Information Sharing
Coronavirus COVID-19

28.Feb.2020
Impact on manufacturing by sector

<table>
<thead>
<tr>
<th>Sectors</th>
<th>Most impacted</th>
<th>Supply chain integration</th>
<th>Demand</th>
<th>Assessing level of disruption</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Chinese share of global</td>
<td>Chinese % of</td>
<td>Chinese share of global</td>
</tr>
<tr>
<td></td>
<td></td>
<td>exports</td>
<td>intermediate good</td>
<td>consumption</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>exports</td>
<td></td>
</tr>
<tr>
<td>Computer, electronic, optical</td>
<td>30%</td>
<td>28%</td>
<td>49%</td>
<td>38%</td>
</tr>
<tr>
<td>products</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical equipment</td>
<td>28%</td>
<td>21%</td>
<td>59%</td>
<td>54%</td>
</tr>
<tr>
<td>Other machinery and equipment</td>
<td>28%</td>
<td>14%</td>
<td>47%</td>
<td>44%</td>
</tr>
<tr>
<td>Motor vehicles and trailers</td>
<td>5%</td>
<td>7%</td>
<td>33%</td>
<td>33%</td>
</tr>
<tr>
<td>Furniture, safety, fire, other</td>
<td>34%</td>
<td>10%</td>
<td>27%</td>
<td>18%</td>
</tr>
<tr>
<td>Other non-metallic mineral</td>
<td>29%</td>
<td>21%</td>
<td>58%</td>
<td>57%</td>
</tr>
<tr>
<td>products</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rubber and plastics</td>
<td>18%</td>
<td>14%</td>
<td>35%</td>
<td>38%</td>
</tr>
<tr>
<td>Basic metals</td>
<td>1%</td>
<td>7%</td>
<td>52%</td>
<td>46%</td>
</tr>
<tr>
<td>Mining and quarrying</td>
<td>1%</td>
<td>1%</td>
<td>25%</td>
<td>29%</td>
</tr>
<tr>
<td>Chemicals</td>
<td>12%</td>
<td>9%</td>
<td>42%</td>
<td>40%</td>
</tr>
<tr>
<td>Paper and paper products</td>
<td>11%</td>
<td>8%</td>
<td>35%</td>
<td>30%</td>
</tr>
<tr>
<td>Other transport equipment</td>
<td>9%</td>
<td>21%</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>4%</td>
<td>5%</td>
<td>35%</td>
<td>39%</td>
</tr>
<tr>
<td>Textiles, apparel, and leather</td>
<td>41%</td>
<td>32%</td>
<td>58%</td>
<td>46%</td>
</tr>
<tr>
<td>Coke &amp; refined petroleum products</td>
<td>7%</td>
<td>5%</td>
<td>22%</td>
<td>23%</td>
</tr>
<tr>
<td>Food, beverages, and tobacco</td>
<td>7%</td>
<td>4%</td>
<td>33%</td>
<td>34%</td>
</tr>
<tr>
<td>Fabricated metal products</td>
<td>0%</td>
<td>19%</td>
<td>30%</td>
<td>29%</td>
</tr>
<tr>
<td>Wood and wood products</td>
<td>19%</td>
<td>9%</td>
<td>40%</td>
<td>34%</td>
</tr>
<tr>
<td>Printing and media</td>
<td>11%</td>
<td>4%</td>
<td>26%</td>
<td>25%</td>
</tr>
<tr>
<td>Agriculture, forestry, and fishing</td>
<td>4%</td>
<td>1%</td>
<td>31%</td>
<td>32%</td>
</tr>
</tbody>
</table>

1. Color scale based on percentiles within each metric

**Economic exposure**
- Low
- High (by metric)

**Assessing level of disruption**
- Within the manufacturing industries, certain sectors are likely to be more vulnerable than others as a result of higher level of anticipated disruption (e.g., idle plants in affected regions) combined with greater global economic exposure.

Overall, vulnerability can be assessed by considering the following criteria:
- If most operations are in/near affected areas
- If products are highly customized, requires skilled talent, and/or specialized equipment/infrastructure
- If industry already under stress
- If China serves a major role in the global supply chain
- (for where China produces intermediate goods) if the industry tends to keep a higher level of component inventory

**Motor vehicles**
- Since 2003, China has since established itself as an automotive powerhouse and now serves as a major supplier to global automakers – COVID-19 poised to be much more disruptive now
- More than 60% of Chinese automotive light vehicle production is based in provinces currently affected by government mandated production shutdowns, leading to an estimate of 9 bn USD productions losses per week
- The outbreak comes at a time of already slumping sales, heightened trade tensions and dampened forecasts

Source: IHS Markit; McKinsey Global Institute analysis
Population movement and traffic indicators provide insights in economic restart signals and consumer confidence

