Global Automotive Supplier Study 2016
Being prepared for uncertainties

July 2016
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Record profits, but at slower growth

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> **Looking back**, there seems to be little reason for automotive suppliers to complain about 2015 – global profit margins remained at an all-time high of ~7.5 percent

> However, the ongoing year-over-year improvement that the supplier industry has enjoyed since 2010 has largely **come to a standstill** – revenue growth has been the lowest in seven years, and several product segments have actually seen profit margins slightly below the 2014 level

> The (aftermarket portion of the) **tire business has clearly driven average global supplier profitability** in 2015 with margins well above 10 percent – **powertrain suppliers have come under intensified pressure** (losing ground vs. 2007), while the **interior segment shows signs of recovery** following a unique intra-segment consolidation over the past two years

> Suppliers focused on **product innovation continue to maintain a two percent average margin lead** over process-focused suppliers – however, the **top performing process specialists achieve similar profitability levels** as their innovation-focused peers

> **Looking ahead**, suppliers will have to cope with **growing market volatility across the world** – at the same time, the (revolutionary) changes of the future are becoming much more evident

> The triad market will most likely be slowly growing, and **China is entering a stage of maturity** with higher sensitivity toward macroeconomic impacts – **Brazil and Russia continue to suffer** from further reductions of demand (at least in 2016), while growth potentials in Iran or North Africa are yet to materialize

> As a consequence, global **vehicle production is expected to grow only moderately** at ~2 percent in 2016 and beyond – suppliers will have to **rely on other factors to stabilize or even drive up their margins** to remain prepared for sudden macroeconomic shocks that could lead to substantial short-term reductions of demand
Executive Summary (2/2)

> On the powertrain side, the development of e-mobility is gaining a lot of momentum – while technological hurdles prevail and a convincing business case for the end customer is nowhere close to accomplishment yet, tightened emission regulations by (supra-)national and local bodies will likely have a catalytic impact over the coming years.

> We expect the market for electrified vehicles to multiply by a factor of 7-10x over the next decade – leading to substantial growth potential for e-powertrain component suppliers while driving the traditional combustion engine segment more and more into a commodity corner.

> At the same time, autonomous driving is becoming a reality – with OEMs as well as new players combining it with vehicle connectivity (and potentially e-mobility), we expect that completely new business models for automobile usage and ownership will emerge within the next ten years.

> Suppliers will face a market for assisted/automated driving components that is expected to grow by a factor of five until 2025 – at the same time, they will likely face fierce competition from new players formerly outside of the automotive supplier industry keen to capture that revenue and profit pool.

> M&A is expected to grow in relevance for automotive suppliers to permit them to gain a technological edge in a faster moving environment or to maintain a (scale-driven) competitive edge in those segments gradually losing ground given the industry changes – However, the complexity of acquisition-led growth will continue to be substantial due to intense competition for attractive targets, high price levels and the challenges of global post-merger integrations.

> Ultimately, this more volatile and rapidly changing environment requires suppliers to speed up their flexibility and agility in developing (and running) their business – thinking well ahead of the next vehicle generation, scenario planning and a more innovative approach to product development will be crucial success factors for companies striving to be among the top performers of the future.
A

Looking back

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Roland Berger and Lazard Automotive teams
2015 was another excellent year for suppliers with record profits – However, at increased volatility and slower revenue growth globally

Key supplier performance indicators, 2007-2015e (n=~600 suppliers)

Revenue growth

EBIT\(^1\) margin [%]

ROCE\(^2\) [%]

<table>
<thead>
<tr>
<th>Year</th>
<th>Indexed [2007=100]</th>
<th>Y-o-Y [%]</th>
<th>07</th>
<th>08</th>
<th>09</th>
<th>10</th>
<th>11</th>
<th>12</th>
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</tbody>
</table>

1) EBIT after restructuring items   2) EBIT after restructuring items/capital employed

Source: Company information; analyst forecasts; Roland Berger/Lazard
Key driver of these results was growing vehicle production in the main markets – Although growth rate lower than in the past

Global light vehicle production volume \( ^1 \) by region, 2011-2015 [m units]

**NAFTA**
- CAGR \( ^2 \): 7.4%
- 2011: 13.1
- 2012: 15.4
- 2013: 16.2
- 2014: 17.0
- 2015: 17.5

**Europe**
- CAGR \( ^2 \): 1.8%
- 2011: 18.0
- 2012: 16.9
- 2013: 17.1
- 2014: 18.1
- 2015: 19.3

**China**
- CAGR \( ^2 \): 7.7%
- 2011: 17.6
- 2012: 18.6
- 2013: 21.3
- 2014: 23.0
- 2015: 23.7

**South America**
- CAGR \( ^2 \): -8.3%
- 2011: 4.3
- 2012: 4.3
- 2013: 4.5
- 2014: 3.8
- 2015: 3.0

**World**
- CAGR \( ^2 \): 3.5%
- 2011: 76.9
- 2012: 81.5
- 2013: 84.7
- 2014: 87.4
- 2015: 88.3

**Japan/Korea**
- CAGR \( ^2 \): 1.4%
- 2011: 12.5
- 2012: 14.0
- 2013: 13.5
- 2014: 13.7
- 2015: 13.2

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\( ^1 \) Incl. light commercial vehicles
\( ^2 \) CAGR 2011-2015
\( ^3 \) Excluding CIS and Turkey
\( ^4 \) Greater China

