

Tracking every move you make

We have analysed Chinese population migration tracking data from Baidu Qianxi. If the data is fully representative (and we raise some caveats at the end of this note), it suggests:

1. Many large cities are still waiting for the majority of their 'out of town' citizens/workers to return.
2. Either migration increases fast soon (adding risks of the coronavirus covid-19 spreading), or continued low migration limits the number of workers and economic activity.
3. Local government rules imply that the return to work is delayed by a further 14 days after workers arrive back in the city.
4. Hence, full capacity utilisation in e.g. industrial production could be delayed well into March.

Many large cities are still waiting for the majority of their 'out of town' citizens/workers to return

We have looked at travel patterns around Chinese Lunar New Year, as indicated by the Baidu Qianxi travel index for 2020 and 2019. The index tracks when someone leaves or enters a city. Using Shanghai as an illustration below, the data shows that citizens usually depart from the city gradually ahead of Lunar New Year, and return gradually in the weeks after – to resume work or school. Lunar New Year's Eve (25 January) is marked.



Source: Baidu / DNB Markets

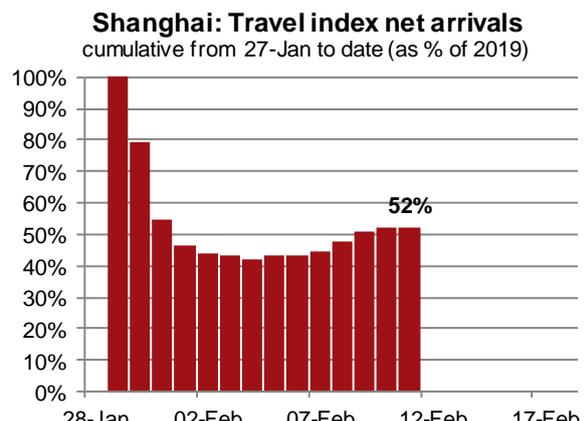


Source: Baidu / DNB Markets

Following the announcement of Wuhan coronavirus measures on 23 January, both arrivals in and departures from Shanghai have come down significantly compared to the corresponding period in 2019. The lack of departures from Shanghai reflects how strictly citizens have practiced self-quarantine in the past few weeks, underlining the potential losses for e.g. the travel industry. More striking is the lack of arrivals back into the city after Lunar New Year's Eve this year. Cumulatively, since Monday 27 January, return travel to Shanghai is at just 52% of the level in 2019. If 2019 is an accurate benchmark, this could indicate a significant shortfall of 'returnee' workers. As a result, more pressure is being put on local workers. In 2018, there were 289m rural migrant workers - representing a third of China's total labor force (NBS).



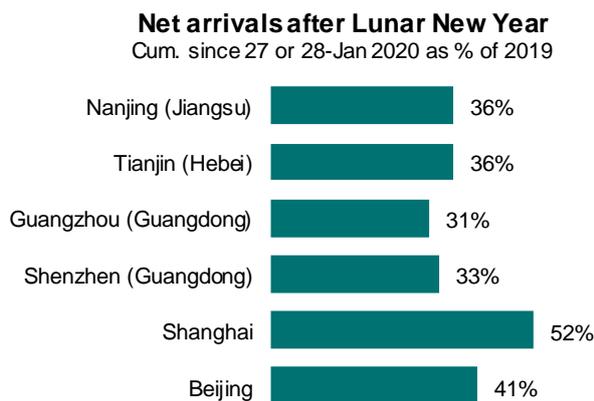
Source: Baidu / DNB Markets



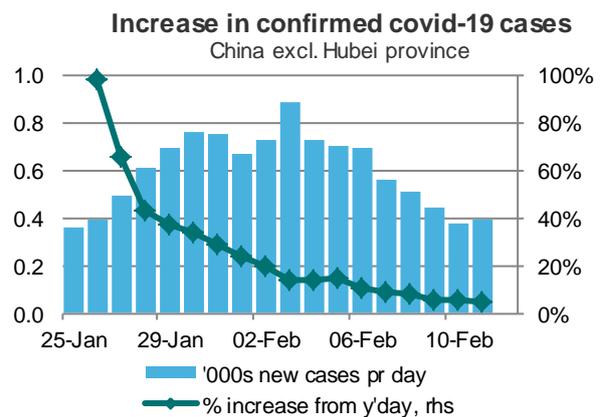
Source: Baidu / DNB Markets

We have looked through the data for the other large cities in China as well. Generally, they follow the same trend as Shanghai. Inbound and outbound travel to/from many cities has fallen significantly since 23 January, and there has been an obviously lower level of ‘returnees’ in the weeks following Lunar New Year’s Eve. The chart below (left) shows a selection of cities that we consider representative. Compared to the same time last year, the majority of citizens have so far not yet returned to the major cities.

