Automotive Tier One Q3 2019

Industry Report

December, 2019

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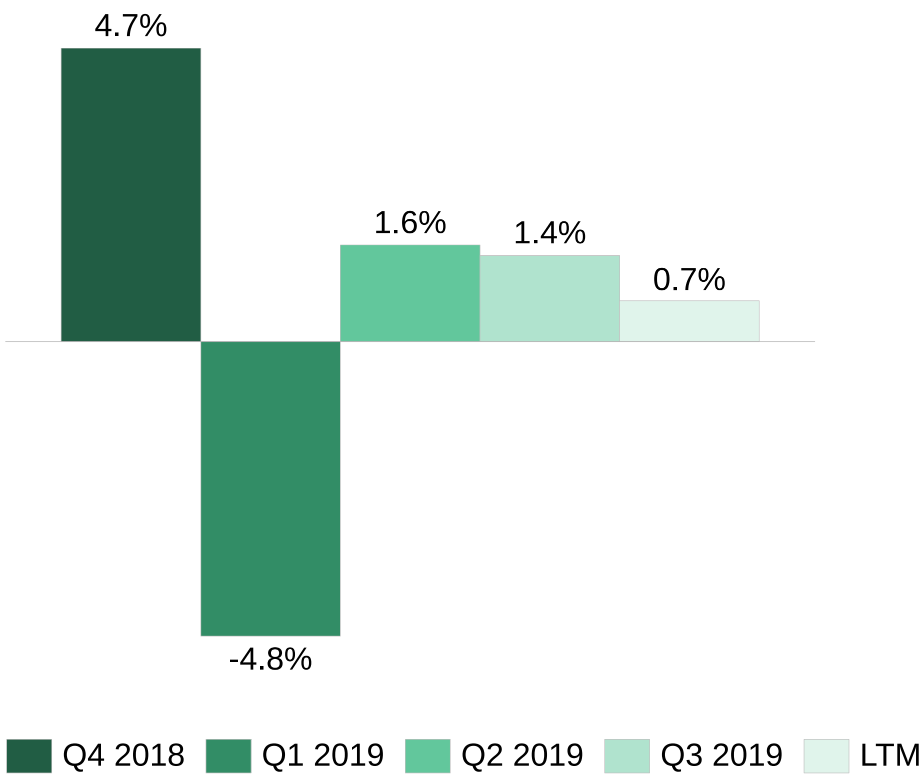
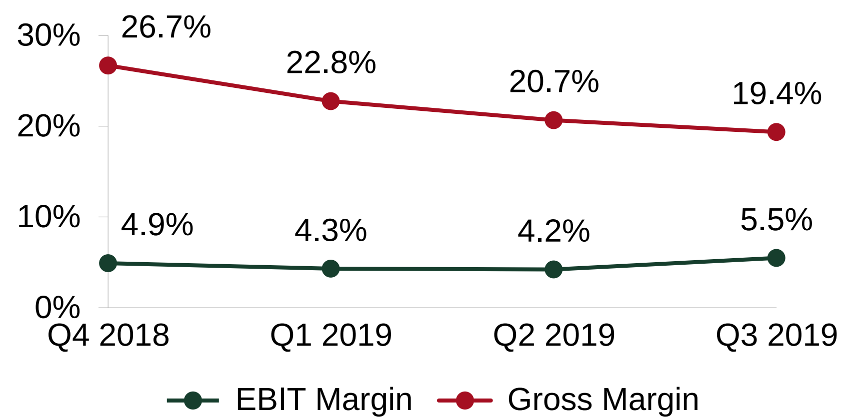
OEM financials indicate that revenue growth has managed to stay out of negative territory in LTM and EBIT margins have recovered from Q1 2019.

Auto OEM Average Industry Revenue Growth
Quarterly & LTM, year over year comparison



Auto OEM Margins
LTM

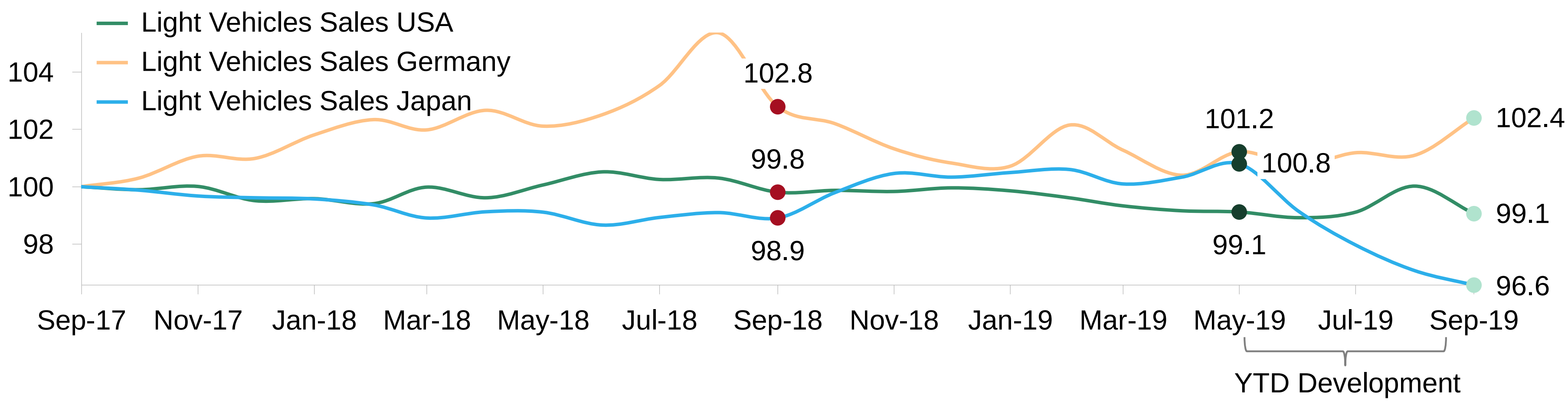


- Following the dramatic Q1 decline in revenue for OEMs, growth rebounded to 1.6% in Q2 and has remained positive in Q3 to bring in the average growth for LTM to 0.7%
- OEM Gross Margins have declined overall, and most notably with Daimler where COGS have continued to increase throughout the year
- EBIT recovery for OEMs driven in large part by General Motors, although the impact of the labor strikes is expected to change this picture

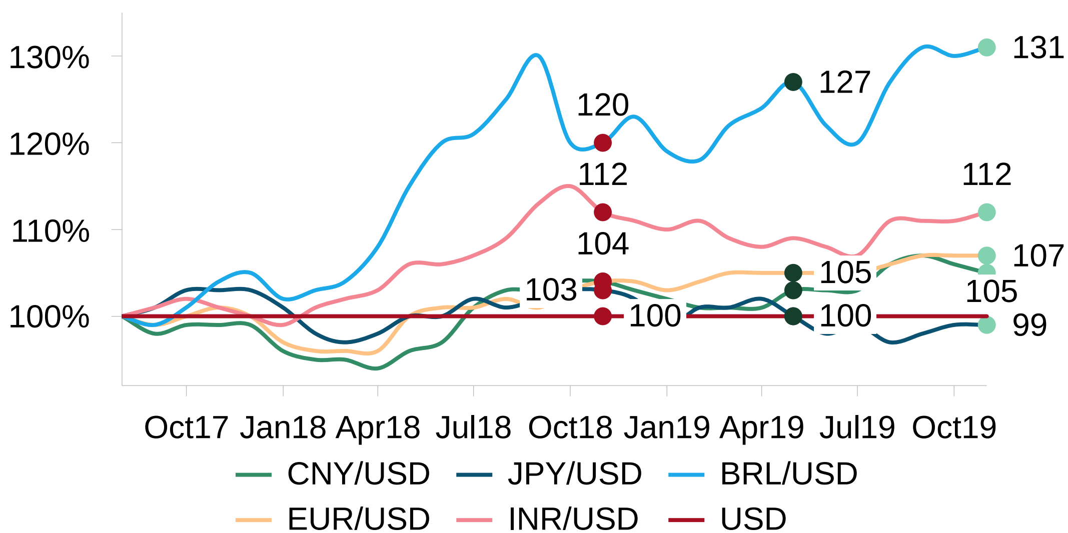
Notes: Based on a sample size of 22 OEM’s located throughout Asia, Europe & North America.
Source: Interim & Annual Reports, Capital IQ, Applied Value analysis.

Light vehicle sales in the US remain below 2017/18 levels despite a small bump in August numbers, while sales in Germany have ticked up strongly.

Monthly Light Vehicle Car Sales by Country, Indexed rolling 12-month average – 100 = Sept. 2017



Currency appreciation against USD, indexed at Aug - 2017



US OEM Quarterly Wrap Q3 2019

- US Light vehicle sales showed signs of life in August before promptly returning to levels that would indicate decline relative to 2017/18
- Strong sales over the summer in Germany helped push figures into growth territory by September, although this is expected to be temporary
- Japan's LV demand took a 4.2% hit as the government has planned on increasing the consumption tax from 8% to 10%
- Most currencies appreciated against the dollar YTD, although the Japanese Yen did end below levels from May

● Last Year ● May Data ● Most recent data

Source: MarkLines

AV's methodology breaks out Tier One Auto Companies into key Sub Segments.

Chassis

Axles, exhaust, suspension, steering wheels, brakes, bearings, 4WD components, fuel tanks, bearings

Powertrain

Drive controls, engines, transmissions, 5C components, pistons, heads, engine cooling and air management, injectors, turbochargers, tubes and hoses, antivibration systems

Electronics & Infotainment/ Connectivity

Airbag/controller, antilock braking system, harnesses, headlights, entertainment, control modules, regulators as well as Infotainment including entertainment, info, navigation services

Exterior/Body

Class A stamping, non-/structural stampings, frame/subframe components, body hardware glass, paint, body molding, fascias, wiper systems, door handles, seals

Interior

Seats, seat belts, interior products, instrument panels (IPs), trim, carpet, headlines, HVAC, mirrors, climate control

Conglomerates

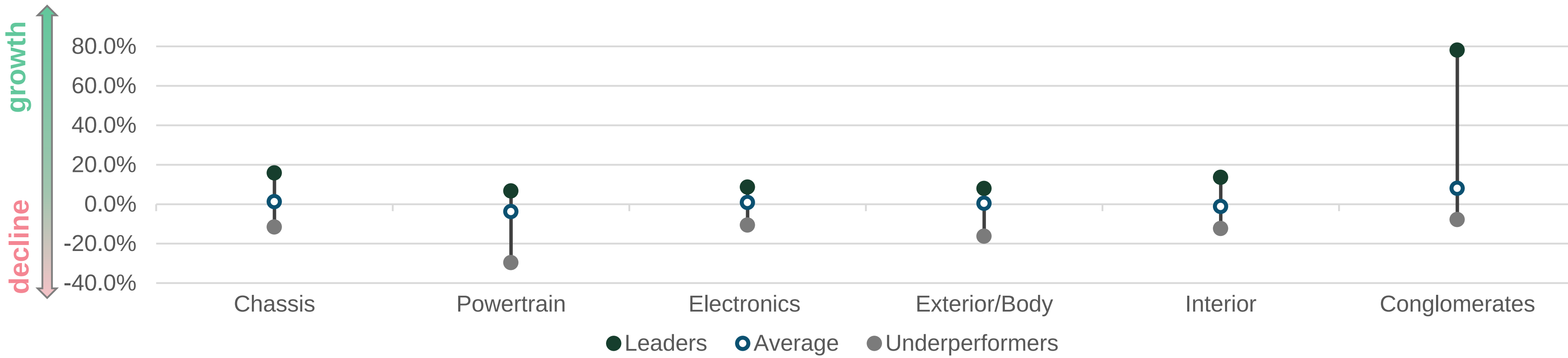
Suppliers a composite of the above categories with no distinct specialization

Applied Value has assessed 81 publicly traded Auto Tier 1 companies across 6 different operational segments.

Segment	Companies	Total in Analysis
Chassis	LEONI, Ftech inc., PRESS KOGYO, DANA, LIPPERT COMPONENTS, MERITOR, DORMAN, JTEKT, NSK, SAF Holland, AAM, NISSIN, SKF, MARTINREA, SHOWA	16
Powertrain	MODINE, DENSO Crafting the Core, HITACHI Inspire the Next, RHEINMETALL, DELPHI, nexteer AUTOMOTIVE, Allison Transmission, BorgWarner, elringklinger, 住友理工 SUMITOMO RIKO, CooperStandard, MUSASHI, EXEDY, nemak, F.C.C., LINAMAR, NGK	17
Electronics	flex, Visteon, TOKAI RIKA, Stoneridge, OMRON, KOITO, GENTEX CORPORATION, VOXX International Corporation, SUMITOMO, HELLA, HYUNDAI MOBIS, STANLEY, APTIV	13
Exterior/Body	FUTABA FUTABA INDUSTRIAL CO.,LTD., SUNGWOO HITECH, G-TEKT CORPORATION, Topre, SUPERIOR INDUSTRIES, UNIPRES, MITSUBA, Gestamp	8
Interior	ADIENT, TOYOTA BOSHOKU, NIHON PLAST CO., LTD. 日本プラスト株式会社, GRAMMER, TS Tech, GENTHERM ELECTRONICS, TACHI-S, SANDEN, LEAR CORPORATION, POLYTEC, Lydall	11
Conglomerates	TENNECO, TOYODA GOSEI, Panasonic, MAGNA, MITSUBISHI ELECTRIC, Autoliv, SMP, HORIZON GLOBAL, KAUTEX A Textron Company, Continental, Mando, AISIN, TUPY, NBHX, ITW	16

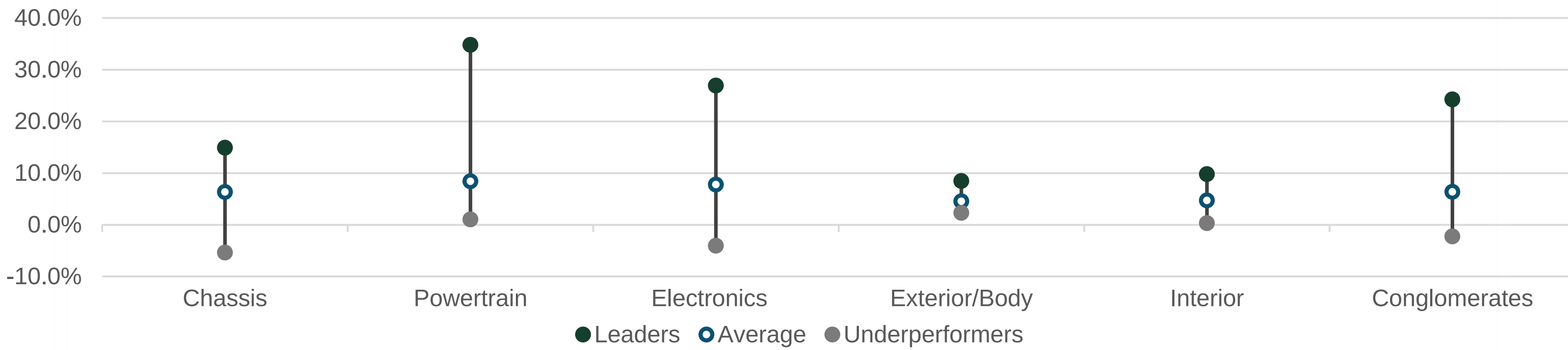
Companies that make up the Powertrain and Electronics segments had the widest variability on EBIT Margin performance in LTM.

Revenue Growth by Tier One Industry Segment LTM



Source: Capital IQ, Applied Value analysis.

EBIT Margin by Tier One Industry Segment LTM



Source: Capital IQ, Applied Value analysis.

Applied Value has analyzed 16 companies in the Chassis segment.

Chassis

Axles, exhaust, suspension, steering wheels, brakes, bearings, 4WD components, fuel tanks, bearings

Executive Summary:

- Chassis EBIT margins have declined over LTM, characterized by increases in both SG&A and COGS amid a slow-down in revenue growth that has persisted throughout the year.
- The decline in Gross Margin for companies in the Chassis segment has also contributed to increased margin volatility.

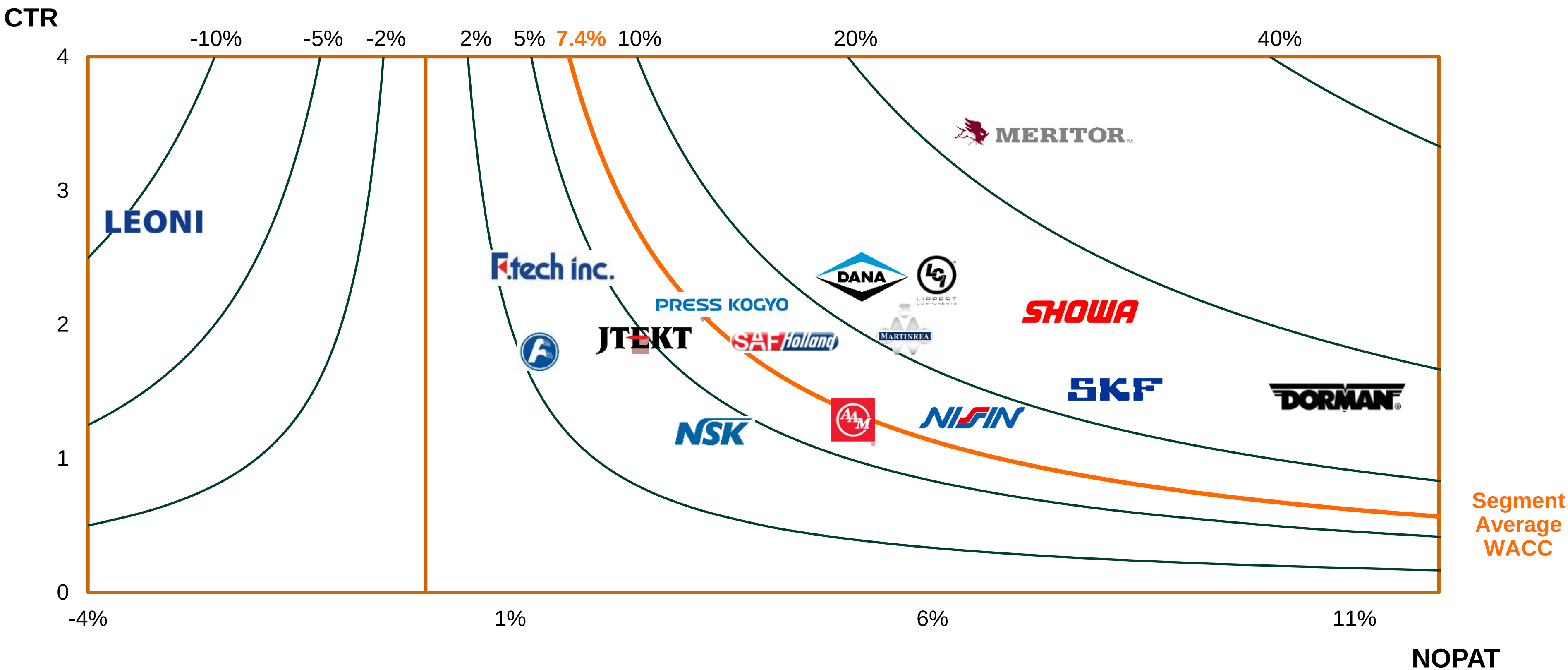
Chassis Segment Financial Performance Highlights:
LTM Average

Revenue Growth	EBIT Margin	SG&A/Sales
1.2%	6.2%	9.4%

COGS/Sales	Gross Margin	Gross Margin Volatility
82.6%	17.8%	1.3%

ROIC snapshot for Chassis segment.