Source: IHS; Roland Berger/Lazard
Financial performance of suppliers varies greatly depending on region, company size, product focus and business model

Profitability trends in the global automotive supplier industry – 2015 vs. 2007

<table>
<thead>
<tr>
<th>Region</th>
<th>Company size</th>
<th>Product focus</th>
<th>Business model</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAFTA-based</td>
<td>&gt; Large suppliers with &gt;EUR 10 bn revenues maintain strong margins of ~8% EBIT</td>
<td>&gt; Chassis suppliers clearly improved margins to almost 8% EBIT driven by ADAS and active safety</td>
<td>&gt; Product innovators are generating stable above-average margins of ~8% EBIT based on technology leadership translated into higher prices</td>
</tr>
<tr>
<td>Europe-based</td>
<td>&gt; Lower midsized suppliers (EUR 0.5 to 2.5 bn revenues) have improved and remain above average</td>
<td>&gt; Tire suppliers maintained strong margins based on their aftermarket business</td>
<td></td>
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<tr>
<td>Chinese</td>
<td>&gt; Upper midsized suppliers (EUR 2.5 to 5 bn revenues) remain below average</td>
<td>&gt; Powertrain suppliers gradually lost ground and achieve below-average margins in the meantime</td>
<td>&gt; Process specialists continue to face below average margins of ~6% EBIT due to a lower innovation level and higher competitive pressure</td>
</tr>
<tr>
<td>Japanese</td>
<td>&gt; Small suppliers (below EUR 0.5 bn revenues) have the lowest margins at ~5% EBIT</td>
<td>&gt; Interior suppliers still trail their peers, but have shown signs of recovery recently</td>
<td></td>
</tr>
</tbody>
</table>

Source: Company information; Roland Berger/Lazard
NAFTA- and Europe-based suppliers are currently more profitable than average – China-based suppliers recently on the decline

Key supplier performance indicators by region, 2007 vs. 2015e [%]

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>China</td>
<td>7.4%</td>
<td>6.0%</td>
</tr>
<tr>
<td>NAFTA</td>
<td>8.2%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Europe</td>
<td>8.0%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Korea</td>
<td>6.2%</td>
<td>5.8%</td>
</tr>
<tr>
<td>Japan</td>
<td>6.3%</td>
<td>7.4%</td>
</tr>
</tbody>
</table>

Source: Company information; Roland Berger/Lazard

> **Europe-based suppliers** largely benefit from **leading technology** positions in many segments and a **favorable customer mix**

> **NAFTA-based suppliers** are still leveraging the effects from their **substantial restructuring** during the 2008/2009 auto crisis and the subsequent **re-focusing on technology**

> **China-based suppliers** have seen a decline in margins in recent years due to sharply **intensified competition** in their home market

> **Japan-based suppliers** are trapped by dependency on their home market and respective OEMs
Very small and midsize suppliers lag behind in terms of EBIT margin – With widening gap to large global suppliers

Key supplier performance indicators by company size (sales in EUR bn), 2007-2015e [%]

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<tbody>
<tr>
<td>&lt;0.5</td>
<td>5.7%</td>
<td>48%</td>
</tr>
<tr>
<td>0.5-1.0</td>
<td>5.0%</td>
<td>48%</td>
</tr>
<tr>
<td>1.0-2.5</td>
<td>7.6%</td>
<td>7.1%</td>
</tr>
<tr>
<td>2.5-5.0</td>
<td>6.7%</td>
<td>6.3%</td>
</tr>
<tr>
<td>5.0-10.0</td>
<td>6.8%</td>
<td>6.3%</td>
</tr>
<tr>
<td>&gt;10.0</td>
<td>7.6%</td>
<td>6.8%</td>
</tr>
</tbody>
</table>

Large multinational suppliers (above EUR 10 bn revenues) continued to benefit from the ongoing globalization and capability to participate in the OEM platform strategy.

Large suppliers (EUR 2.5-5 bn revenues) "stuck in the middle" – performance remains below average.

Midsize suppliers (EUR 0.5-2.5 bn revenues) improved their profitability often based on a focused product portfolio and a leading technology position (for a particular component).

Many very small suppliers suffered from the growing cost of going global and the need to innovate.

Source: Company information; Roland Berger/Lazard
Powertrain suppliers face increasing pressure on profitability – Interior suppliers on the road to recovery?

Key supplier performance indicators by product focus, 2007 vs. 2015e [%]

Source: Company information; Roland Berger/Lazard

- **Chassis** suppliers clearly improved margins over time – development increasingly driven by advanced driver assistance and active safety
- **Interior** suppliers continue to struggle with high commoditization pressure – but growing relevance of vehicle interior might change the picture for the future
- **Powertrain** margins pressurized by intensified competition in this growing segment and the cost of (multiple) innovations
- **Exterior** suppliers partly improved due to growing lightweight focus
- **Tire** suppliers benefited from their strong aftermarket business and recently favorable raw material costs
Product innovators clearly outpace process specialists in terms of profitability

Key supplier performance indicators by business model, 2007 vs. 2015e [%]

On average, innovative products feature higher differentiation potential and greater OEM willingness to pay.

High entry barriers through intellectual property in many innovation-driven segments.

