Business Impact of the Coronavirus

Business and Supply Chain Analysis Due to the Coronavirus Outbreak

SPECIAL BRIEFING

EXECUTIVE SUMMARY

The purpose of this report is to help companies with ties to the impacted regions resulting from the novel coronavirus assess the potential impacts to their businesses and supply chains, and the economy at large. This report was developed by Dun & Bradstreet's team of economists and analytics experts, and includes data, insights, and near-term recommendations for businesses looking to mitigate risk and further disruption to their supply chains as a result of this devastating outbreak.

KEY FINDINGS

- Since January 23, 2020, the novel coronavirus outbreak, which started in the Wuhan, Hubei province – a major business and industrial hub of China – has quickly spread across the region with the most impact occurring in the initial affected province, along with 18 additional provinces.

- Government-enforced closures of businesses in the region have severely impacted the Chinese economy and are also impacting global businesses with operations or suppliers in the region.

- Dun & Bradstreet data indicates that the most impacted provinces account for over 90 percent of all active businesses in China (~50,000 businesses are branches and subsidiaries of foreign companies). Guangdong, Jiangsu, Zhejiang, Beijing, and Shandong provinces account for 50 percent of total employment and 48 percent of total sales volume for China's economy.

- At least 51,000 (163 Fortune 1000) companies around the world have one or more direct or Tier 1 suppliers in the impacted region, and at least five million companies (938 Fortune 1000) around the world have one or more Tier 2 suppliers in the impacted region.

- The top five major sectors that account for over 80 percent of the businesses within the impacted provinces include services (personal and business), wholesale trade, manufacturing, retail, and financial services. Among these sectors, services, wholesale, and manufacturing account for approximately 65 percent of the businesses in the impacted region.

- Although it may be too early to define the exact impact the coronavirus outbreak will have on global businesses and the global economy at large, past pandemics are helping to develop a scenario-driven assessment of economic conditions for the region in the short and medium term that can be used to assess the level of risk and potential impact to their operations

HOW DUN & BRADSTREET CAN HELP

Dun & Bradstreet, a leading global provider of business decisioning data and analytics, enables companies around the world to improve their business performance. Dun & Bradstreet's Data Cloud contains over 355 million entities with over 200 million active global businesses, helping to fuel solutions and deliver insights that empower clients to accelerate revenue, lower cost, mitigate risk, and transform their businesses. Dun & Bradstreet's supply chain data, analytics, and insights enable businesses to evaluate and authenticate direct and sub-tier suppliers, and help companies better understand corporate linkages to gain transparency and insight into suppliers' risk profiles. The Company can also help onboard, assess, and continuously monitor suppliers, as well as identify alternative suppliers if the need arises.

OVERVIEW

On January 30, 2020, the World Health Organization (WHO) declared the fast-spreading coronavirus outbreak a global health emergency. Alongside the devastating effects on human life, the outbreak is already having considerable local impact on employment, business health, and supply chain operations, with increasing implications for global business operations and supply chains.

Powered by Dun & Bradstreet's supply chain data and proprietary analytics, this report provides a comprehensive evaluation of the business landscape in the impacted regions, including how businesses' international relationships via family linkages are affecting global supply chains. This report also analyzes the expected effects the outbreak might have on the regional business community, the international supply chains they are an integral part of, and the local and global economy.

Dun & Bradstreet's hypothesis is that a major portion of China's employment and sales emanate from the businesses within the impacted region and have intricate ties to the global business network. With the impact of the outbreak on the Chinese economy – which makes up about 20 percent of global Gross Domestic Product (GDP)* – the cascading effect might cause a drag of approximately one percentage point on global GDP growth if containment is delayed beyond the summer of 2020.

