Jump Starting Innovation Amid Market Volatility

South Carolina Automotive Summit

February 21, 2019

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Introduction

Mike Jackson

Executive Director, Strategy and Research

Original Equipment Suppliers Association (OESA)

Mike Jackson serves as Executive Director, Strategy and Research of the Original Equipment Suppliers Association (OESA). Jackson has more than 20 years of progressive experience in market forecasting, strategic planning and management consulting. Jackson is a recognized global industry expert, thought leader and public speaker on light vehicle sales and production, manufacturer strategies and OEM product planning. Jackson assists an extensive membership of automotive suppliers, affiliate members and industry stakeholders to anticipate market dynamics, enhance competitiveness and mitigate risk to achieve business success.

Jackson is a highly sought after public speaker, regularly presenting to executive leadership teams and industry conferences throughout North America and around the world. He is frequently quoted by leading print, radio and television media on the industry and light vehicle sales and production dynamics while also serving to represent the voice of automotive supplier community.

Mike Jackson previously directed the North American Vehicle Production forecasting practice at IHS Markit for more than 15 years. As a global product planning and strategy expert in the automotive/mobility sector, Jackson served as subject matter expert on the North American market for a global client base of automakers and all levels of the supply chain with a deep knowledge of the industry and global markets.

Jackson previously held senior strategy roles for electrical system supplier Alcoa Fujikura, Ltd. (AFL) and French-based automotive interior supplier, Faurecia. Jackson gained international experience during a multi-year stay, living and working in Germany, developing language fluency. Jackson holds a degree in management strategy from Eastern Michigan University and also earned his M.B.A. in international marketing from Wayne State University. Jackson is also a member of the Federal Reserve Bank of Chicago’s Automotive Roundtable.
Championing the business interests of the automotive OE supplier community:
Founded in 1998, the Original Equipment Suppliers Association (OESA), serves as the voice of the automotive supplier and a valuable resource for member organizations. Throughout the supply chain and on legislative and regulatory issues, OESA represents the collective voice of suppliers.

Exclusively for automotive suppliers:
Supplier membership is exclusive to original equipment automotive suppliers that directly provide components, tools, materials and services to the OE light vehicle industry.

Strength in numbers:
Membership is comprised of approximately 400 Tier 1,2, and 3 automotive suppliers with North American OE sales that range from $10 million to $5+ billion. Affiliate members support the supplier community with thought leadership, industry analysis and other key information.

Led By supplier industry executives:
OESA’s interests are guided by a board of directors consisting of CEOs from member companies of all sizes.

Staff that works for members:
Members enjoy direct access to a staff of dedicated association employees in Detroit and Washington, D.C.
Roadmap

- Economic Update
- Trade, Tariffs & Tripwires
- Auto Sector Dynamics
- Takeaways
US: Economic Outlook

• Strong fundamentals remain with low unemployment, steady job creation, strong consumer spending and low but rising interest rates

• Job growth has continued, lifting participation rates yet an even tighter outlook is expected by through 2019

Source: wsj.com – February 2019 monthly economist survey
US: Economic Outlook

- Despite higher price volatility, fracking has altered the global energy landscape, holding a constrained pricing outlook

- Higher interest rates and supply constraints limiting growth in housing starts over the forecast horizon. Demand for smaller starter homes remains strong

Source: wsj.com – February 2019 monthly economist survey
US Business Cycle Indicators

S&P 500 (% Δ, YoY)

Consumer Sentiment Index

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Source: Yahoo Finance, University of Michigan, ISM, U.S. Census Bureau
US: New Vehicle Financing
Rising interest rates, and shorter term loans send average monthly payments to record levels

Interest Rate on New Car Loan (percent) vs. US Average Loan Length (months)

Source: Federal Reserve Bank, Weighted Average Finance Rate at Finance Companies
Source: Federal Reserve Bank, New Car Loans at Finance Companies
Volatility in financial markets has caused the outlook for a March 2019 rate hike to fall from nearly 90% in October to just under 30% in March.

The last two surveys show a small chance that the Fed will reverse tightening, and start to lower rates as their next action.

December FOMC “Dot Plot” shows a median estimate of two 25 bps. rate hikes in 2019.

Economic fundamentals remain strong however, and the current policy rate remains below the estimated neutral rate.

Source: WSJ Survey of Economic Indicators, Federal Reserve
US: Recession Probability

The current U.S. economic expansion began in mid-2010. When is it most likely to end?

Source: 2/2019 - WSJ Monthly Survey of Economists
US: Yield Curve

Past 5 recessions preceded by an inverted yield curve; Latest 10-2 spread at 15 bps.