Supported by

Source: McKinsey_Coronavirus_Covid19_Crisis_Response_Feb14-2020

### What this tells us

<table>
<thead>
<tr>
<th>Inbound movement of population in China, movement index arbitrary unit[^1]</th>
<th>Representative cities in selected provinces</th>
<th>Peak congestion level, % travel time increase compared to free flow condition[^2]</th>
<th>Are inhabitants resuming regular daily activities?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jiangsu</td>
<td>2</td>
<td>Nanjing</td>
<td>9</td>
</tr>
<tr>
<td>Guangdong</td>
<td>6</td>
<td>Shenzhen</td>
<td>8</td>
</tr>
<tr>
<td>Shandong</td>
<td>1</td>
<td>Data unavailable</td>
<td>3</td>
</tr>
<tr>
<td>Zhejiang</td>
<td>1</td>
<td>Hangzhou</td>
<td>3</td>
</tr>
<tr>
<td>Henan</td>
<td>1</td>
<td>Data unavailable</td>
<td>4</td>
</tr>
<tr>
<td>Fujian</td>
<td>1</td>
<td>Xiamen</td>
<td>4</td>
</tr>
<tr>
<td>Hubei</td>
<td>0</td>
<td>Wuhan</td>
<td>5</td>
</tr>
<tr>
<td>Hebei</td>
<td>2</td>
<td>Shijiazhuang</td>
<td>5</td>
</tr>
<tr>
<td>Sichuan</td>
<td>1</td>
<td>Chengdu</td>
<td>5</td>
</tr>
<tr>
<td>Hunan</td>
<td>1</td>
<td>Changsha</td>
<td>5</td>
</tr>
<tr>
<td>Shanghai</td>
<td>3</td>
<td>Shanghai</td>
<td>12</td>
</tr>
<tr>
<td>Beijing</td>
<td>3</td>
<td>Beijing</td>
<td>11</td>
</tr>
</tbody>
</table>

[^1]: Measures movement of population into destinations
[^2]: Car traffic only. Peak congestion is defined as the point of day where travel time is the longest compared to free flow condition

### Top 10 provinces and select cities by size of manufacturing sector

- **Guangdong** (hub for electronics) and **Hebei** provinces (hub for metallurgy) compared to others
- **Hubei and Zhejiang**, the two most affected provinces, are showing the lowest level of movement and activities compared to historic levels

### Implications

- **Extended Lunar New Year holiday** in many cities and staggered resumption of manufacturing activities across China are delaying the return of migrant workers
- **Travel / transportation restriction**, such as quarantine periods in home location or upon arrival, is limiting movement of population across China
- **Work from home policies in place by major companies** are reducing the need for travel during rush hours

**Movement of population** is an early signal for potential economic restart
Population movement and traffic indicators provide insights in economic restart signals and consumer confidence

Taken on 24. Th Feb

Peak Congestion level

SOUCE: Big data from amap, update each 5 min https://report.amap.com/detail.do?city=310000
Automotive Industry – OEM Segmentation

**Southwest China**
- **Supplier base for commercial vehicle components**
  - IVECO, Dongfeng and Shaqianxi Automobile Group have set up plants and developed local supplier base

**North China**
- **Supplier base for Korean OEMs**
  - Hyundai, Kia, Hyundai Mobis, and Mando established their plants in north China, attracted and developed local supplier base

**Northeast China**
- **Supplier base for German OEMs**
  - BMW, VW, Bosch and ZF have established their plants, attracted and developed local supplier base

**South China**
- **Supplier base for Japanese automotive**
  - Toyota, Honda, Denso, Aisin, Yazaki, established their plants in Guangdong, attracted and developed local supplier base
- **New energy vehicle suppliers**
  - BYD buildup world’s largest fuel cell factory in Foshan, Guangdong Province
- **Electronic components**
  - Guangdong province alone produces about 20% of world’s electronics industry products

**East China**
- **R&D capabilities**
  - Suppliers including ZF, Yanfeng Visteon, Magna, Bosch set up their R&D centers in Shanghai and nearby regions

**Central China**
- **Supplier Base for European and local automakers**
  - General Motors, Nissan, Renault, Honda and PSA Group (owns Peugeot) all have large factories in Wuhan
- **Supplier base for auto components**
  - German engineering firm Bosch, the world’s largest auto component manufacturer, has dozens of plants in China including two in Wuhan

**Source:** China Automotive Industry Association, McKinsey

Mckinsey_Coronavirus_Covid19_Crisis_Reponse_Feb14-2020
Automotive Industry – OEM Segmentation

COVID-19 poses significant challenges to the automotive industry with a pronounced impact on OEMs

