

China's Greater Bay Area

Many cities, one goal

The Greater Bay Area (GBA) comprising the Pearl River Delta, Hong Kong and Macao...

...is one of the 19 city clusters at the heart of China's new growth dynamic

We think it is showing the way as innovation, quality of life and consumption become more important

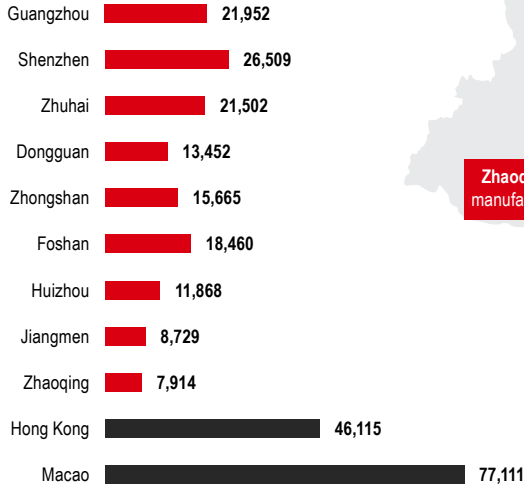
GUANGDONG PROVINCE

GBA

The Greater Bay Area: China's new economic hub

The GBA aims to bring together the two Special Administrative Regions of Hong Kong and Macao with nine cities in Guangdong province: Guangzhou, Shenzhen, Zhuhai, Foshan, Zhongshan, Dongguan, Huizhou, Jiangmen and Zhaoqing. The GBA accounts for 37% of China's total exports and its GDP is USD1.5trn

GDP per capita, by city (USD)



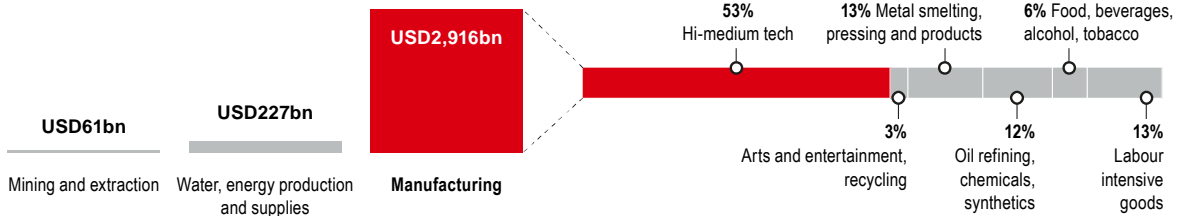
Growth drivers



Guangdong's tilt toward high-tech production

In the 12 months to May 2018, the GBA's manufacturing sector accounted for over 90% of industrial value added, mostly high-medium tech products

Industrial output:



Growth in goods and services



The Belt and Road Initiative (BRI)

The GBA is well positioned to support the Belt and Road Initiative, China's key infrastructure project. The Asian Development Bank estimates that Asia needs annual infrastructure investment of

USD1.7trn



Retail value by 2025e

Currently equivalent to the combined market size of South Korea and Vietnam, and a third of Japan's, we believe the retail value of the GBA is set to double by 2025 to

USD869bn



Made in Shenzhen

Shenzhen produces 22% of China's high-tech exports, and we expect this to rise to 40% by 2025. By then, Shenzhen's R&D expenditure is set to hit

5% of GDP



Banking and financial services

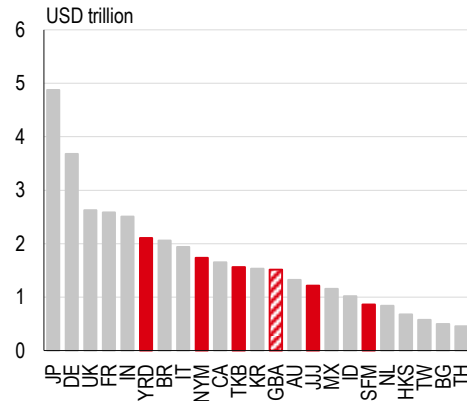
Hong Kong's role as a financial "super-connector" with the mainland: Around 60% of all China's annual overseas direct investment goes via Hong Kong and is worth almost

USD114bn

Sources: WIND, CEIC, government statistical yearbooks, HSBC Research

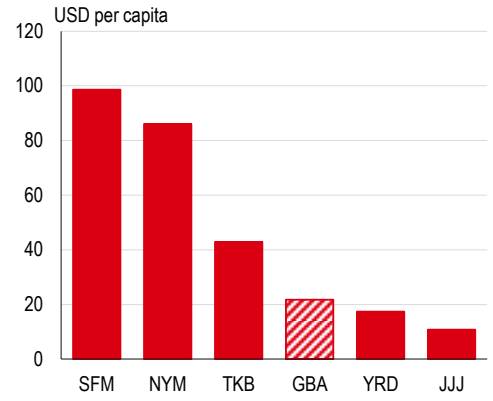
The Greater Bay Area at a glance

Gross domestic product (USDtrn)*



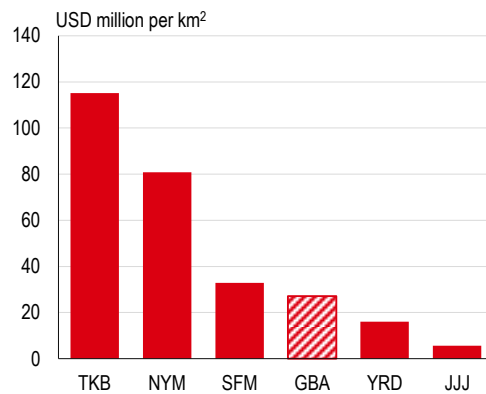
Source: CEIC, HSBC Research

Gross domestic product (per capita, USD)*



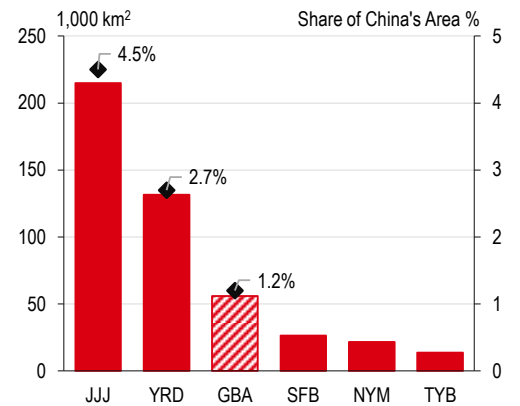
Source: CEIC, HSBC Research

Output per square kilometre*



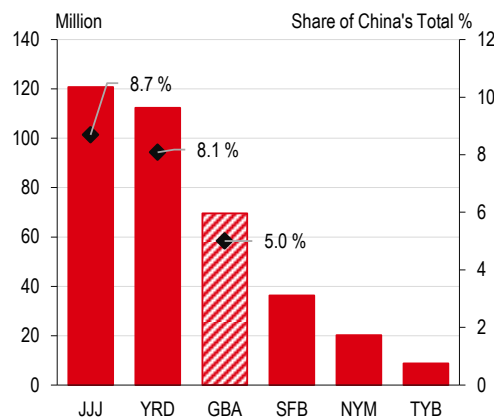
Source: CEIC, HSBC Research

Land mass (square kilometres)*



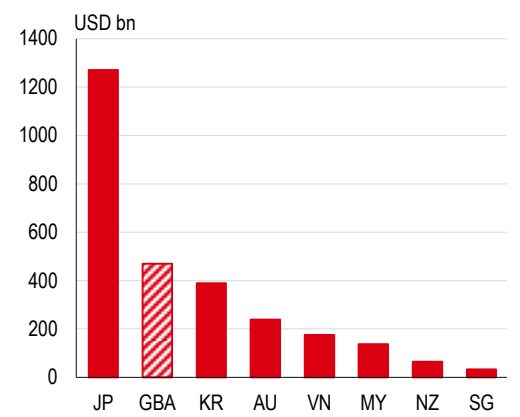
Source: CEIC, HSBC Research

Population (million)*



Source: CEIC, HSBC Research

Retail market (USDbn)*



Source: CEIC, HSBC Research

*The above abbreviations are ISO country codes, apart from the following: YRD – Yangtze River Delta, NYM – New York Metropolitan Area, TKB – Tokyo Bay Area, GBA – The Greater Bay Area, JJJ – Jing Jin Ji, SFM – San Francisco Bay Area, HKS – Hong Kong Shenzhen Metropolitan Area, UK – United Kingdom.

Executive summary

The rise of ‘city clusters’ will unleash the economic potential of ‘agglomeration’, powering China’s productivity growth in the years to come. The Greater Bay Area (GBA) provides the most compelling example of how the clustering of talent, capital and industries will drive higher valued-added production and fuel consumption to secure long-term sustainable growth.

Right time, right place

City clusters will drive the next decade or more of the country’s formidable growth

The quiet hum of cloud computer servers and the sight of busy financial professionals at their screens are the new symbols of China’s latest economic transformation. Linking up with the more familiar development icons of expressways, bridges and railway lines, they are part of a new approach to China’s economic expansion. ‘City clusters’ will drive the next decade or more of the country’s formidable growth, with talent and finance combining to forge a future out of continued urbanisation, consumption, innovation, and technological progress. And nowhere is this more evident than in what is being called the Greater Bay Area (GBA).

Connecting the dots: the ‘one-hour living circle’

There is no famous Shenzhen Bay or any other bay in the way that there is an actual San Francisco Bay or Tokyo Bay. Instead, the GBA is an idea around which some pretty concrete things are being built. And that, of course, includes literally building things out of concrete. It is not just a rebranding of the Pearl River Delta (PRD) area. The difference is that on top of the nine cities¹ in Guangdong, it incorporates the Special Administrative Regions (SARs) of Hong Kong and Macao for the first time.

With a population of 70m, occupying only 1% of China’s landmass, the GBA produces 37% and 12% of the country’s total exports and GDP, respectively. This ranks the region as the 4th largest exporter (ahead of Japan) and the 15th largest economy (ahead of Spain) in the world. We expect the region’s GDP to reach USD2.8trn, the 9th largest economy in the world by 2025². More importantly, the region has led the country’s industrial upgrading and innovation in recent years, accounting for over 50% of the country’s total international patent application³ activity. Innovation boosts productivity and income. Already the wealthiest urban cluster in China, we expect the size of the GBA’s consumer markets to double by 2025 to over USD900bn, larger than those of South Korea and Vietnam put together.

¹ Guangzhou, Shenzhen, Zhuhai, Dongguan, Zhongshan, Foshan, Huizhou, Jiangmen, and Zhaoqing.

² Based on IMF WEO April 2018 forecasts.

³ Patent applications filed under the Patent Cooperation Treaty (PCT).

The key contributor to the success of the GBA is its great infrastructure and logistic capabilities, unequalled anywhere in China, facilitating factor mobility. In particular, Hong Kong's port facilities (both sea and air) have consistently been ranked among the busiest and most efficient in the world since the 1990s. And the recent completion of the Hong Kong-Zhuhai-Macao Bridge (HZMB) across the estuary of the Pearl River, together with the Express Rail Link (XRL) connecting Hong Kong to Guangdong and beyond, are further evidence of the crucial part being played by infrastructure in the development of the GBA.

This is not just about managing and administering a large metropolitan area – it's equally and explicitly about the next stage of China's economic development. And it is being as closely planned and piloted as the other strides China has made across the global economic landscape.

This report discusses how the implementation of the policy of 'city clusters' like the GBA is set to drive China's future economic growth. It also provides an overview of the GBA and discusses the special attributes that set this region apart from China's other clusters. The report concludes by exploring the role of Hong Kong in this national project, discussing the synergies and potential challenges that will be part of this experiment in regional integration.

Hong Kong has a competitive advantage in high value-added services

Our focus on the GBA is, at least, partly motivated by the unique nature of its partnership and synergies associated with the role played by Hong Kong and Macao, both in the past and in the future. Hong Kong has a competitive advantage in high value-added services, including accounting, law, consulting, supply chain management, and global capital allocation. It has also long been an international shipping hub and global financial centre and is likely to continue to provide manufacturers in the PRD with the means to connect with the world's economy; however, the GBA is much more than that. The GBA's focus is on developing a major industrial cluster for technology and innovation, leading the nation's ascent up the global value chain.

China's smartest city

At the heart of the GBA is the city of Shenzhen, chosen by Deng Xiaoping 40 years ago as the incubator of the country's economic reforms, and now China's leading technology innovation hub. The city spends 4.3% of its GDP on research and development (R&D), more than double the national average. We expect this figure to grow further to almost 5% by 2025, while the national level appears set to rise to 2.9%, still more than what the US allocates to R&D.

Little wonder, when this is all added up, that over the past five years, Shenzhen accounted for 22% of China's high-tech exports and contributed more than a quarter (USD26bn) to China's trade surplus in high-tech goods. In 2015, there were almost 20,000 companies in the province with ties to the 'new economy'. We expect the city's high-tech exports to account for c40% of the nation's total by 2025, while close to 45% of high-tech firms will be based in Guangdong province.

The big challenge: one region, three systems

There is much still to be done to secure the GBA's distinct advantages. Rolling three different systems (Hong Kong, Macao, and Mainland) into one region will be difficult and requires significant political will and resources. The GBA is probably less integrated than the European Union (EU). To fully benefit from the 'agglomeration' effect, alignment of these systems within the framework of 'one country, two systems' is needed. China still operates a relatively closed capital account with full liberalisation a distant target. By contrast, Hong Kong and Macao are already free ports with their own currencies and no capital controls. The streamlining of different policies and regulations needs to be addressed. They include social benefits, labour, immigration, and taxation, to name just a few.

At the same time, elevated property prices are proving a challenge. High living costs tend to make it difficult to attract international talent, while expensive operating costs threaten to undermine the GBA's competitiveness. The GBA also competes domestically with Beijing-Tianjin-Hebei (京津冀) (known as Jing-Jin-Ji, or JJJ) and the Yangtze River Delta (YRD).

In the case of Hong Kong, we think the most glaring inadequacy is in technological development and providing early-stage capital. The city's past has established something of an arbitrage trading mentality among entrepreneurs, leading to a more short-term approach to investment. Also, the society's apparent scepticism towards technology start-ups, because of their high-risk nature associated with long-term investment, militates against commercialising potentially profitable technology. There is, therefore, a weak angel culture in the city. However, we argue in this report that this equity gap between the seed and the start-up stages of innovative companies is set to narrow over the next few years.

These challenges notwithstanding, the various authorities of the GBA are likely to forge a closer partnership in the field of R&D. Hong Kong's universities are leaders in the development of technology, but they have no record of commercialising their innovations, partly because the city has for so long been a relatively small market. Indeed, with just 8m people, it, nevertheless, boasts the highest concentration of the world's top 100 universities, right on the doorstep of this booming, innovative enclave. By collaborating with Shenzhen's entrepreneurs who know their market and have access to it, a more intense collaboration is likely to yield significant synergies.

Comparison of major city clusters

City clusters/ area		Population (million)	Land area (1,000km ²)	GDP (USDbn)	GDP per capita (USD)	Output per km ² (USDm)	Tertiary industry (% of GDP)	Top 100 universities
Greater Bay Area	GBA	69.6	55.8	1,514	21,764	27	56%	5
Yangtze River Delta	YRD	120.7	131.5	2,105	17,428	16	52%	3
Beijing-Tianjin-Hebei	JJJ	112.4	214.9	1,217	10,828	6	42%	2
San Francisco Bay	SFB	8.8	26.3	863	98,637	33	82%	3
New York Metropolitan Area	NYM	20.2	21.5	1,735	86,094	81	89%	3
Tokyo Bay Area	TKB	36.3	13.6	1,562	42,865	115	83%	2

Source: Various National Statistical Authorities, HSBC Research

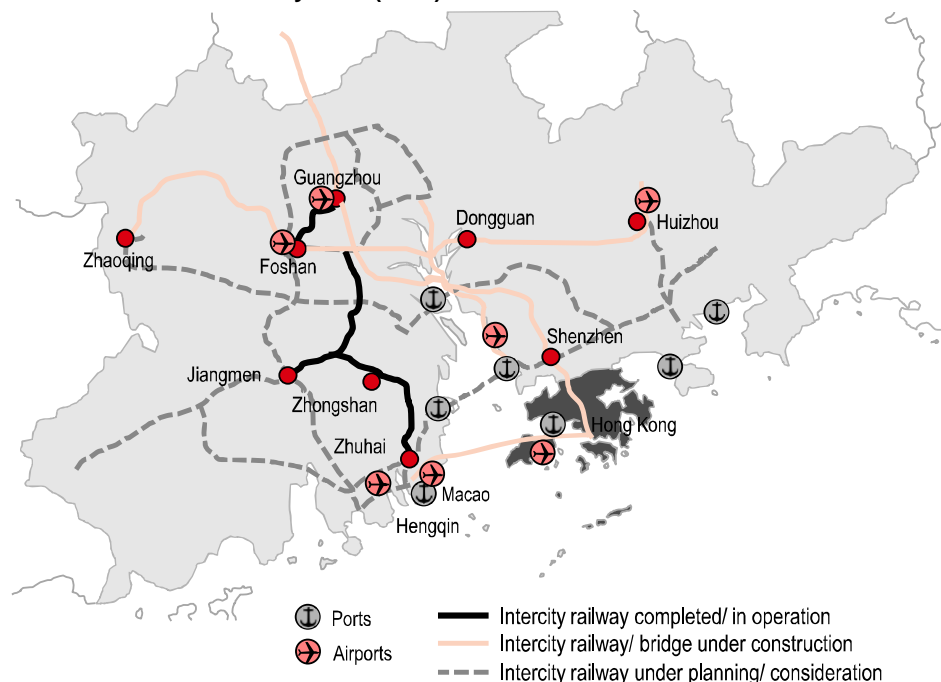
Special Economic Zone 2.0

- ▶ The GBA is pioneering the nation’s transition from investment-led to innovation-driven growth
- ▶ As the GBA emerges as the world’s export powerhouse, it is also gradually being transformed into a new high-tech hub for China
- ▶ Hong Kong is playing the role of linking the GBA to the world using its vast international experience, providing physical and soft capital

A second leading role in China’s economic transformation

When the late Chinese leader Deng Xiaoping began his economic reforms and opening up policies some 40 years ago, Shenzhen and Zhuhai were chosen to be the first experimental Special Economic Zones (SEZs). The bold idea to choose the southern province of Guangdong as the place to launch what has turned out to be one of the most important events in modern economic history – the industrialisation of China – has its own history. The province has always been the most exposed to the outside world, with foreign interaction that included ideas, conflict, migration, and – most crucially – trade and investment. Neighbouring Hong Kong and Macao, the province – known to many in the English-speaking world as Canton – was different in many important ways from the rest of China at the time.

