

Coronavirus Outbreak: Impact on Thai Economy

The COVID-19 originated in Wuhan, one of China's largest cities and a major domestic transport hub. In January, drastic measures by China's government to contain the outbreak coupled with news of escalating infections and deaths - mostly in China - have triggered concerns about the impact on the Chinese and global economy. News of the outbreak also intensified at the start of the normally week-long Chinese New Year festive season, when domestic and outbound travel peak in China. This will worsen the economic fallout. In this report, we estimate the impact on China's economy (GDP) and the knock-on effects through three channels - tourism, supply disruption, and income (multiplier) effect - on other economies including Thailand, as well as global growth.

Our baseline projection is that **the outbreak will get worse before it gets better, with infections and deaths possibly peaking in March and contained by May. In this case, China's GDP growth would be reduced by 0.9ppt in 2020 from the baseline. The impact would be worst in 1Q20 with growth expected to tumble by 2.8 ppt, followed by a 1.1ppt drop in 2Q20. But this would be partly offset by pent-up demand for the rest of the year. The impact on global GDP growth would be limited (-0.27 ppt). The impact on Thailand's economy would be larger (-0.44 ppt) given stronger trade and tourism links with China.**

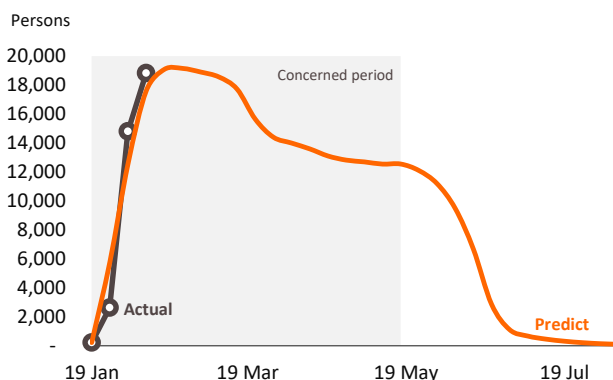
There is still little information on how to effectively contain the coronavirus outbreak. The SIR model we applied suggests it could last up to May.

In December last year, 41 patients were diagnosed with pneumonia of an unknown origin in Wuhan, China. It was only at year-end that the COVID-19 (or its previous name 2019-vCoV) was confirmed as the cause. Since then, the number of infections and deaths have escalated, especially in China. The government there has introduced several drastic measures to prevent a nationwide epidemic, but the virus has spread to more than 25 countries. This has created fear and concerns worldwide.

In order to predict how long it would take to effectively contain the outbreak, Krungsri Research adopted the Susceptible-Infected-Recovered model (SIR model) with epidemiological characteristics of the virus. The conclusion is **the outbreak could peak in March and be contained by May**. The model predicts new infections could rise to nearly 20,000 cases a week at the peak in March, before dropping to 12,000 in April and May [See Figure 1].

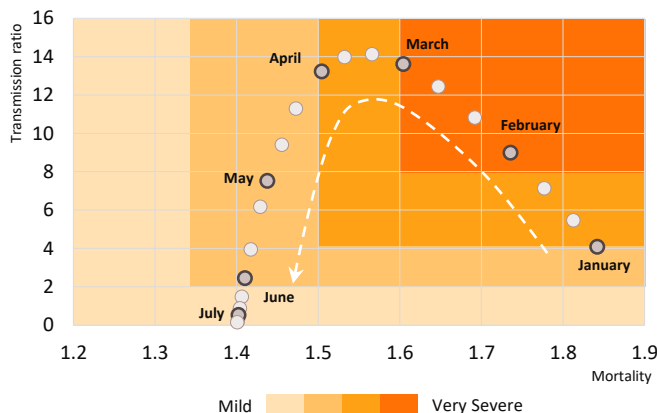
We then modelled the severity of the outbreak (or transmission rate) based on the above predictions [See Figure 2]. It suggests the situation would be **"very severe"** in February and March with high mortality rate and transmission ratio. It could be downgraded to **"severe"** in April and May, when mortality rate is expected to drop significantly. After May, the transmission rate should drop rapidly, and the outbreak should be effectively contained. The model predicts mortality rate for the COVID-19 would be well below 2% over the period of estimation.

