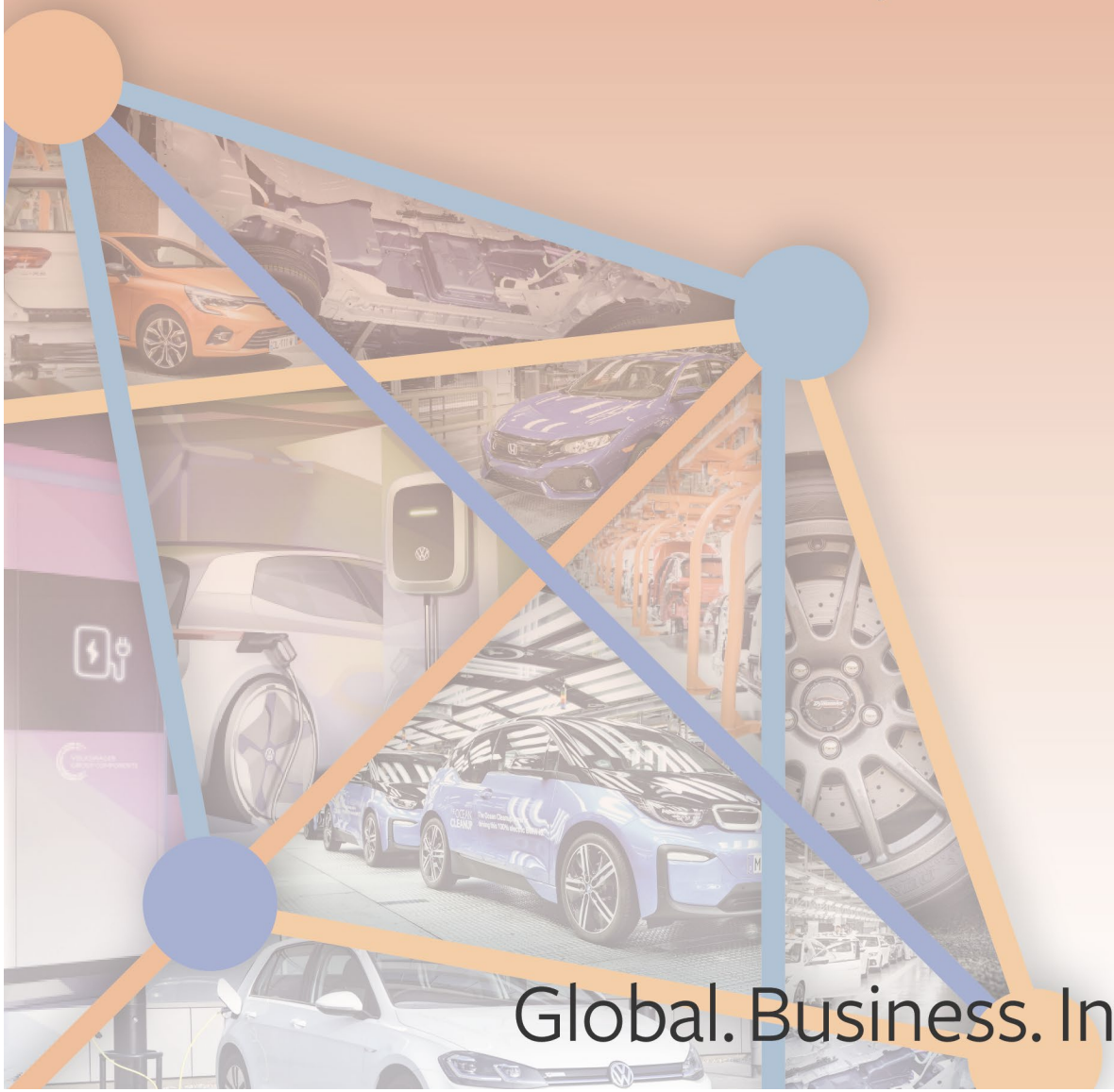
AUTOMOTIVE
FROM ULTIMAMEDIA

Automotive Tier Supplier Profit Analysis:

Mitigating Margin Compression Whilst Navigating Unprecedented Industry Transformation



Global. Business. Intelligence.

Automotive Tier Supplier Profit Analysis

Report by Daniel Harrison

Automotive Analyst

Automotive from Ultima Media

December 2019

For more business intelligence and data for the automotive industry, visit:
automotivemanufacturingsolutions.com/insight

1. Introduction

Following a decade in which most major tier one suppliers enjoyed a period of relatively stable profits, suppliers are today facing a tough time. In parallel with their OEM customers, many are reporting falling profits amidst lower vehicle sales and production volumes in 2018 and 2019. The next several years look set to put further pressure on margins.

Multiple headwinds are driving this decline, including slower economic growth and trade disputes. At the same time, tightening vehicle emissions regulations and wider industry shifts in technology, most notably to electrified powertrains, require huge investments and capital outlays in product development, as well in operations, including re-tooling plants and adapting facilities. Other technologies are also driving high investments, such as connectivity, autonomy and shared mobility.

As OEMs feel the effects of the downturn, they are already making moves to reduce production and staff. They are also applying pressure on their suppliers both to invest in these next generation technologies and to lower costs. At the same time, a shift away from some types of internal combustion engine (ICE) powertrain technology, notably diesel, is hurting some tier ones, especially in Europe.

A longer-term transition to pure battery electric vehicles, meanwhile, could eliminate even more parts and jobs in the supply chain.

For these reasons, transitions across the industry are likely to impact suppliers even harder than they will OEMs. Savings will increasingly have to be found, including in production, supply chain, material and labour, to maintain high spending in R&D and new technology.

At the same time, returns on these investments are far from certain, not least as it remains unclear whether any one kind of hybrid or electric powertrain technology will become dominant in the new decade. There is also doubt about whether traditional manufacturers and suppliers can adapt and compete in new areas like autonomous or shared mobility, where advanced electronics and software will be the differentiators.

Our analysis of the leading 20 automotive tier suppliers, including their operating margins over a ten-year period and outlook for the future, suggests that tier one suppliers will face further margin compression. Compared to average automotive profits of around 6-7% in the last decade among OEMs, we expect overall industry operating margins to be squeezed by almost half to 3-4% over the next five years. This figure, which will be more in line with longer-run averages, will ripple down the supply chain. Already, there are signs that some banks and investors are wary about lending money to tier ones for longer periods of time.

Our research suggest that tier suppliers are responding to this pressure in multiple ways, including programme and operational efficiencies, as well as attempts to reduce fixed costs. In particular, suppliers have introduced job reduction programmes in higher cost, low growth countries like Germany. However, suppliers also need to be targeted in where they reduce headcount, as many

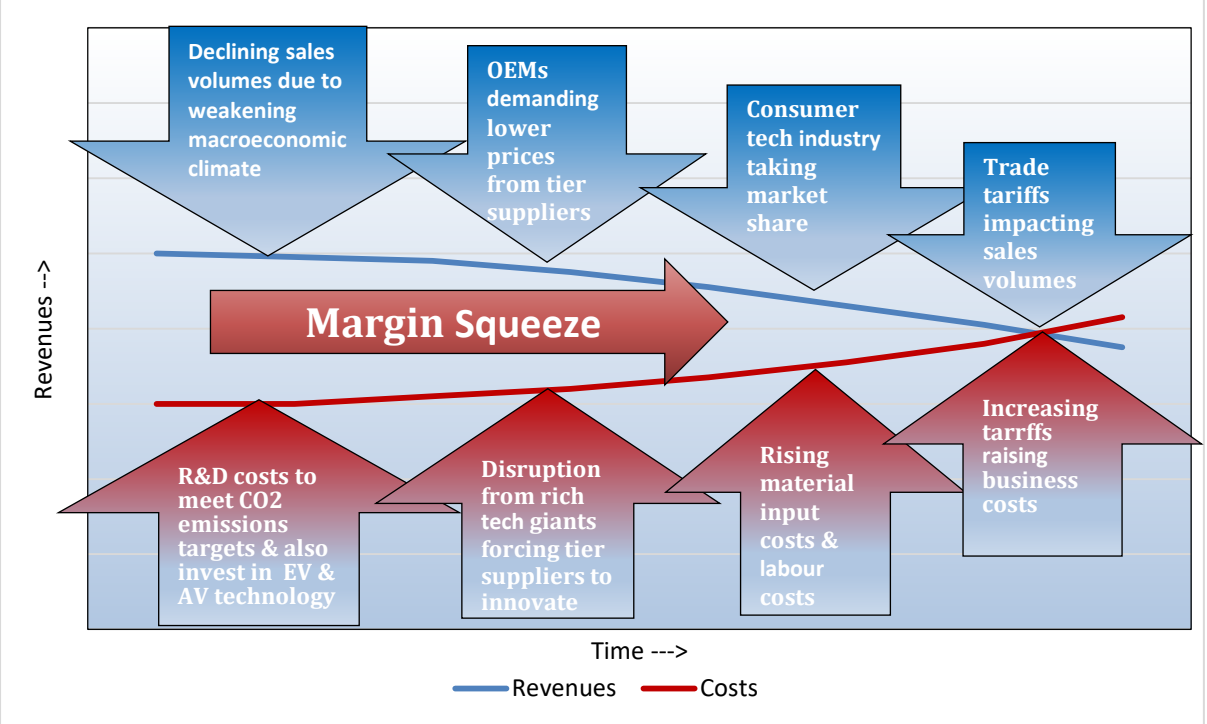
must also simultaneously increase recruitment in areas where more skills are required, such as digital and software experts.

Large suppliers will also depend upon their diversified product offerings, for example in developing multiple powertrain technologies, or in new business areas such as shared mobility. However, they will need to offer enough specialisation and value-add to OEMs to avoid becoming commoditised. In a number of cases, suppliers have or plan to spin off parts of the business that are more likely to be commodities, such as powertrain components, in order to focus on core segments and high growth technologies.

But even as they increase specialisations, suppliers will need to generate further economies of scale to reduce costs. Because of the strong market positions required to achieve this, we anticipate further restructuring and consolidation among segments of the supply chain, as well as acquisitions and collaboration with new market entrants.

Within this difficult change, however, many tier ones are also well positioned to increase their contribution and significance in the value chain. OEMs are likely to depend on suppliers to deliver a greater share of key technology, notably around electrified powertrains and batteries, but also in areas like advanced driving assistance systems (ADAS), internet of things (IoT) and artificial intelligence. Tier suppliers that develop these new technologies in close cooperation with their customers should be better able to control investment cost and avoid being commoditised.

Figure 1.1 Diagram Showing Upward Pressures And Downward Pressures on Suppliers



Source: Automotive from Ultima Media

2. Top 20 Automotive Tier Supplier Analysis

Table 2.1 Top 20 Automotive Tier Suppliers By Automotive Revenue and Margin 2018

Automotive Tier Supplier	Tier supplier rank	Automotive revenues as % of total company	Automotive revenues 2018 (F/X rate averaged for 2018)	Automotive margin 2018
Robert Bosch	1	61%	$54.7bn (€47.6bn)	7.4%
Denso Corporation	2	89%	$41.1bn (JPY 4,521bn)	8.1%
Magna International	3	100%	$40.82bn (C$53bn)	7.6%
Continental	4	72.5%	$37bn (€32.2bn)	7%
ZF Friedrichshafen	5	83.5%	$35.5bn (€30.85bn)	4.1%
Aisin Seiki	6	96.2%	$34.2bn (JPY 3,760bn)	6.5%
Hyundai Mobis	7	80%	$28.2bn KRW (35,149bn)	7%
Valeo	8	100%	$22bn (€19.12bn)	4.9%
Lear Corporation	9	100%	$21.15bn	5.9%
Faurecia	10	100%	$20.15bn (€17.52bn)	7.3%
Yazaki Corporation	11	100%	$18.2bn (JPY 2,002bn)	3.3%
Panasonic Automotive	12	21.3%	$15.5bn (JPY 1,700bn)	4.8%
Adient	13	100%	$17.44bn	1.4%
Sumitomo Electric Industries	14	53.7%	$15.5bn (JPY 1,709bn)	5%
Aptiv	15	100%	$14.4bn	10.2%
Cummins	16	59.1%	$14bn	11.6%
Mahle	17	92.8%	$13.4bn (€11.682bn)	6.1%
BorgWarner	18	100%	$10.53bn	11.3%
Schaeffler	19	64.1%	$10.5bn (€8.997bn)	7.6%
JTEKT Corporation	20	70%	$9.7bn (JPY 1,064bn)	4.4%

Source: Automotive from Ultima Media, Annual Reports

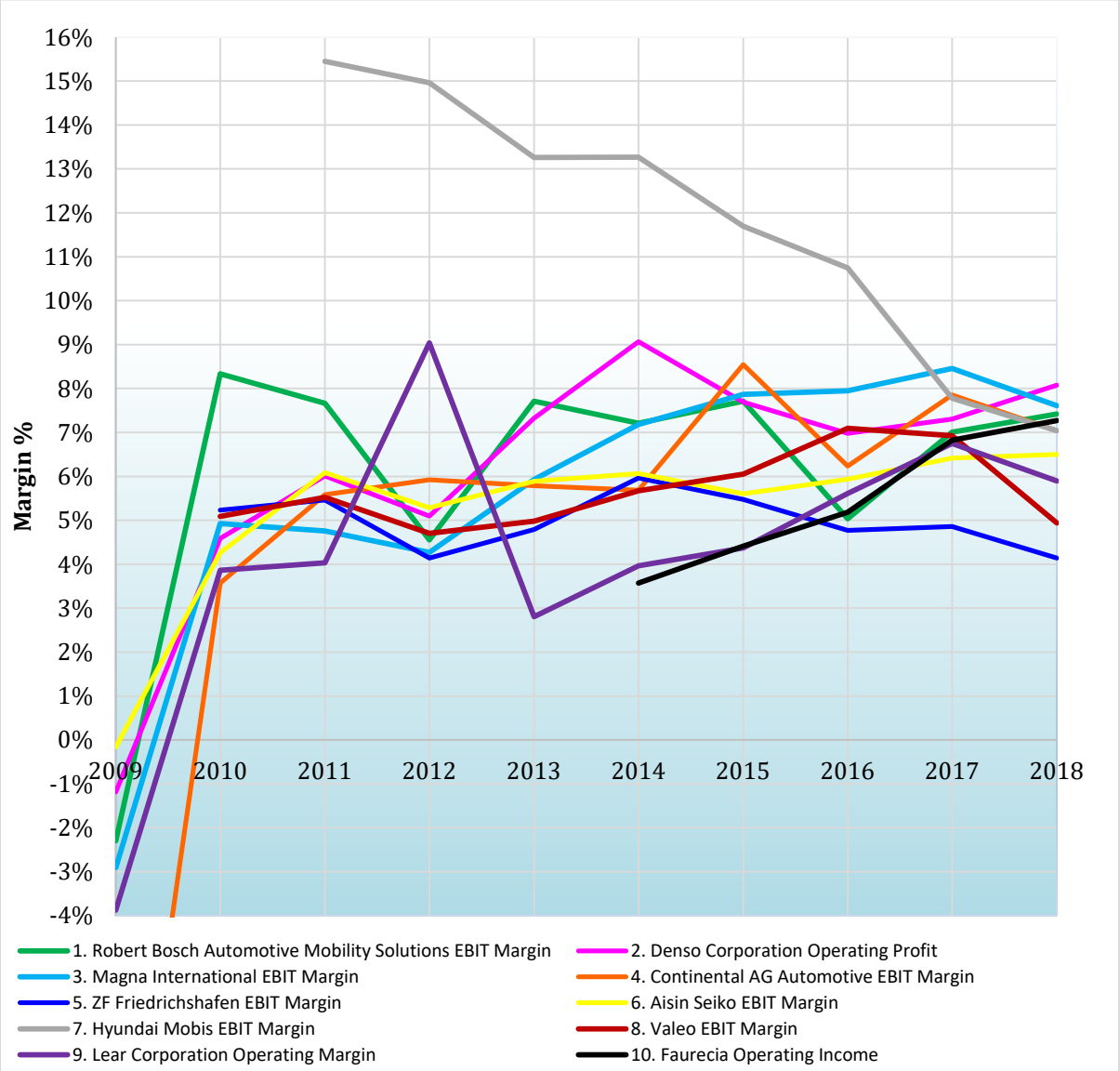
2.1 Methodology For Revenue and Margin

For the tier suppliers in this chart that only supply OEMs, automotive is 100% of a company's overall revenue. In other cases, we have estimated proportions of other divisions that would be automotive. At Continental, for example, we have used its annual reports to determine the proportion of its rubber division revenues that were supplied to OEMs.

For the calculation of current revenues, we have converted companies' revenue as reported in their native currencies, using average exchange rates for 2018.

For margins, different companies have slightly different accounting and reporting methodologies in their financial reports. We have tried where possible to use earnings before interest and tax (EBIT), or operating income, as detailed in annual reports.

Figure 2.1 Top 10 Automotive Tier Supplier Historical Margins 2009-2018 (%)

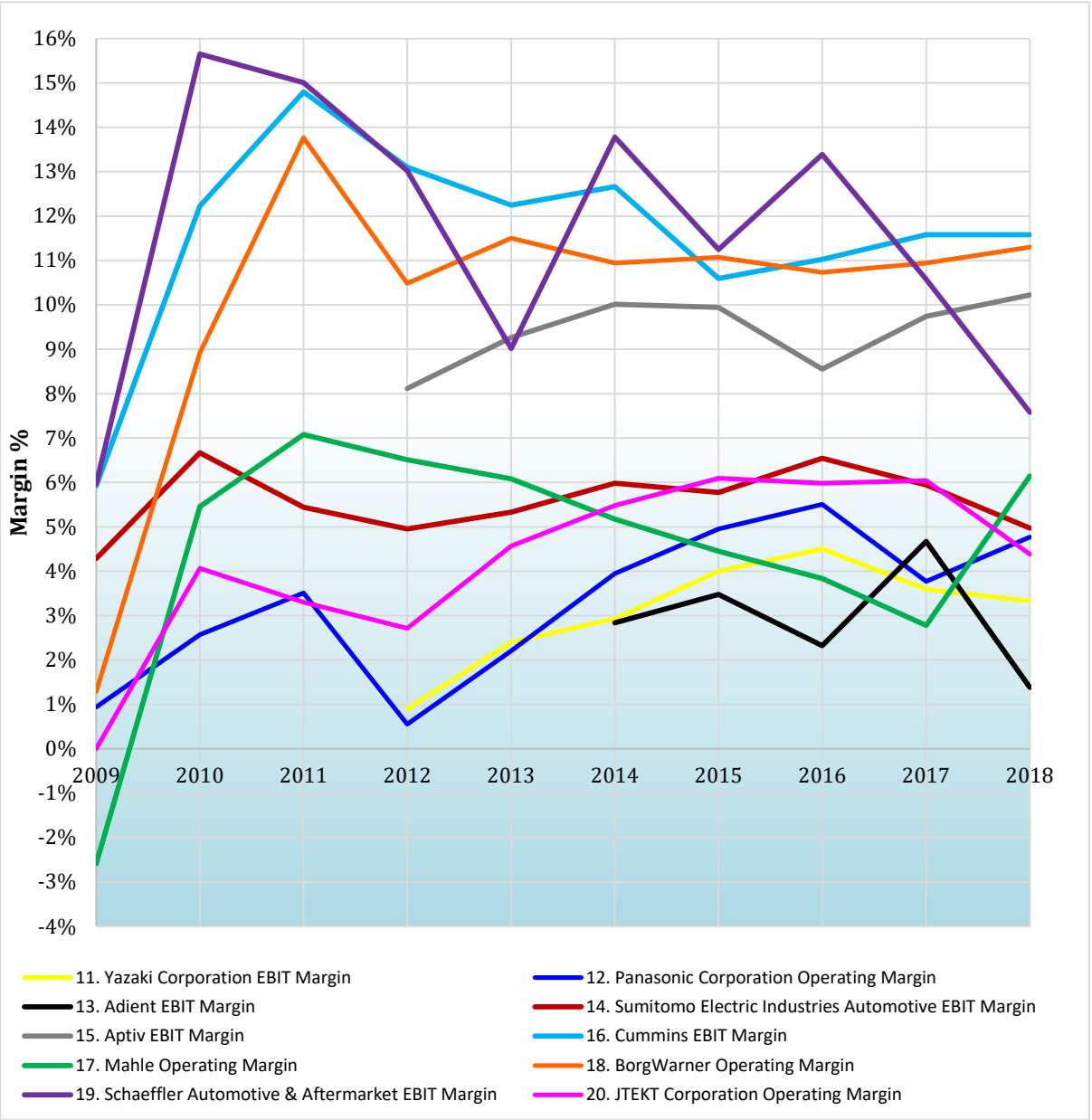


Source: Automotive from Ultima Media

2.2 Top 10 Tier Supplier Margin Analysis

All tier suppliers suffered heavily in the wake of the 2008-2009 financial crash, with the majority registering a loss during that period. However, the industry rebounded surprisingly quickly, with all back in profit by 2010 and profits broadly rising thereafter. But what is most striking is how similar the margins have been for suppliers since then; with the exception of Hyundai Mobis, profits have fluctuated between 4-8% and averaged around 6-7%, which seems to have become the industry norm. This is in part due to the fiercely competitive marketplace at the level of the top 10 players. But the relatively low margins are also characteristic of an overly fragmented and competitive industry – a sign that the industry could be ripe for consolidation.

Figure 2.2 Top 11 to 20 Automotive Tier Supplier Historical Margins 2009-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

2.3 Top 11 to 20 Tier Supplier Margin Analysis

Amongst the top 11-20 tier suppliers, the picture is quite different. These companies are more specialised, offer more niche products and are much less diversified and global than the top 10 tier suppliers.

Notably, there are two distinct groups of suppliers within this subset: several high-margin companies producing high value products with fewer competitors, and low-margin companies supplying a narrow range of more commoditised products.

Table 2.2 High Margin Tier Supplies Vs. Low Margin Tier Suppliers

High margin group (8-14% margin)
BorgWarner – produce high value advanced engineering gearboxes and clutches which have relatively few competitors **Aptiv –** produce high value-added electronics for ADAS and AI functions. **Cummins –** produce engine components primarily for commercial and larger vehicles with relatively few competitors
Low margin group (2-6% margin)
Adient – Narrow portfolio: Only produce seating, which is known to be a low margin segment **Yazaki Corporation –** Narrow portfolio**:** mainly produce wiring harnesses, which are commoditised **JTEKT –** Narrow portfolio: mainly produce bearings, which are highly commoditised **Mahle –** Narrow portfolio: mainly produces low-margin, commoditised engine components **Sumitomo Electric –** Narrow portfolio: mainly produce wiring harnesses, which are commoditised

Source: Automotive from Ultima Media

2.4 Profit Outlook: A Return To Historical Margin Levels

Although automotive profits are under pressure, it is worth noting that the industry's profitability over the past five years has actually been much higher than long-run averages.

Looking back to the pre-crisis period 1990–2008, the overall industry's margins averaged just 2-4%. The financial crash then sent most OEMs and tier suppliers into the red in 2008-2009, resulting in a number also going bankrupt. However, there was a surprisingly quick recovery. Carmakers enjoyed relatively strong margins from 2013–2018, averaging 6–7%, largely driven by recovering volumes, a deliberate push on product mix to higher margins SUVs, pick-ups and crossovers, as well as the rapid rise of Chinese new vehicle sales. Of course, across the industry there have been large variations in profitability with some premium OEMs achieving double digit margins, whereas volume players often averaged 4-5%.

Over the past two years, however, the macroeconomic landscape has shifted. At Automotive for Ultima Media, we don't expect a significant improvement in volumes until as late as 2024-2025, as outlined in our report (see 'Automotive Headwinds' report).