Chart 14: The Greater Bay Area (GBA)



Source: Invest Hong Kong: The Greater Pearl River 7th Edition, HSBC Research

The two SEZs – Shenzhen and Zhuhai were mere fishing villages – served as catalysts for the rapid industrialisation of the PRD region, giving rise to its description as ‘the world’s factory’. Today the area constitutes a sophisticated ecosystem of supply chains; however, there is no ‘rustbelt curse’ here. On the contrary, the area is now more the cradle of China’s innovative future than the grave of its industrial past.

What is the Greater Bay Area (GBA)?

There is no famous bay, as there is an actual San Francisco Bay or Tokyo Bay, even though there are plenty of watery inlets in the Pearl River Delta (PRD) that could be called bays. Instead, the GBA is an idea, just as the one in San Francisco is today – home to an exuberant proliferation of things new, driven by a confluence of technology and imagination.

The GBA consists of nine cities in Guangdong province and Hong Kong and Macao

The GBA consists of nine cities in Guangdong province (Guangzhou, Shenzhen, Zhuhai, Dongguan, Zhongshan, Foshan, Huizhou, Jiangmen, and Zhaoqing) and the two Special Administrative Regions (SARs) of Hong Kong and Macao (see Appendix for a timeline of the creation of the GBA). The GBA’s GDP was around USD1.5trn in 2017, about 12% of the national total. We expect economic output to equal that of the New York Metropolitan Area by 2025.

While the ‘Big Idea’ is very much about the present and the future, the more prosaic idea of cooperation goes back more than a decade and a half. In 2003, a Closer Economic Partnership Arrangement (CEPA) was signed between Hong Kong and the Mainland to forge closer economic ties. Those were not auspicious times, given the outbreak of the SARS pandemic a year earlier. In 2006, steps were taken to construct a one-hour commuting circle in the area as well as joint pollution control measures. More cooperation followed in 2010 and in July 2017; the National Development and Reform Commission (NDRC) reached an agreement with the relevant governments to deepen the development in and co-operation between the cities. Crucially, the key points included deepening the collaboration between the high-tech and innovative industries in Shenzhen and the financial and legal services in Hong Kong, aimed at making the area a world-class technology hub. Furthermore, the underlying goal of the GBA is to further integrate Hong Kong and Macao with the Mainland.

Table 1. Summary of Greater Bay Area statistics

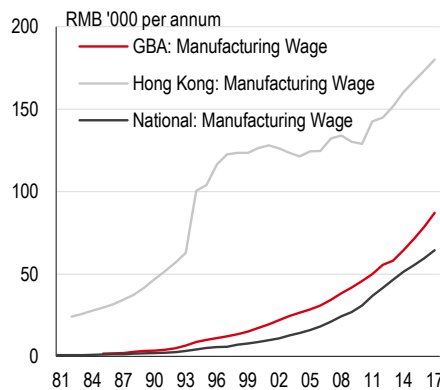
City/ Region	Population (million)	Area (km ²)	GDP (USDbn)	GDP per capita (USD)	Output per km ² (USDm)	Deposits [#] (% share)*	Retail Sales (% share)*	Utilised FDI (% share)*	R&D (% of GDP)	Top 100 universities**
Guangzhou	14.5	7,249	318	21,952	44	3.1	2.6	4.6	2.2	-
Shenzhen	12.5	1,997	332	26,509	166	4.2	1.6	5.4	4.3	-
Zhuhai	1.8	1,732	38	21,502	22	0.4	0.3	1.8	-	-
Dongguan	8.3	2,460	112	13,452	46	0.8	0.7	1.3	-	-
Zhongshan	3.3	1,784	51	15,665	29	0.3	0.4	0.4	-	-
Foshan	7.7	3,798	141	18,460	37	0.9	0.9	1.2	-	-
Huizhou	4.8	11,347	57	11,868	5	0.3	0.4	0.8	-	-
Jiangmen	4.6	9,505	40	8,729	4	0.3	0.3	0.4	-	-
Zhaoqing	4.1	14,891	33	7,914	2	0.1	0.2	0.1	-	-
GBA excl SARs	61.5	54,764	1,122	18,243	20	10.5	7.5	16.0	-	-
Hong Kong	7.4	1,050	342	46,115	325	-	-	-	0.8	5
Macao	0.7	30	50	77,111	1,662	-	-	-	0.1	-
GBA incl SARs	69.6	55,844	1,514	21,764	27	-	-	-	-	5
HK-SZ Metropolitan	19.9	3,047	674	33,795	221	-	-	-	2.5	5

Source: CEIC, HSBC Research. *Refers to all deposits, not just household savings. #Share of China’s total excluding SARs. **QS University Ranking 2018.

From rural backwater to the world’s factory

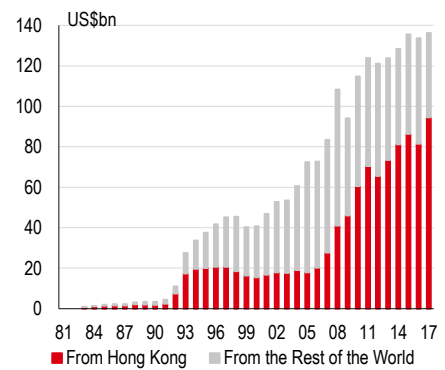
The GBA has been a popular destination for foreign capital from when Deng Xiaoping’s ‘Open Door’ policy was initiated. Factory owners from Hong Kong and Macao invested in the area, fuelling the growth of low-end labour-intensive goods (such as garments and plastic shoes), thanks to relatively low production costs (see Chart 15). Trade flourished in the run-up to China joining the World Trade Organisation (WTO) in 2001. In the 20 years to 1997, accumulated investment from abroad amounted to USD220bn, of which USD120bn, or 55%, came from Hong Kong (see Chart 16).

Chart 15: Entrepreneurs came to Guangdong to enjoy low factor costs in the 1980s



Source: Various Statistical Agencies, CEIC, HSBC Research. Note: GBA figure was weighted by city-level GDP.

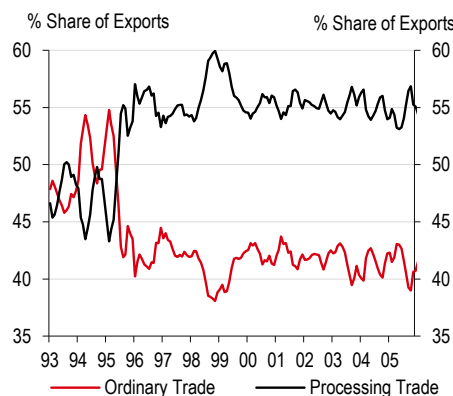
Chart 16: Opening up of Guangdong led to an influx of foreign capital to China (FDI)



Source: Ministry of Commerce, CEIC, HSBC Research [FORMAT]

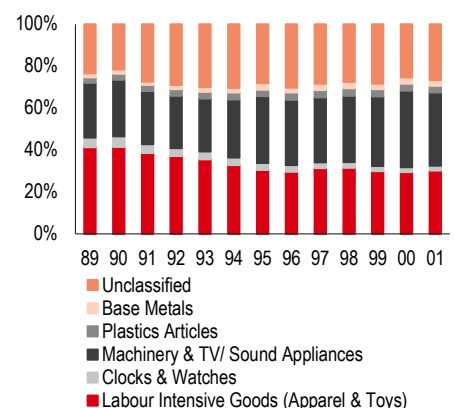
During the 1990s, the industrialisation of the region began in earnest, with low-end OEM factories popping up across the GBA, particularly in the city of Dongguan. This is evidenced by a sharp rise in the share of processing exports from 45% to 60% of China’s total by the millennium (see Chart 17). About 40% of total re-exports from the Mainland via Hong Kong in 2017 were actually goods produced by Hong Kong’s manufacturers using Guangdong as their production base (see Chart 19). This figure was much higher during the heyday of the 1990s, when it was consistently above 70-80% of the total, showing the importance of the GBA as a manufacturing base. Indeed, an average 41% of China’s total exports were accounted for by Hong Kong’s processing demand during the initial phase of the opening up in the 1990s. By 2017, the absolute number involved ballooned to USD113bn.

Chart 17: Processing and assembly trade rose sharply during the ‘golden era’ of the 1990s



Source: China Customs, CEIC, HSBC Research

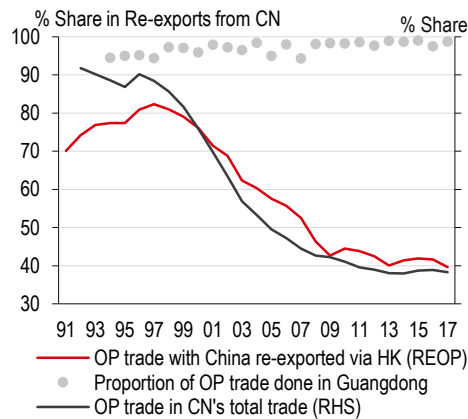
Chart 18: Early processing demand from Hong Kong was mostly for labour-intensive goods



Source: Censtatd, CEIC, HSBC Research

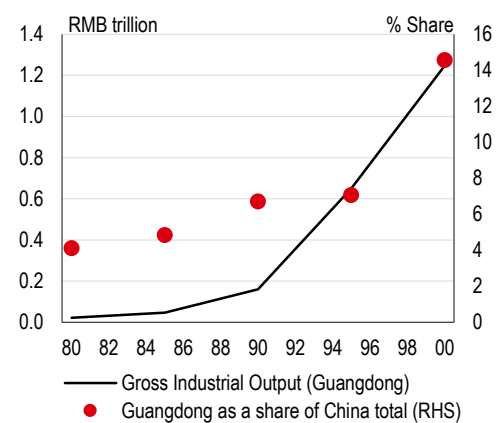
We believe the magnitude and the importance of Guangdong as the manufacturing processing heartland has been underestimated over time because of the rapidly rising consumption of processed goods locally and the direct shipment from Guangdong to other destinations as logistics and port facilities greatly improved in the Mainland. These activities are currently not being captured in Hong Kong's outward processing data.

Chart 19: Hong Kong's outward processing trade with China



Source: CEIC, HSBC Research

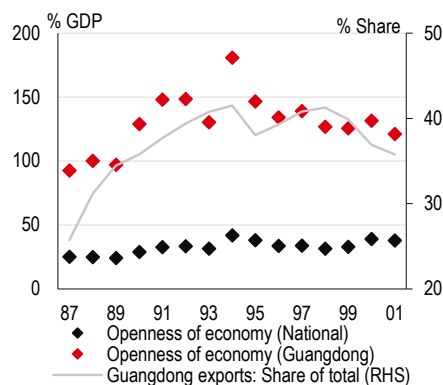
Chart 20: Guangdong's industrial power really took off after the 1990s



Source: Guangdong Statistics Yearbook, HSBC Research

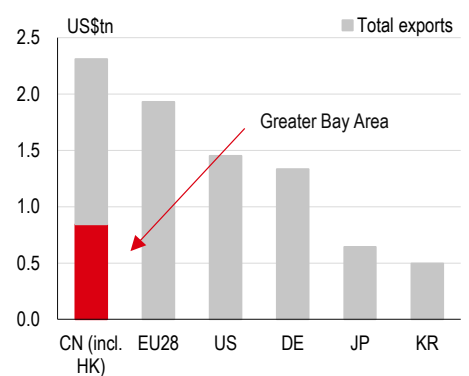
The significant rise in Guangdong's exporting activity was also reflected in its industrial output, which took off in earnest in the 1980s (see Chart 20). Moreover, the increasingly external-facing nature of the economy had made Guangdong one of the most open provinces in China (see Chart 21).

Chart 21: Guangdong's economy is one of the most open in China



Source: NBS, Censtatd, HSBC

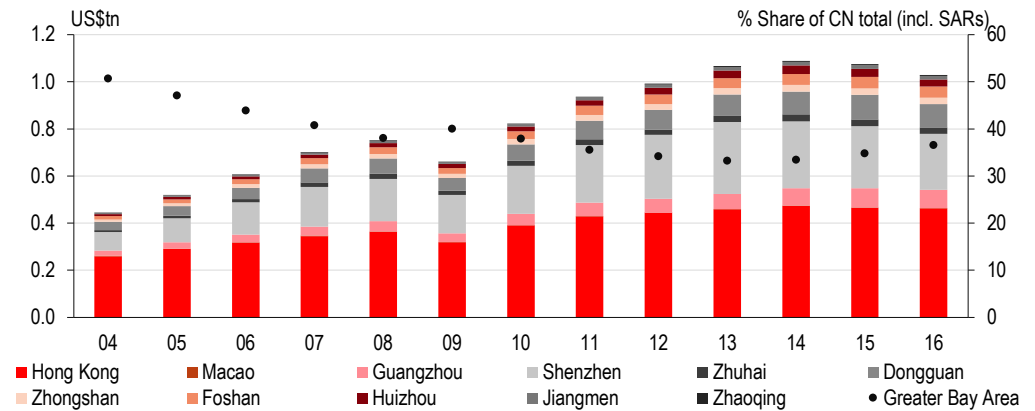
Chart 22: Factoring in Hong Kong, the GBA is the world's export power house



Source: China Customs, Censtatd, CEIC, HSBC. EU28 – European Union. US – USA. DE – Germany. JP – Japan. KR – Korea.

By now, the GBA's export value is c60 times the value since the opening up, exceeding that of Japan and Korea (see Chart 22), with its industrial output reaching USD1.6trn. As such, the GBA is not only an export powerhouse for China but also for the world.

Chart 22: City-level breakdown shows the export dynamics within the region



Source: NBS, Censtatd, HSBC

The centre of global supply chains

What is special about the GBA is that it is not merely a manufacturing and export powerhouse. Years of experience in manufacturing for the world has led to the construction of one of the most comprehensive supply chains globally, both physical and financial. The ease of finding alternative suppliers nearby makes Guangdong compelling for a wide spectrum of manufacturers. Similarly, the ease to access funding and trade-related financing for all sizes of companies has helped facilitate cross-border trade flows in and out of the region.

The variety of products manufactured has given rise to an ecosystem of high-quality suppliers

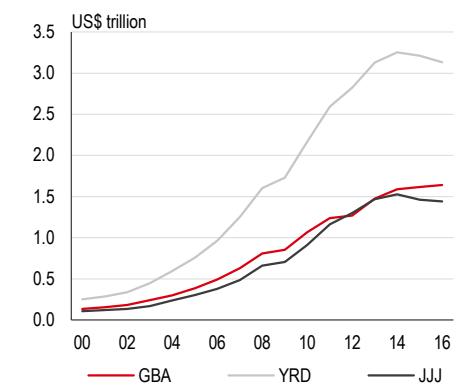
At the same time, the variety of products manufactured in this part of China has given rise to an ecosystem of high-quality suppliers connected to brands around the world. Mature infrastructure, warehousing and port facilities also facilitate the movement of goods, an essential part of this supply chain. The GBA is basically the prototype of how a successful emerging economy should run, while the existing supply chain gives the area a special edge over rival city clusters in China. Indeed, when the world suffered from a temporary fall in goods demand in 2015, the manufacturing businesses in the region showed their resilience, even staging an expansion in output, while the other city clusters in China suffered output declines (see Charts 23 and 24).

Chart 23: The production mix in the GBA's manufacturing sector makes it more resilient in a downturn



Source: Guangdong Statistics Yearbook, China Custom, HSBC Research

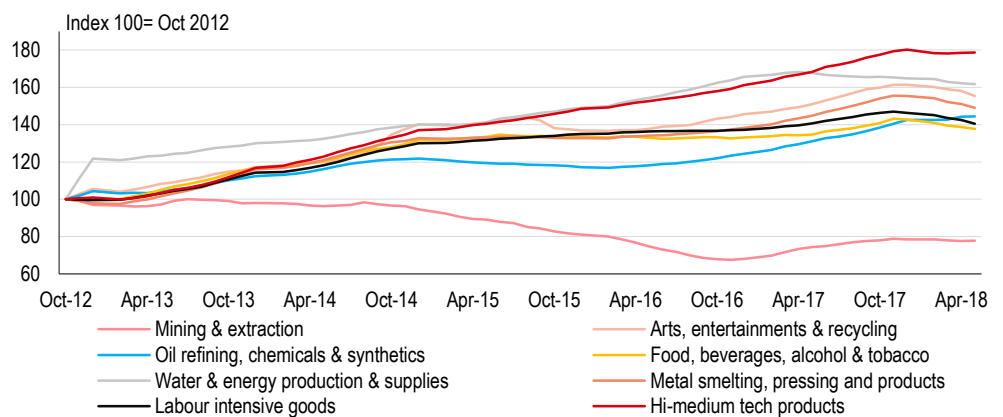
Chart 24: The GBA's industrial output grew despite the global downturn in 2015, thanks to the production mix



Source: NBS, HSBC Research

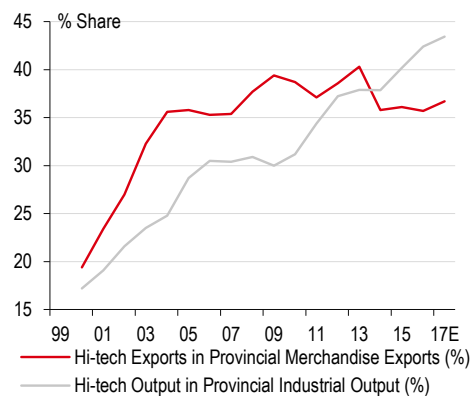
Over the years China has shifted towards higher value-added manufacturing, such as electronics, a move that was at full speed even before the Global Financial Crisis (GFC), while supply chains have gradually moved onshore. Output growth in labour-intensive goods has become stagnant, reflecting the prevailing trend of relocating low-end factories to neighbouring low-cost locations because of rising manufacturing wages. While production of high- to medium-tech goods has soared, output of labour-intensive and high-polluting industries has stalled (see Chart 25). Particularly, mining and extraction output has fallen by almost a quarter since 2012. This conspicuous shift away from labour-intensive processing (also shown in Chart 19) is heralding the emergence of the ‘new economy’ story.

