

A person is standing on a rooftop, looking out over a city skyline. The city is filled with various buildings, including several tall skyscrapers. The sky is a pale, hazy blue. A large yellow trapezoidal shape is overlaid on the left side of the image, containing the title text.

Impact of Coronavirus on Automotive & Mobility Sub-sectors

Executive summary

- ▶ **Macroeconomy:** The direct impact of the coronavirus outbreak on the global macroeconomy is expected to be significant, but concentrated largely within Q1/Q2 2020.
- ▶ **Public policy response in China:** Policies are being created to provide support to the consumer & service sectors. Further measures conducive to creating a favorable business environment are also being considered.
- ▶ **Passenger Vehicles:** The passenger vehicle market is expected to face significant disruption in production, global supply chain and customer demand. Extended production downtimes may lead automotive OEMs to diversify their supplier base.
- ▶ **Commercial vehicles:** As with passenger vehicles, commercial vehicle production in other countries (Japan in particular) is likely to slow as components sourced primarily in China are in scarce supply in the short term.
- ▶ **Chemicals:** Chemical producers in China are facing steep pricing declines as demand from end markets falls due to factory closures across a range of sectors. Hubei also has a concentration of chemical production facilities.
- ▶ **Industrial Products:** While industrial products as a sector is not as directly affected by factory closures in Hubei as the PV or chemical sectors, global players are facing both supply constraints and lowered end-market demand.
- ▶ **Transportation:** Transportation and logistics are expected to face a prolonged slowdown on lower shipment volumes to countries with integrated supply chains and intermediate goods dependency on China.
- ▶ **Airlines:** Similar to past pandemics, a drop in airline passenger traffic and the suspension of flights to China are expected to be severe in the short term, with corresponding decreases in activity in China's tourism industry. However, aviation experts expect the industry to recover soon after virus containment.

Coronavirus impact on macroeconomy

The direct impact of the coronavirus outbreak on the global macroeconomy is expected to be significant but concentrated largely within Q1/Q2 2020

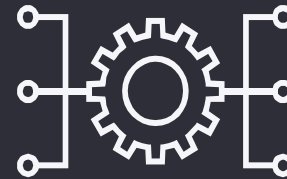
- ▶ China now makes up 16% of the global economy versus 4% during the epidemic (SARS) in 2003, which means the impacts on the rest of the world will also be larger
- ▶ The global spillovers will come via four main channels: reduced goods imports by China, fewer tourism visits from Chinese nationals, supply-chain disruptions due to shortages of Chinese-produced intermediate goods, and financial market and business confidence effects



Reduced goods imports by China. Chinese services imports are set to be affected far more than goods imports. Oxford Economics has reduced forecast for Chinese import volumes by 9% in Q1 and 5% in Q2 compared to January forecast, pointing to notable short-term spillovers



Fewer tourism visits from Chinese nationals. Chinese visitors accounted for 150 million overseas trips in 2019, while Chinese tourists spent \$130 billion overseas in 2018, up 13% from the previous year. 73% fewer trips were taken by Chinese tourists over the lunar new year holiday in 2020 compared to 2019



Supply-chain disruption due to shortages of Chinese-produced intermediate goods. Chinese intermediate exports are small as share of global production, but South Korean autos and electronics and Japanese textiles – are particularly vulnerable to Chinese industrial disruption



Financial market and business confidence effects. The financial market rally was derailed by a jump in the virus infections and doubts lingered about the resumption following the New Year break. Worries about the spread of the coronavirus and its hit to the global economy also affected the global business confidence

In the short term, coronavirus outbreak impact on China's economy is expected to be high, but short-lived

- ▶ The coronavirus will affect the Chinese economy in Q1 2020. The economic impact is likely to be high but short-lived, as during the 2003 SARS episode
- ▶ However, the scale of the outbreak and impact is set to be worse than in the case of SARS, as the coronavirus is affecting a larger part of China and its population



Consumption and travel would be most impacted. Citizens are staying home more than usual to avoid infection. The government has stopped all domestic and outbound group and individual package tours. Retail, restaurants, transport and hospitality sectors are experiencing severe short-term losses as a result



Investment and production will see a sizeable impact but to a lesser degree. The reduced number of work weeks in Q1, the lockdown of affected regions, and the disruptions of the flows of people and goods in the near term will all hinder production and investment. However, given the transitory nature of the virus outbreak, investment and production activity is not likely to be brought to a standstill



Government action and response is providing some support to the economy. The China Banking and Insurance Regulatory Commission has encouraged financial institutions to support businesses and households affected by the virus. More policies are likely in the pipeline particularly to support the service and the consumer sector, along with further measures conducive to creating a favorable business environment

Source: Oxford Economics

China's real GDP growth is forecasted at 5.0%-5.8%, while world GDP growth is forecasted at 2.2%-2.3%

- ▶ China plans to achieve the baseline target of doubling 2010 GDP and per capita income by 2020, which requires real GDP growth of no less than 5.5% in 2020, a view that is widely held among the nation's leading economists. China will likely take multiple measures to support economic growth to reach the targets
- ▶ China's Real GDP growth in 2020 is forecasted at 5.0%-5.8%. The impact will mainly be felt in Q1, followed by an expected rebound in subsequent quarters, while world GDP growth is forecasted at 2.2% -2.3%

Organization	2020 China's real GDP growth	2020 World GDP growth	Assumption
Standard & Poor's	5.0%	-	Epidemic under control in March
Oxford Economics	5.4%	2.3%	Epidemic under control in 1Q
IHS Markit	5.4%	2.2%	The shutdown ends on 10 February
IMF	5.8%	-	Epidemic under control in February

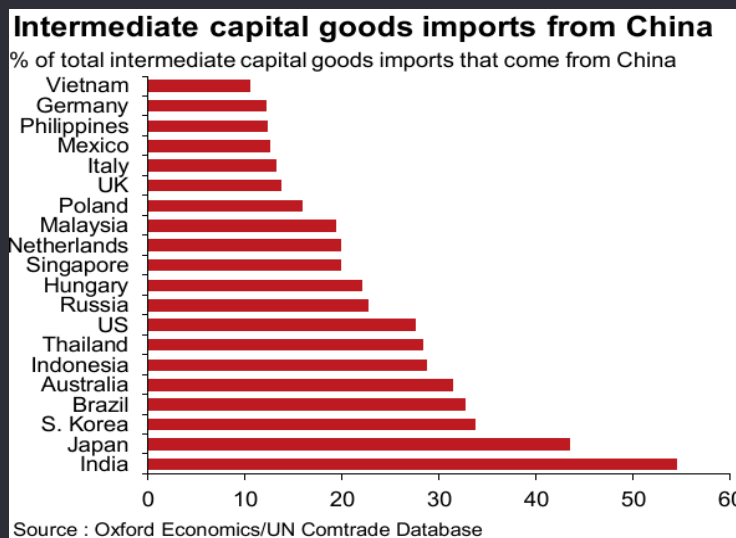
Source: Oxford Economics

Asian economies' import shares of Chinese intermediate goods are significant, and would face the biggest disruption

Top 20 export markets for core Chinese/HK intermediate goods (2018)		
	\$bn	% of core intermediate exports
US	170.0	17.7
S. Korea	67.3	28.4
Japan	65.5	23.2
India	64.3	25.5
Vietnam	60.7	41.6
Germany	34.7	5.8
Thailand	34.5	24.8
Singapore	28.5	14.8
Malaysia	28.2	22.1
Indonesia	27.5	26.8
Mexico	24.1	9.3
Netherlands	21.9	11.0
UK	20.4	7.5
Brazil	19.6	20.6
Philippines	19.2	30.8
Australia	18.8	26.7
Russia	17.5	17.5
Italy	16.4	7.5
UAE	14.9	13.6
Canada	14.6	7.6

