-term, a burgeoning used-car market supported by the removal of restrictions on second-hand trading could put a dent in new vehicle sales.
- 2. The US automotive market faces a major shift. It is expected to shrink by -2.5% in 2017 and -1.8% in 2018, with sales amounting to 17.4 million units in 2017 and 17.1 million in 2018. This can be attributed to a booming used car market, where growing volumes of off-lease vehicles will lead to downward pressures on pricing and declining consumer demand for new cars. An

initial tightening of lending conditions also contributes to the slowdown in demand.

- 3. Japan. Vehicle sales' volumes are expected to stabilize at 5.0 million units in both 2017 and 2018, with a growth rate of +1.6% in 2017 and +0.2% in 2018. Despite the lingering effects of the 50% increase in the minicar ownership tax in 2015, sales growth will be fueled by the extension of "eco-car" tax benefits. Global economic recovery and a weak Yen could also boost Japanese vehicle exports in the short-term.
- 4. India is experiencing a strong growth momentum. Based on our estimates, vehicle sales will increase by +10.7% in 2017 and +13.5% in 2018 or 4.1 million and 4.6 million units respectively. One of the principal drivers of sales growth is the rollout of the Goods and Sales Tax (in July 2017), removing the previous cascading effect of taxes on pricing (i.e. lower car prices and growing volumes). Low penetration rates and government commitment to infrastructure investment support medium-term growth prospects.
- **5. Germany**'s vehicle sales continue to rise with a figure of 3.8 million in 2017 and 3.9 million in 2018. This represents a growth rate of +2.2% in 2017 and +1.7 in 2018. This slowdown is associated with the emissions scandal and cartel allegations that shake up the industry and undermine consumer confidence. The flexibility of

German manufacturers to switch to alternatives vis-à-vis the challenging nature of Diesel technology will determine medium-term growth, especially for sales in Europe.

- **6.** The UK. New vehicle sales growth is forecast to plunge by -5.0% in 2017 and -6.0% in 2018. Annual sales are expected to fall from 3.0 million vehicles in 2017 to 2.8 million in 2018. Uncertainty surrounding Britain's exit from the EU impacts both consumer and business confidence, weighing on top line sales growth. Moreover, new constraints on auto finance and the booming used car market present further headwinds to new vehicle registrations.
- 7. France is expected to experience a solid sales growth of +3.0% in 2017 and +2.0% in 2018, which equals 2.5 million and 2.6 million new vehicles sold respectively. Recovery of domestic economic activity supports the solid growth momentum of the French automotive market.
- **8.** New vehicle sales in **Italy** are set to jump by +7.0% in 2017 and +5.0% in 2018. Sales will increase by 2.2 million and 2.3 million units respectively. A fierce battle for market shares and improved consumer and business confidence have been driving the Italian automotive market.





# +58% Growth of EV sales in 2017

# The Electric Cup: State Support Fuels Growth

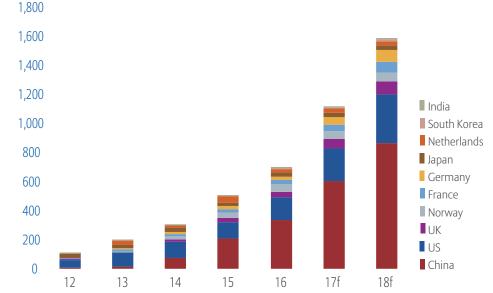
The worldwide fleet of electric vehicles (EV) surpassed 2 million vehicles in 2016 after having crossed the 1 million thresholds in 2015, at a staggering growth rate of 60%. We forecast that the stock of electric cars will climb above 3 million units in 2017 on a double-digit growth trajectory.

While sales of battery-powered cars still represent a small proportion of the global market, the patterns of expansion are diverse. Annual EV registration will be growing +58% in 2017 and +41% in 2018. The largest contributors to electric vehicle sales growth are China, the US, the UK, France, and Germany. While growth momentum is set to remain strong in China (+80% in 2017), the US and Japan are facing a slowdown. By the end of 2017, China and the US will account for more than two-thirds of global EV sales.

The dispersion of growth rates across countries is driven to a large extent by policy and regulatory frameworks. The first includes fiscal incentives such as subsidies and tax exemptions. The latter refers to pollutant emission limits and restrictive measures on cars powered by an internal combustion engine (ICE) which runs on fossil fuels.

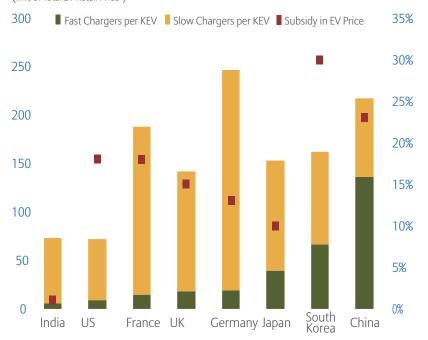
As large-scale infrastructure deployment is crucial, but costly and slow, governments continue to rely on financial incentives to improve the value proposition of electric cars in the short-term. The price of a battery pack, a fully assembled battery unit including wiring, electronics, and a cooling system, is the critical factor. The price of a battery pack fell approximately 80% from 2010 to 2016. It still accounts for the largest share of the production cost of an electric car. At the same time, battery durability must improve, given the higher rate of depreciation of a battery-powered vehicle.

