It’s Time for the Auto Industry to Reset Expectations
While underlying demand remains strong, we expect continued geopolitical and economic uncertainty to stall the auto industry’s recovery.

New vehicle sales were down nearly 12% year over year for the first half of 2022 due to the impact of the war in Ukraine, COVID-based shutdowns in China, and ongoing semiconductor shortages.

While we expect supply constraints to ease in some semiconductor categories through 2023, vehicle demand may be tempered due to other factors, including continued inflationary pressures, rising interest rates, eroding consumer confidence, and ultimately a slowdown in GDP growth. In the near term, pent-up demand will help offset the impact of these factors.

Amid the turmoil, auto companies should seize the opportunity to transform themselves for the future.

Four key imperatives:

- Transform your operating model for a sustained lower-volume, higher-uncertainty environment
- Build more resilient supply chains to adapt to emerging risks and geopolitical uncertainty
- Win together: forge targeted partnerships with OEMs and suppliers
- Accelerate innovation and optimize for both the current and expected environments

Sources: IHS Markit; BCG analysis.
Early signs indicate that the semiconductor supply will remain tight through 2023, but some easing will follow.

Sources: BCG IC model forecast; BCG analysis.

Note: Semiconductors are purchased one quarter before the actual end-market sales year. Demand forecasts are determined by expected demand of representative industries. Supply forecasts are determined by foundry capacity. Semiconductor memory devices not included in this analysis.
The global economy has slowed, especially in Europe

**REAL GDP GROWTH IN SELECTED REGIONS, 2021–2023 (%)**

<table>
<thead>
<tr>
<th>Region</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>5.7</td>
<td>4.1</td>
<td>3.2</td>
</tr>
<tr>
<td>Eurozone</td>
<td>5.4</td>
<td>4.2</td>
<td>3.0</td>
</tr>
<tr>
<td>United States</td>
<td>5.7</td>
<td>2.1</td>
<td>2.6</td>
</tr>
<tr>
<td>China</td>
<td>8.1</td>
<td>5.1</td>
<td>5.3</td>
</tr>
</tbody>
</table>

Europe is being significantly affected by high inflation, energy challenges, and rising interest rates, all of which is dampening growth forecasts.

The region is facing many structural challenges, which raise more questions about its outlook over the long term compared to other regions. These include:

- Unfavorable demographic trends
- Productivity declines
- Fiscal tightening
- Ongoing weakness in Eastern EU (no vehicle recovery expected before 2030)

**Sources:** World Bank; BCG analysis.

*China’s 3.8 percentage-point decrease in GDP growth from 2021 to 2022 reflects economic uncertainty and the effects of pandemic restrictions.*
China’s auto market has been hit hard by COVID-related lockdowns

Passenger vehicle sales were substantially lower in the first half of 2022...

...as lockdowns led to retail and supply chain shocks

- Drastic reduction in dealership activity
  - Approximately 30% of dealerships in China were shut down in April; 60% of shuttered dealerships were closed for more than 1 week
  - In Shanghai and Changchun, dealerships were closed for ~2 months

- Significant supply chain disruption
  - Shanghai accounts for more than 10% of national vehicle production
  - Manufacturing bases of key auto suppliers (such as Bosch, Continental, and Infineon) are based in or around Shanghai

Sources: National Bureau of Statistics of China; China Automotive Association (April 2022); MarkLines; BCG analysis.
And despite stimulus, short-term growth is unlikely to persist in China

The government stimulus package could boost demand and ultimately accelerate the proportion of electric vehicles produced.

- 50% reduction in the vehicle-purchase tax through 2022\(^1\)
- RMB 10,000 subsidy for battery electric vehicle purchases in 2022
- 40,000 passenger vehicles added to Shanghai’s quota system (other cities expected to follow)

Nevertheless, consumer confidence will continue to be mixed in 2022 and beyond, suggesting that the growth cycle in 2021 will be short lived.

- ~35 pt decrease in consumer confidence between January (121.5) and April 2022 (86.7), with the index rising only slightly through June (neutral = 100)
- ~40% drop in home sales in July 2022 for China’s top 100 developers, compared to the same period a year before

Sources: National Bureau of Statistics of China; China Real Estate Information Corporation; BCG analysis.