Peer Group ROIC LTM



Top Performers (LTM ROIC)	Dorman	15.2%	SHOWA	16.2%	Meritor	22.2%
Bottom Performers (LTM ROIC)	F-Tech	4.0%	FAWER	2.3%	Leoni AG	-10.1%

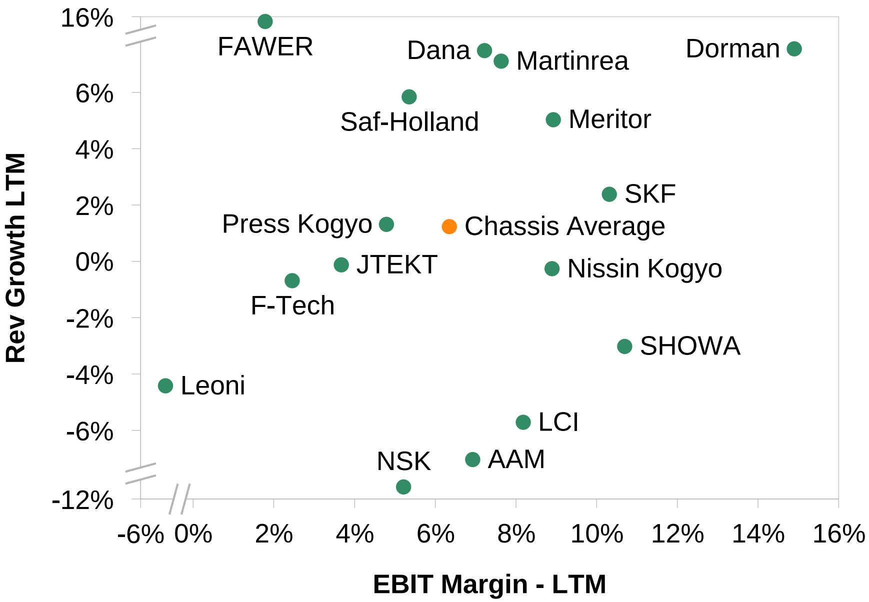
ROIC = Return on Invested Capital (actual return that the company has generated after tax)

WACC = Weighted Average Cost of Capital (the required return that the company must generate in order create value, i.e. a ROIC>WACC creates shareholder value)

Source: Capital IQ, Annual reports, Applied Value Analysis.
WACC: Damodaran Online.

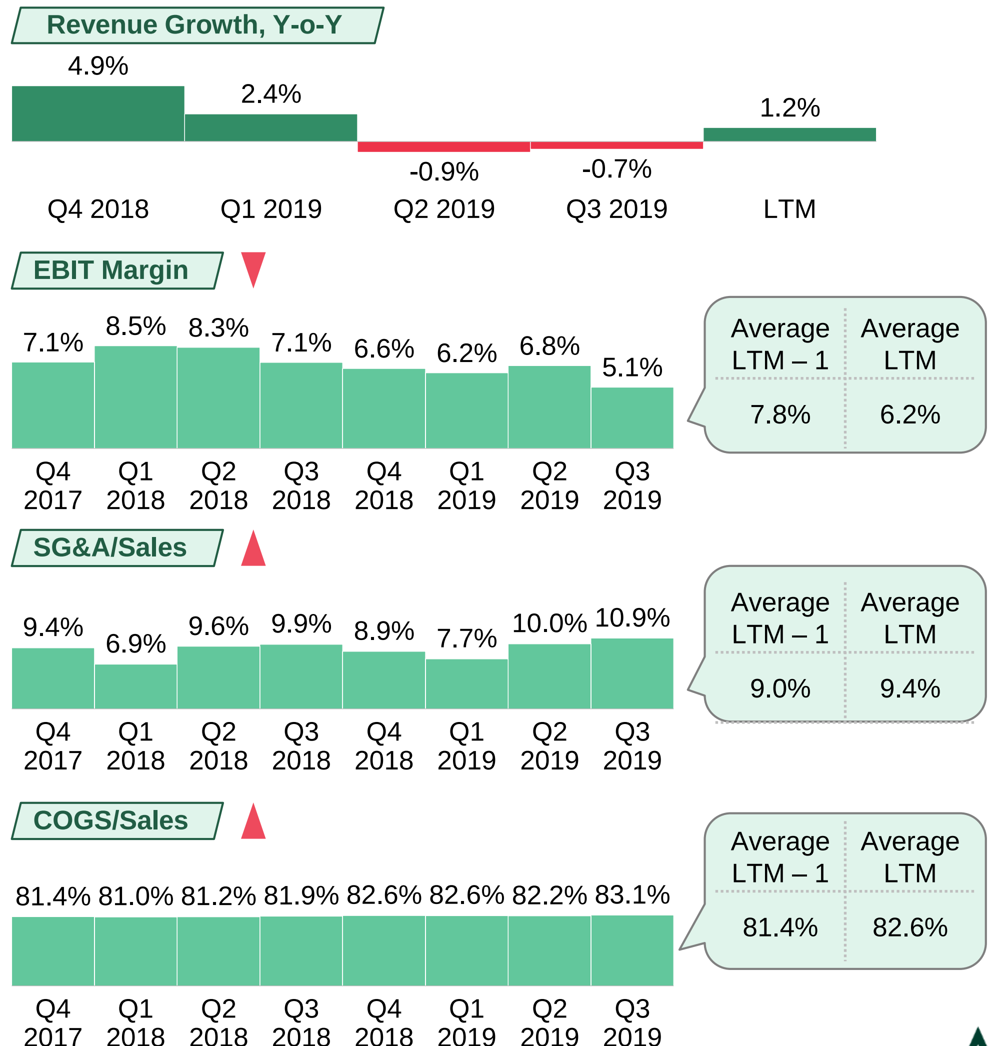
Chassis EBIT margins have declined over LTM, driven by rising SG&A and COGS since Q1 2019.

Chassis' EBIT Margin x Revenue Growth, year-over-year



- The segment's LTM revenue growth of 1.2% reflects a significant slow-down in growth that has persisted throughout the calendar year, while rising SG&A and COGS have toppled EBIT from 7.8% down to 6.2%
- Despite sales erosion, Lippert (LCI) has surpassed consensus EPS estimates three times over the last four quarters and improved EBIT 90bps from Q3 2018 to 8.2%, placing it above the segment average
- F-Tech performance ranked at the bottom of the segment due to a decrease in net sales and operating profit in their Asia segment of 14.3% and 39.1%, respectively
- Leoni was of the segment's worst performer, abandoning 2019 profit targets and unveiling plans for job cuts and divestments

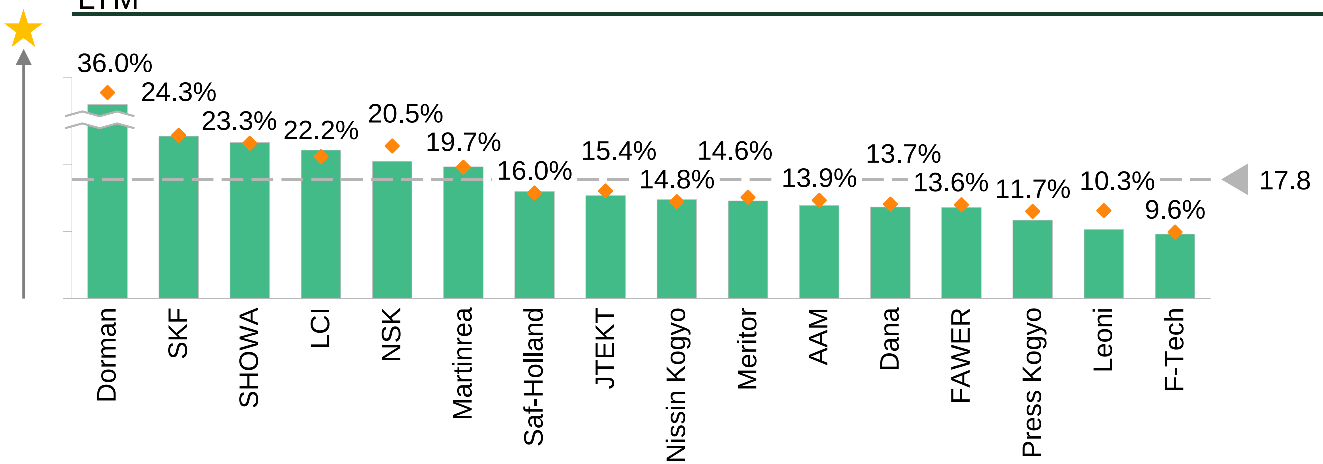
Chassis' Quarterly Development



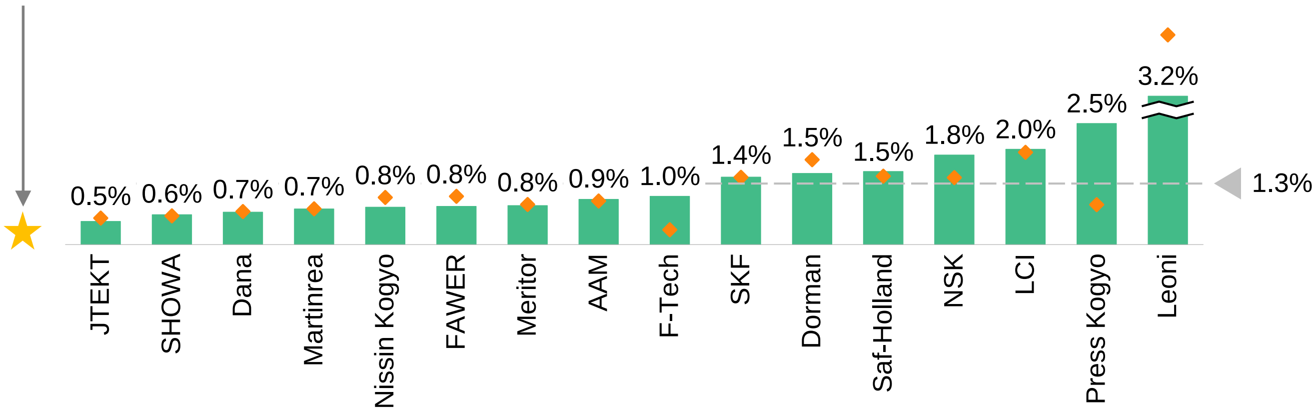
Gross Margins have declined for most companies in the Chassis segment, contributing to increased margin volatility as well.

Chassis Gross Margin
LTM

◆ Q2 Benchmarks



Chassis Gross Margin Volatility
LTM



- JTEKT's gross margin decreased from 16.0% in Q2 to 15.4% in Q3 driven by weak sales in both China and Japan
- Dana, a top performer in revenue growth, has also managed to maintain a stable gross margin in Q3 relative to Q2
  - The company is actively collaborating with Valeo to develop 48-volt EV systems, scheduled to launch early 2020 with major EU automakers
- American Axle's gross margin slipped in LTM to 13.9% following a September announcement that the company would be selling its Castings business unit
  - The company said it has sold the BU for $245M to a NY-based PE firm, Gamut Capital

Note 1: Gestamp does accounting by nature, which only considers raw materials instead of all COGS
Note 2: Dorman only serves Aftermarket, thus the higher Gross Margins compared to peers
Source: Interim & Annual Reports, Capital IQ, Applied Value analysis.

Applied Value has analyzed 17 companies in the Powertrain segment.

Powertrain

Drive controls, engines, transmissions, 5C components, pistons, heads, cooling and air management, injectors, turbochargers, tubes and hoses, antivibration systems

Executive Summary:

› The Powertrain segment has experienced the highest decline in revenue vs. other segments in LTM.

› Volatility in the segment's gross margins have increased drastically, driven by Linamar and Cooper-Standard.

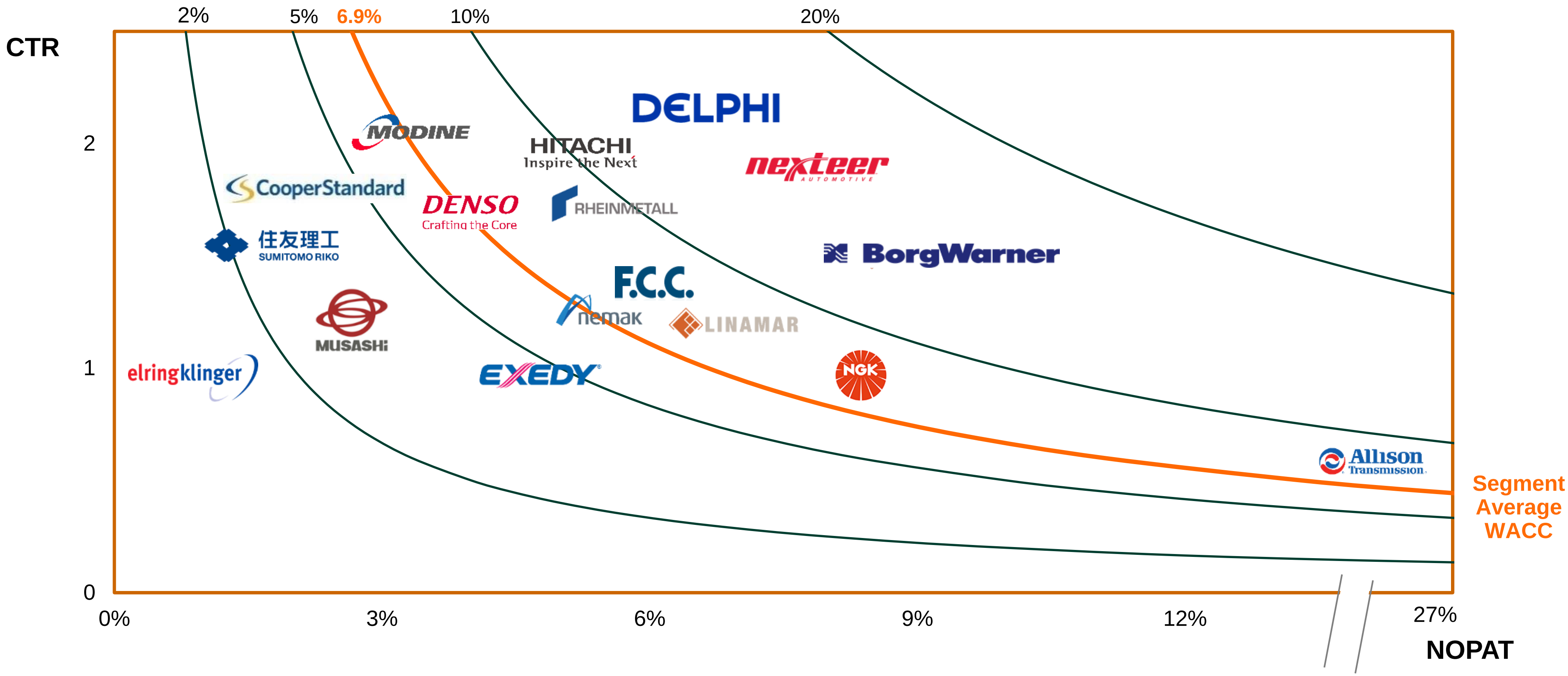
Powertrain Segment Financial Performance Highlights:
LTM Average

Revenue Growth	EBIT Margin	SG&A/Sales
-3.8%	8.2%	11.1%

COGS/Sales	Gross Margin	Gross Margin Volatility
78.3%	22.5%	1.2%

ROIC snapshot for Powertrains segment

Peer Group ROIC LTM



Top Performers (LTM ROIC)	BorgWarner	+12.5%	Delphi	+13.1%	Allison	+18.0%
Bottom Performers (LTM ROIC)	Cooper Std.	+3.2%	Sumitomo Riko	+2.4%	Elring Klinger	+0.7%

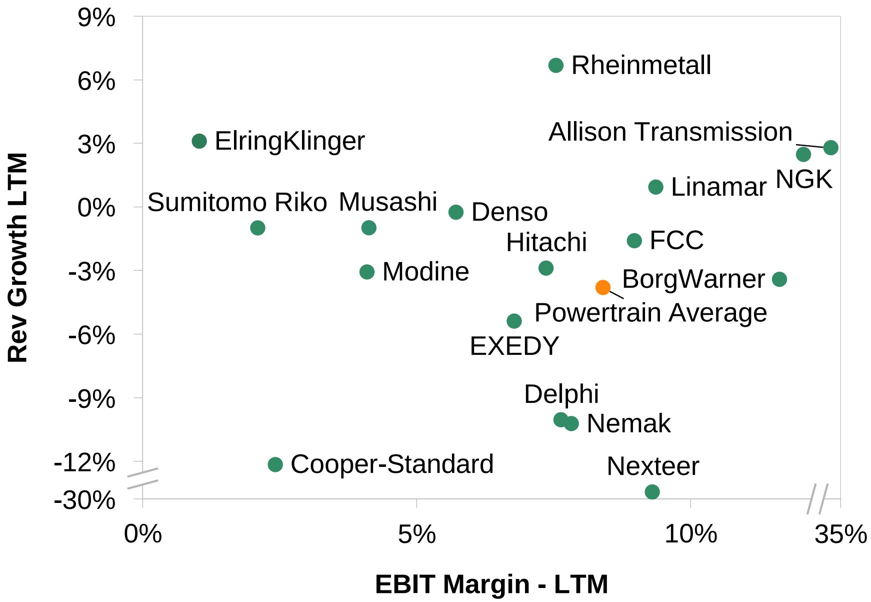
ROIC = Return on Invested Capital (actual return that the company has generated after tax)

WACC = Weighted Average Cost of Capital (the required return that the company must generate in order create value, i.e. a ROIC>WACC creates shareholder value)

Source: Capital IQ, Annual reports, Applied Value Analysis.
WACC: Damodaran Online.