Competitive structure more consolidated in innovation-driven segments.

Higher fragmentation in many process-driven segments drives price competition.

1) Business model based on innovative products with differentiation potential
2) Business model based on process expertise (while product differentiation potential is limited)

Source: Company information; Roland Berger/Lazard
One group of top-performing suppliers has managed to grow its business at high margins

Key performance indicators of top vs. low performing suppliers

2. EBIT after restructuring items

Source: Company information; Roland Berger/Lazard
However, top performance is not necessarily related to (product) innovation only

Key performance indicators of top vs. low performing suppliers

> **Product innovators** lead process specialists in terms of **average profitability** – no real difference in terms of growth

> **Top process specialists**, though, achieve average margins close to those of the top product innovators

> **Large difference in growth rates** between top and low performing process specialists indicates the relevance of scale economies

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1) Top (low) performance based on above- (below-) average revenue growth 2007-2014, ROCE 2007-2014 and ROCE 2014

2) EBIT after restructuring items

Source: Company information; Roland Berger/Lazard
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Short term, we expect even slower growth and margins still at a high level – Due to increased volatility, risks outweigh opportunities

Supplier global revenue and margin outlook, 2016/2017e

**Revenue growth [2007=100]**

- 07: 100
- 08: 98
- 09: 82
- 10: 99
- 11: 110
- 12: 114
- 13: 122
- 14: 130
- 15: 134
- 16e
- 17e

**EBIT¹) margin [%]**

- 07: 6.4
- 08: 2.1
- 09: 1.6
- 10: 6.9
- 11: 6.5
- 12: 6.8
- 13: 7.2
- 14: 7.3
- 15: 7.4
- 16e
- 17e

Source: Company information; Roland Berger/Lazard
A potential market cool-down in 2016 and future technology changes stay at the top of the supplier CEO agenda

Supplier CEO radar screen for 2016 and beyond

Note: Excluding product segment specific technology and operational issues

Source: Roland Berger/Lazard
2015 world economy was dominated by China's economic turmoil and 2016 is another volatile year

Global economic outlook

- **GDP growth still solid, but China outlook shaky and uncertainties from recent Brexit decision**
  - Apart from China, world's economies showed solid growth rates in 2015
  - China's officials target moderate GDP growth between 6.5% and 7%
  - Expected moderate GDP growth rates 2016 for the US and EU
  - Significant uncertainties from recent Brexit decision

- **Low commodity prices remain?**
  - 2015 prices of commodities decreased dramatically due to China's slowdown
  - Brent crude oil hit 11-year low at USD 28 a barrel in Jan. 2016, certain recovery since then
  - Will oil and other commodity prices still remain at historically relatively low levels?

- **Interest rates starting to diverge globally?**
  - US Fed raised interest rates +0.25% for first time since 2008 in Dec. 2015
  - ECB, BoJ and PBC continue or expand supportive fiscal policies (quantitative easing)

- **Global trade to increase?**
  - 2015 world merchandise trade expectations were corrected downwards due to falling import demand in China, Brazil and other emerging economies
  - Global trade growth is expected to slightly increase in 2016, but remains sluggish

- **Analysts' eyes on China's stock market and Brexit**
  - Despite unprecedented peaks and troughs in the Chinese stock market, the Shanghai Composite Index has actually outperformed the S&P 500 for 2015
  - Yet stock markets had a shaky start due to the China crash in Jan. 2016
  - After a substantial recovery, uncertainty on the stock markets is back due to recent Brexit decision

Source: Press research; Roland Berger/Lazard
Global light vehicle sales growth is expected to pick up slightly over the coming years – India with strongest predicted growth

Light vehicle sales volume by region, 2014-2018e [m units]

Annual growth by region [CAGR, %]

| Region       | 2014 → 2016 | 2016 → 2018 | Volume risk
|--------------|-------------|-------------|-------------
| Europe¹)     | 7%          | 1%          | Medium      |
| NAFTA²)      | 4%          | 0%          | Low         |
| Japan        | -5%         | -2%         | Low         |
| China        | 5%          | 2%          | Medium      |
| Brazil       | -25%        | 0%          | High        |
| India        | 7%          | 12%         | High        |
| Russia       | -25%        | 12%         | High        |

¹) Excl. CIS/Turkey  ²) United States, Canada, Mexico  ³) Potential deviation from expected development until 2018

Source: IHS; Roland Berger/Lazard
Development of global hotspot markets is drifting apart – China maturing, Brazil struggling, Iran revitalizing and EU faced with Brexit

Overview of global "hotspots" 2016

**United States**
- Sales of SUVs and pickups at high level driven by low fuel prices
- Vehicle emissions receive new attention due to COP21 and diesel controversy
- New mobility business models emerge with the US being a frontrunner

**Europe**
- Unexpectedly high growth of sales volumes across most markets in first months of 2016
- Controversy about emissions (and diesel in particular) in the public debate
- EV sales still not picking up yet
- Uncertainty arising from Brexit decision

**China**
- SUV and MPV boom continues, but overall growth slows down
- Chinese OEMs reinforce their market position as quality increases
- EV market starting to evolve

**Brazil**
- Competition remains high in budget and premium segments
- Sales volume risks lead to profitability concerns of OEMs
- OEMs seek alternative profit streams (export opportunities and aftersales)

**Iran**
- Sanctions lift promotes growth of economy and vehicle demand
- Demand for high-quality cars increases
- Demographics develop in a beneficial manner

Source: Roland Berger/Lazard
Global markets will likely become more volatile – Suppliers will have to actively manage a set of "hotspots" in their regional portfolio

Implications for automotive suppliers

1. Overall, global vehicles sales and underlying vehicle production are expected to grow only moderately in 2016 and beyond – suppliers will have to rely on other factors to stabilize or drive up their margins.