Simultaneously, unprecedented levels of industry transition towards electrification will require huge shifts in capital investment towards these new technologies. However, as shown in our powertrain forecast report (see 'Powertrain Forecast 2020-2030'), market share will be fragmented across varying degrees of combustion engine, hybridisation and full electrification, with significant varieties across regions. This will add more complexity to OEM and supplier investment strategies.

OEMs are already taking measures to shore up their margins, including cutting costs across the supply chain. In November 2019, BMW announced it was in talks with suppliers to help achieve cost-cutting measures which would save more than €12 billion ($13.26 billion) by 2022. This included agreements with 18 suppliers regarding an efficiency programme, which the carmaker confirmed would be necessary to reduce the effect of trade wars and the huge investment in electric vehicles.

Other OEMs are cutting costs to protect margins and enable new investment. Daimler is paying the price of previously backing diesel powertrains and is consequently experiencing a costly transition towards electric vehicles and powertrains to help meet tough European Commission emission targets. The vehicle manufacturer has issued two profit warnings in 2019, with EBIT (earnings before interest and tax) margins expected to fall to 3-5%. In November, Daimler also announced that at least 10,000 jobs would go to help fund the heavy investment required for investing in EVs and autonomous vehicles. The company hopes to save €1 billion by the end of 2022 in its Mercedes-Benz passenger car division.

Other OEMs, including Ford Motor Company and Volkswagen Group, have pointed to difficulties ahead. In December, Audi announced it would cut up to 9,500 production jobs by 2025, and an equivalent percentage of management positions – even as it hires 2,000 experts in areas such as electric mobility and digitalisation.

Such reductions will be felt across suppliers, with the outlook particularly poor for segments of the powertrain sector. Daimler has even suggested that it would stop development of ICE powertrains. However, electrification is unlikely to replace lost ICE revenues for years to come and won't deliver meaningful profits for most companies until significant volumes and economies of scale are realised.

In this context, our outlook over the next five years is for continued margin pressure across the industry, resulting in average profit margins of 3-4%, or half their recent averages. This margin compression will impact on suppliers and their business strategies, which we analyse in the next section.

3. Automotive Tier Supplier Company Profiles & Analysis

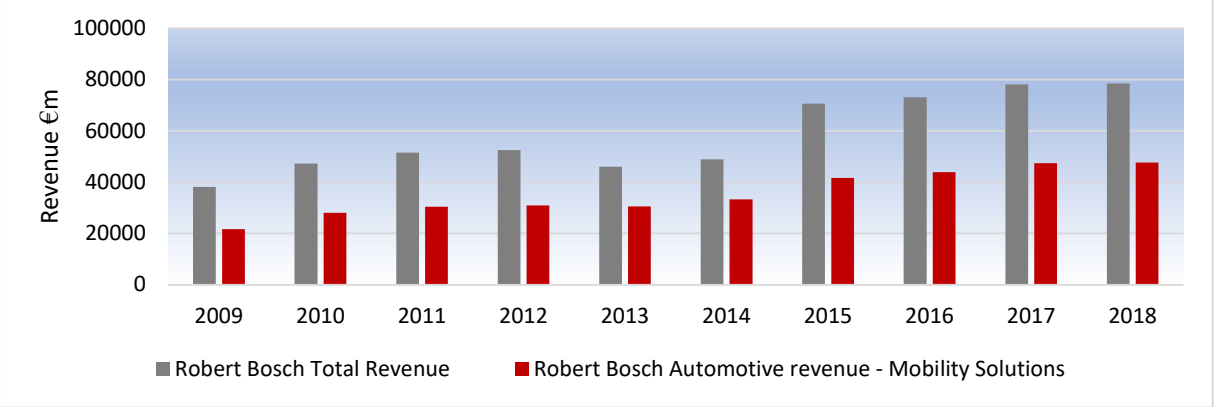
3.1 Robert Bosch

Table 3.1 Robert Bosch Overview

BOSCH	ADAS, fuel injection systems, powertrain control, chassis control, active and passive safety systems, multimedia, electric drive systems, steering systems, battery technology
Automotive Tier Supplier Ranking	**1st**
Total/Automotive Revenues	€78.5bn/€47.6bn (61% automotive)
Total/Automotive EBIT Margin %	7%/7.4%
Headquarters	Stuttgart, Germany
Employees	400,100 (March 2019)
Website	www.bosch.com

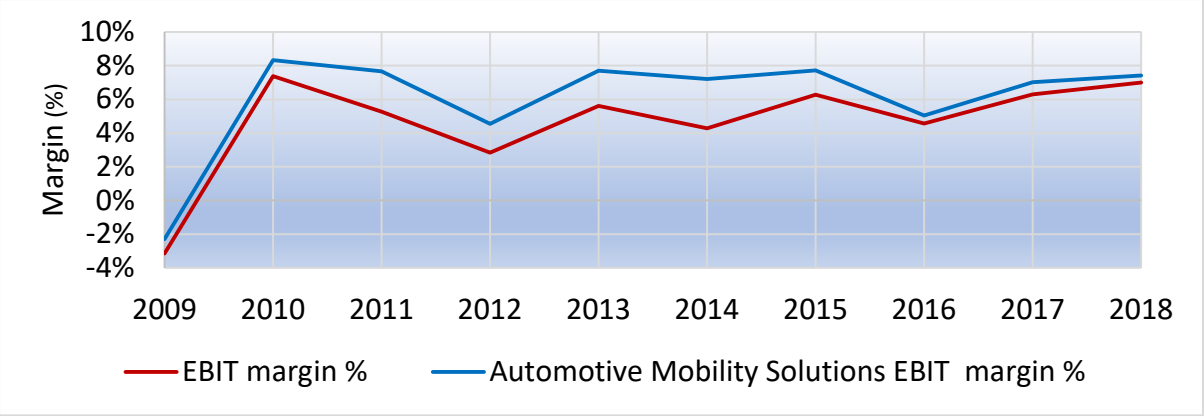
Source: Automotive from Ultima Media, Annual Reports

Figure 3.1 Robert Bosch Historical Total & Automotive Revenues 2009-2018 (€m)



Source: Automotive from Ultima Media, Annual Reports

Figure 3.2 Robert Bosch Historical Total & Automotive Margins 2009-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.1.1 Robert Bosch Analysis

As the largest global automotive tier supplier, Bosch has a dominant position in the industry. The Stuttgart-based company has pursued a growth strategy built on a highly diverse product portfolio and brand recognition, which has been achieved with a strong emphasis upon R&D.

Bosch's private ownership structure, which is rare amongst larger tier suppliers, allows a somewhat longer-term approach to investment and profitability compared to listed companies, which are under more pressure to deliver more short-term returns to shareholders.

That longer-term strategy has ultimately played out in Bosch's success as the number one player, with healthy revenues and overall group EBIT margins which have averaged 7% from 2010-2018 (see **Figure 3.2**).

Bosch's Automotive Mobility Solutions division now accounts for more than 60% of overall revenues, and in 2018 the division achieved an average EBIT of 7.4%, which outperformed Bosch's overall margin, and is on the high end of average margins (**Figure 3.2**). However, Bosch's diversification beyond automotive could help it to better weather the sector's current downturn and maintain investment.

This healthy financial position allows Bosch to make further substantial investments in R&D to maintain a lead in cutting-edge technologies and to outperform the industry despite current headwinds. However, despite Bosch's substantial investment in innovation, this dominance cannot be guaranteed whilst there is so much rapid innovation reshaping the industry. A possible breakthrough from a new or minor player in EV technology, for example, could quickly gain market share.

Likewise, Bosch faces similar challenges to other tier suppliers in the current climate. Falling demand from OEMs, in particular due to the declining European and Chinese markets, will inevitably impact topline revenues and margins. More than 80% of Bosch's revenues are derived from APAC and Europe (with only minor penetration in other regions), so Bosch is more exposed to the downturn than other tier suppliers. To counter this, Bosch needs to improve market penetration in other countries and improve it's 'regional resilience'.

The carmaker is also highly exposed to ICE technology, notably diesel powertrain technology, sales for which continue to dwindle and are expected to be largely phased out over the coming decade. Partly in response, Bosch has announced it will cut 2,600 jobs in Germany by 2022.

Nonetheless, Bosch is well placed to exploit the EV surge with its powertrain components and systems. It also has a strong position in key growth areas including ADAS. The downturn may be an opportunity for Bosch to cement its position as market leader, including by acquiring or muscling in on new technology segments or regions. For example, the tier supplier has already been investing more in software-driven shared mobility and autonomous driving solutions.

In 2017, Bosch's joint venture with Mahle decided to put its turbo business up for sale as part of a strategy to move beyond hardware.

Bosch is also focusing more on mobility solutions. In 2018, it acquired a carpooling and mobility startup, Splitting Fares, in the US. It has also established a Connected Mobility Solutions division to focus more on shared and connected mobility. The company is furthermore working directly with municipal authorities, not just by developing low-emissions powertrains, but by addressing transport issues like congestion through on-demand mobility as a service, with revenue channels based on data connectivity.

See our exclusive interview with Robert Bosch in chapter 5.

Table 3.2 Robert Bosch M&A & Joint Venture Activity

Company	Date	Details
Nikola Motor Company	2017	Bosch joint development of a powertrain based on truck eAxle technology with EV and fuel-cell truck start-up Nikola Motor Company
SPLT	2018	Bosch acquires the carpool platform, Splitting Fares, that allows individuals to match passengers prior to accepting rides
Mercedes	2019	Bosch and Mercedes start a new joint pilot project to develop an app-based ride-hailing service using automated driving

Source: Automotive from Ultima Media

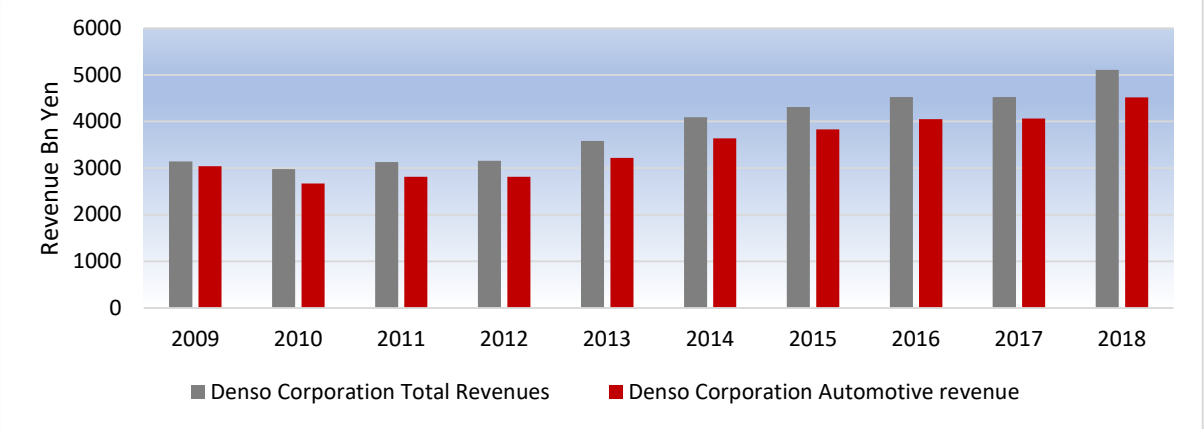
3.2 Denso Corporation

Table 3.3 Denso Corporation Overview

DENSO	Active safety systems, powertrain control, electric/hybrid vehicle components, fuel management systems, thermal system, climate control systems, body electronics, small motors, information & telecommunication systems
Automotive Tier supplier ranking	**2nd**
Total/Automotive Revenues	JPY 5,108bn/JPY 4,521bn (89% automotive)
Total EBIT Margin %	8.1%
Headquarters	Kanya, Aich, Japan
Employees	170,000
Website	www.denso.com

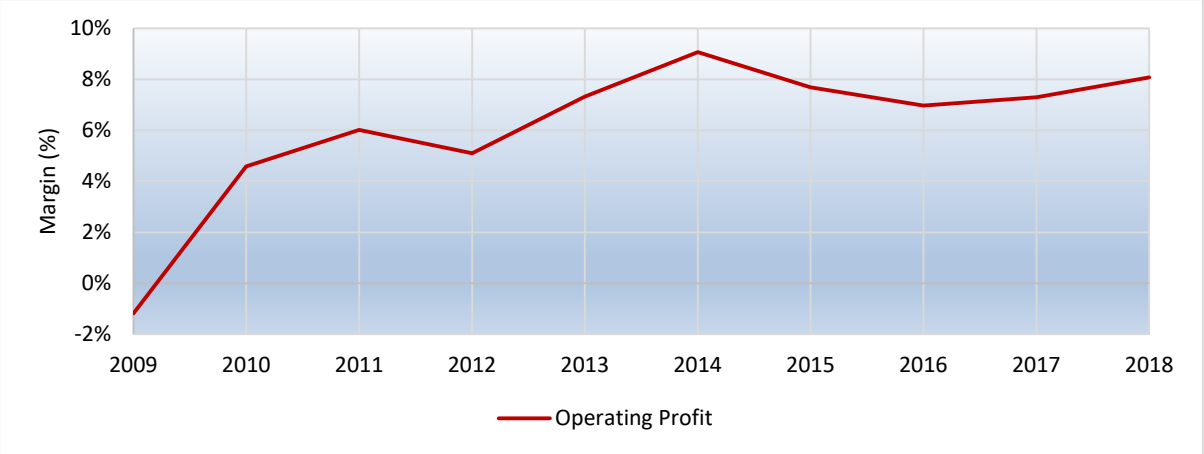
Source: Automotive from Ultima Media, Annual Reports

Figure 3.3 Denso Corporation Historical Total & Automotive Revenues 2009-2018 (Bn Yen)



Source: Automotive from Ultima Media, Annual Reports

Figure 3.4 Denso Corporation Historical Total Margins 2009-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.2.1 Denso Corporation Analysis

With overall revenues of $41.1 billion in 2018, Japan's Denso is the second largest global tier supplier. This size and strength give Denso the scale to support major R&D programmes that have helped it to succeed. This has been reflected in the group operating margins, which averaged 6.8% from 2010 to 2018, and have been on a steady upward trajectory, reaching 8.1% in 2018.

However, Denso's bottom line is increasingly under pressure, including from large technology investments. Preliminary financial results for 2019 indicate a significant fall in earnings and margins and we expect Denso's outlook to weaken in the medium term. In H1 2019, consolidated profit fell to $1.2bn, a 12% fall from the previous year, although revenues remained stable at $24.3 billion. Despite an increase in production volumes, operating profit decreased due to Denso's increased investment for future growth. Market slowdown and currency exchange fluctuations have also led Denso to revise down its forecast.

Denso's main defining characteristic is its 25% ownership by Toyota, which also accounts for around 50% of its global sales. As our interview illustrates, this can be a mixed blessing. Toyota guides new technology development, and helps Denso to grow in new regions, for example. However, the close relationship with Toyota also makes it more difficult to find business with other OEMs. Toyota can also force prices down very hard.

The strength of this ownership structure is particularly evident in the Japanese market, especially in terms of powertrains and thermal components (e.g. climate control). However, Denso's reliance on the Asian market is a risk given China's current volatility, and demographic decline in Japan. However, its scale and expertise will position Denso well to capture growth across Asia as volume recovers. The company also continues to diversify into North America both in traditional segments, as well as in partnerships to build Denso's capabilities in connected services and autonomous vehicles.

The powertrain transition is a risk for Denso's margins, notably the 'commoditisation' of certain components. The company is therefore trying not to compete with high volume/low margin competitors but to leverage more advanced technologies where margins are higher. Denso's focus on emerging technologies seems to confirm this strategy. However, many others are developing similar emerging technologies, so this is likely to become a very competitive area.

It is notable in our interview with Denso that the company appears not to be backing 48-volt mild hybrid technology and is instead backing alternatives such as 400-volt technology. This decision, in our view, could mean missing out on a major growth segment as most other tier suppliers and OEMs see 48-volt mild hybrids as a relatively cost-effective way of reducing emissions.

Table 3.4 Denso M&A & Joint Venture Activity

Company	Date	Details
Toyota	2019	Denso & Toyota announced a JV called Mobility Innovative Research Institute for Semiconductors (MIRISE) for R&D into next-gen in-vehicle semiconductors
PiNTeam	2019	Denso has bought an equity stake in PiNTeam, a German company which should help Denso accelerate development of the software for in-vehicle electronic control units (ECUs)

Source: Automotive from Ultima Media, Annual Reports

See our exclusive interview with Denso Corporation in chapter 5.

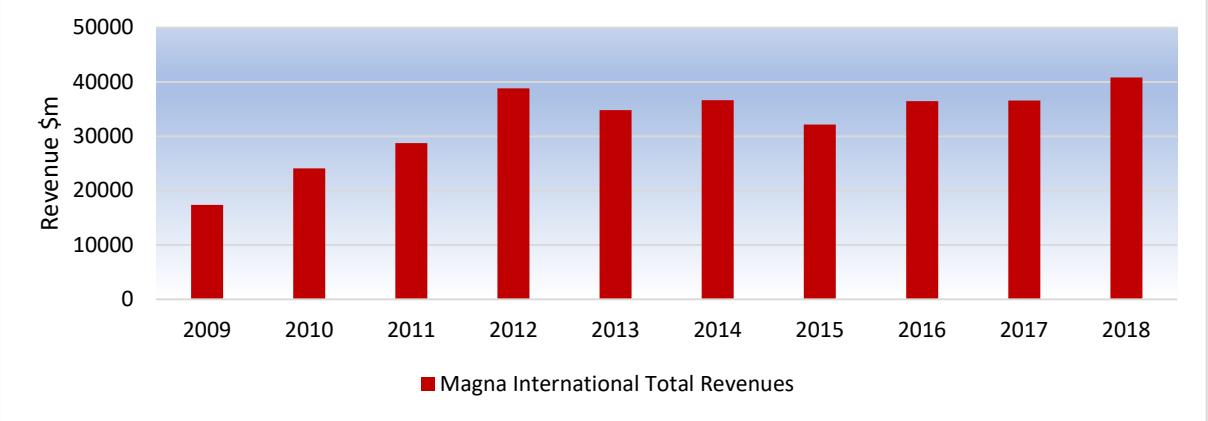
3.3 Magna International

Table 3.5 Magna International Overview

MAGNA	Body & chassis systems, closure systems, exterior systems, interiors, seating systems, vision systems, powertrain systems, electronic systems, roof systems, hybrid & electric vehicle systems, vehicle engineering & contract vehicle assembly, rearview cameras, complete vehicle solutions
Automotive Tier supplier ranking	**3rd**
Total/Automotive Revenues	$40.82bn/$40.82bn (100% auto)
Total/Automotive EBIT Margin %	7.6%
Headquarters	Aurora, Ontario, Canada
Employees	169,000
Website	www.magna.com

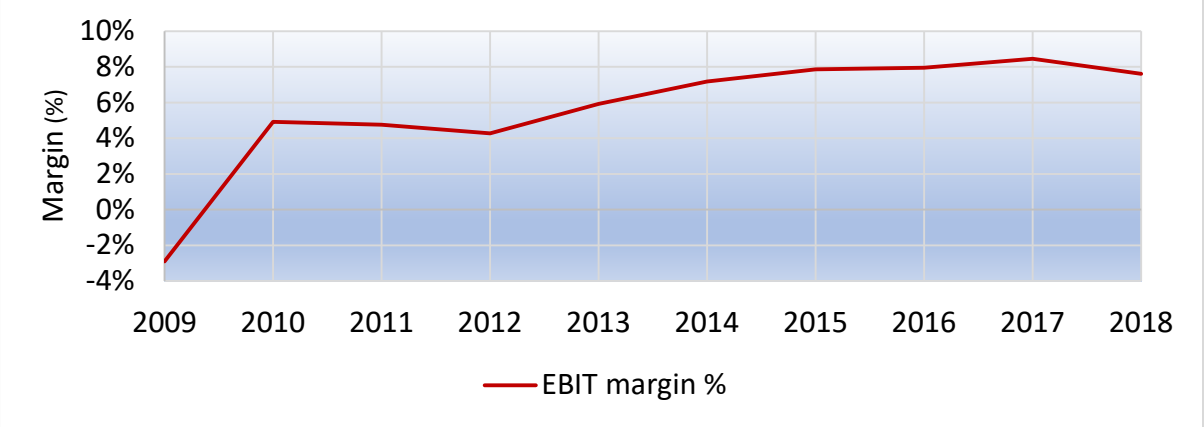
Source: Automotive from Ultima Media, Annual Reports

Figure 3.5 Magna International Historical Total Revenues 2009-2018 ($m)



Source: Automotive from Ultima Media, Annual Reports

Figure 3.6 Magna International Historical Margins 2009-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.3.1 Magna International Analysis

Although Magna has mostly shifted away from supplying interiors, its product portfolio remains one of the most diversified among tier suppliers and this may well prove to be an asset in an uncertain future.

With revenues of $40.8 billion in 2018, Magna has the scale to invest in R&D and engineering to stay competitive and to strengthen its position at the top table with the other top five tier suppliers. On the other hand, being so diversified creates risk that R&D efforts are diluted across multiple technology areas, diminishing the potential for returns on investment.

Nonetheless, as **Figure 3.6** illustrates, since 2012 Magna has achieved steadily increasing margins, reaching 8% in 2017. Heavy R&D investments began to affect margins in 2018, however this year the company's profits seem to be under more pressure. For Q3 2019, Magna reported sales down 3% to $9.3 billion, including impacts from the strike at GM. For the full year 2019, the company has revised its forecast down due to expected lower production volumes and higher launch costs.

Whilst in a very strong position overall, Magna is highly reliant upon North America and Europe. In 2018, 42% of sales were in the EU and 50% in North America – just 8% of sales were in APAC in 2018. However, Asia and China remain a significant area for potential growth.

Overall, the outlook for Magna is positive. Recent developments include investment in Getrag's transmission joint ventures, and a production order award from BMW for dual-clutch transmissions, including hybrid variants, which was the largest production order in Magna's history**.** Magna is currently constructing a $60m plant in Ohio to make rear seat structures including a contract for PHEVs commencing in Q1 2020.

Production at Magna's vehicle contract manufacturing arm in Austria, Magna Steyr, is also strong, including the electric Jaguar I-Pace, and orders for BMW, Mercedes-Benz and Toyota. Magna Steyr has also established a joint venture with BAIC to build electric vehicles in China.

In December 2019, INEOS Automotive announced an expansion of its partnership with Magna that further demonstrates the supplier's strength across the value chain. Its subsidiary, Magna Powertrain, has been involved in the chassis and suspension development since the project began. It will now be joined by Magna Steyr, which will undertake the series development phase of the new Grenadier. This is an example of tier suppliers claiming more of the value chain by being more involved in the development cycle – and acting in many ways as a 'tier supplier 0.5'.

Given this, we expect revenue to reach $43 billion in 2020, albeit with continuing margins pressures. Nonetheless, Magna remains in one of the strongest positions among tier suppliers.

Table 3.6 Magna International M&A & Joint Venture Activity

Company	Date	Details
Getrag	2015	Acquires the Getrag Group, one of the leading automotive transmission suppliers for $1.9 bn
Grupo Antolin	2015	Sells off its interiors business to Grupo Antolin for $525m, divesting of a very low-margin business segment
Telemotive	2016	Acquires automotive electronics engineering provider, Telemotive
OLSA	2018	Acquires OLSA to enhance lighting business
Wipac Czech	November 2019	Acquires Wipac to expand the design and development capabilities of forward lighting systems.