Source: Oxford Economics/UN Comtrade database

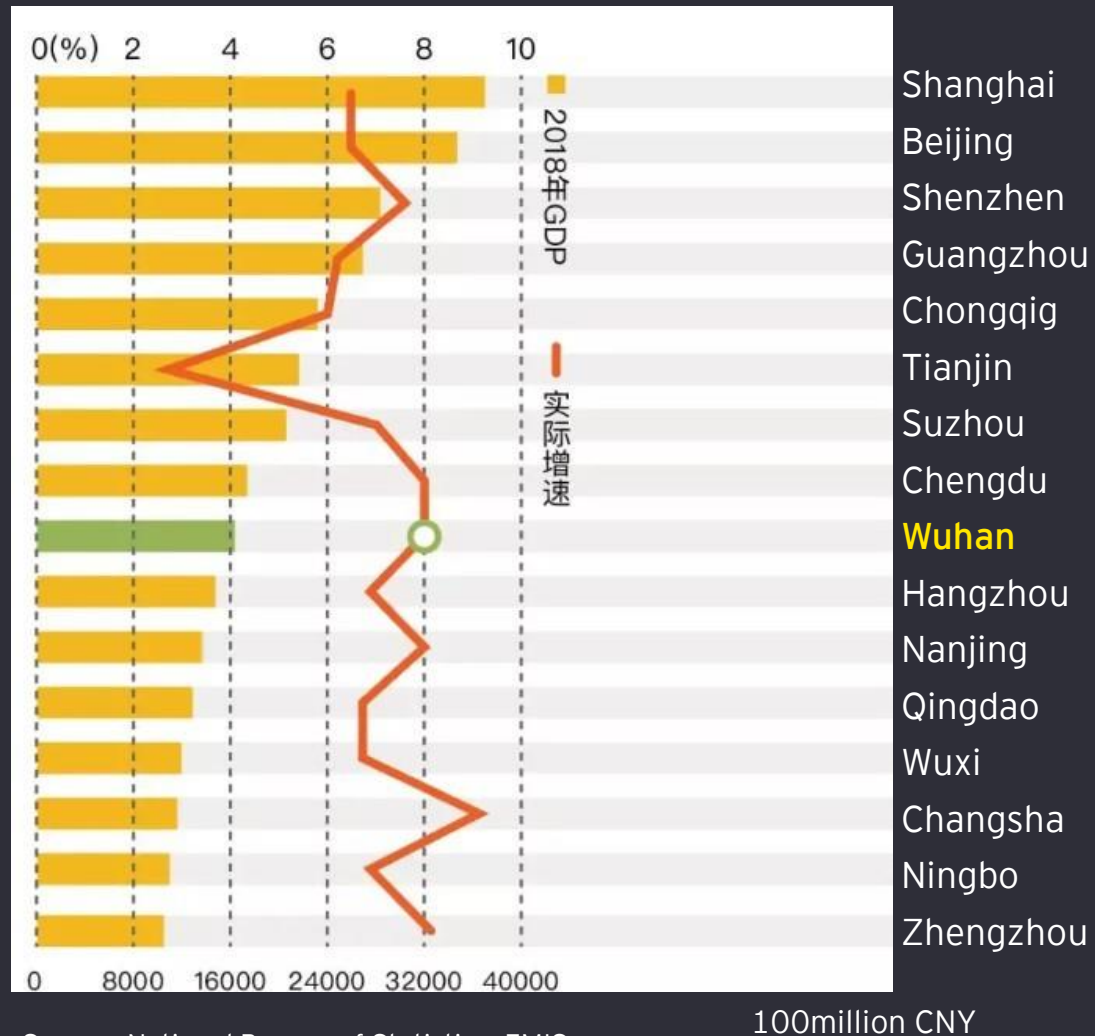
- ▶ Vietnam's supply chain in particular is closely tied to China. Over 40% of core intermediate goods that it imports come from China, implying short-term substitution away from Chinese intermediate producers won't be feasible. After Vietnam, the South Korean and the Philippines economies look vulnerable to coronavirus
- ▶ The share of intermediate goods imports from China is in excess of 20% in all the other Asian economies on the list, bar Singapore
- ▶ The data suggests that US industry might be more vulnerable than the industrial sectors of other advanced economies. However, this is based on 2018 figures and may not account for supply-chain diversification resulting from ongoing US-China trade tensions
- ▶ China's share of global trade in intermediate parts for non-transport capital goods is especially high at 28%, implying that the capital goods sector could be prone to particularly severe disruption. Three economies – India, Japan, and South Korea – import more than a third of their intermediate capital goods from China, suggesting scope for particularly significant disruption there. Nonetheless, the affected sectors will represent a small share of total output in these economies
- ▶ Oxford Economics cut 2020 GDP growth forecast for Germany to 0.5% from 0.7%, considering coronavirus will hit external demand and industrial supply chains, delaying industrial recovery



Wuhan regional overview

Wuhan: a central Chinese economic center closely connected to the world

China Trillion-GDP cities GDP and real GDP growth(2018)



- ▶ Wuhan's real GDP ranked at 9th in a list of 16 Chinese cities with GDP of 1 trillion CNY or more in 2018. Wuhan accounts for nearly 1/3 of Hubei Province's GDP.
- ▶ The permanent population of Wuhan is nearly 11 million.
- ▶ Wuhan, as the only sub-provincial city in 6 central provinces (Hunan, Hubei, Anhui, Jiangxi, Henan, Shanxi), is a crucial economic hub. Wuhan's three major rail stations, ferry ports and airport make it one of the largest transport centers in the region. Wuhan is also a key stop for Yangtze river cruises.
- ▶ Several countries have consulates in the city, including the US and France - both of which are working to evacuate their nationals from Wuhan due to the virus. Around 160 Japanese companies, including major players in the auto and electronics industries, have offices in the city, according to the Japanese Chamber of Commerce in Wuhan.

Source: National Bureau of Statistics, EMIS

100million CNY

Wuhan's economic impact reaches a wide range of end markets

Industrial powerhouse

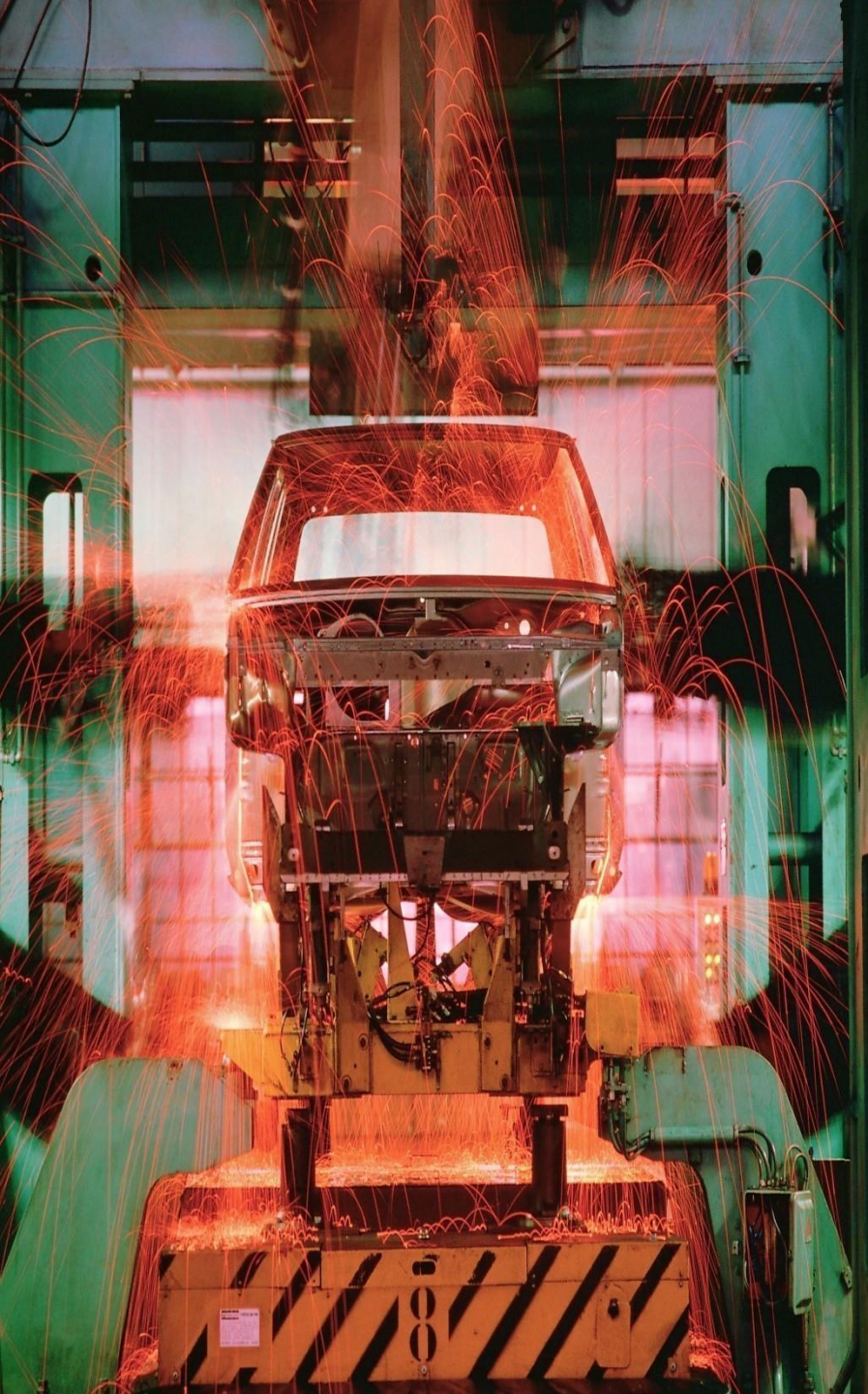
Wuhan is the capital city of the province of Hubei, central China's industrial heartland. It is a major center of industry, including iron and steel manufacturing. According to UNESCO, half the world's long-span bridges and 60 percent of China's high-speed railways were designed by Wuhan designers. As a traditional industrial hub it has attracted large numbers of migrants seeking work. According to Wuhan's mayor, five million of the city's population are migrants.