**Chart 4** EV Vehicle Registrations (in thousand)



Sources: IEA, Euler Hermes

## **Chart 5** Charging Infrastructure and Subsidies (in % of Total EV Retail Price\*)



\*Based on BEV model BMW i3 (60Ah) as a benchmark. Only national subsidies are taken into account, while additional local subsidies or incentives might exist. For example in the United States, many states grant additional subsidies (e.g. California). In China, only domestically produced models are granted subsidy. For better comparability, the calculation for i3 was made with a subsidy.

Source: IEA, McKinsey, Euler Hermes.

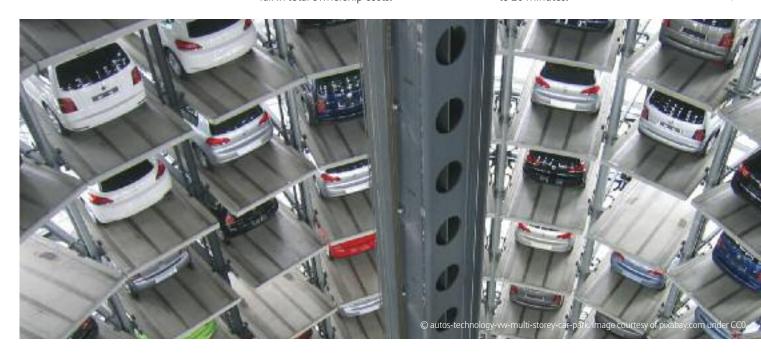
51% Market share of China in global EV sales in 2017 In recent years, there has been a discernible policy trend away from scrappage programs, which were introduced to stimulate demand after the global financial crisis. Policies are now more geared towards targeted subsidies for the adoption of electric driving. This transition has also been aligned with greater public investment in energy infrastructure.

There is a strong correlation between the growth in penetration rates of electric cars and financial incentives. Thus, the pace of phasing out of subsidies must be aligned with the fall in total ownership costs.

In our panel of countries, China (23%) provides the highest rate of subsidies. As a result, the Chinese electric vehicle market has been growing faster than in any country in the last five years.

The most critical short-term risk is the abrupt removal of incentives. If electric vehicle sales were to accelerate too fast, monetary incentives run the risk of becoming a burden for governments. At the same time, fuel tax revenues would start to fall along with declining traditional vehicle sales, thereby putting a strain on public finances. Thus, EV subsidies would eventually be replaced by EV taxes.

Medium-term growth hinges on energy infrastructure and technological development. Available energy infrastructure is a key selling point for potential consumers of a battery-powered vehicle. The number of public charging stations has been on a steady increase in the last years, driven by the strong growth of fast chargers. China has the largest number of fast chargers in absolute and relative terms (136 per a thousand EV), followed by South Korea (67) and Japan (40). In stark contrast, countries like Germany (20 per thousand EV), the UK (18), France (15), and the US (10) lag in the deployment of energy infrastructure. Strong government support remains pivotal in ensuring network expansion. Private sector involvements could lead the next generation of charging infrastructure. A joint venture of leading German car makers is currently implementing a high-powered charging network along major highways in Europe. With completion expected by 2018, these ultra-fast charging stations would have power levels up to 350 kW which could reduce charging time to 20 minutes.

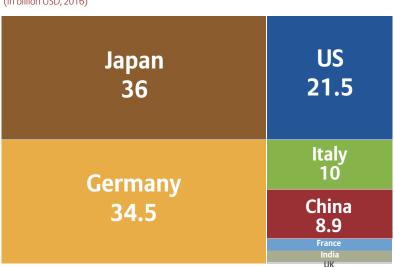


### The Profitability Cup: Suppliers Ahead of Manufacturers

Overall, profitability remains strong in the automotive sector, with an average EBIT margin of 6.0% across the actors reviewed, up from 5.5% in 2015 and 5.2% in 2014. Suppliers achieved an average EBIT margin of 7.0% in our panel in 2016, up from 6.5% in 2015, with Italian suppliers taking the lead (9%). Meanwhile, car manufacturers facing high pressure from global competition achieved a slightly lower average margin of 5.5% in 2016, up from 4.8% in 2015, with Japanese actors in pole position for the second consecutive year. The expansion of outsourced activities by vehicle manufacturers and the consolidation of the industry into oligopolistic 'mega suppliers' with no more than two or three major competitors continues to be reflected in their respective earnings.

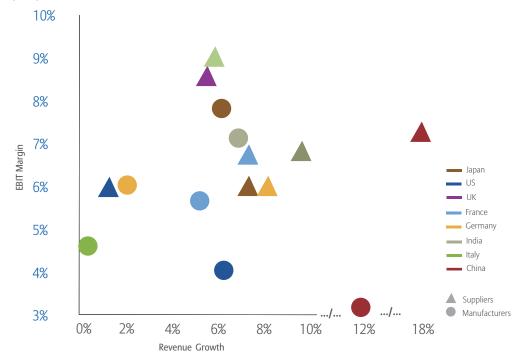
There is the risk that this divergence between car manufacturers and suppliers becomes more entrenched. Compared to many suppliers, unaffected by market trends such as the rise of electric vehicles or autonomous cars (because brakes, tires, and semiconductors remain indispensable), manufacturers face more structural challenges. The electrification of vehicles could turn the internal combustion engine, which is the traditional manufacturers' core value proposition, into a liability. Moreover, the digital ecosystem surrounding the autonomous car (key word: user experience) will generate the bulk of revenues in the future, while the hardware components of the car will become

**Chart 7**: Auto Sector CapEx (in billion USD, 2016)



Sources: Bloomberg, Euler Hermes

## **Chart 6** EBIT Margin Suppliers vs Manufacturers (2016)



Sources: Bloomberg, Euler Hermes

less important for the purchasing decision of consumers. .

