China Market Outlook

Volume Growth Engine to the Global Automotive Industry

UMTRI: Ann Arbor, Michigan | 9 November 2016

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Global Growth Set to Rise in 2017
US Economy Gains as Brazil/Russia Start Recovery

World economic growth rates

Source: IHS
World Light Vehicle Sales Forecast
Market will reach 100 million by end of the decade; growth peak is approaching

Average growth 3.2%
Growth rate peaks in 2019

Source: IHS Automotive sales forecasts
Mature Markets’ Segment Sales
Buyers love utilities; SUVs/CUVs are strong—outperforming country average

World (LV sales, indexed to 2012)

Japan/Korea

North America

West Europe

Source: IHS Automotive, LV global segmentation, indexed to 2012 level
Developing Markets’ Segment Sales
Utilities are strong—even in weaker markets

Brazil (LV sales, indexed to 2012)

China

India

Russia

Source: IHS Automotive, LV global segmentation, indexed to 2012 level
Beyond the Recovery
Global Production Growth 2016 - 2023

Millions

-2 0 2 4 6 8 10

Millions

Greater China 6.6
South Asia 4.3
Europe 2.0
South America 1.2
Middle East/Africa 0.8
North America 0.6
Japan/Korea -0.5


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China Light Vehicle Sales Outlook

The auto stimulus program (from October 2015) boosts short term

Not enough weak data points to call a trend break in the strong relationship of key drivers to automotive sales:
- headline GDP
- average income
- disposable income growth
- urban population employment growth
Stock market volatility is real, yet less market level.

- Vehicle Purchase Tax cut from 10% to 5% for vehicles (1.6L and below) in October 2015–December 2016
- Improving GDP growth of 6.6% in 2016

- GDP growth to trough out from 2018 with an average growth of 6.4% in 2018–20
- Supported by replacement demand coming from scrappage of vehicles (Euro I and below) in 2014–17

- Termination of tax incentives
- GDP growth rate of 6.2% in 2017
- The government could usher in vehicle demand management because of rising energy security concerns

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Economy vs. Car Sales: City Tier Development

Tier 4–Tier 6 cities market shares increase with Tier 1 share declining.
Product Nameplates – LV Sales
OEMs moving to emerging market quickly to gain customers

Number of nameplates 2006–23

Source: IHS Markit

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Body Type Diversity
SUV sales keeps expanding over-proportionally in long term
Production - Long-term Development

Slowing down gradually after 2019, a decline still not expected

Production volume development

Source: IHS Markit

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Scenarios by Stimulation of Tax-cut Policy
Expiration of Tax-Cut Policy as main impact

Seasonality abnormality from 2015 to 2017

Growth Rate

<table>
<thead>
<tr>
<th>Policy ends 2016</th>
<th>Policy ends 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014: 8.1%</td>
<td>2014: 8.1%</td>
</tr>
<tr>
<td>2015: 4.7%</td>
<td>2015: 4.7%</td>
</tr>
<tr>
<td>2016: 7.5%</td>
<td>2016: 6.5%</td>
</tr>
<tr>
<td>2017: 1.0%</td>
<td>2017: 3.0%</td>
</tr>
<tr>
<td>2018: 3.0%</td>
<td>2018: 1.0%</td>
</tr>
</tbody>
</table>

200-300K units shift from Q4 2016 to 2017

Source: IHS Markit

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Risk & Reward: Over Capacity

Capacity development

- Production
- Over capacity
- % Utilization

Source: IHS Markit

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Greater China Output

Contribution to Growth %

- Other: 55%
- G3: 15%
- US3: 14%
- A4: 16%

Millions

<table>
<thead>
<tr>
<th>Year</th>
<th>Other</th>
<th>Asian4</th>
<th>US3</th>
<th>German3</th>
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<tbody>
<tr>
<td>2012</td>
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<tr>
<td>2014</td>
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<td>0.0</td>
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<tr>
<td>2016</td>
<td>6.4</td>
<td>6.4</td>
<td>1.2</td>
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<tr>
<td>2018</td>
<td>7.2</td>
<td>7.2</td>
<td>2.0</td>
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<tr>
<td>2020</td>
<td>8.0</td>
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<td>2.8</td>
<td>0.0</td>
</tr>
<tr>
<td>2022</td>
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<td>8.8</td>
<td>3.6</td>
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Modular Platforms of JV & China OEMs
Total number of platforms increase, while decrease per OEM by modular platform

<table>
<thead>
<tr>
<th>JV Brand</th>
<th>JV &amp; Local Brands</th>
<th>Local Brand</th>
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<tbody>
<tr>
<td>MQB</td>
<td>UKL</td>
<td>SPA</td>
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<tr>
<td>MSB</td>
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<td>D/F</td>
<td>FX</td>
<td>M8X</td>
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New OEM entrances and brand expansion

New entrants from other industries drives brand expansion

**Brand number**

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<thead>
<tr>
<th></th>
<th>2000</th>
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<td>2025</td>
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</table>

**Sharing Economy**

**Mega Tech Companies**

Google  Baidu  Mega Tech

**New OEMs**

**Existing small OEMs**

**Sharing Economy**

UBER  滴滴出行  神州租车

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Capacity expansion in China
JV brands and COEM - NEV is a main driver for future capacity expansion

Volkswagen - Qingdao & Tianjin
Ford – Harbin
PSA – Chengdu
FCA – Guangzhou
Hyundai – Cangzhou & Chongqing
Honda – Wuhan
Renault – Wuhan
Karma - Hangzhou
Tesla – ?

BAIC - Huanghua & Ruili
Geely – Baoji, Jinzhong Zhangjiakou & Guiyang
GAIG - Urumqi
Chery – Changshu
FDG – Hangzhou
Hanteng – Shangrao
Joylong – Yangzhou
NEXTEV – Hefei
Shaolin – Zhengzhou
CH-Auto - Suzhou
China OEM expansion in Overseas Markets
New plants and R&D centres, establishment reflect COEMs ambitions
Global EV Production

2023: 1.1M
CAGR = 27.5%

19 Nameplates

2023: .6M
CAGR = 28.3%

146 Nameplates

NA EV  |  ROW EV  |  NA EV Share  |  China EV Share
0.4  |  0.1  |  0.6  |  1.8
The Future Mobility Jigsaw is Taking Shape

Technology and society drive fundamental change

New business models will materialize
Mobility will be redefined

New urban mobility
Technology
Battery cost
Public transit
VMT changes
Autonomous vehicle
Economy
Oil prices
Car & ride sharing

VMT = Vehicle miles traveled

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Thank You!

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