High-tech industries

Wuhan has been making inroads into high-tech industries. In a report last year, the Milken Institute ranked it China's ninth best-performing city, up seven places from the organization's previous annual report. Wuhan's economy included areas from chip-making to biomedicine and had secured investments from 230 Fortune Global 500 firms, according to the study. The Wuhan East Lake High-tech Development Zone, also known as "Optics Valley," had attracted several high-tech companies, including Xiaomi. It was the city's first fiber-optic cable production site, according to state news agency Xinhua.

Automobile industry

Wuhan has several automobile enterprises and more than 500 automobile parts enterprises. The output value of the automobile and parts industry in Wuhan was around 400 billion yuan (\$57 billion) in 2018, according to Wuhan automobile industry development office.



Subsector Impact - Passenger Vehicles

Automotive OEMs are dealing with the global implications of the Coronavirus epidemic

China's vehicle production is expected to take a setback amid growing fears of an impending global supply chain disruption.

The 2019 novel Coronavirus (Coronavirus) that originated in Wuhan of Hubei has begun to significantly impact the Chinese economy and the global automotive sector.

While the Chinese economy recovered from the SARS* epidemic in 2003, a rebound is expected to take longer this time due to the relatively larger size of the economy and a widespread impact of the virus.

Multiple automakers and suppliers are suspending operations and restricting employee travel as the Chinese governments extended the Lunar New Year holidays in affected areas and limited companies to resume operations until further notice.

*Severe acute respiratory syndrome
Source: Credit Suisse, IHS Markit, news articles

Since major OEMs have a significant manufacturing base in China, the slowdown in production is likely to impact the overall profits for OEMs and suppliers alike.

“

If this situation continues, supply chains will be disrupted. There are forecasts that predict the peak for infections will drag on until February or March.

-Volkmar Denner, CEO, Robert Bosch



Automakers and suppliers are expected to be affected with production halts stemming from extended Lunar New Year holidays



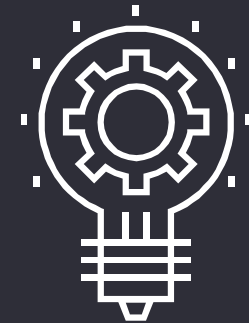
Vehicle forecasts

Wuhan is forecast to produce ~1.3 million vehicles in 2020, accounting for ~6.5% of China's total production led by Honda and GM in Wuhan; while Shanghai is forecast to produce ~1.6 million vehicles in 2020 led by Volkswagen, GM and Tesla.



Production downtime

China's production slowed down further in January and February due to extended Lunar New year holidays across affected regions. While most provinces are shut till 10 February, Hubei is shut till 10 March.



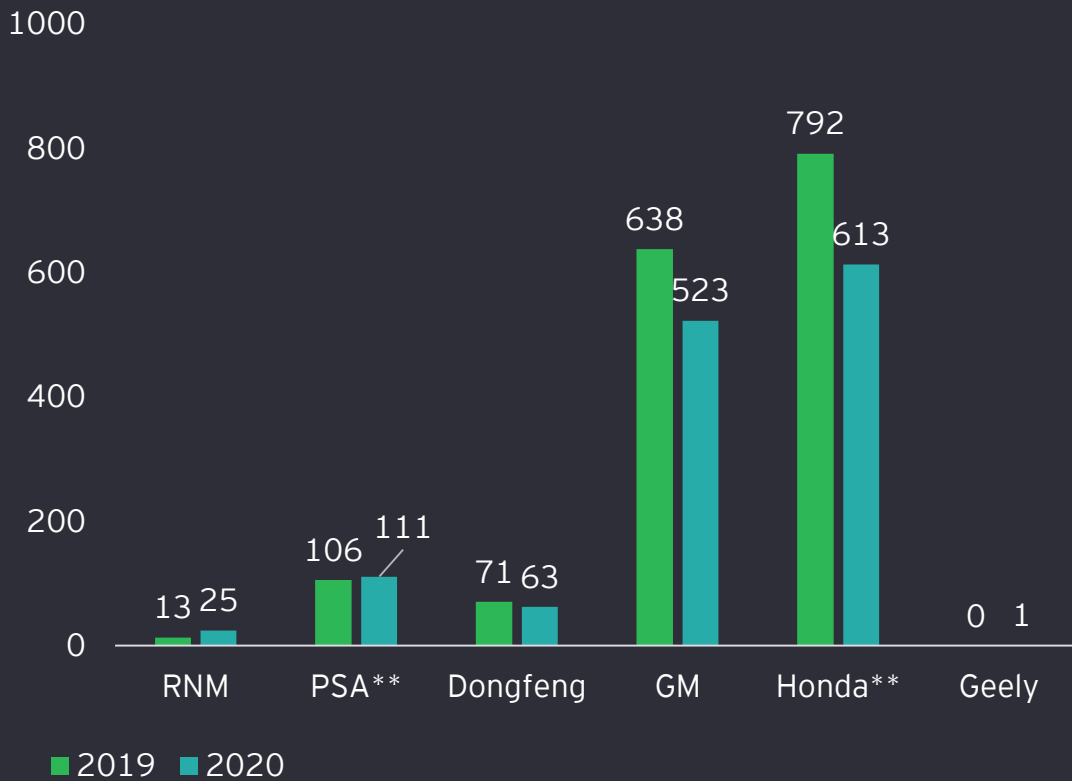
Supplier exposure

Major automotive suppliers such as Adient, BorgWarner, Lear, Garrett Motion, Bosch, Magna and Aptiv among others have manufacturing operations in the affected regions (~20% revenue share in China). A global supply chain disruption could accelerate vehicle production downtime due to parts shortages particularly in interiors, lighting, electrical and braking components.

Automakers are waiting to resume vehicle production, but are also evaluating the potential overall delay due to Coronavirus

Honda is the largest player in Wuhan with three assembly plants; currently assessing transport disruption of auto parts

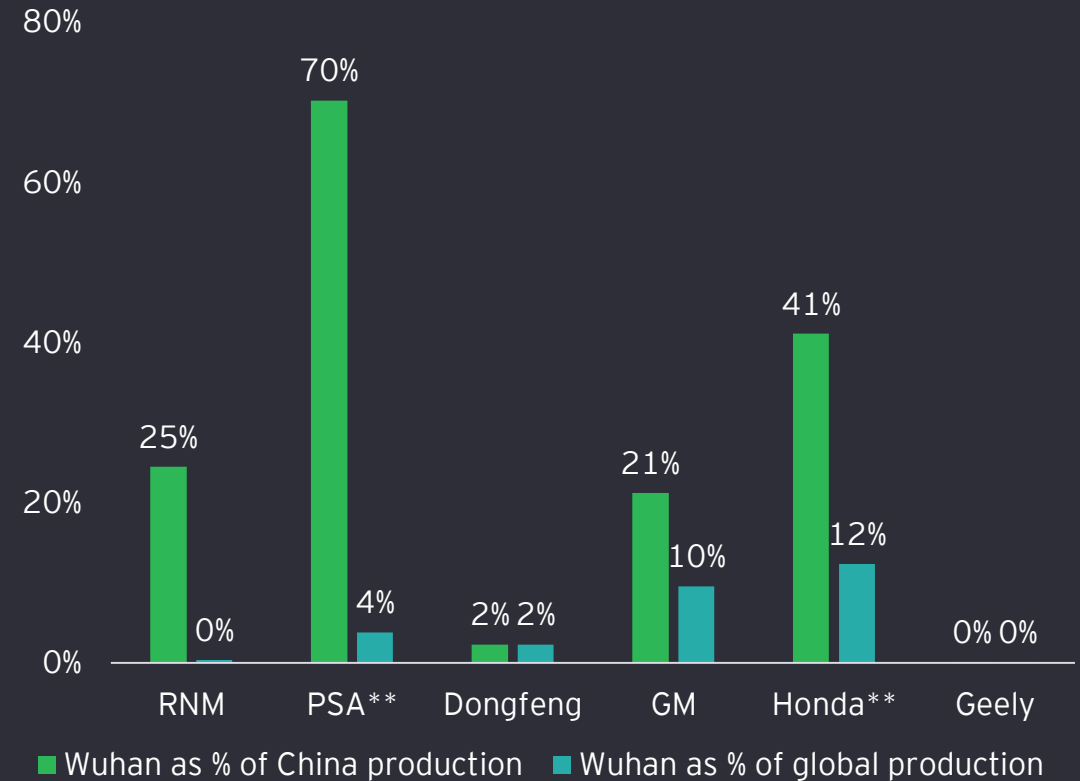
Wuhan production volumes by OEM, 2020E (Thousands)