Source: Automotive from Ultima Media

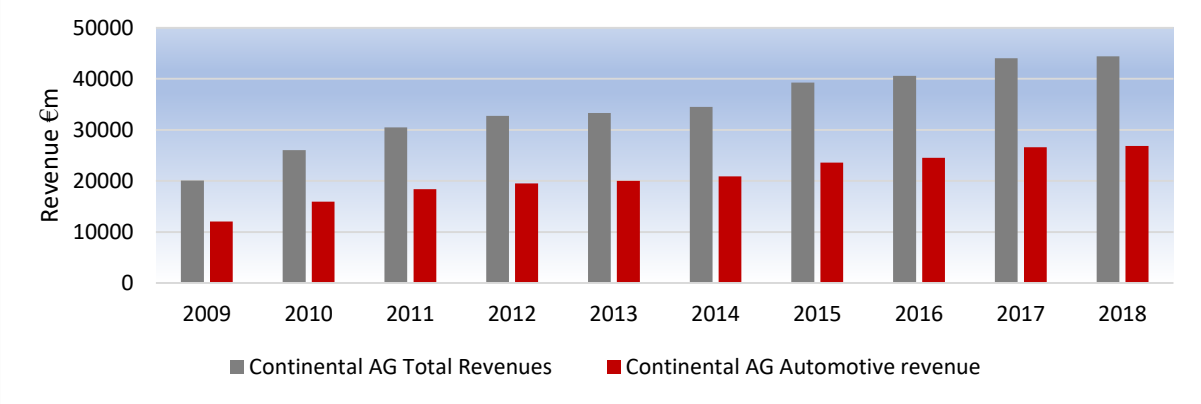
3.4 Continental

Table 3.7 Continental International Overview

	Chassis & safety ADAS, hydraulic brake systems components, passive safety & sensonics, vehicle dynamics, powertrains, fuel & exhaust management, hybrid powertrains, sensors & actuators, transmissions, interior: body & security, commercial vehicles & aftermarket, infotainment & connectivity, instrumentation & HMI, tyres, ContiTech
Automotive Tier supplier rank	**4th**
Total/Automotive Revenues	€44.4bn / €32.2bn (72.3% Auto)
Total/Automotive EBIT margin %	9%/7%
Headquarters	Hanover, Germany
Employees	244,582 (2019)
Website	https://www.continental-corporation.com

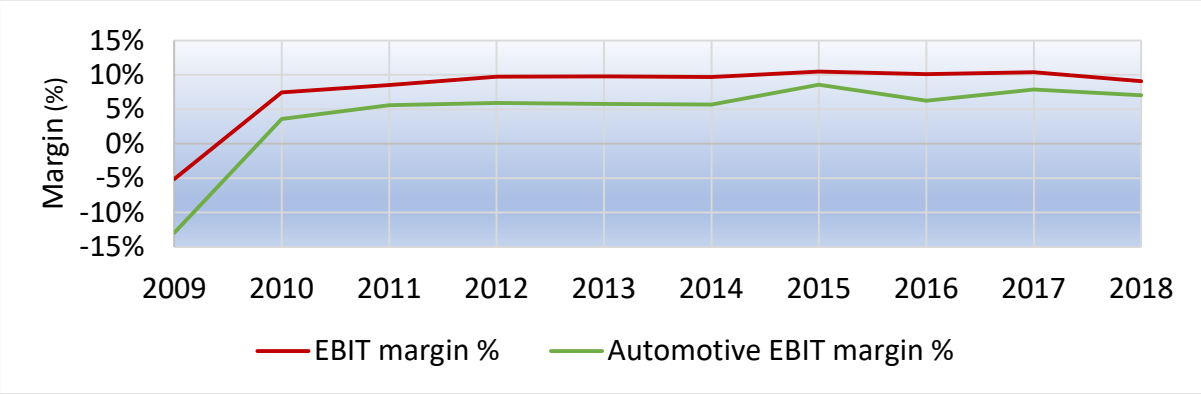
Source: Automotive from Ultima Media, Annual Reports

Figure 3.7 Continental Historical Total & Automotive Revenues 2009-2018 (€m)



Source: Automotive from Ultima Media, Annual Reports

Figure 3.8 Continental Historical Total & Automotive Margins 2009-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.4.1 Continental Analysis

Continental is another highly diversified supplier with strong scale and investment in new technology. However, it is also a prime example of how difficult the transition to electrified powertrains and digital technologies will be for many tier suppliers. The company has initiated a restructure that will see it spin off its powertrain division, phase out production of certain ICE components, and reduce jobs in the coming years – cuts that will be necessary for it to remain profitable and invest in new technology.

In 2018, Continental had two groups: the Automotive Group which generated €26.8 billion, and the Rubber Group which generated €11.7 billion. We have assumed a proportion of the rubber group is supplied direct to OEMs for factory fitment and the remaining percentage is for the replacement/aftermarket. We therefore estimate that Continental's tier one supplier revenues amounted to €32.2 billion in 2018 ($37 billion). Continental is currently 46% owned by the Schaeffler Group.

This places Continental as the number four automotive tier supplier. Continental is well diversified in powertrains, electronics, safety systems and tyres, which positions the company to take advantage of the trends in connectivity, electrification, safety and mobility. Continental aims to be within the top three players of each product category. If it is not top three, it has said that it will either acquire companies with the expertise in these areas, or else exit the segment.

As a result, Continental has a component or system in its product portfolio to cater to almost all of the industry megatrends and high growth segments. Continental has stated that it will focus on profitable growth areas, including driver assistance, autonomy and connected car, mobility services, customers, tyre, industrial and end-customer businesses. However, so do many of the other leading tier suppliers.

The company's Rubber Products group helps insulate the company against fluctuations in other parts of the business. Demand is fairly constant in OE fitment and aftermarket, and margins are generally above 10%. This balance of a stable tyre division helps the company to expand in its more fluctuating Automotive Product Group.

As can be seen from Figure 1, Continental's overall EBIT margins have been consistently strong over the past decade at around 9-10%, with EBIT margins in the Automotive Products Group slightly lower at 6-7%.

A challenge for Continental is that nearly 50% of revenues are from Europe, leaving it highly exposed to European market stagnation and lower profits in the region. An improved regional balance is one of the 'seven dimensions' Continental has stated that it will focus on to maintain and achieve profitability and margin growth.

For example, Continental is opening a large new plant in Wuhu, China producing a range of powertrain products, including thermal management parts, sensors and actuators for both conventional powertrains and electric vehicles.

However, the potential growth in Asia does depend to some extent upon subsidies and regulatory factors that will drive the adoption of low-emission technologies that Continental is well equipped to provide. And currently, at least, weakness in China is hurting profits.

Continental experienced a 41% fall in profits in Q2 2019 citing issues in China and the sift to EV and AV technologies. And in Q3, despite sales increasing by 3% to €11.1 billion for the quarter, Continental reported losses of €1.99 billion due to one-off impairments and provisions.

Despite these one-time effects, CEO Elmar Degenhart has stated that the company's Transformation 2019–2029 structural programme was necessary to improve long-term competitiveness. The company projects full-year 2019 sales will be about €44 billion-€45 billion and the adjusted EBIT margin will be about 7-7.5%.

It is worth noting that sales demand is holding up well and margins maintained despite the external market conditions weakening, indicating that Continental is increasing market share relative to other tier suppliers within an overall contracting market. This opportunity to exploit the downturn and emerge stronger is further discussed in our strategy analysis in **chapter 4.**

3.4.2 Restructuring

From 2020, the company plans to implement a new holding company structure that will see it spin off its powertrain unit altogether. In September 2019, it grouped its powertrain activities together and rebranded it Vitesco Technologies.

The decision to separate its powertrain business was welcomed by investors, and seen as pre-emptive move ahead of major disruption to the powertrain industry. The company's automotive and rubber divisions will also operate more autonomously from 2020. The intention is that this restructuring will allow the business to respond more flexibly to individual demand in each regional market with widely different regulation, powertrain dynamics and consumer preferences.

However, Continental is set to be hit hard by these changes in powertrain. In August 2019, it said it would begin phasing out production of internal combustion engine components as demand, especially for diesel, drops more rapidly than expected. Alongside this, Continental stated it will phase out its hydraulic components business for ICE powertrains over the next few years due to a 'drastic decline in demand for hydraulic components'.

In November this year, Continental revealed a restructuring plan that includes phasing out of production for ICE components at several plants worldwide, with over 5,000 jobs expected to be impacted over the next ten years.

In parallel, the company said it will discontinue the production of display and control technologies by the end of 2025 and phase out R&D functions at Babenhausen, Germany by 2021. Both moves are attributed to the industry shift from analogue to digital technologies and acute increase in costs pressures. The Rubí plant in Spain is also under review as it mainly produces analogue displays and

controls. These moves demonstrate that there is profound technological industry transition away from hardware and analogue products towards digitalisation.

Overall, Continental have indicated that 20,000 jobs (around 8% of the workforce) are potentially at risk.

It is not all negative for Continental and other large powertrain suppliers, particularly as they make investments in new technology. For example, in December 2019, Vitesco Technologies announced what it claimed is a major breakthrough in hybrid powertrains, presenting a radically simplified and more cost-effective transmission architecture that could be better suited to mass market adoption.

However, both to enable such investments, as well as to remain profitable, Continental and other suppliers will have to make drastic cuts during this difficult industry transitional period.

Table 3.8 Continental M&A & Joint Venture Activity

Company	Date	Details
Veyance Technologies Inc	2015	The German division of Continental acquired the rubber company Veyance Technologies Inc. for $1.6bn to be integrated into the company's ContiTech division, to serve as the regional home office for ContiTech in North America
Nexteer	2017	Joint venture to develop ADAS motion control, for braking and advanced steering system integration
Osram	2018	Joint venture to combine expertise in lighting, light control and electronics
Michelin	2019	Joint venture planned related to tyre production and raw material sourcing

Source: Automotive from Ultima Media

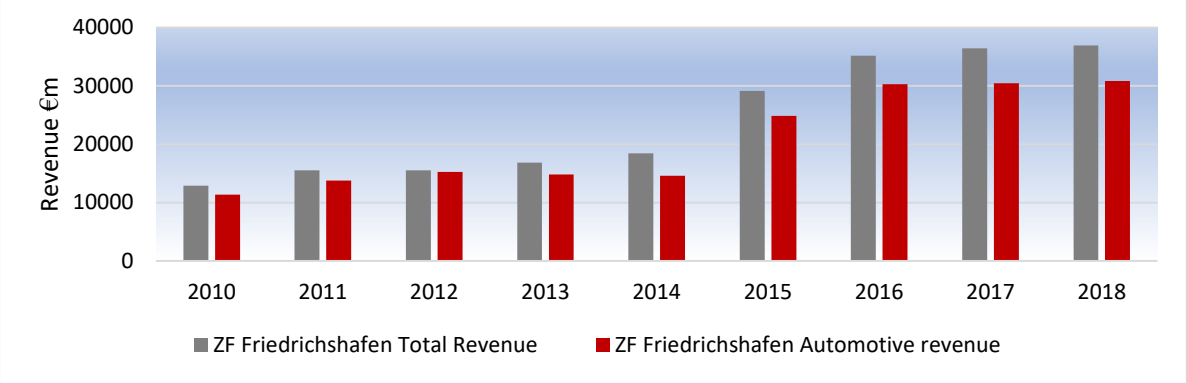
3.5 ZF Friedrichshafen

Table 3.9 ZF Friedrichshafen Overview 2018

	Transmission systems, steering systems, braking systems, axles components, clutches, dampers, car powertrain technology, car chassis technology, commercial vehicle technology, industrial technology, active & passive safety technology, electronic systems, ADAS (Camera, Lidar, Radar)
Automotive Tier supplier ranking	**5th**
Total/Automotive Revenues	€36.93bn/€30.85bn (83.5% automotive)
Total EBIT Margin %	4.1%
Headquarters	Friedrichshafen, Baden-Württemberg, Germany
Employees	148,969
Website	www.zf.com

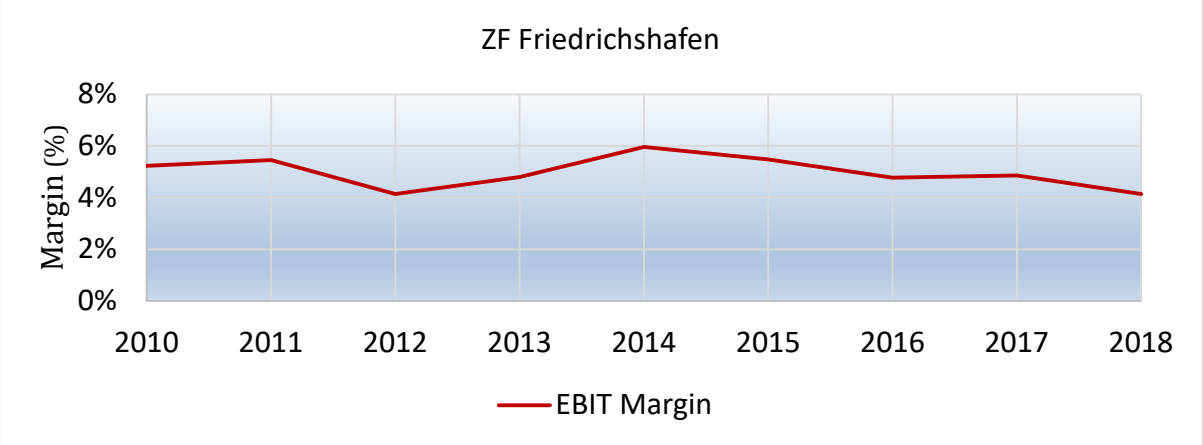
Source: Automotive from Ultima Media, Annual Reports

Figure 3.9 ZF Friedrichshafen Historical Total & Automotive Revenues 2010-2018 (€m)



Source: Automotive from Ultima Media, Annual Reports *ZF acquires TRW in 2015

Figure 3.10 ZF Friedrichshafen Historical Margins 2010-2018 (%)



Source: Automotive from Ultima Media, Annual Reports *ZF acquires TRW in 2015

3.5.1 ZF Friedrichshafen Analysis

ZF is the 5th largest tier suppler with total revenues of €36.93bn in 2018, of which automotive revenues were €30.85 billion. EBIT margins have ranged between 4-6%, and have been on a slight downward trajectory since 2014, falling to 4.1% in 2018. Things look set to get tougher, as ZF announced sales were down 1.7% to €18.4 billion in the first half of 2019, and also issued profit warnings for the year.

Despite this, ZF's scale helps it to maintain a strong emphasis on R&D. The company spends 6.6% of revenue, which is slightly on the low side compared to other players who are spending 7-8% on R&D. ZF's relatively slim margins could become a constraint on raising R&D spend.

Nonetheless, ZF is a technology leader in powertrains and chassis systems, which puts it in a strong position in those areas. The 2015 acquisition of safety systems supplier TRW complemented ZF's portfolio and brought expertise in safety electronics, such as ADAS. This migration from mechanical powertrain components to electronics is reflected in the industry more widely, as this area is believed to have higher margins than purely mechanical components.

However, ZF's margins have not increased overall since acquiring TRW. In fact, margins have been steadily falling over the past five years. What's more, the continual migration to more electronic content is still a potential threat to ZF as it tries to keep up with change.

ZF's product portfolio makes it well placed to capitalise on the trends to reduce emissions from ICE powertrains. ZF stated it will increase its penetration in hybrids, for examples. The increasing focus on reducing CO2 emissions is also an opportunity for ZF to develop more lightweight chassis components, which is of particular relevance to ZF's Composites Technology Centre. ZF is also well placed to gain from the mobility trend, being part of the broader Mobility as a Service (MaaS) Alliance.

ZF is highly reliant on the stagnant EU market with nearly 50% of sales. Despite efforts to increase its regional penetration in regions like India, China and Korea, in 2018 APAC accounted for only 21% of sales. In November 2019, ZF announced it was establishing a third Chinese R&D centre in southern China. ZF also opened its first Vietnam plant that month, a €25m (US$28m) facility to supply chassis modules to vehicle manufacturer Vinfast.

Despite these opportunities, falling margins will put the company under further pressure to reduce costs. ZF has already faced strikes as staff are concerned that the company is planning on moving jobs and factories overseas, which is always when revenues and margins are being squeezed.

Table 3.10 ZF Friedrichshafen M&A & Joint Venture Activity

Company	Date	Details
TRW	2015	ZF acquires safety systems supplier TRW for $12.4 billion
Hella / Nvidia	2017	Collaboration to deliver ADAS & AI autonomous driving technology with the NCAP safety certification
Faurecia	2017	Partnership to develop disruptive and differentiating interior and safety systems
Cree	2019	ZF and semiconductors supplier Cree announced an increase in their strategic partnership involving Danfoss power modules and ZF power-chips.
Cognata and OptimalPlus	2019	Partnership to strengthen AI competence, plant operations management and enhanced efficiency of ADAS validation operations with two Israeli tech companies
Danfoss Silicon Power (DSP)	2019	ZF and Danfoss Silicon Power increase their cooperation on silicon and silicon-carbide power modules for EVs
Wolong Electric Group	2019	ZF and Wolong Electric Group expand their existing JV to produce components and electric motors for automotive applications.

Source: Automotive from Ultima Media

See our exclusive interview with ZF in chapter 5.

3.6 Aisin Seiki

Table 3.11 Aisin Seiki Overview

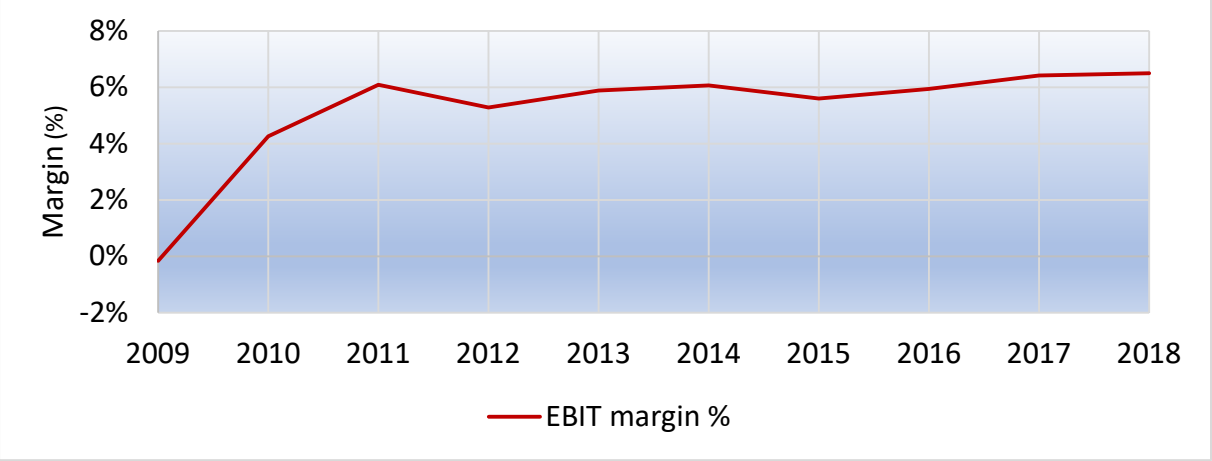
AISIN	Brake systems, chassis, drivetrains, transmissions, body, satellite navigation, electronics, engine components
Automotive Tier supplier ranking	**6th**
Total/Automotive Revenues	JPY 3,908.9bn/JPY 3,760bn (96.2% auto)
Total EBIT Margin %	6.5%
Headquarters	Asahi-machi, Kariya, Japan
Employees	114,478
Website	www.aisin.com

Source: Automotive from Ultima Media, Annual Reports

Figure 3.11 Aisin Seiki Historical Revenues 2009-2018 (Bn Yen)

Source: Automotive from Ultima Media, Annual Reports

Figure 3.12 Aisin Seiki Historical Margins 2009-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.6.1 Aisin Seiki Analysis

Aisin is 30% owned by Toyota and is another of the companies with which provides a measure of security of supply and international reach. However, Aisin Seiki's performance is even more strongly correlated with Toyota than Denso, for example, as the carmaker accounts for 59% of Aisin's revenues.

Partly for this reason, Aisin's margins have remained fairly consistent and healthy since 2011 at around 6%. This very close alliance with Toyota is both a strength and weakness for Aisin and it is one of the company's aims to reduce its reliance on Toyota sales. However, this is unlikely to be easy.

A current weakness of this strong association with Toyota is that 77% of sales are from APAC. In the current economic climate, that has led to weaker volumes, primarily from China, Japan and India. However, the wider region offers plenty of growth potential in future.

Aisin's penetration in other regional markets remains relatively limited, with North America accounting for 14% and the EU only 9%. A priority for the company will be to expand into new countries to achieve growth and improve regional resilience.

One of Aisin's strength is its diversified product portfolio, especially with early experience in hybrid powertrains, which puts the supplier in a strong position with other OEMs looking to adopt hybridisation to help meet improve fuel consumption and meet emission targets, which are tightening across much of the Asia Pacific region.

Of particular strength is Aisin's electronic stability control systems (ESC), which is especially important for the US market, where it has been compulsory fitment for vehicles below 4.5 tons since 2012. Another strength in its portfolio is automatic transmissions, which, despite ICE vehicle decline, is generally on the increase globally.

Aisin's 5% R&D investment, whilst lower than other tier suppliers its size, still amounts to a significant annual amount, while Aisin's close collaboration with Toyota helps to give it economies of scale.

