GREATER BAY AREA: A 2030 OUTLOOK

Opportunities and challenges over the next decade
The Greater Bay Area (GBA) is a national initiative highlighted in the Chinese government’s 13th Five Year Plan, aiming to build a globally competitive mega-region, and by 2035, build a productivity cluster, serving as a key facilitator of the Belt and Road Initiative. The Chinese term for a mega-region, 城市群, translates to cluster of cities, and may serve as the most appropriate definition in the context of the GBA.

Opportunities:

While Hong Kong SAR*, Shenzhen and Guangzhou shall become the future key office clusters for the GBA, we forecast that there could be a total of additional 21 million sq metres of office space needed given the forecasted economic growth between 2019-2028. The improved connectivity of the cities' ports, which are three of the world’s top 10 largest, should result in synergies to facilitate further growth.

Challenges:

The differences between the Hong Kong and Chinese economic systems, legal structure, and labour costs may become a challenge to attract the right balance of skilled labour into the GBA. Meanwhile, the cost of commuting across cities still exceeds that of intracity travel. Bridging these gaps will be crucial to unlock the untapped potential for the next stage of economic development in the GBA.

Notes:
* Hong Kong Special Administrative Region of the People’s Republic of China
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The Greater Bay Area (GBA) is a national initiative highlighted in the Chinese government’s 13th Five-Year Plan aimed at building a world-class city cluster in Southern China and a key facilitator of the Belt and Road Initiative—the 21st century maritime Silk Road designed to enhance China’s trading network. The region comprises nine cities in Guangdong province (Guangzhou, Shenzhen, Zhuhai, Dongguan, Huizhou, Jiangmen, Zhongshan and Foshan) as well as the two Special Administrative Regions (SARs) of the People’s Republic of China, Hong Kong and Macau. The initiative was signed with President Xi Jinping as a witness in July 2017 and was followed by the release of the Outline Development Plan in February 2019, which identifies the proposed role of each city in the GBA, and the release of the three-year action plan in July 2019, which details 100 measures in nine key action areas as shown in Chart 2.

Under the three-year action plan, by 2022 the GBA is planned to be an incubator for world-class innovation, have the infrastructure to facilitate the smooth flow of people and goods and improved liveability. Under the plan, the GBA is planned to be a globally competitive mega-region by 2035. As part of the jigsaw of the GBA plan, the Chinese government further announced its plan in August 2019 to make Shenzhen a model city for China and the world.
The GBA initiative aims to form a productivity cluster around the four core cities, which should act as a nexus in the development of the broader mega-region. The formation of a productivity cluster is key to the success of the broader initiative, but what exactly is a productivity cluster, and how does it differ from a mega-region?

**Productivity clusters**

The concept of a productivity cluster is fairly straightforward. It is a concentration of several related businesses in some geographic area. These businesses can be related by operating in similar industries (sectoral cluster), through the use of common resources (horizontal cluster), or by sitting in different parts of the same supply chain (vertical cluster). The concentration of these related businesses should result in a pool of resources, whether they be financing, skills, infrastructure or ideas, that should result in productivity gains through competition and economies of scale and give companies located within this geographical location an edge over competitors located outside of it.

Although the emergence of Silicon Valley has popularized productivity clusters in policy discussions since the 1990s, there are several examples of clusters that predate the rise of information and technology communications. Hollywood and Bollywood are two examples of entertainment clusters. The area around the Great Barrier Reef in Cairns, Australia, is an example of a tourism cluster. Italian fashion, the petroleum industry in Texas, automobile production in Detroit in the 1900s, physics in Geneva (CERN) and wine regions around the world are all examples of clusters.