In a context of mostly accommodative financing conditions, solvency in the automotive sector remains stable. With the exception of the US and Italy, the debt burden for the majority of actors surveyed has fallen compared to precrisis 2007 levels. In 2016, Net Debt/EBITDA, a proxy for solvency, was lowest for British and Chinese companies while Italian and American companies showed the highest solvency ratios at 2.2 and 2.1 respectively. Euler Hermes data shows that liquidity as measured by worldwide working capital requirement (WCR) averaged

78 days of sales in 2016. French and Italian manufacturers continue to be the most efficient over the operating cycle, whereas Chinese players stand at the opposite end of the spectrum. In 2016, Chinese manufacturers reported 112 days working capital requirements or 43% more than the world average.

Capital Expenditures (CapEx) totaled USD125bn in 2016 in our panel. More importantly, CapEx continues to be dominated by the traditional titans of the automotive sector. In 2016, Japan, Germany, and the US accounted for 73.6% of the total sector CapEx in our panel. Though German and French firms remain near their pre-crisis levels, Chinese and Indian companies have made efforts to catch up, raising their spending by 236% and 269% respectively since 2007. In China, this has contributed to structural overcapacity in some vehicle segments.

6.0% Sector EBIT margin in 2016

### The Innovation Cup: Tech Me If You Can

Three technological challenges drive innovation in the automotive sector: battery-powered electric vehicles (EV), autonomous driving technologies, and new mobility services. At the same time, three factors will determine the ability of industry players to secure future market shares. These are Research and Development (R&D) spending, the ability to deliver patentable technology, and ICT Mergers and Acquisitions (M&A) as well as strategic partnerships.

In 2015, the automotive industry spent a total of EUR108bn on R&D, the third-strongest sector after pharmaceuticals and technology hardware. The EU is by far the world's largest investor (47% of the world total), followed by Japan (27%) and the US (15%). However, the most aggressive growth in R&D expenditure comes from Asia. Chinese and Indian car manufacturers and suppliers have raised their R&D spending by 20.9% and 18.8% respectively from 2012 to 2015.

Similarly, the automotive industry produces a large number of patents relative to other sectors. In 2016, nearly 8,000 patents were registered, up 32.6% from 2015. As with R&D, the traditional industry champions such as Japan, Germany and the US account for the lion's share of patents. Manufacturers and suppliers in these countries have secured 67% of total patents.

Car companies face challenges from non-traditional players, notably in the field of con-



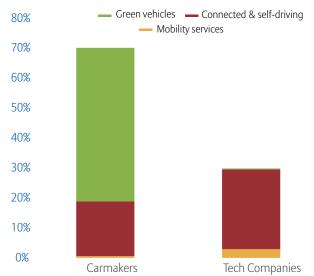
nected and autonomous driving technologies. Between 2012 and 2016, Google filed 221 patents related to driverless technologies, surpassed only by Audi with 223 patents in the same period. Established players continue to dominate the electric vehicles market.

Faced with new competitors, traditional manufacturers will need to sustain their investments in software companies or establish strategic partnerships with tech innovators and start-ups.

The total number of M&A deals in Tech, Information and Communication (ICT) above USD1mn has risen fivefold since 2012, while the

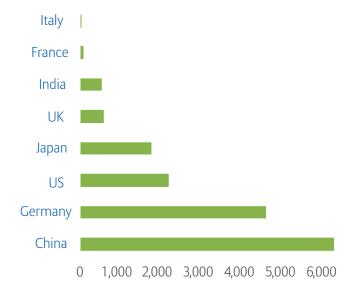
average deal size has risen 175%, reaching USD83mn as of August 2017. Chinese manufacturers lead the pack. Between 2012 and 2017, they spent USD6.2bn on ICT acquisitions, outspending the German (4.5bn) and American (2.1bn) competition. While governments provide subsidies and infrastructure investment to push the adoption of electric cars, manufacturers can focus on forging partnerships and achieving a competitive edge. The risk of bad investments remains high at this early stage.

**Chart 8** Carmakers\* vs. Tech: Patents for New Technology (as % of total sector patents)



\*Carmakers (Audi, BMW, Daimler, VW, Tesla); Tech companies (Google, Amazon, Microsoft, Apple, Facebook, Uber) Sources: WIPO, Oliver Wyman, Euler Hermes

**Chart 9** Cumulative ICT M&A for the Auto Industry (2012-2017) (in million USD)



Including deals completed and pending until August 2017. Source: Bloomberg



## Automotive in China

## New Technologies, Old Challenges

- 30 million new vehicles to be sold in 2019, despite decelerating momentum
- Overcapacity persists, while moving from volumes to valuebased growth
- Active industrial policy and high subsidies (23% of the EV retail price is subsidized) to drive growth

#### A tipping point?

In January 2017, the tax on pollutant emissions was raised from 5% to 7.5% for small-engine vehicles and restrictions on used-car trading were lifted. The Chinese authorities aim to reduce demand further by raising the same tax to 10% by the end of 2017. Anticipating the hike, consumers brought forward new car purchases to 2016. For 2017 and 2018, we expect the market to expand +2.0% and +3.2% respectively. This stems to a large extent from lower-tier cities and rural areas. At the same time, there are signs of an emerging used-car market in China, which is set to expand at a rapid pace in subsequent years (from 12 million in 2017 to 24 million in 2020), with medium-term risks for manufacturers, who have invested in the Chinese automotive market.