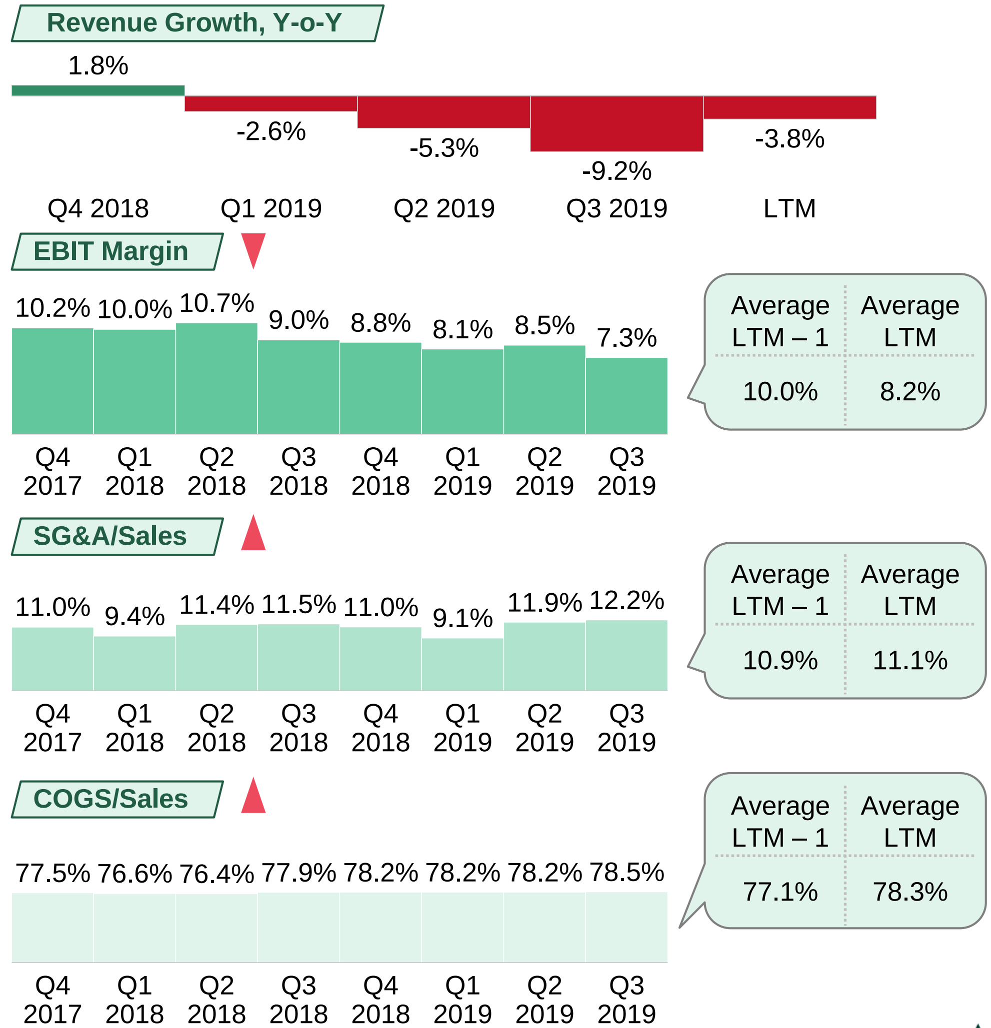
The Powertrain segment has experienced the highest decline in revenue vs. other segments In LTM.

Powertrain's EBIT Margin x Revenue Growth, year-over-year



- Revenues in the powertrain segment have been in negative growth territory since Q1 2019 and declined in LTM at 3.8% YoY
- Rheinmetall's Chinese joint venture with Hasco achieved significant revenue growth of 6.7% to €722M and making it one of the few Powertrain companies to achieve growth overall YoY
- Nexteer automotive showcased the greatest decline in revenue at 30% primarily attributed to a decline in China OEM light vehicle production
  - However, Nexteer also opened its 27th plant (July'19) and first in Africa, a 110K Sqft., along with a facility in Morocco to manufacture electric power steering systems for FCA, PSA, Renault, Nissan and Mitsubishi

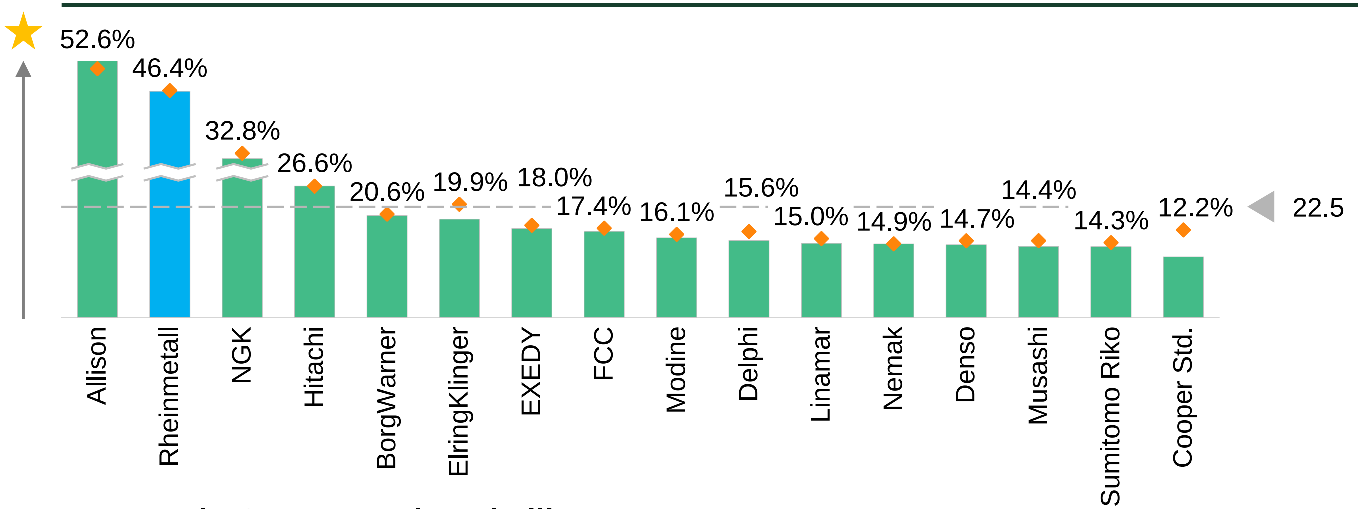
Powertrain's Quarterly Development



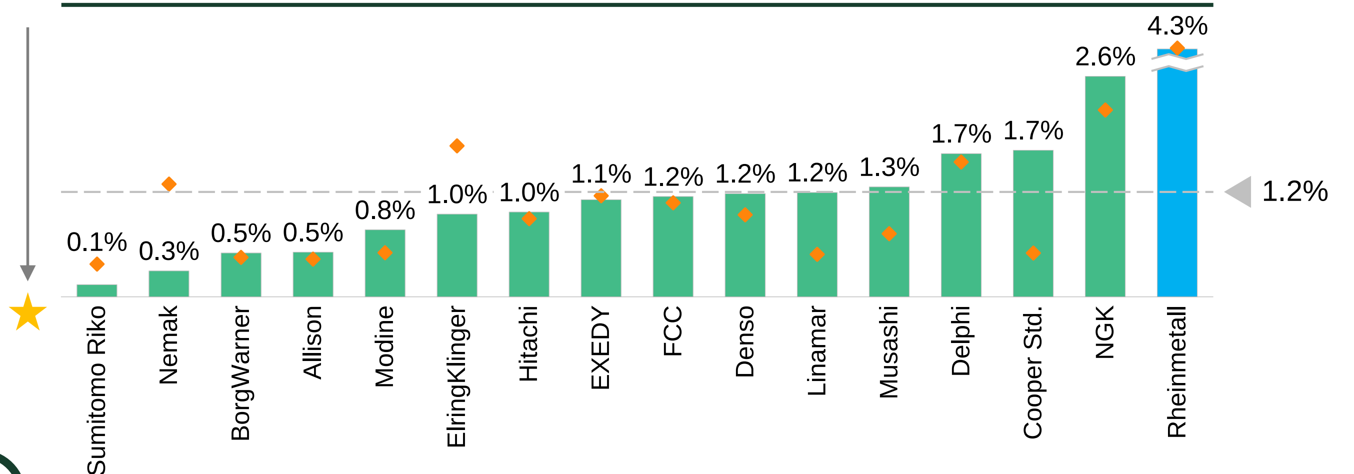
Volatility in the segment's gross margins have increased drastically, driven by Linamar and Cooper-Standard.

Accounting by Nature
Accounting by Function
Q2 Benchmarks

Powertrain Gross Margin
LTM



Powertrain Gross Margin Volatility
LTM



- Cooper-Standard's production levels in North America and Asia have remained well below expectations, reporting a net loss of $5.2M in Q3
- Musashi's gross margin fell from 15.5% to 14.4% in Q3 and the company forecasts additional gm erosion of 7.1% on lower sales
    - Musashi partnered with Aquarius Engines (Nov'19) aiming to provide electric supply solutions
- Denso's slip in performance is attributed to its European segment with a decline in both sales and operating profit of 11.3% and 33.9%, respectively
- BorgWarner sold its Morse TEC subsidiary (Oct'19) which housed asbestos liabilities and resulted in a $40M after-tax loss

Note 1: Allison's high gross margin is attributed to it's focus on automatic transmissions
Note 2: Automotive is only 10% of Hitachi's Revenue
Note 3: Rheinmetall does accounting by nature, which only considers raw materials instead of all COGS
Source: Interim & Annual Reports, Capital IQ, Applied Value analysis.

Applied Value has analyzed 13 companies in the Electronics & Infotainment segment.

Electronics

& Infotainment/ Connectivity

Airbag/controller, antilock braking system, harnesses, headlights, entertainment, control modules, regulators as well as Infotainment including entertainment, info, navigation services

Executive Summary:

- Revenues in the electronic segment declined for the third straight quarter, pushing EBIT Margins down to 7.6% in LTM.
- An increase in COGS 0.7% pushed the segment's Gross margins down to an overall average of 21.7% in LTM.

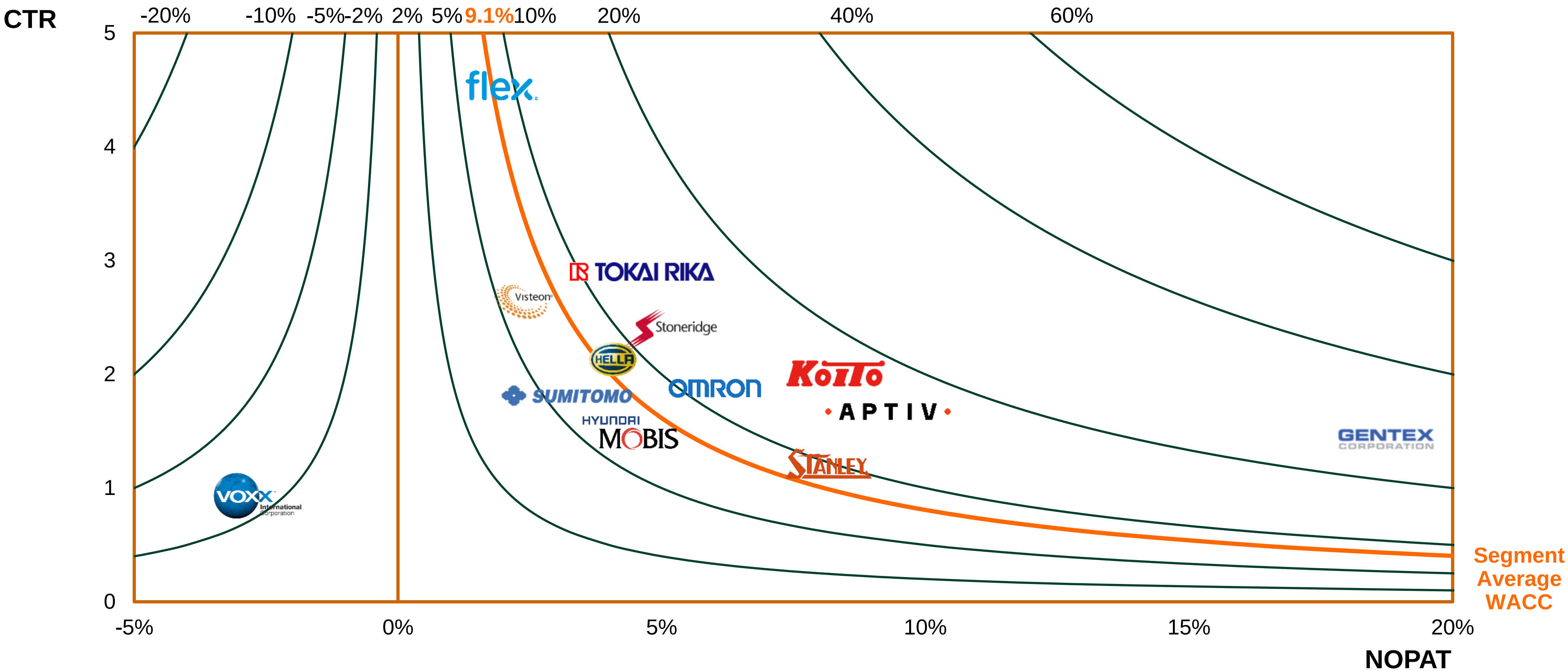
Electronics & Infotainment Segment Financial Performance Highlights:
LTM Average

Revenue Growth	EBIT Margin	SG&A/Sales
-1.9%	7.6%	10.8%

COGS/Sales	Gross Margin	Gross Margin Volatility
78.5%	21.7%	1.3%

ROIC snapshot for Electronics & Infotainment segment.

Peer Group ROIC LTM



Top Performers (LTM ROIC)	Gentherm	+13.3%	Aptiv	+14.8%	Gentex	+22.4%
Bottom Performers (LTM ROIC)	Visteon	+6.6%	Sumitomo Elec.	+5.5%	Voxx	-3.0%

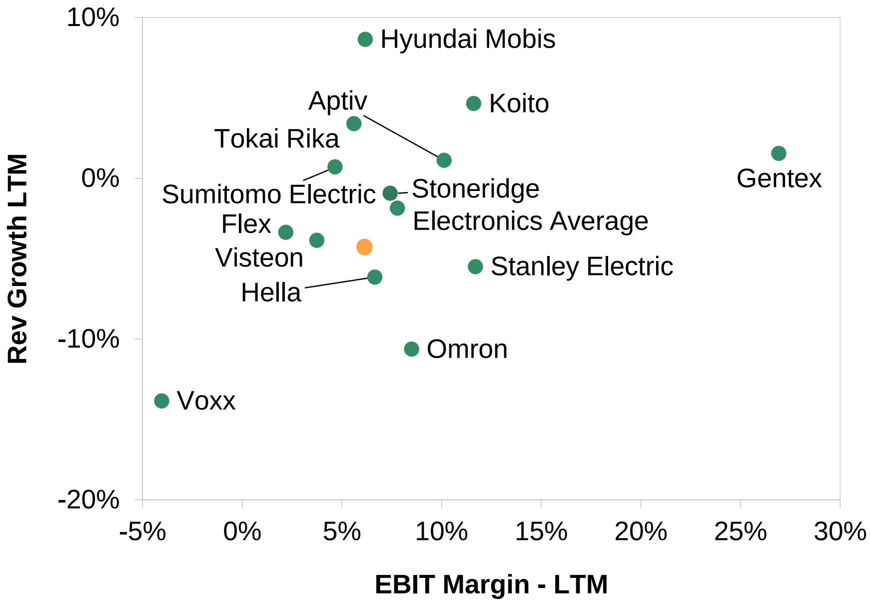
ROIC = Return on Invested Capital (actual return that the company has generated after tax)

WACC = Weighted Average Cost of Capital (the required return that the company must generate in order create value, i.e. a ROIC>WACC creates shareholder value)

Source: Capital IQ, Annual reports, Applied Value Analysis.
WACC: Damodaran Online.

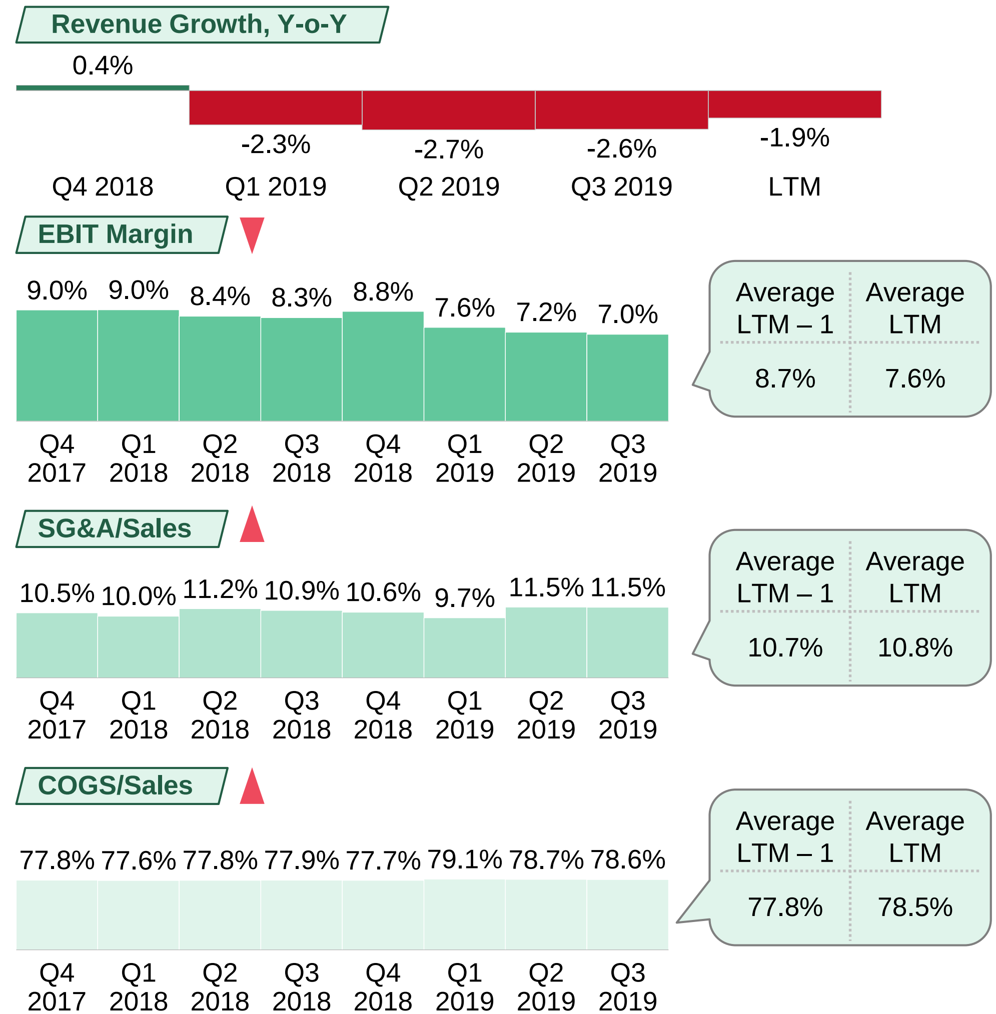
Revenues in the electronic segment declined for the third straight quarter, pushing EBIT Margins down to 7.6% in LTM.