**have multiple facilities in Wuhan
Source: LMC Automotive, news articles

PSA, GM and Honda have leading exposure in Wuhan as part of JVs with Dongfeng (PSA, Honda) and SAIC (GM)

Wuhan production as % of China and global production by OEM, 2020E





Chinese vehicle production outlook for 1Q20 will be significantly down due to the epidemic

Chinese 1Q20 light vehicle production is expected to decline by 20%-25% y-o-y reflecting a decrease of ~600,000 units, compared to previous IHS estimates of 13% decline y-o-y

The dynamic situation due to the epidemic is increasing production forecast uncertainties. While accelerated line rates and added overtime could push production volumes, parts supply shortages and production delays can reduce the overall volume

Companies are expected to pay freight premium once the impact of the virus settles down; which is likely to lead to an outsized margin impact

As the Coronavirus outbreak continues through February, key concerns around plant closures remain unsolved

Assuming China recovers from its economic slowdown, OEMs are likely to use the outbreak as an opportunity to destock their inventory, consequently reducing China's vehicle production outlook in 2020. However, low capacity utilization levels in China have the potential to offset production downtime

Only **59**
out of 183 car factories in
China have resumed production
as of 12 February 2020

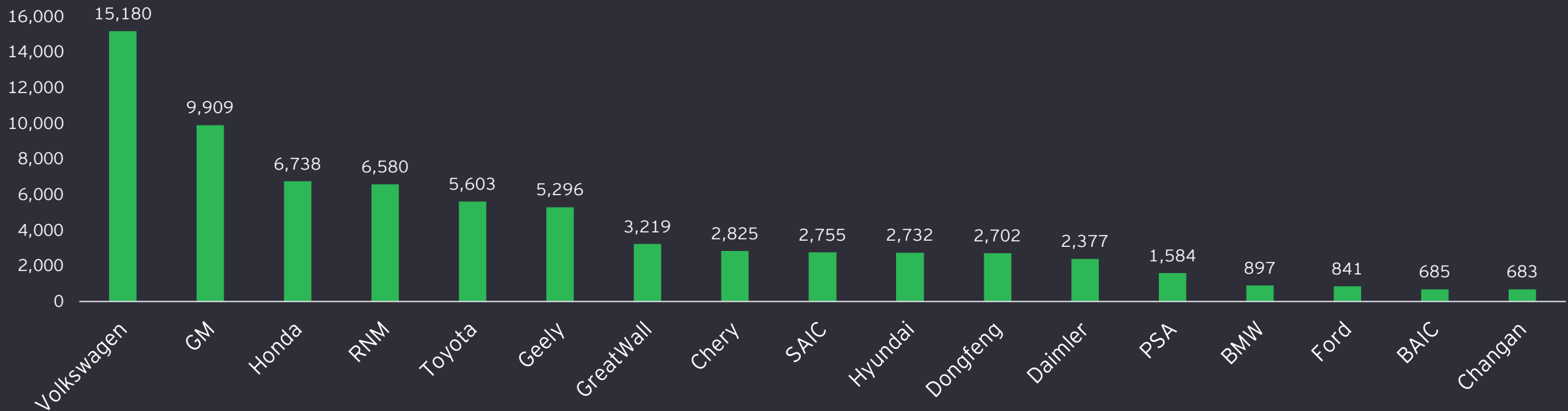
Sources: News articles, Credit Suisse

OEMs are likely to subsume daily production losses in 1Q20 owing to their strong market positioning and business

- ▶ OEMs will face production losses due to a reduced migrant worker flow across China, interruptions in auto parts supply and extended government mandated shutdowns
- ▶ Dongfeng has a relatively high exposure to the outbreak; with 50% of its production based in Hubei. However, Moody's expects OEMs like Dongfeng to absorb the losses from 1Q20 supported by their solid business profiles in terms of scale and competitive market positions

Volkswagen is expected to have the highest daily production losses due to disruptions in other provinces; however has no direct exposure in Hubei

Estimated daily vehicle production losses in China due to Coronavirus by OEMs



Source: IHS Markit, Moody's

Chinese car sales are expected to decline in the short term; OEMs are starting to warn the impact of the virus on sales

German carmakers are particularly sensitive to what happens in China. Volkswagen AG produces and sells ~40% cars in China. China is also a major market for BMW and Daimler

Consumer demand and corporate capital spending is expected to drop in the near term, which will drastically lower sales. However, the credit impact will be offset by long-term demand growth in China and strong financials of key OEMs



Toyota has issued a **sales warning** due to the continued spread of the virus
Volvo Cars has decided to not set sales targets for its dealers in February 2020



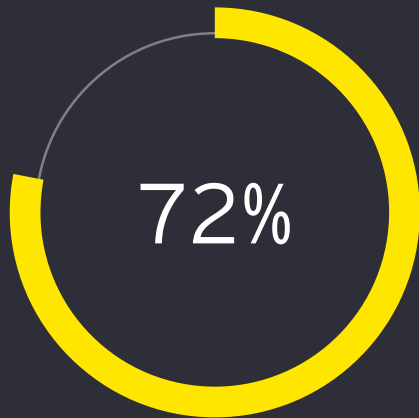
Sales are expected to take a hit as most **consumers** chose to stay home voluntarily to avoid any infections.
Chinese EV sales will also be heavily impacted as sales of those vehicles are concentrated in the biggest cities



Chinese Passenger Car Association expects **sales to fall** by 25% to 30% in the January-February period while 2020 sales may decline by 5%

Auto dealers would be under tense cash-flow pressure due to a sharp fall in revenues and high fixed costs

- ▶ The restriction of travel makes potential consumers postpone the purchasing plan, resulting in the sharp fall of revenue of the dealers, while the high fixed costs still exist including rent and labor costs, thus making most of the dealers face tense cash flow
- ▶ Some dealers have started to develop sales through on-line marketing channel including VR showroom, live video, and provide door-to-door delivery and insurance-extend service
- ▶ OEMs like Volvo cancelled the February sales target and provided subsidies for dealers



About 72% of the auto dealers are facing cash flow shortage problem, and 34% of the dealers can only maintain less than 3 months.



Over 60% of the auto dealers have high inventory level with inventory index above 1.5, while 78% of the dealers use auto financing for over half of the vehicles, resulting in higher financial cost.



About half of the dealers may have over CNY1 million loss due to the coronavirus issue.