Chart 25: Industrial output of high-tech goods has seen faster growth since 2012



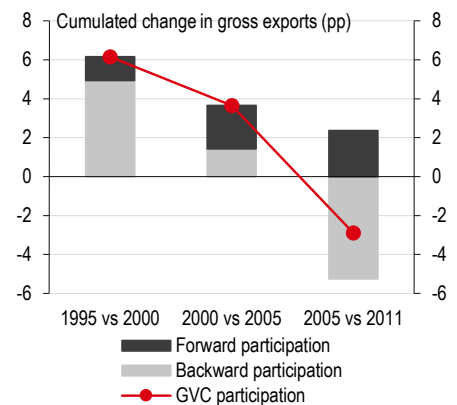
Source: Wind, HSBC Research

Chart 26: Guangdong’s high-tech export and output share has increased sharply



Source: Guangdong Statistic Yearbook, HSBC Research

Chart 27: Global value chain participation has been dragged down by lower backward linkages in China



Source: OECD TIVA, HSBC Research

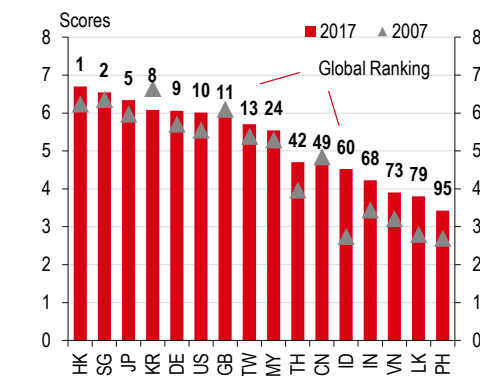
Undoubtedly, this second wave of on-shoring has raised the economies of scale of the GBA’s industry. The clustering and network effects associated with an enlarged supply chain have also boosted productivity. Although there is no readily available/timely measure to validate this, we think this structural change can be captured by the increasing share of domestically value-added activity in China over that period, using input-output tables. Alternatively, we can look at the changes in the global supply chain index (the GVC participation rate).

Over the last few decades globalisation continued at a fast pace, reflected in the segregation of production processes. Facilitated by technological advances (transport, logistics, and communication), countries' production functions have been moving towards their comparative advantages. As a major beneficiary of this integration process, China's participation in the global value chain rose substantially during the period of 1995-2005. This is when producers were getting themselves prepared in the run-up to and immediately after joining the WTO (see Chart 27). Between 2005 and 2011 the process reversed, with China's participation decreasing, the likely explanation for which was the on-shoring of supply chains. A closer look at the grey bar shows a significant fall in 'backward participation', meaning China uses less foreign intermediate supplies to manufacture final goods, suggesting that it was the upstream supply chain that was being moved onshore.

Moreover, China's 'forward participation' has continued to grow over the period. This is consistent with the notion of higher forward integration for more developed economies, i.e., supplying intermediate goods for emerging markets to assemble. As China's economy gets more complex, the more capabilities it entails to produce different goods, whether it be intermediate or final. This is partially reflected in the sophistication of the supply chain, making the on-shoring of high value-added production inevitable.

Even within the GBA, this intense economic collaboration has not only hastened the development of the upstream supply chain but also quite notably the downstream logistics and freight sectors. Infrastructure quality speaks for itself: the latest Global Competitiveness Report from the World Economic Forum shows an improvement in China's overall ranking to 42nd, while Hong Kong, part of the GBA, scored number one in infrastructure quality (see Chart 28).

Chart 28: China's infrastructure quality has improved over the years, while Hong Kong has topped the league



Source: World Economic Forum Competitiveness Report 2017-2018, HSBC

Chart 29: China's basic infrastructure is already world-class

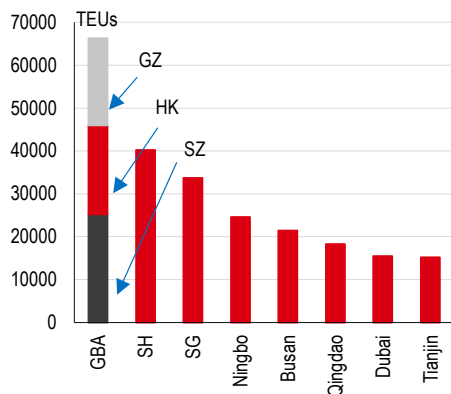
Infrastructure metrics	Mainland China	Hong Kong	World
Phone landlines (per 100 people)	15	59	13
Mobile subscriptions (per 100 people)	97	241	101
Internet access (% of population)	53	87	46
Broadband users (per 100 people)	23	36	12
Roads built (km per 100 sq km)	50	201	50
Rail density (km per 100 sq km)	1.4	64	0.8
Electricity access (% of population)	100	100	87
Water access (% of population)	96	100	88
Sanitation access (% of population)	75	96	68

Source: World Bank, HSBC Research

Significant infrastructure investment

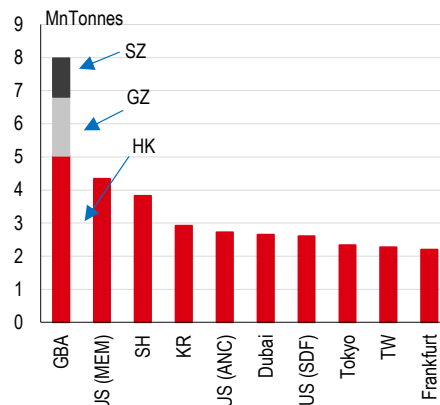
The key contributor to the success of the GBA is its great infrastructure and logistics capabilities, which makes the GBA unequalled in the rest of China. In particular, Hong Kong's port facilities (both sea and air) have consistently been ranked among the busiest and most efficient in the world since the 1990s (see Charts 30 and 31).

Chart 30: Three of the top 10 seaports are in the GBA (2017)



Source: World Shipping Council, Lloyds List of the World's Busiest Ports, HSBC

Chart 31: The GBA's air cargo traffic is amongst the busiest in the world (2017)



Source: Airports Council International, HSBC. US (MEM) – Memphis, US (ANC) – Anchorage, US (SDF) – Louisville, KR – Incheon, TW – Taipei, Tokyo – Narita, SH – Pudong.

The recent construction of the Hong Kong-Zhuhai-Macao Bridge (HZMB) across the estuary of the Pearl River, together with the Express Rail Link (XRL) connecting Hong Kong to Guangdong and beyond, will further improve factor and goods mobility between the economic nodes of the GBA, adding to the agglomeration effect.

The physical infrastructure construction can be divided into phases. During the first 10-year period, the completion of railway lines between Guangzhou and Shenzhen (2011) and Guangzhou and Zhuhai (2012) marked the initial formation of the one-hour living circle (一小時生活圈). The next 10 years brought improved connectivity with Hong Kong through the HZMB and the high-speed rail links, allowing Hong Kong's economic activity to radiate to the left bank of the delta. The building of even more bridges like the Shenzhen-Zhongshan Bridge (深中通道) and Humen Second Bridge (虎門二橋) will further enhance inter-city connectivity between the left and right banks and likely divert traffic flows fundamentally (see Chart 14). The last phase, commencing in 2030, would see the realisation of the one-hour living circle at a more granular county-level. With this, consolidation infrastructure resources (seaports and airports) within the GBA may be inevitable. This also includes the reallocation of non-tangible resources, such as the optimisation of the region's already tight airspace, particularly when airports in Shenzhen, Guangzhou and Hong Kong are already building or planning more runways. However, we think that with more economic activity as the GBA grows, the existing plan will not be enough to cater to future traffic demand.

Main hub of innovation

During the GFC of 2008-09, the most export-oriented region of the GBA faced a 'double whammy' of global demand deficiency and rising domestic wages. Many private sector exporters specialising in low-end manufacturing either went out of business or relocated to low-cost locations. Those that survived managed to deleverage and have been upgrading their industrial base since. This prolonged process of 'creative destruction' has not only moved industries up the value chain in China but also sowed the seeds for the budding 'new economy' referred to earlier in the report.

Indeed, products that are more complex and require more R&D inputs have become prevalent in the GBA in recent years. There has been significant growth in high- to medium-tech products (such as cars, mobile phones, and electronics) in the period since 2012 (where data is available), followed by the creative and recycling industries. Thanks to ongoing industrial upgrading, specialisation in high value-added goods can help withstand a higher cost base, giving manufacturers enough retained earnings to reinvest in R&D-intensive sectors. At the

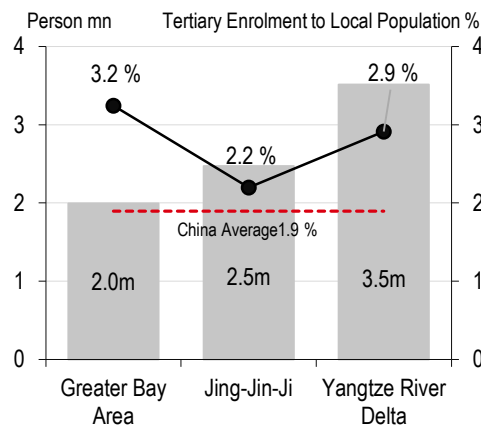
There has been significant growth in high- to medium-tech products

same time many start-ups have sprung up across the region, mostly in Shenzhen. The city is now home to many innovative companies, such as the telecoms and network giant Huawei and drone maker Dà-Jiāng Innovations (DJI).

R&D intensity expected to hit c5% by 2025

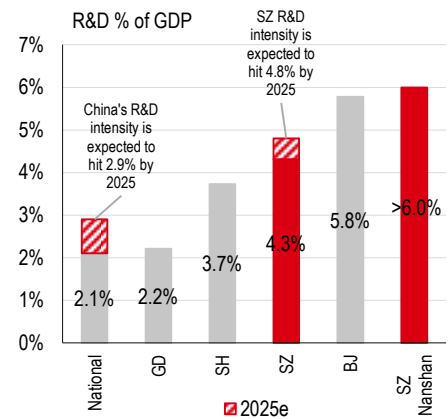
Besides flexible industrial policy initiatives, other key contributors to the development of innovative sectors include the size of R&D spending and the calibre of the workforce. Despite its smaller population, the GBA has a higher level of tertiary enrolment ratio compared to, say, JJJ (see Chart 32). Shenzhen also spent 4.3% of its GDP on R&D in 2016, more than Shanghai, and more than double the national average. And, if we take a small ‘patch of tech land’ to the west of Shenzhen where the Nanshan industrial park is situated, the R&D share exceeded 6% of GDP, even more than in Beijing (see Chart 33). Looking ahead, we expect Shenzhen’s R&D intensity to grow further to 4.8% of GDP by 2025, while the national level appears set to rise to 2.9%, more than the current intensity in the US.

Chart 32: The GBA’s tertiary enrolment ratio is amongst the highest



Source: CEIC, HSBC Research

Chart 33: Shenzhen’s R&D is double the national average



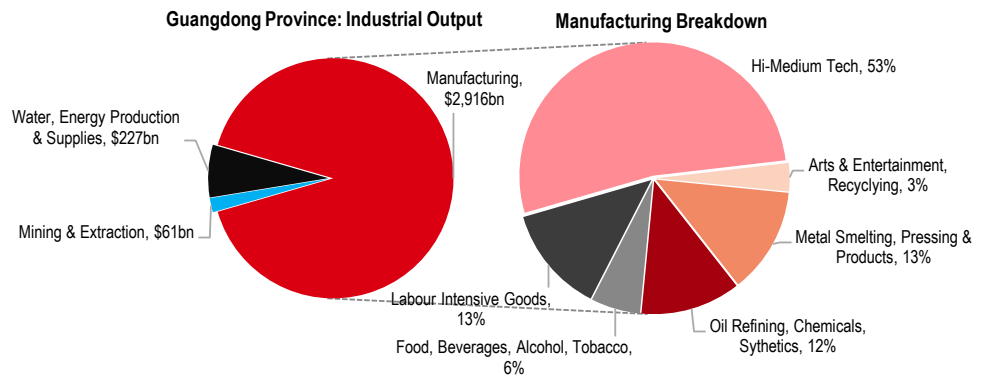
Source: Various Statistical Yearbook, The Economist, CEIC, HSBC Research

Since the GBA is highly external facing, the tilt towards high-tech production inevitably translates in a higher share of exports. Indeed, exports of medium- to high-tech products accounted for over 40% of provincial export value to the rest of the world in 2017.

We have seen a drastic change in the manufacturing profile of the region over the years

As such, we have also seen a drastic change in the manufacturing profile of the region over the years. While city-level data are not available for the value-added calculation, we look at the provincial data for Guangdong that includes the GBA. In the 12 months to May 2018, the manufacturing sector accounted for over 90% of industrial value added, of which high-tech products were almost half (48%). With the trend of migrating garment and shoe factories to Vietnam or Cambodia continuing, it is unsurprising to see that these low-end products, characterised by their labour-intensive nature, now account for a much lower share of industrial output, at just 12%. It is official: Guangdong’s manufacturing is now re-dressed in a high-tech outfit.

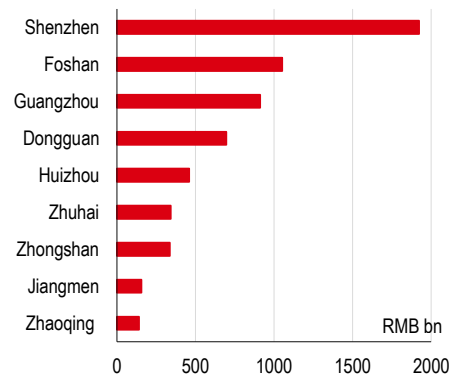
Figure 34: Guangdong's industrial value-added breakdown (12 months to May 2018)



Source: WIND, HSBC Research

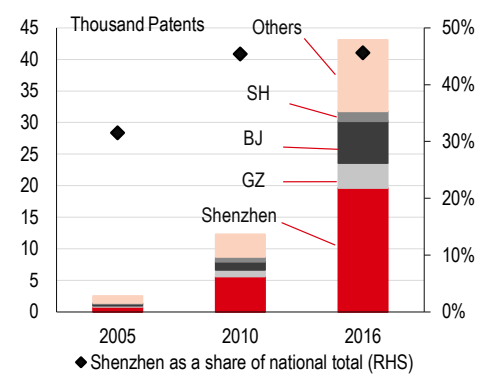
More specifically, Shenzhen – the centre of innovation – is at the heart of this transformation. Chart 35 shows that city-level industrial output for Shenzhen is now almost RMB2trn, according to the latest data. This high level of output is reflected also in the city's international patent application activity (PCT – see page 3). According to the latest set of data from the World Intellectual Property Organisation (WIPO), Shenzhen alone accounted for 19,648 applications, close to half of all China's applications in 2016, up from just 32% a decade ago. The clear dominance of Shenzhen shows the city's dynamism in innovation and the potential it has to become a technology hub.

Chart 35: High-tech industry output: Shenzhen tops the league in the GBA



Source: Guangdong STS, HSBC Research

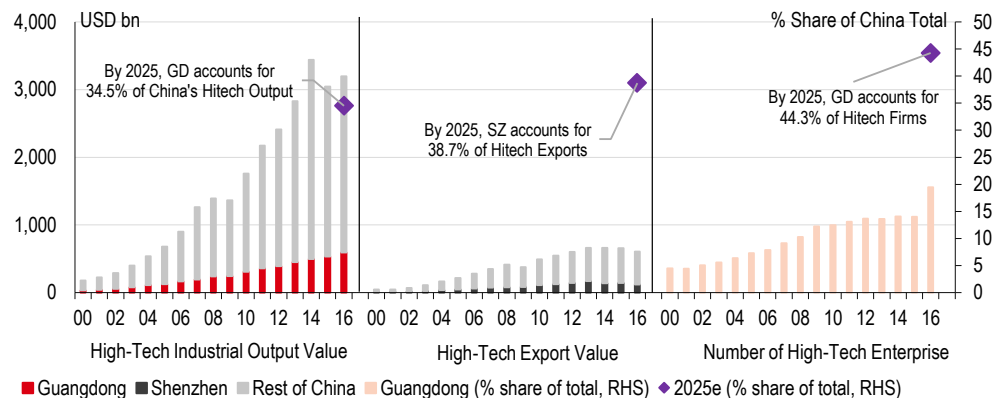
Chart 36: China's applications for international (PCT) patents by city



Source: WIPO, SIPO, HSBC Research

At the national level, the change in Shenzhen's economic structure towards high-tech manufacturing has translated into significant growth in its share of the export value of these new goods. Over the past five years, the city accounted for 22% of China's high-tech exports; more importantly, it contributed more than a quarter (USD26bn) to China's trade surplus in high-tech goods. This vibrant sector showed its resilience once again in 2015 when, as China's overall high-tech output decreased, high-tech industrial production value in Guangdong province kept growing and hit USD600bn in 2016, a fifth of China's total (see Chart 7). In that year there were almost 20,000 companies in the province with ties to the 'new economy'.

Chart 37: High-tech firms, exports and output



Source: Various Guangdong Statistical Yearbooks, Shenzhen Statistical Yearbooks, HSBC Research

Shenzhen's share in high-tech exports to hit 40% by 2025

We believe Shenzhen and Hong Kong are firmly on course to becoming the country's most important innovation and technology hubs. We expect Shenzhen's high-tech exports to account for c40% of the nation's total by 2025, while close to 45% of high-tech firms will be based in the province of Guangdong (see Chart 37). There are many reasons: Shenzhen has a mature manufacturing base and a comprehensive supply chain that enable efficient commercialisation of high-tech ideas by entrepreneurs. The city not only has the talent that understands the demand of the domestic market but also has access to it. Most important of all is the people. Shenzhen has the entrepreneurial spirit and dynamism that Hong Kong once had and the high calibre of the workforce will enable the development of its research capacity in the future.

Hong Kong, on the other hand, is a veteran financier and is expected to continue to provide capital to satisfy the development needs of these emerging new industries. Although more work still needs to be done on providing early capital, we are already seeing signs that things are changing for the best in Hong Kong's venture capital scene. Moreover, Hong Kong's universities have consistently been producing great basic research, filling in the gap of early R&D stages. All in all, closer collaboration between the two cities will create greater synergies.

Moreover, we expect Guangdong's tradition of taking a more liberal approach to industrial policy to continue, especially in Shenzhen, allowing sufficient incentives for industries to grow organically. This flexible approach has previously allowed authorities to make timely judgements regarding regulations and policies in accordance with prevailing market conditions⁴. This should help create a favourable environment for innovation to continue flourishing in Shenzhen as the city spearheads the search for China's new growth engine.