Electronics' EBIT Margin x Revenue Growth, year-over-year



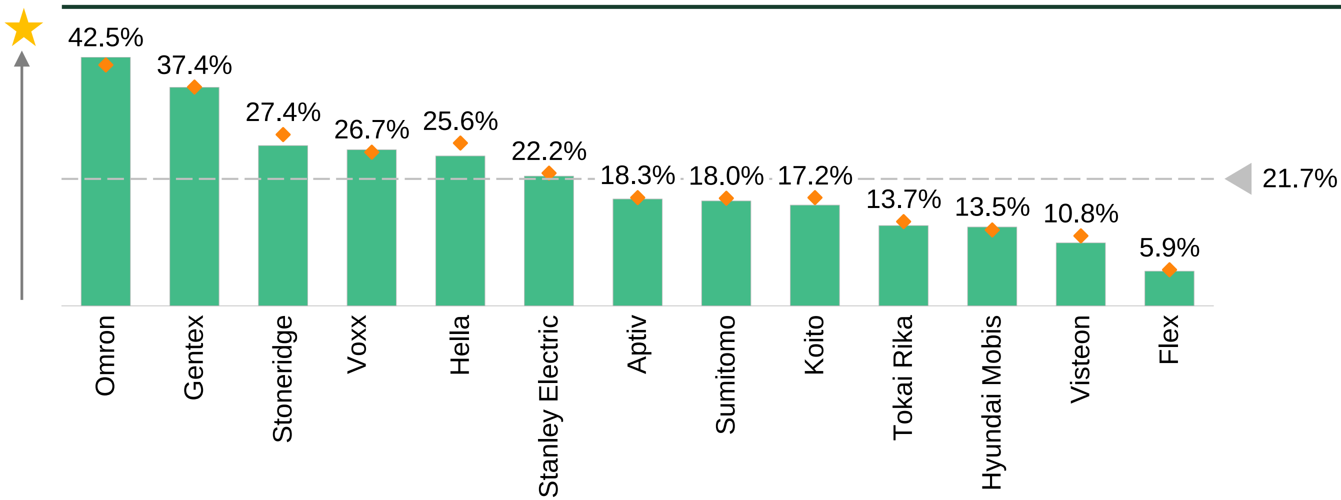
- Although revenue is down in LTM, stringent regulatory frameworks in North America and Europe related to vehicle safety are expected to create growth opportunities in the segment going forward
- The segment's EBIT margin average dropped from 8.7% to 7.6% driven by Voxx and Flex
- Voxx realized a $13.2 M decline in revenue due to launch delays for certain vehicle models as well as reduced sales of aftermarket satellite radio and headrest products
- Hyundai Mobis managed to realize a sales boost by ramping production at its North America Ohio facility, which had been shut down early in 2019
  - Aptiv and Hyundai have an active Joint Venture focused on Autonomous Driving technology

Electronics' Quarterly Development

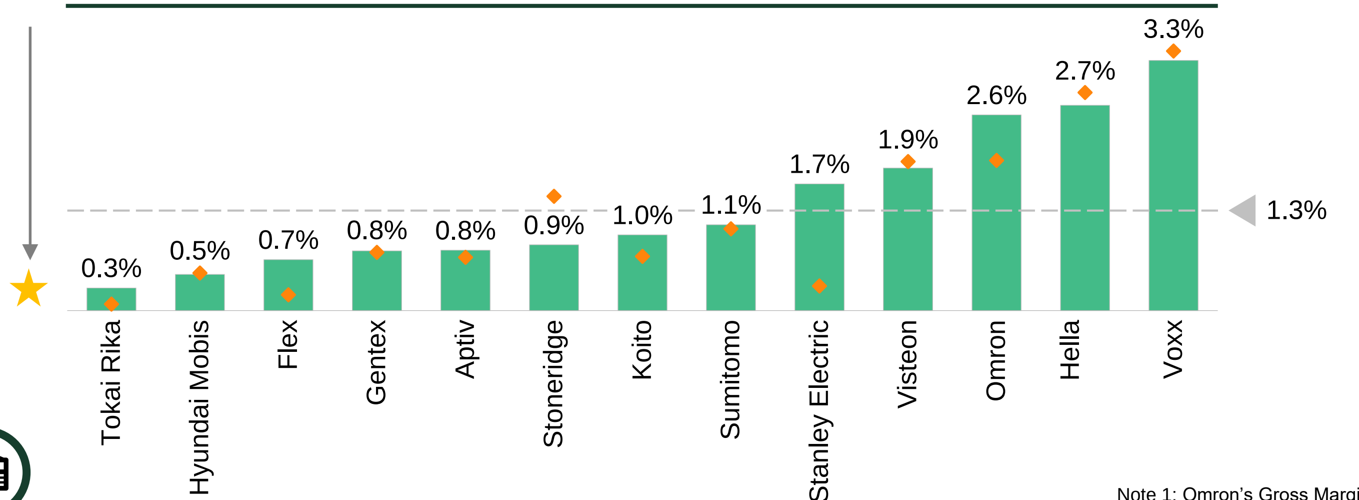


An increase in COGS as a percent of sales of 0.7% pushed the segment's Gross margins down to an overall average of 21.7% in LTM.

Electronics & Infotainment Gross Margin
LTM



Electronics & Infotainment Gross Margin Volatility
LTM



- Flex, at 5.9% gross margin is the weakest performer while Omron led the group and attributed their success to the cost-effective industrial automation business
- Amongst all the American firms, Gentex had the highest gross margin at 37.4%
  - Gentex also led the segment with EBIT margin of 26.9%
- Stoneridge reported lost revenue due to the General Motors strike and ramp-down of the shift-by-wire transmission systems, contributing also to a decline in Gross Margins
- Hella gross margin declined from 27.8% in Q2 to 25.6% in Q3 amid reports of weak sales in Asia and exit from the wholesale distribution business

Note 1: Omron's Gross Margin is higher because of their Industrial Automation Business segment
Source: Interim & Annual Reports, Capital IQ, Applied Value analysis.

Applied Value has analyzed 8 companies in the Exterior/Body segment.

Exterior/Body

Class A stamping, non-/structural stampings, frame/subframe components, body hardware glass, paint, body molding, fascias, wiper systems, door handles, seals

Executive Summary:

- The Exterior/Body segment recorded a slight positive recovery in revenue in Q3, although EBIT margins have fallen to 4.5% in LTM.
- The segment's Gross Margins fell further than expected driven by lower than expected production among several companies.

Exterior/Body Segment Financial Performance Highlights:

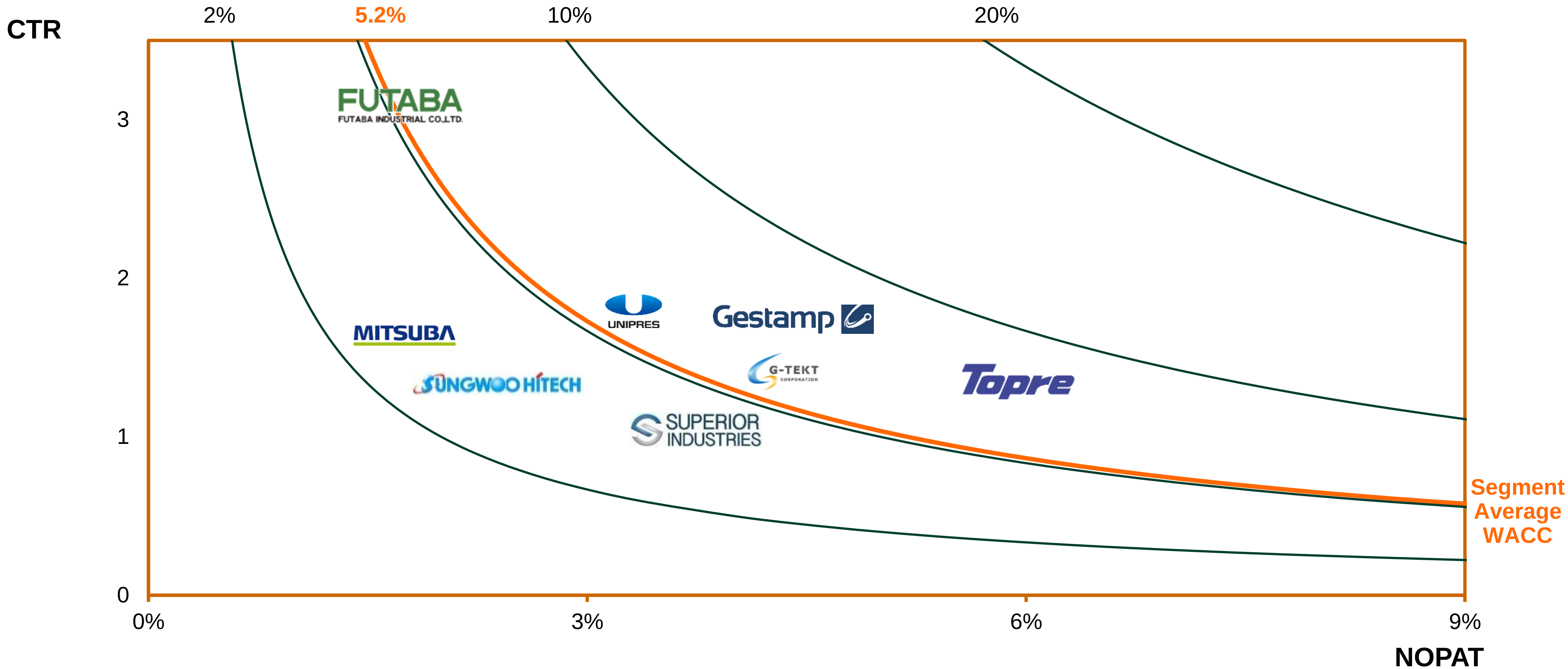
LTM Average

Revenue Growth	EBIT Margin	SG&A/Sales
0.4%	4.5%	7.7%

COGS/Sales	Gross Margin	Gross Margin Volatility
85.3%	15.0%	1.4%

ROIC snapshot for Exterior/Body segment

Peer Group ROIC LTM



Top Performers (LTM ROIC)	G-Tekt	+5.8%	Gestamp	+6.6%	Topre	+8.0%
Bottom Performers (LTM ROIC)	Superior	+4.9%	Mitsuba	+2.4%	Sungwoo	+2.4%

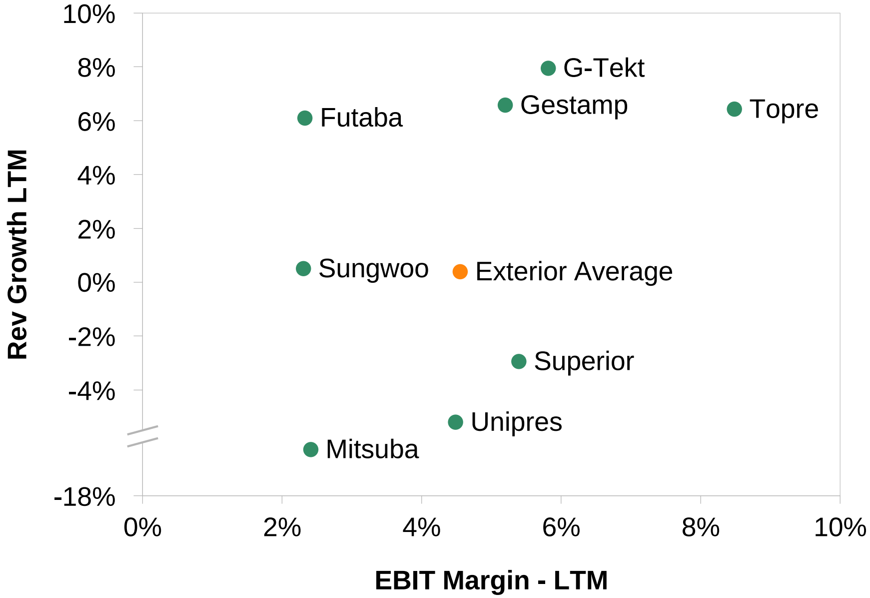
ROIC = Return on Invested Capital (actual return that the company has generated after tax)

WACC = Weighted Average Cost of Capital (the required return that the company must generate in order create value, i.e. a ROIC>WACC creates shareholder value)

Source: Capital IQ, Annual reports, Applied Value Analysis.
WACC: Damodaran Online.

The Exterior/Body segment recorded a slight positive recovery in revenue in Q3, although EBIT margins have fallen to 4.5% in LTM.

Exterior/Body's EBIT Margin x Revenue Growth, year-over-year



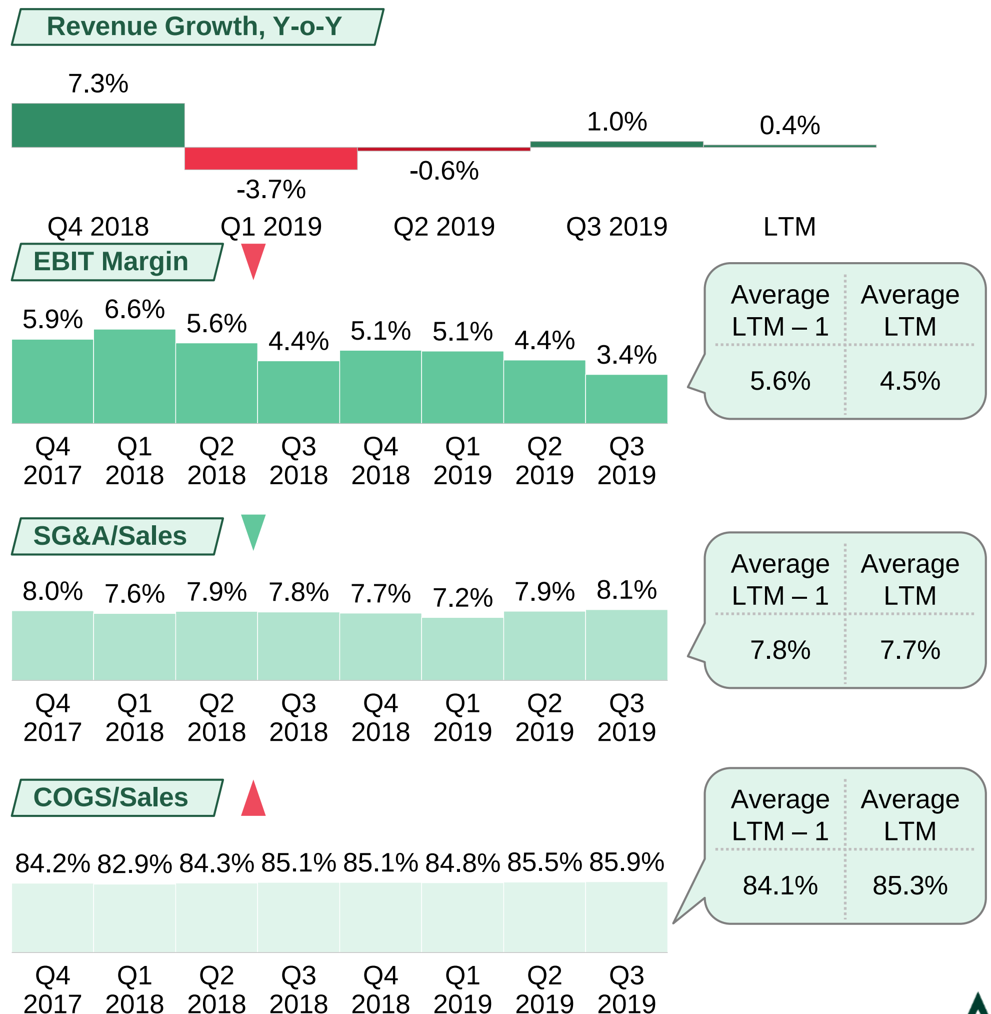
› Despite a decline in revenue in Q1 and Q2 2019, the exterior/body segment posted overall growth in LTM of 0.4% driven primarily by G-Tekt and Gestamp

› Exterior EBIT dropped by 1.1 ppt over LTM due to the segment low margin performance by Futaba and Sungwoo, both at 2.3%

› Topre was one of the best EBIT performers 8.5% in LTM along with 6.4% revenue in growth in LTM

  – Topre also announced (Nov'19) 51 advanced manufacturing jobs in their auto stamping operation near the Nissan manufacturing plant. This is part of a 5-year $63 M capital investment for Topre

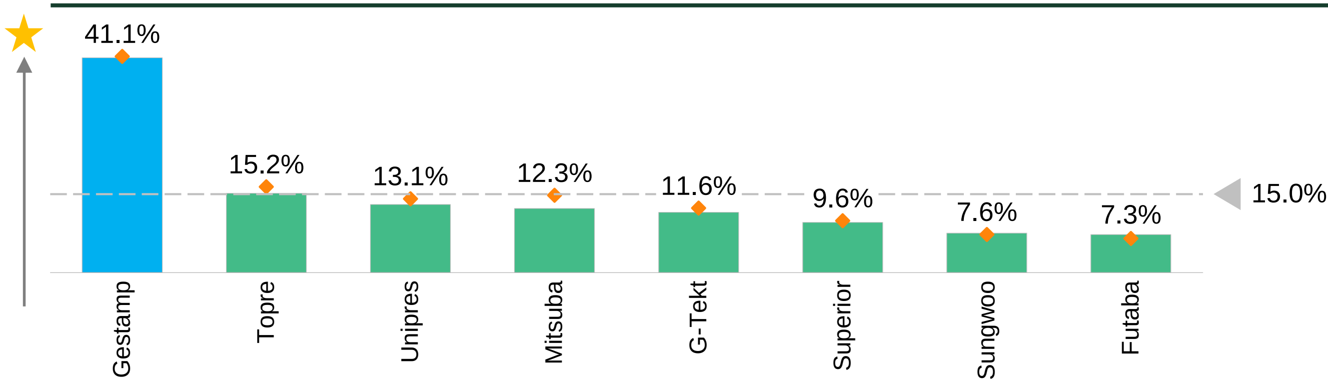
Exterior/Body's Quarterly Development



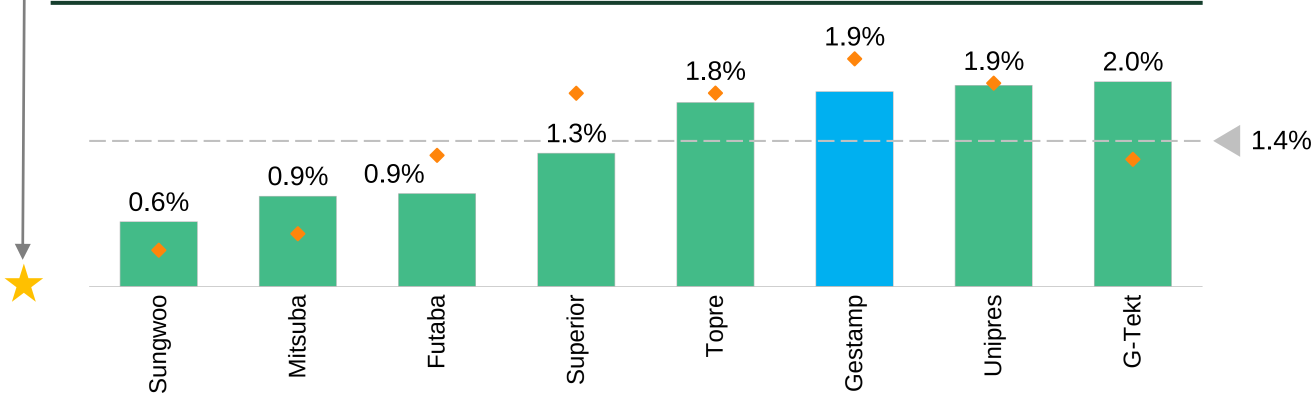
The segment's Gross Margins fell further than expected driven by lower than expected production among several companies.

Accounting by Nature
Q2 Benchmarks

Exterior/Body Gross Margin
LTM



Exterior/Body Gross Margin Volatility
LTM



- Unipres, which performs slightly below the segment average, is expected to see a 35% decrease in operating profit due to production cutbacks by their major customers and transfer pricing taxation
- Despite the uncertain auto market, Gestamp grew LTM revenue by 6.6% due to starting production in their new facility in Michigan
- Futaba's 6.1% overall revenue increase was largely driven by their Asian operating segment with an 18% increase vs. 12% in their European segment
- Superior Industries saw 2.9% decline in overall revenue particularly driven by an 8.8% decline in United States
  - This decline was partially driven by the UAW labor strike

Source: Interim & Annual Reports, Capital IQ, Applied Value analysis.

Applied Value has analyzed 11 companies in the Interior segment.

Interior

Seats, seat belts, interior products, instrument panels (IPs), trim, carpet, headlines, HVAC, mirrors, climate control

TOYOTA BOSHOKU, T-Tech, NIHON PLAST CO., LTD., LEAR CORPORATION, TACHI-S, ADIENT, GRAMMER, Lydall, POLYTEC, SANDEN, GENTHERM

Executive Summary:

› The interior segment posted a third straight quarter of revenue decline in Q3, pushing LTM growth down to -1.2%.

› Only two firms in the interior segment managed to increase their Gross margin from the previous quarter.