Figure 1: Prediction of New Infections



Source: WHO, predict by Krungsri Research
Note: data as of Feb 9, 2020

Figure 2: Severity of Wuhan Coronavirus Outbreak



Source: LANCET, predict by Krungsri Research

Historical data show all recent sustained disease outbreaks had substantial economic consequences. The 1994 plague in Surat, India which reported only 693 cases costs the nation US\$2bn. Studies by WHO, IMF, World Bank and US Medicine National Institutes of Health concluded **the economic impact of a disease outbreak could be assessed in several ways, including direct and indirect costs, irrational behavior to avoid infection, lost labor productivity, slower economic activities in some sectors, and protective measures to prevent further outbreaks.**

- **Direct and indirect costs:** Unexpected medical expense will dampen purchasing power, which would reduce aggregate demand. Employment could drop if businesses are disrupted and productivity would fall if a large number of the workforce gets ill. Finally, an epidemic could burden public finance as spending would increase while tax revenues would drop.
- **Irrational behavior to avoid infection:** WHO has introduced “fear factor” as a variable that could lead to slower economic activities and exacerbate the negative impact.
- **Lower labor productivity:** This could happen if a substantial number in the workforce gets ill or in bad mentality.
- **Slower economic activities in some sectors**
 - **Agriculture and Food:** In recent years, several epidemics had been traced to farmed animals and it ended ended with the culling of livestock. The H1N1 outbreak in 2009 cost Mexico’s swine industry US\$27 million.
 - **Tourism and Transportation:** People usually try to avoid unnecessary travels during epidemics. During the SARS epidemic in 2002-2003, Singapore and Hong Kong lost more than 70% of their tourism receipts. And it cost airlines more than \$7bn.
 - **Trade and Retail industries:** Consumer fears and lower spending will hit the restaurant and retail industries. The food industry in Korea registered a 10% drop in retail sales during the MERS epidemic.
- **Protective measures to prevent further outbreak:** Travel restrictions by governments in several countries during the MERS outbreak cost Saudi Arabia \$5bn. In the COVID-19 outbreak, China had effectively locking down several cities by halting mass transportation in and out of those cities, to prevent a nationwide contagion. Such drastic measures will dampen economic activities.

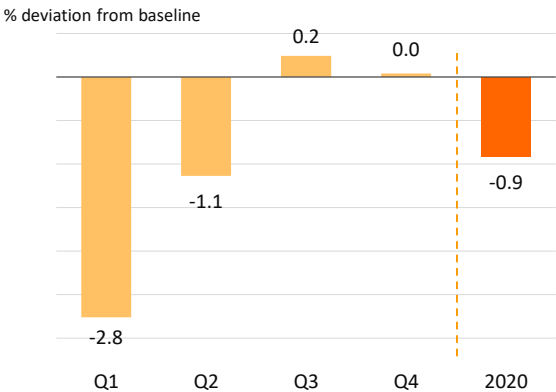
China has also extended the Chinese New Year holiday to prevent unnecessary travel, but that also meant businesses stayed shut past the normal one-week holiday. In addition, several countries including the US, Italy, Australia, have banned travel to China and/or imposed strict 14-day quarantine measures on those who had traveled to China recently. Meanwhile, British Airways, Lion Air, Seoul Air, Jetstar Asia, Cathay Pacific, Finnair, United Airlines, and Delta have suspended or reduced flights to/from China. These will disrupt China’s and the global economy.

The latest coronavirus outbreak will disrupt China’s economy considerably, especially in the first half of 2020.

The SIR model predicts the epidemic would peak in March and last until May, so the most severe impact would be in the first two quarters of 2020. After that, as measures are relaxed and confidence improve, economic activity should pick up again.