Looking ahead, we expect the GBA to command an even greater share of high-tech output in line with the region's rising dominance in innovation and technology. With further cross-border collaboration on the research front, coupled with more R&D funding pouring into the twin cities, Shenzhen's PCT applications are set to rise further. We also expect faster economic integration of the region as a result of more refined physical infrastructure that improves connectivity. All these factors are likely to raise household income in the GBA, faster than other city clusters, ultimately improving living standards.

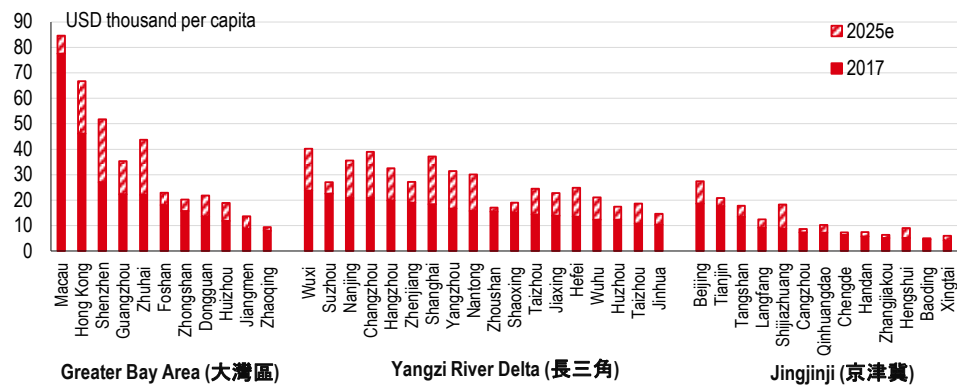
We expect Guangdong's tradition of taking a more liberal approach to industrial policy to continue

⁴ Global Experiences with Special Economic Zones, Douglas Zhihua Zeng, World Bank, April 2015.

Factories to shopping malls

Despite having the smallest land mass among China's city clusters, the GBA is the richest cluster. In 2017, GDP per capita in the area (including the two SARs) hit an all-time high of USD22,231, around 2.2 times what it was a decade ago, and we believe it is likely to grow to cUSD30,000 by 2025. In particular, incomes in Hong Kong and Macao are already consistent with developed economies⁵ in 2017, at USD46,115 and USD77,111, respectively, and are likely to reach USD66,680 and USD84,610 by 2025 (see Chart 38). Furthermore, the GBA's population is also growing. It was 70m in 2017 and we expect it to reach 83.4m by 2025 (see Chart 40), a substantial consumer market in its own right.

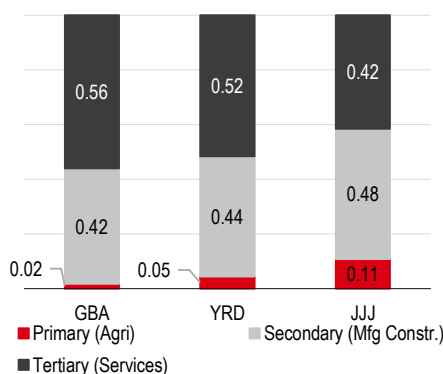
Figure 38: The GBA is the wealthiest cluster in China in terms of GDP per capita



Source: Hong Kong Censtatd, CEIC, HSBC Research

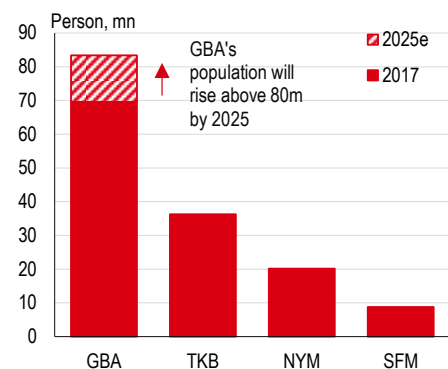
This means the GBA is more than just a hub for innovative industries. It is an important part of the consumption- and services-based engines of China's next phase of economic development. Just 10 years ago, China's tertiary or services sector accounted for around 47% of economic growth and consumption just 45%; now, those two measure 60% and 80%, respectively.

Chart 39: Tertiary sector accounts for close to 60% of the GBA's economy



Source: CEIC, HSBC Research

Chart 40: With a population of close to 70m, the consumption potential is large



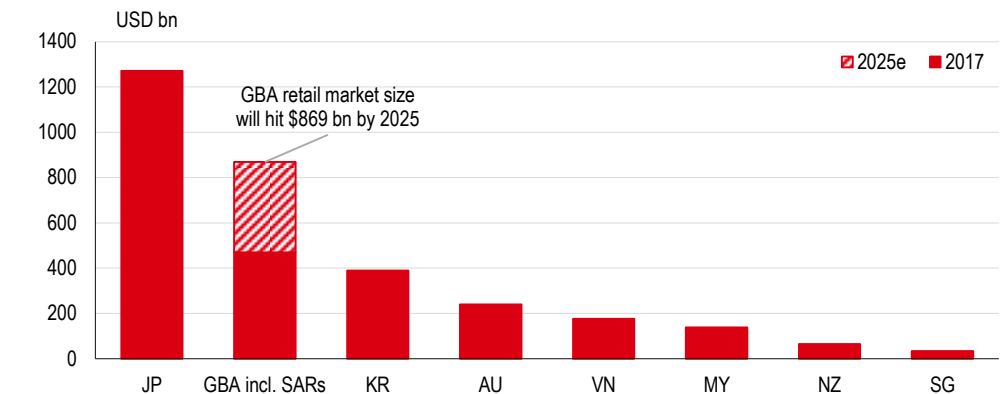
Source: CEIC, HSBC Research

⁵ According to the Fed St. Louis, GDP per capita for a high income country is USD41,211 in 2017. <https://fred.stlouisfed.org/series/NYGDPCCAPCDHIC>.

The GBA’s retail market is as big as Korea, New Zealand and Singapore combined

In the case of the GBA alone, things are even more advanced. In 2017, the weight of tertiary industry in Guangdong was amongst the highest across the country at 56% (see Chart 39), while in Hong Kong modern services accounted for 90% of GDP. Meanwhile, annual retail sales for the region have nearly quadrupled in just 10 years, from USD137bn in 2007 to almost USD470bn in 2017, equivalent to the combined market size of Korea, New Zealand and Singapore, and a third of Japan’s market size. We believe this is set to double to USD869bn by 2025 (see Chart 41).

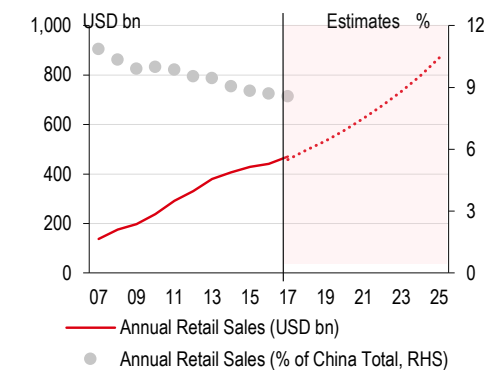
Chart 41: Putting the GBA’s retail market size in a cross-country context



Source: CEIC, HSBC forecasts

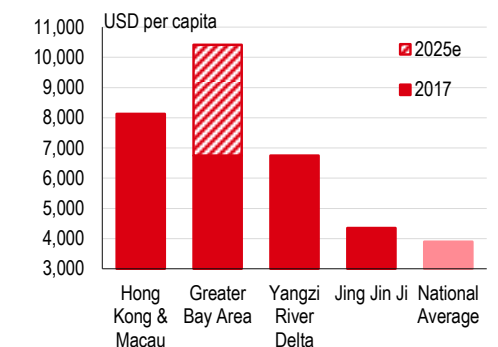
Per capita spending is also the highest among major city clusters in China, with USD7,000 worth of goods per year. It is worth noting that the figure would be even higher if services and online shopping were included. By 2025, we expect the GBA’s annual retail spending to reach USD10,400 per capita (see Chart 43).

Chart 42: The GBA’s retail market size will almost double by 2025



Source: NBS, HSBC Research

Chart 43: Annual retail spending per capita will hit USD10,400 by 2025

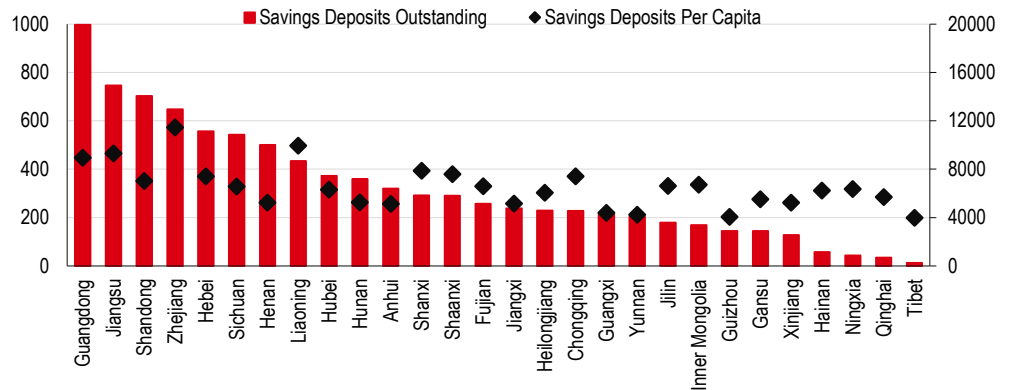


Source: Various Statistical Offices, HSBC Research

In addition to the spending habits and significant promise, the GBA has a record of saving. Chart 44 shows that Guangdong province has the highest deposit savings in China, at around USD1trn, a tenth of all national deposit wealth.

We believe the high level of accumulated wealth has something to do with the region's first mover advantage in China's opening up initiative. Thanks to its proximity to Hong Kong, the city's economic and investment activity radiated to the 'hinterland', enabling the GBA to climb up the income ladder faster than other areas. The implications for future consumption are significant, if that stored wealth is given cause to be unleashed.

Chart 44: Guangdong has accumulated most banking wealth across all provinces

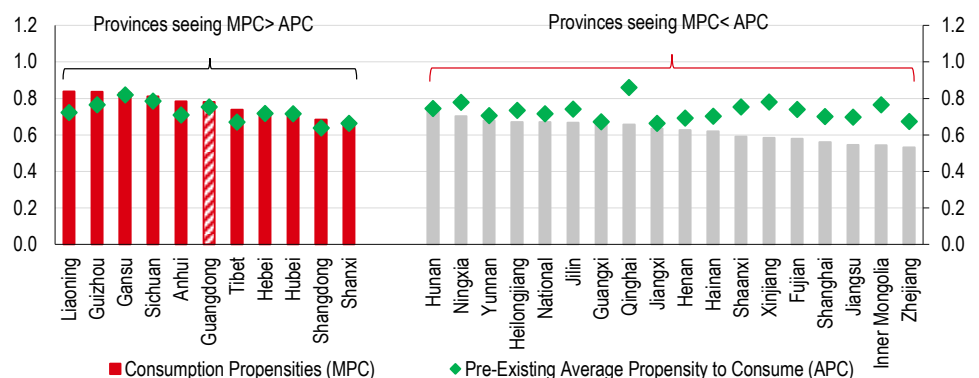


Source: Various Statistical Offices, HSBC Research

One thing that could help do this is the positive wealth effect stemming from elevated property values. The perception of higher wealth raises consumer confidence, making consumers in the GBA more likely to spend more on durable goods and big ticket items. Consumers in Guangdong are in any case generally wealthier, underpinned by above-average net banking wealth (in the 40-50th percentile amongst all provinces).

We also expect consumers here to spend more and save less of their disposable income in the future. Chart 45 shows that each province's marginal propensity to consume (MPC) and average propensity to consume (APC). In short, the consumption propensity can be thought of as the extra money spent given a unit rise of income, while the APC is a snapshot of how much was consumed over its income. The fact that Guangdong's households have a higher consumption propensity than the existing propensity (MPC > APC) implies that the average consumption rate is expected to rise further for an increase in disposable income in the near term.

Chart 45: Consumers in the GBA are set to spend more of their disposable income and saving less in the future



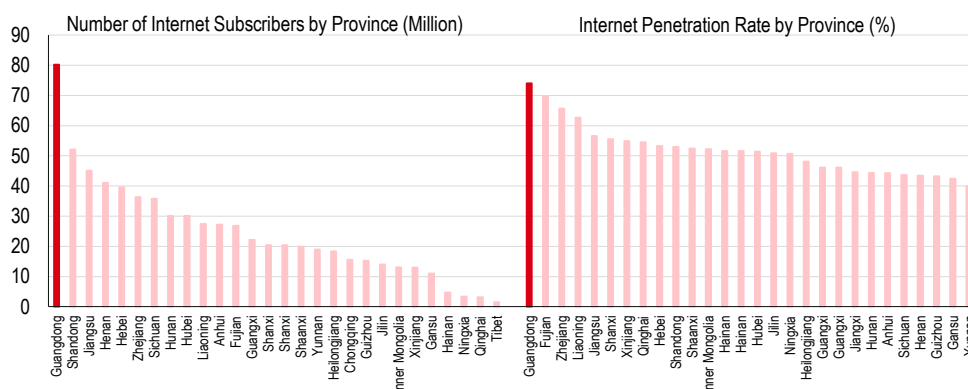
Source: NBS, WIND, HSBC Research

Indeed, with China’s growth model moving away from being led by exports and investment to consumption, we expect this trend to continue. The ongoing industrial upgrading in the GBA will raise incomes further, in turn raising consumption. Of course, some commentators suggest that overall per capita income in the GBA will catch up with that in Hong Kong and Macao by 2030, but we think this will not happen until a later date, but the income gap will significantly narrow. Greater spending would not be just confined to the sale of goods but also services, both offline and online. This is because we expect internet-services collaboration will deepen and productivity will be unleashed as old service industries revamp themselves.

The tide is also turning on demographics

The tide is also turning on demographics. As China ages, its economy is gradually saving less and spending more. This applies to the GBA as well. Not only does this mean that a slightly more affluent ageing population is likely to help support certain types of consumption, but Generations Y (those born from the early 1980s through to the turn of the millennium) and Z (those born from mid-1990s to the early 2000s) are set to be the new driving forces for consumption in the GBA, according to various demographic studies⁶. Having been born into richer families than previous generations, a lot of Generation Y and Z’s spending tends to be done on the internet. Also their overall spending accounts for at least 20% of total consumption growth, more than other generations.

Chart 46: Guangdong has the most internet users, while enjoying a high penetration rate



Source: China Statistical Yearbook, HSBC Research

Added to this is the fact that Guangdong’s internet metrics are amongst the best in China (see Chart 46), with the highest internet penetration rate of 74%, while the number of internet users has reached 80m, all of which bodes well for future e-commerce development in the GBA, providing a solid backbone for consumption.

The maritime Silk Road starts here

There may be many belts and many roads in China’s so-called Belt and Road Initiative (BRI), but there is only one starting point of the maritime Silk Road, and that is the GBA. It is already China’s most international region, an export powerhouse, and Hong Kong and Macao have long thrived on their internationalism, where ‘East meets West’. As a result, the GBA is in the best position to support the development of the BRI. The Asian Development Bank (ADB) estimates that emerging Asia alone will require about USD26trn in infrastructure investment from now until 2030, or USD1.7trn per year, so there are plenty of opportunities for the GBA to finance these infrastructure projects along the route, particularly as Hong Kong aims to enhance its financier

⁶ Meet the Chinese consumer of 2020/Double clicking on the Chinese consumer, McKinsey & Company, 2017.

The GBA is also able to export its professional services to BRI countries

role⁷. In particular, besides equity financing and conventional bank lending, Hong Kong is currently developing its green bond market, an alternative channel to finance infrastructure projects with some ecological elements.

Moreover, Guangdong is a significant non-financial outward direct investment (ODI) provider across provinces, accounting for 15% of China's outward investment flow in 2016 and 24% of China's non-financial ODI stock. Given that Hong Kong is a gateway to capital flows in and out of the Mainland, the city is able to capture these financing opportunities like a 'one-stop shop', not only doing 'match-making' for capital and investment projects but also providing supplementary services, such as risk management and professional support. The Hong Kong Monetary Authority (HKMA) has set up an Infrastructure Financing Facilitation Office (IFFO) for this purpose, pooling partners/stakeholders to facilitate infrastructure investments by creating a platform for information exchange, disseminating knowledge on investments and financing, and promoting market development. The GBA is also able to export its professional services to BRI countries. For example, China Development Bank (CDB) issued the first BRI bond in December 2017. Also, Hong Kong can leverage 'one country, two systems' and take advantage of its open capital account to help promote the internationalisation of the RMB.

Lastly, we think the GBA will have wider implications, radiating and projecting its economic activity to the countries along the new Silk Road. For example, high-tech companies can use the GBA as a springboard to expand their overseas markets. With Hong Kong better integrated with the Mainland under the GBA, the city can use its 'financial connectivity' to the fullest extent, using its wealth of international experience to assist Chinese corporates to meet their global expansion goals.

Many challenges ahead

The many forces driving the region towards a more innovative and consumption-driven economy do not, of course, exist in a policy vacuum. There are two things that could make a considerable difference to the way the future is shaped. First, the GBA is the only city cluster in China that involves jurisdictions beyond China's own socialist system. Unlike the more restricted PRD concept, the GBA includes Hong Kong and Macao. The sovereignty of these SARs was returned to China just before the millennium, and they still run a capitalist system and have different institutional and legal structures, even compared with each other. Rolling these three systems into one region can prove challenging as this requires significantly political will and resources to make them more harmonised.

Hong Kong and Macao are already free ports with their own currencies and no capital controls

Second, for agglomeration to be fully beneficial, there has to be factor mobility within the region, particularly capital and labour. However, China still operates a relatively closed capital account with full liberalisation a distant target. By contrast, Hong Kong and Macao are already free ports with their own currencies and no capital controls. On labour mobility, different regions have their own separate employment policies and controls over immigration. Besides visa requirements, residents from different parts of the region are not yet eligible to access each other's social services and benefits, amongst which education and health are critical. This could have the effect of stifling the flow of talent and workers, significantly reducing the agglomeration effects.

The challenges notwithstanding, there are tentative signs that the bar will be lifted for residents from Hong Kong and Macao to enjoy a range of social benefits in the Mainland but not yet the other way. For instance, Shenzhen allows Hong Kong permanent residents to work in the Qianhai FTZ visa free, while foreign workers are now eligible to contribute to their social protection schemes in Guangdong. Hong Kong also introduced several talent attraction schemes, targeting not just overseas professionals but also putting a focus on talent from the Mainland. There is much that can still be done.