Yield Curve (10 minus 2 yr. Treasury)

Sources: U.S Federal Reserve, US Bureau of Economic Analysis, Bloomberg
US: Light Vehicle Sales Outlook
Forecasts vary among firms – yet all reflect declining sales after a marginal increase in 2018

Annual Sales (millions)

<table>
<thead>
<tr>
<th>Year</th>
<th>Forecast Avg.</th>
<th>History</th>
<th>PWC-Autofacts</th>
<th>IHS-Markit</th>
<th>LMC Automotive</th>
<th>Wards Auto Intelligence</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>17.2M</td>
<td>17.2M</td>
<td>17.2M</td>
<td>17.2M</td>
<td>17.2M</td>
<td>17.2M</td>
</tr>
<tr>
<td>2016</td>
<td>-1.8%</td>
<td>17.00</td>
<td>16.80</td>
<td>17.00</td>
<td>17.00</td>
<td>17.00</td>
</tr>
<tr>
<td>2017</td>
<td>-320K</td>
<td>16.60</td>
<td>16.40</td>
<td>16.60</td>
<td>16.60</td>
<td>16.60</td>
</tr>
<tr>
<td>2018</td>
<td>+0.6%</td>
<td>16.20</td>
<td>16.00</td>
<td>16.20</td>
<td>16.20</td>
<td>16.20</td>
</tr>
<tr>
<td>2019</td>
<td>+96K</td>
<td>15.80</td>
<td>15.60</td>
<td>15.80</td>
<td>15.80</td>
<td>15.80</td>
</tr>
<tr>
<td>2020</td>
<td>-500K</td>
<td>15.40</td>
<td>15.20</td>
<td>15.40</td>
<td>15.40</td>
<td>15.40</td>
</tr>
<tr>
<td>2021</td>
<td>-110K</td>
<td>15.00</td>
<td>14.80</td>
<td>15.00</td>
<td>15.00</td>
<td>15.00</td>
</tr>
</tbody>
</table>

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Source: 3Q 2018 OESA Affiliate Forecast Matrix – PWC/Autofacts, IHS Markit, LMC Automotive, AutoForecast Solutions
Shifting U.S. Demand Preferences

U.S. Industry Sales (Mils.)

- Cars
- Utilities
- Trucks and Commercial Vehicles

<table>
<thead>
<tr>
<th>Year</th>
<th>Cars</th>
<th>Utilities</th>
<th>Trucks and Commercial Vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>2.0</td>
<td>5.7</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>4.0</td>
<td>4.1</td>
<td>9.2</td>
</tr>
<tr>
<td>2023</td>
<td>3.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Average U.S. Industry Transaction Prices

<table>
<thead>
<tr>
<th>Year</th>
<th>Cars</th>
<th>Utilities</th>
<th>Trucks and Commercial Vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$24,146</td>
<td>$30,946</td>
<td>$41,239</td>
</tr>
<tr>
<td>2018</td>
<td>$26,160</td>
<td>$33,164</td>
<td></td>
</tr>
</tbody>
</table>

Sources: Ford Motor Company, IHS Markit, J.D. Power PIN
Roadmap

• Economic Outlook
• Trade, Tariffs & Tripwires
• Auto Sector Dynamics
• Takeaways

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OESA Supplier Barometer: Q4 2018 Results

Describe the general twelve month outlook for your business. Over the past three months, has your opinion become…?

Current Supplier Outlook (Share of Respondents)

- **Significantly more optimistic**
- **Somewhat more optimistic**
- **Unchanged**
- **Somewhat more pessimistic**
- **Significantly more pessimistic**

Supplier Barometer Index: (SBI and 6m Average)

Rising concerns over tariffs and trade policy pulled down the Q4 2018 OESA Supplier Barometer Index (SBI) by four points to 39, eleven points below a neutral reading.
Trade policy remains the greatest industry threat, at 3.1 in the fourth quarter, unchanged from Q3 2018. Poor sales of programs supplied was identified as the second largest threat, declining substantially from Q3.
Cumulative Impact of Trade Actions on Suppliers

- **Steel & Aluminum Tariffs & Quotas**
- **China Tariffs and Investment Restrictions**
- **Sec. 232 Investigation on Autos & Parts**
- **Uncertain Future of NAFTA “2.0”**

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Assume a 20% tariff was levied on automotive related parts (excluding raw materials) imported into the U.S., the immediate impact would be a....

- 78% of suppliers indicate a 20% tariff would have a net negative impact on their business.
- For suppliers that responded negatively, the response would be to modify their supply chain to source domestically, shift production outside the U.S., cut investment and U.S. jobs.
Production Planning: Breakeven and Year-End Estimates

Considering North America light duty vehicle production, estimate the required 2018 industry volume needed to achieve breakeven in your North American operations?