**Chart 1** New Vehicle Registrations (in million)

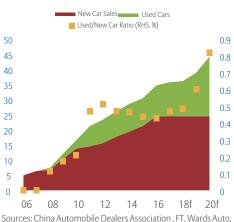


Sources: OICA, IHS, Euler Hermes forecasts

#### New portfolios and consolidation will drive profitability

Financial performance of Chinese suppliers is excellent relative to their global counterparts. In 2016, they earned an average EBIT margin of 7.3%, whereas manufacturers achieved a margin of 3.2%, well below the average of the countries reviewed. Some manufacturers have started producing SUVs and crossovers, moving from volume-based to value-added manufacturing, which could drive up margins. This also happens in the context of structural overcapacity, especially in the commercial vehicles and battery segments, which will be corrected through a (state-induced) wave of consolidation.

Chart 2 The Used-Car Market in China (in million)



Sources: China Automobile Dealers Association, FT, Wards Auto,



Automotive Non-Payment Risk (Q2 2017)

#### World leaders in M&A, weak domestic innovation

Despite China's active industrial policy, R&D spending and granted patents lag behind most advanced countries. Only in the field of battery technology, the Chinese automotive sector managed to raise its share of worldwide patents from 7% between 2005-2009 to 14% between 2010-2015. Independent innovation remains weak, as manufacturers rely on foreign automotive technology via joint ventures. In contrast, between 2012 and 2017, companies spent USD 6.2bn on ICT M&A (Uber China deal for USD 1.2bn in 2016), making them worldwide leaders, followed by Germany with USD 4.5bn. In August 2017, Great Wall Motors expressed interest in buying Fiat Chrysler Automobiles' Jeep unit.

#### Leading the electric wave

China has today the world's largest electric vehicle fleet, amounting to over 1 million cars by the end of 2017. It will remain the fastest growing market, with high double-digit growth rates. This has been supported by a rapidly expanding network of fast chargers (136 per thousand EV in 2016) and one of the highest subsidies worldwide amounting to 23% of the price of an electric vehicle. High registration fees in top-tier cities for cars with internal combustion engines also make EV adoption more attractive. Medium-term risk could emerge from the shift towards non-monetary incentives. Despite the gradual phasing out of production subsidies until 2020, China's industrial policy is tilted towards electrification. Under a zero-emission vehicle mandate, the government requires that 8% of new car sales by producers be electric in 2018 and 12% in 2020. This represents a risk for foreign manufacturers, which have not yet launched production in China.



# Automotive in the US

## **Growth Sputters**

- Auto loans defaults have been surging, putting a dent in credit lending and sales
- Swelling inventories contribute to declining profit margins for car manufacturers
- The US remains one of the global leaders in innovation, especially battery technology patents

#### Sales running out of gas

We expect the US automotive market to shrink by -2.5% in 2017 and -1.8% in 2018. In the aftermath of the global financial crisis, strong sales volumes were driven by the availability of cheap credit and lax lending conditions. With tighter monetary policy, the access to motor financing is becoming more restrictive, leading to a slowdown in consumer demand. New car loan origination has cooled off, as borrowers have started to default. Headwinds hampering new vehicle sales will also come from the booming used-car market. Growing volumes of off-lease vehicles will lead to downward pressure on pricing in the next years, leading to declining consumer demand for new vehicles. The policy changes proposed by the Trump Administration (e.g. border adjustment tax) add uncertainty to the industry's outlook.

## **Chart 1** New Vehicle Registrations (in million)

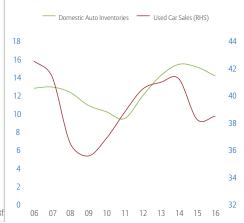


Sources: OICA, IHS, Euler Hermes forecasts

#### Inventory glut will eat into margins

The average EBIT margin of US manufacturers was below average of the sample countries. In 2016, they earned an EBIT margin of 4.0%. On the contrary, suppliers achieved average EBIT margin of 6.0%. We expect margins to deteriorate because of an inventory glut. When consumer demand slipped and inventories started rising, manufacturers cut prices and increased incentives for car dealers. This, in turn, will cause margins to plummet. Mounting pressure on production capacity has already led some manufacturers to announce plans to lay off workers. US manufacturers and suppliers continue to be industry leaders when it comes to capital expenditure, behind Japan and Germany.