⁷ HKMA Promotes Hong Kong as the Gateway to Belt and Road Opportunities, <http://www.hkma.gov.hk/eng/key-information/press-releases/2017/20170922-3.shtml>.

Taxation is another challenge. Income tax rates are different, with employees in Hong Kong and Macao having to pay a much lower effective rate than those in the Mainland. This has had a slight inhibiting effect on the cross-border flow of human capital. The difficulties involved in harmonising these policies are considerable. That said, the signing of a double taxation agreement has no doubt come as a relief to some tax payers in the GBA, because the arrangement clarifies the conditions in which local taxes are being exempted. Given the different income tax rates, the new measures will likely have only a marginal positive effect on the cross-border flow of talent. Moreover, double taxation has never been an issue for taxpayers in Hong Kong, since the city operates a territorial tax regime where foreign income is exempted. The direction of talent flows might be biased towards Hong Kong from the Mainland due to lower taxation.

Mutual recognition of professional qualifications is also important

For agglomeration to have the maximum effect, mutual recognition of professional qualifications is also important. This would, in effect, remove non-trade barriers between the regions and allow talent resources to flow more freely without having to undertake additional examinations. The extent of the exemptions can be found here⁸, and the list is still growing under the CEPA⁹ framework. However, challenges remain for certain types of professions, the obvious ones being legal and medical professionals.

High property prices are not only causing social problems, but they also raise operating costs for businesses, making any city less competitive. Another side effect of this is to push up living costs for highly skilled workers and reducing their willingness to settle in a city. This challenge is particularly acute for the GBA, because property prices are high in both Hong Kong and Shenzhen. Indeed, the Mercer survey¹⁰ revealed that Hong Kong and Shenzhen appeared in the top 15 cities, having the highest costs of living for high-skilled workers.

However, competition does not just come from other globally renowned city clusters, like the San Francisco Bay Area. China itself has enough city clusters to compete with the GBA, all having quite similar characteristics. For example, the YRD has a strong manufacturing base and Shanghai is a leading financial centre. In fact, every city cluster seems to have a plan to become the next innovation and technology hub. The challenges for the GBA are, therefore, to find ways to stand out from the crowd.

In the next chapter, we explore ways in which the GBA can tackle these challenges, how differences within the GBA can be bridged, and the role that Hong Kong can play in the GBA's industrial upgrading and, by doing so, contributing to this national strategy.

⁸ Hong Kong Labour and Welfare Bureau - The present situation of the respective mutual recognition of professional qualifications – [https://www.lwb.gov.hk/eng/legco/13-04-2016E\(2\).pdf](https://www.lwb.gov.hk/eng/legco/13-04-2016E(2).pdf).

⁹ Hong Kong Trade and Industry Department – Mutual Recognition of Professional Qualification and other issues relating to professional services under CEPA – <https://www.tid.gov.hk/english/cepa/mutual/mutual.html#construction>.

¹⁰ Mercer Cost of Living Survey (June 2018).

Partnership and synergies

- ▶ Hong Kong's key comparative advantage lies in its potential as the main financier for industrial upgrading and innovation in the GBA
- ▶ A closer partnership with Shenzhen can create significant synergies, although there are hurdles to overcome to realise the full potential
- ▶ More needs to be done on the policy front by all authorities to seize the GBA's opportunities

A tale of twin cities

The decades that followed saw the de-industrialisation of Hong Kong as factories moved across the border

Since the 'Open Door' policy of the 1980s, the economic interaction between the Mainland and Hong Kong has evolved as circumstances changed. At first, businesses in Hong Kong provided capital, while Guangdong provided land and labour. At the time, Hong Kong was at the peak of industrialisation but had hit a bottleneck. With rising wages and a tight supply of labour locally, processing goods in the Mainland seemed to be the answer for entrepreneurs in Hong Kong. The differences in factors of production gave rise to effective partnership opportunities between the two regions, a testament to the synergies generated from their respective comparative advantages. The decades that followed saw the de-industrialisation of Hong Kong as factories moved across the border, accompanied by a structural upgrading to a service-based economy. Consumption has become an important growth driver, while a surge in transshipment demand has greatly benefited the logistics and port businesses in Hong Kong.

With Hong Kong's makeover as an international financial hub, the nature of the partnership of the twin cities was extended further. Hong Kong became a provider of 'services', while the Mainland began to develop its own niche. This amplifying demand for financial business services on top of the existing demand from manufacturers in the Mainland has resulted in flourishing professional industries, such as accounting, marketing, merchandising, and law. Some financial services firms even began outsourcing their back office to the Mainland.

Over the past 10 years as the GBA began to emerge as a new tech hub, the partnership between the twin cities evolved further. Shenzhen, in particular, has embarked on a dual-track economy, aiming to become an innovation centre and a regional hub for financing. The recent initiatives of creating the Qianhai-Shekou Pilot Free Trade Zone and the Hong Kong-Shenzhen Science and Technology Park at the Lok Ma Chau Loop show the region's ambition of seeking to exploit available opportunities to further their economic ties.

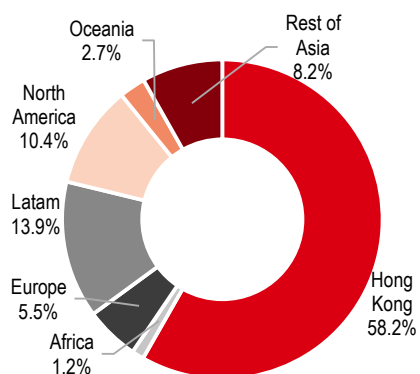
A super-connector

While the implementation of China’s ambitious Belt and Road Initiative (BRI) is well under way, Hong Kong has taken up the role as a super-connector, drawing on its extensive resources in finance, law, education and R&D. It has a deep pool of talent of different nationalities, including bankers, accountants and lawyers, with an understanding of the Mainland and global markets, making the city the preferred location of capital where information can flow freely and business is underpinned by a highly regarded common law system.

Hong Kong has long been a provider of physical capital

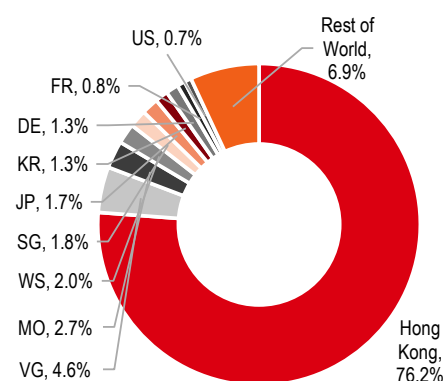
Hong Kong has long been a provider of physical capital. Foreign investors have long chosen Hong Kong as a base to tap into opportunities in the Mainland, and Chinese companies use Hong Kong as a springboard for opportunities abroad. With its mature financial markets fully integrated with the rest of the world, Hong Kong has access to a global network of funds. Its contribution to the economic development of the PRD is widely recognised. In 2017, Hong Kong was the third largest recipient of FDI flows, according to UNCTAD. In fact, Hong Kong’s role of capital allocation is best captured by the flow of funds both into and out of the Mainland. The latest data show that almost 60% of all China’s outward direct investment (ODI) goes via Hong Kong (or USD114bn) (see Chart 47). On a provincial basis, 76% of Guangdong’s FDI inflows were of Hong Kong origin (see Chart 48). Typically, throughout the process of foreign investment, knowledge is normally transferred in production, while foreign talent helps nurture local talent.

Chart 47: Mainland’s outward direct investment (ODI) by destination



Source: CEIC, HSBC Research

Chart 48: Guangdong’s foreign direct investment (FDI) by origin

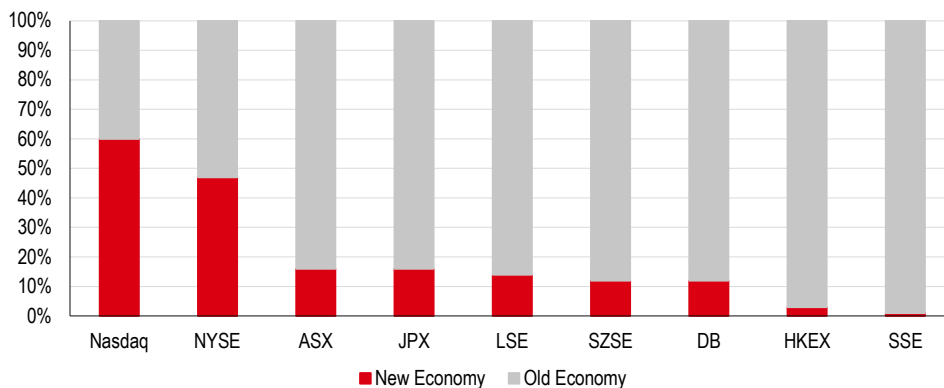


Source: Guangdong Statistical Yearbook, WIND, HSBC Research

Serving the financing needs of the Mainland

Besides providing the financing needs for infrastructure projects under the BRI, there is an increasing opportunity for financing the Mainland’s ‘new economy’. Following in the footsteps of the HKMA in facilitating the financing of infrastructure projects (setting up an Infrastructure Financing Facilitation Office), Hong Kong took a bolder step in attracting Mainland companies to list on the Hong Kong Stock Exchange. In 2017, financial services accounted for 53% of total fundraising on the Main Board of the stock exchange, followed by the sectors of TMT, Healthcare and Life Science – the so-called ‘new economy’ sectors – at 28%. This is encouraging, given that ‘new economy’ companies listed in the past decade only made up 3% of the total market capitalisation, trailing well behind other major markets, including the Shenzhen Stock Exchange (see Chart 49).

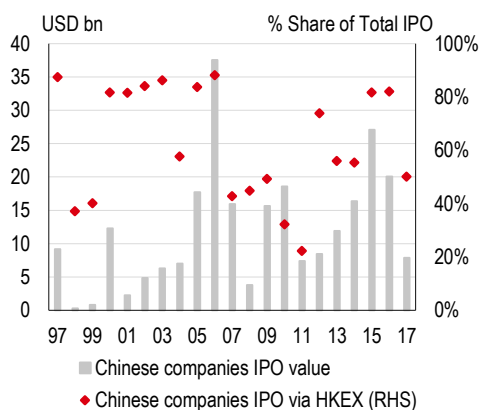
Chart 49: Market capitalisation of newly listed companies by type over the past 10 years: Enhancement to listing rules will boost Hong Kong’s financier role for tech companies



Source: Hong Kong Stock Exchange, Bloomberg, SCMP, HSBC Research. Note: As at June 2017.

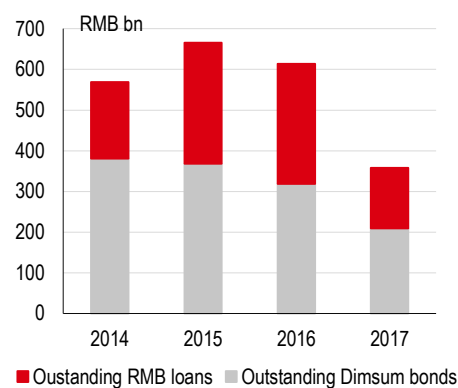
Over the years, Mainland-related companies raised large amounts of international capital through the Hong Kong Stock Exchange, but they were mostly from the traditional sectors. Chart 50 below shows the evolution of Mainland companies’ financing needs, accounting for an average of 63% of the total IPO value in Hong Kong since 1997. Hong Kong has become the preferred destination for Mainland companies to raise capital because of its inherent advantages, such as the market’s deep liquidity, favourable valuations, transparent vetting process, sound regulatory regime, and strong global investor base. Listing has also helped brand-building amongst international investors for these emerging industries.

Chart 50: HKEX’s fund raising for Chinese-based companies



Source: Bloomberg, HSBC Research

Chart 51: ‘Dim Sum’ bond market in Hong Kong also helped raise substantial funds



Source: HKMA, LegCo Document, HSBC Research

As the GBA has embarked on more and more enterprises in innovation and technology, it is logical that Hong Kong’s role as financier to the region has been enhanced. In fact, the Hong Kong Stock Exchange recently announced plans to attract fintech, biotech firms, and tech giants to raise capital there. This requires an enhancement of listing rules and procedures, which took effect in April 2018¹¹. Even without the creation of a ‘Third Board’ (besides the Main Board and the Growth Enterprise Market (GEM)), which was previously proposed, the new additional chapters of the listing rules will cater to the financing demands of ‘new economy’ companies, particularly those from the Mainland, featuring a weighted voting right (WVR) structure with or without a track record of profits and revenue. Indeed, companies in the biotechnology industry and high-tech starts-up would be the

¹¹ HKEX Announcement (24 April 2018) – Hong Kong’s Listing Regime Enters New Era.

main beneficiaries. The authorities have finalised the details of the safeguards as well as the criteria delineating eligibility to ease previous concerns about the leniency for listing. The Hong Kong Stock Exchange also facilitates a second listing of technology companies (on Nasdaq, for example) in Hong Kong. To raise the proportion of tech companies, the Hong Kong Stock Exchange has allowed those SMEs listed on the Chinese Third Board (NEEQ) to dual-list on the Hong Kong market without additional approval. Overall, the new listing regime should help accelerate the development and growth of emerging and innovative sectors in the GBA.

Hong Kong has also acted as a well-regulated RMB lending and bond issuance platform

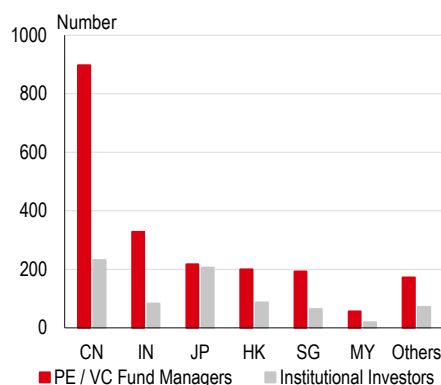
Hong Kong has also acted as a well-regulated RMB lending and bond issuance platform. Although there was a setback in the pace of RMB internationalisation in 2017 when both RMB loans and deposits fell from their earlier peaks, there is currently around RMB350bn worth of RMB debt and bonds outstanding in the market (see Chart 51), a significant amount.

Then there are the Stock Connects (Shanghai 2014 and Shenzhen 2016) and the Bond Connect (2017), enabling both ‘northbound’ and ‘southbound’ flows between equity markets subject to an aggregated quota, which has broadened international investors’ access to China’s A-share market. Since the Mainland is still in the midst of opening up its capital account, Hong Kong offered itself as a test bed for portfolio flow liberalisation in a controlled environment. The two Stock Connects can be seen as precursors of a wider opening up of financial market flows, including the upcoming London-Shanghai Stock Connect at the end of the year. Besides stocks, allowing foreign exposure to the third largest bond market in the world has been another milestone towards a fully convertible capital account.

Developing the capacity to provide early-stage financing is key

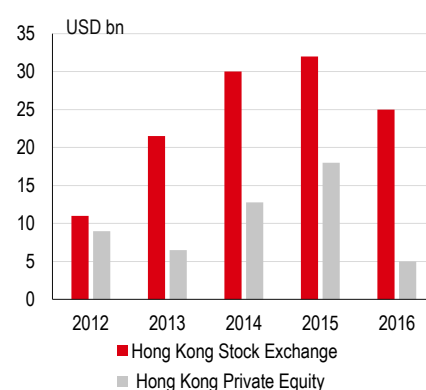
Hong Kong’s direct equity financing platform (i.e., the Main Board) is primarily designed for established companies wanting to expand their businesses. Even in the case of the GEM, the listing requirements target predominately SMEs that require late-stage funding and, as such, are not aimed at start-ups. In fact, the recent revision to the listing rules looks to have made it even less supportive for start-ups, by raising the minimum capitalisation requirement. That said, the new preferential requirements for biotech firms can be seen as a step closer to providing earlier capital for tech companies, but the entrance barrier in terms of market capitalisation is still at a large HKD1.5bn.

Chart 52: Where are all the PE/VC managers and investors based in Asia?



Source: Hong Kong SAR Government, PEI, HSBC

Chart 53: Fund raising amount via equity platform and private equity in Hong Kong



Source: Hong Kong SAR Government, HKEX, PEI, HSBC

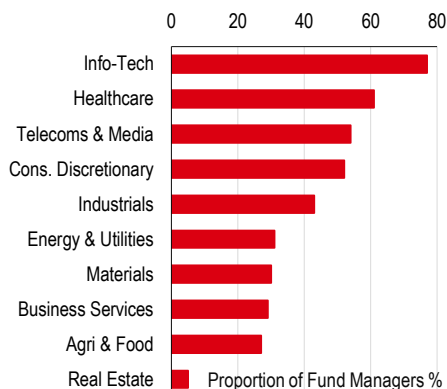
While more established companies may take advantage of the Hong Kong Stock Market as their funding platform, direct equity financing might not be suitable for smaller start-ups. Besides traditional financing channels through the banking system, equity and fixed income platforms, ‘new economy’ start-ups are often keen to raise funds via venture capitalists and the private equity network (see Chart 56). To give a sense of how important this channel is, the funds raised in Hong Kong over a five-year period (2012-17) alone are equivalent to over 40% of the amount raised in Hong Kong’s equity market (see Chart 53).

With the abundance of capital ‘swooshing’ around, why is the start-up scene in Hong Kong so lacking in ‘fire’, especially compared to the Mainland?

It’s all about culture and talent

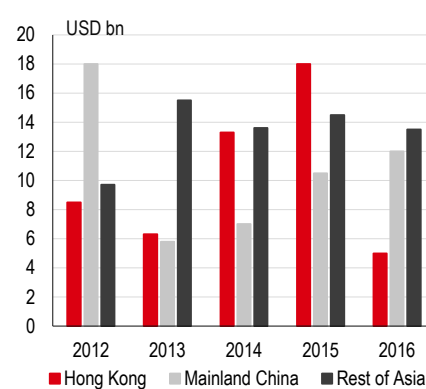
First, the venture capitalists based in Hong Kong mostly target non-local ventures and are mostly focused on technology opportunities in the Mainland. Indeed, China is by far the largest venture capital investment market in Asia and second in the world after the US (see Chart 52). In 2017, alone, it drew USD65bn of investment flows, and the world’s largest venture capital deal that year was completed in the Mainland – the ride-sharing and autonomous vehicle technology company Didi Chuxing raising USD 5.5bn from seven investors. Looking at the wider private equity and venture capital industry as a whole where data are available, there is currently USD1.5trn of assets under management by funds in the Greater China region (including Hong Kong, Macao and Taiwan), a significant portion of which is for high-tech companies in the Mainland. Chart 54 shows the kind of industries that likely attract most funding.