2. The Chinese market is entering a stage of maturity with lower average growth rates and higher sensitivity toward macroeconomic impacts – suppliers need to review (and potentially adjust) the revenue and capacity plans for their Chinese operations.

3. The Brazilian and Russian markets continue to suffer from further reductions of demand at least in 2016 – existing restructuring efforts of suppliers require further enforcement, however, a complete exit from either market seems advisable in rare cases only.

4. Iran and (to a lesser extent) North Africa emerge as new high growth areas in the global automotive vehicle production landscape – suppliers have to carefully balance the resulting opportunities against the associated risks from underdeveloped automotive infrastructures, possible OEM dependencies, legal conditions, or potential political instabilities.

5. The level of macroeconomic volatility and uncertainty, recently fueled by the Brexit decision, is higher than in previous years – suppliers need to remain prepared for a sudden macroeconomic decline that could lead to substantial short-term reductions of demand in one (or more) of the global regions they operate in.

Source: Roland Berger
Most recent M&A deals were driven by technology and customer/market access – Economics-driven consolidation still not picking up

Major types of M&A motivation

<table>
<thead>
<tr>
<th>Rationale</th>
<th>Technology access</th>
<th>Market/customer access</th>
<th>Economics-driven consolidation</th>
<th>Financial value creation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain access to new or strengthen existing technology/material or process capabilities to secure/establish USP (horizontal and vertical)</td>
<td>Gain access to regions or customers not served to date – via existing business or asset deals (e.g. capacity of production locations)</td>
<td>Optimize highly fragmented and inefficient market structures</td>
<td>Create value by turning around under-performing or distressed assets and/or divestments</td>
<td></td>
</tr>
<tr>
<td>Dominant acquirers/domains</td>
<td>Established, larger suppliers</td>
<td>In the past, typically driven by established market players, today primarily led by emerging market players</td>
<td>Typically occurring in process-focused segments with pressure on revenues, margin and utilization</td>
<td>Manufacturing-focused financial buyers, mainly private equity firms</td>
</tr>
<tr>
<td>Empirical evidence in recent deals</td>
<td>Easiest to communicate sustainable &quot;value add&quot; to investors</td>
<td>Pure &quot;expansion&quot; deals without technology focus are rare</td>
<td>Not favored by the OEMs in many cases</td>
<td>Due to healthy sector environment, rather muted deal activity in this area</td>
</tr>
<tr>
<td>&gt; Established, larger suppliers</td>
<td>&gt; In the past, typically driven by established market players, today primarily led by emerging market players</td>
<td>&gt; Not favored by the OEMs in many cases</td>
<td>&gt; Due to healthy sector environment, rather muted deal activity in this area</td>
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<tr>
<td>&gt; Recently, also OEMs in the field of autonomous driving</td>
<td>&gt; Typically occurring in process-focused segments with pressure on revenues, margin and utilization</td>
<td>&gt; Not favored by the OEMs in many cases</td>
<td>&gt; Due to healthy sector environment, rather muted deal activity in this area</td>
<td></td>
</tr>
<tr>
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<td>&gt; Due to healthy sector environment, rather muted deal activity in this area</td>
<td></td>
</tr>
<tr>
<td>&gt; Driver of many Chinese transactions</td>
<td>&gt; Driver of many cross-border transactions, e.g. from Japan</td>
<td>&gt; Not favored by the OEMs in many cases</td>
<td>&gt; Due to healthy sector environment, rather muted deal activity in this area</td>
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</tr>
</tbody>
</table>

Source: Roland Berger/Lazard
The overall M&A landscape is still diversified internationally – Chinese players established as an important buyer group

Selected automotive supplier acquisitions, 2011-2016 (YTD)