The outbreak is expected to reduce China’s GDP growth by 2.8 ppt in 1Q20 and by 1.1 ppt in 2Q20 from the baseline. In the second half of the year, as economic activities return to normal and coupled with pent-up demand, these could mitigate the negative impact. In 2020, China’s GDP growth is expected to reduced by 0.91 ppt [See Figure 3].

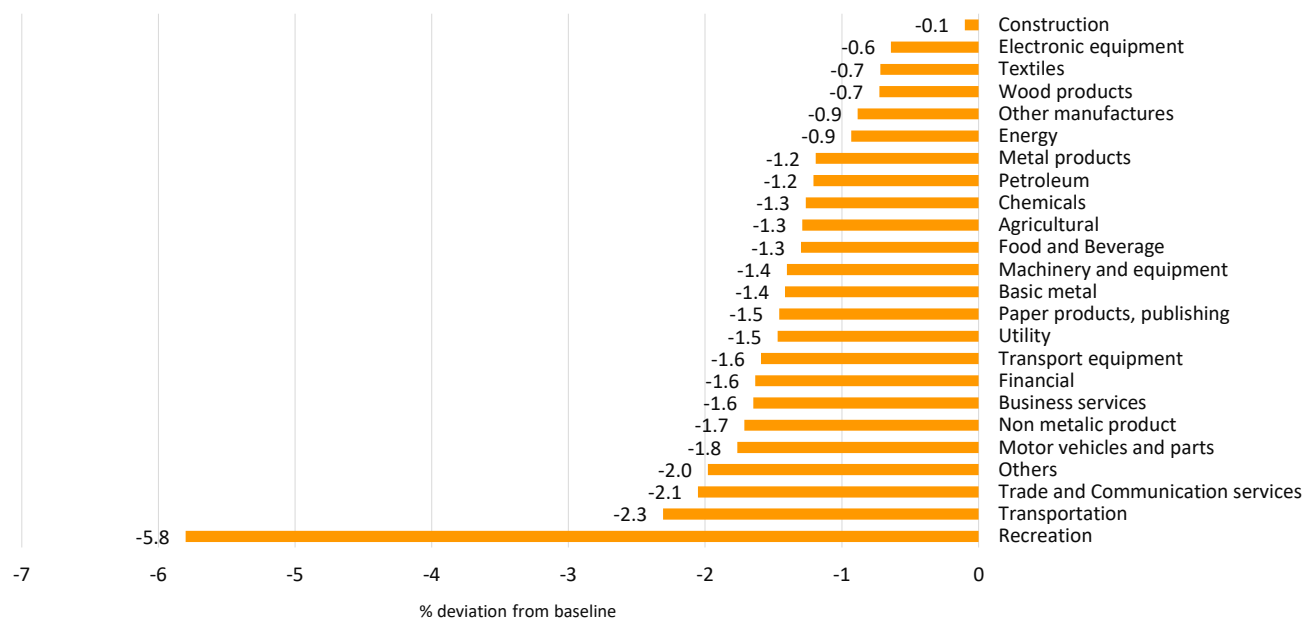
Figure 3: Estimated reduction in China’s GDP Growth from baseline in 2020



Source: Krungsri Research

Tourism, Transportation and Trade would be worst-hit. Our economic model suggests recreation sector would drop by 5.8ppt. Transportation and Trade would drop of 2.3 ppt and 2.1 ppt from the baseline, respectively.

Figure 4: Impact on China’s Economy by Sector



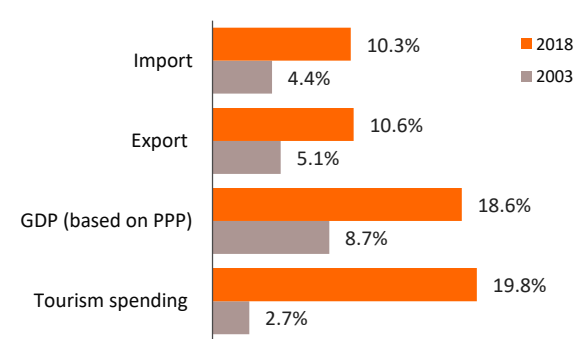
Source: Krungsri Research

China’s contribution to the world economy has risen substantially, so the impact would be felt across the globe

China’s rising contribution to the global economy. China is the world’s second largest economy. Its contribution to the global economy rose from 8.7% in 2003 to 18.6% in 2018. The Chinese accounted for 19.8% of the global tourist market in 2018, compared to only 2.7% in 2003. And during the same period, China’s share of international trade had risen two-fold.