ANALYSIS METHODOLOGY

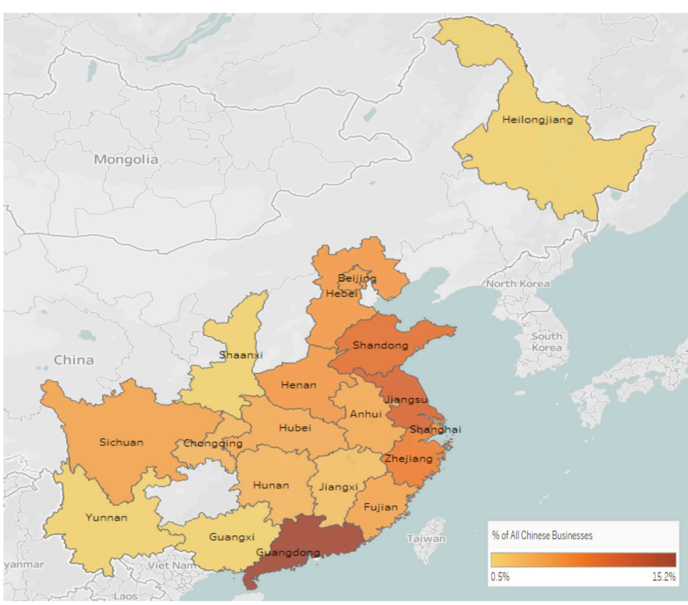
Based on analysis done using Dun & Bradstreet's Data Cloud, the Company focused on the most severely impacted region to inform this report, concentrating on the 19 provinces that reported 100 or more confirmed cases of the virus as of February 5, 2020.

Dun & Bradstreet also explored several sub-sections of its data specific to Hubei, ground zero for the outbreak, and the remaining 18 provinces that make up the impacted region to obtain a sufficiently representative sampling of data to inform a meaningful understanding of the unfolding situation. These factors included distribution of businesses within the impacted region, annual sales, employment, supply chain, and linkage connections. Based on sales projections from the Dun & Bradstreet Data Cloud and drawing inferences from past outbreaks, the analysis also provides a scenario-driven assessment of projected economic conditions for the region in the short and medium term.

Dun & Bradstreet's ultimate goal is to provide clients with meaningful business updates of the situation and equip them with actionable insights on their own family linkages, supply chains, and commercial associates (local and global) impacted by the outbreak. This insight enables better management of current business processes so that clients can plan accordingly to mitigate risks in the future.

BUSINESS LANDSCAPE

MAP 1: Provinces with 100+ Confirmed Cases and Percent of All Chinese Businesses Affected



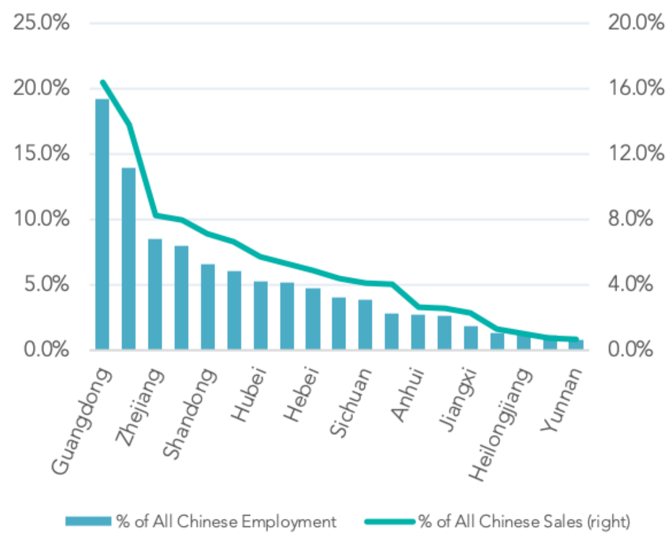
SOURCE: Dun & Bradstreet (February 5, 2020)

Dun & Bradstreet data shows that close to 90 percent of all active businesses in China are located in the impacted region (19 provinces as seen in the above Map 1).

According to Dun & Bradstreet firmographic data, roughly 70 percent of businesses in the impacted region are micro businesses (those with less than 10 employees), 19 percent are small businesses (those with less than 100 employees), and the rest are larger businesses (with 100 or more employees). The interruptions caused by the Government-enforced closures over the growing outbreak might have adverse implications for these businesses, absent specific measures that may be taken to offset the economic hardship as a result of this crisis.