**Chart 2** Used-Car Sales & Inventories in the US (in million)



Sources: Edmunds Media, US Bureau of Economic Analysis



Automotive Non-Payment Risk (Q2 2017)

# One of the global leaders in innovation and strategic investments

In 2015, R&D volumes amounted to EUR16.8bn, following Germany with EUR37.0bn and Japan with EUR29.4bn US industry players lead the field in battery technology. Between 2010-2015, they secured 29% of worldwide patents, before Japan (23%) and Germany (15%). Between 2012-2017, volume of M&A deals in ICT totaled USD2.1bn, following China and Germany. In May 2016, Ford, General Motors, and Microsoft invested USD253 mn in Pivotal Software, a cloud-based software startup. The former two had previously launched Ford Pass, an innovative consumer experience platform. In August 2017, Ford announced that it will launch production of electric cars in China, in a joint venture with Anhui Zotye Automobile. It already operates JVs in China, with Changan Automobile and Jiangling Motors.

#### California ahead of the curve

Government support for electric driving in the US is below average compared to the countries in our panel. Electric vehicle adoption varies greatly across states, with California being in the pole position. Alongside a zero-emission vehicle scheme and tax incentives, they just proposed the California Electric Vehicle Initiative (CEIV), which would provide point-of-sale rebates to buyers of electric cars (up to USD7,000, while also eliminating the need to file rebate applications with the state). The vast majority of fast chargers can be found in metropolitan areas such as San Francisco and San Jose. Other states such as Georgia, Oregon, and Washington are also catching up.



# Automotive in Japan

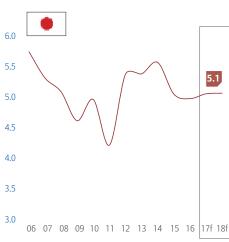
### Safe and Sound

- Japan's 5 million vehicle market is set to grow +2.0% in 2017 and slow to +0.2 in 2018
- Japanese manufacturers are the most profitable car makers worldwide
- Generous subsidies for competing technologies mean EV sales remain subdued

#### Manufacturers remain global players

Following two consecutive years of contracting sales growth, vehicle sales in Japan are estimated to grow +2.0% in 2017 and +0.2% in 2018. Despite the lingering effects of the 50% increase in the ownership tax for minicars in 2015, sales growth was fueled by the extension of "eco-car" tax benefits in 2016. While the use of derivatives and increased localized production has reduced the exchange and interest rate risk, Japanese producers are still vulnerable to movements in the Yen. Globally, Japanese producers are faring well. The combination of a weaker yen and a sustained recovery in global demand should support sales through 2017. Toyota Motor Corp. sold 10.2 million units worldwide in 2016, second only to Volkswagen while the Nissan Renault Group sold the most cars in H1 2017 (5.27 million units) up +7.0% y/y.

## **Chart 1** New Vehicle Registrations (in million)

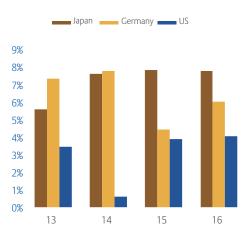


Sources: OICA, IHS, Euler Hermes forecasts

## Healthy balance sheets, but declining profit margins

Japanese manufacturers enjoyed the highest EBIT margin in our sample, while their suppliers nudged ahead in terms of revenue growth. However, we expect profits to decline because of the struggling US market, which will lead to intensified price competition and declining profits. Manufacturers were largely unscathed by the 2016 emissions scandal and have still some of the healthiest balance sheets among the players in the industry (e.g. solvency has improved relative to 2007 levels). In 2016, both manufacturers and suppliers were ranked first worldwide in terms of capital spending, before Germany, spending USD35.6bn.

**Chart 2** Manufacturer EBIT Margins



Sources: Bloomberg, Euler Hermes



Automotive Non-Payment Risk (Q2 2017)

#### Big but nimble

Manufacturers and suppliers spent a total of EUR29.4bn on R&D in 2015. 1854 patents were filed in the Japanese automotive industry in 2016, second to Germany and more than twice as many as US companies. At the same time, Japanese manufacturers and suppliers have been less aggressive than their peers in their ICT M&A. Since 2012, they initiated USD1.7bn worth of deals, behind China, Germany and the US. In 2017, Japanese companies led the creation of the Automotive Edge Computing Consortium. Its goal is to set up a digital ecosystem for connected cars to support emerging technologies (smart driving with enhanced cloud computing technologies). Members include the Toyota Motor Corp., DENSO, NTT DOCOMO, Ericsson, as well as Intel.

#### **Hybrid strategy**

Since Japan introduced its eco-friendly vehicle tax incentive scheme in 2009, the share of (socalled in Japan) next-generation vehicles (hybrid, pluq-in hybrid, electric, fuel cell, and clean diesel), has risen sharply. In 2016, they accounted for almost 35% of new passenger car registrations. The picture for electric car sales is less impressive. In 2016, sales surged by +20% y/y to an annual total of 24,000 cars or 0.5% of total new registrations. Plans to deploy 5,000 fast chargers by 2020 along with an ongoing scrappage program should support further electric vehicle adoption. We forecast moderate growth in 2017. The Japanese government also provides generous subsidies for competing technologies such as hydrogen fuel cell vehicles (PHEVs), which could undermine more expanded adoption of electric cars.



# Automotive in India

## Engines On!

- India's automotive market is the fastest growing, at +10.5% in 2017 and +13.5% in 2018
- Medium-term growth is supported by low penetration rate and young population
- Lack of energy and transport infrastructure hinder electric car sales

#### Harmonized tax boosts sales

In July 2017, India launched its single, unified tax regime, where the Global Sales Tax (GST) removed the cascading effect of taxes. This impacts sourcing and distribution strategies of car companies, resulting in lower overall cost, while reducing the tax burden on vehicles. This effect of minimized taxation will lead to downward pricing in some car segments and therefore boost short-term sales. For 2017 and 2018, the car market is expected to expand by +10.5% and +13.5% respectively. Medium-growth prospects remain favorable and sustained by increasing FDI into the automotive sector, solid government support, and rising demand from a large and young population with growing disposable income.

