

Technological Innovation and Bay Area Development

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Topics

1. The Greater Bay Area as a leading new technology hub
2. Where are we now with AI and research?
3. The needs of the medical sector in China
4. Other essential steps to achieve objectives

1. The Greater Bay Area as a leading new technology hub

The Greater Bay Area project

- A national policy initiative to develop the Greater Bay Area into an integrated economic unit, signed on 1 July 2017 by National Development and Reform Commission, Guangdong Province, Hong Kong SAR, Macao SAR
- Great emphasis given to it by ministers on behalf of President Xi Jinping at the China Development Forum 2019

The Greater Bay Area



Parallel policies

- Promoted in parallel to *Belt and Road* and the technological upgrading of Chinese industry in *Made in China 2025*
- Synergy between them: Technological upgrading and access to B&R projects helps in the development and integration of the GBA
- GBA with its advantageous position because of Guangzhou/Shenzhen as leading technological centres and Hong Kong SAR as leading financial and business centre leads new technology across China and B&R countries

Old China development model not sustainable

- China development model that relied on heavy polluting industries like iron and steel not sustainable
- Environmental decay and old technology relying on cheap labour key factors in its decline and demise
- Government committed to moving away from this model to one relying on new clean technology with digital technology at its core

New growth model

- The new growth model of China relies on megacities, quality manufacturing and services and opening up to the world
- Yangzi River Delta and Pearl River Delta at the core of this model
- GBA does not yet have an advantage over Shanghai area but when integration comes it should become the leading megacity

Development of GBA

- The Governor of Guangdong Province gave details of the development planning for the area at the China Development Forum in March 2019
- A five-point plan to upgrade the manufacturing technology and bring more integration between Hong Kong and Macau and Guangdong Province

What is planned is good for technology

- Improvement in transportation, one hour maximum distance from the centre, developing high-speed train
- Intellectual Property Rights (IPR) protection to encourage innovation
- Improvements in the international business environment to attract more business, foreign and domestic, and more Hong Kong and Macau residents to come and work
- Emphasis on R&D with joint labs, high tech infrastructure and collaboration between schools and business for further training

Benefits from agglomeration

- R&D and inventiveness are helped by concentration of economic activities and specialization as planned in GBA
- Successful research requires top level scientists and good infrastructure (transportation, energy and especially digital and big data banks)
- High-speed train should be matched by high-speed data transfers between researchers
- Exchange of ideas and easy funding are essential for putting ideas into practice

R&D in the Belt and Road Initiative

- Belt and Road emphasized R&D further, by launching the Belt and Road Science, Technology and Innovation Cooperation Action Plan
- R&D is generally undeveloped in the B&R markets and China could play the leading role in this respect for collaborations
- Greater Bay Area could lead the B&R group of countries in innovation and supporting services

Innovation corridor

- An innovation corridor should develop in the Shenzhen-Dongguan-Guangzhou area, acting as the core for the wider GBA development
- Shenzhen is already the innovation hub and Guangzhou has modern industry
- Dongguan encouraging more high-tech innovation and opening up its land policy. Especially strong in mobile telephony with Hawaii based there
- R&D spending is increasing fast in this area

A Silicon Valley and Wall Street combined

- In the United States the leading innovation hub is Silicon Valley and the leading financial centre is Wall Street
- In the GBA, Hong Kong as a financial and business centre is just behind New York and London and Shenzhen-Guangzhou corridor is growing very fast in attracting new technology companies
- Potential to combine “Silicon Valley of China” with “Wall Street of China”!

2. Where are we now with AI and research?

Commitments

- China has committed to upgrading industrial production with more digital technology, AI and robotics
- And with opening up and financial liberalization
- Essentially committed to market-driven reforms to compete with Japan, Germany and the United States internationally

Progress

- The opening up is proceeding fast with respect to trade but finance still closed
- Industrial upgrading is taking place – e.g., Foxcomm (makers of iPhone) replaced 400,000 employees with robots between 2012 and 2016
- But it is still in its infancy on a per capita basis