Dun & Bradstreet data also shows that the impacted provinces command a majority of employment and sales volume – nearly 90 percent – of all businesses located in China. Shown in Chart 1 - the top five provinces with the highest percentage of employment– Guangdong, Jiangsu, Zhejiang, Beijing, and Shandong – account for 50 percent of total employment and 48 percent of total sales volume for China's economy. The province of Hubei, ground zero of the coronavirus outbreak, has a share of approximately 5 percent of both metrics.

CHART 1: IMPACTED PROVINCES
% OF CHINESE EMPLOYMENT AND SALES



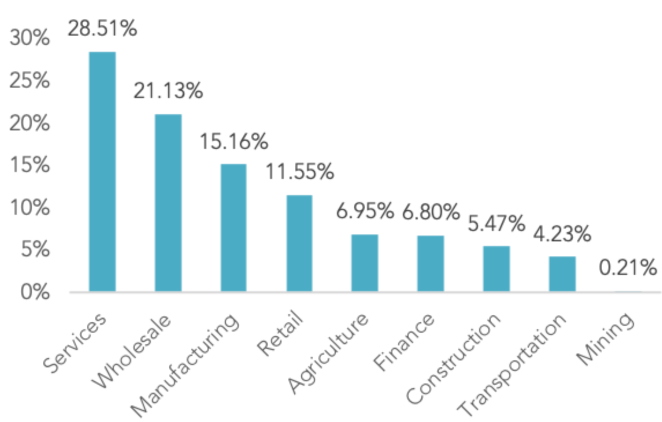
SOURCE: Dun & Bradstreet (February 5, 2020)

With a vast portion of business activity being concentrated in the impacted region, the effects of this public health emergency are expected to be unprecedented and widespread. This might create an economic secondary effect to the extent of reducing national real GDP growth by two to three percentage points. This outbreak exacerbates the difficulties the Chinese economy has been having recently with its financial cycle entering a more difficult phase after at least a decade of easy credit and capital misallocation.

IMPACTED INDUSTRIES

As seen in Chart 2, the top five major sectors that account for over 80 percent of the businesses within the impacted provinces include services (personal and business), wholesale trade, manufacturing, retail, and financial services. Among these sectors, services, wholesale, and manufacturing account for approximately 65 percent of the businesses in the impacted region. These industry verticals, by the nature of their products and of the international trading structure of China (as we will see in the next section), will have business connections throughout the world with potential implications for the global economy.

CHART 2: BUSINESSES IN THE IMPACTED PROVINCES – DISTRIBUTION BY INDUSTRY

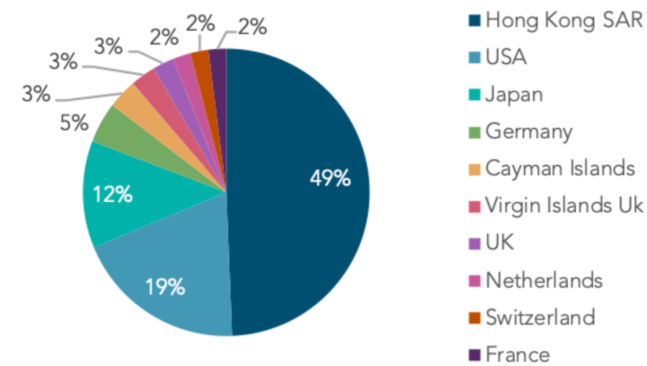


SOURCE: Dun & Bradstreet (February 5, 2020)

THE IMPACTED REGION: INTERNATIONAL CONNECTIONS

As a nerve center of businesses representing several industry verticals, it is not surprising that the impacted region has commercial ties throughout the globe. Dun & Bradstreet's proprietary linkage information shows that although the majority of business have their corporate headquarters located in China, approximately 49,000 businesses operating in the region are branches or subsidiaries of companies headquartered elsewhere. Some countries with the highest dependency on the impacted region include the USA, Japan, Germany, the UK, and Switzerland. The top 10 countries and regions are shown in Chart 3.