The economic benefits of successful clusters are clear. Apart from being a catalyst for economic growth, they are also a hotspot of job creation. These jobs are not only in the industry that is the focus of the cluster, but there are immense positive spillovers into other professions. University of California economist Enrico Moretti estimates that for every tech job created, five additional jobs are created. Of these five jobs, two are skilled professionals (such as doctors, lawyers, teachers or real estate and construction professionals) while three are unskilled (hospitality and clerical workers). To quote Moretti:

"[Apple] employs 12,000 workers in Cupertino. Through the multiplier effect, however the company generates more than 60,000 additional service jobs in the entire metropolitan area, of which 36,000 are unskilled and 24,000 are skilled. Incredibly, this means that the main effect of Apple on the region’s employment is on jobs outside of high tech.1"

The spillover effects may be even more impressive. Despite only employing about 1,500 employees in 2010, according to University of California Berkeley Professor Enrico Moretti, Facebook apps have created at least 53,000 new jobs and indirectly created an additional 130,000 in the services sector.²

**Mega-regions**

Unlike productivity clusters, there is no universal definition of mega-regions despite some efforts to create one based on population or population density thresholds. The term itself has been used somewhat interchangeably with megalopolis and supercity, which can further confuse the definition. In essence, a mega-region is a cluster of cities within a defined proximity and connected, usually through transportation infrastructure such as rail and road. The Chinese term for a mega-region, 城市群, translates to cluster of cities, and may serve as the most appropriate definition in the context of the GBA.

Connectivity is the key to mega-regions, which differentiates them from the productivity clusters which are generally built around a specific industry or grouping of industries. This allows for synergies between different cities specializing in different industry groups and is a conduit for positive spillover effects such as cost savings or access to a deeper pool of human capital.

Apart from the GBA, China is home to two other well-known mega-regions: Beijing and its surrounds, known as the Jing-Jin-Ji area and Shanghai’s Yangtze River Delta region. Other mega-regions globally include the Tokyo-Osaka mega-region in Japan, the Northeast Corridor of the United States spanning from Boston to New York City and Washington D.C. and the Coastal California mega-region spanning from San Francisco to Los Angeles and San Diego.

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The ambition of the GBA can be summed up by its scale. As far as population size, the GBA is large even compared to other mega-regions in Asia, and dwarves the mega-regions of the United States. In 2015, the latest figures available, the United Nations estimated that the combined urban population of the 11 cities comprising the GBA had reached 54 million. This is more than Jing-Jin-Ji’s 39 million, and is roughly equivalent to the Yangtze River Delta region’s 56 million or the combined urban population of 58 million from the Coastal California and Northeast Corridor. It only trails the estimated 69 million urbanites in the Tokyo-Osaka cluster.

“If you want to have good ideas, you must have many ideas”
– Linus Pauling

The scale of the GBA initiative is so immense that it is often compared to entire countries rather than cities. By population size, the GBA is comparable to the UK or France. Importantly, however, this is likely to grow, with the UN forecasting a 30% increase in the GBA urban population between 2015-2035 to almost 70 million. This would position the GBA as one of the most populous urban mega-regions in the world, with more urbanites than the UK, France or Germany.

A concentration of people is clearly an important factor in a productivity cluster. An increase in interpersonal communications generally increases the free exchange of ideas. Indeed, Leonardo Da Vinci would intentionally design his buildings with a central dome, so individuals would interact in passing – a design that has been copied by many present-day tech companies when designing their own campuses.
For a region as large and populous as the GBA, connectivity is an important factor that either contributes to or constrains productivity. Regional planners have prioritised this, as investment in physical infrastructure is one of the key components of the GBA initiative, and large outlays have been undertaken to upgrade regional rail and road infrastructure. As noted by HSBC in 2019, the GBA also benefits from having a higher population density than most mega-regions, particularly those in North America. The number of inhabitants per square kilometre in the GBA is roughly three times that in the U.S. Northeast corridor, and five times the Costal California mega-region. Due to closer proximity of the GBA cities, travel times between main cities are lower, as it takes less than an hour to travel between Hong Kong and Guangzhou compared to more than three hours between New York and Washington (more than seven hours from Boston to Washington) and more than eight hours to travel between San Francisco and Los Angeles. Commute times in the GBA are even less than the significantly denser clusters of Tokyo-Osaka and the Yangtze River Delta. Furthermore, as a technology hub, the GBA should also benefit tremendously from the rollout of 5G capability, which China has prioritised for implementation in 2019.