* Inventory index=inventory volume at the end of current month/ current month vehicle sales(1.5 is the alert level)

Source: Renhedao

Coronavirus to impact component sourcing primarily for interior components, lighting, electricals and braking systems; Honda expected to be heavily affected

- ▶ Hubei is an important sourcing hub for major OEMs; consisting of around 70 supplier plants and an overall revenue of ~US\$3.9b. It serves Guangdong, Chongqing and Sichuan provinces for Honda and Dongfeng
- ▶ Hubei primarily offers just in time/ just in sequence needs of GM and Honda for interior components
- ▶ It also extends sourcing to Daimler in Beijing for lighting; Geely in Zheijhang
- ▶ ZF and Chassis Brake International are important braking suppliers in the region; that supply to OEMs outside Hubei (Geely, Jiangling, Honda, SAIC, VW, and Daimler); and even out of China
- ▶ Dongfeng Automotive Component Group provides various parts such as camshafts and electronic control units (ECUs) among others

Such parts shortage is expected to impact Honda's component sourcing and consequently vehicle manufacturing in the region. If extended shutdowns occur in adjacent provinces (Anhui, Zhejiang, Guangdong), the risk of disruptions in global vehicle production is likely to be amplified



Hubei based suppliers overview

Supplier group	2019E Hubei revenues* (US\$m)	Type
Yanfeng	738	Door trim panel, floor console, instrument panels
Honda	460	Instrument panel, exhaust cold end
TS Tech	404	Door trim panel, seat assembly
Yanfeng Adient	376.6	Seating
ZF Group	289.4	Braking, shock absorbers, airbag module
IAC	248.8	Floor console, instrument panel
Tachi S	245.9	Seat assembly
Lear	212.9	Seating, wiring harness
Sumitomo Electric	200.1	Wiring harness
Chassis Brake International	188.9	Braking
Marelli	177.1	Headlamp, tail lamp, cold end
Aptiv	173.8	Wiring harness
Stanley Electric	170.2	Headlamp, tail lamp

*2019 estimates based on IHS component averages

Sources: News articles, IHS Markit



Coronavirus has begun affecting vehicle production globally; causing OEMs to consider diversifying parts supply

Hyundai idled assembly lines in South Korea, pointing to a shortage of components (wiring harness in particular) due to the Coronavirus outbreak. GM Korea and Renault Samsung have also suspended production in China

Kia reduced output at its Hwaseong and Gwangju, but is yet to suspend operations. GM Korea, Renault Samsung and SsangYong have also been affected due to parts shortage from China. Nissan also announced a temporary shutdown in Japan due to parts shortage

The shutdowns in South Korea and Japan point to potential complexities in the global supply chain for automakers. Hubei is a primary centre for critical components. Guangdong, Shanghai, Beijing and Jinlin are major bases for light vehicle engines

Prolonged suspended operations in China could lead to a depleting parts inventory for OEMs; driving them to source these parts from other low cost countries. Hyundai plans to diversify its supply chain by partnering with domestic suppliers in South Korea to minimize production downtimes

It is yet to be seen how the virus impacts North American and European production as China is also a major parts supplier in these regions

50%

Of all manufacturing in Wuhan is related to the automotive industry

Sources: News articles, IHS Markit

Recent headlines

- ▶ [CNN-China's car sales plunged 18% in January. The coronavirus could make things even worse](#)
- ▶ [REUTERS-Hyundai bet big on China. Now coronavirus is twisting its supply chain](#)
- ▶ [Automotive News China-China starts granting 'force majeure' slips to virus-hit suppliers](#)
- ▶ [WSJ-Coronavirus epidemic further dents China's auto market](#)
- ▶ [The Hindu BusinessLine-Coronavirus spread to shrink India auto production by 8.3% in 2020: Fitch](#)

Scenario Analysis

Scenario based planning

Optimistic Scenario

Epidemic over in March/April

Impact limited to near term volume disruptions, expectation of pent up demand in second half balancing out annual sales. Global supply chain recovers quickly.

“Both the automotive industry and macroeconomy will back to the original development path, we have confidence on the high-quality development of Chinese automotive industry.”

-Yong Xiao, Vice President, GAC NE

Base Scenario

Epidemic over in May/June

Impacted volumes through first half of year lead to a reduction in annual volumes, global supply chain struggles to recover leading to global implications.

“It’s a fairly fluid situation, as you might imagine, the effect the virus has on the industry will depend on the dislocation of labor that went home for the holidays, and how quickly they can all come back -- either from a practical perspective or from a government-mandate perspective.

-Joseph Massaro , CEO, APTIV

Conservative Scenario

Epidemic over in July/August

Impact into second half of the year leads to significant reduction in annual volumes. Large global impact and immediate changes to global supply chain.

“In the mid and long term, the automotive industry and the macroeconomy will be heavily impacted by the epidemic, the “automotive market winter” will be colder, it will be harder to deal with the challenge.

-Lihong Qin, CEO, Next EV

Overall impact and considerations

Short term

- ▶ Local automakers and suppliers are expected to be affected with production halts stemming from extended Lunar New Year holidays. Production of global OEMs and suppliers who rely on the Chinese supply chain will be impacted.
- ▶ Consumer demand and corporate capital spending is expected to drop, which will lower sales.
- ▶ The profitability of automakers and suppliers will be impacted.

Medium term

- ▶ Production losses will be partially offset as plants come back online.
- ▶ With traffic ban removed, consumer demand will gradually recover.
- ▶ Automakers and suppliers would start to develop strategic plans to lessen the impact on profits, and think about the solutions to supply chain risk.
- ▶ French, Japanese and American OEMs will take time to recover, while local OEMs may benefit from the likely growing demand from first-time buyers.

Long term

- ▶ The PV market will likely return to its long-term growth, however with significant near term disruptions.
- ▶ The supply chain network is expected to see a reduction of sole sourcing parts to reduce further disruptions.
- ▶ PV retail is likely to recover, however such experiences may increase expectations for more virtual purchases.

Overall impact and considerations - Facts

Announced developments for the PV market (Click [Here](#) to get the updated facts)

Expected impact of announcements varies from high to low

Topic	Company Name	Announcement	Impact/ influence
Develop anti-virus vehicle	Geely	Geely announced to invest 0.37 billion CNY on developing the anti-virus vehicle	Low
Expats left	PSA	Group PSA has decided to repatriate its expatriates and their families who are in Wuhan area	Low
Profitability	Beijing-Benz	Beijing-Benz applied to the Tianjin Government for the returning of 19 suppliers in Tianjin and said the daily loss would be 0.4 billion CNY	High
	Nissan	Nissan may report its first quarterly loss in more than a decade on Thursday because of slumping sales, sources familiar with the company said, adding more pressure on efforts to rebuild the company after Carlos Ghosn's ouster.	
	Tesla	Tesla CFO Zach Kirkhorn said it may slightly impact profitability in the first quarter.	
	Tata	Tata said the outbreak could impact its profit margin forecast of around 3 percent for the JLR unit in fiscal 2020 at a time when it was making progress on a turnaround plan to improve sales in China.	
Supply chain disruption	Nissan	Nissan Motors' Fukuoka plant, which produces the Serena minivan for the Japanese market and the Rogue, company's best-selling sport utility vehicle in the US, will be shut from Feb. 14, according to The Paper and reported by Yicai Global.	High
	Hyundai	Hyundai idled assembly lines at its plants in South Korea, pointing to a shortage of components (wiring harness in particular) due to the Coronavirus outbreak	
	FCA	FCA CEO Mike Manley said that four Chinese suppliers were affected by the coronavirus outbreak, including one "critical" supplier.	
	Tata	Jaguar Land Rover warned of potential disruption to its supply chains outside of China, two days after conceding the coronavirus is likely to affect its fourth-quarter performance.	
	Suzuki	Suzuki said it was considering sourcing vehicle components from outside China, as the spread of a new coronavirus in the country threatens to disrupt vehicle production in its biggest market, India	
	Bosch	The chief executive of Robert Bosch warned that coronavirus could impact its global supply chain, which is heavily dependent on China.	



Subsector Impact - Commercial Vehicles

CV manufacturers are impacted by production halts stemming from extended Lunar New Year holidays, however a few have resumed production

Suspension of production facilities:

- ▶ **Three major impacts to CV sub-sector:** 1. Postponed resumption of construction site activities, which normally start after Lantern Festival (usually in February); 2. Depressed offline promotional activities, given the peak season after Chinese New Year; 3. Delayed start date for OEMs' manufacturing.
- ▶ The coronavirus outbreak is also hitting Japanese automakers in China with many companies extending the Lunar New Year suspension of its production lines across China. Utilization at Chinese plants stood at just about 50% recently, as sales in China shrank from 2018.
- ▶ According to Carla Bailo, president of the Center for Automotive Research, "About 3.1 million cars and trucks are expected to come off the assembly lines in Hubei province and nearby Shanghai which account for about 12 percent of China's output. But if manufacturers in delay operations for a five-day workweek, that could result in 150,000 lost units."
- ▶ Dongfeng Motors likely to lose significant market share as its Heavy Duty Truck (HDT) located in Hubei. Dongfeng held 20% market share in 2019 and ranked as the second-largest HDT manufacturer in China. This is likely to benefit other major players such as FAW and ShaanQi, whose workshops are located in northern China.
- ▶ **Hino Motors**, a truck maker in the Toyota group, is also postponing its restart of production in Guangzhou.
- ▶ **Caterpillar**, with 20 facilities and hundreds of employees in the country, also suspended production. It has however, reopened most of its facilities in China after getting clearance from local government. The company has stated that it is actively monitoring the coronavirus for any potential impact.
- ▶ **Nissan Motors'** venture with **Dongfeng Motor Group** which had initially suspended production in China until at least 10 February, might now have to extend it further until 21 Feb 2020, citing government guidance.