CHART 3: GLOBAL HEADQUARTER DISTRIBUTION OF BUSINESSES IN THE IMPACTED REGION – TOP 10 COUNTRIES & REGIONS

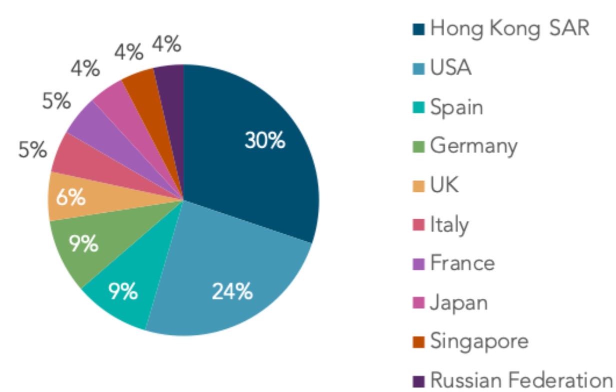


SOURCE: Legal Linkage, Dun & Bradstreet (February 5, 2020)

There are also several businesses on the other end of the spectrum whose corporate headquarters are located in the impacted region with branches and subsidiaries situated in other countries. Notwithstanding the fact that most of these branches are located in China, these Chinese origin companies have considerable presence globally with the biggest footprint in countries and regions including Hong Kong SAR, the USA, Spain, Germany, and the UK.

Over 17,000 corporate headquarters are in the ground zero province of Hubei and may have experienced disruptions to business. The branches and subsidiaries situated in the above named top five countries have a total employee base of at least one million employees and generate over $2 trillion in sales. These branches are linked to the impacted region (as seen on Chart 4) through their family trees and are projected to see some decline in their earnings due to operation disruptions.

CHART 4: GLOBAL BRANCH DISTRIBUTION OF CHINESE COMPANIES – TOP 10 COUNTRIES & REGIONS

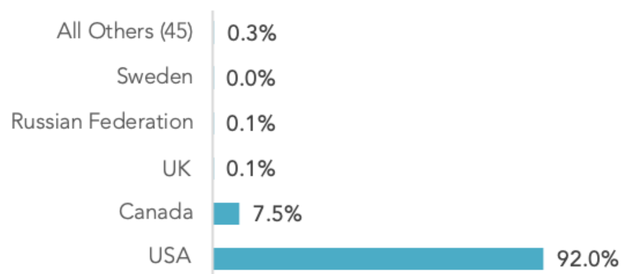


SOURCE: Legal Linkage, Dun & Bradstreet (February 5, 2020)

Besides being connected to the impacted region by family linkage, many global businesses are dependent on the area to fuel their supply chain. According to Dun & Bradstreet's supply chain data, analytics, and insights, at least 51,000 companies around the world have one or more direct or Tier 1 suppliers and at least five million companies around the world have one or more Tier 2 suppliers in the impacted region. These businesses remain important drivers of corporate income and growth in the global economy. At least 163 companies within the former group and 938 companies within the second group are Fortune 1000 companies.

As seen in Chart 5, Dun & Bradstreet found that over 90 percent of businesses with direct impact to their supply chains are headquartered in the USA. Other countries with companies that have impacted supply chains include Canada, the UK, Russia, and Sweden.

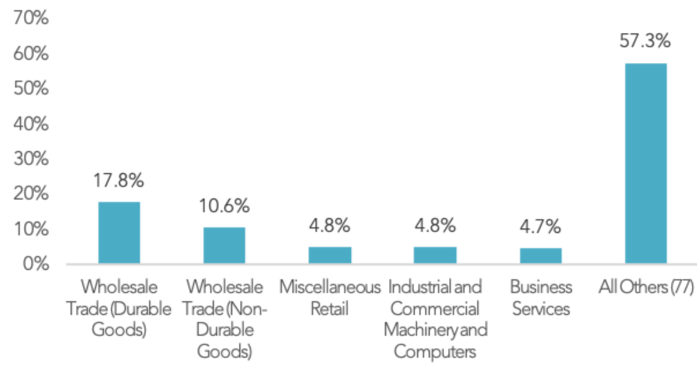
CHART 5: DISTRIBUTION BY COUNTRY – COMPANIES WITH TIER 1 SUPPLIERS IN IMPACTED REGION



SOURCE: Dun & Bradstreet Supply Chain Analytics (February 2, 2020)

Businesses within these locations and operating within these industry verticals are most likely already experiencing disruptions to their operations. From a logistics and supply chain perspective, Dun & Bradstreet can make preliminary recommendations for alternative suppliers, for example, by helping clients with actionable insights to identify suppliers located in regions or countries not impacted to minimize interruptions.