When looking at output per capita, each person in the San Francisco Bay Area produces roughly five times more output (in U.S. dollar terms) than do their counterparts in the GBA. The GBA initiative seeks to narrow this productivity gap. This gap will probably shrink over the next decade, though it is unlikely to disappear entirely. To put this in perspective, if per capita GDP in the GBA was equivalent to the San Francisco Bay Area today, the GBA’s GDP would be smaller than only that of the United States and China, being slightly larger than that of Germany and the U.K., combined. This ability to catch-up represents a significant opportunity for near-term growth in the GBA, which this report discusses in more detail in a later section.

Chart 9: GBA infrastructure connection

"One machine can do the work of fifty ordinary men. No machine can do the work of one extraordinary man.\textemdash Elbert Hubbard

Key to any productivity cluster is a skilled workforce. Clusters tend to form around universities as first, research at universities and collaboration between academia and the private sector can spawn private companies and second, companies located around these areas would have access to a highly-skilled workforce. This is particularly true for a knowledge-based industry such as technology, where ideas can produce multi-billion-dollar companies without physical products. It may also be where Silicon Valley has the largest edge over the GBA.

Chart 10: GDP output comparison – GBA vs. San Francisco Bay Area

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<th>GBA</th>
<th>San Francisco Bay Area</th>
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<tr>
<td>Land area (sq. km)</td>
<td>56,904</td>
<td>17,887</td>
</tr>
<tr>
<td>Population (mn)</td>
<td>71.16</td>
<td>7.82</td>
</tr>
<tr>
<td>GDP* (US$ bn**)</td>
<td>1,642.0</td>
<td>837.5***</td>
</tr>
<tr>
<td>Real GDP growth (%)</td>
<td>5.9</td>
<td>4.7***</td>
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<tr>
<td>Per-capita GDP (US$)</td>
<td>23,075</td>
<td>107,178***</td>
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Notes: * At current market prices  ** Converted with the yearly average exchange rates  *** 2017 figure

Source: Colliers International

What is somewhat unique to the GBA is that it is a mega-region forming around one dominant hi-tech productivity cluster. In that sense, it is somewhat difficult to compare it directly with other mega-regions such as Jing-Jin-Ji, the Yangtze River Delta, the Tokyo-Osaka region, or the Northeast Corridor of the United States. These regions are generally characterized by a more diverse economic base, and lack one dominant industry. Because of this, the Costal California mega-region is the most appropriate comparison for the GBA. Although both should have some diversity in their economic base, the technology sector is the dominant industry.
According to Times Higher Education, Northern California alone is home to two of the top engineering and technology universities in the world, which are collectively home to more than 50,000 students. If this measure includes all of California, it expands to nine universities ranked in the top 100 engineering and technology universities. These schools have a student population in excess of 250,000 and perhaps as important, they are diverse with 52% of the student population being female and 20% being made up of international students. Companies of all sizes located in the Costal California mega-region would have access to this large and highly skilled group of potential employees.

Meanwhile, all of the top-100 engineering and technology universities located around the GBA are in Hong Kong. This illustrates another aspect of how important Hong Kong is to the GBA initiative. The scale of these programs is different as well – they have a total student population of less than 80,000, less than a third of what the comparable for top 100 engineering and technology schools in California, despite a much larger catchment area.

Research has shown that a skilled labour force is a more important contributor to productivity growth in cities than better physical capital. If the GBA is able to close the productivity gap with Silicon Valley and other hi-tech clusters in developed markets, we believe that access to a large skilled pool of labour will be essential for growth to be sustainable. This is not confined to engineering and technology graduates – as discussed earlier one of the characteristics of a hi-tech cluster is that there tends to be spillovers into other sectors, in particular professional services.