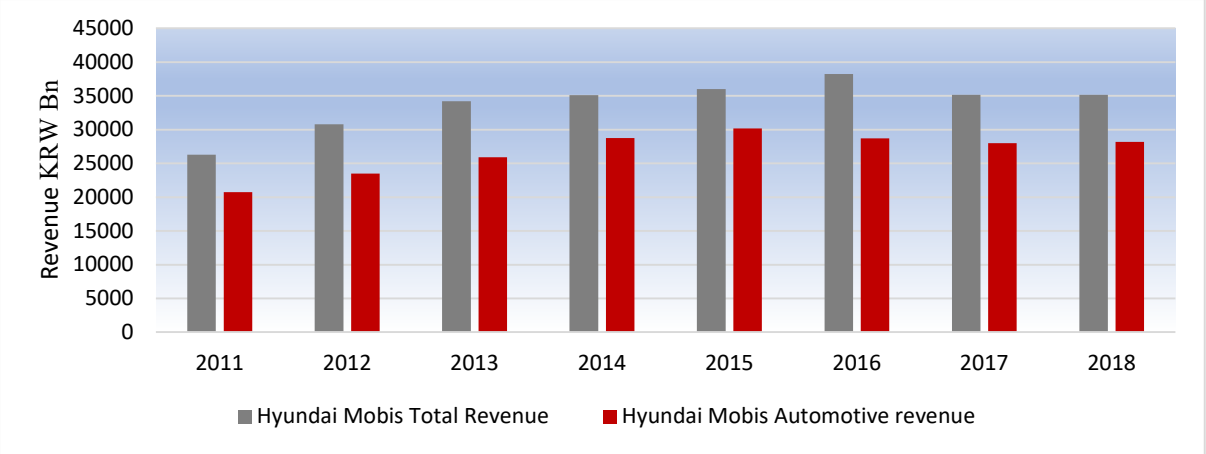
3.7 Hyundai Mobis

Table 3.12 Hyundai Mobis Overview 2018

HYUNDAI MOBIS	ADAS, autonomous driving, EV systems, in-vehicle infotainment, braking, steering, lighting, safety, airbags, cockpit modules, front-end module, chassis module, aftermarket parts
Automotive Tier supplier ranking	**7th**
Total/Automotive Revenues	KRW 35,149bn/KRW 28,186bn (80% auto)
Total EBIT Margin %	7%
Headquarters	Seoul, South Korea
Employees	25,216
Website	www.mobis.co.kr

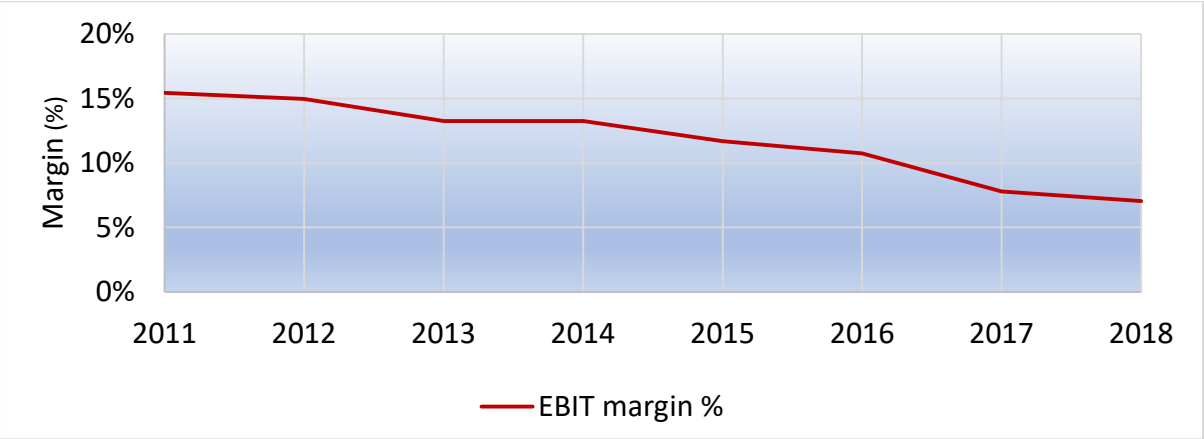
Source: Automotive from Ultima Media, Annual Reports

Figure 3.13 Hyundai Mobis Historical Total & Automotive Revenues 2011-2018 (Bn KRW)



Source: Automotive from Ultima Media, Annual Reports

Figure 3.14 Hyundai Mobis Historical Total Margins 2011-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.7.1 Hyundai Mobis Analysis

Hyundai Mobis is part of Hyundai Motor Group's complex corporate structure. The Korean conglomerate owns around 32% of Hyundai Mobis, however Hyundai and Kia sales are believed to account for more than 80% of the company's sale revenues. This was a major strength when Hyundai-Kia were growing strongly internationally in the 2000s. However, this over-reliance upon demand from one OEMs clearly needs to be addressed to insulate Hyundai-Mobis from any potential fall in sales from Hyundai-Kia.

From remarkable highs earlier in the decade, Hyundai Mobis's margins have been on a declining trajectory, from as high as 15.5% in 2011, falling to 7% in 2018, which is more in line with industry averages. Part of the issue appears to be that overall revenues have faltered since 2016 and in particular, automotive revenues have consistently fallen since 2015.

This over dependence upon Hyundai-Kia and Korean demand also limits the regional scope of the company. Despite moves to improve regional penetration beyond Asia, South Korean accounted for 49% of sales in 2018, with 14% China, 18% America and 14% Europe. Gaining business with other potential OEMs could be challenging for Mobis given the close alliance between it and Hyundai-Kia. Last year, plans to try to simplify Hyundai Mobis's structure by spinning off its modules and aftersales units and merging them with Hyundai's logistics subsidiary, Hyundai Glovis, were scrapped after investors balked at the idea.

However, the reputation of components that Hyundai Mobis supplies is a strength in its global expansion. Hyundai Mobis is also well placed to respond to emerging powertrain technologies. Thanks to Hyundai Motor Group's focus on hydrogen fuel cell electric vehicles (FCEVs), Mobis is taking a lead role in developing components for this low-emission technology. Although FCEV volume remains extremely low, it could gain more traction in the medium to longer term.

The company will also benefit as Hyundai-Kia expand electric powertrain production. Hyundai Mobis is investing 380 billion won ($321m) in a new EV components plant in Korea, for example.
The company furthermore has a strong emphasis on the aftermarket for Hyundai and Kia. However, our analysis here in terms of revenues and market position refers to just the revenues derived from Hyundai Mobis's tier one role supplying components directly to OEMs.

In 2018, Hyundai Mobis stated that its strategy would be to achieve an annual growth rate of 8% and invest heavily into future mobility technology, from which it expects to derive 25% of revenues. To achieve growth, the company has stated that it will put "intensive investment" into developing automotive components specifically relating to connectivity, information and communication technology and technologies including radar, cameras and other sensor systems for autonomous vehicles. The company is also seeking M&A opportunities overseas.

Table 3.13 Hyundai Mobis M&A & Joint Venture Activity

Company	Date	Details
APTIV Technologies Limited	September 2019	JV Investors Hyundai Motor, Kia Motors, Hyundai Mobis have partnered with APTIV Technologies Limited to form a $4bn autonomous driving joint venture with the aim of developing robotaxis

Source: Automotive from Ultima Media

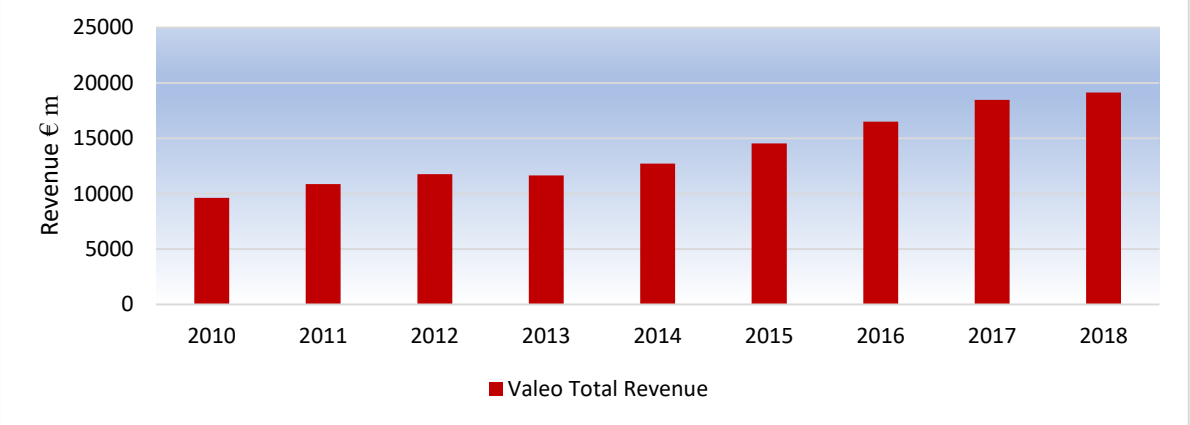
3.10 Valeo

Table 3.14 Valeo Overview

Valeo	HVAC, front-end modules, air intake modules, clutches, stop-start micro hybrid systems, top column modules, camera/sensors, vision systems, lighting, wipers, electrical & electronic systems, thermal systems, transmissions, security systems, interior systems
Automotive Tier supplier ranking	**8th**
Total/Automotive Revenues	€19.1bn/€19.1bn (100% auto)
Total EBIT Margin %	4.9%
Headquarters	Paris, France
Employees	113,600
Website	www.valeo.com

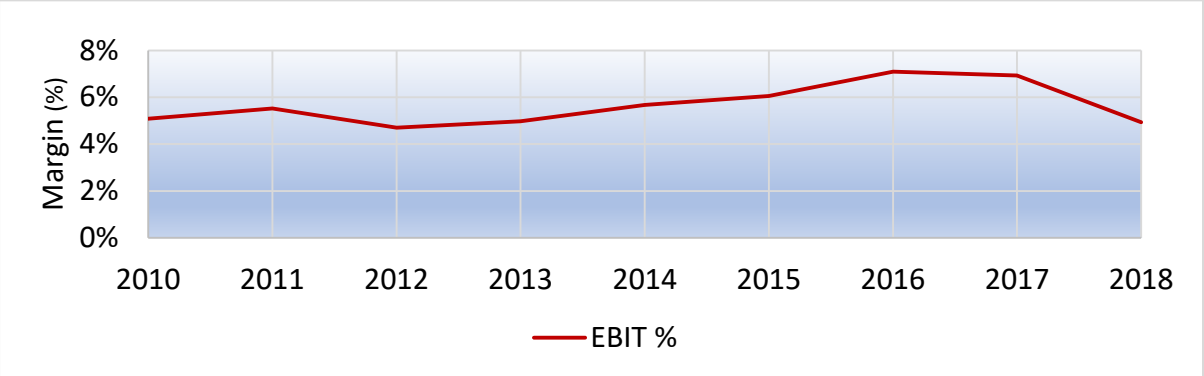
Source: Automotive from Ultima Media, Annual Reports

Figure 3.15 Valeo Historical Revenues 2010-2018 (%)



Source: Automotive from Ultima Media, Annual reports

Figure 3.16 Valeo Historical Margins 2010-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.10.1 Valeo Analysis

For Valeo over the past decade, consistent revenue growth has correlated quite strongly with margin growth, reaching 7% in 2016, before dipping recently to 5% margins in 2018. The company's operating margins are therefore slightly on the low side, despite the global economies of scale and technological capabilities of the company.

In 2018, Valeo announced a €100m cost-cutting plan in response to current and predicted deterioration in market conditions. Despite this, Valeo's share price nearly halved and suffered from the introduction of new WLTP rules, as OEMs slowed the testing for these regulations, which impacted the supply of components. Additional cost-cutting plans are likely to be in the pipeline.

Nonetheless, CEO Jacques Aschenbroich has indicated that these drastic moves are necessary and that a long-term focus on higher margin, advanced technologies will benefit the company. We believe that is the correct strategy for margin development.

Valeo has a strong, diverse product portfolio mix that should serve it well as the industry changes, including components around electrification, autonomous vehicles, active safety and digital mobility. However, the longer-term prospects for returns on these advanced R&D investments is highly uncertain, especially for autonomous technologies.

Valeo is slightly over reliant upon stagnating European markets, with 44% of sales revenues derived from France and Germany. This reliance partly explains Valeo's slightly lower overall average margins. Investment has been made to regionally diversify, but this needs to go even further. In 2018, 17% of sales came from America, whilst a strong 33% of sales are from Asia, positioning the company to exploit future growth opportunities, especially in new powertrain technology. However, competition in emerging technologies in Europe and Asia is very strong.

Table 3.15 Valeo M&A & Joint Venture Activity

Company	Date	Details
Peiker Acustic	2015	Valeo acquires Peiker Acustic GmbH a major supplier of onboard telematics and mobile connectivity solutions
FTE Automotive	2016	Valeo signs an agreement with Bain Capital Private Equity, owner of FTE automotive, to purchase 100% of FTE automotive for €819.3m
Ichikoh	2017	Valeo launches a takeover bid, increasing its share to 55.08% of Ichikoh's capital and taking control of Japan's leading automotive lighting company

Source: Automotive from Ultima Media

3.8 Lear Corporation

Table 3.16 Lear Corporation Overview

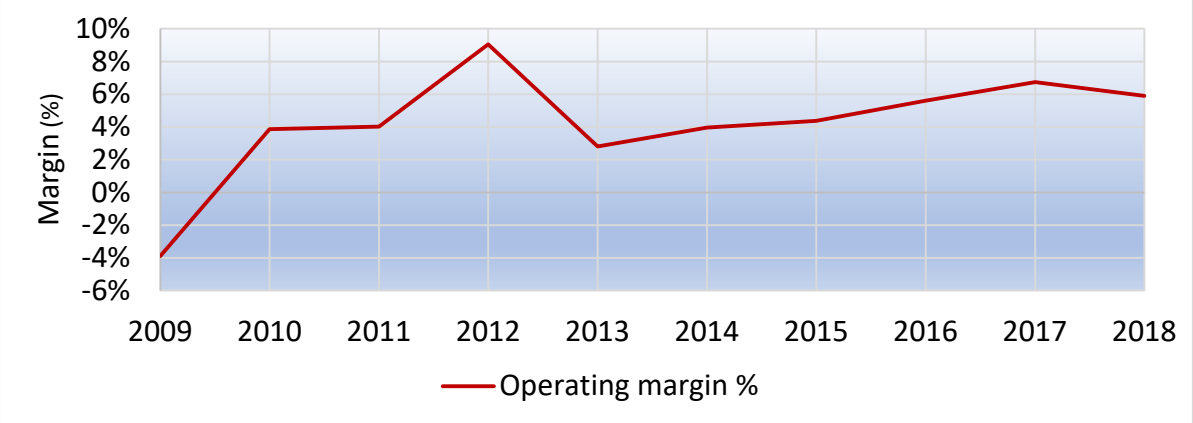
LEAR CORPORATION	Seating components and systems, electrical systems, wiring, junction boxes, terminals/connectors, ECMs, wireless systems
Automotive Tier supplier ranking	**9th**
Total/Automotive Revenues	$21.15bn/$21.15bn (100% auto)
Total EBIT Margin %	5.9%
Headquarters	Michigan, US
Employees	165,000 (2017)
Website	www.lear.com

Source: Automotive from Ultima Media, Annual Reports

Figure 3.17 Lear Corporation Historical Revenues 2009-2018 ($m)

Source: Automotive from Ultima Media, Annual Reports

Figure 3.18 Lear Corporation Historical Margins 2009-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.8.1 Lear Corporation Analysis

Despite revenue growth nearly doubling over the past decade, Lear's margins have fluctuated, peaking at 9% in 2012 and ranging between 2% and 7%. The company filed for Chapter 11 bankruptcy in 2009 as many industry players suffered losses in the financial crash. However, Lear emerged with a debt restructuring plan which allowed it to recover. It is now estimated to be within the top three seating suppliers globally.

Lear Corporation is today highly specialised in seating, accounting for 76% of revenues. While this allows Lear to achieve economies of scale in automotive seating, it also leaves it vulnerable in this low-margin segment.

The remaining 22% of revenues are from electrical products, higher-margin segments with the potential for expansion to make the company more resilient. Nonetheless, Lear has a strong balance sheet and reasonably good regional penetration in North America and Europe, although only 19.1% of revenues are from Asia.

As powertrains and platforms become more commoditised, vehicle interiors are increasingly becoming differentiators, with rising technology and electronics content, all of which is an opportunity for Lear to exploit. Interestingly, in anticipation of this growth opportunity, Lear has been acquiring capabilities in software and communications technologies, including the recent acquisition of connected car software specialist, Xevo. However, the company needs constant R&D investment to maintain a market leading position.

Table 3.17 Lear Corporation M&A & Joint Venture Activity

Company	Date	Details
Guilford Mills	2012	Acquires specialty fabrics company Guilford Mills for $257m
Eagle Ottawa	2014	Acquires automotive leather supplier Eagle Ottawa LLC for $850m
Autonet Mobile	2015	Acquires the intellectual property and engineering team of Autonet Mobile, a developer of connected car solutions.
Arad Systems	2015	Acquires Arada Systems, a technology company specialising in vehicle-to-everything (V2X) communication systems.
Grupo Antolin	2017	Acquires Grupo Antolin's automotive seating business for €286m
Xevo	2019	Acquires connected car software provider Xevo for $320m

Source: Automotive from Ultima Media

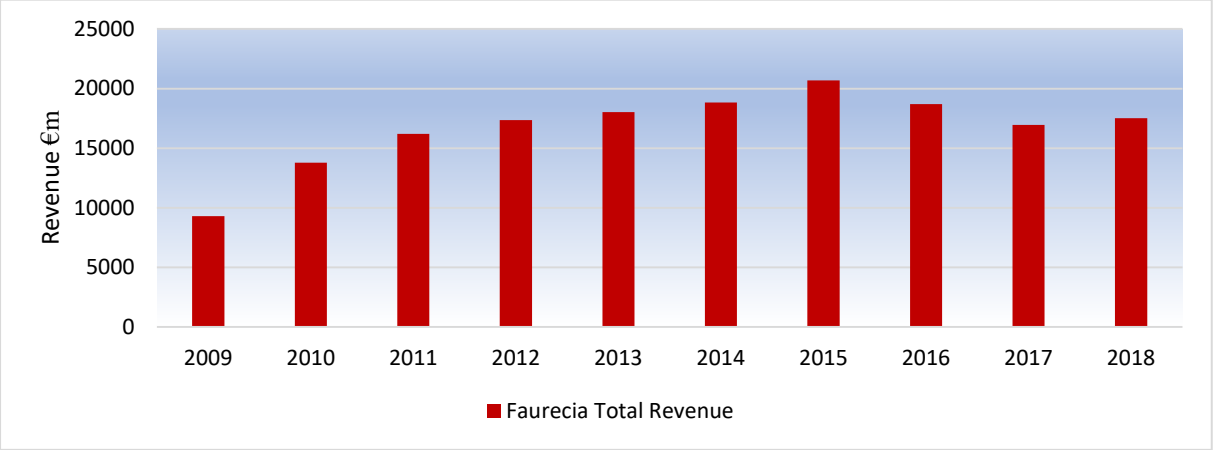
3.9 Faurecia

Table 3.18 Faurecia Overview

faurecia	Seating and components, clean mobility, interiors, instrument and door panels, front-end modules, bumpers, exhausts, composite parts
Automotive Tier supplier ranking	**10th**
Total / Automotive Revenues	€17.52bn/€17.52bn (100% auto)
Total EBIT Margin %	7.3%
Headquarters	Nanterre, France
Employees	122,000 (2019)
Website	www.faurecia.com/en

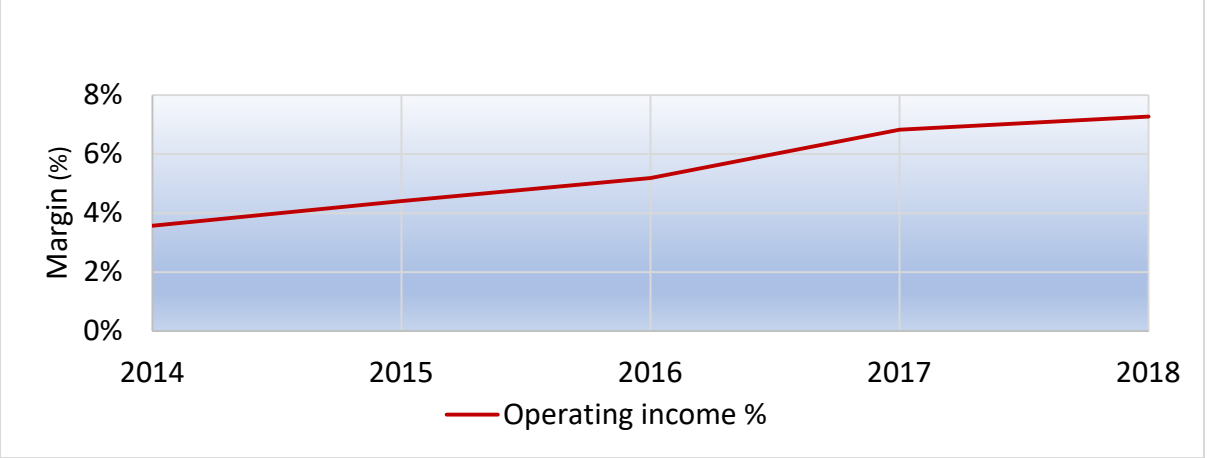
Source: Automotive from Ultima Media, Annual Reports

Figure 3.19 Faurecia Historical Revenues 2009-2018 (€m)



Source: Automotive from Ultima Media, Annual Reports

Figure 3.20 Faurecia Historical Margins 2014-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.9.1 Faurecia Analysis

Groupe PSA is currently Faurecia's controlling shareholder with a 46% stake, however PSA plans to distribute these shares to its investors as part of its planned merger with FCA. However, even before PSA offloadg shares, Faurecia operates as an independent company and supplies all major OEMs including VW Group, Renault Nissan, Ford, GM, BMW, Daimler, FCA, Toyota, Hyundai-Kia, JLR & BYD, with even further emphasis on diversification.

Whether as a shareholder or not, meanwhile, PSA has continued to offer opportunities to Faurecia, something that may increase following the merger with FCA.

Revenues grew from 2010-2015, but have since fallen. Despite this, margins have grown steadily from 3.6% in 2014 to 7.3% in 2018 (data was only available from 2014 onwards), benefiting in part from acquisitions, including a Ford interiors plant in the US. Nonetheless, Faurecia's future revenues are likely to be negatively affected by the loss of contracts with PSA in Spain and Mercedes in the US.

Faurecia is still highly dependent upon the stagnant and highly competitive European market, which will limit topline growth. And despite Faurecia's economies of scale and leading market position, the seating and interiors market is highly competitive. In November 2019, Faurecia announced targets for annual average revenue growth at above 5% between 2019 and 2022 to achieve €20.5 billion in 2022.

Faurecia stated also that it is trying to diversify its business beyond Europe and PSA Groupe, aiming for 8% margins by 2022 (current guidance is for 7% margins in 2019). Given the current trajectory of margins this looks possible if not somewhat ambitious given the current downturn in the automotive market and margin pressure upon OEMs and tier suppliers.

Faurecia indicated that these margin improvements will be accomplished by initiatives in digital transformation and ramping up innovation in new areas. Its growth strategy also appears to revolve around key acquisitions and joint ventures focused on high margin advanced technology segments. Recently, the company has increased investments in electronics, including the acquisition of Chinese and Japanese firms, and the establishment of an electronics cluster. Faurecia is also investing in hydrogen storage and fuel-cell research centres.