Chart 54: What type of start-ups do investors like?



Source: Preqin, HSBC Research

Chart 55: Amount raised by private equity funds in Asia

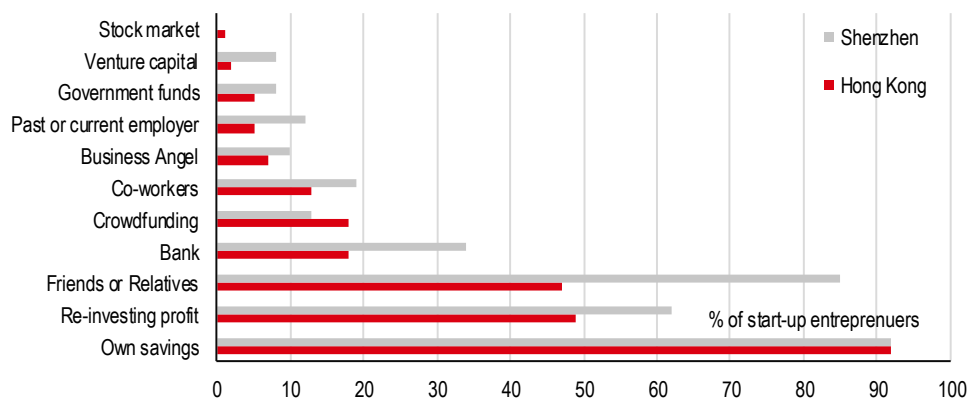


Source: Hong Kong SAR Government, PEI, HSBC Research

Hong Kong’s venture capitalists have also developed expertise in Mainland opportunities, which has become a frequent theme for capital raising activities in the city. With 15% of Asia’s venture capital pool under management, Hong Kong is second to the Mainland in this fundraising platform in Asia with access to global funding networks (see Chart 55).

Second, there is a lack of investable high-quality start-ups in Hong Kong. Even where there are opportunities, the ideas lack creativity and are mostly derivations of foreign commercialisations. That has also to do with the lack of executives and entrepreneurs who know about technology and have some operational experience.

Third, there is a lack of venture capital talent in Hong Kong. Most finance professionals are from accountancy and finance backgrounds, lacking the experience to incubate a business, let alone a technology start-up. This has resulted in a short-term investment style of venture capital funds in Hong Kong, which have focused on late-stage projects and buy-out deals, sometimes without a firm focus on technology.

Chart 56: Where does the money come from for start-ups?

Source: Global Entrepreneurship Monitor, HSBC Research

In fact, we think this highlights the most glaring inadequacy in terms of Hong Kong's technology development. According to a paper by Au & White (2009)¹², the city's past has established something of an 'arbitrage trading mentality' among entrepreneurs, leading to investment 'short-termism'. Also, the society's scepticism towards technology start-ups, because of their high risk nature associated with long-term investment, plays against commercialising potentially profitable technology. There is an insufficient 'angel culture' in Hong Kong, which is essential to the development of a start-up scene, leading to a lack of early-stage investment. This is underscored by Chart 56 – more financing for start-ups was made through these early-stage funding channels in Shenzhen than in Hong Kong. However, this 'equity gap' between seed and the start-up stages is set to narrow over the next few years, as we now argue.

How can Hong Kong do better to compliment Shenzhen?

The above discussion broadly summarises why Hong Kong is mired in the odd situation of having abundant capital and good technology universities but not a vibrant start-up scene (see Chart 58). However, the authorities have already begun to adopt measures to improve Hong Kong's ability to provide early-stage capital. The government has launched an Innovation & Technology Venture Fund¹³ (ITVF) worth HKD2bn, which venture capitalists can co-invest in for their targets in series A and B rounds of funding¹⁴. Of course, there is still more to be done to bridge the equity gap. In comparison with policies adopted by Singapore¹⁵, the current scheme is relatively conservative. Besides the main aim of creating a more vibrant start-up ecosystem in Hong Kong, the side effect from the government deploying more funds, is to attract more foreign venture capital funds to be based in Hong Kong, which in turn raises the capital pool to invest and support the Mainland's start-up scene.

Furthermore, early-stage capital provision in Hong Kong suffers greatly from mismatches caused by inefficient information flows. The government could help make informal investors more visible to start-ups, so they can pitch to each other. In this regard, the government has established a platform to facilitate information flows between start-ups and venture capitalists to re-establish the missing link, but more can be done. Helping local angels to organise into syndicates may raise the efficiency of early-stage investment by risk pooling. Additionally, preferential tax policies for angel investors may help develop the industry. Doing this correctly will help the capital provision for Mainland start-ups since most Hong Kong-based angel investors and venture capitalists prefer Mainland-based ventures.

¹² Hong Kong's venture capital system and the commercialisation of new technology, Hong Kong Innovation Project No.5, Savantas Policy Think Tank, Kevin Au/Steven White (March 2009).

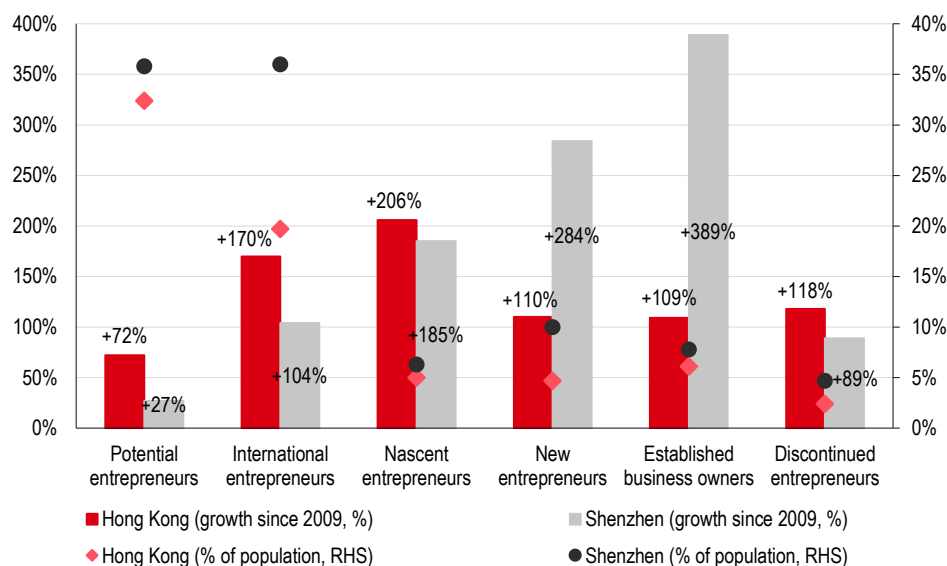
¹³ Hong Kong Innovation and Technology Commission – <https://www.itc.gov.hk/en/funding/itvf.htm>.

¹⁴ Pre-seed to seed funding ranges from HKD100,000 to HKD800,000. Pre-Series A funding ranges from HKD800,000 up to about HKD8m. Series A funding is in the range of HKD8m to HKD40m, while Series B funding is HKD40m to HKD80m.

¹⁵ Singapore Prime Minister's Office (National Research Foundation), <https://www.nrf.gov.sg/funding-grants/early-stage-venture-fund>.

Creating a good platform for venture capital exits is important to keep the local industry growing. Making listing rules more attractive to tech investors who want to realise their returns from their ventures based in the Mainland and around the region will consolidate Hong Kong as a base for venture capital funds. Although the Hong Kong Stock Exchange offers exits through IPOs, the bourse in Shenzhen still took the lion’s share of listings. Industry commentators said that funds prefer to list onshore because of higher valuations. That said, it is encouraging to see more private equity exits via the Hong Kong bourse recently for reasons such as better liquidity, greater transparency and fewer restrictions on sell downs after the expiry of lock-up periods. Lastly, a faster exit route for venture capital investment is likely to result in higher returns, thereby creating more motivation to invest in early-stage ventures.

Chart 57: Entrepreneurial culture is growing in the GBA, leading to higher demand for start-up financing

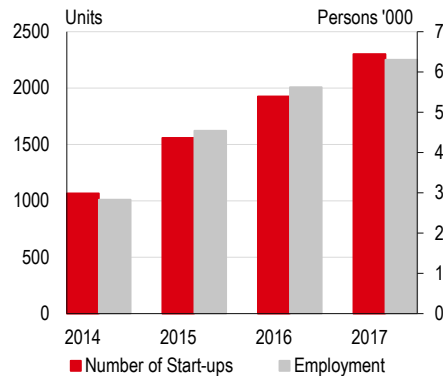


Source: Global Entrepreneur Monitor, HSBC Research

Encouraging people to be less risk averse and to think less conservatively requires a gradual change to the education system and social values. Popular television programmes, such as the Dragon’s Den (UK) or the Tiger of Money (Japan), may help promote venture capitalist ‘mindsets’ in the wider population; however, raising entrepreneurial spirits or encouraging people to take risks of some magnitude is more difficult.

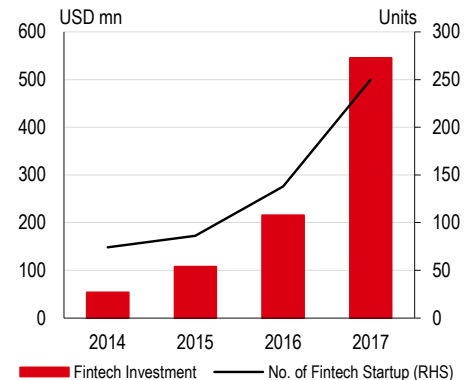
However, the culture of the professional industry can be changed by who works there. Formulating appropriate talent policies for start-ups and the venture capital industry are, therefore, vital for Hong Kong to become the next hub for early capital provision. The recent relaxation of rules regarding innovation and technology talent to work in Hong Kong may help fill some of the gap but nurturing talent locally is key for the long-run. Reviving the capital investment entrant scheme may help bring in entrepreneurs who have experience in starting businesses from scratch. The same applies to government officials who formulate and execute innovation and funding policies – a tech background may equip them with skills in how to tell good ventures from bad ones.

Chart 58: Number of start-ups has more than doubled since 2014 but is still not as vibrant as in Shenzhen



Source: InvestHK, Startmeup, HSBC Research
Note: The Startup Profiling Survey only targets respondents located in selected co-working spaces and incubation and acceleration programmes. Actual number of start-ups may be underestimated.

Chart 59: Number of fintech start-ups has been rising in tandem with investment



Source: InvestHK, Startmeup, HSBC Research
Note: Fintech investment in 2014 was estimated based on a cumulative total of HKD940m deployed since 2010, the rest are actuals.

Of course there are other problems for ‘big money’ funds settling in Hong Kong for local investment purposes due to its small market size relative to the Mainland. However, with the recent push from the government, the number of start-ups has already increased significantly. Indeed, the growing number of fintech start-ups in Hong Kong (see Chart 59) has been rising in tandem with the amount of venture capital investment in recent years, thanks to the introduction of tax exemptions.

Despite its shortcomings, Hong Kong is expected to hold on to its lead as the venture capital hub for Asia because of its proximity to opportunities in the Mainland. However, it needs to do even more to create a conducive environment for venture capitalists. The more vibrant the local start-up scene, the more international venture capitalists will station themselves in Hong Kong and the more investment they will make in Mainland opportunities. The crucial point is, the city will have to address the lack of early-stage/angel investors if it wants to boost more venture capital investment in technology start-ups. At the same time bureaucracy needs to be reduced and communications between departments improved. All these things will go a long way to expanding Hong Kong’s capacity to provide early-stage funding for start-ups.

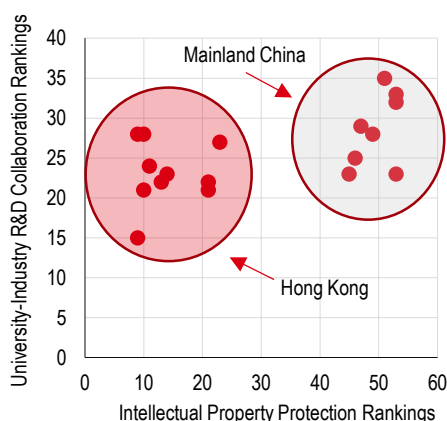
When high-quality research meets the market

Having advanced tertiary education institutions close at hand is an integral element of a high value-added business environment with high R&D intensity. The San Francisco Bay Area/Silicon Valley has several top universities, such as Stanford and UC Berkley. Similarly, Hong Kong has several world renowned universities and research institutions. In fact, for a city of just 8m residents, it is indeed a blessing that Hong Kong boasts five of the world’s top 100 universities, according to QS research, more than London, Boston, or the San Francisco Bay Area. Hong Kong’s universities score particularly well in science-related disciplines, including engineering & technology, information systems, and computer sciences. This is despite Hong Kong’s low public resources input into research, which trails well behind Taiwan, Korea, and Singapore, for instance, with its R&D share of GDP at just 0.8% in 2016. At the same time, Hong Kong’s educational institutions do not have a strong record of commercialising their research, probably due to the relatively small market.

Chart 61 shows that the “big 3” in Hong Kong occupy the 4th (HKU), 5th (HKUST) and 7th (CUHK) places in the Times Higher Education survey table for Asia, while the Mainland’s top two universities are second and third (but, not in the GBA, of course). At the same time, Hong Kong ranked 15th in

the world in terms of cross-pollination between universities and industry on R&D (see Chart 60). This is likely to be at least partly related to the fact that Hong Kong does well in intellectual property protection (9th place in 2017). Moreover, Hong Kong's universities are, on average, more competitive in innovative and technology disciplines (Chart 62), and earned higher rankings than Mainland universities in terms of research and teaching quality (Chart 63).

Chart 60: Hong Kong has an edge in cross-pollination between universities and industry on R&D



Source: Various Issue of WEF Global Competitiveness Index, HSBC Research

Chart 61: Hong Kong has three of the top 10 universities in Asia

Asia's Overall University Ranking (2018)	
1	National University of Singapore
2	Tsinghua University
3	Peking University
4	University of Hong Kong
5=6	HKUST/Nanyang Technological University
7	Chinese University of Hong Kong
8	University of Tokyo
9	Seoul National University
10	Korea Advanced Institute of Science and Technology

Source: Times Higher Education League Table, HSBC Research

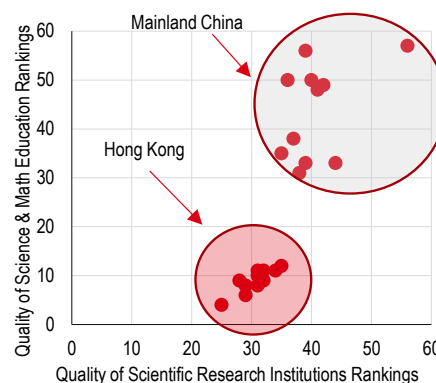
In May 2018, the Chinese authorities issued a directive¹⁶ to make Hong Kong an international innovation hub, forging closer ties with the GBA in terms of R&D activities. The Mainland will make national R&D funding available to scientists and laboratories in Hong Kong¹⁷. According to the Hong Kong government¹⁸, we think the technology collaboration between the two regions will likely focus on Hong Kong's areas of strength, namely artificial intelligence and biotech. To give a sense of the size of the grants, the central government's R&D funding for all Chinese university projects amounted to RMB68.8bn in 2016. While not all will be directed to Hong Kong, of course, that number is equivalent to about 3% of Hong Kong's GDP and will make a considerable contribution to raising collaboration in the GBA and taking it to the next level.

Chart 62: Hong Kong's research foundation is strong

	Overall World Ranking	Engineering & Technology	Computer Science
HKU	26	30	26
HKUST	30	17	14
CUHK	46	41	28
City	49	63	50
Polytechnic	95	56	51

Source: QS University Rankings 2018, HSBC Research

Chart 63: Hong Kong's research institutions are more competitive (2008-18)



Source: World Economic Forum Global Competitiveness Index 2017-18, HSBC

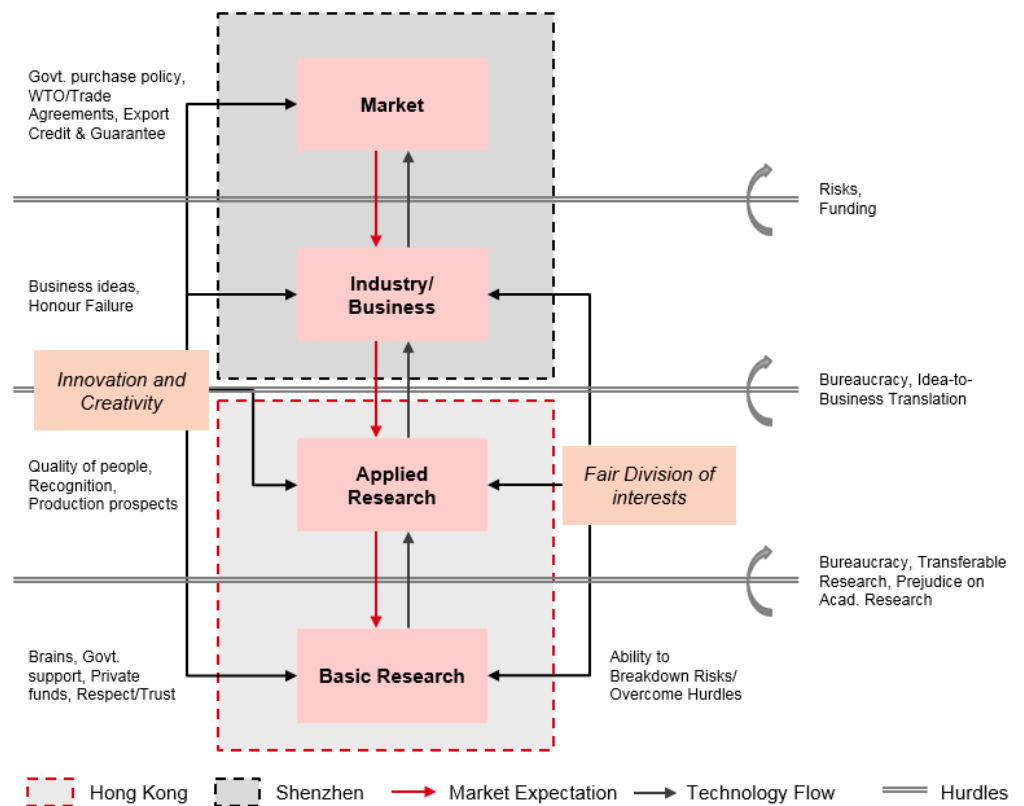
16 Xinhua News: 习近平支持香港成為國際創新科技中心(14 May 2018).