We think this corresponds well with news from the Chinese central government, which is reportedly expecting a total of 180m citizens to be travelling this week and wants to take measures to curb the risk of contagion. The extended Lunar New Year vacation ended on Monday, and central government officials have called for a controlled and staggered return to work. This implies a significant increase in the number of travellers, as well as increased risk of the coronavirus spreading. Official infection statistics have improved significantly for provinces other than Hubei (home to Wuhan). However, they do not indicate that the virus has been fully contained yet.



Source: Baidu / DNB Markets



Source: WHO/NHC/DNB Markets

Even with a significant increase in travel volume, the lack of labour may persist, curbing production

Many local governments have imposed restrictions and conditions on companies as they restart activity, including checkpoints, frequent reporting, mandated temperature checks, and the provision of masks. Most local governments are allowing ‘local’ workers to return to their offices now, but require those travelling back into the cities to self-quarantine for 14 days before coming to work. We consider there are compelling reasons for local governments to remain cautious. Firms also practice differing policies, and also have good reason to remain cautious. This means that activity cannot pick up immediately after workers return to cities.

To illustrate our point, we have sketched out a scenario for Guangzhou (see Appendix). In this scenario, by next week (18 February), cumulative net arrivals to the city will remain at just 74% of the level in 2019. The scenario assumes a significant increase in travel volume into Guangzhou (up 20% each day), but the potential shortfall in labour implies that full utilisation in industrial production could be delayed well into March. This means that ‘catch-up’ production, to make up for the additional +1 week Lunar New Year ‘holiday’, is also moved further out in time. For certain industries, this could accelerate the relocation of supply chains from China to abroad.

Important caveats on the Baidu dataset

The Qianxi dataset comes as a ‘travel index’ calculated by Baidu. Baidu is similar to Google, and Google Maps. The index is calculated using big data from Baidu users’ mobile phones location services, combined with Baidu’s flight tracker (Tianya) and transportation information systems for e.g. trains and buses that are integrated with Baidu. For now, the Baidu dataset corresponds well with observations and news from companies. For example, Reuters reports that Foxconn saw only 10% of its workforce return to Shenzhen.

Still, we are concerned whether there could be biases in the index. This could be in terms of the types of users and when they use Baidu, e.g. it could be weighted towards younger users, with students being overrepresented. Schools and universities will be closed until 16 February. The current lack of car congestion could lower the number of users in 2020 compared to 2019. While we will track the development of this dataset, we will also check to see how well it matches up with other news sources and company reports of activity.

Side note: A new government tracker app to keep you safe

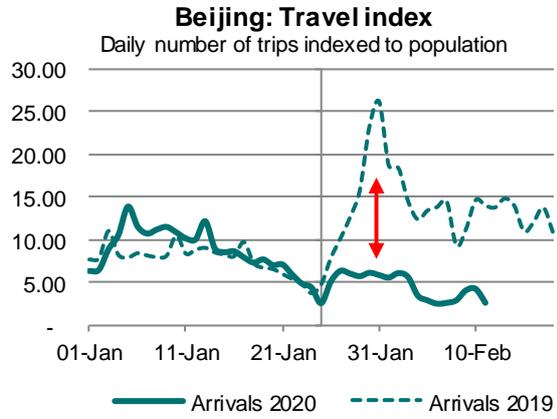
The Chinese government has [developed an app](#) that allows for individual movement tracking, enabling people to check whether they are at risk of catching the virus. Notably, it links up to popular apps such as Alipay, QQ, WeChat using phone numbers and is connected to a personal ID. Those who have been in close contact with an infected person can be warned and stay self-quarantined. At the time of writing, the Chinese National Health Commission has reportedly identified c450,000 persons that have been in close contact with an infected patient. This government tracker uses different data on personal travel from that provided by Baidu. It may become very useful in combating the spread of the coronavirus. At the same time, it illustrates new business models that are developing in China, which could have a longer-lasting effect than the coronavirus outbreak itself.