\(^1\)From 10% to 5%.
The auto industry has likely reached the peak of pent-up demand

Estimated global pent-up demand for light vehicles by quarter (millions)

<table>
<thead>
<tr>
<th>Year</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>0.9</td>
<td>2.3</td>
<td>2.6</td>
<td>3.5</td>
</tr>
<tr>
<td>2021</td>
<td>0.9</td>
<td>2.3</td>
<td>2.6</td>
<td>3.5</td>
</tr>
<tr>
<td>2022</td>
<td>2.5</td>
<td>2.5</td>
<td>1.9</td>
<td>1.2</td>
</tr>
<tr>
<td>2023</td>
<td>0.3</td>
<td>&lt;0.3</td>
<td>0.3</td>
<td>0</td>
</tr>
</tbody>
</table>

Sources: IHS Markit; BCG automotive semiconductor model (July 2022); BCG pent-up demand forecast (July 2022); expert interviews; BCG analysis.
Production is unlikely to recover to prepandemic levels in the foreseeable future...

**GLOBAL ANNUAL LIGHT VEHICLE PRODUCTION (MILLIONS)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual/forecast volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>89</td>
</tr>
<tr>
<td>2016</td>
<td>93</td>
</tr>
<tr>
<td>2017</td>
<td>95</td>
</tr>
<tr>
<td>2018</td>
<td>94</td>
</tr>
<tr>
<td>2019</td>
<td>89</td>
</tr>
<tr>
<td>2020</td>
<td>75</td>
</tr>
<tr>
<td>2021</td>
<td>77</td>
</tr>
<tr>
<td>2022</td>
<td>87</td>
</tr>
<tr>
<td>2023</td>
<td>90</td>
</tr>
<tr>
<td>2024</td>
<td>92</td>
</tr>
<tr>
<td>2025</td>
<td>95</td>
</tr>
</tbody>
</table>

Sources: IHS Markit; BCG analysis.
Note: This analysis includes IHS forecast data taken from 2019, baseline data from December 2020, and updated BCG analysis from July 2022. Figures are rounded.
…with Europe in particular showing only a slow recovery of production volume

<table>
<thead>
<tr>
<th>Region</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>16.3</td>
<td>13.0</td>
<td>13.0</td>
<td>14.1</td>
<td>15.6</td>
<td>15.7</td>
<td>15.9</td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>21.1</td>
<td>16.6</td>
<td>15.9</td>
<td>16.0</td>
<td>17.1</td>
<td>18.1</td>
<td>18.1</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>24.7</td>
<td>23.6</td>
<td>24.8</td>
<td>24.0</td>
<td>24.6</td>
<td>25.3</td>
<td>27.1</td>
<td></td>
</tr>
<tr>
<td>Rest of the world</td>
<td>26.8</td>
<td>21.4</td>
<td>23.4</td>
<td>24.5</td>
<td>25.4</td>
<td>26.3</td>
<td>26.9</td>
<td></td>
</tr>
</tbody>
</table>

**GLOBAL ANNUAL LIGHT VEHICLE PRODUCTION (MILLIONS)**

(actual/forecast volume)

**Sources:** IHS Markit; BCG analysis.

**Note:** This analysis includes IHS forecast data taken from 2019, baseline data from December 2020, and updated BCG analysis from July 2022. 2021 forecasts are actuals as of April 2022 with correction for reporting delays. Figures are rounded.
Therefore, automakers should take the following actions to navigate continued market challenges:

**01 Transform your operating model for a sustained lower-volume, higher-uncertainty environment**
- Take a zero-based budget approach to your cost structure, planning for the worst and dramatically reducing break-even point
- Develop next-generation digital capabilities (such as AI and automation) to eliminate waste and do things faster, cheaper, better
- Realign pricing and commercial construct to better capture value created (both with end consumers and between OEMs and suppliers)

**02 Build more resilient supply chains to adapt to emerging risks and increasing geopolitical uncertainty**
- Reconfigure demand and supply planning processes to drive greater accuracy and better evaluation of tradeoffs
- Leverage data and AI to unlock efficiencies and evaluate, monitor, and react to risks in new ways
- Institutionalize enterprise-wide scenario analysis, contingency planning, and crisis-resilience capabilities

**03 Win together: forge targeted partnerships with OEMs and suppliers**
- Develop more robust longer-term demand and supply forecasts and increase level of transparency throughout the value chain
- Balance the need to push for incremental cost efficiencies with maintaining long-term relationships and incentives for co-investment
- Explore new forms of strategic partnerships to create needed scale, secure new technologies, and ensure supply chain security

**04 Accelerate innovation and optimize for both the current and expected environments**
- Focus: ensure laser-like clarity on what you stand for and how you will create sustained value
- Challenge everything: shake up the status quo and ruthlessly reinvent for advantage (e.g., business model, op model, and path to net zero)
- Break free from traditional talent models, ways of working, and cultural constraints to attract the talent needed to win in new mobility
- Double down on efforts to redesign select components and systems to reduce the reliance on scarce resources

Source: BCG analysis.
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