CHART 6: DISTRIBUTION BY INDUSTRY – COMPANIES WITH TIER 1 SUPPLIERS IN IMPACTED REGION



SOURCE: Dun & Bradstreet Supply Chain Analytics (February 2, 2020)

Table 1 provides the view into the top few (by value of trade) products on the UN Comtrade** database and the possible alternative supplier countries for these products:

Table 1: Top Products Imported from China and Possible Alternative Supplier Countries

PRODUCT	POSSIBLE ALTERNATIVE SUPPLIER COUNTRY
Electrical machinery, equipment, and parts	Brazil
Nuclear reactors, boilers, and parts	Chile, Singapore
Furniture and parts	Mexico
Toys, games, and sports requisites	Mexico, Brazil
Plastics and article made of plastics	Mexico, Brazil
Motor vehicles and parts	Chile, Colombia, India
Apparel and clothing accessories	Brazil, Canada
Optical, medical, and surgical instruments	Colombia, Brazil, India

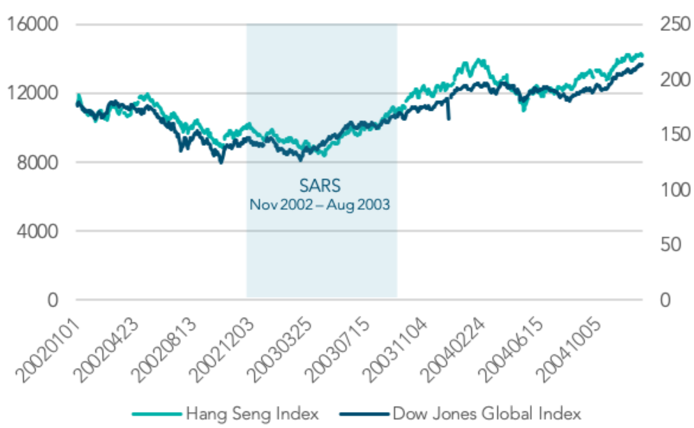
SOURCE: UN Comtrade and Dun & Bradstreet (February 5, 2020)

POTENTIAL ECONOMIC IMPACT

Uncertainty remains as the outbreak continues to spread across China, impacting not only the Hubai region, but the country's economy at large, and ultimately, the global economy. Global equity markets reacted to the pandemic, indicated by the S&P 500 index, which dropped by more than 50 points in late January – hitting its lowest point since October 2019, but has since recovered. China's stock, currency, and bond markets were closed for a longer period of time beyond the Lunar New Year holiday, and not unexpectedly, plunged on their first day of trading on February 4, 2020.

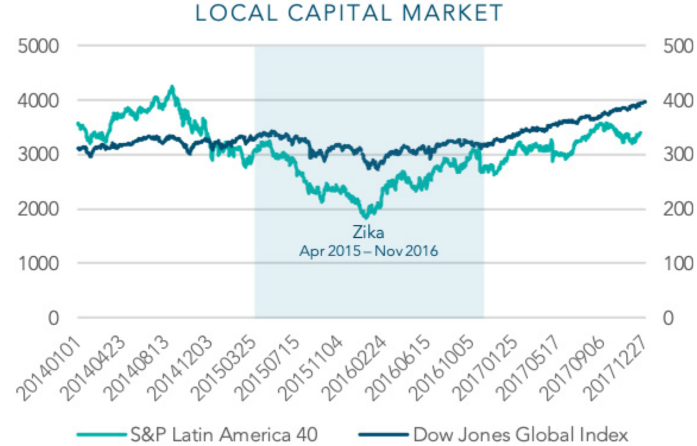
In order to assess the possible economic impact of the coronavirus outbreak, Dun & Bradstreet studied the effect of two similar outbreaks: the severe acute respiratory syndrome (SARS) and Zika viruses (as seen on Charts 7 and 8). In both instances, Dun & Bradstreet compared the global and local markets, which are measured by respective equity market indices.