Interior Segment Financial Performance Highlights:

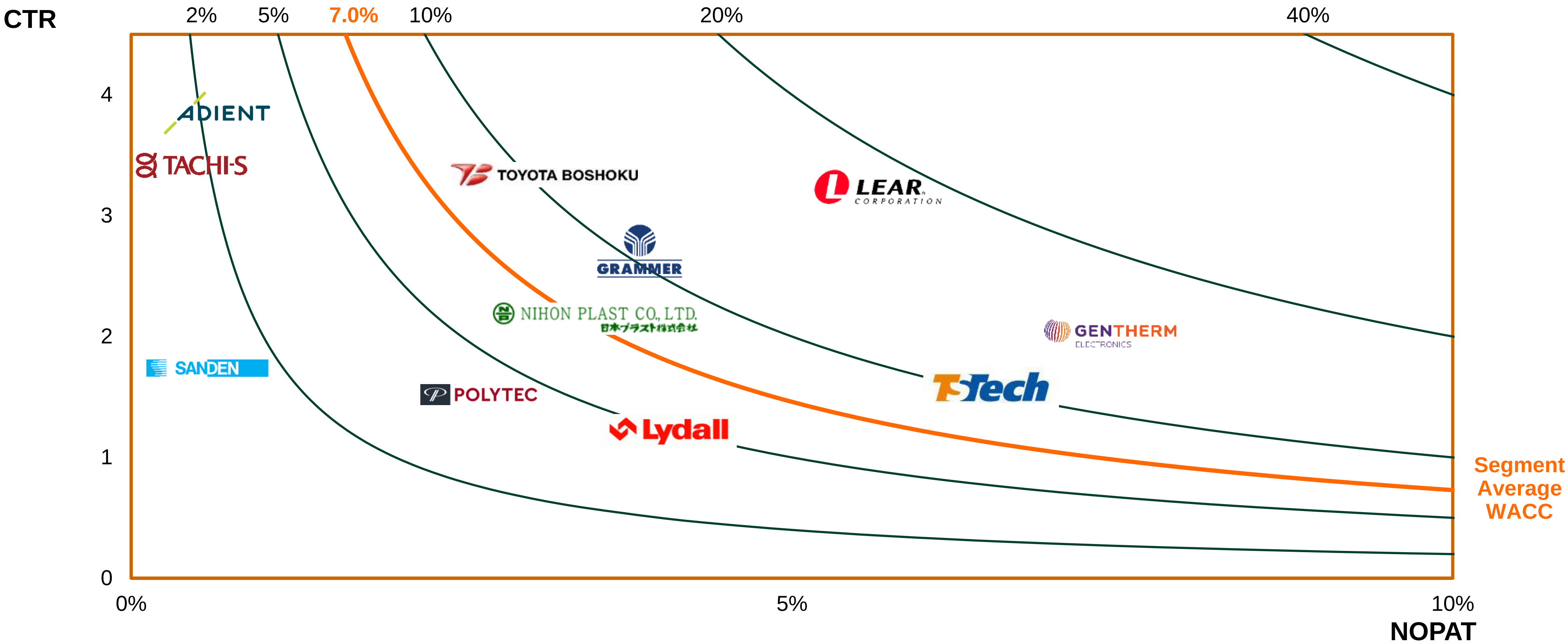
LTM Average

Revenue Growth	EBIT Margin	SG&A/Sales
-1.2%	4.6%	10.8%

COGS/Sales	Gross Margin	Gross Margin Volatility
82.7%	17.6%	1.5%

ROIC snapshot for Interior segment

Peer Group ROIC LTM



Top Performers (LTM ROIC)	Toyota Boshoku	+9.5%	TS TECH	+10.2%	Lear	+17.5%
Bottom Performers (LTM ROIC)	Adient	+1.7%	TACHI-S	+0.7%	Sanden	+0.5%

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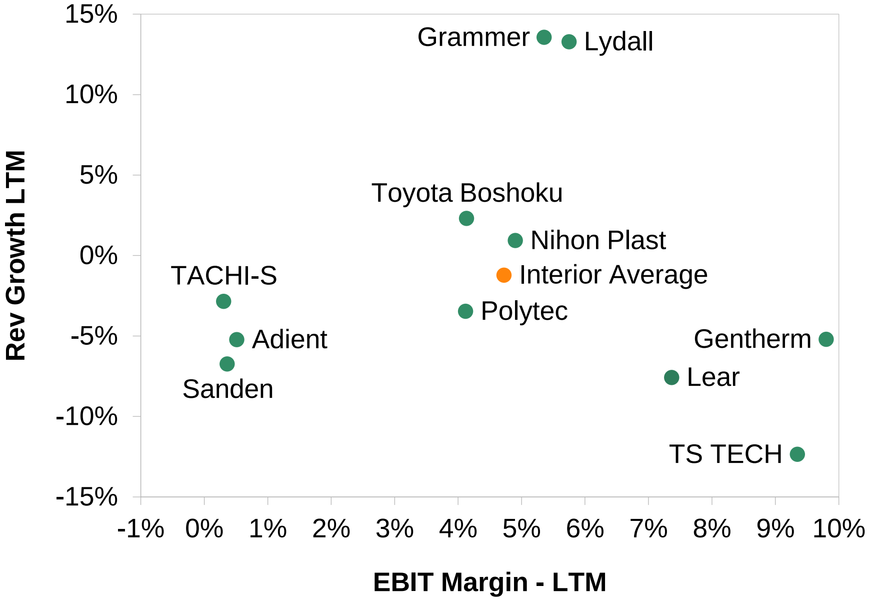
The interior segment posted a third straight quarter of revenue decline in Q3, pushing LTM growth down to -1.2%.

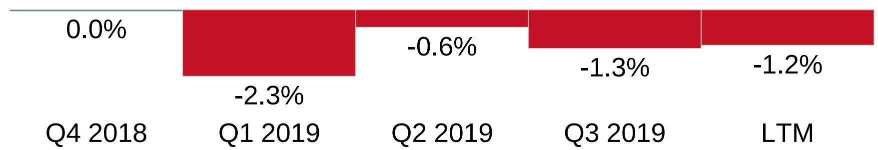
Interior's EBIT Margin x Revenue Growth, year-over-year



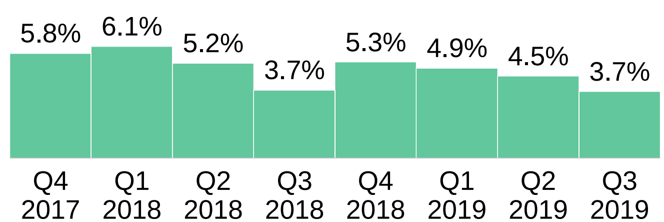
- The segment's revenue development over LTM was impaired by the worst performers in the peer group, Lear and TS Tech
- Lear and TS-Tech, experienced the sales decline (7.6% and 12.4%) due to labor strikes by their largest customers Honda and GM
- Grammer led the group in revenue growth YoY with growth of 13.6%
- Lydall Q3 sales growth, although positive, was hindered by trade tensions and uncertainty in key markets
  - Sales were negatively impacted by a drop in demand in China, and global weakness in sealing product markets and lower volume due to the strike at General Motors

Interior's Quarterly Development

Revenue Growth, Y-o-Y

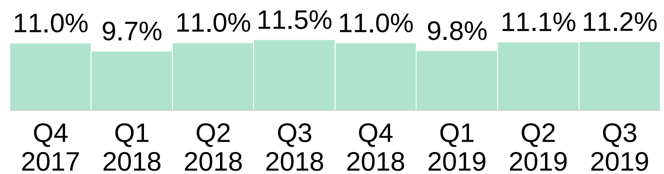


EBIT Margin



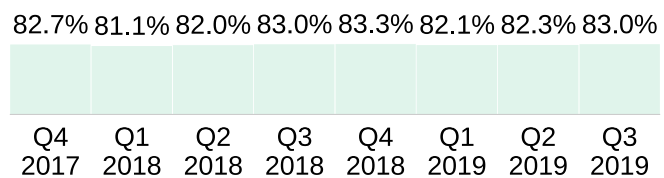
Average LTM – 1	Average LTM
5.2%	4.5%

SG&A/Sales



Average LTM – 1	Average LTM
10.8%	10.8%

COGS/Sales

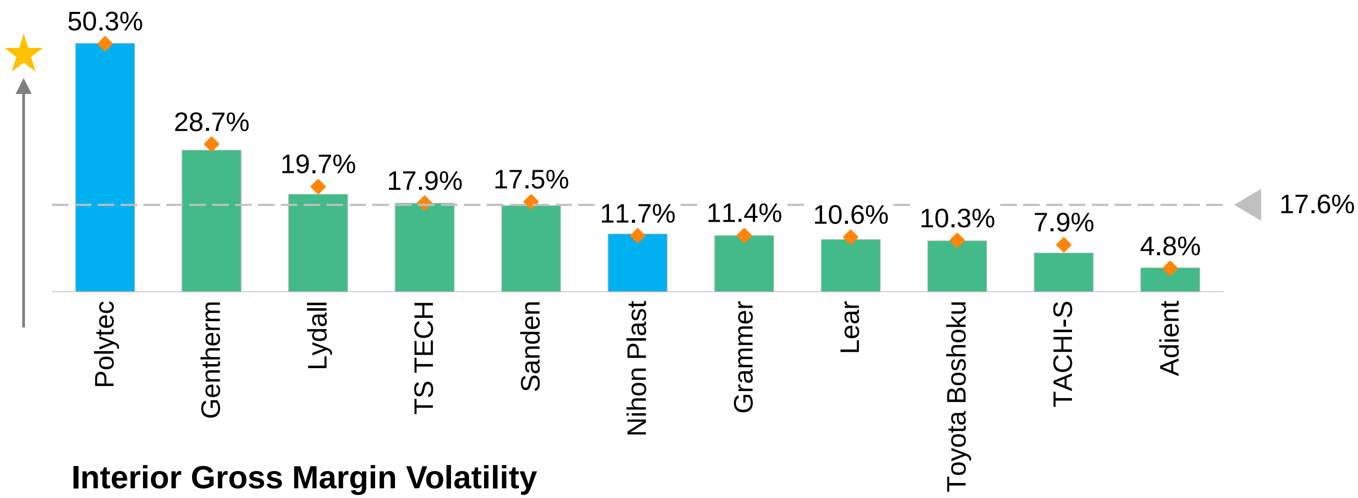


Average LTM – 1	Average LTM
82.2%	82.7%

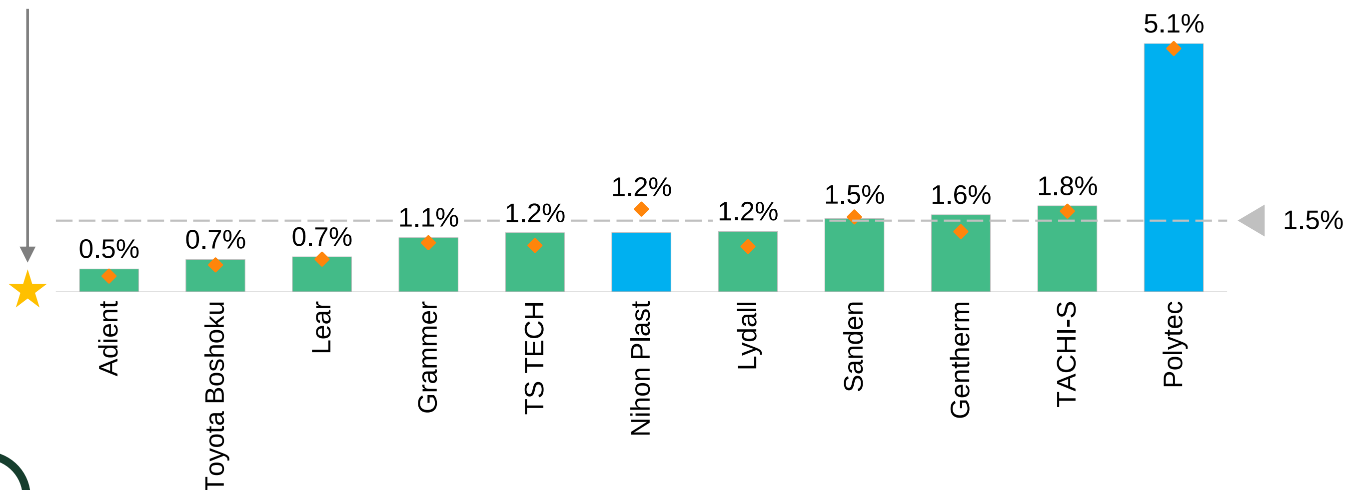
Only two firms in the interior segment managed to increase their Gross margin from the previous quarter: Polytec and Nihon Plast.

Accounting by Nature
Accounting by Function
Q2 Benchmarks

Interior Gross Margin
LTM



Interior Gross Margin Volatility
LTM



- Gross Margin of the interior segment averaged LTM at 17.6% led by Gentherm and Lydall (accounting by function)
- Nihon Plast announced (Sept ’19) a $15M expansion of their Ohio facility, reportedly to meet growing customer demand from Honda, Nissan, and Toyota
  - Nihon Plast saw a decrease in sales of 9% in the resin segment, offsetting growth in the rest of the business
- Tachi-s saw revenue growth in all regions except North America which declined 2.8% in Q3
  - Its NA performance contributed to higher volatility in gross margins overall, at 1.8% in LTM

Source: Interim & Annual Reports, Capital IQ, Applied Value analysis.

Applied Value has analyzed 16 companies in the Conglomerates segment.

Conglomerates

Suppliers a composite of the above categories with no distinct specialization

Executive Summary:

- The Conglomerate segment's LTM revenue growth of 8.0%, highest among all other segments, came with a 1.4% reduction in EBIT margins.
- Though margins were below previous quarters levels, volatility overall has fallen due to margin stabilization at Horizon and Toyoda Gosei.

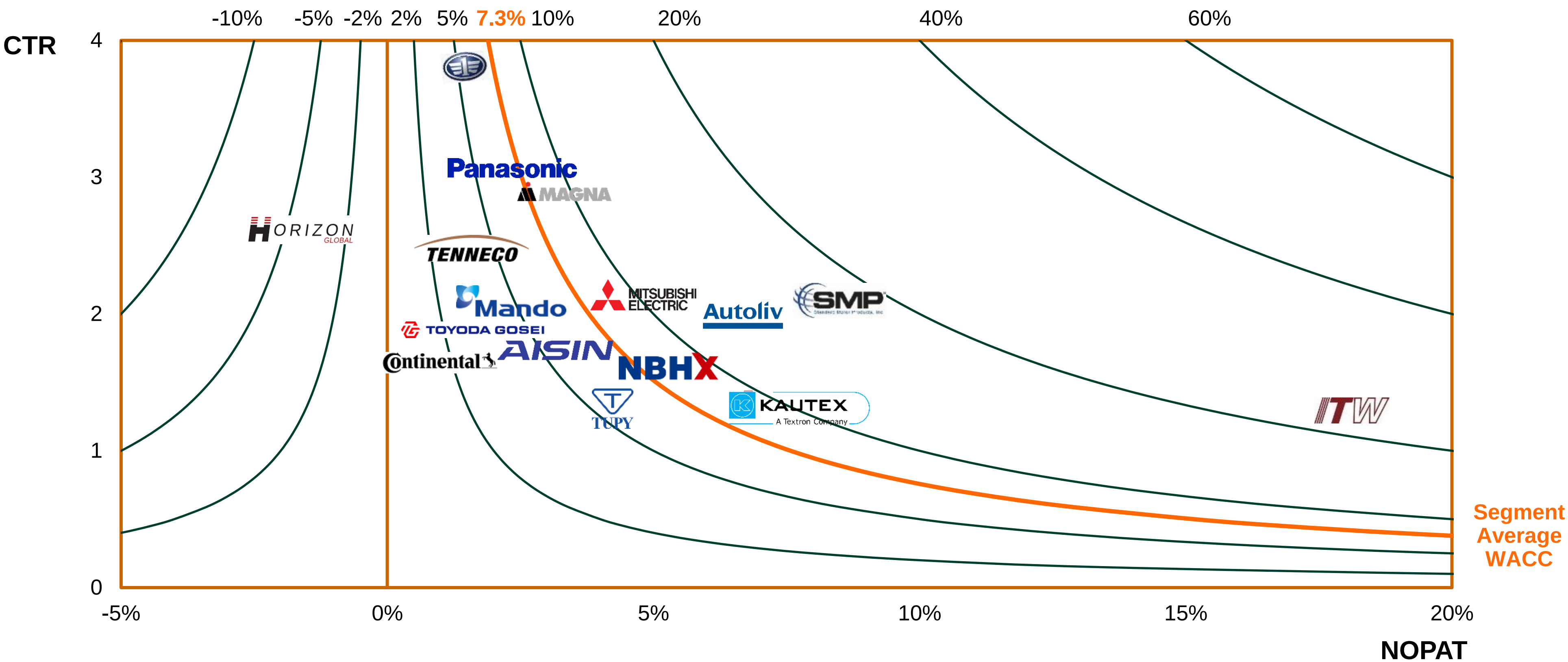
Conglomerates Segment Financial Performance Highlights:
LTM Average

Revenue Growth	EBIT Margin	SG&A/Sales
8.0%	5.9%	10.7%

COGS/Sales	Gross Margin	Gross Margin Volatility
80.5%	19.6%	1.2%

ROIC snapshot for Conglomerates segment

Peer Group ROIC LTM



Top Performers (LTM ROIC)	Autoliv	+14.4%	Standard Motor	+16.3%	ITW	+22.5%
Bottom Performers (LTM ROIC)	Aisin	+4.6%	Continental	+4.4%	Horizon	-4.2%

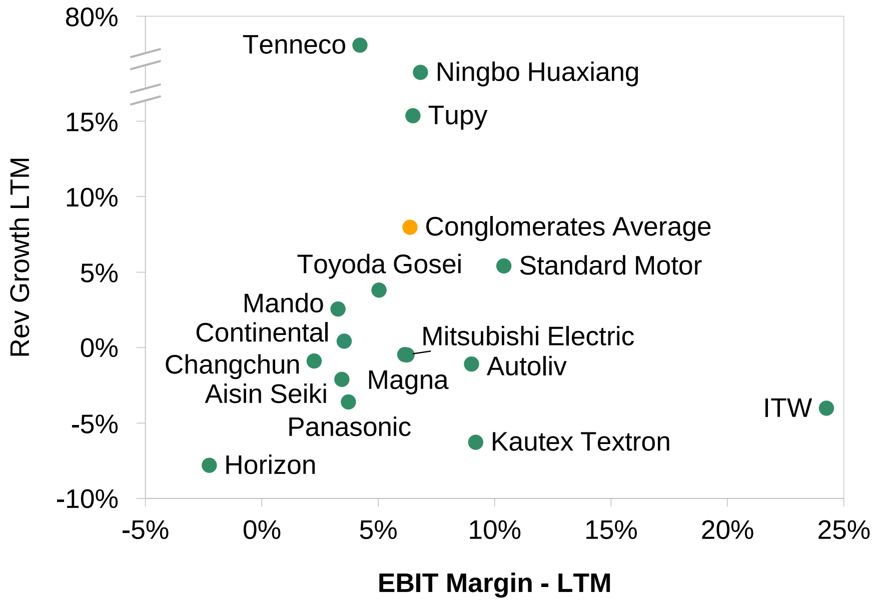
ROIC = Return on Invested Capital (actual return that the company has generated after tax)

WACC = Weighted Average Cost of Capital (the required return that the company must generate in order create value, i.e. a ROIC>WACC creates shareholder value)

Source: Capital IQ, Annual reports, Applied Value Analysis.
WACC: Damodaran Online.