Table 3.19 Faurecia M&A & Joint Venture Activity

Company	Date	Details
Mahle	2017	Mahle and Faurecia collaborate on thermal management technologies for the cockpit of the future
ZF	2017	Partnership to develop disruptive and differentiating interior and safety systems
Clarion	2019	Acquires Clarion forming Faurecia Clarion Electronics (FCE) which with past acquisitions of Parrot Automotive, Coagent Electronics created capabilities in ADAS and electric cockpit technologies.
SAS	2019	Acquires the remaining 50% of its SAS JV from Continental, cementing its position in interior modules and systems architecture.
Michelin	2019	Faurecia and Michelin form a €140m joint venture called Symbio to develop, produce and market hydrogen fuel cell stack systems
Devialet	2019	Faurecia and Devialet announce a partnership on automotive sound solutions

Source: Automotive from Ultima Media

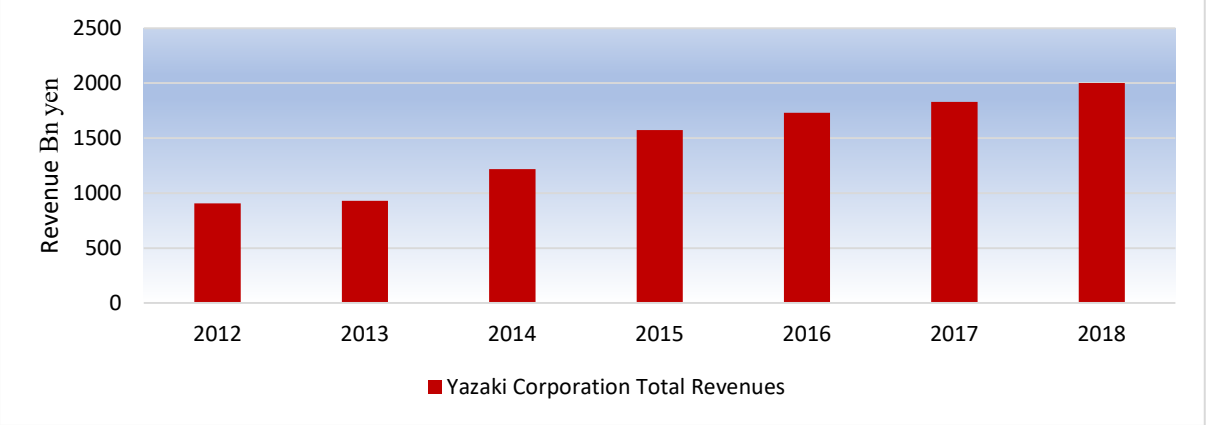
3.11 Yazaki Corporation

Table 3.20 Yazaki Corporation Overview

YAZAKI	Automotive parts, electric wires, gas equipment, air-conditioning equipment, solar equipment, wire harnesses
Automotive Tier supplier ranking	**11th**
Total/Automotive Revenues	JPY 2,002bn/JPY 2,002bn (100% Auto)
Total EBIT Margin %	3.3%
Headquarters	Tokyo, Japan
Employees	306,118 (June 2018)
Website	www.yazaki-group.com/global

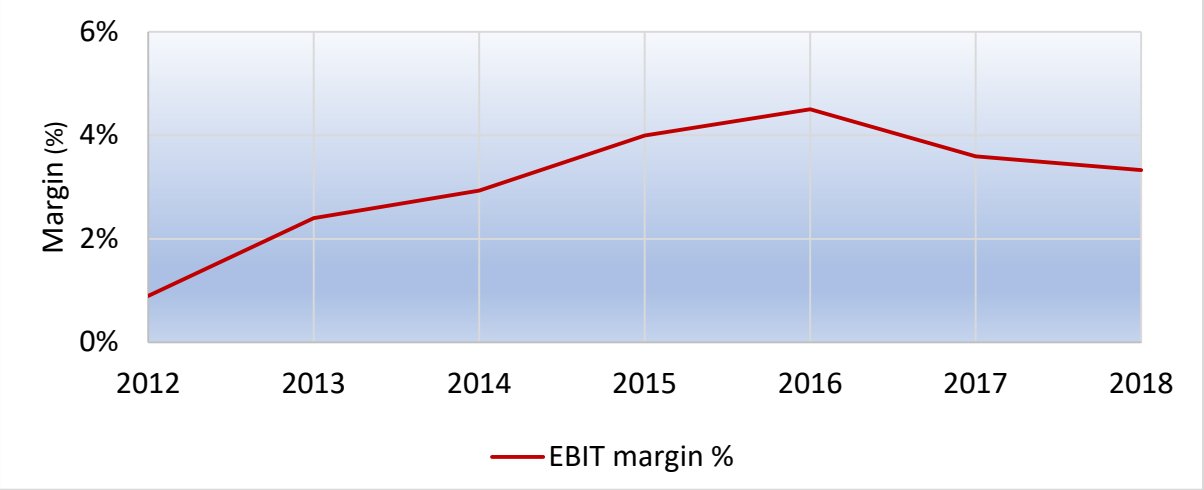
Source: Automotive from Ultima Media, Annual Reports

Figure 3.21 Yazaki Corporation Historical Revenues 2012-2018 (bn Yen)



Source: Automotive from Ultima Media, Annual Reports

Figure 3.22 Yazaki Corporation Historical Margins 2012-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.11.1 Yazaki Corporation Analysis

Yazaki Corporation has seen revenues double since 2013. However, despite this topline growth, EBIT margins have been consistently below the industry average of 6%, with Yakazi's margins as low as 1% in 2012, peaking at 4% in 2016 and falling back to 3.3% in 2018. We suspect this is in part because Yazaki has a relatively limited product range, with the majority of revenues coming from low-margin electrical wiring.

Yazaki is family owned, and supplies many of the world's OEMs. In recent years it has been trying to capitalise on its core competency in wiring harnesses to create a range of products to exploit the growth in demand for hybridised and electrified vehicles.

Yazaki also wants to diversify its new products as a share of its revenue. For example, new products in production include arc suppression for low-voltage and high-voltage systems, current sensors to measure the flow of energy and solid-state switching to allows real time monitoring. It also has connection systems and other electrical system components in the pipeline.

Yazaki has made special note of the increase in voltage being used in electrical systems from the traditional 12-volt systems, to higher voltage for mild hybrid and full hybrid systems. Not only does the vehicle architecture change, but the entire wiring harness must be adapted. Yazaiki's strategy is to support different architectures, whether it involves 48-volt or higher voltages. This positions Yazaki well in the transition to electrified powertrains, whichever voltage ultimately dominates.

We believe this effort to diversify the product range, especially into higher margin products, is the right strategy. However, competitors are likely to take a similar approach.

Furthermore, supporting many different architectures is risky, with the transition to electrification far from certain, even by the company's own admission. Many different orders for particular voltages may turn out not to achieve significant sales volumes or may not materialise at all if the industry pivots to a different system.

Another challenge for Yazaki is the regional differences demanded by those OEMs. For example, Toyota is Yazaki's largest client and is a large consumer of hybrid systems (although Toyota has made recent moves to full EV and PHEV). In contrast, Yazaki's largest customer in North America, where levels of electrification are low, is GM, which is likely to produce higher levels of ICE vehicles. And in Europe, the main sales are from JLR, where there will be a higher level of electrification required.

These different voltage levels, and the regional disparity in levels of electrification, all create challenges for Yazaki in terms of investment decision for those new products.

Yazaki has also emphasised its strategic intentions to transition more from 'build-to-print' to 'build-to-suit' relationships with OEMs, suggesting that it intends to play a larger role in developing products on behalf of, and together with, its customers.

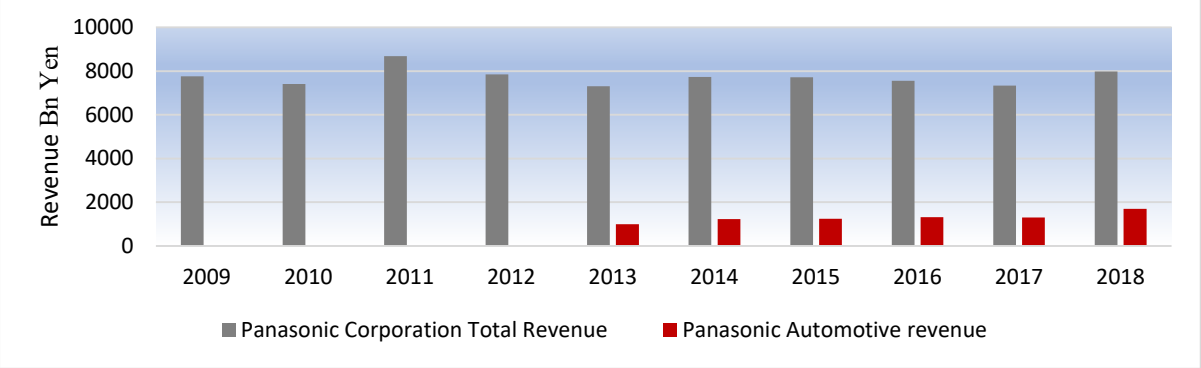
3.12 Panasonic Automotive Systems

Table 3.21 Panasonic Automotive Systems Overview

Panasonic AUTOMOTIVE	Audio/in-vehicle infotainment, HMI systems, on-vehicle systems, navigation systems, energy, invertor, integrator, compressors, batteries, motors, monitors, camera modules, sensors, switches, HUDs, mirrors, charging systems, ETC onboard units, Ficosa International
Automotive Tier supplier ranking	**12th**
Total/Automotive Revenues	JPY 7,982bn/JPY 1,700bn (21.3% auto)
Total EBIT Margin %	4.8%
Headquarters	Osaka, Japan
Employees	273,858 (Panasonic Corporation 2019)
Website	www.panasonic.com/global/corporate/am.html

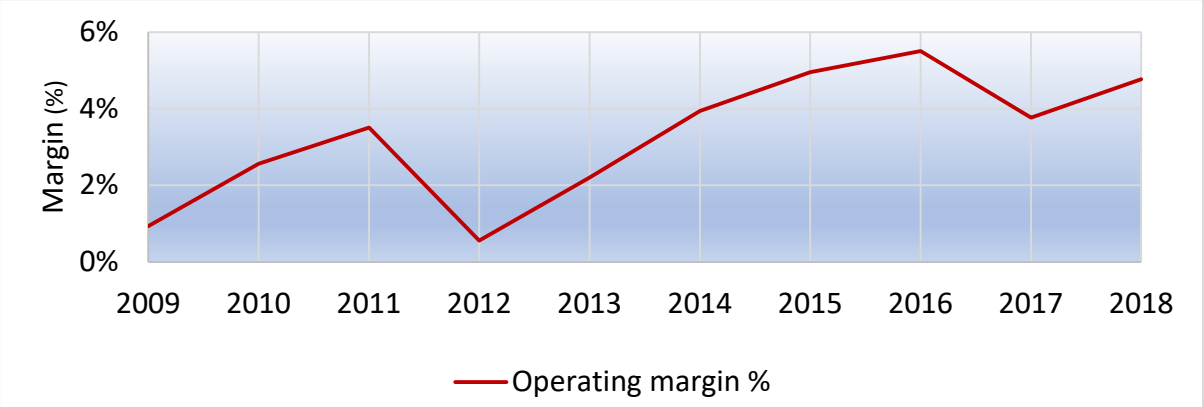
Source: Automotive from Ultima Media, Annual Reports

Figure 3.23 Panasonic Corporation & Automotive Systems Co. Historical Revenues 2009-2018 (Bn Yen)



Source: Automotive from Ultima Media, Annual Reports

Figure 3.24 Panasonic Corporation Historical Margins 2009-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.12.1 Panasonic Automotive Systems Co Analysis

Panasonic Automotive is part of the larger Panasonic Corporation. Within the parent company, margins are quite low, averaging around 3% over the past decade. It is well documented that the corporation is struggling in its other divisions in consumer electronic, computing, energy, home appliances and industrial products.

In this context, it is notable that the automotive share of Panasonic's revenue mix has been steadily growing from 12.9% in 2013, to 21.3% in 2018, illustrating that this segment is increasingly important to the corporation's prospects, not least thanks to growth in new technology segments and automotive tier suppliers' higher average margins than Panasonic's other segments.

Panasonic Automotive has been particularly successful in supplying lithium-ion batteries to OEMs for electric vehicles, especially to Tesla, with whom Panasonic has partnered at Gigafactory 1 in Nevada.

Panasonic Automotive also manufactures automotive batteries in China and in Japan. Early in 2019, it established a joint venture with Toyota to develop and build electric vehicle batteries, with the aim to share technology and operation in China and Japan. The joint venture plans to sell batteries not only to Toyota but also to other carmakers.

The Panasonic acquisition of the majority stake of Spain's Ficosa International in 2017 was a strategic move to focus on growth areas expected in 'comfort', 'safety' and 'environment', which includes developments of electronic mirror systems, ADAS and cockpit systems.

Given these acquisitions and partnerships, we expect Panasonic Automotive's revenue and margin outlook to be favourable. Its product portfolio is aligned well with the emerging trends of electrification (batteries) and autonomy (cameras and sensors) and connectivity (in vehicle electronics).

Table 3.22 Panasonic Automotive M&A & Joint Venture Activity

Company	Date	Details
Tesla	2014	Partnership with Tesla at Gigafactory 1 n Nevada, US.
Ficosa International	2014 & 2017	In 2014, buys a 49% stake in ADAS and technology supplier Ficosa, acquiring 20% more shares in 2017 to take majority control.
OpenSynergy	2016	Acquires German Automotive software developer, OpenSynergy
Toyota	2019	Establishes JV with Toyota to make EV batteries for multiple carmakers

Source: Automotive from Ultima Media

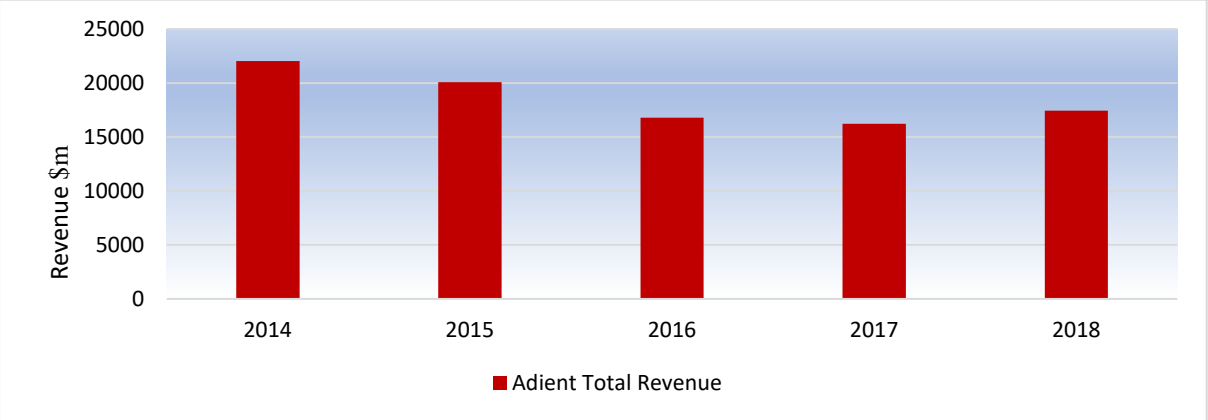
3.13 Adient

Table 3.23 Adient Overview

ADIENT	Seating systems and components
Automotive Tier supplier ranking	**13th**
Total/Automotive Revenues	$17.4bn/$17.4bn (100% auto)
Total/Automotive EBIT Margin %	1.4%
Headquarters	Dublin, Ireland / Michigan, USA
Employees	86,000 (2017)
Website	www.adient.com

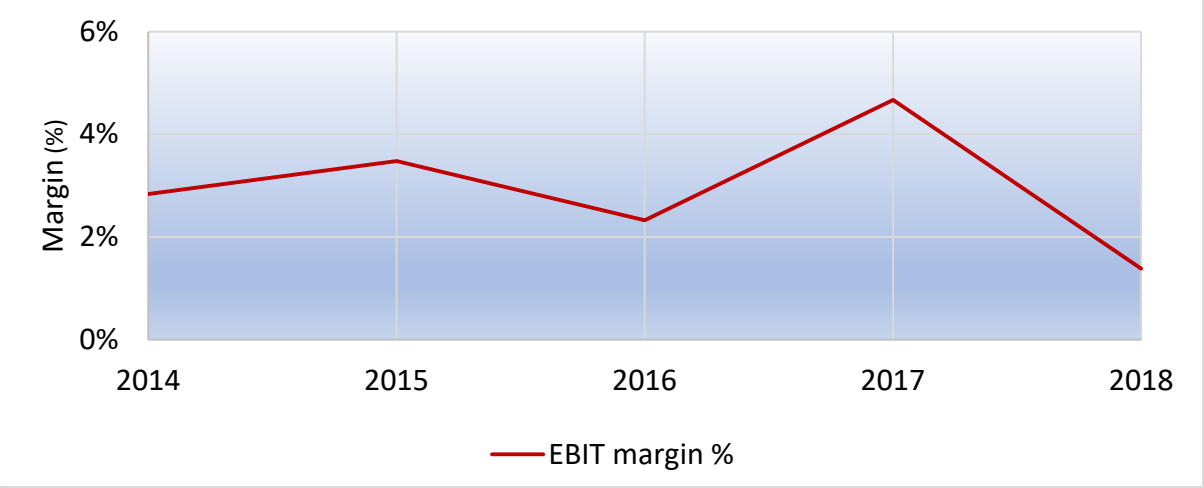
Source: Automotive from Ultima Media, Annual Reports

Figure 3.25 Adient Historical Revenues 2014-2018 ($m)



Source: Automotive from Ultima Media, Annual Reports

Figure 3.26 Adient Historical Operating Margins 2014-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.13.1 Adient Analysis

Adient specialises in automotive seating systems and components and as such is well placed to take advantage of economies of scale. However, this segment is known to be low-margin, and likely has excess capacity. The tight margins and intense competition in seating leave little room for manoeuvre in investment and operations.

Adient was spun-off from Johnson Controls Interiors (JCI) in 2016 and is majority-owned by Yanfeng Automotive Interiors (YFAI), a Chinese company with a 70% share. However, Adient's revenue has been disappointing since the spin off, and margins have been very low in a tough market environment and under pressure from the need to invest. Profit margins fell to below 2% in 2018. This year could be worse as revenue has declined. However, the share price rose over 30% thanks to new seating contracts with GM, Ford, VW and Kia.

There will be opportunities ahead in the higher margin, premium seating business, which Adient needs to grasp to improve financial performance. For example, Adient is a leader in lighter-weight seating and other new seating technologies.

Adient's regional sales are highly biased towards North America with 42% of sales, and Europe 40%, with 18% other regions. Adient needs in particular to achieve sales and volume growth in the Asian markets, something with which its Chinese majority shareholder may help, including as part of joint ventures.

A strength of Adient is already that it has global facilities and a wide range of OEMs that it supplies. Nonetheless, Adient's key problem is that it is in a low-margin business segment and is too specialised and focused on stagnant European and North American markets. However, Yangfeng's stake in Adient should help Adient to expand further with Chinese OEMs.

Table 3.24 Adient M&A & Joint Venture Activity

Company	Date	Details
Johnson Controls	2016	Johnson Controls completes separation of Adient with YFAI taking majority ownership
Futuris	2017	Acquires automotive seat manufacturer Futuris from Clearlake Capital, adding 15 facilities in Asia and North America.
BASF	2019	BASF and Chongqing Yanfeng Adient Automotive Components ("Yanfeng Adient") reach an agreement to expand the existing cooperation to co-create new application developments in the automotive industry.

Source: Automotive from Ultima Media

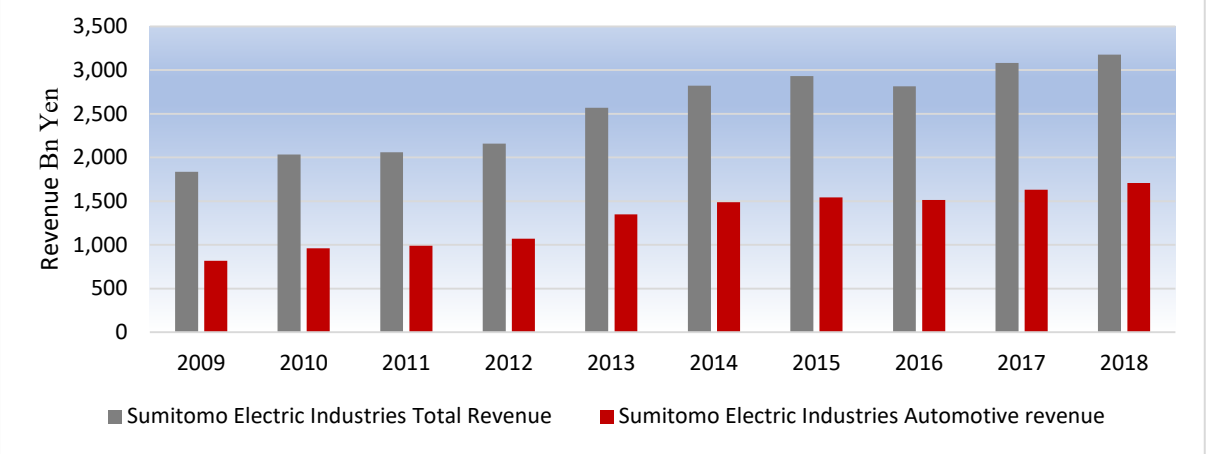
3.14 Sumitomo Electric Industries

Table 3.25 Sumitomo Electric Industries Overview

SUMITOMO ELECTRIC	Wiring harnesses, anti-vibration rubber, automotive hoses, electrical equipment, traffic control systems
Automotive Tier supplier ranking	**14th**
Total/ Automotive Revenues	JPY 3,178bn /JPY 1,709bn (53.7% Auto)
Total EBIT/Automotive EBIT Margin %	5.8%/5%
Headquarters	Osaka, Japan
Employees	272,796 (2019)
Website	http://global-sei.com

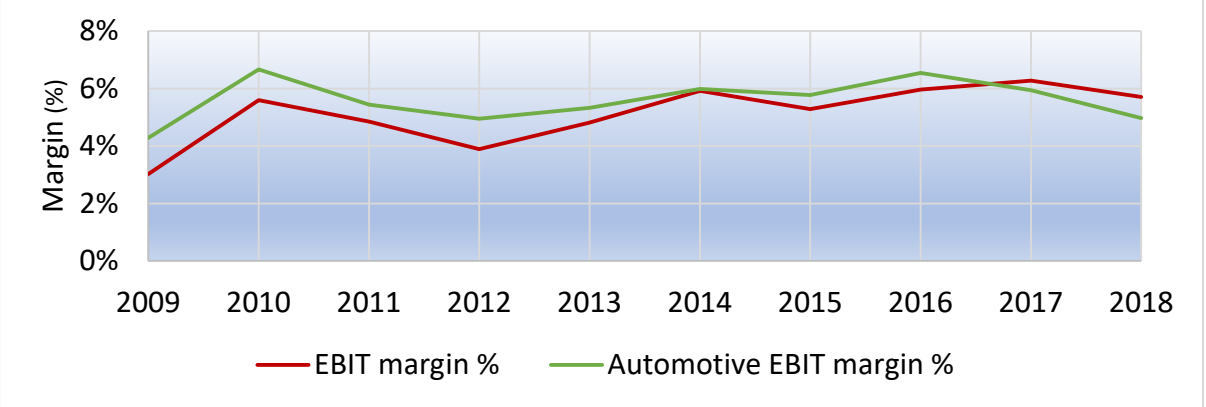
Source: Automotive from Ultima Media, Annual Reports

Figure 3.27 Sumitomo Electric Industries Historical Total & Automotive Revenues 2009-2018 (Bn Yen)



Source: Automotive from Ultima Media, Annual Reports

Figure 3.28 Sumitomo Electric Industries Historical Margins 2009-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.14.1 Sumitomo Electric Industries Analysis

Sumitomo Electric Industries has involvement in automotive, infocommunications, electronics, environment and energy, industrial materials and is also developing in life sciences and materials. Revenue has nearly doubled over the past decade, while margins have remained very consistent at around 6% over that period – profits that have been very similar for the company's automotive business.

These profit margins are fairly high given the segments for which Sumitomo focuses on for automotive, notably low-margin electrical wiring harness systems, for which it is the market leader. But it has a strong potential in a number of its electrical and semi-conductor segments.

Sumitomo Electric Industries has attached a strong importance to R&D for new product development investment, which seems to have been bourne out by healthy topline revenue and consistent operating margins.

Sumitomo Electric Industries has outlined several main objectives:

- Enhance cost competitiveness in wiring harnesses and improve business profitability in Europe.
- Quickly restore profitability in anti-vibration rubber business.
- Accelerate development of connectivity, autonomous, shared and electrification (CASE) related products and promote new overseas customer acquisition.

We would also add that to continue with strong revenue growth and maintain margins, Sumitomo needs to leverage its semiconductor business to develop advanced electronic components, which is a strong growth area within automotive segments.