#### An engine of profitability

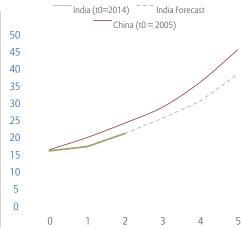
In 2016, manufacturers earned an EBIT margin of 7.1%, well above the sample average. This is due to Tata Motors, India's largest manufacturer, with a margin of 7.9%. Suppliers, on the other hand, had a below average performance of 6.8%. Revenues and profitability are expected to grow due to the GST rollout. Nonetheless, total capital expenditure of Indian manufacturers and suppliers represents a fraction of what industry leaders such as Germany, Japan, and the US invest, although it has been growing rapidly in recent years (by 269% since 2007).

**Chart 1** New Vehicle Registrations (in million)



Sources: OICA, IHS, Euler Hermes forecasts

**Chart 2** Penetration Rate Over Time (Vehicles per 1,000 Driving Population)



Sources: IHS, Euler Hermes



Automotive Non-Payment Risk (Q2 2017)

## Large conglomerates lead R&D expenditure

With respect to technological innovation in the automotive sector, India does not fare well. To turn India into a leading and innovative manufacturing and export hub (official government target), R&D spending must increase substantially and a system of fiscal incentives for manufacturers and suppliers should be implemented. ICT M&A volume between 2012 and 2017 amounted to USD515mn (a mere tenth of China's M&A volumes). The lion's share is attributable to the acquisition of Lyft Inc. (USD510mn) by Tata Motors, India's largest automotive manufacturer, and a consortium of investors in 2017. The collaboration will extend to mobility services and self-driving cars.

## Infrastructure deficiencies hinder greater EV adoption nationwide

In 2015, the Indian government introduced the Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME) scheme focused on technology development, pilot projects and charging infrastructure. One of the main obstacles to electric vehicle penetration remains India's deficient energy and transport (and power-generating) infrastructure. The large unmet need for infrastructure investment remains the main concern. Meanwhile, government subsidies cannot compensate for the still relatively higher battery prices in the country. As a result, sales of electric cars continue to be subdued, with an overall EV fleet of 115,000 vehicles by the end of 2017 (a tenth of China's EV fleet).



# Automotive in Germany

#### Down with Diesel?

- Diesel market share plummets to 41%, while electric car sales surged by +116% in H1 2017
- German manufacturers remain one of the most profitable worldwide despite scandals
- Industry players remain uncontested worldwide leaders in R&D spending

## Regulatory backlash has narrowed demand for diesel

In H1 2017, new vehicle registrations totaled 2.4 million, up +2.1% compared to the same period in 2016. Following the emission scandal and cartel allegations, German manufacturers now face mounting pressure surrounding the diesel technology. We expect the downward trend in diesel market share to continue (from 46.9% in H1 2016 to 41.3% in H1 2017), with lower sales in this segment. New vehicle sales are set to expand by +2.2% in 2017 and +1.7% in 2018. The medium-term outlook will be determined by the industry's flexibility (and willingness) to make the shift from diesel technology to alternatives. The loss of consumer confidence and tarnished reputation will affect manufacturers' sales. In response, they have an-

**Chart 1** New Vehicle Registrations (in million)



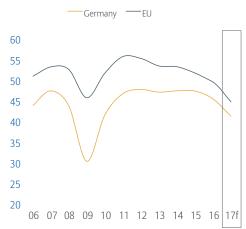
Sources: OICA, IHS, Euler Hermes forecasts

nounced diesel rebate scheme to trade in old vehicle, with additional incentives for electric and hybrid models.

#### Profitability provides a cushion

Financial performance of German manufacturers continues to be strong. In 2016, the average EBIT margin of German manufacturers stood at 6.0%, above the average of the countries reviewed (weighted down by the still recovering margin of VW). On the contrary, suppliers achieved an EBIT margin of 6.0%, below the average. German manufacturers seem well-endowed to handle potential fines for breaching antitrust regulation. According to EU legislation, the maximum fine could be as much as 10% of their global revenues.

**Chart 2** Diesel Sales (as % of Total New Vehicle Registrations)



Sources: ACEA, Euler Hermes



Automotive Non-Payment Risk (Q2 2017)

#### Global leaders in engine technologies

Between 2010-2015, German manufacturers and suppliers were the international leaders in engine patents. 34% of patents in the field of electromobility and 32% of patents in the field of hybrid driving systems worldwide come from Germany. In 2015, the German automotive industry invested EUR37.0bn in R&D, beating Japan (EUR29.4bn) and the US (EUR16.7bn). In 2015, BMW, Audi, and Daimler carried out one of the largest ICT M&A deals in the German automotive industry thus far by purchasing the digital-mapping company HERE for USD2.8bn (62% of the M&A volume across sectors of the German automotive industry between 2012 and 2017, totaling USD4.5bn). Only the Chinese producers had a larger deal volume over the same period (USD6.2bn).