While it is possible to develop new schools, the Hong Kong University of Science and Technology and the City University of Hong Kong were both established in the past 30 years, the GBA offers no specific plan, which is problematic. The Outline Plan for the GBA, released in February, 2019, includes a section on “Developing an Education and Talents Hub”, but this appears to focus more on encouraging mutual recognition of education between Hong Kong, Macau and Guangdong rather than significantly expanding the capacity of regional post-secondary education.

The importance of expanding educational capacity cannot be understated, and there is a lesson to be drawn from Silicon Valley here as well. According to Moretti, the San Jose and San Francisco-Oakland regions comprising Silicon Valley are two of the top ten most educated regions in the United States, as 47% and 44% of working residents have a college degree, respectively. Merced, California, is 100 miles from this cluster, and is one of the least educated regions in the United States, with only 11% of the working population holding a college degree. Unsurprisingly, wages earned in San Jose and San Francisco-Oakland are significantly higher than those in Merced on average. However, what may be somewhat more surprising is that college graduates in Silicon Valley earn 30% more than college graduates in Merced, and non-college graduates in Silicon Valley earn more than double than those without a college degree in Merced. Using wages as a proxy for worker productivity, this would indicate that having a high concentration of college graduates not only increases aggregate productivity, but also increases the productivity of workers who do not have a college degree.

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OPPORTUNITIES

Greater Bay Area is under the spotlight for future businesses in China

The world and business community are now more aware of the GBA and southern China. Over the last decade, investors have been paying more attention to the Yangtze River Delta, particularly to Shanghai. However, the investment and business arena has been gradually changed, with increasing market focus having shifted from the north to the south of China, especially after the Central government announced their GBA guidelines earlier in February 2019. In fact, according to Colliers’ Annual Hong Kong Investor Survey Report 2018, around 40% of the survey participants expressed their interest in investing in GBA cities of mainland China, whilst Shenzhen and Guangzhou are considered as the most popular destinations among those cities. Both domestic and overseas capital have been paying increasing attention to explore opportunities within this region.

According to government’s latest data, 20 companies from the 2019 Fortune Global 500 list are from the GBA - seven of which based in Shenzhen, seven in Hong Kong, three in Guangzhou, two in Foshan and one in Zhuhai.

Whilst the GBA plan is leveraging on the growth of the innovative and high value-added industries, these new industries should also bring new life to the economy. As a result, property demand for commercial and logistics industries should also bring new life to the economy. As a result, property demand for commercial and logistics industries should also bring new life to the economy.

The fast growth of office stock has raised the concerns of oversupply, particularly in Shenzhen. However, the immediate outlook appears to be relatively upbeat for the Grade A office market. Participants in the RICS Global Commercial Property Monitor expect the rents and capital values both to increase between 4-4.5% over the next 12 months, almost a full percentage point above what is expected for similar assets in Hong Kong. Infrastructure upgrades and increased transportation connectivity support this outlook, the completion of the Guangzhou-Shenzhen-Hong Kong Express Rail Link in 2018 makes a one-hour living circle possible within the three core cities.

Moreover, regression analysis shows a very high correlation between GDP and occupied Grade A office space in Hong Kong, Shenzhen and Guangzhou. Based on Oxford Economics’ GDP forecasts for the three cities, we forecast that Grade A office demand will likely increase to 399 million sq feet (37 million sq metres) by 2028, supported by the estimated level of economic growth.