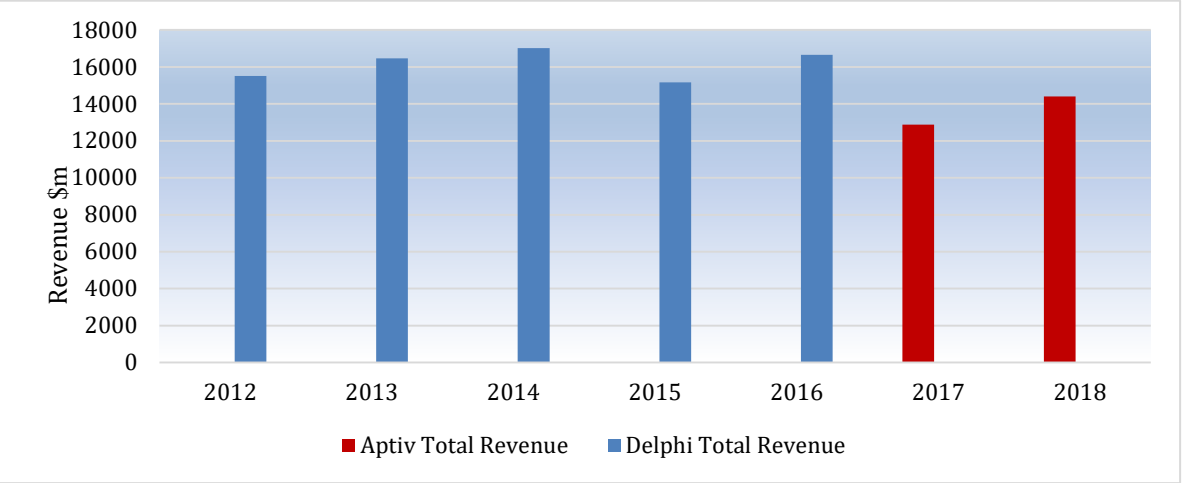
3.15 Aptiv

Table 3.26 Aptiv Overview

APTIV	Infotainment and user experience, connectivity, cyber security, active safety, smart architecture for autonomous vehicles
Automotive Tier supplier ranking	**15th**
Total/Automotive Revenues	$14.4bn/$14.4bn (100% auto)
Total EBIT/Automotive EBIT Margin %	10.2%
Headquarters	Dublin, Ireland
Employees	143,000
Website	www.aptiv.com

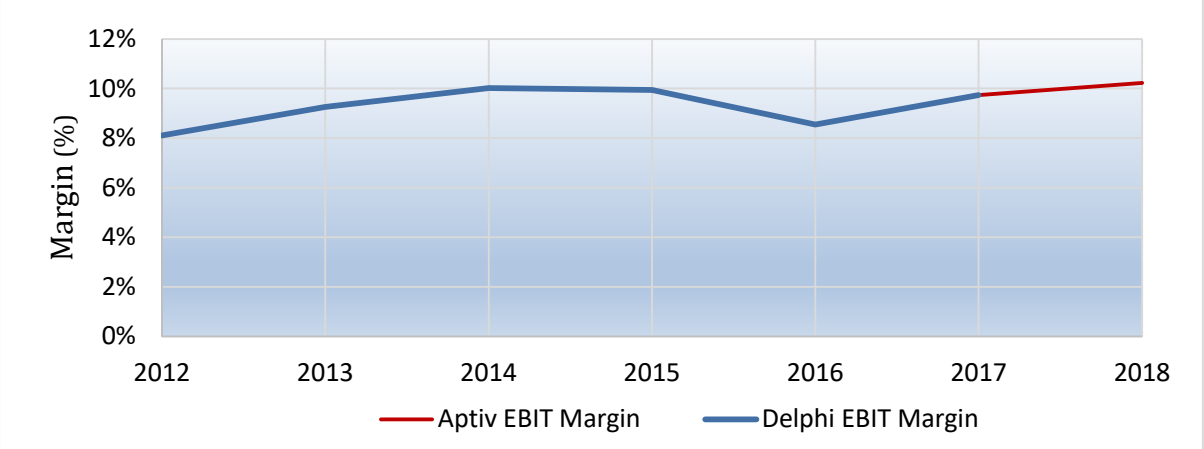
Source: Automotive from Ultima Media, Annual Reports

Figure 3.29 Aptiv Historical Revenues 2012-2018 ($bn)



Source: Automotive from Ultima Media, Annual Reports

Figure 3.30 Aptiv Historical Margins 2012-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.15.1 Aptiv Analysis

Aptiv was known as Delphi Automotive up until 2016. In June 2017, Delphi Automotive split into Delphi Technologies and Aptiv, which focus more on smart mobility products encompassing software and electrical architecture. Aptiv describes itself as "mobility's leading software and systems technologies integrator".

Aptiv has 2 main divisions:

- **Signal and Power Solutions:** complete vehicle electrical systems, integrating wiring and cable assemblies, electrical centres and connection systems.
- **Advanced Safety and User Experience:** advanced software and sensing systems, computing platforms, advanced safety systems and automated driving, user experience and infotainment, as well as other vehicular electronic controls.

Aptiv revenues (and Delphi before 2017) have been somewhat fluctuating. Despite this, margins have remained steadfastly positive, averaging around 9% over the past decade, and then growing after the spinoff to reach 10.2% in 2018, which is well above the tier supplier average of 6%. This is in large part because Aptiv's product portfolio is strongly biased towards high-value and high-margin advanced electronics components, software and systems.

The former Delphi Automotive had been through a variety of iterations after it was spun off from General Motors 20 years ago, which later included four years operating under bankruptcy protection, from which it emerged in 2009. After that, Delhi had a strategy and track record of 'bolt-on acquisitions' as is illustrated below. As Aptiv, its focus is much more directed to active safety, software and electronics.

Table 3.27 Aptiv M&A & Joint Venture Activity

Company	Date	Details
Control Tec LLC	2015	Acquired for $104m
Antaya Technologies	2015	Acquired for $151m
Ottomatika	2015	Acquired for $16m
HellermannTyto	2015	Acquired HellermannTyton for $1.7bn
PureDepth	2016	Acquired for $15m
MovieMento	2017	Acquired for $40m
NuTonomy	2017	Acquired the self-driving start-up NuTonomy for $450m
Delphi Technologies	2017	Divests powertrain division and aftermarket-related businesses (now Delphi Technologies) and changes name to Aptiv
Gabocom	2019	Acquired Gabocom, a cable system supplier.

Source: Automotive from Ultima Media

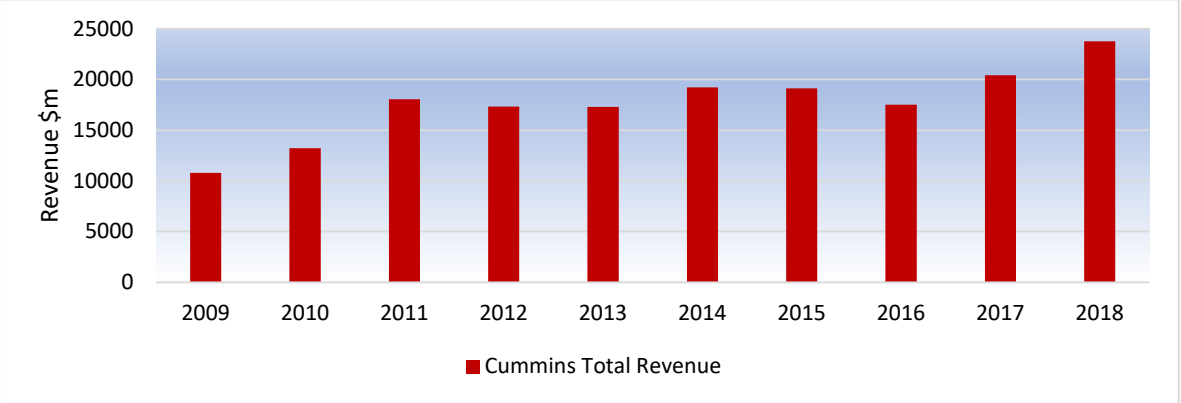
3.16 Cummins

Table 3.28 Cummins Overview

	Engines, filtration, air handling, emission control, power generation and turbo technologies.
Automotive Tier supplier ranking	**16th**
Total/Automotive Revenues	$23.7bn/$14bn (59%)
Total EBIT Margin %	11.6%
Headquarters	Indiana, US
Employees	58,600 (2018)
Website	www.cummins.com

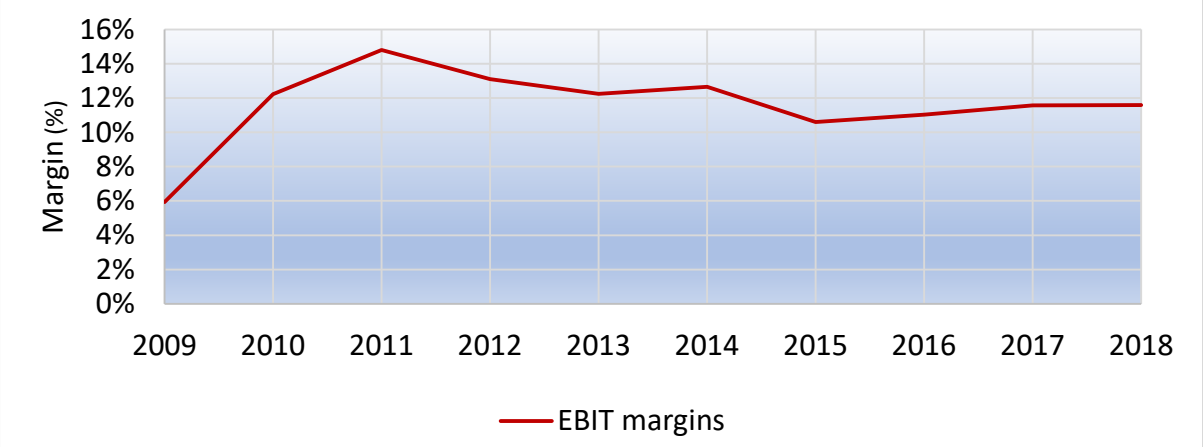
Source: Automotive from Ultima Media, Annual Reports

Figure 3.31 Cummins Historical Revenues 2009-2018 ($m)



Source: Automotive from Ultima Media, Annual Reports

Figure 3.32 Cummins Historical Margins 2009-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.16.1 Cummins Analysis

Cummins is a diversified US-based company that designs, manufactures, and distributes engines, filtration (Fleetguard), air handling, emission control, power generation, electronics and turbo technologies (Holset). It operates in around 190 countries via a network of more than 600 company-owned and independent distributors.

Total revenues have been growing somewhat erratically over the past decade, but have more than doubled over that period. Margins have been exceptionally strong and above 10% for most of the past decade, reaching 14% in 2011; they settled at 11.5% in 2018.

Around 59% of the revenues are from products believed supplied to OEMs, with the remainder of revenues being aftermarket parts, dealerships and support and vehicles for other markets such as oil & gas, construction, railroad and military applications. While related, for the purpose of this analysis we do not consider this within the usual definition of 'automotive'.

Cummins has a technical centre in Darlington, UK where it develops products for the European, Middle Eastern and Asian markets.

Cummins is primarily focused on larger commercial vehicles and components, a segment with less competition, which may partly explain the higher margins Cummins can command compared to automotive tier suppliers that supply high volume, low-margin passenger vehicles segments.

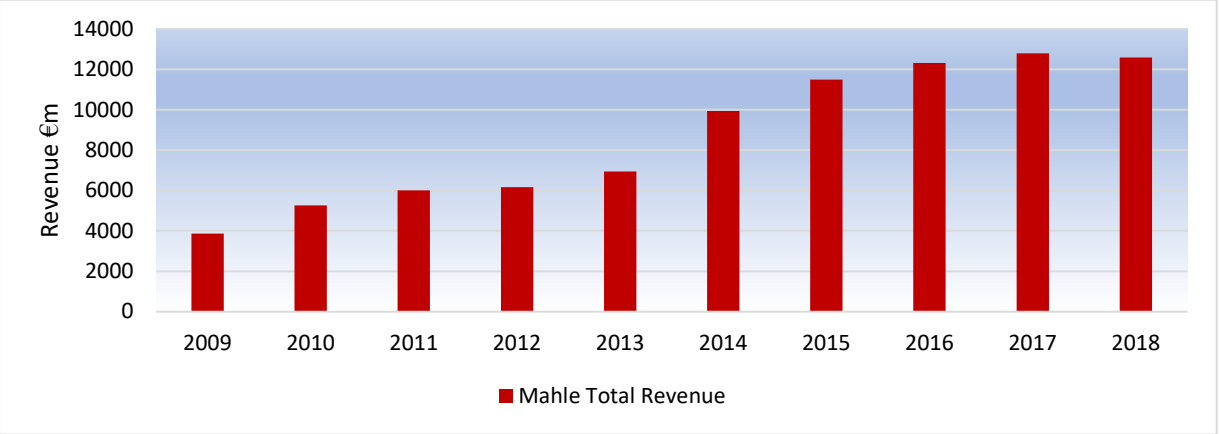
3.17 Mahle

Table 3.29 Mahle Overview

MAHLE	Engine systems, filtration, electrics, mechatronics, and thermal management.
Automotive Tier supplier ranking	**17th**
Total/Automotive Revenues	€12.58bn/€11.68bn (92.8% auto)
Total EBIT Margin %	6.1%
Headquarters	Stuttgart, Germany
Employees	79,564 (2018)
Website	www.mahle,com

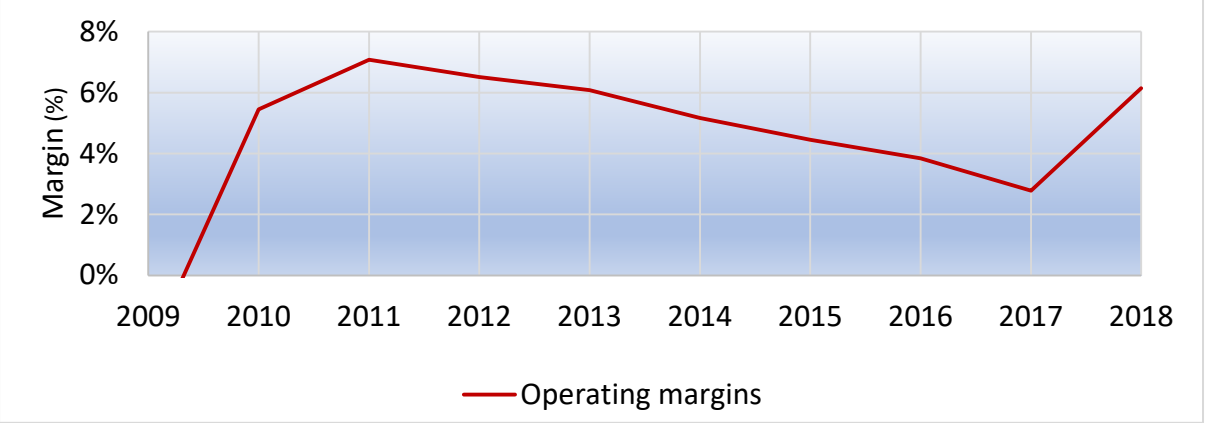
Source: Automotive from Ultima Media, Annual Reports

Figure 3.33 Mahle Historical Revenues 2009-2018 (€m)



Source: Automotive from Ultima Media, Annual Reports *Mahle acquires Behr in 2013

Figure 3.34 Mahle Historical Margins 2009-2018 (%)



Source: Automotive from Ultima Media, Annual Reports *Mahle acquires Behr in 2013

3.17.1 Mahle Analysis

Mahle is based in Stuttgart, Germany and supplies automotive components for internal combustion engines, including engine systems, filtration, electrics, mechatronics and thermal management. In 2013, the company took a majority stake in Behr, which specialises in air conditioning and engine cooling systems.

Among other things, the majority stake led to the full integration of a thermal management unit; the company also bought out a thermal unit from the former Delphi Automotive in 2015.

As of 2018, the company had over 160 production plants and 16 major R&D centres around the world.

The company has four main business units:

Engine Systems and Components: manufacturing pistons, cylinders, and related parts
Filtration and Engine Peripherals: manufacturing filters, oil coolers and pumps
Thermal Management: manufacturing cooling solutions for EV batteries, powertrain components
Aftermarket: manufacturing spare parts and accessories for the automotive aftermarket

Despite growth and acquisitions that have led to a quadrupling of topline revenue over the past decade, margins have remained generally low, declining for most of the period until recovering to 6.1% in 2018.

To deal with the margin decline, the company has divested underperforming units. In 2017, it put its Bosch-Mahle joint venture turbo business up for sale. It has also announced job losses and factory closures at two plants in France and Luxembourg, citing a "lack of competitiveness".

These moves do not bode well for Mahle. Some of its difficulties relate to a fairly narrow, low-technology and low-margin product portfolio, with commoditised componentry such as engine parts and thermal management equipment.

To rectify this situation and increase margins, Mahle needs to capitalise on its strong revenues either by economies of scale, or diversify into higher technology, higher margins products.

Table 3.30 Mahle M&A & Joint Venture Activity

Company	Date	Details
Behr	2013	Mahle increases holding in the Behr Group from 36.85% to a majority holding of 51%
Delphi Thermal	2015	Mahle acquires Delphi Thermal Management Division for US$272m
Mahle	2017	Mahle & Faurecia collaborate on thermal management technologies for the cockpit of the future
Behr	2018	Mahle Group acquires all the shares in Behr Hella Service GmbH

Source: Automotive from Ultima Media

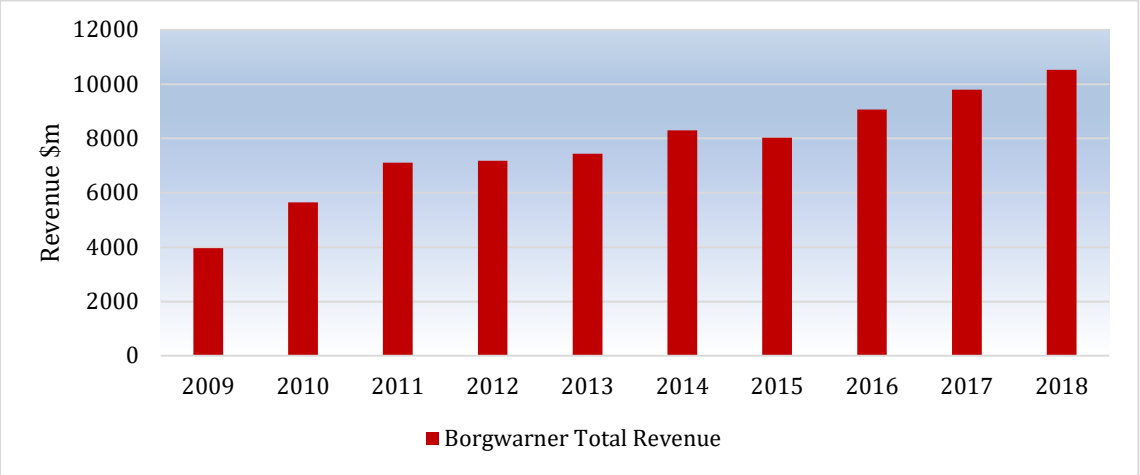
3.18 BorgWarner

Table 3.31 BorgWarner Overview

BorgWarner	Powertrains, turbochargers, manual transmissions, automatic transmissions, dual clutch transmissions, AWD technology
Automotive Tier supplier ranking	**18th**
Total/Automotive Revenues	$10.53bn/$10.53bn (100% auto)
Total EBIT Margin %	11.3%
Headquarters	Michigan, US
Employees	30,000
Website	www..borgwarner.com

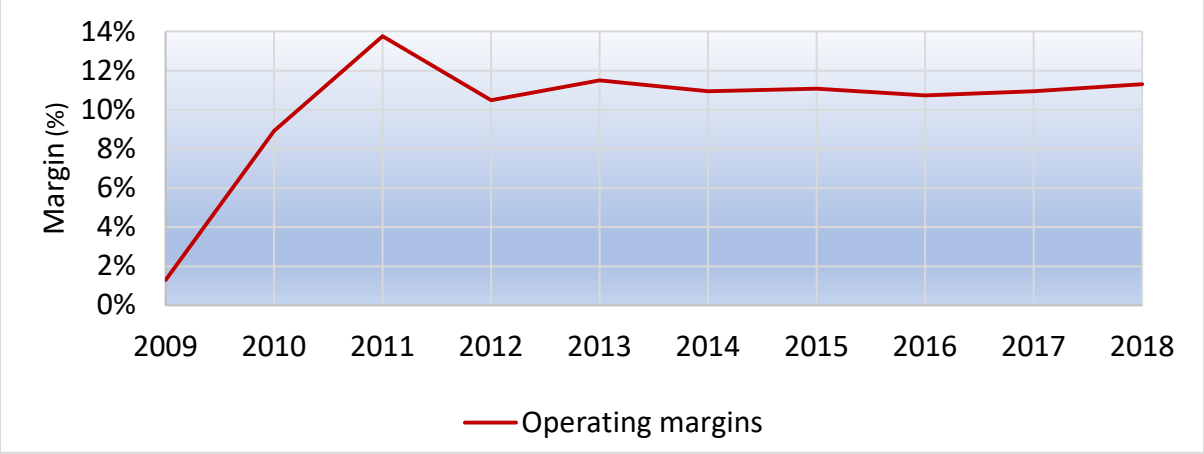
Source: Automotive from Ultima Media, Annual Reports

Figure 3.35 BorgWarner Historical Revenues 2009-2018 ($m)



Source: Automotive from Ultima Media, Annual Reports

Figure 3.36 BorgWarner Historical Margins 2009-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.17.1 BorgWarner Analysis

BorgWarner is a well-established market leader specialising in powertrains, turbochargers and transmissions. This portfolio mix places the company in a strong competitive position given that OEMs are trying to simultaneously achieve fuel efficiency gains without compromising performance. Products such as turbochargers and dual-clutch transmissions are thus growing in use in the industry. The company also has capabilities in all-wheel drive systems, which is another growth area with higher sales of SUVs and crossovers.

The tightening emissions regulations could also help BorgWarner capture a higher percentage of vehicle content.

BorgWarner has achieved strong revenue growth over the past decade, with healthy margins consistently above 10%. This appears to be due to BorgWarner's dominant market position, brand recognition and pricing power. However, this could come under threat as new entrants undercut BorgWarner's pricing in the shift to electrification.

BorgWarner has a reasonably well-balanced revenue mix across Europe (38% of sales), North America (34% of sales) and Asia (28%), with the latter likely to be a target for growth. BorgWarner is however relatively reliant on VW and Ford, which together account for 26% of sales.

Perhaps a more fundamental issue will be that BorgWarner is at core a hardware and engineering company, which could be a weakness as the industry transitions more towards electronics and software. And that shift is not only one of product, but also of mindset and knowledge; for example, over time more mechanical engineers may be gradually replaced by IT and software engineers.

Another issue for BorgWarner is the downward cost pressure that OEMs are applying, especially on more commoditised products, such as the traditional hardware in ICE powertrain (especially in declining diesel) componentry. It's notable that some tier one suppliers, including BorgWarner, have blamed their own tier two and three suppliers for failing to cut costs.

Ultimately, BorgWarner must resist the commoditisation of its product portfolio by innovating and investing in R&D to provide crucial added value that differentiates their products.