Historical Breakeven (Millions of Units)
- 2017 = 14.5
- 2016 = 14.3
- 2015 = 13.5
- 2014 = 12.7
- 2013 = 12.0
- 2012 = 11.0
- 2011 = 10.5
- 2010 = 10.0
- 2009 = 9.5

2018 Median breakeven level = 15.0 million units of production.

Suppliers are “OK” if a mild downturn occurs over the near-term: Breakeven is well below forecasts

Source For Sales & Production Volumes: IHS Markit forecast (January 2018)
Peaks and Valleys
North America Vehicle Production Cycles

Cycle (In Years) 3 5 7 9 6 7

Boom

Bust


Source: Wards, LMC Automotive, Authors’ Calculations
Roadmap

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## North America Vehicle Production Forecast

<table>
<thead>
<tr>
<th>(in millions)</th>
<th>2018 Actual</th>
<th>2018 Forecast</th>
<th>2019 Forecast</th>
<th>2020 Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>pwc &amp; Autofacts</strong></td>
<td>4.35</td>
<td>4.07↓0.01</td>
<td>4.22↑0.07</td>
<td>17.04↑0.24</td>
</tr>
<tr>
<td><strong>IHS Markit</strong></td>
<td>4.38</td>
<td>4.07↓0.20</td>
<td>4.22↑0.21</td>
<td>17.03↑0.10</td>
</tr>
<tr>
<td><strong>LMC Automotive</strong></td>
<td>4.40</td>
<td>4.12↓0.10</td>
<td>4.25↑0.11</td>
<td>17.15↑0.10</td>
</tr>
<tr>
<td><strong>Auto Forecast Solutions</strong> (AFS)</td>
<td>4.41</td>
<td>4.22</td>
<td>4.30</td>
<td>17.31</td>
</tr>
<tr>
<td><strong>Forecast Average</strong></td>
<td>4.38</td>
<td>4.12</td>
<td>4.25</td>
<td>17.13</td>
</tr>
<tr>
<td><strong>Forecast Spread</strong></td>
<td>0.07</td>
<td>0.15</td>
<td>0.08</td>
<td>0.28</td>
</tr>
<tr>
<td><strong>2017 Average</strong></td>
<td>4.51</td>
<td>4.07</td>
<td>4.26</td>
<td>17.31</td>
</tr>
</tbody>
</table>
2019 North American International Auto Show

- Primary Utility & Truck focus
- Driving Content + Record ATPs
- Growing Segmental Competition

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Production Dynamics
Regional SUV Surge: Nameplate Volume Washed Away by Increased Competition

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## Top Automotive States

### Top 20 - Supplier Employment (000s)

<table>
<thead>
<tr>
<th>State</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michigan</td>
<td>5%</td>
</tr>
<tr>
<td>Ohio</td>
<td>6%</td>
</tr>
<tr>
<td>Indiana</td>
<td>49%</td>
</tr>
<tr>
<td>Tennessee</td>
<td>32%</td>
</tr>
<tr>
<td>Kentucky</td>
<td>8%</td>
</tr>
<tr>
<td>Alabama</td>
<td>56%</td>
</tr>
<tr>
<td>Illinois</td>
<td>38%</td>
</tr>
<tr>
<td>North Carolina</td>
<td>8%</td>
</tr>
<tr>
<td>South Carolina</td>
<td>4%</td>
</tr>
<tr>
<td>Texas</td>
<td>8%</td>
</tr>
<tr>
<td>California</td>
<td>5%</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>1%</td>
</tr>
<tr>
<td>Georgia</td>
<td>5%</td>
</tr>
<tr>
<td>New York</td>
<td>1%</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>5%</td>
</tr>
<tr>
<td>Missouri</td>
<td>1%</td>
</tr>
<tr>
<td>Iowa</td>
<td>1%</td>
</tr>
<tr>
<td>Virginia</td>
<td>5%</td>
</tr>
</tbody>
</table>

### Regional Share %

- Midwest: 56%
- S-East: 38%

### US Vehicle Output - 2016 ( Millions )

<table>
<thead>
<tr>
<th>State</th>
<th>CAR</th>
<th>TRUCK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michigan</td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td>Ohio</td>
<td>49%</td>
<td>32%</td>
</tr>
<tr>
<td>Indiana</td>
<td>8%</td>
<td>5%</td>
</tr>
<tr>
<td>Kentucky</td>
<td>56%</td>
<td>38%</td>
</tr>
<tr>
<td>Alabama</td>
<td>3%</td>
<td>5%</td>
</tr>
<tr>
<td>Tennessee</td>
<td>1%</td>
<td>5%</td>
</tr>
<tr>
<td>Missouri</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>Illinois</td>
<td>1%</td>
<td>5%</td>
</tr>
<tr>
<td>Texas</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>Mississippi</td>
<td>1%</td>
<td>5%</td>
</tr>
<tr>
<td>South Carolina</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>Georgia</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>Kansas</td>
<td>1%</td>
<td>5%</td>
</tr>
<tr>
<td>Kansas</td>
<td>1%</td>
<td>5%</td>
</tr>
<tr>
<td>California</td>
<td>5%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Source: 2017 MEMA Economic Study – 2015CY; Share of total direct employment