17 Ministry of Science & technology PRC: 關於鼓勵香港特別行政區高等院校和科研機構參與中央財政科技計劃組織實施若干規定 (Feb/ May 2018) http://www.most.gov.cn/mostinfo/xinxifenlei/gzcg/gfxwj/gfxwj2018/201805/t20180514_139492.htm.

18 HKSAR Policy Address (2017) <https://www.policyaddress.gov.hk/2017/eng/policy.html>.

The founding of Dà-Jiāng Innovations (DJI), a world-leading consumer/business drone designer and manufacturer, is a prominent example of inadvertent collaboration between Hong Kong’s universities and Shenzhen. A graduate and his mentor from HKUST developed the first generation of commercial drones in 2006. However, because of high rents and operating costs in Hong Kong, the company moved to Shenzhen – also because of the favourable funding structure and industrial policies – and has flourished ever since. Collaboration between DJI and HKUST continues through the sponsoring of scholarships for students pursuing robotics and creating a joint tech laboratory.

Chart 64: Synergies: Hong Kong-Shenzhen collaboration. Hong Kong takes charge of the initial R&D phases, while Shenzhen specialises in latter phases of commercialisation



Source: CAE-HKAES Report 2017, HSBC Research

Overall, the basic research strength of Hong Kong’s institutions seems to be catering to the innovation needs of industries in the GBA area. A policy study¹⁹ conducted by HKUST and the Chinese Academy of Engineering assessed these key strengths and demands, which are summarised in the table below.

¹⁹ Report on Policy Study on the Integrative Development of Innovation and Technology in the GBA, CAE-HKAES-HKUST (October 2017).

Table 4: Hong Kong research strengths

University	Research strengths
HKU	Biomedicine, Biology, Chemistry, Computation & Information, Drugs, Food Safety & Quality, Integrative Biology, New Energy, New Materials, Neuroscience
HKUST	Artificial Intelligence, Biotechnology, Big data, Civil Engineering & Environmental Hydraulics, Electronics, Environment & Sustainable Development, Fuel Cells, Information Technology, Nanotechnology, Neuroscience, Robotics & Automation Technology, Wireless Communication
CUHK	Biomedicine, Chemistry, Electronics and ICT, Environment and Sustainable Development, Robotics & Automation Technology, Smart City
City University	Biomedical Sciences, Marine Environment, Materials Science, Wireless Communications Technology
HK Polytechnic	Advanced Manufacturing Technology, Architecture, Civil Engineering, Rehabilitation Sciences, Structural & Environmental Engineering, Sustainable Urban Development, Rail Transit, Textile
HK Baptist University	Chemistry, Chinese Medicine, Environmental & Biological Analysis, Information Technology, New Materials

Source: CAE-HKAES Report 2017, HSBC Research

The report identified several industries in the GBA that should further strengthen research collaboration with Hong Kong's universities, namely big data, e-commerce, energy conservation, environmental science, new energy, new materials, smart manufacturing, and medical science. After understanding the industries and markets through demand and supply matching, the government could provide incentives for university researchers to commercialise their basic research, according to the joint study. Unfortunately, academics are not incentivised to get involved in applied research and knowledge transfer to industry, despite the efforts spent to set up industry education research platforms (IERs) in Shenzhen. This makes the recognition of the contribution of scientists vital, not least by making provision for them to share in the income of successful knowledge transfers, and could even involve a contribution to applied research being made mandatory for academics.

In all, Hong Kong and Shenzhen are able to complement each other's strengths in the field of R&D. For example, Hong Kong can be responsible for the earlier stages of the innovation process (see Chart 64), after which Shenzhen – where entrepreneurs know their market and are good at commercialising research outcomes – can take care of the latter stages of the process. This coupled with Dongguan's solid industry base to manufacture prototypes and innovative products, will certainly create a lot of synergies for the GBA.

Table 5: Innovation needs of GBA's emerging industries

Industry	Emerging innovative industries in the GBA
Biomedicine	Biomedical Sciences, Biological Breeding, Diagnostic Reagents, Innovative Drugs, Modern Chinese Medicine, Medical Devices, Life & Health
Energy Saving & Environmental Protection	Energy Saving Technologies & Products
Information Electronics	Cloud Computing, Digital Home, Geospatial Information Systems, Internet of Things, New Display, Next Generation Internet, Software & Integrated Circuit Design, Wireless Communication
New Energy	Nuclear Power, Solar Power, Wind Power
New Energy Vehicles	Vehicle, Key Parts, Ancillary Facilities, Environmental Management
New Materials	Advanced Metals, New Inorganic Non-metallic Materials, New Rare Earth Materials, High Performance Organic Polymers & Composite Materials, Special Fine Chemicals
Semiconductor Lightings (LED)	Key Technology & Commercialisation

Source: CAE-HKAES Report 2017, HSBC Research

Talent policies: internationalism at play

Hong Kong has long been a place where ‘East meets West’; it is a magnet for talent with an international mindset and a variety of skills. The city’s cosmopolitan nature is a major advantage. The number of expatriates in Hong Kong has continued to rise. In 2017, close to 64,000 highly skilled overseas individuals were admitted under the five main schemes listed in Table 6 below (GEP, ASMTP, QMAS, IANG, and ASSG). Besides filling the gaps in Hong Kong’s labour market, companies hiring foreign professionals have to hire locals in return, helping to nurture home-grown high-tech talent.

Table 6: Hong Kong talent policies at a glance

Talent schemes	Target groups
General Employment Policy (GEP)	Targeting professionals and entrepreneurs from non-Mainland residents
Admission Scheme for Mainland Talents and Professionals (ASMTP)	Targeting professionals from the Mainland
Quality Migrant Admission Scheme (QMAS)	Targeting Mainland and overseas talent who have not yet secured a job using GPT and APT points system
Immigration Arrangement for Non-local Graduates (IANG)	Targeting overseas fresh graduates having completed their studies in Hong Kong
Admission Scheme for the Second Generation of Hong Kong Permanent Residents (ASSG)	Targeting the second generation of former Hong Kong permanent residents
Dependant and Stay Arrangements	Targeting dependents of successful entrants
Technology Talent Admission Scheme	Targeting new hires in seven tech areas: biotech, AI, cyber security, robotics, data analytics, fintech, and material science

Source: Hong Kong Immigration Department, HSBC Research

Recently, Hong Kong’s government rolled out a fast-track programme specifically to attract innovation and technology talent to strengthen competitiveness and enhance manpower resources in this field. Initially, the plan is aimed at companies resident in the science parks and the ‘Cyberport’ in Hong Kong, with an annual quota of 1,000. With the demand for technology talent expected to rise steeply, given the new push for innovative growth and the expansion of the science parks, the three-year pilot Technology Talent Admission Scheme is likely to be greeted favourably. However, most core schemes do not provide monetary or housing incentives to attract talent.

Battle for talent

North of the Shenzhen River, the Mainland introduced a fast-track scheme for highly skilled talent at the beginning of the year allowing for five- or 10-year multiple entry visas valid for stays of 180 days. Shenzhen’s talent policies – which include a mixture of signing-on bonuses and housing benefits – look more targeted, flexible and generous than those in Hong Kong.

Table 7: The Mainland's talent policy initiatives

Talent policy initiatives	Target groups
Talent Visa Programme (R Visas) - allows a stay up to 180 days with multiple entries valid from 5-10 years	Expatriates whose skills are in urgent demand: scientists, entrepreneurs and other high-skilled talent
Green card - permanent residency allows foreign nationals to enjoy social benefits and to buy properties	Foreign talent after three years in the job with recommendations from employer
Thousand Talents Programme - successful applicants get RMB2m research grant and a RMB500,000 personal reward as well as social benefits	Targeting returnees, scientists and engineers
Shenzhen High Level Professional Programme - successful applicants will be given RMB6m or a free 10-year lease on a 200 sq m flat with a gratuity of RMB10m after 10 years; research start-up fund of RMB1m	Outstanding scientists and researchers
Shenzhen Peacock Programme - a combination of generous signing bonus (RMB1.6m to RMB3m) and free housing or rent subsidies, also research capital funding	High-tech professionals and companies in biomedicine, new energy, information systems; academics, journals editors, scientists
Shenzhen - incentives for bachelor's degree holder at RMB15,000 if secured a job offer, master's and PhD will be offered RMB25,000-30,000	Recent university graduates
Shenzhen - allowing foreign nationals to subscribe to the housing fund	Qualified foreign talent employed in Shenzhen, including residents of Hong Kong, Macao, and Taiwan
Shenzhen - cash subsidies awarded to talent categorised by a class system	Talent in possession of a permanent residence permit, including their spouse
Shanghai - master's graduates with a job secured in FTZ will get work permits; fresh graduates can also apply for a two-year residence permits if they want to start a business	Graduates from Chinese universities
Shanghai - providing permanent resident permits and offering subsidies	Overseas high-tech professionals
Beijing - granting qualified talent with hukou, which allows them to purchase properties and access to social benefits	Doctors, IT specialists, etc...

Source: Various sources, HSBC Research

The battle to attract talent in the Mainland is not confined to overseas people but involves competing with other tech hubs, such as Hangzhou, Shanghai and Beijing. For instance, the Peacock Programme, established in 2011, played a part in attracting high-tech start-ups, such as DJI, KuangChi, Royole, and BGI.

Harmonisation of talent policies

Looking ahead, a closer partnership between cities in talent management policies would help foster the development of the 'new economy' in the GBA. For now, however, the GBA is still behind in terms of tapping into the global talent pool. Indeed, Hong Kong's tech workforce is only 2.2% of total employment, while a fraction of the 83,000 local graduates majored in computer-related sciences. Tapping into global talent is, therefore, crucial for Hong Kong's development. Even Shenzhen managed to bring back 18,000 overseas returnees, but less than 15% secured jobs in IT-related sectors. Overall, more work will need to be done on talent attraction.

Utilising each other's strengths

Hong Kong has long been acknowledged as a provider of advanced information about both the Mainland and abroad and the city enhances people's vision through the experience of living there and through university education and research activities. However, Shenzhen has the industry support, the entrepreneurship culture, and the facilities Hong Kong lacks. One way to collaborate is for overseas talent and their dependents to live in Hong Kong and enjoy its global lifestyle and education, while commuting to Shenzhen or the LMC Science Parks on a daily basis. If Hong Kong's internationalism and competitive tax rates already attract both foreign and Mainland talent through further relaxation of its immigration policy, the city may also be able to provide more direct incentives. Allocating more land for international schools is one example of a move that would help attract talented people with families.

On top of attracting and retaining experienced talent in Hong Kong, the governments in the GBA should encourage the learning of science and technology at a young age. The CAE-HKAES study suggests that universities led by prominent local scientists should partner with schools to re-write the science and technology curriculum. Instead of just relying on bringing in highly skilled migrants to fill the gap, this would help generate local talent in these subjects.

Legal superlatives

A mature system for intellectual property protection is essential

A mature system for intellectual property protection is essential to the long-term development of any innovative economy. Laws governing those rights, first introduced to Hong Kong in 1873, are engrained in the business culture. Indeed, Article 139 and 140 in the Basic Law²⁰ stipulate that Hong Kong should have its own system of intellectual property protection. More collaboration across the GBA needs to be nurtured to develop mutual recognition of patents as well as on arbitration matters. For instance, policymakers may want to explore the possibility of Mainland parties resident in the GBA being able to use Hong Kong's intellectual property laws in any legal disputes regardless of whether they are engaged in cross-border activity. Further study needs to be done on mutual enforcement of judgements, which should help further incentivise R&D and nurture the 'new economy' in the GBA.

Existing collaboration

Collaboration can also be extended to full-scale physical and human capital resource sharing, which is indeed not a new idea. The Shenzhen-Hong Kong Innovation Circle Agreement²¹ (深港創新圈), signed in 2007, has shown the way in many respects.

The CEPA²² (內地與香港關於建立更緊密經貿關係的安排) of 2003 goes even further back, facilitating greater mobility across the border. In 2010, the Hong Kong-Guangdong Co-operation Framework Agreement²³ (粵港合作框架協議) affirmed areas of co-operation and the mechanisms of communication and co-ordination, including innovation and technology.

Of all existing collaborative platforms, we see the Industry-Education-Research (IER) of 2006 as constituting a major breakthrough. The facility promotes exchanges between Hong Kong-based academics and Shenzhen's industry base and their starts-ups. As a result, it facilitates knowledge transfer to the industries and the commercialisation of basic research results from Hong Kong's universities. Six Hong Kong-based universities have established IERs in Shenzhen's Virtual University Park.

In terms of capital provision, the Guangdong-Hong Kong Technology Co-operation Funding Scheme (TCFS), a joint technology fund sponsored by cross-border governments and set up in 2004, has supported a total of 264 projects involving HKD860m as of January 2018.

20 The Basic Law of Hong Kong SAR - <http://www.basiclaw.gov.hk/en/basiclawtext/index.html>.

21 香港特別行政區 與深圳市人民政府關於“深港創新圈”合作協議

[https://www.itc.gov.hk/ch/doc/CA_Shenzhen&HK_InnovationCircle_\(Chi\).pdf](https://www.itc.gov.hk/ch/doc/CA_Shenzhen&HK_InnovationCircle_(Chi).pdf).

22 Closer Economic Partnership Arrangement (CEPA): <https://www.tid.gov.hk/english/cepa/index.html>.

23 Hong Kong-Guangdong Co-operation Framework (2010), NDRC/HKSAR Government/Guangdong Government, http://gia.info.gov.hk/general/201707/01/P2017070100409_262244_1_1498888409704.pdf.

Prospects for regional integration

The underlying theme of the GBA is to further integrate Hong Kong and Macao with the Mainland under the framework of “one country, two systems”.

In addition to the many platforms for collaboration we have explored, there are also many issues associated with the pursuit of more balanced and sustainability economic growth across the region, given the many cross-border issues that transcend any single authorities’ jurisdiction. We think the following two symbolic, yet practical, projects endorsed by the NDRC can serve as testing grounds for new ways of collaborating.

Qianhai-Shekou Pilot FTZ

A laboratory of modern services and soft infrastructure

The pilot Free Trade Zone (FTZ) of Qianhai & Shekou Area (前海) was established in April 2015, one of 11 existing in the Mainland. It belongs to one of the three main sites of the bigger Guangdong pilot FTZ complex (GDFTZ), which includes Nansha in the south of Guangzhou and Hengqin near Macao (see Chart 65). Occupying an area of 28.2 sq km, the primary focus of the Qianhai FTZ is to nurture modern services and to promote industrial upgrading in the Mainland. Because of its strategic location, there are frequent exchanges and co-operation with Hong Kong and Macao, which are helping Qianhai develop into a major services hub in the GBA, specialising in a wide range of industries, including finance, modern logistics, information and technology services. The more implicit agenda for Qianhai is to become a testing ground for the harmonisation of institutions, especially legal, but also ‘financial opening up’, supply chain management, and financial innovation.

The following is a brief summary of its major functions.

Industrial upgrading: Developing a modern services sector is the key focus of the Qianhai-Shekou FTZ. The opening up of the Mainland’s services sector, including the finance industry, requires collaboration with Hong Kong and Macao, drawing in particular on Hong Kong’s international experience in logistics and shipping services, professional business services, and information services.

Financial opening up: Qianhai is to become a ‘showroom’ for financial market liberalisation. Besides financial innovation, Qianhai will take up cross-border RMB services and support Hong Kong to become an offshore RMB hub. Over time, this should help create a single capital market between Hong Kong and Shenzhen as liberalisation continues.

Legal system: One of the main priorities of Qianhai is to help chart changes to the current legal system in the Mainland. According to Shenzhen’s government, the area is set to explore areas of law, including legislation, the administration of justice, law enforcement, arbitration, intellectual property rights protection and legal services, under the basic framework of laws in the Mainland. Consideration is being given to the application of some Hong Kong laws (common law) in the region for cases involving a foreign party contract, which would be a bold step forward.

Factor mobility: Any Hong Kong or Macao resident looking to work in the Qianhai special economic zone will no longer need to secure an employment permit. They will also be granted the same status as local workers when it comes to contributing to/withdrawing from the Housing Provident Fund and be eligible for a loan from the Housing Provident Fund for the purposes of securing their accommodation.

Figure 65: Qianhai & Shekou FTZ is part of Guangdong Pilot Free Trade Zone (GDFTZ)



Source: HKTDC, HSBC Research

The Lok Ma Chau Loop

A special area within Hong Kong

Besides improving connectivity within the GBA through infrastructure projects, such as the HZMB and the Express Rail Link, the border arrangements between the Hong Kong and Shenzhen provide a favourable backdrop for the twin cities to develop innovation and technology industries in or around the Lok Ma Chau Loop (LMC Loop). The idea is that this would complement the economic strength on both sides and push forward the concept of the 're-industrialisation²⁴' of Hong Kong.

The two governments agreed²⁵ in January 2017 to co-develop the strip of land of 87 hectares (see Chart 66) into a premier education and innovation hub for the 'new economy'. The proposed site is at least four times the size of Hong Kong's science parks in Shatin and Cyberport combined. The CAE recommended²⁶ to the State Council that the LMC Loop should be positioned as a key national strategic development initiative, turning it into a world-class innovation and technology centre, which will explore new ways to collaboration between the Mainland and Hong Kong.

The outcome of consultations carried out on both sides indicates significant industry demand for higher education, research and development as well as creative industries in the LMC Loop. The initial plan shows that not only that the LMC Loop will provide office space for high-tech companies, some research and educational institutions are also expected to set up there. This is intended to give rise to collaboration in R&D amongst companies and academic institutions,

24 The Hong Kong Productivity Council: Re-industrialisation of Hong Kong Challenges, Changes and Opportunities (2018).
25 Memorandum of Understanding on Jointly Developing the Lok Ma Chau Loop by Hong Kong and Shenzhen (3 January 2017) http://gia.info.gov.hk/general/201701/03/P2017010300609_250718_1_1483450856957.pdf.

26 Chinese Academy of Engineering - 中國工程院院士建議將深圳福田落馬洲大河套區確定為國家戰略創建世界級產業技術創新中心 (22 June 2017).

further improving commercialisation by turning upstream research into marketable products in the downstream market. The final plan is to bring together the whole ecosystem in the LMC Loop with over 600 high-tech companies by 2020.