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Decentralization has been a common theme amongst occupiers of Grade A office space in Hong Kong in recent years. The high degree of connectivity between GBA cities facilitates a broader decentralization beyond the borders of Hong Kong. In a recent survey ofRICS professionals in Hong Kong, 40% of participants believed that Hong Kong-based companies have started to consider relocating or expanding headcounts into other parts of the GBA. An additional 41% believed that this would begin to occur over the coming three years. Tax incentives are set to aid this movement of operations, and in some cases personnel, across the border. Given the relative high rents in Hong Kong, emerging office markets across the boarder such as Nanshan can serve as affordable alternatives to Hong Kong for incubators and start-up companies.

During 2019-2024, about 136 million sq feet (13 million sq metres) of Grade A office space is scheduled to be completed in Hong Kong (1.2 million sq metres), Shenzhen (9.4 million sq metres) and Guangzhou (2.1 million sq metres), which indicates that the total supply by 2024 would still be lagging the size of the 232 million sq feet (21.5 million sq metres) of additional office space needed between 2019-2028, based on Oxford Economics forecasted economic growth. The logistics capability within the GBA, particularly that between Dongguan and Zhuhai, is likely able to provide the necessary supply-chain support for the establishment of a hi-tech productivity cluster. This appears to be taking place as government figures show that in 1H 2019, more than 7,800 new firms were established in Guangdong via foreign direct investment. Aggregate foreign investment reached nearly RMB84 billion (USD12 billion), 15% of which was directed at hi-tech industries. General Electric serves as an example of a Fortune 500 company that is undertaking serious investment in the region. It is building a biotechnology park in Guangzhou, the first that it has built in Asia.

Logistics

In 2018, the GBA recorded over 74 million TEUs of annual container throughput, with Shenzhen, Guangzhou and Hong Kong in the world’s top 10 ports. The increased connectivity between these ports under the GBA initiative should result in synergies to facilitate further growth, as well as the upgrading of port facilities in Nansha in Guangzhou. Increased air transport capacity should also facilitate further growth in the GBA as a transport hub, as both Hong Kong and Guangzhou airports are undergoing upgrades to increase their respective capacities.

The logistics capability within the GBA, particularly that between Dongguan and Zhuhai, is likely able to provide the necessary supply-chain support for the establishment of a hi-tech productivity cluster. This appears to be taking place as government figures show that in 1H 2019, more than 7,800 new firms were established in Guangdong via foreign direct investment. Aggregate foreign investment reached nearly RMB84 billion (USD12 billion), 15% of which was directed at hi-tech industries. General Electric serves as an example of a Fortune 500 company that is undertaking serious investment in the region. It is building a biotechnology park in Guangzhou, the first that it has built in Asia.
The unprecedented scale of the Greater Bay Area offers plenty of opportunities. The benefits of scale are well known, whether it is a more efficient use of labour and capital within companies or supply chains and cost savings external to companies. Even with high degrees of digitalization in the modern economy, companies based in major cities such as Hong Kong, London and New York enjoy benefits that would not be available if they should be based in Lanzhou, Lincoln or Des Moines. For Harvard Business School professor Michael Porter, one of the early proponents of modern clusters, this cooperation was one of the primary advantages of companies in similar industries locating close together.

However, there is an argument that in an increasingly complex economic environment, scale could be a detriment. Traditionally urban economists have focused on bottlenecks related to underinvestment in infrastructure and housing.

This infrastructure investment of the GBA appear to render these concerns mute, though to paraphrase Christine Lagarde it is essential to make sure that these concerns are the “right” investments. Financing for infrastructure projects are a finite resource, which means that for every project undertaken there is the opportunity cost of a project being passed over. The cost-benefit analysis process must be rigorous, which implies the need for a uniform standard to ensure the benefits and drawbacks of each project are appropriately accounted for.

A loss of co-ordination when preforming complex activities is another potential pitfall of increasing scale. This is a kind of macro Ringelmann effect, or the tendency of individual members of a group to become less productive as the size of their group increases. As complexity increases, there are likely limitations to the number of complementary tasks that can be completed by an individual or company.