Source: LMC Automotive, OESA Analysis

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OESA Supplier Barometer Survey: HR & Talent Focus

SKILLS + CULTURE GAP
58% MODERATE TO WIDE

△ SKILL SETS
- SPECIALIZED
- AUTONOMOUS
- COLLABORATIVE

TALENT SCARCITY
NEW VALUES
TIME FLEXIBILITY

SKILL SETS
- SPECIALIZED
- AUTONOMOUS
- COLLABORATIVE

ACTION PLANS:
- CROSS FUNCTIONAL TRAINING
- APPRENTICESHIPS
- CHANGE ROLES TO FIT SKILLS
- NEW HIRING PRACTICES

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The EV Profit Challenge

‘All In’
- Clean sheet design
- Ground up capex
- ‘New Everything’
- Must scale to survive
- Low margin of error

‘Incremental’
- Incremental approach
- Incremental capex
- Weighs on current profits, yet can reinvest proceeds
- Enables transition

"We wanted to wait for the fifth generation (to scale) to be much more cost competitive," BMW CEO Harald Krueger

Expects its EVs to be profitable by 2020 after first EV launched in 2013.
Global BEV Demand By Market

2017 BEV Sales ('000s)
- China: 465
- Europe: 132
- USA: 93
- Other: 30

2017 Sales: 720k
China: 65%

2027 BEV Sales ('000s) – CAGR from 2017 = 33%
- China: (6,370)
- Europe: (3,350)
- USA: (800)
- Other: (1,900)

2027 Sales: 12.4mn
China: 51%

Source: LMC Automotive Global Hybrid & EV Forecast

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GM – Future Electrification Plan

• FLEXIBLE STRATEGY
• LEVERAGE CHINA
• BUILD SCALE
• ADD PARTNERS
• CADILLAC ROLE
Given the dynamic pace of industry change, describe your firm’s pace of innovation.

- Well behind industry…
- Leading the industry 14%
- Slightly behind industry 16%
- Slightly ahead of industry 32%
- On pace with industry 33%

To what extent does your company’s capital strategy support dimensions of open innovation, which includes working with external partners?

- Not at all 3%
- Minimal 11%
- Very high 11%
- High 39%
- Moderate 36%
Driving Innovation

Ford
SYNC

Jump Starting Innovation Amid Market Volatility
### The Future of Transportation Stack

#### Services
- 

#### Safety & Security
- Physical Car & Driver Safety - Accident Detection

#### In-Car Intelligence + Assistance
- 

#### Autonomy
- 

#### Infrastructure + Connected Car
- 

#### Intelligent Manufacturing
- 

#### Onboard Sensors
- 

#### Vision / Camera
- 

#### LiDAR
- 

#### Radar
- 

#### Navigation Assistance + Pedestrian Analysis & Communications
- 

#### Intrusion, Tracking & Recovery
- 

#### Personal / Voice Assistance
- 

#### Cybersecurity
- 

#### In-Motion, Fatigue & Alcohol Detection + Distraction Avoidance
- 

#### Cyberspace
- 

#### Physical Car + Driver Safety - Accident Prevention
- 

#### Other: Aftermarket, Repair, Rental
- 

#### Specialty Vehicles
- 2-Wheelers
- 

#### Public Transport
- 

#### Trucks / Freight
- 

#### Flight
- 

#### Other: Hyperloop, Personal Mobility
- 

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Source: [www.wired.com](http://www.wired.com)

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**Jump Starting Innovation Amid Market Volatility**
OESA Supplier Barometer: 2018 Planning

Over the next 12 months, what is the likelihood that your company will make acquisitions and/or divestitures?

Suppliers are actively assessing acquisitions and divestitures; acquisitions from larger companies, divestitures from smaller (ref appendix)
Roadmap

• Market Outlook
• Trade, Tariffs & Tripwires
• Auto Sector Dynamics
• Takeaways
“A crucial battle has begun -- not one about winning or losing, but one about surviving or dying.”

“This is an era in which the correct answers are unknown.”

“Cost reduction is crucial. It is a fight to restore our original strength.”

Akio Toyoda
Toyota Motor Corp. President
Takeaways

• **Growth:** Surge intensifies competition; amplifies risks & rewards
• **Culture:** Humble, Curious, Inventive, Collaborative, Resilient
• **Strategy:** Counter-cyclical innovation planning; Maximize SPEED!
• **Flexibility:** Liquidity is key; vital to balance ‘Core’ vs Emerging
• **Stretch:** Align BEV opportunities with capabilities, sweet spots
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