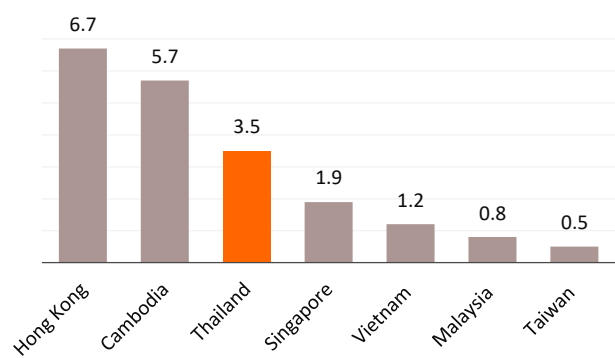
As a result, the negative impact on China’s economy will spillover to the global and Thai economies. This would be through three major transmission channels - weaker tourism sector, supply disruption, and income effect (multiplier effect).

Figure 5: China’s contribution (% of world market)



Source: CEIC

Figure 6: Share of Chinese Tourist Expenditure on GDP

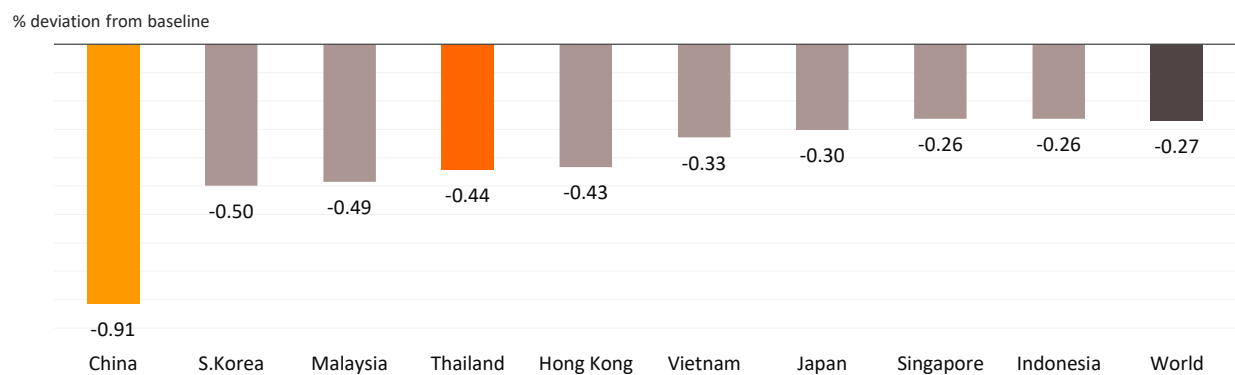


Source: CEIC

- **Tourism sector:** Chinese currently account for 30%-60% of tourist arrivals in several countries in Asia. **The tourism sector in these countries would be hurt by a sharp drop in tourist arrivals and tourism receipts.**
- **Supply disruption:** A sharp drop in production would affect both the backward and forward supply chains. However, slower production and trade in China could create trade diversion, and some countries could see an increase in exports. Hence, **supply disruption would be influenced by the level of production and trade diversion effects.**
- **Income effects (multiplier effects):** This can be triggered by a drastic change in demand. For example, a sudden drop in tourist arrivals would reduce overall spending, which would hurt businesses in the sector and possibly their suppliers. This would reduce employment, which means income would drop. Ultimately, the overall economy would be affected because of the multiplier effect, or in this case, the reverse multiplier effect.