Fig 66: The Lok Ma Chau Loop of the Hong Kong SAR

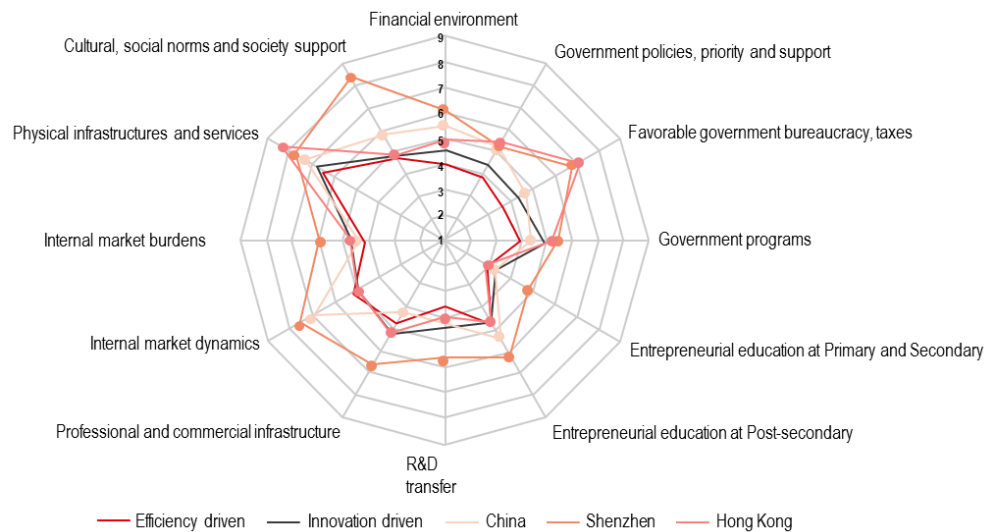


Source: HSBC Research

The idea of the LMC Loop was first conceived as one of the 10 major infrastructure projects announced in the Hong Kong Policy Address in 2007. With its unique geographical position, the new Science and Innovation Park at the LMC Loop and the adjacent innovation zone to the north of the border, will take advantage of each city's comparative advantage.

First, the Science and Innovation Park will leverage Shenzhen's dynamic entrepreneurial scene due to its proximity to its high-tech hub in Nanshan as well as Shenzhen's strength in manufacturing prototypes, mass production and commercialisation as well as its access to the domestic market. From another perspective, the Science and Innovation Park will compliment Shenzhen's vibrant high-tech scene with Hong Kong's strengths, namely university research, branding and marketing, access to the global market, fund raising infrastructure and the provision of land resources immediately across the border.

Chart 67: Hong Kong vs Shenzhen in innovation and technology (2017/18)



Source: Global Entrepreneurship Monitor 2017/18, HSBC Research

Chart 67 above shows the strengths of Hong Kong and Shenzhen and how they can complement each other in the context of fostering entrepreneurship in innovation and technology industries. Hong Kong scored well in physical infrastructure and government-related factors, while Shenzhen had an edge in R&D transfer, entrepreneurship culture, market size, and soft infrastructure/talent.

Meanwhile, to fully exploit the synergy potential, Hong Kong will support Shenzhen in developing a site north of the LMC Loop into a Shenzhen Innovation and Technology Zone. The area will then be regarded as the Shenzhen-Hong Kong Innovation and Technology Co-operation Zone.

If collaboration between the two cities on these fronts succeeds, it will help form the nucleus of a new regional technology cluster in a strategic location within the GBA. With the advent of the Internet of Things and 'smart production', the company responsible for running science parks in Hong Kong has begun promoting Industry 4.0 or 'smart factories' in downstream production, paving the way for the 're-industrialisation' of Hong Kong.

Plans include trying to attract high value-added technology and manufacturing industries by building an Advanced Manufacturing Centre and a Data Technology Hub in the Tseung Kwan O Industrial Estate. The government has also invested HKD18bn in promoting smart manufacturing and applied research projects at universities and to subsidise industry adoption of smart technologies.

In addition, the two places have strengthened collaboration in scientific research by setting up the Guangdong-Hong Kong Technology Cooperation Funding Scheme, jointly funding some 60 prospective R&D projects. The overall start-up environment in Hong Kong and Shenzhen has improved since 2009 according to a university study. Hong Kong scores higher in infrastructure, government policies and taxation than other innovation-driven economies on average, whereas Shenzhen (efficiency-driven economy by stages of economic development) scores better in internal market dynamism, cultural and social norms and R&D transfer between start-ups and institutions. In 2016 alone, the number of start-ups in Hong Kong has risen by 24% y-o-y to 1,926. It appears that the start-up scene in Hong Kong is at last beginning to show signs of life.

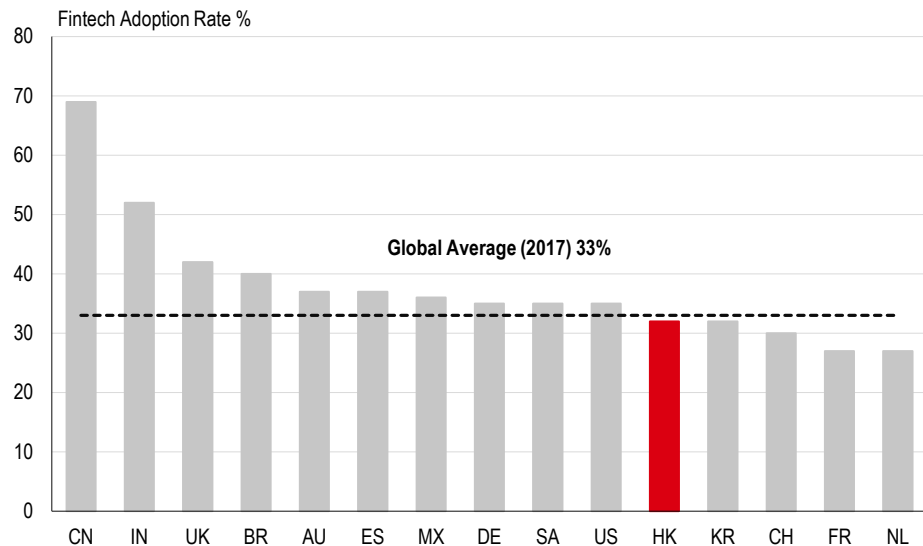
Tech prospects: Hong Kong will become smarter

'Smart cities' are a growing trend around the globe

'Smart cities' are a growing trend around the globe. This involves more than just improving 'connectedness' in a city. It is about improving the quality of life of residents, while using big data analytics and monitoring sensors to make services more efficient. Hong Kong's government commissioned a report²⁷ on smart city applications, which identified a few sites in the city for smart city pilot projects. The report pointed out six areas of focus – smart mobility, smart living, the environment, people, government, and a smart economy. The latter involves the application of automation in production and services to encourage innovation by developing new products, services, industries, and markets. This coincides with the aforementioned goal of re-industrialisation of the city, while developing its high-tech industry.

Smart mobility is also highlighted as one of the main focuses, which involves improving efficiency of urban transportation using real-time data and monitoring facilities. The application of this idea would further improve the efficiency in traffic flow management and the use of car park space in the city. It would also enable the development of real-time apps for bus movements and occupancy or even car-pooling, which epitomises the benefits of a shared economy. However, a fast and reliable backbone in telecommunication infrastructure is needed to get the ball rolling, and this would involve further investment in the next generation of mobile networks and city-wide Wi-Fi availability. Moreover, a cashless society is a key feature of smart living, which would fit well with Hong Kong's quest to become a leader in fintech. In 2017, Hong Kong's fintech adoption rate is around that of the global average, according to Ernst and Young (see Chart 69). We expect Hong Kong to perform better in the next few years, given its fertile environment for fintech, including its high mobile and internet penetration, low corporation tax, and new government initiatives mentioned previously to support start-up investment.

Chart 69: Hong Kong's fintech adoption rate is the highest amongst financial centres



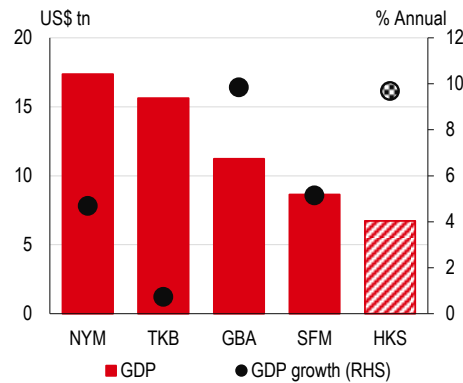
Source: Ernst & Young 2017, HSBC Research

²⁷ PWC, Report of Consultancy Study on Smart City Blueprint for Hong Kong, June 2017.

One metropolis, two regions

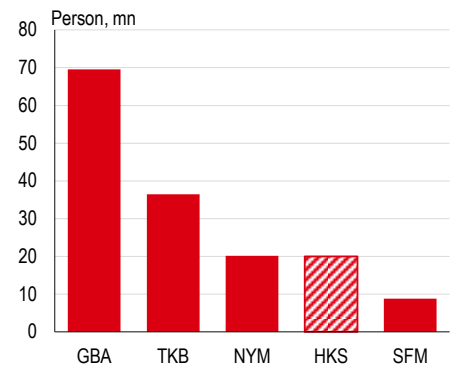
Considering today’s increasingly globalised world, the twin cities of Hong Kong and Shenzhen (HKS) might eventually need to integrate further to fend off fierce competition. In fact, the relationship between the two cities is already quite close due to history, kinship, and business ties going back to the ‘front shop, rear factory’ collaboration concept. The combined economic power of the HKS metropolitan area is substantial (see Charts 70 and 71). At USD674bn in 2017, it accounted for 60% of the GBA’s economy and is roughly around the same as Thailand and Vietnam’s economies combined. In terms of growth, the HKS economy expanded in 2017 at twice the speed of the San Francisco Bay Area and 13 times that of the Tokyo Bay Area.

Chart 70: The twin city accounts for a large chunk of the GBA’s GDP



Source: Various Sources, HSBC Research

Chart 71: Twin city has a population similar to the New York Metropolitan Area



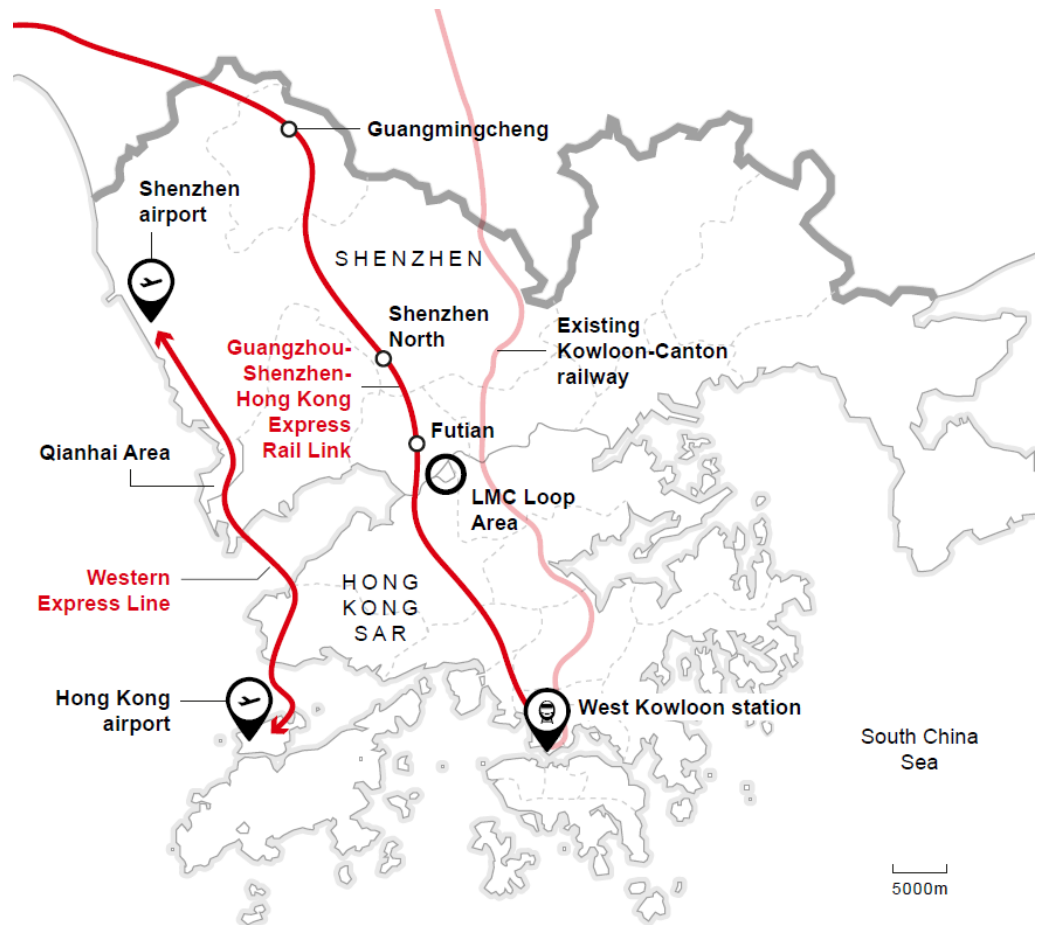
Source: Various Sources, HSBC Research

Looking further afield, the governments within the GBA, especially Hong Kong and Shenzhen, may consider expanding beyond the current economic co-operation framework as featured by the CEPA and develop into a closer economic union-type relationship²⁸ towards the key date of 2047²⁹, when the ‘one country, two systems’ arrangement potentially runs its course and the economies and institutions are more in sync and interconnected with one another.

²⁸ Building a Hong Kong-Shenzhen Metropolis, Bauhinia Foundation Research Centre, August 2007.

²⁹ Article 5 of the Basic Law stipulates that the socialist system and policies shall not be practised in the Hong Kong Special Administrative Region, and the previous capitalist system and way of life shall remain unchanged for 50 years. It has no mention of what will come after 2047.

Chart 69: Formation of the twin city depends greatly on cross-border infrastructure



Source: Shen (2014), HSBC Research

The idea of closer interaction has been that the development axis (services and finance) would extend from Hong Kong through to the Shenzhen Economic Zone, then through its industrial base, domestic market and 'living circle' to other GBA cities, such as Dongguan and Huizhou. The same is true for Shenzhen, which is now gathering enough energy in innovative industries to radiate back to Hong Kong, ultimately benefiting all in a virtuous circle.

There are challenges, however. It has been pointed out³⁰ that full integration between Hong Kong and Shenzhen is still a distant target, given the slow progress so far. It is very easy to overlook that any integration process involves not just the economy, but also other aspects of society, including standards and regulations, institutions, legal, culture and social values.

³⁰ Not quite a twin city: Cross-boundary integration in Hong Kong and Shenzhen, Habitat International, Jianfa Shen (2014).

Appendix

Timeline of the Greater Bay Area

Date	Event
June 2003	The Mainland and Hong Kong Closer Economic Partnership Arrangement (CEPA) is the first free trade agreement ever concluded by China and Hong Kong. The main text of CEPA was signed on 29 June 2003.
August 2004	The 7 th meeting of the Hong Kong-Guangdong Co-operation Joint Conference decided to commission a study on creating the Pearl River Delta city cluster area.
March 2006	The joint study “大珠江三角洲城鎮群協調發展規劃研究” for creating a sustainable world-class city cluster area commenced.
August 2008	At the 11 th Plenary of the Hong Kong-Guangdong Co-operation Joint Conference in August 2008, Hong Kong and Guangdong agreed to transform the PRD region into a low-carbon, high-technology and low-pollution city cluster of quality living.
January 2009	On the 30 th anniversary of the Open Door Policy, the NDRC released an action plan for the PRD “Outline of the Plan for the Reform and Development of the PRD (2008-2020)” “珠江三角洲地區改革發展規劃綱要”, outlining its strategy and development from 2008 to 2020. In October 2009, a joint consultation study on building a quality living area in the region was released by the three sides.
July 2009	The findings of the Greater PRD study “大珠江三角洲城鎮群協調發展規劃研究” commenced in 2006 were released in July 2009.
April 2010	A framework agreement on regional co-operation was signed between Hong Kong and Guangdong governments “粵港合作框架協議”. A three-party study on enhancing liveability and development of the Bay Area, the so-called the “Action Plan for the Bay Area of the Pearl River Estuary” “環珠三角宜居灣區建設重點行動計劃” commenced in April 2010. Public consultation of the results was held in January 2011.
December 2010	The State Council issued a national strategy on the use of land “全國主體功能區規劃”, positioning the PRD as one of the three main city clusters of China, alongside JJJ and the YRD.
March 2011	A similar framework agreement was signed with Macao. The same month saw the 12 th Five-Year Plan promulgated, including paragraphs on closer co-operation in the PRD, particularly on infrastructure building.
March 2014	The “Bay Area” concept was first mentioned in the Work Report of the Shenzhen Government. Agreement was achieved in “Shenzhen-HK-Macao Corporation Meetings”.
March 2015	The “Bay Area” was proposed at the national level. The NDRC and the Ministry of Foreign Affairs/Commerce released the paper “Vision and Action to promote the construction of the Silk Road Economic Zone and the 21 st Century Maritime Silk Road” “推出共建絲綢之路經濟帶和 21 世紀海上絲綢之路的願景與行動”.
March 2016	The Greater Bay is set in stone as a national strategy. The 13 th Five-Year Plan called for the construction of the Bay into a world-class metropolitan area.
October 2016	Incorporating the Greater Bay idea in the SAR town planning of Hong Kong 2030+.
December 2016	The NDRC accelerates the planning and development of city clusters nationwide, setting out goals and requirements, making them more systematic.
March 2017	The Government Work Report proposed further research and development of the construction of the Greater Bay Area.
April/December 2017	Premier Li met with CE Lam discuss the construction plan for the Greater Bay Area.
July 2017	In July 2017, the NDRC and the relevant governments reached a framework agreement “深化粵港澳合作推進大灣區建設框架協議” to deepen the development in and co-operation between the cities within the Bay Area.
October 2017	During the 19 th Party Congress, the NDRC was reportedly studying policies and drafting a detailed plan/blue print “粵港澳大灣區城市群發展規劃” for the Greater Bay Area connecting the Mainland and Hong Kong and Macao, including customs and check-points policy.

Source: Various sources, HSBC

Notes

Disclosure appendix

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