<table>
<thead>
<tr>
<th>Year</th>
<th>Acquirer / Target</th>
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<tbody>
<tr>
<td>2011</td>
<td>BHAP / Inalfa</td>
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<tr>
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<td>Citic / KSM Castings</td>
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<td>CQLT / Saargummi</td>
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<td></td>
<td>Gestamp / ThyssenKrupp MF</td>
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<td></td>
<td>GKN / Getrag driveline bus.</td>
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<td>Inteva / A. Meritor Body Syst.</td>
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<td>Iochpe-Maxion / Hayes Lemmerz</td>
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<td>Martinrea / Honsel</td>
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<td>Ningbo Huaxiang / Sellner</td>
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<td>Ningbo Joyson / Prath</td>
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<td>Nissinbo / TMD Friction</td>
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<td>Samvard. Motherson / Peguform</td>
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<td>Toyota Boshoku / Polytex Auto Interior</td>
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<td>Valeo / Niles</td>
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<tr>
<td>2012</td>
<td>Bohong / Wescast Industries</td>
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<td>Bosch / SPX</td>
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<td>Continental / Freudenberg molded brake parts</td>
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<td>Delphi / FCI MVL</td>
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<td>Faurecia / ACH Interiors</td>
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<td>Grupo Antolin / CML</td>
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<td>Hebei Linyung / Kiekert</td>
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<td>Lear / Guilford Mills</td>
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<td>Magna / Ixetic</td>
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<td>Metalasia / ISE Automotive</td>
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<td>Nemak / JL French Automotive</td>
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<td>Tupy / Citifusa</td>
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<td>Wuhan Iron &amp; Steel / ThyssenKrupp TB</td>
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<tr>
<td>2013</td>
<td>Amtek / Neumayer Tekfor</td>
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<td>BorgWarner / Wailer</td>
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<td>Gentex / JCI HomeLink</td>
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<td>Grammer / Nectec</td>
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<td></td>
<td>Halla / Visteon climate business</td>
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<td></td>
<td>Huayu Auto. Systems / Yanfeng Vieon JV</td>
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<td></td>
<td>Mahle / Behr</td>
</tr>
<tr>
<td></td>
<td>Nidec / Honda Elesys</td>
</tr>
<tr>
<td></td>
<td>Ningbo Huaxiang / HIB Trim Parts</td>
</tr>
<tr>
<td></td>
<td>TMT / ZF Boge</td>
</tr>
<tr>
<td></td>
<td>Tokai Rubber / Anvis</td>
</tr>
<tr>
<td></td>
<td>Wangfeng / Meridian Lightweight</td>
</tr>
<tr>
<td></td>
<td>Waxiang Group / A123</td>
</tr>
<tr>
<td>2014</td>
<td>Amtek / Kaiser</td>
</tr>
<tr>
<td></td>
<td>Amtek / Kuepper Group</td>
</tr>
<tr>
<td></td>
<td>AUNDE / Fehrer</td>
</tr>
<tr>
<td></td>
<td>AVIC / Hilite</td>
</tr>
<tr>
<td></td>
<td>AVIC / KOIKI Technik</td>
</tr>
<tr>
<td></td>
<td>Bosch / ZF Lenksysteme</td>
</tr>
<tr>
<td></td>
<td>Delphi / Unwired Technology</td>
</tr>
<tr>
<td></td>
<td>Federal-Mogul / TRW valves business</td>
</tr>
<tr>
<td></td>
<td>Lear / Eagle Ottawa</td>
</tr>
<tr>
<td></td>
<td>MAHLE / Letrika</td>
</tr>
<tr>
<td></td>
<td>Sensata / Schrader</td>
</tr>
<tr>
<td></td>
<td>Shanghai Prime Machinery / Nedschroef</td>
</tr>
<tr>
<td></td>
<td>Visteon / JCI auto. electronics bus.</td>
</tr>
<tr>
<td></td>
<td>ZF / TRW</td>
</tr>
<tr>
<td>2015</td>
<td>AVIC Automotive / Henniges</td>
</tr>
<tr>
<td></td>
<td>BorgWarner / Remy International</td>
</tr>
<tr>
<td></td>
<td>China National Tire / Pirelli</td>
</tr>
<tr>
<td></td>
<td>Continental / Elektrobit</td>
</tr>
<tr>
<td></td>
<td>Delphi / HellermannTyton</td>
</tr>
<tr>
<td></td>
<td>Grupo Antolin / Magna interior business</td>
</tr>
<tr>
<td></td>
<td>Harman / Symphony Teleca/Redbend</td>
</tr>
<tr>
<td></td>
<td>Johnson Electric / Stackpole</td>
</tr>
<tr>
<td></td>
<td>Linamar / Montupet</td>
</tr>
<tr>
<td></td>
<td>Magna / Getrag</td>
</tr>
<tr>
<td></td>
<td>MAHLE / Delphi thermal business</td>
</tr>
<tr>
<td></td>
<td>NGK Spark Plug / Wells Vehicle Electronics</td>
</tr>
<tr>
<td></td>
<td>Valeo / Peiker Acustic</td>
</tr>
</tbody>
</table>

Key: Acquirer / Target

Source: CapitalIQ; Thomson; Dealogic; Merger Market; press research; Roland Berger/Lazard
As a result, supplier stocks and subsequently acquisition targets have become more expensive

Evolution of automotive supplier valuations

> Strong and profitable growth in previous years has led to a rating of automotive supplier valuations

> Increased stock valuations paired with increased competition for available assets have fueled M&A valuations

> M&A valuation levels have reached 8-9x EV/EBITDA in recent important strategic transactions compared to 5-6x in earlier years

Source: Factset; Roland Berger/Lazard

The ongoing M&A activity level is gradually reshaping the competitive landscape – Suppliers need to participate actively

**Implications for automotive suppliers**

1. **The ongoing M&A activity** in the automotive supplier industry will likely continue to be fueled by high amounts of available liquidity among corporates and financial investors as well as substantial interest of Chinese/Asian buyers.

2. As a result, the **price level** for automotive supplier acquisitions, which has grown considerably with EBITDA multiples being up to 50-100% higher than 5-10 years ago, is expected to remain high especially for attractive assets – despite currently low financing cost, proper business cases based on operational synergies become more difficult to realize.