CHART 7: SARS IMPACT ON GLOBAL AND LOCAL CAPITAL MARKETS



SOURCE: Haver Analytics and Dun & Bradstreet (February 5, 2020)

CHART 8: ZIKA IMPACT ON GLOBAL AND LOCAL CAPITAL MARKET



SOURCE: Haver Analytics and Dun & Bradstreet (February 5, 2020)

For SARS, Dun & Bradstreet compared the Hang Seng Index (Hong Kong SAR, the region of origin for the outbreak) to the Dow Jones Global. The indices historically remain correlated and trended down at a similar level during the timeline of the virus, between November 2002 and August 2003.

The impact comparison of the Zika virus was made between the S&P Latin America 40 (due to the prevalence of the virus in the region) and the Dow Jones Global. The impacts differed considerably in the two indices. While the Latin American index experienced a drop over the duration of the virus (April 2015 - November 2016), the global index declined only slightly and bounced back soon thereafter.

While the ultimate economic impact of the coronavirus is unpredictable, expectations for Chinese economic performance also remain unfavorable based on its performance in the recent quarters. The Chinese economy grew 6.1 percent in 2019, dropping from 6.8 percent in 2018 and seven percent in 2017. Trade tensions with the United States may be a major cause for the slowdown. A partial "Phase 1" trade deal went into effect in late 2019 and eased uncertainty for both countries, but most tariffs still remain in place.

For economic impact assessment, Dun & Bradstreet divided the overall Chinese economy into:

1. Primary Industries (e.g., mining, fishing, agriculture)
2. Secondary Industries (e.g., electricity, oil, metal, manufacturing, construction)
3. Tertiary Industries (e.g., retail/wholesale, financial, real estate, public services, information technology)

With this in mind, the Hubei province performed better than the rest of the country on all three aspects. Hubei's Primary Industries - its smallest of the three - grew at 3.2 percent (compared to China's 3.1 percent). The Secondary Industries grew at 8 percent (compared to China's 5.7 percent) and Tertiary Industries – the largest sector of the three – grew at 7.8 percent (compared to China's 6.9 percent). The overall Hubei region, with its wealth of businesses and international trade connections, grew faster than China at 7.5 percent, although growth for this region slowed at the end of 2019.

Based on the trend noted at the end of 2019, current global economic uncertainties, and without the coronavirus outbreak, the economy of Hubei as well as the rest of China would be projected to experience slowing growth. To simulate the growth pattern in Hubei and throughout China, we consider two scenarios:

SCENARIO 1

Containment by Q2 2020: The outbreak is expected to be contained within a reasonable time range required to invent a vaccine. National and international contagion is expected to be blocked and the Chinese economy is projected to begin its path forward towards improved conditions.

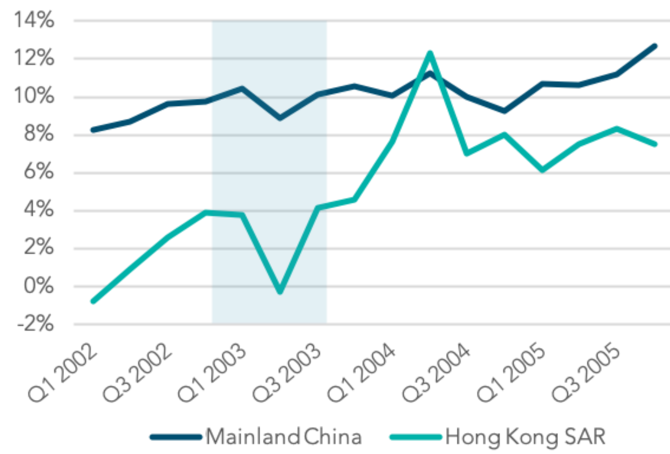
SCENARIO 2

Delayed containment beyond Q4 2020: Due to various economic and political circumstances, the vaccine for the virus is not invented by the second quarter of 2020. The disease is expected to continue to spread throughout 2020 and to become an international concern.