Table 3.32 BorgWarner M&A & Joint Venture Activity

Company	Date	Details
Remy	2015	Acquires Remy, specialist in electric traction motors, starters & alternators
Sevcon	2017	Acquires Sevcon, a global player in electrification technologies
Romeo Power Technology	2019	BorgWarner forms a joint venture with Romeo Power Technology in May 2019 to develop battery packs for electric vehicles

Source: Automotive from Ultima Media

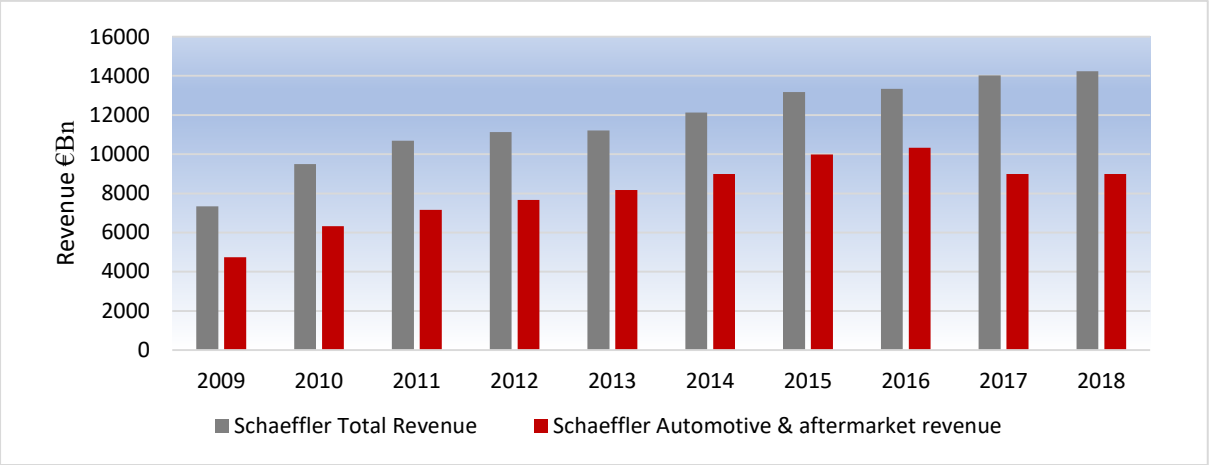
3.19 Schaeffler Group

Table 3.33 Schaeffler Group Overview

SCHAEFFLER	Rolling element bearings for automotive, aerospace and industrial applications, electric axles
Automotive Tier supplier ranking	**19th**
Total/Automotive Revenues	€14.24bn/ €8.99bn (64.1% auto)
Total EBIT/Automotive EBIT Margin %	10%/7.6%
Headquarters	Herzogenaurach, Germany
Employees	92,478 (2018)
Website	www.schaeffler.com

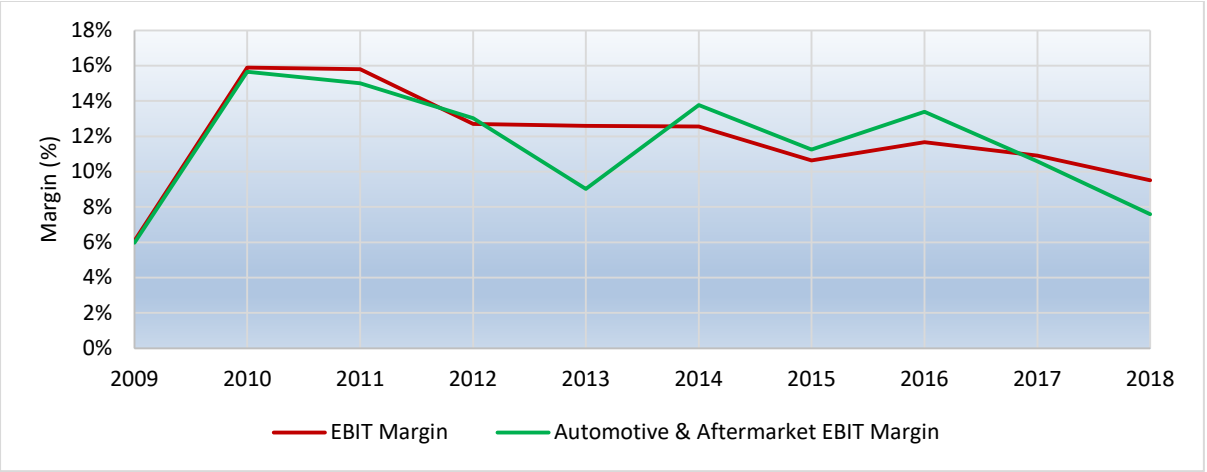
Source: Automotive from Ultima Media, Annual Reports

Figure 3.37 Schaeffler Group Historical Total & Automotive Revenues 2009-2018 (€m)



Source: Automotive from Ultima Media, Annual Reports

Figure 3.38 Schaeffler Group Historical Margins 2009-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.19.1 Schaeffler Group Analysis

Schaeffler Group is a German manufacturer of rolling element bearings for automotive, aerospace and industrial applications. It is a strong player, with higher-than-average profit margins, and strong growth over the past decade, driven in part by acquisition.

Around a decade ago, Schaeffler made attempts to swallow much larger rival player Continental, taking a controlling stake through €12 billion in staggered payments. However, in 2011 Schaeffler sold off €1.8 billion worth of shares to reduce its stake from 75.1% to 60.3%; today, Schaeffler own a minority 46% stake of Continental.

Schaeffler Group also owns the brands INA, FAG and LuK.

Schaeffler's topline revenue development has been strong, nearly doubling over the past decade. Automotive segment revenues have remained around 60% to 70% of the business and are currently 64.1% of revenues in 2018.

Margins for total revenues and automotive segment revenues have closely aligned over the past ten years, with both remaining in double digits for most of the decade; automotive segment margins only dipped into single digits recently, dropping to 7.6% in 2018. However, the slight downward trajectory of margins is clear.

In this context it is understandable why moves are underway to reduce costs. There have been reports that at Continental up to 20,000 jobs are at potentially risk, while at Schaeffler, 1,300 jobs are being cut.

Table 3.34 Schaeffler M&A & Joint Venture Activity

Company	Date	Details
Continental AG	2008	Schaeffler Group takes a 75.1% controlling stake of much larger Continental AG through €12 billion in staggered payments. The group owned it owned 90% of the stock, directly and indirectly
Continental AG	2011	Schaeffler sells off €1.8bn worth of shares to reduce its stake from 75.1% to 60.3%;
Continental AG	2012	Schaeffler sells a 10.4% Stake in Continental to Raise $2.1 Bn
Continental AG	2015	Schaeffler reduces its ownership to a minority 46% stake of Continental.

Source: Automotive from Ultima Media

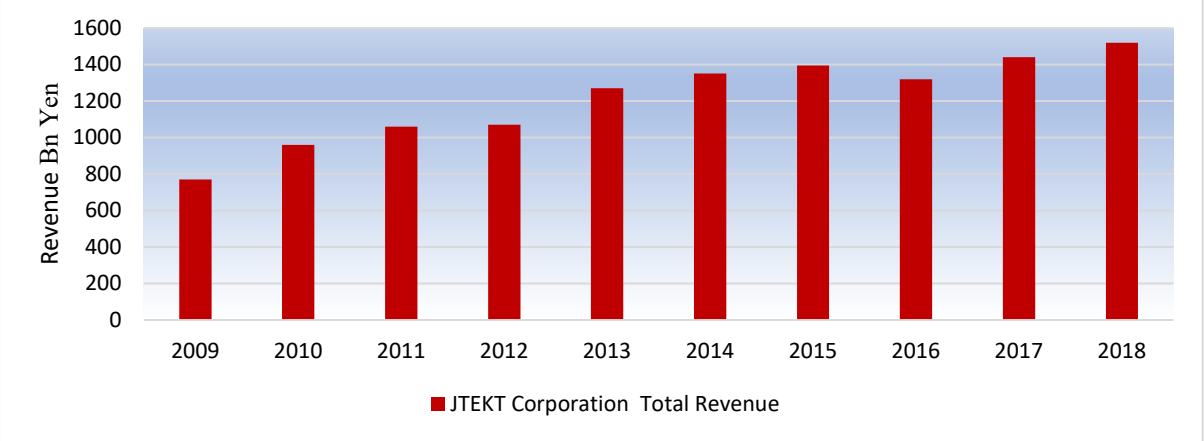
3.20 JTEKT Corporation

Table 3.35 JTEKT Corporation Overview

JTEKT	Bearings, steering system components, drive-line components, machine tools, electronic control devices
Automotive Tier supplier ranking	**20th**
Total/Automotive Revenues	JPY 1,441bn/JPY 1,064bn (70% auto)
Total EBIT Margin %	4.4%
Headquarters	Osaka, Japan
Employees	49,589
Website	www.jtekt.co.jp

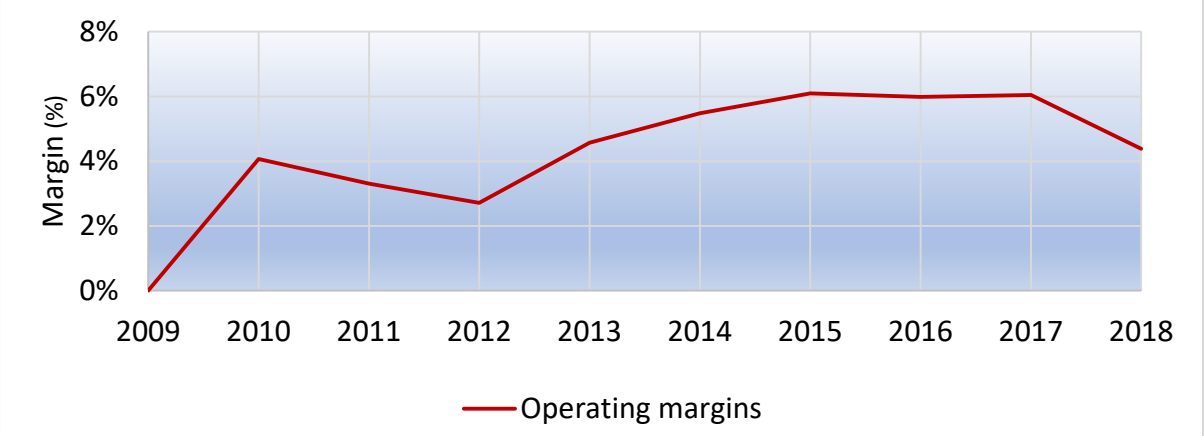
Source: Automotive from Ultima Media, Annual Reports

Figure 3.39 JTEKT Corporation Historical Revenues 2009-2018 (Bn Yen)



Source: Automotive from Ultima Media, Annual Reports

Figure 3.40 JTEKT Corporation Historical Margins 2009-2018 (%)



Source: Automotive from Ultima Media, Annual Reports

3.20.1 JTEKT Corp. Analysis

JTEKT is a tier supplier of bearings, steering system components, drive-line components, electronic control devices and machine tools to non-automotive sectors.

Overall revenue development has been strong over the past decade, nearly doubling from JPY 770 billion in 2009 to JPY 1,520 billion in 2018. However, margins over that period have remained on the low side, only reaching the industry average of around 6% from 2015-2017. Margins dropped back to 4.4% in 2018.

From an engineering perspective, JTEKT has impressive competencies and industrial experience in bearings and engineering components. But from a strategic business perspective, this is not as positive. Although JTEKT undoubtedly invests in high-quality engineering, competitors usually achieve very similar high standards, and this tends to result in a commodification of the product and low margins, as is the case here. Japanese OEMs can apply downward pressure on prices when they know they can get similar bearings from a competitor.

A weakness of the company is that it has been fined in the past for anti-competitive practices which may affect trust and restrict its ability to seek new business with OEMs.

Furthermore, JTEKT remains a mechanically engineered component company in an industry transitioning more and more towards toward electronics and software, which is where the higher margins can be found. To improve margins, the company will need to expand its higher valued-added segments.

JTEKT also needs to regionally diversify. Japanese sales accounted for 41% of revenues in 2018, with the Asia/Oceania region accounting for 64% of sales.

4. Strategies To Mitigate Margin Compression

The automotive industry is facing an unprecedented period of transition as the powertrain mix inevitably pivots towards electrification, which requires huge capital investment in new technology and R&D, as well as in operational and supply chain costs, such as plant tooling.

In a climate of diminishing sales volumes, the OEMs have remained profitable by pushing hard with higher margin SUV and crossover sales, platform-sharing agreements and forming partnerships on key technology areas for electrification and autonomous vehicle technology.

Likewise, for tier suppliers to maintain margins during this critical transitional phase, they must implement strategies that maintain existing revenue (and profit) streams to help subsidise the initially low or non-existent returns expected from next-generation electric vehicle technologies. Most suppliers maintain investment in R&D at around 6-8% of revenue.

However, suppliers face considerable financial hurdles. Tier suppliers' historically slim margins will come under further pressure during a prolonged downturn, which raises concerns about how companies will raise capital for the huge technology investment necessary over the next decade.

Return on capital employed (ROCE) is notoriously low within the automotive industry, which makes lending to automotive companies a relatively unattractive prospect for investors. With current growth prospects dim, and any returns on expensive technology investments uncertain, there are reports that banks are increasingly unwilling to lend to suppliers for more than three years.

This cash flow squeeze would put tier suppliers in somewhat of a catch 22 scenario. Margins are being squeezed, but tier suppliers need significant capital to finance the necessary R&D and strategic acquisitions to ultimately protect and improve margins.

Many companies are already taking measures to overcome this squeeze and to make themselves more viable and attractive for investors and lending, whether increasing value-added activities or exploring new business models. Below, we analyse a number of strategies that tier suppliers are following to cope with these changes and challenges.

4.1 Shift Investment Focus Onto High Margin Technologies vs. Commoditised Products

Due to a variety of industry dynamics, some automotive supply segments will increasingly become commoditized, while others segments are expected to experience growth – and those dynamic segments are generally where the higher margins are available.

High growth segments:

- Batteries
- Software
- Charging infrastructure
- Big data monetisation
- Shared mobility

- Connectivity
- ADAS/autonomous systems & artificial Intelligence (AI)
- Electronics
- Infotainment

Stagnant segments:

- Seating
- Tyres
- Brakes suspension systems

Declining segments:

- ICE powertrains
- Exhaust systems
- Thermal management
- Low-value manufactured components

Our interview with Denso confirms that in a climate of dwindling margins, trying to compete in increasingly commoditised products from high-volume competitors will make it very difficult to retain healthy profit margins. To preserve or increase margins, the focus should shift to more advanced technologies where there are fewer competitors and where that specialisation can command higher margins.

This is easier said than done. However, there are notable examples where companies have made this transition.

Visteon is an example of an automotive supplier which moved away from its wide range of commoditised products, including seating and powertrain, climate and lighting, to focus on displays, audio, and instrument clusters, as the company's leadership believes vehicle cockpit electronics will be a key differentiator for consumers, and therefore in high demand from OEMs. And interestingly, in 2018, Visteon achieved 11% margins (although the company's results, like many other suppliers, have been under more pressure in 2019).

The traditional market for mechanical parts such as brake rotors, door handles, bearings and air filters will increasingly become a commoditised business, with lower barriers to entry and lower margins. So it's a race to the bottom.

The most successful tier suppliers will be those that make themselves indispensable to OEMs by providing a unique, high value product judged on quality and customer benefit, rather than just on price.

4.2 Opportunity to Capture More Of The Value Chain

The transition from ICE to EV creates a huge opportunity, at least for some tier suppliers. One of the significant differences that electrification brings over internal combustion powertrains is that OEMs

or their joint ventures have, mostly, produced engines in-house. With electric drivetrains, OEMs could lose a large part of the value chain – and therein is the opportunity.

Currently, a new range of tier suppliers are producing the electric vehicle powertrain, including the motors, controller, cooling system, battery and software. Of course, many suppliers already provide components of both ICE, hybrid and EV powertrains. This clearly brings opportunities for new and existing tier suppliers to exploit this emerging opportunity to grasp a larger share of the powertrain market.

Likewise, autonomous, connected and shared mobility technologies are also opening up new areas to tier suppliers as OEMs diversify into new areas. For example, in 2019, Bosch and Mercedes announced a new joint pilot project to develop an app-based ride-hailing service using automated driving. And Continental formed a joint venture with Nexteer to develop ADAS motion control, for braking and advanced steering system integration.

Furthermore, there is an opportunity for tier suppliers to move beyond reactively supplying components to an OEM's specified demand (so-called 'build to print'). Instead, more suppliers are focusing on the opportunity of becoming a 'full service supplier' that can provide integrated solution, 'turnkey' solutions, such as pro-actively designing and suggesting a complete interior, or complete powertrain and battery solutions, rather than an OEM sourcing these components individually from disparate suppliers.

Beyond merely supplying components, there is the potential for suppliers to capture even more of the value chain, especially in the areas of mobility and data services, for example vehicle subscriptions, shared mobility and big data monetisation.

4.3 Shifting From Hardware To Software

Traditionally, tier suppliers have focused on recruiting mechanical engineers. But the modern vehicle has vast amounts of software code, while design and manufacturing processes are increasingly dependent on digital tools and skills. Suppliers need to focus on recruiting software engineers to complement mechanical and production engineers. The challenge is that many of these IT people don't always want to work in the automotive industry.

For example, half of Visteon's 4,000 engineers are now software engineers. Its manufacturing facilities look more like consumer electronics production line rather than an automotive supplier.

But further to this, tier suppliers (and OEMs) need to shift away from manufacturing excellence towards software and data-driven business models that put customers at the core. That is the challenge that manufacturers will have as they have to re-invent themselves as mobility providers, not just vehicle manufacturers.

4.4 Simplify and Focus the Product/Technology Offering

A growing number of tier suppliers are in the process of restructuring their business or divesting divisions so as to focus on core business and technology growth areas. Delphi Automotive's earlier

separation between its powertrain business (Delphi Technologies) and Aptiv is an example of focusing specialisation and innovation. Continental is making a similar move with the recent separation and planned spinoff of its powertrain division.

But whilst companies are putting more focus onto software, and in many cases moving away from ICE powertrain components, tier suppliers are as confused about the future of automotive powertrains as many consumers are. As the Denso interview confirmed, suppliers are unsure which technology to back. With shrinking margins, and huge development costs, suppliers have to bet on which powertrain types to back, because most companies simply cannot afford to invest in developing all different types. A strategic choice has to be made.

Interestingly, Denso has chosen not to invest in 48-volt mild hybrid technology. Time will tell if that was the correct choice, but our analysis indicates that these mild hybrids will be one of the fastest growing segments over the next decade. Nonetheless, the reduction of complexity is a major way to achieve cost-saving potential.

4.5 Collaborations Not Competition: Cooperation, Joint Ventures, Alliances, Partnerships

In the splintering development of powertrain technology, and the growing risk of many technologies being commoditised, suppliers are likely to benefit, if not depend upon, increased collaboration.

Although many ICE technologies are being systematically phased out – most notably diesel, but also types of petrol powertrains over the longer term – our forecasts indicate that by 2030, 85% of all powertrains will still include some form of ICE (whether pure petrol, diesel or all the shades of hybridisation). Therefore, whilst ICE sales decline, the case for sharing development costs and optimising resources to free up capital for investment in growth areas, such as CASE technologies.

The two major trend towards electrification and autonomy require huge capital investment and economies of scale, even as both risk eventually being commoditised. This naturally drives a shift towards JVs, technology exchanges, alliances and partnerships to research and develop electric vehicles.

In terms of electrification, there is huge potential for collaboration on powertrain development, which eliminates the need for OEMs or tier suppliers to develop competing technologies as separate companies, which is economically inefficient.

Ultimately, collaboration across the supply chain needs to be enhanced. In the past each component was produced separately within a silo, but those barriers are gradually being removed as a more holistic approach with different parts of the value chain communicating on the overall objective.

But further to that, suppliers need to embrace the bigger picture and seek formal supply chain partnerships along the value chain, from battery pack suppliers, software providers, all the way down to the mining companies supplying the raw minerals such as lithium, cobalt and nickel.

Securing these supply chains will increasingly become a competitive advantage as the next generation of solid-state batteries are developed.

Likewise, when developing autonomous vehicle and self-driving technologies, there are enormous synergies to be had from joining forces, rather than developing these next generation technologies in siloes. The benefit of economies of scale evident in players such as Waymo moving way ahead of the game (due to parent Alphabet's deep pockets) compared to even major OEMs.

However, joint ventures and alliances may not provide a fast route to increase or preserve margins, especially with the uptake in new technologies still uncertain. ZF has, for example, has more recently favoured a strategy of establishing multiple joint ventures, and whilst this has technological benefits, the impact upon margins has been less clear and intangible thus far.

Other suppliers are pursuing alternative routes to invest in and leverage technology. A good example is partnerships between OEMs and tier suppliers in motorsport, such as Formula E, which is regarded as a test bed for future EV innovation. Notably, Audi and Schaeffler say they will continue with their partnership in Formula E motorsport.

4.6 Industry Consolidation Through M&A

The value of automotive industry M&A deals has been steadily increasing by 10% a year over the past decade, reaching nearly $100 billion in 2018.

The next generation of CASE technologies will require massive investment not only from the OEMs, but also increasingly the tier suppliers that primarily develop and supply them. In many cases, only larger players will be able to afford the R&D to lead in these technology areas, which is likely to lead to more industry consolidation.

The motive for M&A activity has now pivoted more towards developing EVs, shared mobility, connected and autonomous vehicles to gain market share and leverage economies of scale, which would help to reduce costs and improve margins.

Although there are larger players, the automotive tier supplier industry is quite fragmented; when the industry is in a downturn, a shakeout of weaker suppliers becomes more likely, with many acquired at a bargain price by the major players. We expect just such a period of consolidation during this period of economic uncertainty and critical technology transition.

We also foresee the acquisition of technology providers who will be key to developing critical technologies, such as battery companies, sensor specialists and software developers

4.7 Planning For The Downturn

Our forecast for global volumes indicates that sales will fall in 2019 and 2020 and not recover to 2018 levels until as late as 2024. In such a stagnating global vehicle market, tier suppliers will need to adjust their forward planning.

Tier suppliers will need to examine their cost base, including production and labour, material costs and operational efficiency to mitigate the impact on supply chains.

Maintaining cash flow and financial buffers in any business is vital, especially during a downturn, to ensure liquidity is maintained during critical moments. Keeping cash flow high also allows more room for manoeuvre for potential M&A opportunities, and helps maintain investment in new technology.

Cash flow can be preserved through restructuring and divesting low-growth non-core businesses, examples which are already being followed by Continental in separating its powertrain business. Suppliers can also seek to maximise growth in parts of the business that might be less immediately impacted by a recession, such as the aftermarket.

Companies that proactively plan for a downturn and adjust costs tend to emerge leaner and stronger than those that did not prepare for the new reality. So there is an opportunity here to gain advantage compared to competitors that don't plan as decisively for the downturn.

4.8 Exploring New Revenues Streams

Downturns need not only be addressed by cutting costs. It is also a time to pursue new business opportunities, and this will be critical for tier suppliers.

It is widely thought that traditional manufacturing margins for OEMs and tier suppliers alike would always remain small. However, there are new revenue streams that have become available to exploit, especially if tier suppliers can form closer alliances with OEMs and gain more critical roles in developing technology, for example within the digital and software ecosystem.

Important development areas for OEMs are particularly linked to digital customer experiences in vehicles, including monetising data, and further integrating artificial intelligence and software. Connected ecosystems are increasingly a key purchase choice for consumers. And importantly, these add-on services, such as infotainment, usage-based insurance and pay-per-use mobility services provide a rich pool of consumer data to exploit.

Rather than leave this huge new potential revenue pool entirely for the OEMs to monetise, we believe that tier suppliers need to muscle in on this new emerging data driven revenue stream.

Another example is ZF, which is part of the Mobility as a Service (MaaS) Alliance, a European platform that is developing a new ecosystem of public and private transport services.

4.9 Forming Alliances With Digital Disruptors

Tier supplier need to acknowledge that incumbent OEMs are also likely to consolidate, and could eventually represent a smaller part of the industry than they do today. We expect that that the 20

main OEMs could reduce to 10-15 groups, for example, while non-traditional OEMs will further disrupt the market. The impact of Tesla is a good example of how suddenly things can change.

Rather than only fighting for market share and sales with existing OEMs, tier suppliers need to look further afield and think bigger about how the industry will look in just one or two vehicle development cycles – in other words, the next 5-10 years.

For example, a greater role is likely to be played by the likes of Google, Apple, Tesla, Amazon and Chinese EV startups. Although these mainly tech giants have financial and technological strength, they have little experience of automotive, and that is where tier suppliers could help. Forming key alliances with these newer players will pay dividends further down the line.