#### **Diesel scandals boost EV sales**

In Germany, 13% of an electric car's retail price is subsidized, behind the US (18%) and France (18%). The implementation of Germany's charging infrastructure remains patchy, with only 20 fast chargers per thousand electric vehicles, on a par with the UK (18) and France (15). In 2016, Daimler, BMW, VW, and Ford agreed to work together to establish a vast highpowered charging network for EV along major highways throughout Europe by 2020. In response to the diesel scandal, sales of electric cars have experienced triple-digit growth in H1 2017. Sales surged by +115.5% to 22,453 cars (close to total sales of electric vehicles in 2016). We expect this growth momentum to remain strong in 2017, while car sales could exceed the threshold of 50,000 this year.



# Automotive in the UK

### Confidence Brakes

- Sales growth will continue to face the impact of Brexit on consumer confidence
- While vehicle sales are down, electric vehicle sales are up sustained by regulatory measures
- British suppliers enjoy one of the highest operating margins in the world

#### Sales: The squeaky wheel of Europe

The British vehicle market is expected to contract -5.0% in 2017 and -6.0% in 2018. This year marks the end a five-year period of strong sales growth (spurred by cheap auto financing deals). Dealership finance has cooled off, as consumers increasingly turned to used cars due to their plummeting prices. While the risk of rising defaults from mounting consumer debt is reduced, this will have a dampening effect on new vehicle sales. Both markets have however been slowing down markedly since last year owing to the persistent uncertainty of Brexit, the weak exchange rate, and waning business and consumer confidence, which will have knock-on effects on new vehicle sales in the upcoming years.

### Margins spared, for now

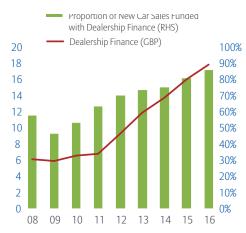
With an EBIT margin of 8.6% in 2016, British suppliers achieved one of the highest values in our panel of countries. Total capital expenditure in the UK is rather weak relative to Germany, France, and Italy. Solvency remains strong and liquidity in the form of working capital requirements is above the world industry average. So far, the health of the industry has withered the Brexit fallout. There is reason to believe however that the weak pound frontloaded the benefits cheaper exports, with rising import costs and heightened uncertainty to act as headwinds to both margins and growth. We expect that Brexit will eventually hurt the profitability of the entire sector.

**Chart 1** New Vehicle Registrations (in million)



Sources: OICA, IHS, Euler Hermes forecasts

**Chart 2** Annual Dealership Finance for New Car Purchases in the UK



Sources: Bank of England, Finance & Leasing Association



Automotive Non-Payment Risk (Q2 2017)

#### A story of Public Private Partnerships

In 2015, British R&D in the automotive sector amounted to EUR1.8bn, the lowest among the countries reviewed. Of greater significance are private and public initiatives aimed at bolstering low carbon and connected technologies. In July 2017, the Advanced Propulsion Centre (APC) announced the Faraday Challenge (with government funds of GBP246 mn.) aimed at developing the EV supply chain in Britain by creating a national battery manufacturing facility. The ultimate purpose is to scale up the technology and entice international manufacturers and suppliers. While Brexit may impact sales growth already (since 50% of the cars produced are exported to Europe), there may be second order consequences on the automotive sector funding, a bulk of which is provided by EU R&D funding.

#### EV sales grow despite lack of infrastructure

British consumers brought forward vehicle purchases to H1 2017 to beat the revised Vehicle Excise Duty (VED), which includes the introduction of a flat fee for vehicles emitting more than 100g CO2/km. In a similar vein, the government's announcement to ban the sale of diesel and petrol cars by 2040 has already forced some consumers to rediscount the purchase of cars with internal combustion engines. We therefore expect sales of electric vehicles to expand at a solid two-digit growth rate. Regarding financial incentives, the UK lies below the average, with only 15% of an EV's retail price subsidized. The current charging networking must be expanded, where only about 18 fast chargers per thousand vehicles are accessible.



Automotive in France

## Revving Up

- Recovery of economic growth and consumer confidence at home supported sales growth of +4.2% in the first eight months of 2017
- French manufacturers and suppliers remain in strong financial standing
- Generous EV policies may face near-term budgetary constraints

#### **Economic recovery**

Following two consecutive years of strong sales growth, the car market in France beat expectations the first eight months of 2017, delivering +4.2% growth y/y. The pickup can be explained by a broad recovery in domestic business activity. We forecast vehicle sales to grow by +3.0% in 2017, and +2.0% in 2018.

#### Manufacturing: a well-oiled machine

French manufacturers compensated for the sharp downturns in Russia and Brazil by relying on their principal market in Europe. In 2016, 78% of French vehicles produced by French car manufacturers were sold abroad and 49% were destined to the EU. French manufacturers achieved an average EBIT Margins of 5.7% in

**Chart 1** New Vehicle Registrations (in million)



Sources: OICA, IHS, Euler Hermes forecasts

2016, above the sample average while suppliers saw their average EBIT margin rise to 6.7%, below the average of countries reviewed. Both manufacturers and suppliers have maintained healthy balance sheets (i.e. high solvency) and present the second most efficient operating cycle in our country panel with low working capital requirements. Regarding capital expenditure, French industry players lag behind their German (EUR34.0bn) and Italian (EUR10.0bn) counterparts, with a total volume of EUR6.3bn in 2016.