Hubei's provincial government issued a statement on 13 Feb 2020, that companies couldn't resume work in the region before 21 Feb 2020 unless their business is directly linked to producing medical equipment or providing food, infrastructure and other basic needs.

The parts and components manufacturers with facilities in China are also being impacted

Disruption in parts and components manufacturing:

- ▶ China accounts for about 10%~20% of component makers sales.
- ▶ Parts manufacturers across China have suspended production through this week and in the case of Hubei province, the outbreak's epicentre, factories will remain shut until 13 February or later.
- ▶ A lack of parts adds another major setback for an industry already battling waning demand and rising spending requirements for electric and autonomous vehicles as automakers are considering suspending operations at domestic plants for due to insufficient inventories of wiring harnesses and other major components sourced from China.
- ▶ Automakers may pay dearly for these production losses if dropping inventories squeeze new-vehicle sales. Automakers like Volvo are also relying more exclusively on Chinese parts, such as spare tires wheels, suspension systems including shock absorbers, and electronic components, that may hurt production in other factories outside China.

The epidemic not only impacted companies with facilities in China, but also the ones with global supply chains going through China, causing global disruption

Implications for the global supply chain:

- ▶ Automakers are especially susceptible to interruptions in the flow of goods because the industry is global, and cars are complex products with many precision parts.
- ▶ Parts of many commercial vehicle companies' supply chain originate or pass through Wuhan for manufacturing, assembly or finishing. As a result, there has been wide-spread shortages or delays for materials sourced or manufactured there. The length of the lock-down in Wuhan is unknown and the global supply chain for raw materials, parts, or finished goods may be at risk.
- ▶ If the suspension of Chinese plant operations is prolonged, companies are likely to manufacture components in Korean and Southeast Asian plants to supply some components.
- ▶ The Coronavirus should be a serious wake-up call for supply chain professionals to develop several alternate sourcing and manufacturing plans in different regions of the world so as to mitigate the risk from such adverse conditions.

Scenario Analysis

Optimistic Scenario

Epidemic over in March/April

Impact limited to near term volume disruptions, increased sales momentum in the second half would make up for the lost revenues in the first half

"The logistic demand will soon recover when the epidemic is over, many infrastructure projects will restart, these are all good news to the HDT industry. The dealers commonly think there would be 2-3 months recovery growth till the half year is over. Our clients also are optimistic about the future."

- Guorong Li, Regional manager, Foton Daimler

Base Scenario

Epidemic over in May/June

Annual volumes may reflect the impact of the epidemic but immediate actions for revival of the industry will help the volumes recover in the second half

"The CV industry will recover when everyone take off the mask, the epidemic will enhance the development of service industry, manufacturing industry and logistic industry and speed up survival process. Weak brand will have higher pressure. The Industry may start the recovery since May, the sales target in Xiangyang increased 10% yoy. We are confident to fulfill the target."

-Xingan Xu, dealer GM, FAW Jiefang

Conservative Scenario

Epidemic over in July/August

Impact of epidemic will disrupt global supply chains for CV OEMs outside China. Prolonged impact will effect annual sales for CVs

"Currently, our teams are working on actually mapping of the supply chains, right up to the raw material. And more often than not, you'll find that supply chains of different parts, at times, cross through China... there are a few parts which are dependent on that. But people are now focussing on trying to get alternative supply streams activated, so that the impact is minimised."

-Girish Wagh, president, CV Business Unit, Tata Motors

Overall impact and considerations

Short term

- ▶ CV manufacturer and suppliers are expected to be affected with production halts stemming from extended Lunar New Year holidays.
- ▶ This change in the holiday period will impact automakers' original production plans, meaning that they may struggle to hit their original output targets.
- ▶ Consumer demand and corporate capital spending is expected to drop, which will drastically lower sales.
- ▶ The profitability of CV manufacturers and suppliers will be impacted.

Medium term

- ▶ Production loss will be partially offset after the returning of the plants.
- ▶ Consumer demand will gradually recover with Traffic ban removed. The the elimination of National III vehicles and the Implementation of National VI vehicles will stimulate the CV sales.
- ▶ Sales of CV OEMs based out of Wuhan likely to be impacted more than the ones in other provinces.
- ▶ CV manufacturers and suppliers would start to develop revival strategies to lessen the impact on profit, and think about the solution to supply chain risk.

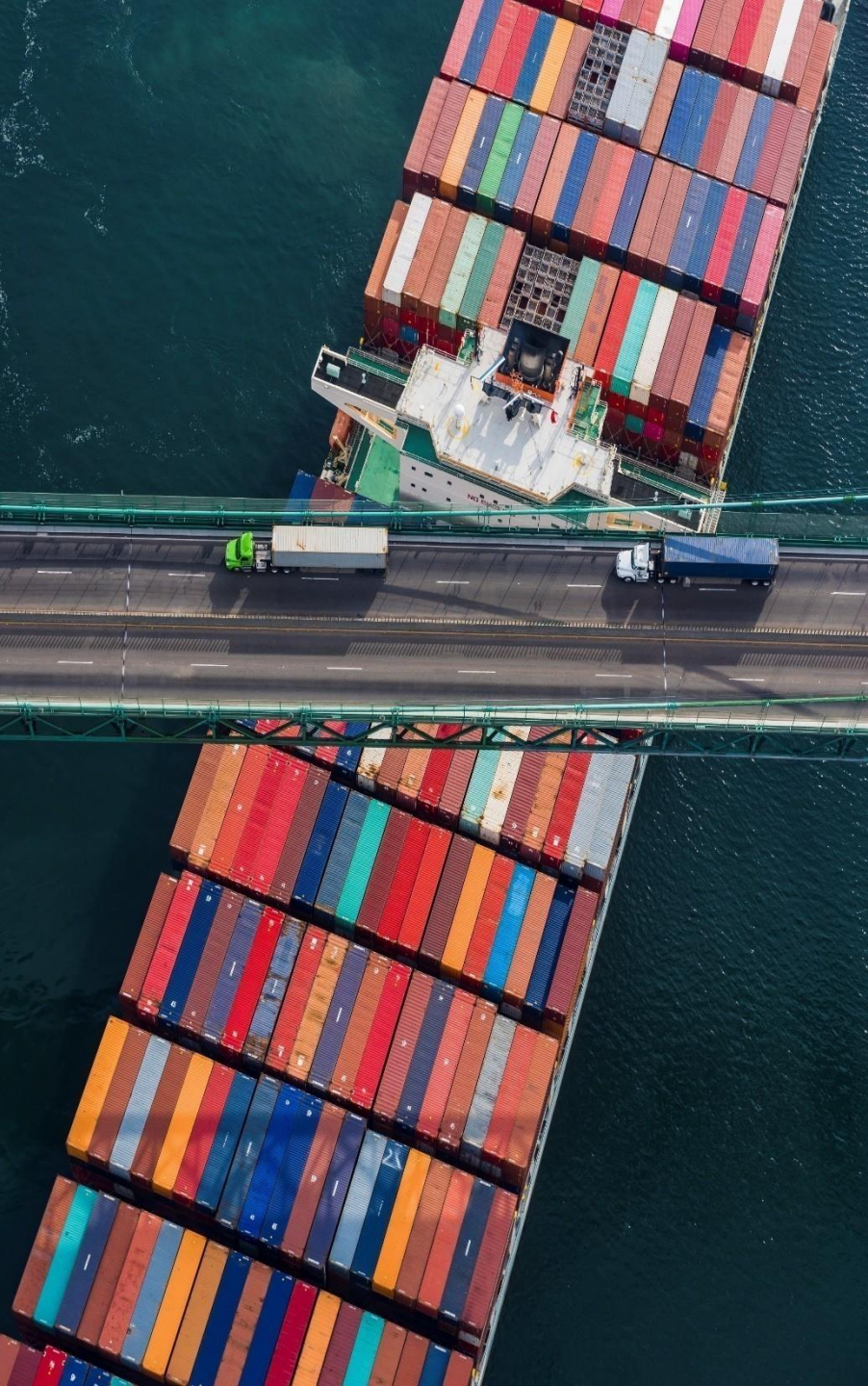
Long term

- ▶ The CV market will be back to the original development path, still have growth aligning with the stable economic development.
- ▶ OEMs lack of competency may enhance the pace to exit the market. The market concentration will be higher.
- ▶ Supply chain professionals may start to develop several alternate sourcing and manufacturing plans.
- ▶ Activation of alternative supply streams in different regions of the world will mitigate the risk from such adverse conditions in the future.