Overview

- China is the world’s largest automotive market with 25.7 million cars produced in 2019, compared to 2.3 million cars in 2001, an 11x increase in less than two decades.
- Global automakers have a substantial footprint in Wuhan, Hubei Province, and China more broadly.
  - Wuhan and the rest of Hubei province account for 9% of total Chinese auto production.
  - General Motors, Nissan, Renault, Honda and PSA (owns Peugeot) have large factories in Wuhan.
  - Nissan produces ~1.5M cars/year in Wuhan.
  - Honda produces ~700K cars/year, equal to 50% of its production capacity in China.
  - GM operates 15 assembly plants with its Chinese partners.
  - Ford has 6 assembly plants and Fiat Chrysler has 2 plants in China.
  - BMW has three factories in northern China.
- Chinese automotive components are a major part of the global auto supply chain, including 8 components factories for Toyota, and 24 plants making cars or parts in China for 40% of the Volkswagen production.
- German engineering firm Bosch, the world’s largest auto component manufacturer, has dozens of plants in China including two in Wuhan.
- Other parts suppliers including Schaeffler, ZF Friedrichshafen, Faurecia and Valeo have significant operations in the country.

Sector-specific considerations

- The COVID-19 will be more harmful to the automotive industry than the 2003 SARS epidemic.
  - COVID-19 has already outpaced 2003 SARS epidemic in both number of confirmed cases and number of deaths.
  - In 2003, China had not established itself as an automotive powerhouse and did not serve as a major supplier to global automakers.
  - China’s car parc was only at 24M units then. ~10x less than it is now (200M units).
  - Chinese car sales increased during ARS epidemic as people bought cars to avoid taking public transit.
  - While Chinese automotive production declined during the SARS crisis, overall automotive sales and revenue were increasingly positive.
- The outbreak comes at a time of already slimming sales, heightened trade tensions and dampened forecasts.
  - China auto sales fell 2.8% in 2019 amidst global trade tensions, the first decline in nearly two decades.
  - Global automakers forecasted further sales declines in 2020, prior to knowledge of the coronavirus outbreak.
  - Prolonging of the crisis could prove financially disastrous for global automakers, causing depletion of parts reserves and supply chain bottlenecks.
  - Fiat Chrysler and Ford unprofitable in China; GM facing decreased profits in the region.
  - Inventory surplus estimates differ but range between 2-6 weeks, any delays in production beyond this timeframe (including ramp up time) could signal deep financial losses.

Examples

- Impact on top global automakers.
  - The coronavirus outbreak will force carmakers in China to slash production by about 15% in the first quarter, requiring a new customer first “pull” mindset.
  - Based on idled plants and lack of component supply from tier-chain – current inventory for some Japanese OEMs to fully produce is less than a week - losses could reach 9 billion USD per week.2
    - More than 60% of Chinese automotive light vehicle production is based in affected provinces.
    - Central government is encouraging local governments to incentivize production re-start.
    - Ford, Tesla were planning to reopen factories this week but will ramp slowly up pre-outbreak capacity.
    - GM, Toyota, Honda, Suzuki, Nissan, BMW anticipate re-opening factories in the coming days to week.
- Impact on global supply chain outside of China.
  - Missing manufacturing components are slowly production globally, especially in APAC including Hyundai in South Korea, Nissan’s plant in Kyushu, Japan, and Renault in Busan, South Korea.
  - Fiat Chrysler may suspend production at a European production plant due to supply chain disruption.

1 Estimate of immediate vehicle production losses shown assuming ongoing production halts in China and lack of parts outside of China could be compensated over the FY through increased production in later quarters.
2 Effect on global OEMs based on missing supply from Chinese exports of automotive parts based on following: ~9% of global trade volume of automotive (Tier-1) parts, assuming 50% average report share, negation of additional effects (e.g. affected Tier-1 suppliers from China, production stop based on single missing parts and integration efforts of OEMs).

For more information, please connect with Bill Peng, and Arthur Wang, our dedicated partners in Hong Kong.

SOURCES: McKinsey_Coronavirus_Covid19_Crisis_Response_Feb14-2020
ICT as labor intensive Industry

- **Production interruption**: resume work is not identify to the recovering the production capacity. Supply chain is under pressure.
  - Apple: due to key suppliers hold stock level in 2-3 months, by the end of Feb, the disruption of Supply Chain is still under control;
  - Huawei: resume work on 3rd Feb. However, limited by their supply chain, their capacity is quite difficult to be achieve their level, mainly influence on new products.

- **Demands**: increase at one digital
  - Global demands (except China market) so far in line with expectation. Consumers will not reduce their expenditures due to COVID-19.
  - Pulling effect of new products: mi planed with 5G phone Xiaomi 10 in Feb, Huawei planed with Mate Xs, Apple with its cheaper version iphone in March;
  - Q1 is basic not boom season for ICT industry, however the catch up in production in Q2 and Q3 is needed for most companies.

SOUCE: Mckinsey_Coronavirus_Covid19_Crisis_Reponse_Feb14-2020
THANK YOU

Members of Swiss Machinery Association (SMA)