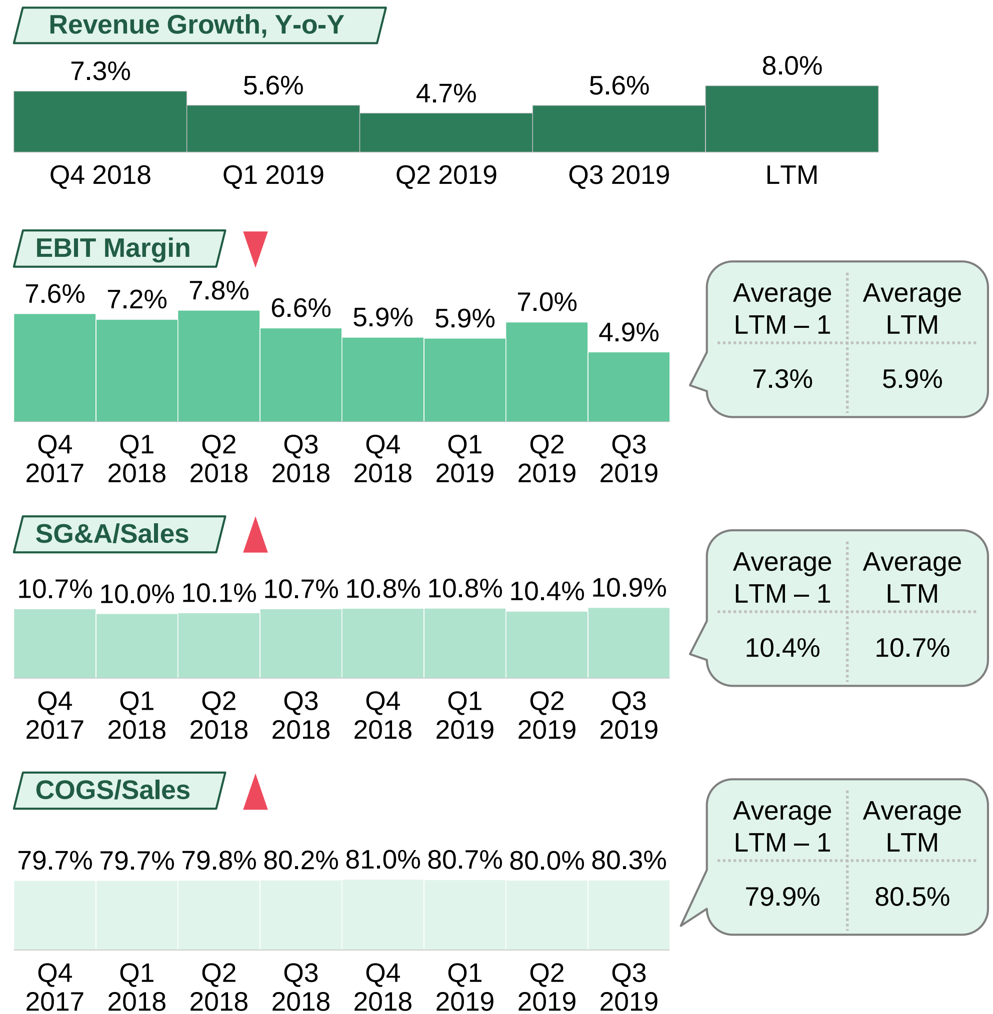
The Conglomerate segment's LTM revenue growth of 8.0%, highest among all other segments, came with a 1.4% reduction in EBIT margins.

Conglomerate's EBIT Margin x Revenue Growth, year-over-year

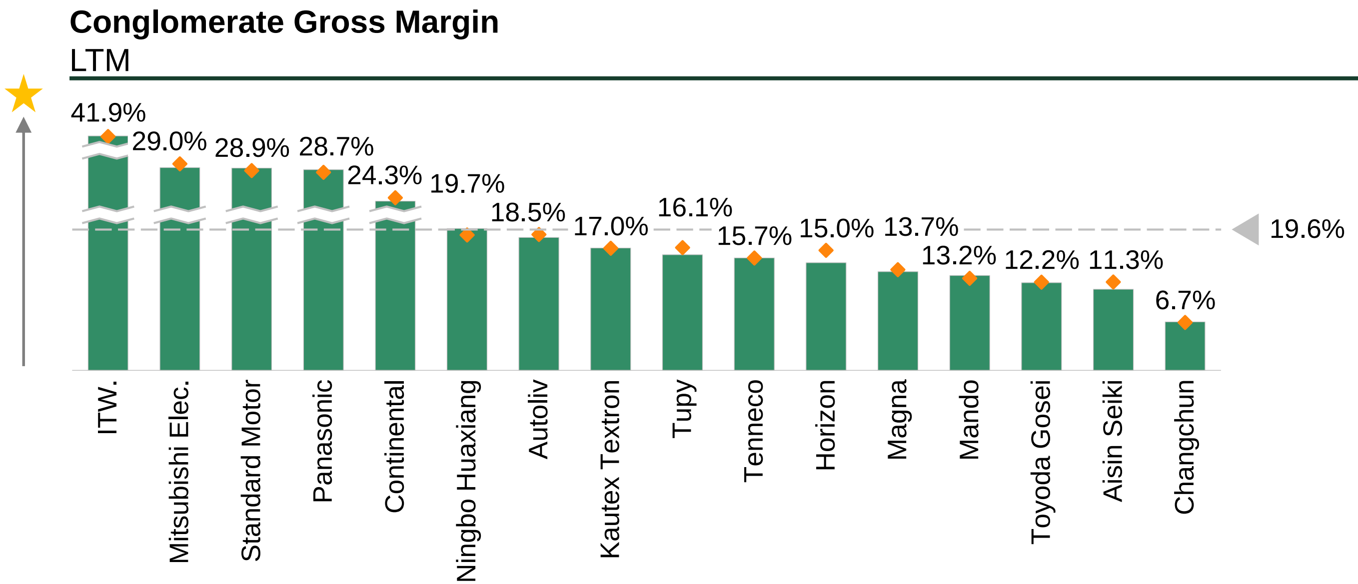


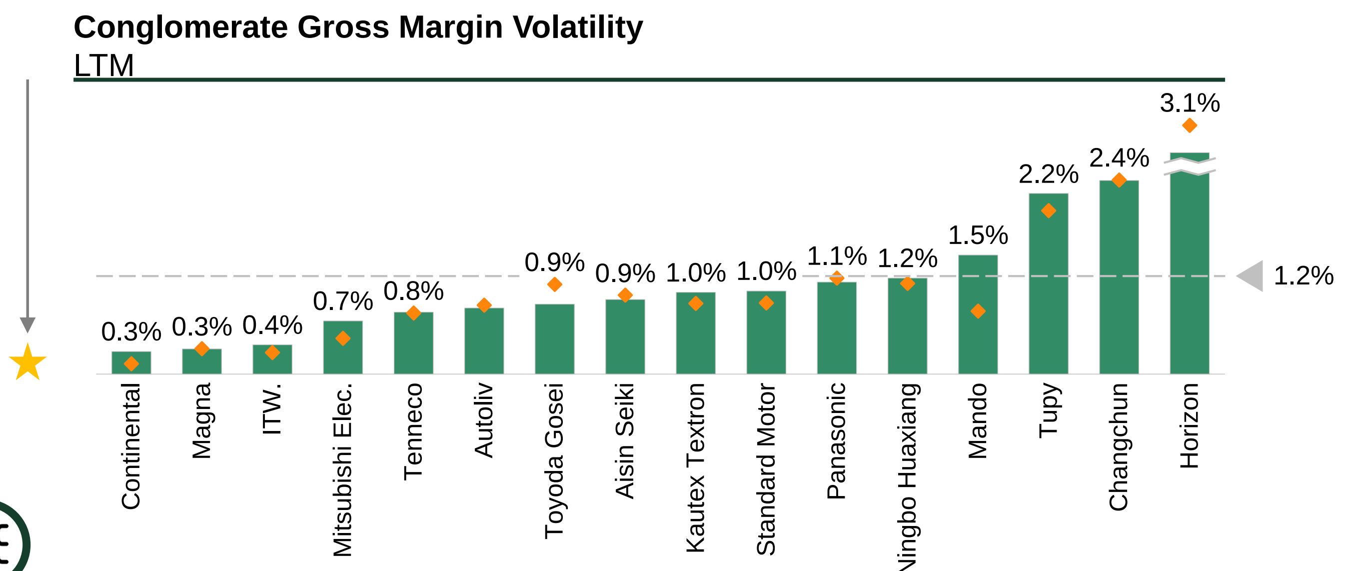
- Conglomerates had a strong LTM revenue growth performance, averaging 8.0%, the highest among all segments
- Decrease in LTM EBIT from 7.3% to 5.9% of the segment was driven by Horizon with an EBIT decline of 2.25% YoY
- Magna acquired Wipac Czech (Nov'19) to strengthen technical competencies for premium customers in the European lighting market
- ITW and Standard Motor are the strongest performers in EBIT Margin
  - ITW reports that adherence to their enterprise strategy set in 2012 has driven growth in their operating margins from 15.9% to 24.4%

Conglomerate's Quarterly Development



Though margins were below previous quarters levels, volatility overall has fallen due to margin stabilization at Horizon and Toyoda Gosei.



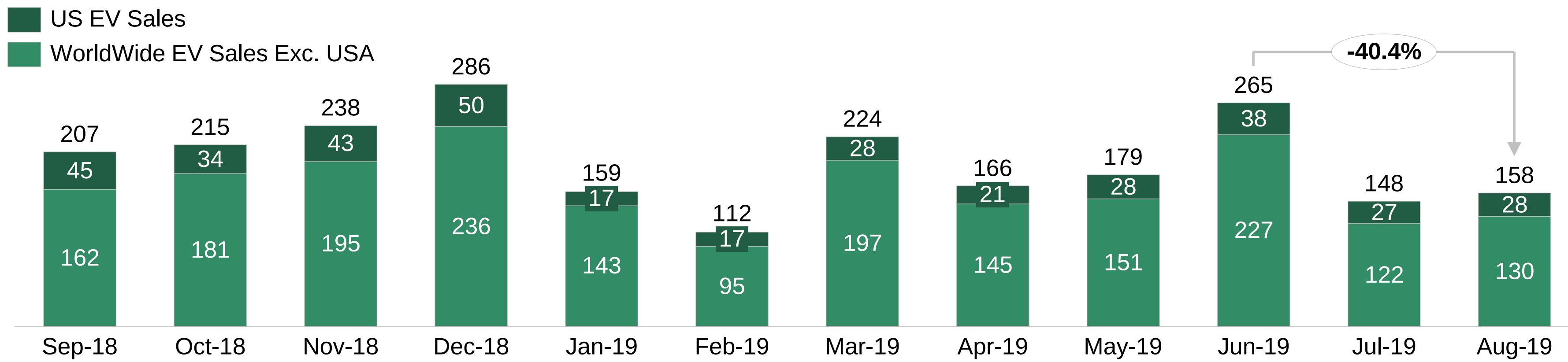


- Horizon's gross margin volatility sits well above its peers at 3.1% in Q3, but this still represents an improvement vs last quarter when LTM volatility was measured at 6.2%
- Mitsubishi's gross margins dipped 9% since Q3 2018, prompted by the close of their Memphis plant
- Standard Motor improved margins by increasing production in low cost plants in China and closing facilities in Grapevine and Orlando, which were of high cost
- Changchun and Hella have partnered (Sept '19) to become the main supplier of FAW premium brand 'Hongqi' in lighting technology

Source: Interim & Annual Reports, Capital IQ, Applied Value analysis.

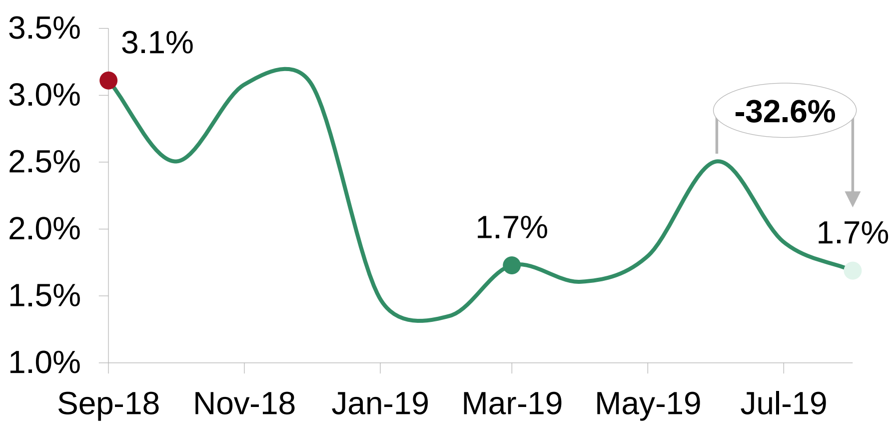
Worldwide EV sales declined 40.4% between June and August, while the portion of EV sales to total LV sales in US remains around 1.7%.

EV Sales by month 2018, (thousand units)



Sources: Applied Value analysis, Inside EV's Monthly .

US EV Sales as a % of US Total Light Vehicle Sales



Sources: Applied Value analysis, BEA, Inside EV's Monthly .

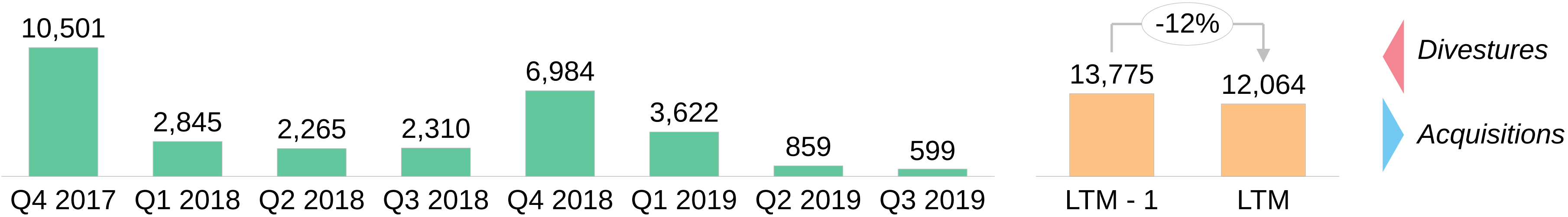
- The EV market is negatively affected by reduction in EV subsidies and cooling economy
  - Tesla led the race with about 112k sales YTD
- Worldwide and USA EV sales have decreased since June 2019. US EV sales as a portion of total sales decreased by 32.6% in the same time period. US EV sales has fluctuated between 1.4% and 2.5% of total car sales in 2019
- Total EV sales sky-rocketed to a 2019 record high of 265k in June 2019 and stabilized back down to the level it started 2019 at ~159k in sales

The acquisition of Tower international by a prominent private equity firm Autokiniton led the activity this quarter M&A activity is down 12% in LTM.

Top 5 Most Recent M&A Activity

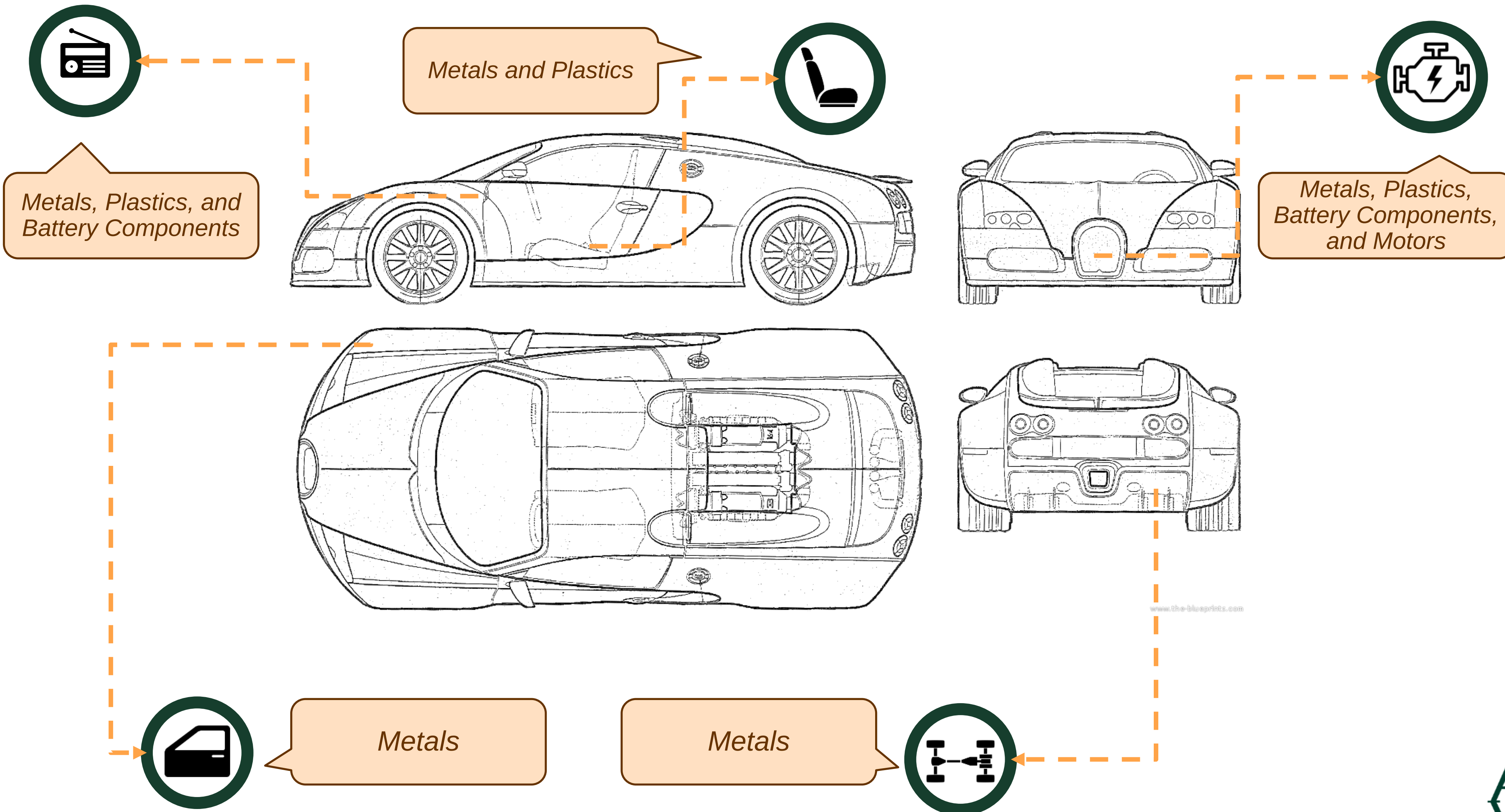
Company	Target	Close Date	Value, USD	Target Description
Tower International	AGG Autokiniton Global Group	09/30/2019	900M	*Autokiniton Global Group, pursues investments in the global automotive supply industry and acquired Tower International.*
AAM	Gamut Capital	09/18/2019	245M	*American Axle sold its Castings business unit to a private equity firm that is based in New York City, Gamut Capital.*
Horizon Global	PEP	07/16/2019	230M	*Horizon sold its Asia-Pacific Business segment to pacific equity partners, a firm focused on LBOs and growth capital.*
Meritor	AxleTech	07/29/2019	175M	*AxleTech is a leading manufacturer and supplier of drivetrain systems for on and off highway heavy-duty vehicles.*
Dana	nordresa	08/26/2019	N/A	*Nordresa is engineering expert for development of electric powertrains for commercial vehicles. Terms not disclosed.*

Total M&A transaction amount previous 2 years, MUSD*



*Note – Total amount only includes the 86 firms that we have analyzed in the report

Applied Value has highlighted the main raw materials across for Auto Tier 1s.