3. **Strategic investors from China** play a much more active role in the Triad M&A markets nowadays, seeking to buy technology access – rise of new competitors for incumbent (Western) suppliers, first in the Chinese market, but prospectively also in the Triad.

4. In an environment of higher technological disruption and more short-term evolution of technologies, active portfolio management through M&A is growing in relevance for building up technological capabilities vs. organic development – to stay competitive, suppliers need to screen the market actively for potential acquisition targets.

5. In addition, suppliers should take an active approach in portfolio management measures, considering disposals of non-core/commodity areas to clean up unhealthy competitive structures and free up invested capital for better use.

Source: Roland Berger/Lazard
The powertrain challenge

Challenge to reduce emissions and "Dieselgate" have led to acceleration of debate on the future of powertrains

Press clippings on powertrain future

“Everything we do is first driven by the customer, but certainly the regulatory requirements influence the technologies that we're introducing”
R. Nair, Ford (01/2016)

“Blue environmental badge to come – diesel remains cheaper than gasoline”
heise online (04/2016)

“After Paris, Madrid follows and bans dirty diesel cars by 2020”
TransportEnvironment (01/2016)

“Tesla Model 3’s first week: 325,000 orders”
CNN Money (04/2016)

“I am a big fan of electromobility. But for the next few years, we won't be able to do without diesel, especially when it comes to meeting CO₂ targets”
Dr. H. Krüger, BMW (10/2015)

Source: Press research; Roland Berger/Lazard
Compliance strategies of OEMs will lead to increased production of alternative powertrains – Electrification expected to play a key role

Implications on powertrains (1/2): Alternative powertrains

### Global powertrain production [m units]

<table>
<thead>
<tr>
<th>Year</th>
<th>ICE (%)</th>
<th>xEVs (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>87.8 (98%)</td>
<td>2.1 (2%)</td>
</tr>
<tr>
<td>2020</td>
<td>92.4 (94%)</td>
<td>6.2 (6%)</td>
</tr>
<tr>
<td>2025</td>
<td>94.0 (79%)</td>
<td>24.9 (21%)</td>
</tr>
</tbody>
</table>

### Global xEV production [m units]

<table>
<thead>
<tr>
<th>Year</th>
<th>ICE (%)</th>
<th>EV (%)</th>
<th>PHEV (%)</th>
<th>Full Hybrid (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>2.1 (2%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2020</td>
<td>6.2 (6%)</td>
<td>0.3</td>
<td>1.2</td>
<td>4.0</td>
</tr>
<tr>
<td>2025</td>
<td>13.2 (24%)</td>
<td>118.9 (21%)</td>
<td>24.9 (28%)</td>
<td>-</td>
</tr>
</tbody>
</table>

1) Including mild hybrid vehicles (up to 20 kW) and ICE start-stop

Source: Roland Berger
Diesel powertrain still expected to hold dominant position in upper passenger car segments, but decline across all segments until 2030

New car diesel forecast by segment in EU-28 until 2030

A  Mini cars  
<table>
<thead>
<tr>
<th>2015</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>4%</td>
<td>96%</td>
<td>100%</td>
</tr>
<tr>
<td>36%</td>
<td>64%</td>
<td>67%</td>
</tr>
<tr>
<td>64%</td>
<td>36%</td>
<td>33%</td>
</tr>
<tr>
<td>96%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

B  Small cars  
<table>
<thead>
<tr>
<th>2015</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>26%</td>
<td>74%</td>
<td>100%</td>
</tr>
<tr>
<td>33%</td>
<td>67%</td>
<td>100%</td>
</tr>
<tr>
<td>36%</td>
<td>64%</td>
<td>100%</td>
</tr>
<tr>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

C  Medium cars  
<table>
<thead>
<tr>
<th>2015</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>64%</td>
<td>50%</td>
<td>44%</td>
</tr>
<tr>
<td>36%</td>
<td>60%</td>
<td>55%</td>
</tr>
<tr>
<td>36%</td>
<td>40%</td>
<td>45%</td>
</tr>
<tr>
<td>64%</td>
<td>40%</td>
<td>55%</td>
</tr>
</tbody>
</table>

D  Large cars  
<table>
<thead>
<tr>
<th>2015</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>16%</td>
<td>84%</td>
<td>31%</td>
</tr>
<tr>
<td>50%</td>
<td>88%</td>
<td>69%</td>
</tr>
<tr>
<td>50%</td>
<td>80%</td>
<td>79%</td>
</tr>
<tr>
<td>50%</td>
<td>80%</td>
<td>79%</td>
</tr>
</tbody>
</table>

E  Executive cars  
<table>
<thead>
<tr>
<th>2015</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>88%</td>
<td>12%</td>
<td>30%</td>
</tr>
<tr>
<td>88%</td>
<td>12%</td>
<td>30%</td>
</tr>
<tr>
<td>88%</td>
<td>12%</td>
<td>30%</td>
</tr>
<tr>
<td>88%</td>
<td>12%</td>
<td>30%</td>
</tr>
</tbody>
</table>

F  Luxury cars  
<table>
<thead>
<tr>
<th>2015</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>50%</td>
<td>56%</td>
<td>63%</td>
</tr>
<tr>
<td>50%</td>
<td>56%</td>
<td>63%</td>
</tr>
<tr>
<td>50%</td>
<td>56%</td>
<td>63%</td>
</tr>
</tbody>
</table>