Krungsri Research attempted to measure the spillover effects by applying the computable general equilibrium model (CGE). We also adopted the vector auto-regression model to assess how economies react periodically to these changes. The conclusion is that **economic growth in selected Asian countries would be reduced by 0.26-0.50 ppt from baseline projections. South Korea and Malaysia will lead the chart. Global economic growth would be reduced by 0.27 ppt** [See Figure 7].

Figure 7: Spillover Impact on Selected Asian Economies



Source: Krungsri Research

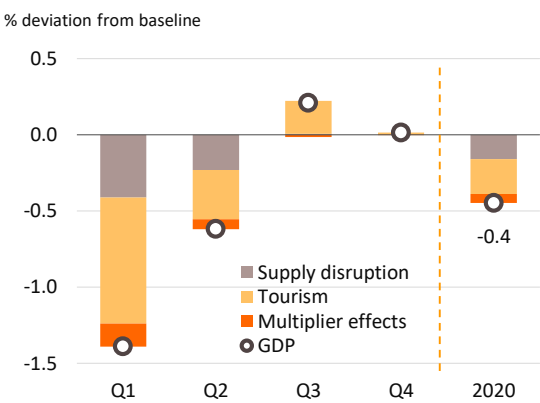
Large impact on Thailand, especially in the first half of 2020

Thai economy would be affected by weaker tourism receipts, supply disruption in China, and income effects. Like its neighbors, Thailand’s economic growth is forecasted to drop by 0.4 ppt in 2020 [Figure 8]. The tourism sector would be responsible for 0.23 ppt drop and trade disruption for 0.16 ppt. The model also suggests the impact on the tourism sector would peak in the first quarter of 2020, and the impact from supply disruption would peak in the second quarter.

Thailand’s tourism sector would be severely hit, even compared to other countries in Asia [Figure 9]. The coronavirus outbreak is expected to reduce tourist arrivals by 30.8% and 13.1% in the first two quarters of 2020, respectively. For full-year, tourist arrivals is expected to drop by 9.0 ppt from baseline.

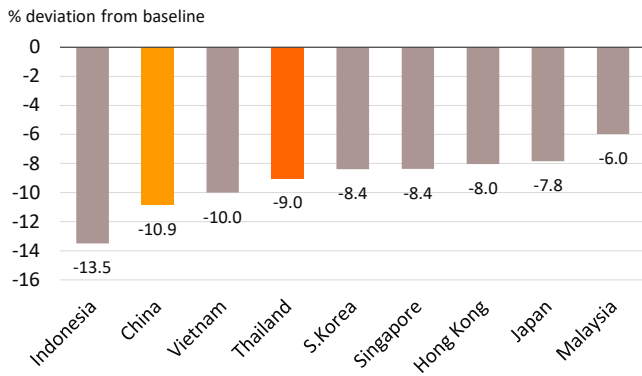
Thai exports is expected to drop by 0.8ppt from baseline in 2020, less than peers [Figure 10]. Exports to China would be slower than forecast earlier. But as some China businesses halt production, some sectors in Thailand could benefit from the trade diversion, including machinery, electronics, metal and agriculture.