Kelly Chen, DNB Markets

Appendix – Migration to selected big cities in China around Lunar New Year



Source: Baidu / DNB Markets



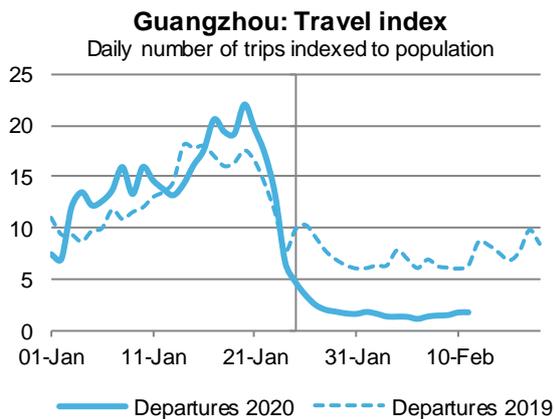
Source: Baidu / DNB Markets



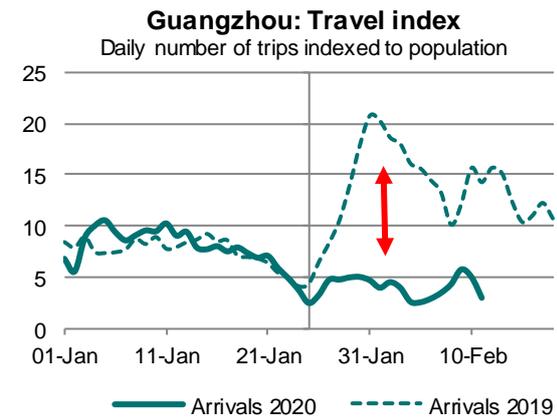
Source: Baidu / DNB Markets



Source: Baidu / DNB Markets

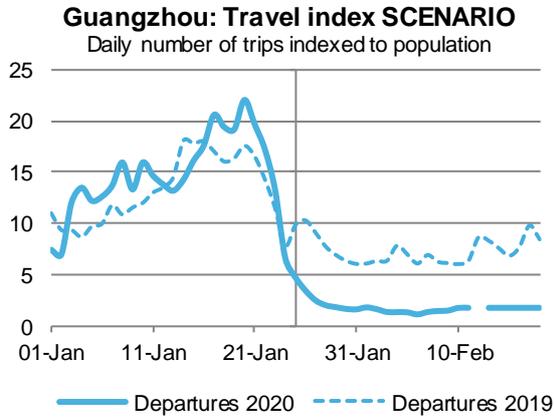


Source: Baidu / DNB Markets

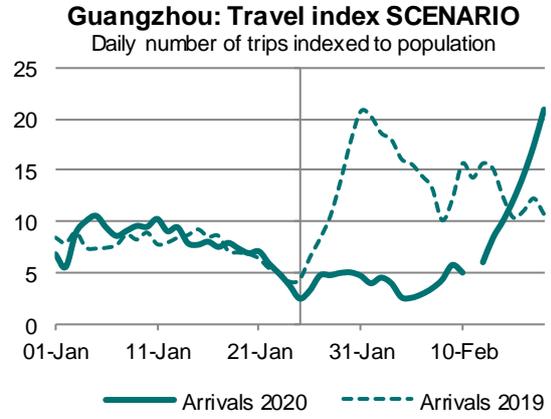


Source: Baidu / DNB Markets

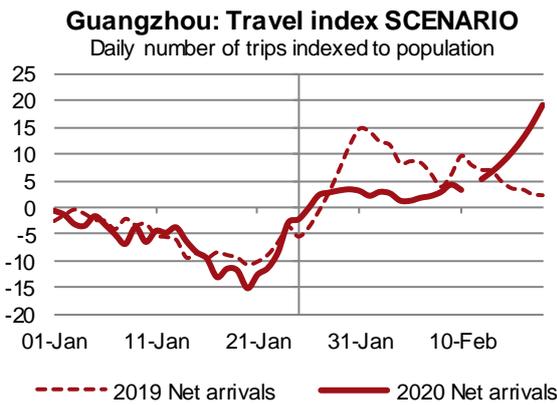
Appendix – Guangzhou scenario (Please note DNB scenario after 11-Feb 2020)



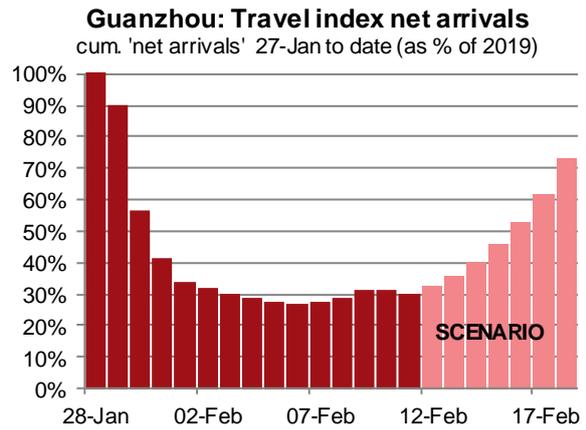
Source: Baidu / DNB Markets



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