4.10 Tier 0.5 Model/Partnerships With OEMs

Increasingly, closer partnership between OEM and tier suppliers is believed to be an increasingly important strategy. Already, communication between OEMs and tier suppliers has risen consistently, especially in component design and the design-to-market cycle. There is room for this to go much further.

Technology is evolving so rapidly that to stay at the competitive cutting edge, OEMs and tier suppliers will have to invest, develop and produce technology in lockstep. Whilst this would help to speed innovation, it would ultimately help make suppliers an even more invaluable part of the OEM's value chain.

Denso's relationship with Toyota is a good example. Instead of just fulfilling supply orders, Denso is a close innovation and development partner for the carmaker. The fact that Toyota owns 25% of the supplier and accounts for 50% of Denso's revenue is certainly an important factor. However, such a so-called 'tier 0.5 supplier' model is based on long-term, strategic working relationships that go beyond ownership links, including shared R&D, working capital, purchasing and operations, all of which helps to speed development at lower costs.

In such a working arrangement, suppliers can also achieve more system integration, from engineering and testing to production, instead of just supplying components. This is especially evident in electrification and autonomous technologies in which the OEM may not have had previous experience, or where suppliers new the automotive industry (for example battery or software companies) may need to learn more about the higher quality required for automotive compared to many consumer-grade products.

If a tier supplier produces an ever larger share of the value and components of a vehicle, such as the powertrain, the logical next step is to imagine a larger tier supplier developing its own vehicle and effectively becoming fully vertically integrated and its own OEM and tier supplier all, perhaps in a limited way, to cater to a niche marker.

This is already the case with a number of suppliers, notably Magna (arguably the original 'tier 0.5 supplier) and Finland's Valmet Automotive, which both have divisions that engineer and assemble vehicles. Valmet has also moved deeper into lithium-ion battery development for electric vehicles for OEMs, expanding engineering, integration and test services; in November this year, it opened a battery-pack assembly plant at a former Nokia factory in Finland.

Such strategic developments will help both OEMs and tier suppliers to maintain competitive positions and ultimately improve margins.

5. Tier Supplier Interviews

5.1 Robert Bosch

We interviewed a representative from Robert Bosch, the largest global automotive tier supplier, in November 2019 regarding its outlook for tier suppliers and in particular the issues surrounding powertrain evolution and the investment and margin compression that is expected to result from this. We thank them for their kind contribution to our research report.

Below are key details of that interview, lightly edited for clarity.

Automotive from Ultima Media: What is your view of the overall state of the automotive industry and how it is impacting Robert Bosch?

Bosch: "Well, I think it's a challenging time. We see that the framework, the conditions, pre-conditions to operate in this industry in Europe, given by Brussels in particular, are putting a restriction on what we can do as an industry as a whole and Bosch plays a role in that. That is one of the key things we are affected by.

And of course, the other is the general economic situation. As a company we are currently dependent by around 60% on the automotive industry. So we have another 40% which is "only affected" by the economic downturn. The latest figures I have seen for Germany suggests that by the end of 2020, the economy looks to be more optimistic than in 2019, so that's something we should welcome. However, the whole automotive industry is not expecting any kind of growth over the next years."

Automotive from Ultima Media: That aligns with our forecasts for a flat outlook for 2020.

Bosch: "We are also heavily active in the Chinese market and that is a big growth market, which has come to a grinding halt. So the structure of our regional dependency is another challenge."

Automotive from Ultima Media: And how are you responding to this downturn?

Bosch: "We are looking to reduce fixed costs, especially in the product areas in which we know we have a finite future, in order to free up capital to spend on new energy solutions and new business areas.

But powertrains are only one part of that that. So in all areas there will not be salary increase at the beginning of 2020 other than where we have previously binding commitments and we have to meet them. We focused on reducing fixed costs, however not across the board. We do not have a flat-out recruitment stop, which is something we may have done in the past, but that is not possible if you want to invest in new topics. You still need to be, and want to be, an attractive employer for IoT, and connectivity. It's important for us not to damage our growth potential and our drive for innovation."

Automotive from Ultima Media: For investment in electric and autonomous vehicles, some of that technology involves completely new supply chains, and a new range of tier two and tier three companies. How does this affect your overall value chain and operations?

Bosch: "I think the most important thing and at the top of our Robert Bosch logistics strategy is supply chain network design, which is something we have developed over the past five years. It has grown from an initial concept to a standard process and database, where the divisions and most of the business units can see today what their supply chain network design is going to look like over the next five years.

We can see the result in our warehousing footprint for example, but also in our transportation network design. Moving forward we can design what is the optimised setup rather than optimising after the event. It's important that we have data and that we are able to manage data. That's the first step.

The second thing is managing the variation of our suppliers and our customers. The management of our modular setups will be able to meet this variation if we do this as close to the customer as possible.

The third is the regional setup for our operations, which we will continue to drive for transport, warehousing, returnable packaging and foreign trade across all of Robert Bosch and which meets the different requirements of our business areas.

Our Robert Bosch logistics strategy remains firm. It is still based on what we defined in 2014 and have revised on an annual base up until this day."

Automotive from Ultima Media: Does Bosch see the transition to those new technologies in electrification, autonomy and connectivity as a risk or an opportunity to gain more of the value chain from OEMs?

Bosch: "There is always a plus and a minus, an opportunity and a risk. But I think for us it's more of an opportunity, yes, I think especially in the whole area of active safety. It's the kind of thing in which we are really at the forefront and cutting edge. In many cases, maybe 80-90%, we understand what is required and what we need to do. This is definitely an opportunity, but there will always be a risk over whether the investment pays off."

Automotive from Ultima Media: We have interviewed a number of other tier suppliers, and they tell us a fairly similar story of experiencing cost pressures, downward pressure on margins. Is that also your experience?

Bosch: "Yes, I mean everybody tries to save money, right? It would be wrong for me to say that we are not doing that."

Automotive from Ultima Media: How is the company trying to counter that margin compression?

Bosch: "By a) gaining new business and b) by reducing fixed costs."

Automotive from Ultima Media: Reducing emissions is not just becoming more important for products in but also in manufacturing and supply chain. How is the company doing in reducing such waste and emissions?

Bosch: "So far, so good. [Reducing supply chain emissions] is something that is now also deployed by our CEO Mr Denner himself through the divisions as a KPI. That is something they are measured on. We are thinking of further ways to quantify and value these reductions within our own KPIs, for example by putting a dollar amount on it. Our leadership means business on this topic. I think that Bosch is at the front of the queue as far as our industrial counterparts are concerned."

Automotive from Ultima Media: The industry is facing many headwinds, such as emissions regulations, trade wars and a slowing global macroeconomic climate? Which one are you most concerned about?

Bosch: "I think the biggest concern is over future powertrains. I mean [the decline of] diesel is not a secret, and it is our biggest base. We know that it has a future, but a finite future. Knowing which horse to bet on for the new powertrains. This is, in my opinion, the biggest challenge."

Automotive from Ultima Media: That completely aligns with our own findings that there is a multitude of powertrain choices now and OEMs and tier suppliers simply don't know which one to back.

Bosch: "We read different stories, different opinions every day, and we don't really see one OEM backing one thing. It's contradictory."

5.2 Denso Corporation

We interviewed a representative in Europe from Denso Corporation, the second largest automotive tier supplier, in November 2019 regarding its outlook for tier suppliers and in particular the issues surrounding powertrain evolution and the investment and margin compression that is expected to result from this. We thank them for their kind contribution to our research report.

Below are key details of that interview, lightly edited for clarity.

Automotive from Ultima Media: What is Denso's view of the current state of the automotive industry?

Denso Corporation: "It's an evolution or even a revolution from a powertrain point of view, autonomous driving and electrification. The biggest impact we see in this new technology is the expense in R&D at both suppliers and OEMs and I would say suppliers are having a difficult situation because we have to increase our R&D expense in order to follow all the requests from all over the world. Our customer, the OEMs, are also struggling because they have to develop so many new things in parallel with the conventional product.

The issue is that we don't see really where we are going in electrification or in autonomous driving. With autonomous driving everybody was saying that by 2025 we would all drive autonomous cars. This is completely incorrect. Now we all concluded that by 2025, we will maybe be at level 3, but not level 5. A lot of OEMs are even saying that level 5 will never be achieved.

Electrification is also is difficult. That is because electric cars are not going to be 100% the solution for the future. When we see the projection for 2030, for instance, the gasoline engine [including hybrid variants] will still account for a very big portion, around 70%. What I would summarise is that the future automotive market is really unclear, and we have the risk of spending a lot of money for many developments that will never reach mass production. So that's painful."

Automotive from Ultima Media: Denso has a large number of powertrain products, from petrol to diesel, hybrid and electric powertrains – how is your business being affected by the transition and investment required to develop those new powertrains?

Denso Corporation: "There's a big impact. When you have a big business in diesel systems [in Europe, for example], and your customer decides to switch to gasoline over a few years, if you are not ready to supply gasoline, you can lose a big sales turnover.

More globally we have considerable experience with Toyota on hybrids of course, because of a long history and big turnover. It is really a strong partnership, of course. And Denso is a big player in hybrid to support Toyota. On the other side, Toyota is a system maker in hybrid. It means Denso is developing and providing high quality products so that the system works, but the system development is led by Toyota, which is quite different at other OEMs.

For electrification, Denso has a tie-up with Aisin, because Aisin is also part of the Toyota Group. Aisin and Denso have created a joint venture, BlueE Nexus, which will provide to OEMs a complete system e-axle – that means a gearbox plus motor generator plus inverter. We hope that will provide a good future for us because we have much experience. In parallel, we need to create our own activity at Denso for EV with our own motors and inverters."

Automotive from Ultima Media: Denso is 25% owned by Toyota and it represents 50% of sales. How do you think this makes Denso different to other tier one suppliers which are somewhat more independent of OEMs?

Denso Corporation: "It has influence of course. Our core development and innovation are made in Japan, and then the application development is made in the US or Europe or China. In Japan, the co-development is often made with OEMs, which brings a good strength on innovation and R&D because our partners share a lot with us and vice versa. That means we can spend an average of 8-10% of our turnover in R&D expenditure. I think Bosch is similar, so it's quite comparable. But we have a strong OEM partner who can validate our solutions.

However, this partnership does not give us an economical advantage to get the business because our partner also always wants a competitive price. It trusts in Denso, and this partnership is a great advantage, but price is always an important discussion. This makes also Denso competitive in other markets. Strong links with one OEM is good, but it wouldn't work without competition cannot work."

Automotive from Ultima Media: Toyota has been slower than other OEMs in electrification. We know that moving to electric vehicles is not only a new technology, it involves a new mindset, completely new supply chains, a new range of companies. How is Denso dealing with that transition?

Denso Corporation: "We are developing our own motor generator for electric vehicles along with inverters and converters as. We have the knowledge and we already have European market customers for this. However, some OEMs want 48 volts and some OEMs want 400 volts or 200 volts, it depends. So, we cannot develop everything – we have to make some choice. 48 volts seems to be a trend in Europe. Maybe we have to do it or maybe we can ignore it, but we need to understand if 48 volts will remain part of European market needs in future."

Automotive from Ultima Media: We have noticed a trend in other tier suppliers and OEMs that want to completely own the EV value chain, everything from the electric motors, the controllers, the batteries, even the mining companies for the rare elements. Has Denso any plans along these lines, whether in acquisitions, collaborations or joint ventures?

Denso Corporation: "Within the past two years we have signed a lot of agreements. We also acquired a small, startup company in Japan to help us in artificial intelligence or software and to help us develop more quickly in other new technology. We have tie-ups or JVs with big companies, such

as with Aisin, Toyota, Honeywell and other Japanese companies to accelerate new technologies. So yes, we are also moving in this direction, which is quite new at Denso. Historically Denso did not acquire many big companies or even small companies. We acquired Magneti Marelli divisions 20 years ago, but it was really a rare case. Now we are accelerating this kind of acquisition or tie-up. But we do it only with added-value companies and it is more to help us to develop or understand some portion to become agile, rather than to buy a company for core material."

Automotive from Ultima Media: In the current sales climate, where we are seeing sales flat or slightly declining in European markets. Are you experiencing cost pressures and downward pressure on margins?

Denso Corporation: "In Europe it is becoming crazy, to be honest. There is a very tough pressure at some generalist suppliers, for instance. But it depends on the business relation of a supplier with customer. If you have a long-term partnership in innovation with OEMs, it is easier to get business than just offering some commodity that everyone can produce. So that's one of our strategies, but it is also the strategy of many suppliers. At least here in Europe, it is important to sign co-development at the innovation stage with a customer, so that you have a better knowledge when the specification is released for RFQ [request for quotation]."

Automotive from Ultima Media: What strategies is Denso using to try and counter that margin compression?

Denso Corporation: "We reject, or we refuse always to sell our products at a loss. So unfortunately, we have to decline some RFQs either because we don't have the capacity in production or in R&D manpower, or because the margin is not enough. And this is a very clear strategy at Denso.

In that sense, the European market is quite difficult, because the margins are very small. So that is why we have two strategies: one is keeping a good margin, the other is learning technology together with the customer."

Automotive from Ultima Media: Would you say the main strategy for Denso and all the other tier one suppliers should therefore be co-development and cooperation?

Denso Corporation: "For most of the big ones, yes. But some newcomers offering commodities rather than high technology have different strategy, as they are looking for volumes with fairly low margins. But these companies are very active, and they are really competitive. But it's not our strategy. Other big suppliers might have the same strategy as Denso, which is to invest in innovation and learn from customers so that we can improve both our technology and offer to other customers afterwards.

The commodities in automotive supply are becoming less financially interesting. Some big suppliers are stopping some activities in products such as alternators/starters, or in powertrain activity. Denso

is not doing that yet. We are keeping all the diversity of our business units and product portfolio, but we are also monitoring our competitors' movements."

Automotive from Ultima Media: What is your outlook for automotive tier one suppliers such as Denso?

Denso Corporation: "I think commodities are becoming a really difficult business as competition is becoming tougher and tougher. So big players will go to the new technology, invest a lot in R&D and innovation in order to keep margins and in order to lead some markets. I am afraid that the companies that continue to offer commodities and only commodities will lose their margin and may eventually fail or be acquired by the big players.

There is really tough competition in Europe compared with the other markets, with strong suppliers and many carmakers with competitive, entry-level cars and who apply strong cost down pressure on suppliers. It is difficult to survive if you don't have strong partnerships with OEMs."

5.3 ZF Friedrichshafen

We interviewed a representative from ZF Friedrichshafen, the fifth largest automotive tier supplier, in November 2019 regarding its outlook for tier suppliers and in particular the issues surrounding powertrain evolution and the investment and margin compression that is expected to result from this. We thank them for their kind contribution to our research report.

Below are key details of that interview, lightly edited for clarity.

Automotive from Ultima Media: What is ZF's view of the current state of the automotive industry?

ZF Friedrichshafen: "I think anyone now working in the automotive industry has a similar opinion. First, we are at a technical turning point, especially from the traditional combustion engine towards new electric and hybrid versions. This is definitely a point. And besides that, no matter if you talk about Europe or the US or China, at ZF we are focusing on four strategic areas, which we call the new generation of technology development.

One is autonomous driving, from which we think many business models will be changed, or even new business model will be generated. And the second area we are focused on is electric vehicles.

And then we have two special areas. One is the safety of the car, no matter if it is the traditional vehicle or a new energy vehicle, we always need safety. And the last area that ZF is focusing on is vehicle motion control, which applies whether it is a traditional car or new energy car."

Automotive from Ultima Media: ZF has a large number of powertrain products. How do you see your business transitioning given the huge investment required for hybrid and electric vehicles?

ZF Friedrichshafen: "ZF has a huge investment in these two areas (hybrid and electric vehicles). One is ZF has formed a new division, called 'Electronics', which focuses on powertrains for electric vehicles. This includes electronic gear combined with a motor; another product is an integrated drive system with three functions combined in one. This (integrated drive) has kind of become a technology trend, so if you look today at electric vehicles from Tesla or other brands in China, like Nio, they are applying similar technology.

For the second investment area, our CEO [Wolf-Henning Scheider] is a strong believer in hybrids, and one of the very important products is the gearbox transmission. So actually, ZF has developed an eight-speed transmission, which has very good sales. The R&D investment is always very expensive."

Automotive from Ultima Media: The shift from internal combustion engines to hybrid and electric is not just a hardware shift, it also has a much stronger emphasis on software and electronics. Can you tell us more about ZF's strategy around that?

ZF Friedrichshafen: "Actually ZF was the first traditional automotive supplier to have a partnership with Nvidia to design and make a GPU (graphics processing unit). So, we produced together the first domain controller for automotive. This is the hardware side. Besides that, we also believe there will be an automotive operating system and that the current number of ECUs (electronic control units) stored in the car will be reduced, and a lot of function maybe will be centralised to the domain controller.

For ZF side, a major investment area is to hire more software engineers. This is not easy, because this is a traditional automotive company and when we are talk about software engineers, we are not only competing with competitors but also internet and software companies. All of a sudden, ZF finds itself in a much much more competitive human resources market."

Automotive from Ultima Media: In the current climate, are you experiencing increasing cost pressures and downward pressure on profit margins?

ZF Friedrichshafen: "Yes of course. This year especially in China, just talking about passenger cars, the market is down around 10%. If you calculate that China overall has 28m annual sales of passenger cars, that means we have lost almost 3m units. As you can imagine, this generates huge cost pressure. We are also working on how to scale down a little bit."

Automotive from Ultima Media: How is ZF responding to that margin compression and that shrinking volume in China?

ZF Friedrichshafen: "We have some typical things like reduced travel, and we are using more virtual meetings. From an IT side, we postponed the date for a new SAP system. The challenges we have are to increase the margins. We are in trouble. On the one side there is the lack of a margin and the other side is that, because of the new trends, we still have to invest heavily in new technical areas. This means we have to save much much more, not just to counter the market downturn. We have to save even more to generate enough money to invest in R&D."

Automotive from Ultima Media: That's interesting you are under cost pressures from falling volumes, but you are also having to invest a lot in the new technologies. Do you have any other comments you can add around that point?

ZF Friedrichshafen: "Yes, actually, we are very actively watching some startups also in China, to see what they are doing and also to see what the potential is for cooperation.

For example, ZF has just joined – not just only China – but worldwide a mobility as a service organisation, which is very new for a traditional tier one supplier. But ZF is no longer only a traditional component supplier. Mobility as a service is an interesting area in which ZF is looking. We do not want to produce a car or start our own service company at this stage, but nevertheless, the whole market is changing so dramatically. Mobility as a service is definitely one area that we cannot neglect."

Automotive from Ultima Media: How do you think ZF differs from other tier one suppliers, for example those which, like Denso and Toyota, have ownership links?

ZF Friedrichshafen: "As ZF is originally from Germany, ZF has a very strong link with German OEMs. In fact, one thing that help us is that in this downturn in China, for example, we see more of an 'upgrade' of the consumer, with more people buying luxury brands like Mercedes-Benz and Audi, which are OEMs with which ZF has very good business relations. So we are hit somewhat, but we are not hit as bad as some of the OEMs or tier ones.

To safeguard its position, ZF always believes technology is number one, no matter how bad the market or the revenue is. ZF is not sacrificing investment for the R&D side."

Automotive from Ultima Media: You think it's a good strategy to target premium customers, with BMW, Audi etc., where there are higher margins than volume manufacturers?

ZF Friedrichshafen: "Yes. On the other hand, I think there is a little bit of risk following these customers. ZF has good relations with the OEMs, but sometimes the OEMs are not innovative enough. If you look at the amount of pre-orders that Tesla got for the Cybertruck, for example, this really concerns the OEMs and tier ones. Tesla has got a totally different way to compete with traditional OEMs."

6. Conclusion & Recommendations

Tier suppliers are likely to face an increasingly tough economic climate over the next few years. Ultimately, the ones that survive and flourish will be those that adapt to the changing landscape.

Of course, in a downturn, companies need to turn to necessary cost-saving measures. As our analysis and interviews find, many suppliers are already focused on reducing fixed costs, for example reducing operational, purchasing and logistics costs. Suppliers are also reducing headcounts and salary costs – especially in underperforming parts of the business or in segments whose future is clearly limited, such as diesel technology.

However, to flourish, tier suppliers need to look beyond controlling overheads and also make bold actions to develop topline growth.

Some of our key findings and recommendations for automotive tier suppliers in the 2020s include the following:

- Shift investment focus onto high margin technologies e.g. electronics and software
- Aim to capture more of the automotive value chain
- Simplify and focus the product and technology offerings, particularly with a view to offer more value and avoid commodification
- Seek industry collaborations, joint ventures and partnerships to share R&D costs, gain more economies of scale and to increase regional resilience – and seek these not only with other suppliers, but also with OEM customers
- Consider strategic mergers and acquisitions to complement competencies
- Plan for and exploit the downturn, especially in potential investments and acquisitions
- Explore new revenues streams and business models, such as shared mobility, monetising data
- Consider closer alliances with OEMs along the lines of Denso and the tier 0.5 model

The challenge is that few automotive suppliers will be alone in pursuing such changes. Likewise, most of these strategies require capital, which is a challenge already in an historically low margin industry such as automotive sector. And with the current levels of uncertainty in the sector, investor confidence and lending to suppliers are at a low ebb. Many companies will have to take action to reduce costs.

Nonetheless, despite the difficult outlook for the automotive industry, huge new revenue streams await those tier suppliers that can position themselves to seize lucrative new business opportunities. The current downturn may prove just the right time to do so.

7. Glossary

ADAS	Advanced Driver Assistance System
AI	Artificial Intelligence
CASE	Connected, Autonomous, Shared, Electric
CO2	Carbon Dioxide
CEO	Chief Executive Officer
CSR	Corporate Social Responsibility (report)
EBIT	Earnings Before Interest & Tax
EBITDA	Earnings Before Interest, Tax, Depreciation & Amortization
ECM	Engine Control Module
ECU	Electronic Control Unit
EV	Electric Vehicle
FCEV	Fuel Cell Electric Vehicle
FY	Financial Year
GPU	Graphics Processing Unit
H1	First Half of the Financial Year
H2	Second Half of the Financial Year
HEV	Hybrid Electric Vehicle
HMI	Human Machine Interface
HUD	Head-Up Display
HVAC	Heating, Ventilation & Air Conditioning
ICE	Internal Combustion Engine
JV	Joint Venture
LLC	Limited Liability Company
M&A	Mergers & Acquisitions
OEM	Original Equipment Manufacturer
PHEV	Plug-In Hybrid Electric Vehicle
R&D	Research & Development
RFQ	Request For Quotation
ROCE	Return On Capital Employed
SAP	A brand name of enterprise software
Tier 1	A tier one supplier provides components and systems directly to the OEM.
Tier 2	A tier two supplier provides components and systems to Tier 1 suppliers.
Tier 3	A tier three supplier provides the raw materials to produce the components
V2X	Vehicle to Everything communications technology

8. Appendix

Ultima Media Ltd *part of* Süddeutscher Verlag
401 King Street
Hammersmith
London, W6 9NJ
www.ultimamedia.com
P: +44 (0)20 8987 0900

Disclaimer

All facts and figures are believed to be accurate at the time of publication; Ultima Media accepts no responsibility for inaccuracies due to future developments in the market or incorrect information provided by Ultima Media's sources. Ultima Media is unable to accept any legal liability for any consequential loss or damage, however caused, arising as a result of any actions taken on the basis of the information provided in this report.

Contact Details

Daniel Harrison (report author)
Automotive Analyst
daniel.harrison@ultimamedia.com
P: +44 (0)208 987 0946

Christopher Ludwig
Editor-in-Chief
christopher.ludwig@ultimamedia.com
P: +44 (0)208 987 0968

For more insight and analysis on the automotive industry, visit:
automotivemanufacturingsolutions.com/insight