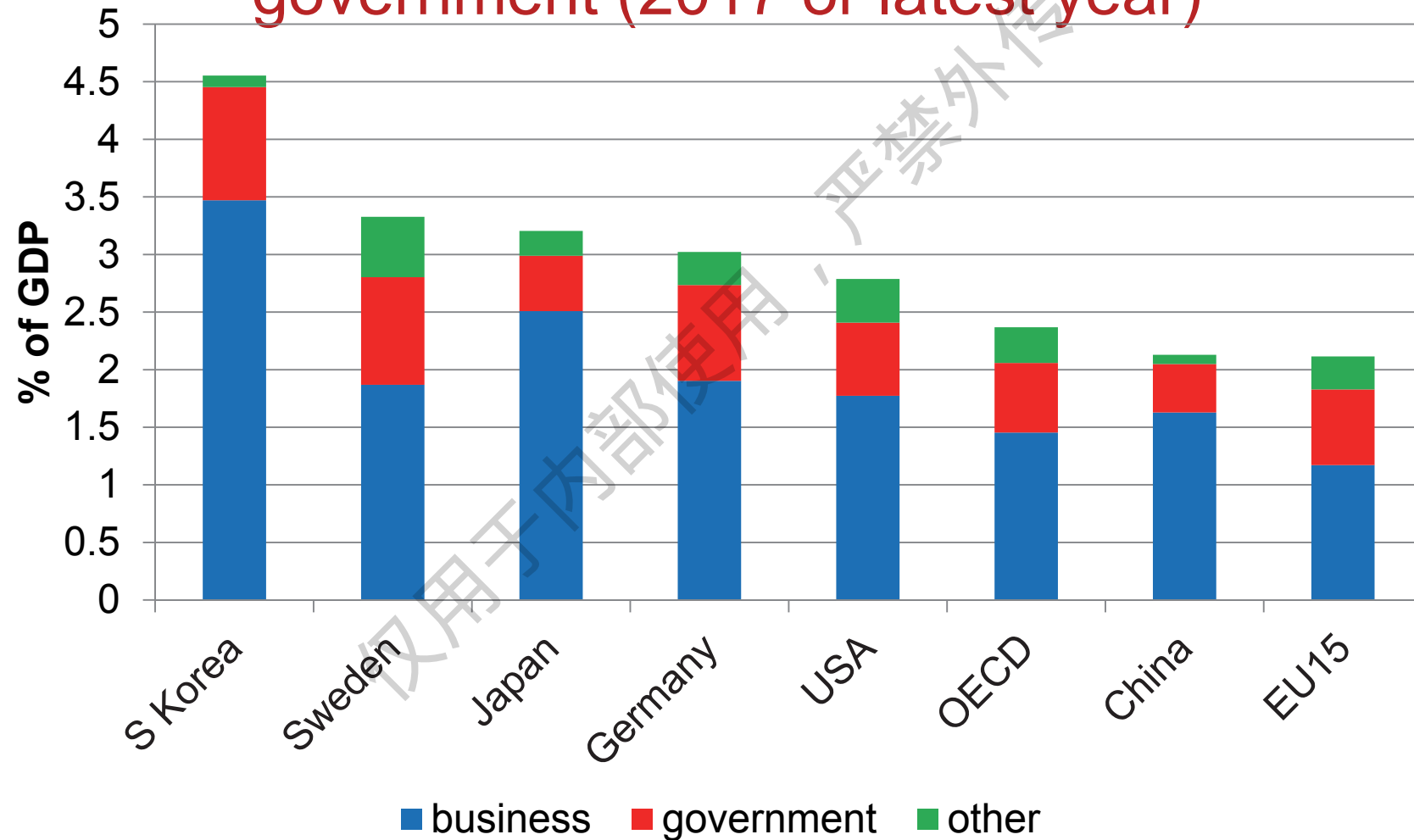
Artificial Intelligence

- Research by China International Capital Corporation (CICC) examines penetration of ten industrial sectors by AI (AI chips, computer vision and speech recognition, IoT sensors)
- They find that it has reshaped mobile internet (smart phones), security and surveillance (cameras recognising behaviour) and home (via voice recognition)
- But in other sectors still undeveloped and especially slow in the medical sector because of data shortage

Encourage more innovation

- More R&D is needed and more and better data to achieve aims.
- This needs to be pushed more as a matter of urgency because infrastructure for megacities is still undeveloped
- Policy is moving in that direction - high on the agenda are collaborations between academia, a market driven company sector and government
- This is very important as China is still a long way behind advanced countries in these collaborations

R&D, funded by business or government (2017 or latest year)



3. The needs of the medical sector in China

Medical sector must attract priority

- Medical care in China is still far behind other developed countries at all levels, including diagnosis, treatment and care.
- On average OECD countries spend about 10% of GDP on health and care, China spends 6%
- This percentage goes up with economic development
- OECD countries on average employ about 10% of their labour force in health and care, China less than 5%

Growth prospects in health and care

- The health and care sector needs to grow fast in China, government needs to give it priority – population ageing is only one factor
- The future of medical treatment is precision medicine, making use of large data sets and Artificial Intelligence to customize care for each patient
- This approach is still undeveloped, not only in China but in the rest of the world too

Requirements moving forward

- To achieve the objective of moving medical treatment to the digital era there is need of a lot of data: individual, community/environmental and data from treatments in other countries
- Collaborations need to be international and need to involve hospitals, universities, government and patients

Steps need to be taken

- Researchers need to put pressure on the government to deliver on the importance that it is attaching to improvements in medical treatment and high-tech development by helping in research funding and collection of data banks
- Guangdong Province has a good chance of acquiring leading role because of its technological infrastructure and Associations like the Guangdong Stem Cell and Regenerative Medicine Association are important in coordinating this collaborative effort

4. Other essential steps to achieve objectives

Worker education and training

- New technologies require new knowledge, mainly technical
- Although improvements have been made, especially in central areas and top universities, the immigrant population (the majority) do not have good access to top schools
- Technical education needs to start from school and companies need to provide training for skill upgrades

Government support

- Technology displaces labour – recall Foxcomm example
- This labour needs to transition to other jobs, which will be created as the economy grows
- But they will be in new and unfamiliar sectors in the service industries
- Government needs to help with training and with a good social support system to encourage smooth transitions

European experience

- European countries have long experience in managing transitions
- Best combination is income support for the family and active support to the worker to retrain and find a new job
- These are expensive – but countries that manage them well, like the Nordic countries, usually score highest in happiness surveys, despite the high costs
- Population like this role of government as long as it is well managed!

Conclusions

- The Greater Bay Area has a good chance to become a leading technology centre, not only for China but also for the Belt and Road countries of central Asia
- Work in this direction has started but more needs to be done
- The best way to succeed is to involve all actors in collaboration – workers, employers, universities and government

Thank you for listening
谢谢!