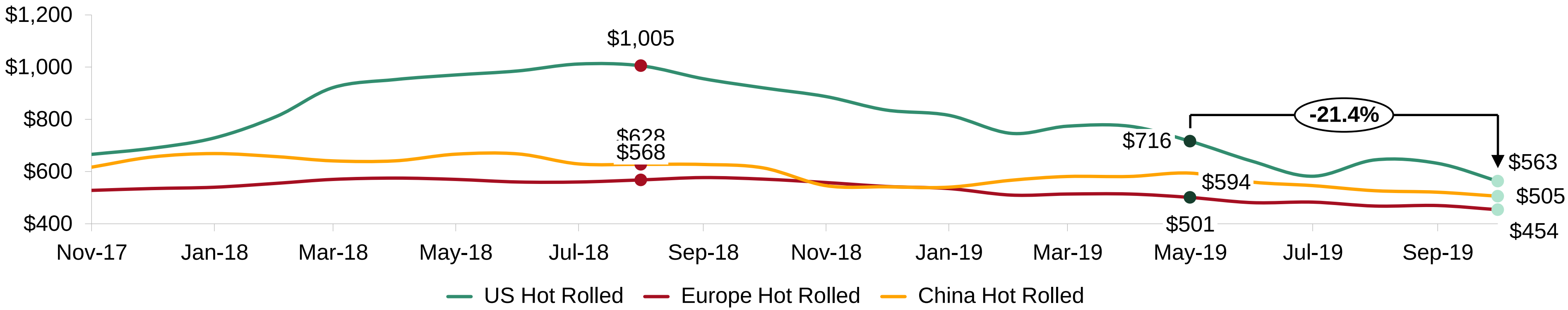


Market Trends Summary.

	Key Takeaways
Metals	• Steel prices in Europe, United States, and China reached their lowest in the last 2 years, Aluminum following along with the same trend.
Plastics	• Plastic, rubber and soda ash prices decreased across the board; Rubber prices have rebounded, reaching levels it started 2019.
Battery & Electrical	• Battery component costs have a mixed storyline, as Lithium and Graphite prices have dropped, and Cobalt and Nickel prices rose.
Motors	• Neodymium, Copper, and Silicon all trended downward at an average of ~5%, with Neodymium recovering from their previous spike.
Indirect Costs	• Natural gas costs have decreased in both US and Germany, at 10.9% and 16.0%, respectively.
Trade & Employment	• Auto Tier 1 manufacturing wages are rising most rapidly in the US, as the average hourly rate averaged $21.8/hr in August 2019.

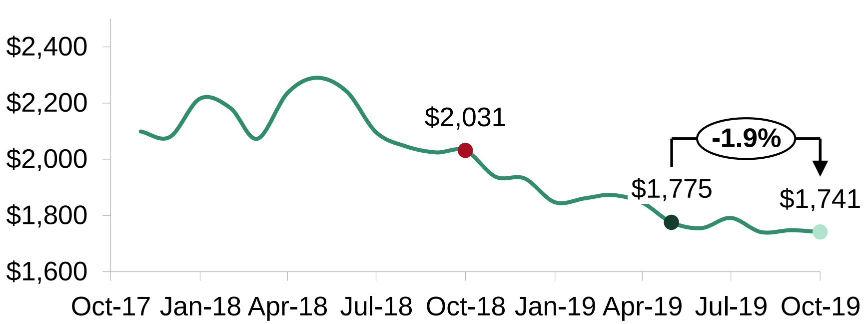
Steel prices in Europe, United States, and China reached their lowest in the last 2 years, with aluminum following along with the same trend.

Global Steel Prices, Hot Rolled Coil
USD/MT



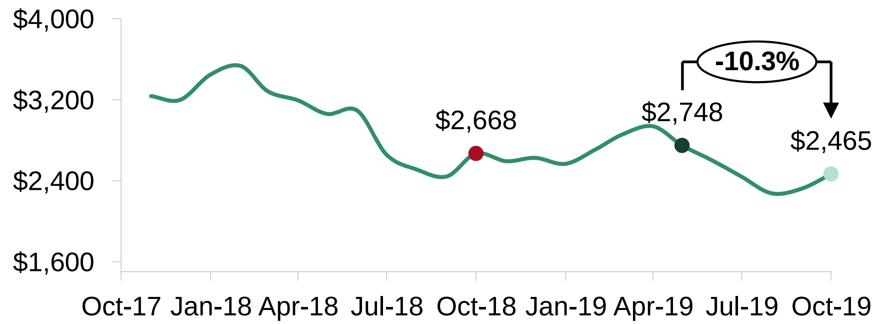
Source: CRU

Aluminum
USD/MT



Source: LME

Zinc
USD/MT

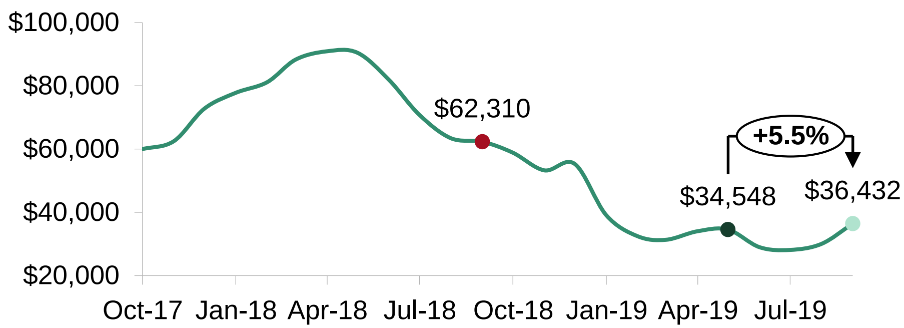


Source: Capital IQ

Last Year
May Data
Most recent data

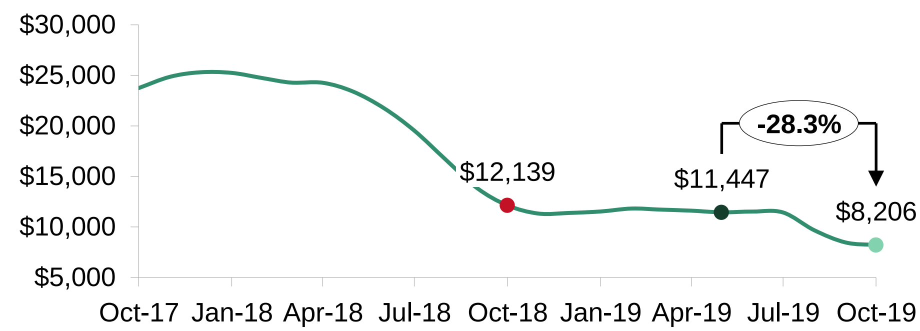
Battery component costs have a mixed storyline, as Lithium and Graphite prices have dropped, and Cobalt and Nickel prices rose.

Cobalt
USD/MT



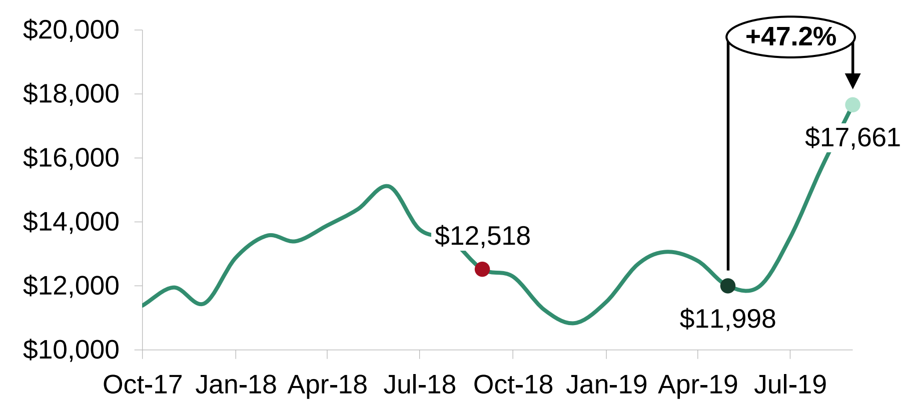
Source: LME

China 99.5% Lithium Carbonate spot price
USD/MT



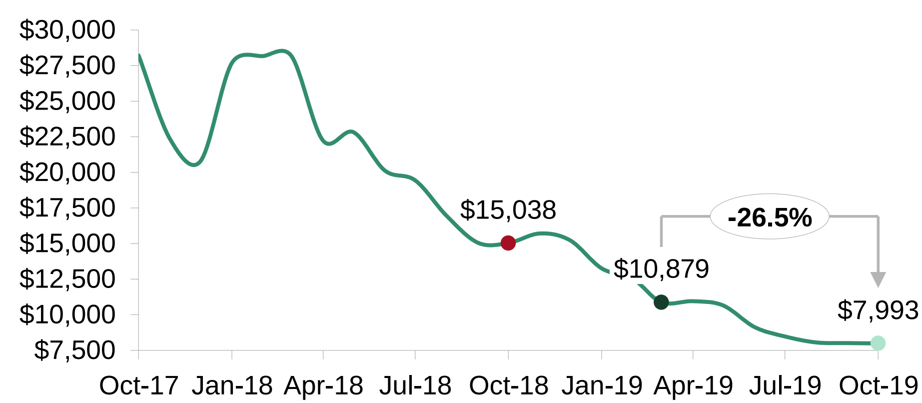
Source: Shanghai Metals Market

Nickel
USD/MT



Source: LME

Graphite
USD/MT

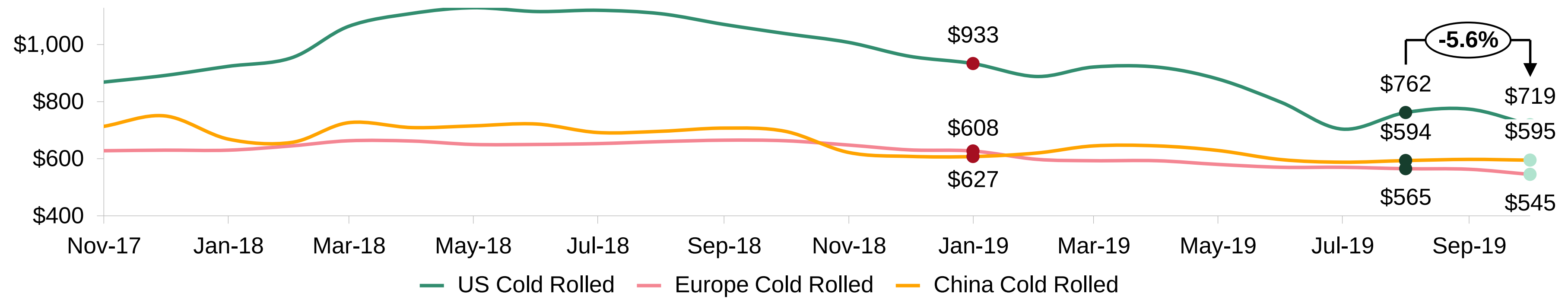


Source: Metal News CN

Last Year   May Data   Most recent data

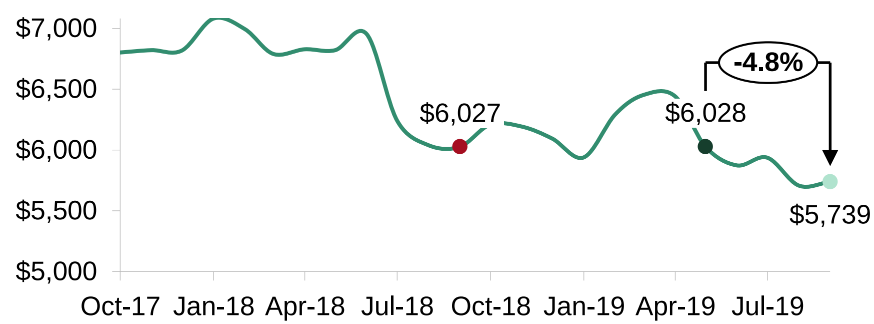
Neodymium, Copper, and Silicon all trended downward at an average of ~5%, with Neodymium recovering from its previous spike.

Silicon Steel – Cold Rolled
USD/MT



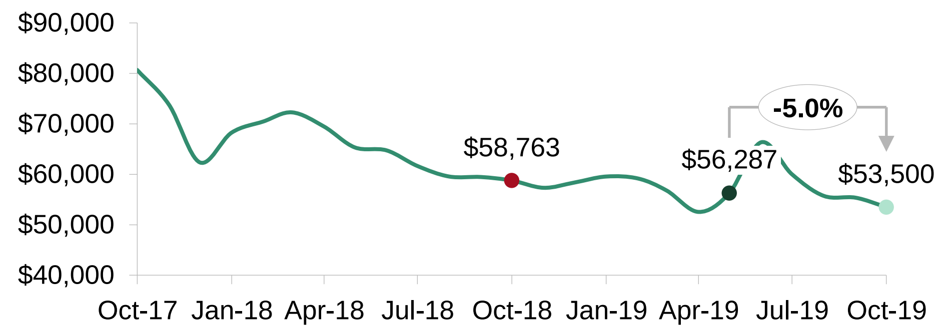
Source: CRU

Copper
USD/MT



Source: LME

Neodymium Costs
USD/MT

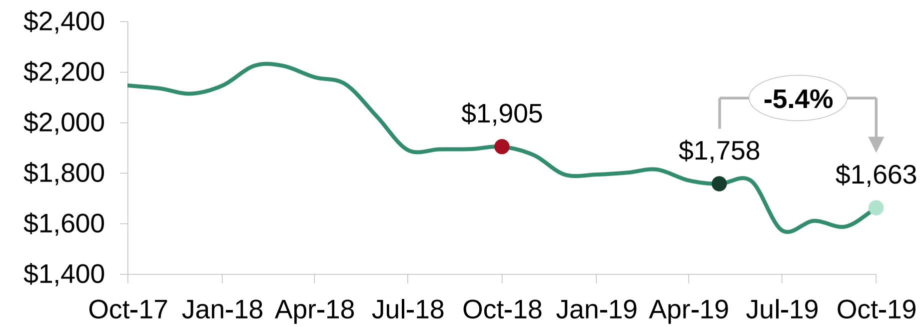


Source: SMM

● Last Year ● May Data ● Most recent data

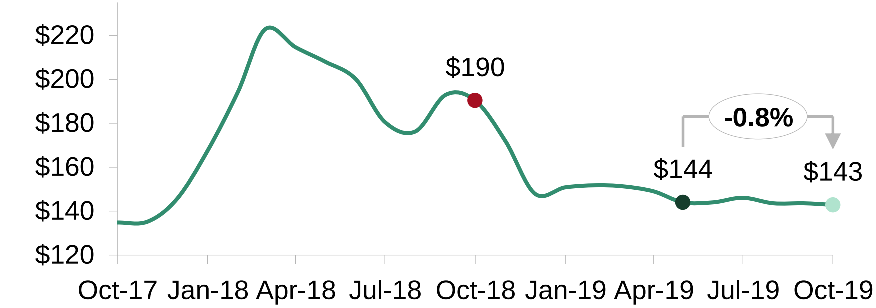
Display and Sensor input costs continued the same downward trend, which began in early 2018.

#441 Silicon
USD/MT



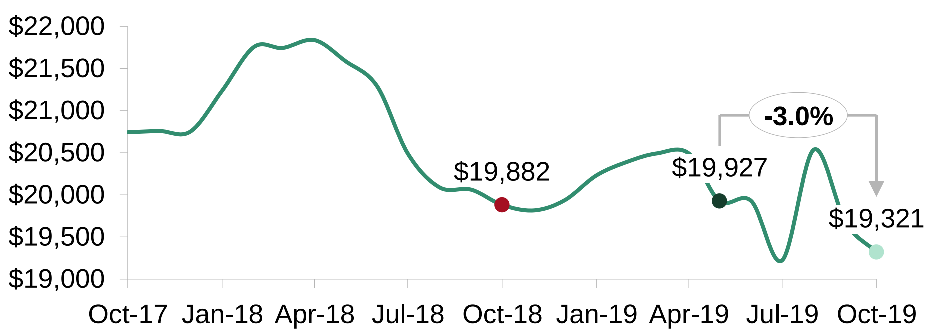
Source: www.100ppi.com

Gallium
USD/MT



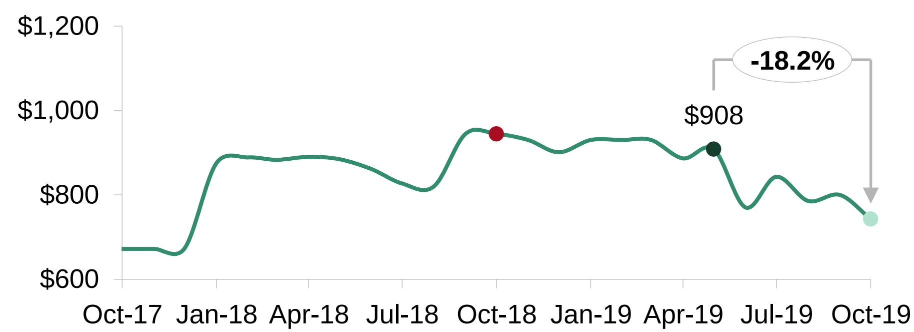
Source: www.cngold.org

Stannic Oxide
USD/MT



Source: www.100ppi.com

Hebei PET Clear Sheet
USD/MT

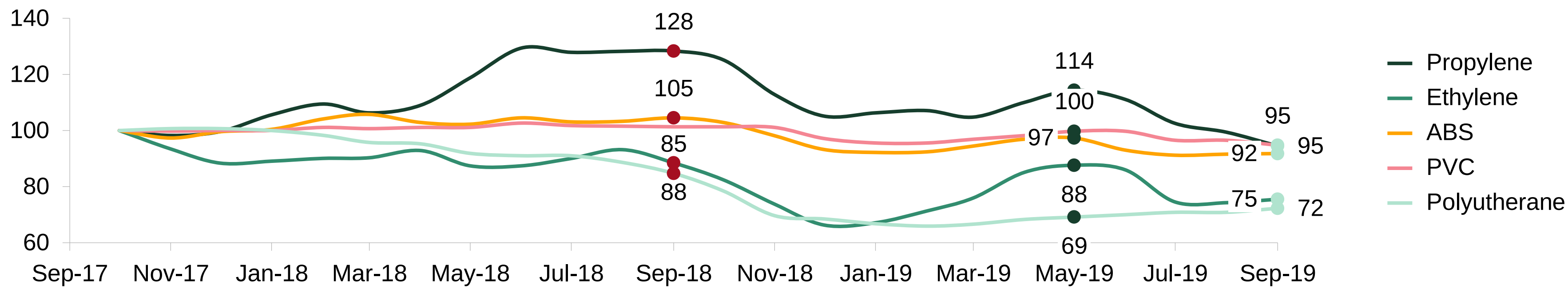


Source: www.feijiu.net

Last Year   May Data   Most recent data

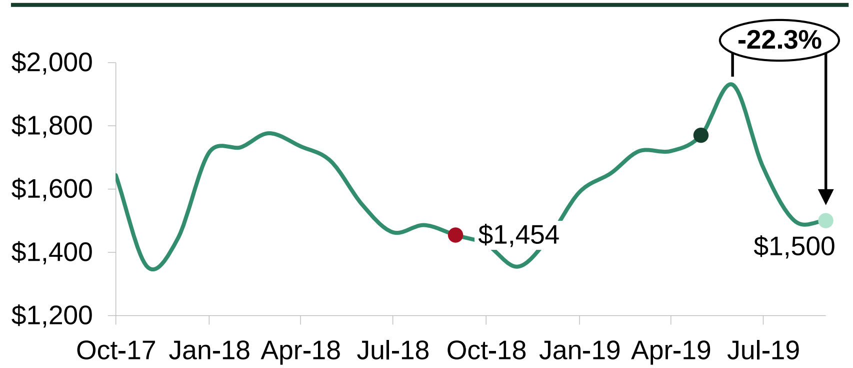
Plastic, rubber and soda ash prices decreased across the board; Rubber prices have rebounded, reaching levels where it started 2019.