In a previous section we noted the need for a skilled workforce to sustain growth, possibly through supplement of domestic skilled labour with foreign skilled labour. Indeed, the ability to attract skilled labour into the GBA ex-Hong Kong and Chinese economic system, legal structure, and labour costs.

The Chinese system is closer to that in Japan or Germany, where profits tend to stay within the company. This makes it more difficult to offer competitive compensation packages for “superstar” executives/employees. Indeed, both Japanese and German companies are not as reputed to attract top international talent as those in the U.S., U.K., and other similar economic systems. Although the section on “Developing an Education and Talents Hub” in the GBA Outline Plan does discuss the need to increase foreign skilled labour in the GBA, drawing on the experience of Hong Kong and Macau, it does not address this fundamental issue.

The ability to attract skilled labour into the GBA ex-Hong Kong has the potential to become a major challenge moving forward. One of the ideas underpinning the GBA is that companies located in cities in Guangdong could utilize Hong Kong’s skilled workforce, given that travel time between the Hong Kong CBD and the Futian district in Shenzhen and downtown Guangzhou is as low as 15 minutes and one hour, respectively. However, despite this being similar to the hour it takes to commute between the New Territories and the Hong Kong CBD, for example, cross border travel would still take longer.

However, a RICS survey found that despite companies’ plans to outsource and expand operations into other GBA cities and the relative difference in the cost of housing, there does not appear to have been considerable increase in interest in cross-border residential property purchases. When asked whether they have seen any interest from Hong Kong homebuyers to purchase property in other GBA cities, 57% of respondents said that they either did not know or had not seen an increase and did not expect to in the near-term. Only 13% of contributors reported that they had seen an increase in interest that resulted in transactions.

Considering the results of the survey indicating that Hongkongers investing in the residential market in the GBA ex-Hong Kong is in its infancy, attracting people to commute to the mainland is the most likely option.

Companies would likely have to pay a premium on this commuting labour, typically matching salaries in Hong Kong. But there would be an additional premium for this labour in the form of additional wages or subsidized travel. This adds an additional cost for the company hiring the employee, and could even mean that there is little difference in cost between locating an employee in Shenzhen or Guangdong and Hong Kong.

Apart from being an unprecedented size, the GBA is also unprecedented in that it aims to combine two different systems of institutions in one cluster. While differences in the legal structure are important, they have been discussed at length. This is a known-known, an issue that is known and there is a credible chance to be resolved. Representing a greater risk is the known-unknown of combining two different economic systems together under the umbrella of a single productivity cluster. There is much more uncertainty as to how the GBA will overcome this potential obstacle, namely because it has never been attempted before.

As a result of history, Hong Kong and Guangdong operate under different economic systems. Hong Kong operates under a traditional Anglo-American model where contracts are strictly enforced by a clear and well-developed legal system giving individuals and businesses confidence to borrow and invest long-term. Meanwhile Guangdong, as in the rest of China, operates under a system that is common in economies where the government plays a greater role. These tend to be opaque, where relationships are highly valued and information is difficult to come by.

Each system has its advantages and disadvantages – the Anglo-American model tends to sacrifice stability for growth whereas the opposite is true for an economy with an increased government presence. Incentives are structured differently under each system, and as economist Raghuram Rajan has written, “fault lines” can emerge when these systems interact. Most major financial crises since the 1980s, including the Asian Financial Crisis, have been a result of a high degree of unsustainable interaction between these two systems – usually related to hot money.

The GBA is something different, however. In the past, periods of intense interactions between these two systems have been transitory, and frictions emerged when one was unable to adapt to the other. Under the GBA plan, these two systems are likely permanently intertwined, with each forced to adapt to some degree. It is unclear whether the GBA will be able to bridge these gaps. But if it does, it could unlock vast amounts of untapped potential and form the base for China’s next stage of economic development.

12 In an April 2019 speech IMF Managing Director Christine Lagarde said “This means that we must not only avoid policy missteps, but also be sure to take the right policy steps.”
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