Overall impact and considerations-Facts

Click [Here](#) to get the updated facts

Topic	Company Name	Announcement	Impact/ influence
Assist to confront the epidemic	Yutong	Yutong accelerate to produce isolation ambulance to help confront the epidemic	Mid
Value chain disruption	Zhong Tong Bus	The brand manager Dusheng Li said the whole value chain has been impacted by the sudden epidemic, all the components production halted, the logistic has been an issue, the returning of labors will be delayed, many CV manufacturers are facing high pressure, the export business will also be impacted.	High
Deferred payment for buyers	Foton Dongfeng FAW	Foton, Dongfeng, FAW introduced deferred payment policies to release the buyers pressure.	Mid

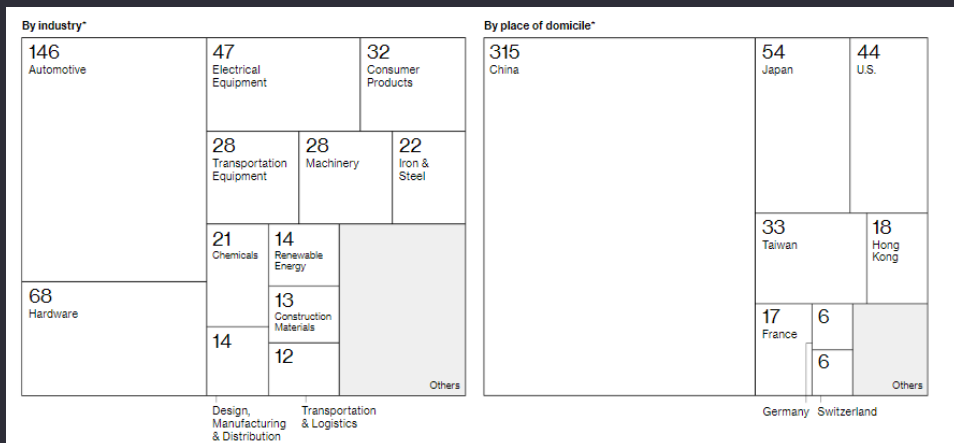


Subsector Impact - Transportation

The global supply chains are likely to be affected more due to the epicentre of the virus outbreak

Wuhan, the capital of Hubei and home to 11 million residents, serves as a major transportation and industrial hub in central China and is home to a number of automotive and high-tech manufacturing industries focusing on optoelectronics and semiconductor production.

Industry consolidation in Wuhan, China: The Epicentre



384

Production sites in Wuhan

89

Research and development

27

Logistics

Source: Bloomberg

Impact on shipments - severe delays in delivery time

- ▶ The regional lockdown has impeded logistics operations that rely on access to highways to carry goods into and out of the region, while severe delays should also be expected on inbound and outbound air cargo shipments.
- ▶ a weekly train connection to northern France via the Europe-China railway corridor has stopped departing from Wuhan and the departure location has been relocated to another Chinese city.

Impact on air shipments - reduced airfreight capacity

- ▶ Shippers looking to transport products out of mainland China will see a reduction in airfreight capacity. Several passenger airliners have cancelled their trips to China, thus pulling out several tonnes of belly cargo air capacity.
- ▶ Cathay Pacific, a major passenger and cargo airline for the region has decided to cut its capacity by at least 50% through March

Impact on hinterland water transport - congestion on coastal ports

- ▶ There is no barge service in/out Wuhan. Yangtze River feeder service will skip Wuhan Port. Destination Service in Wuhan Port is stopped for now.
- ▶ Capacity utilisation at major Chinese ports has been 20%-50% lower than normal and more than a third of ports said storage facilities were beyond 90% full

Freight volumes impacted due to lockdowns across China

- ▶ Initially companies and factories in several major cities and provinces - including Beijing, Zhejiang, Jiangsu, Guangdong and Shanghai - were ordered to halt their operations until at least February 9.
- ▶ The factories in regions outside Hubei have started opening up, but they face extreme labour shortages, as workers aren't returning due to a health warning issued by Chinese Authorities for people to remain inside.

Impact of Coronavirus on shipping

Possible scope of impact

- ▶ Everything from cars and machinery to apparel and other consumer staples are shipped in containers, and disruption to the industry could reverberate far beyond China as the country seeks to contain the coronavirus outbreak by keeping factories shut and workers at home.

Wuhan's strategic location

- ▶ Strategically located on the banks of the Yangtze River, Wuhan hosts China's largest inland river port on the Yangtze that connects Shanghai to the country's hinterland for a third of the costs incurred by road transportation.

Short-term impact on the shipping industry



Increased blank sailings

Steamship lines had already announced blank sailing programs during the Chinese New Year due to weakened demand. This would further increase if the current situation is prolonged, resulting in less service openings.



Slow port operations

Port operations are being disrupted as ports have implemented new safety procedures. Ports are implementing quarantines thus, resulting in idle times and delaying port operations.



Trade shows cancellations/postponements

Various trade shows are already cancelled, postpone or resulting in low participation. This may diminish new purchases and affect importing countries' commodity supply and missed income opportunities for Chinese sellers.

Steps taken by authorities

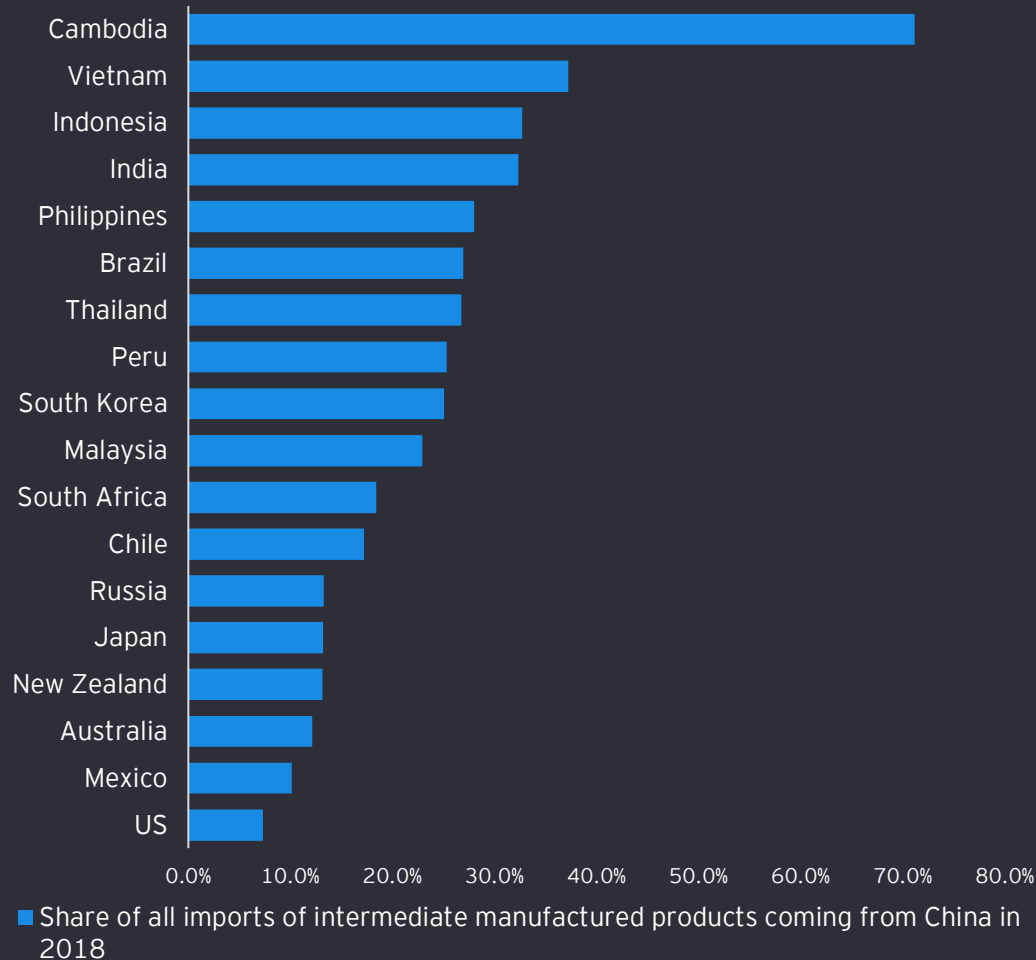
- ▶ Since January 23, China has reportedly held back ships, including gas carriers, from calling in Wuhan as authorities ordered terminals to stop their operations in order to slow down the outbreak of the virus.