Plastic Costs
Indexed



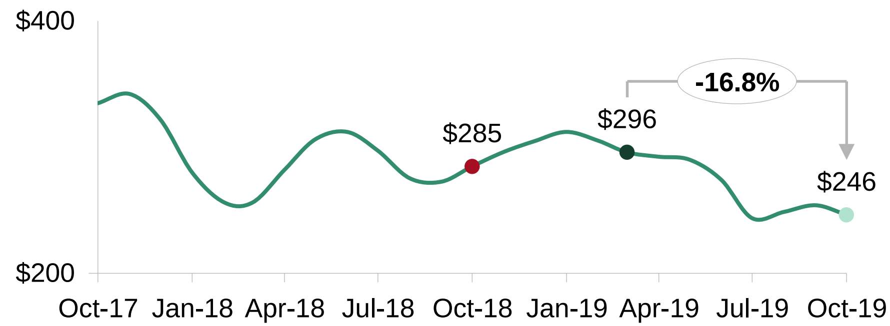
Source: Capital IQ

Rubber – RSS3
USD/MT



Source: Capital IQ SICOM

Glass – Soda Ash
USD/MT

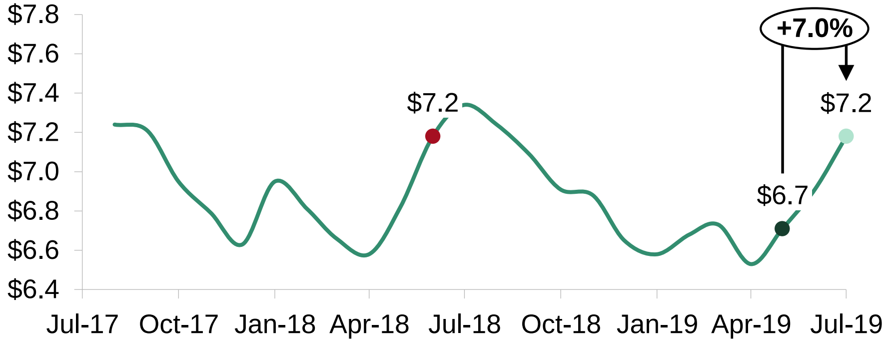


Source: Soda.100ppi.com

Last Year
May Data
Most recent data

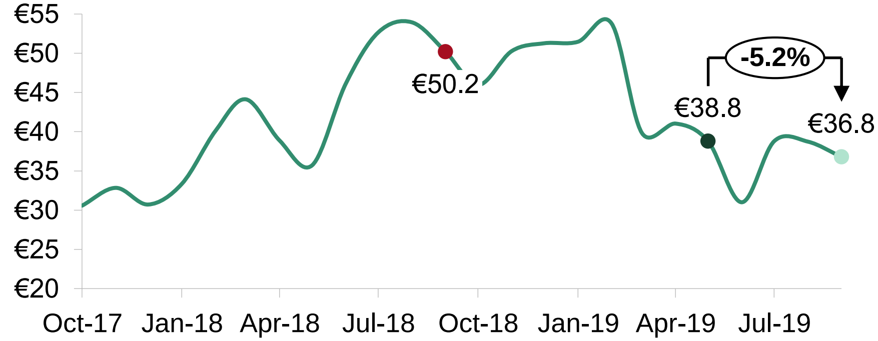
Natural gas costs have decreased in both US and Germany, at 10.9% and 16.0%, respectively.

Electricity US
US Cents/KWH



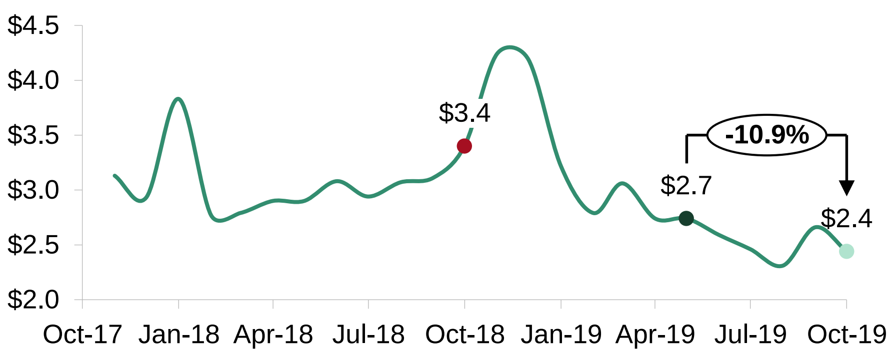
Source: US Energy Information Administration (Industry retail price)

Electricity Europe
EUR/KWH



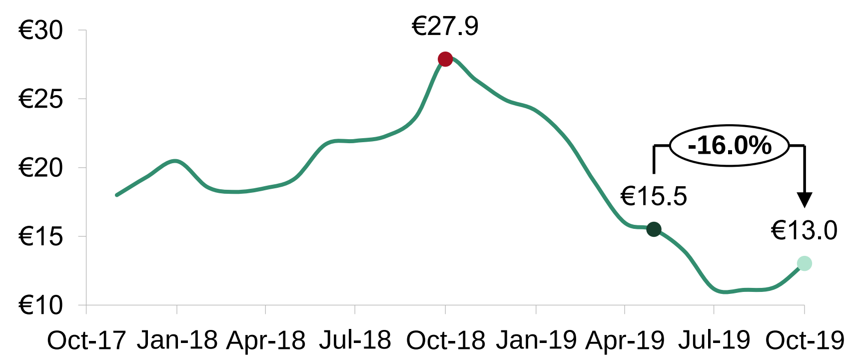
Source: EEX (KWK-Index Germany), Nordpool

Natural Gas US
USD/mmBtu



Source: EIA (Natural Gas spot price at the Henry Hub terminal in Louisiana)

Natural Gas Germany
EUR/MWH



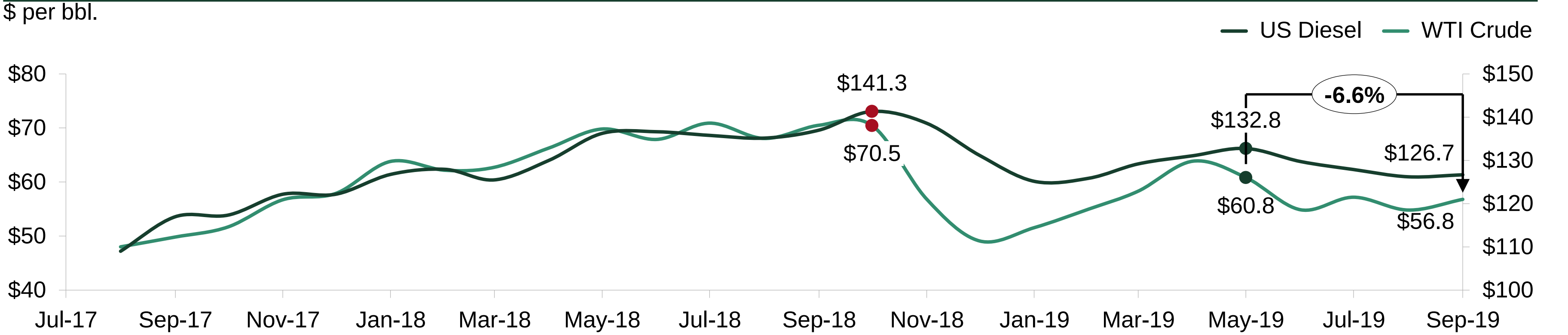
Source: EEX (EGIX Germany)

● Last Year ● May Data ● Most recent data

Although WTI Crude decreased by 6.6%, transportation costs increased in 2019, with BDI's significant rebound of 229.2%.

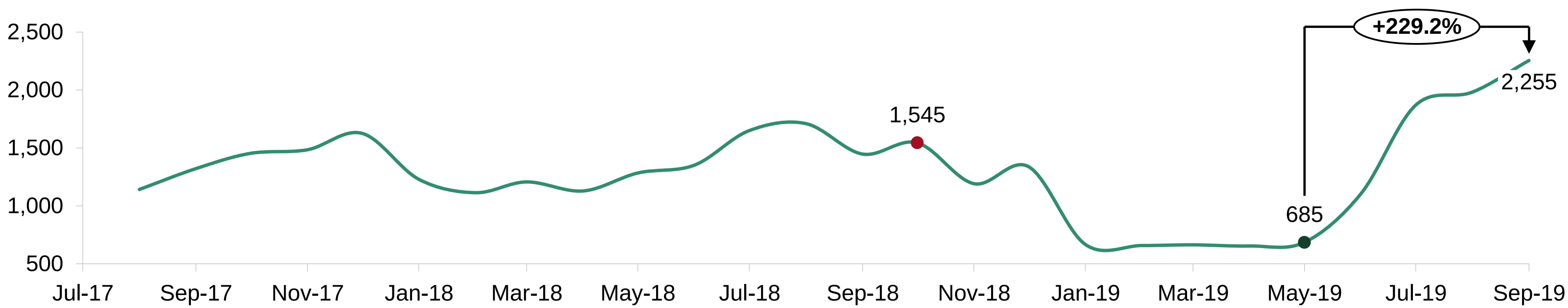
WTI Crude

$ per bbl.



Source: Capital IQ

BDI - Shipping



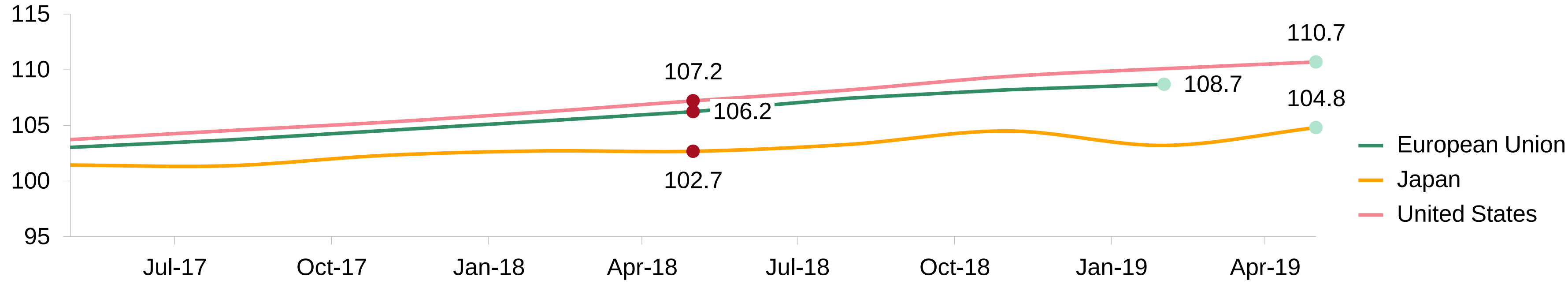
Source: Investing.com

Last Year May Data Most recent data

Source: S&P Capital IQ.

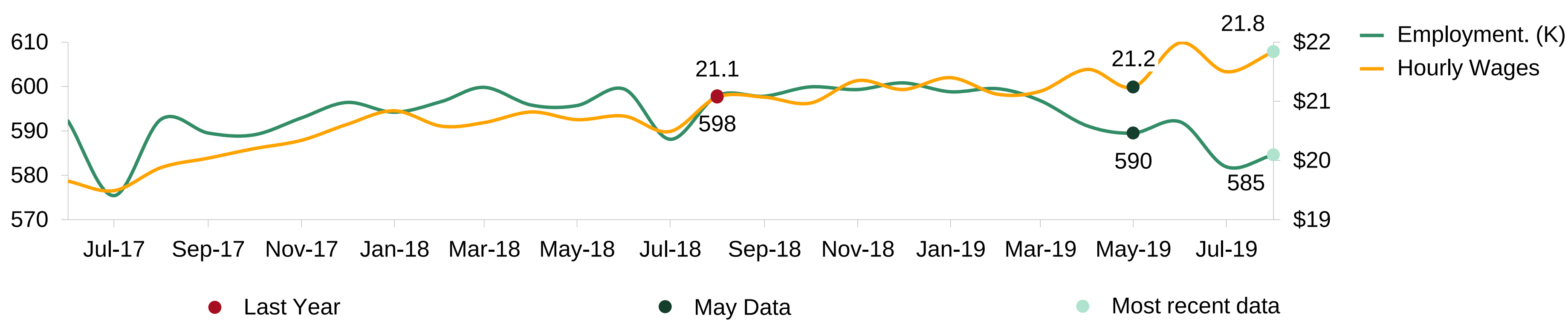
Auto Tier 1 manufacturing wages are rising most rapidly in the US, as the average hourly rate averaged $21.8/hr in August 2019.

MEI Manufacturing Pay Index
Index 2015 pay rates = 100



Source: OECD.stat

USA Motor Vehicle Parts Manufacturing – Tier One
Employment # in (K) & wages in USD/Hour



Source: Bureau of Labor & Statistics

Auto Tier One Financial Performance

Auto Tier One Investment & Innovation Trends

Market Trends & Cost Curves

About Applied Value

Applied Value is a management consulting & investment firm founded on the principles of lean growth and entrepreneurship.

1997 Background as an internal consultancy and change agent within the Swedish ***Stenbeck Group…***

KORSNÄS MTG TELE2 MILLICOM

2019 …today, a hands-on consultancy supporting clients **across industries**

Industries of Expertise

- Telecom & Media
- Chemicals & Process
- Industrials & Engineering
- Consumer Goods
- Automotive

Applied Value Group

Investments | **Management Consulting** | **Social Responsibility**

Selected portfolio companies

HUMAN CARE, COSMOSID, rivermeadow, Bake My Day, Division 5 Inc, Söderfors Steel, flexenclosure

APPLIED VALUE

HAND IN HAND, Straight Ahead Ministries, Exodus

ROI driven | *Fact-based* | *Practical over theoretical* | *Hands-On* | *Global perspectives*

Our Lean Growth framework is based on Focus, Simplicity, Speed – guiding principles to raise client performance

Lean Growth

Focus
- ✓ Define strategic focus
- ✓ Excel in key capabilities
- ✓ Use partners for non-core activities

Simplicity
- ✓ Reduce complexity
- ✓ Simplify and standardize processes, organization and supply chain

Speed
- ✓ Set targets
- ✓ Measure and improve
- ✓ Reduce Time to Market-Customer-Cash

Offerings

Go-to-Market
Segmentation, Positioning, Product/Channel Mix

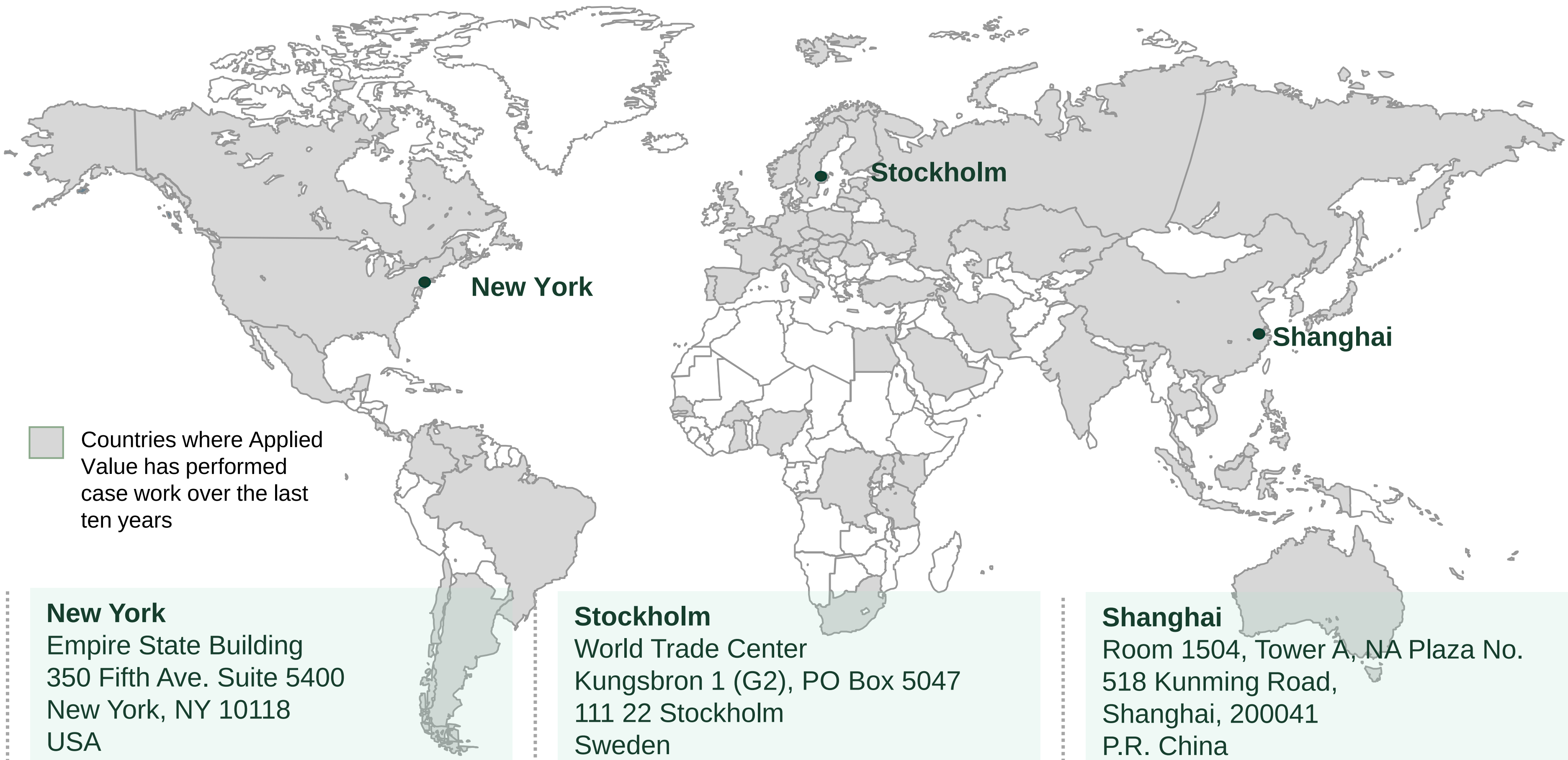
Gross Margin Improvement
Pricing, Sourcing, VA/VE, Supply Chain, Operations

OPEX Efficiency
Operational efficiency, S&M / G&A productivity, Organization

Capital Efficiency
Working Capital mgmt., Innovation/R&D performance, M&A, Fixed asset leverage

Digital Transformation and Efficiency
Strategy, Capability improvement, Execution

Applied Value challenges and supports repeat global clients across industries from three offices.



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