Figure 8: Thailand’s GDP Deviation from Baseline in 2020



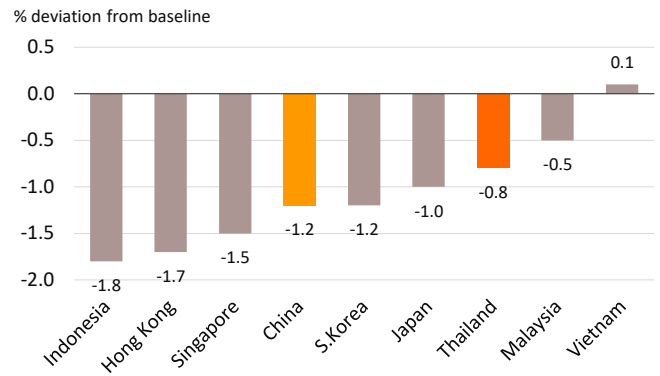
Source: Krungsri Research

Figure 9: Impact on Tourist Arrivals in Thailand and Selected Asian Countries



Source: Krungsri Research

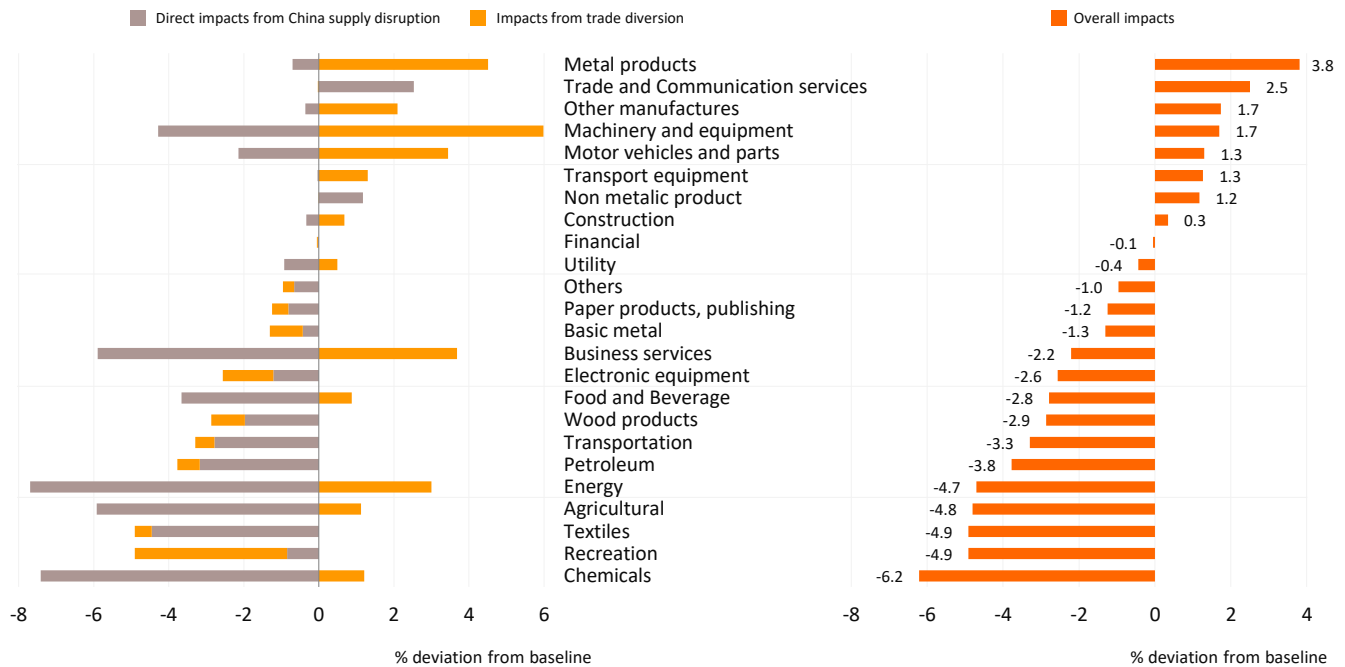
Figure 10: Impact on Exports in Thailand and Selected Asian Countries



Source: Krungsri Research

Mixed impact by sector. Our model suggests almost all sectors would be hurt by a slower China economy. But some sectors would gain from trade diversion and could expand. These include Metal Products, Trade and Machinery sectors. At the same time, Chemicals, Recreation and Textile sectors could be hit hard because of large exposure to China [See Figure 11].

Figure 11: Impact on Individual Sectors



Source: Krungsri Research

Summary: Krungsri Research expects the COVID-19 outbreak to peak in March and last until May. The ease of transmission could lead to widespread contagion although the mortality rate is not as severe as SARS or MERS. The direct and indirect costs associated with illness and death will rise and will hit the global as well as Thailand's economy. The models we applied suggest Thailand's economic growth would be reduced by 0.44 ppt from baseline this year. The impact would be worst in the first quarter, especially in the Tourism, Chemicals, Recreation and Textile sectors.

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