Key events impacting shipping

- ▶ Ships arriving in Australia were impacted by Canberra's move to ban all personnel entering the country, if they have been to China on or after Feb 1.
- ▶ Ships that left China on or after Feb 1 will have to wait out the 14-day quarantine period. In case a sickness is reported on board the ship, the Australian authorities will investigate and likely extend the quarantine for 14 more days.
- ▶ Singapore, has had Chinese nationals returning from holiday delayed to health inspection and quarantine checks. Workers include crew on ships, workers at ports, shipyards and maritime technicians.
- ▶ Singapore has asked for all workers returning from Mainland China in the last two weeks, to be put on a 14-day leave of absence.
- ▶ Container services Japan-Wuhan has been suspended. Fewer ships are coming and leaving Wuhan, resulting in cargo delays, potential demurrage fees, and congestion up the river as a result of longer berthing times for ships.

Reliance of other countries on Chinese intermediary goods for production will impact global supply chains

Asian factories risk supply disruptions



Source: World Integrated Trade Solutions, World Bank

China is crucial Asia's total production output

- ▶ Logistics industry is bearing a 'derived impact' of slowed production and falling exports from China to other countries.
- ▶ The automotive, apparel, high-tech, and consumer electronics are the first industries to be impacted.
- ▶ Congestion and delays on ports combined with production lockdowns has hampered the supply of intermediary goods, which has resulted in production halts in other Asian countries, which have large dependency on China for such products.
 - ▶ Wuhan is a major automotive hub, with plants from Nissan, PSA, Honda, General Motors, Geely and Renault, as well as a large range of car parts suppliers, which serve a wider network of assembly plants.
 - ▶ Hyundai closed its largest production plant in South Korea, due to unavailability of intermediary goods required for production.
- ▶ International carmakers including Nissan, PSA and Renault have begun pulling foreign staff from plants across parts of China, amid warnings the outbreak could further hamper the country's struggling auto market.
- ▶ Blank sailings by global shipping companies is the first measure undertaken to ease the pressures of low demand.
- ▶ Continued interruptions in production for a sustained period may result in supplier and producer shifts thus re-routing the trade routes, as witnessed in the US-China trade war.

Source: Financial times

Coronavirus and Transportation & Logistics responses from the subsector

06 February 2020: Peter Sand, Chief Shipping Analyst, Baltic and International Maritime Council (BIMCO)

"A closure of the world's manufacturing hub impacts container shipping at large, as it is a vital facilitator of the intra-Asian and global supply chains, this will affect many industries and limit demand for containerized goods transport."

3 February 2020, Sherina Kamal, Product Director, Risk monitoring, Resilience 360

"We see that Wuhan is completely under lockdown. In there, cargo can't leave as the transportation routes are being blocked – there's the quarantine, nothing's getting in and nothing's getting out except for medical supplies and essential things"

28 January 2020, Guy Platten, Secretary General, International Chamber of Shipping

"The shipping industry will always prioritise the health of our crew and members of the public above all else. We have recommended that all our members across the world follow the WHO measures. As an industry, we fully understand the importance of playing our role in halting the spread of viruses. By implementing the measures in their entirety, we are avoiding the needless closure of any port. Shipping can continue to be the conduit for 90% of world trade, ensuring the steady supply of medicine, food and fuel for consumers worldwide."

Scenario Analysis

Base Scenario

Epidemic over in May/June

"In the meantime, we are using the flexibility of our network to redirect assets to support other shipping lanes where there continues to be demand."

- UPS company statement

"assessing the need "for potential network capacity adjustments to cater for any short-term changes in demand out of China."

- A.P. Moller Maersk company statement

"We don't have any plans to blank sailings or omit ports... But we are watching the developments closely and will decide on short notice... demand deterioration on the Asia / North Europe trade caused by the Coronavirus."

- Spokesperson, Hapag-Lloyd

Conservative Scenario

Epidemic over in July/August

"severe disruptions to inbound and outbound air cargo shipments, trucking and rail cargo services. The lockdowns could have a major impact on supply chain operations and industrial production in China across industries such as automotive, pharmaceutical and medical supplies, and high-tech manufacturing."

- DHL company statement

Overall impact and considerations

China is an integral part of the global manufacturing supply chain, accounting for approximately 20% of global manufacturing output

Short term

- ▶ Strict containment measures undertaken by Chinese government will have prolonged negative impact on domestic demand and business output.
- ▶ Taiwan, South Korea, Singapore and Vietnam look most vulnerable as they are highly integrated into China's supply chain

Medium term

- ▶ Coronavirus toll on shipping reached US\$350 million per week
 - ▶ Declining activity in China has impacted maritime operations from shipyards to carriers of bulk commodities.
 - ▶ More than 350,000 containers in the global trade network remain idle.
 - ▶ At least 21 sailings between China and the Americas have been cancelled along with 10 cancellations in the Asia-Europe trade route.
- ▶ Shifting material sourcing
 - ▶ The high-tech industry including Dell Technologies, HP, Qualcomm, Huawei, Samsung, among others are all looking at disruptions to their supply chains.
 - ▶ Foxconn, Apple's largest contract manufacturer request to resume production was declined by the authorities
- ▶ Monitoring supply chain risks and dual-sourcing:
 - ▶ Impact measurement of city lockdowns, government shutdowns of industrial areas along with transportation disruptions on manufacturing and logistics networks.
 - ▶ Companies are likely to consider a strategic cost-benefit analysis to assess if the added cost of sourcing from different geographical locations and alternate suppliers.
- ▶ Delayed compliance to IMO low-sulphur regulations
 - ▶ Chinese shipyards have 960 vessels in their order books valuing US\$27 billion. The yards are issuing 'force majeure' for delays to avoid penalties arising from unfulfilled contracts.
 - ▶ Delivery of retrofitted vessels, new tankers, bulk ships and container ships is likely to be delayed due to the slowdown from the virus.

Long term

- ▶ Supply chains are complicated to reconfigure within a short span of time, so such an outbreak is bound to create logistical complications.
- ▶ Though supply chains can make do with certain stopgap measures in the short-term, they cannot really circumvent the gravity of the problem in the long run.

Key considerations

- ▶ What are the short- and longer-term operational impacts to our business and supply chains, and how to overcome these and recover?
- ▶ How is the industry peer group responding? What is working well and what isn't?
- ▶ What are the trigger points and scenarios to be watched for and included in decision making?
- ▶ When will "business as usual" operations resume? Are there precautionary measures for certain industries or locations?

Overall impact and considerations-Facts

Click [Here](#) to get the updated facts

Topic	Company Name	Announcement	Impact/ influence
Blank sailings on Asian trade routes	A.P. Moller Maersk CMA CGM Hapag Lloyd MSC Mediterranean Shipping	Giant shipping companies such as Maersk, MSC Mediterranean Shipping, Hapag-Lloyd and CMA-CGM have said that they have reduced the number of vessels on routes connecting mainland China and Hong Kong with India, Canada, the United States and West Africa.	High
Import/export impact	Volkswagen Hyundai Motor Tesla Kia Motors	Supply chains have begun feeling the heat. Hyundai Motor Co. said Tuesday it will begin suspending production at all seven of its plants in South Korea because of a lack of parts made by suppliers in China. Tesla Inc. warned of delivery delays in China with its factory in Shanghai closed due to the outbreak, while Kia Motors Corp. cut car production in three South Korean plants due to parts shortages from Chinese suppliers.	High
Delay in vessel delivery	Clarksons PLC	"We got two ships in Southern China that need to be retrofitted," said a Scandinavia-based tanker owner who asked not to be identified. "They were supposed to be back in the water over the next couple of weeks, but we were told the yard has issued force majeure certificates for eight vessels they are working on, saying the virus will push back deliveries by a minimum three weeks."	Medium

Appendix

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