#### Partnerships matter

Manufacturers spent EUR6.1 billion on R&D in 2015 and filed 858 patents in 2016, ranking fourth behind Germany, Japan, and the US in both categories. In August 2017, PSA acquired

**Chart 2** EBIT Margin Manufacturers vs Suppliers in France



Sources: Bloomberg, Euler Hermes



Automotive Non-Payment Risk (Q2 2017)

GM's European arm for EUR1.75bn, including the Opel and Vauxhall brands. French suppliers continue to be proactive in forging strategic partnerships to pursue connectivity and autonomous driving technologies. In March 2017, Valeo acquired minority participations in Kuantic, specialized in telematics, and a 100% stake in Gestigon, a German startup focused on 3D image recognition. In June 2017, Cisco and Valeo announced a partnership to create strategic innovations related to smart mobility services (Cyber Valet Services).

#### More incentives on the horizon

In July 2017, Macron's government announced that Diesel and petrol powered cars would be banned by 2040. The government is also expected to review the existing scrappage scheme (prime à la casse), which has been a dismal failure. The new program would replace two separate subsidies for modest (nontaxable) households with a EUR2,000 grant for the destruction of cars registered before January 2006. This measure supplements subsidies of up to EUR10,000 for newly-purchased electric cars. In light of budgetary pressures, these measures could be postponed. Indeed, the fiscal re-alignment of diesel fuel (with petrol) will not occur before 2022. Nonetheless, with 20,000 electric vehicles sold in the first half of 2017, we expect EV sales to continue exhibiting solid doubledigit growth. In March 2017, the largest French automaker, PSA, announced that 80% of its models would be electric by 2023 and has already begun testing autonomous driving technologies on roads.



# Automotive in Italy

#### In the Fast Lane

- Italy's vehicle market will be the fastest growing in Western Europe, with +5.0% in 2018
- Italian suppliers enjoy the highest EBIT margin (9.0%) in the automotive industry
- Strategic partnerships rather than R&D due to limited financial resources of SMEs

#### Back on its feet - at least for now

Based on our forecast, new vehicle registrations in Italy are set to climb by +7.0% in 2017 and +5.0% in 2018. This continued strong growth momentum stems from a fierce battle for market shares, with a growing number of rebates. Besides, positive consumer and business confidence have been driving new vehicle sales. Medium-term growth prospects remain uncertain. A looming banking crisis in Italy has the potential to disrupt the European automotive market. High levels of government debt and a banking system exposed to a high volume of NPLs could lead to serious restraints in credit provision and dampen consumer confidence.

## **Chart 1** New Vehicle Registrations (in million)

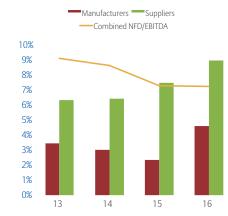


Sources: OICA, IHS, Euler Hermes forecasts

#### New luxury brand strategy outside Europe

The EBIT margin of Italian manufacturers was below the average of the countries reviewed, with 4.6% in 2016. The positive driver was the strong financial performance of Fiat Chrysler Automobiles (FCA) achieving a margin of 5.5% in 2016. Suppliers achieved the highest EBIT margin of 9.0% compared to their global counterparts. The largest Italian manufacturer, FCA, has been shifting production from mass-market cars to vehicles in the luxury segment with its brands Alfa Romeo, Ferrari, Maserati, and Jeep models, while also fostering exports to other markets. With its growing presence in the US, Fiat Chrysler has to compete with premium brands from Germany and Japan. The slow pace of debt reduction remains the principal cause of concern for the company.

**Chart 2** EBIT Margin Manufacturers vs Suppliers in Italy



Sources: Bloomberg, Euler Hermes



Automotive Non-Payment Risk (Q2 2017)

#### Structural factors weigh on innovation

In 2015, the Italian automotive industry invested approximately EUR5.0bn in R&D, behind Germany (EUR37.0bn) and France (EUR6.1bn), yet ahead of the UK (EUR1.8bn). In 2015, Italian industry players secured only 4% of worldwide automotive patents. This might be linked to the fact that Italy's industry consists primarily of SMEs, which have limited financial resources relative to their massive German counterparts. Moreover, in recent years, industry-wide profits have been rather modest, resulting in a lack of strategic investment in battery and engine technologies or automated driving systems. On a positive note, in August 2017, FCA joined a strategic alliance between BMW, Intel and Mobileye in developing a platform for autonomous cars, with production to be launched by 2021.

#### Slow out of the EV gates

Electric vehicles are a recent trend in Italy. So far, there has been little government support in promoting a nation-wide adoption of electric cars (no financial incentives are offered, but an exemption of ownership tax is). Charging infrastructure is now slowly beginning to evolve. Pioneers are cities such as Milan and Turin, which have started implementing charging networks. This trend goes hand in hand with the growing popularity of shared mobility services in large cities. In response to the Diesel emission scandal, FCA announced that Maserati will broaden its product portfolio and begin the production of EV by 2021.

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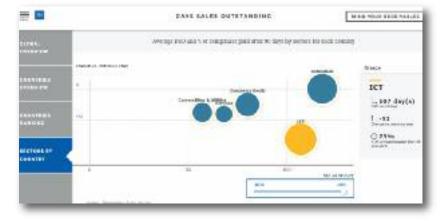
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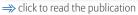




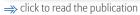


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