In both scenarios, consumer demand is expected to become concentrated on emergency medical services and supplies, and food deliveries within the Hubei province and throughout China as the outbreak spreads. The Primary Industries, which are a small percentage of the economy in the impacted region, are expected to continue to shrink throughout the course of the outbreak, limited to reduced food production only. The Secondary Industries are also expected to slow due to reduction of demand for most retail and wholesale goods. Of note is the manufacturing sector, which could remain active for production of medical supplies, and the construction sector, which could be boosted initially with the building of medical facilities, clinics, or hospitals. The Tertiary Industries are expected to run depending on a few sub-sectors. For example, the demand for medical services or food delivery services will continue.

For a greater economic impact assessment, Dun & Bradstreet drew another example from the SARS outbreak. Chart 9 demonstrates that real GDP growth in Hong Kong SAR started to fall immediately at the onset of the outbreak and fell by approximately four percentage points into the peak of the outbreak, recovering sharply and vigorously with containment. GDP growth in China dropped by two percentage points at the peak and showed the same recovery trend. A similar proportion of growth rate (drop and recovery) was used for the present scenarios. We estimate the sectoral growth rates based on GDP growth rates in the SARS era shown above and sales projections from the Dun & Bradstreet Data Cloud.

CHART 9: REAL GDP GROWTH (Y/Y) – HONG KONG SAR AND MAINLAND CHINA



SOURCE: Haver Analytics and Dun & Bradstreet (February 5, 2020)

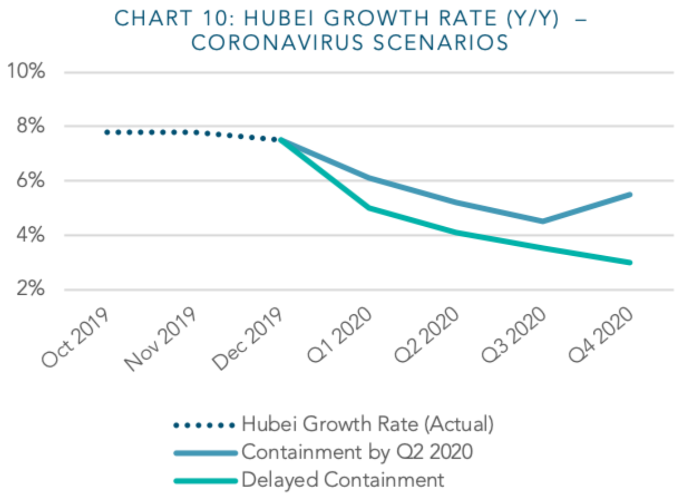
Based on the shocks to demand for the three key sectors, their growth rates for Scenarios 1 and 2 for 2020 are projected in Table 2.

Table 2: Actual and Forecasted Growth by Sector

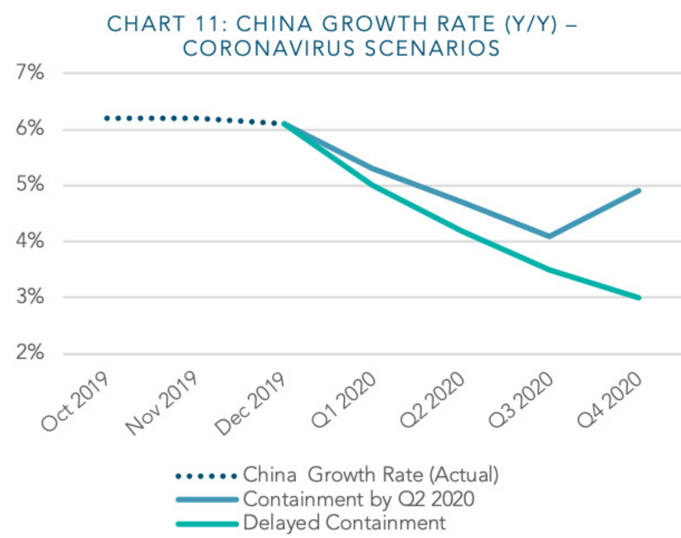
	HUBEI PRIMARY INDUSTRY		HUBEI SECONDARY INDUSTRY	
DATE	Q2 2020 CONTAINMENT	DELAYED CONTAINMENT	Q2 2020 CONTAINMENT	DELAYED CONTAINMENT
Oct 2019	3.30%	3.30%	8.20%	8.20%
Nov 2019	3.30%	3.30%	8.20%	8.20%
Dec 2019	3.20%	3.20%	8.00%	8.00%
Q1 2020	3.10%	3.10%	7.80%	7.60%
Q2 2020	2.50%	2.20%	7.70%	7.30%
Q3 2020	2.00%	1.50%	7.60%	7.20%
Q4 2020	2.10%	1.20%	7.80%	7.00%