1) In % of new car sales

Source: EEA; Roland Berger
The global powertrain component market is expected to grow to EUR ~279 bn by 2025 – Substantial shift toward xEV

Market development of powertrain components for light vehicles [EUR bn]

Source: Roland Berger component market model
The powertrain mix is expected to substantially change over the next decade – New opportunities vs. wind-down of traditional business

### Implications for automotive suppliers

1. **Tightened emission regulations** will further drive up complexity and **cost of the exhaust system** especially for diesel – **short-term revenue potential** for certain suppliers

2. **Diesel** is expected to **gradually decline in market share** in Europe over the coming years – **challenging business situation** especially for those diesel-focused **suppliers who do not offer comparable gasoline products**

3. The pace of **innovation of the internal combustion engine's development** will **slow down markedly** after 2020 – **commoditization of business** for conventional engine component suppliers in the mid/long term

4. The market for **e-mobility components** will likely see **rapid growth** over the next decade – **traditional automotive suppliers facing growing competition** from both new entrants (e.g. for batteries) as well as OEMs increasing their own value creation

5. The total **per vehicle cost of powertrain** will further go up driven by electrification and tighter emission requirements – incremental revenue **potential for powertrain suppliers**, but **growing cost pressure in other domains**

6. A sudden **change in regulation** might lead to a **disruptive e-mobility breakthrough** even in the mid term – need to **foster scenario planning** among suppliers

Source: Roland Berger/Lazard
Activities of OEMs and tech giants show that automated driving is becoming a reality and that the race for leadership is on.

Recent activities in automated driving:

### Established OEMs
- **GM**
  - 03/11/2016: General Motors acquires self-driving car startup Cruise Automation.
- **BMW**
  - 03/17/2016: BMW presents autonomous driving as 1 of 5 technology pillars as part of BMW i NEXT strategy.
- **DAIMLER**
  - 03/18/2016: Daimler puts three autonomous trucks on roads from Stuttgart to Rotterdam.
- **TOYOTA**
  - 04/07/2016: Toyota opens third operation of its TRI at University of Michigan, in addition to MIT and Stanford, funding of USD 1 bn.
- **VOLVO**
  - 04/11/2016: Volvo will test 100 automated vehicles in Chinese cities.
- **FORD**
  - 05/13/2016: Ford and Nvidia foster autonomous driving on snowy roads by using optical LiDAR sensors.
- **VW**
  - 05/25/2016: Volkswagen acquires a stake in Gett.

### New players
- **UBER**
  - 03/21/2016: Uber reportedly seeks 100,000 autonomous cars from OEMs.
- **ZOOX**
  - 03/23/2016: Zoox receives a permit to test self-driving cars in California.
- **GOOGLE**
  - 04/07/2016: Google is expanding tests of their self-driving Lexus SUV to Phoenix AZ.
- **TESLA**
  - 04/08/2016: Tesla Motors develops next-generation autopilot with team of chipmakers.
- **APPLE**
  - 05/05/2016: Apple reportedly considers using an 800,000 square foot property in Silicon Valley as a testing ground for autonomous driving.
- **UBER**
  - 05/24/2016: Uber and Toyota announce plans to explore ridesharing collaboration.

Source: Press research; Roland Berger/Lazard
New players entering the automotive industry might drive completely new mobility services – AD likely to be one main technology enabler

Case study: IT players' battlefronts in automotive

### A
**IVI Applications**
- Most apps have not yet reached automotive grade for inclusion in the embedded IVI
- Trend toward tethering offers additional opportunities, but overall has limited data richness

#### Levels:
- Device
- Platform
- Operating system
- Apps
- Goal

### B
**IVI OS/Middleware**
- Systems will gain traction, but issues in achieving automotive grade have slowed progress
- Future OEM consortiums could still pose a threat

### C
**Automated driving system**
- Opens the door for additional access, but:
  - Vehicle integration poses a challenge
  - Requires technological differentiation versus offerings of major Tier 1 suppliers

### D
**Vehicle design**
- Optimized for integration with the greater ecosystem
- OEMs cannot prevent or dictate the limits of their presence in the vehicle
- Volume potential through major business customers such as Uber (or competing with Uber)

---

1) Includes finding partners to produce vehicles

Source: Press research; Roland Berger/Lazard
The ADAS and AD component market is expected to grow by ~16% p.a. until 2025 and reach a global volume of almost EUR 30 bn.

Market development of ADAS/AD systems for light vehicles [EUR bn]

<table>
<thead>
<tr>
<th>Year</th>
<th>Lane depart. warning</th>
<th>Night vision</th>
<th>Drowsiness detection</th>
<th>Parking assist</th>
<th>Blind spot detection</th>
<th>Adaptive cruise control/Traffic jam pilot/Highway pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>0.2</td>
<td>1.8</td>
<td>0.9</td>
<td>1.4</td>
<td>3.4</td>
<td>0.7</td>
</tr>
<tr>
<td>2017</td>
<td>0.7</td>
<td>1.9</td>
<td>0.8</td>
<td>1.8</td>
<td>3.4</td>
<td>0.7</td>
</tr>
<tr>
<td>2019</td>
<td>2.3</td>
<td>2.5</td>
<td>2.8</td>
<td>2.5</td>
<td>7.2</td>
<td>0.9</td>
</tr>
<tr>
<td>2021</td>
<td>1.3</td>
<td>3.0</td>
<td>3.5</td>
<td>3.0</td>
<td>10.2</td>
<td>1.1</td>
</tr>
<tr>
<td>2023</td>
<td>1.2</td>
<td>2.6</td>
<td>3.8</td>
<td>2.6</td>
<td>15.3</td>
<td>1.9</td>
</tr>
<tr>
<td>2025</td>
<td>1.3</td>
<td>3.9</td>
<td>3.9</td>
<td>3.9</td>
<td>27.5</td>
<td>0.7</td>
</tr>
</tbody>
</table>

1) incl. lane keep assist

Source: Roland Berger component market model
Automated driving to become reality over the next decade – Suppliers face changing competition and new capability requirements

Implications for automotive suppliers

1. The overall penetration of ADAS/AD features will likely rise dramatically over the next decade – rapidly growing revenue pool for automotive suppliers (as well as other players)

2. Most of the additional functionalities (and thereby revenues) will be software-driven – huge additional potential for software-focused suppliers

3. OEMs will likely expand their control of ADAS/AD component design and specification – limited potential for suppliers to sell fully integrated systems as one-stop-shop solutions

4. Traditional electronics hardware component suppliers gradually expand their value chain coverage into ADAS/AD component development – new competitive threat to incumbent automotive suppliers from their own supply base

5. Future ADAS/AD components will largely be based on standardized hardware and differentiated via software (at shorter development cycles) – enhancement of software development capabilities needed among almost all suppliers

6. ADAS/AD might become a main feature of a new type of vehicles offered by potential new entrants (e.g. Google) as part of an integrated mobility solution – new revenue potential for automotive suppliers with new customers (across all component segments), but at the expense of conventional OEM business

Source: Roland Berger/Lazard
Looking back
Record profits, but at slower growth

Looking ahead
Four main challenges in the supplier industry

Conclusions
Key actions for automotive suppliers

Contacts
Roland Berger and Lazard Automotive teams
The market for auto suppliers is expected to yield substantial further growth opportunities – Innovation will be key to capturing them.

Global automotive component market development 2015 vs. 2025

**Component market value**\(^1\) [EUR bn]

<table>
<thead>
<tr>
<th>Revenue pool 2015</th>
<th>Volume growth(^2)</th>
<th>&quot;Winning&quot; components</th>
<th>&quot;Losing&quot; components</th>
<th>Net price-downs</th>
<th>Revenue pool 2025e</th>
</tr>
</thead>
<tbody>
<tr>
<td>~705</td>
<td></td>
<td>261</td>
<td>-112</td>
<td>-167</td>
<td>858</td>
</tr>
</tbody>
</table>

\(\text{Product mix}\)^3

1) Light vehicle OE market, excluding commercial vehicle and aftermarket portion
2) Change driven by vehicle production volume (volume per car at 2015 level)
3) Additional growth/decline caused by change in product/technology content per car

**Winning and losing components**

**Losers**
- Diesel - Unit injector
- Diesel - Indirect injectors
- AT (3/4 stage)
- Starter
- Generators
- Powertrain/xEV
  - H2 tanks
  - BSG 48V
  - Fuel cell
  - Battery cells
  - Large e-motors
- Power pack e-hydraulic
- Power pack hydraulic
- Power pack pinion EPS
- Brake booster (passive)
- Leaf springs conventional

**Winners**
- Electric/mechanical caliper
- Coil springs - Composite
- Leaf spring - Composite
- ADAS/HAD
- Electric parking brake
- A-Pillar - Composite
- B-Pillar - Composite
- Roof cross member - Composite
- Rear cross member - Composite
- Tunnel - Composite
- AC compressor - Electric
- Pedals - Electronic
- HVAC EV
- PTC heater - xEV heaters
- Seat structure (lightweight)

**Product mix**
- Losers: up to -10%, up to -20%
- Winners: up to +20%, up to +40%
Suppliers will have to deal with an even higher degree of uncertainty regarding future innovations – While maintaining an eye on costs

Key actions for automotive suppliers

1. Conduct **scenario planning exercises** on a regular basis to prepare for a potential disruptive **breakthrough of e-mobility and automated driving** (e.g. robocabs) **in the mid term** – especially relevant for powertrain suppliers, but affecting all other domains as well

2. Enforce **shift of investment focus to key product innovations** (xEV, composites, ADAS/AD software, HMI, etc.) without jeopardizing the development capabilities for existing core products

3. Drive-up **speed and flexibility in the research and development** process – Establish dedicated **innovations teams outside of the traditional R&D organization** and processes dealing with new products/solutions

4. Foster **active portfolio management** – leverage favorable financing conditions for (technology-driven) acquisition while considering **divestment of businesses with limited long-term growth perspectives** (but still a feasible business case in the mid term)

5. Maintain tight cost management and continue to **resolve structural issues** in footprint and overhead while economic **conditions are still favorable** – especially relevant for process specialists

Source: Roland Berger/Lazard
A
Looking back
Record profits, but at slower growth

B
Looking ahead
Four main challenges in the supplier industry

C
Conclusions
Key actions for automotive suppliers

D
Contacts
Roland Berger and Lazard Automotive teams
Please contact us for further information

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Source: Roland Berger/Lazard
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