SOURCE: (Actual growth rates): National Bureau of Statistics (China) and Dun & Bradstreet. Note: Q1-Q4 2020 rates are forecasts. (February 5, 2020)

Finally, the scenarios are modeled using the projected sector growth rates (as seen in Chart 10 for Hubei and Chart 11 for China) and forecasted sales from the Dun & Bradstreet Data Cloud.



SOURCE: National Bureau of Statistics of China and Dun & Bradstreet (February 5, 2020)



SOURCE: National Bureau of Statistics of China and Dun & Bradstreet (February 5, 2020)

SCENARIO 1

Scenario 1 forecasts a dip in the growth rate for Hubei and China as the international community is expected to draw closer to containment by the summer of 2020. Growth slows for one more quarter and then begins rapid movement towards pre-virus levels, following the pattern noted post-SARS.

This scenario projects a maximum three percentage point drop in the GDP growth of Hubei and two percentage point drop in China. It is also estimated that there will be a small (less than one percentage point) change in global growth in this scenario.

SCENARIO 2

Scenario 2 outlines the most drastic scenario where there is no vaccine in sight, therefore making it harder to control the international spread of the virus. Isolation of China from the rest of the world is expected in this scenario, and growth is indicated to plunge as a result, as was the case in the SARS epidemic. In addition, this scenario considers that there is no indication of a recovery within 2020. In this case, a maximum of four percentage points and three percentage point drop in real GDP growth is expected for Hubei and China respectively, resulting in a global growth slowdown of approximately one percentage point.

No matter which scenario plays out, the Hubei region, China, and the global economy are indicated to see a churn in their business population and some lackluster employment and revenue growth in the near-term. When (not if) containment and eradication is achieved, factors within the impacted geography are bound to generate economic activity with consumers, satisfying pent-up demand once improved conditions are underway. The sum of the efforts to revitalize the region will place the global economy back on track for sustained growth.

CONCLUSION

- Dun & Bradstreet's data and analysis supports the initial hypothesis that supply chains linked to the impacted region span several key industry verticals, putting business processes at risk around the globe.
- The study also shows that due to the commercial importance of the impacted region, the coronavirus outbreak is projected to cause a slowdown in the local economy and has the potential to impact global growth.

RECOMMENDATIONS ON HOW TO PROTECT YOUR SUPPLY CHAIN

The coronavirus outbreak continues to expand across China and beyond its borders, with a small number of cases identified globally. While the final impacts to companies with business operations in the affected regions is uncertain, Dun & Bradstreet recommends taking immediate steps to mitigate further risk to a company's supply chain:

NEAR-TERM BEST PRACTICES

- Develop a risk-based assessment process that helps identify and continuously monitor a variety of risks that could impact the productivity of your supply chain.
- Complete an assessment of suppliers to ensure your suppliers' suppliers are not going to negatively impact your business.
- Monitor your supply chain. Make sure that you are monitoring the risks associated with both your Tier 1 and Tier 2 suppliers to ensure your company has a complete view of the supply chain.
- Identify alternative suppliers in non-impacted regions of the world to diversify the supply chain and limit dependencies on any one supplier of geographic region.

LONG-TERM BEST PRACTICES

- Build policies and contingency plans for your supply chain. Identify geographically diverse suppliers to onboard in the event of emergency. A company should also consider dual-sourcing for critical components within your supply chain.
- Periodically test and revise your strategy to account for organizational growth and environmental change.

To learn more about how Dun & Bradstreet can help your business, go to:

https://www.dnb.com/marketing/media/supplier-report-coronavirus.html

REFERENCES

* International Monetary Fund, GDP based on PPP (share of world): https://www.imf.org/external/datamapper/PPPSH@WEO/OEMDC/ADVEC/WEOWORLD

** UN COMTRADE Trade Statistics: https://comtrade.un.org/data