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Chongqing Pilot Free Trade Zone
--Exploration, Openness and Innovation

CONTENTS

Session Ⅲ: Innovation

Chongqing Free Trade Zone: Exploration, Openness and Innovation

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This paper looks from an international perspective at the implications of the development of China's pilot free trade zone (FTZ) in Chongqing. It is submitted by the Jardine Matheson Group (JM) as a contribution to discussion at the 12th meeting of the Chongqing Mayor's International Advisory Council (CMIA) to be held on 24 September 2017.

Executive Summary

- This 12th meeting of the Chongqing Mayor's International Advisory Council comes at an important time for the global economy, China and Chongqing. We welcome this opportunity to discuss these issues and the particular question of the future role of the free trade zone (FTZ) in Chongqing.
- The global economy faces uncertainty from developments in the US and Europe, and there are numerous challenges to globalization from trade protectionism and domestic politics. In this context, China's approach to globalization is increasingly important. We welcome President Xi Jinping's speech at Davos in January 2017, setting out the Chinese government's commitment to globalization and further openness of the Chinese economy, and highlighting the need to make economic globalization 'more invigorate, more inclusive and more sustainable'.
- Chongqing has played an important role in China's integration into the global economy over recent years, and has become a high point for openness in inland China in an era of globalization. This has been particularly noteworthy in its role in international production networks and the development of infrastructure connectivity, such as the Chongqing-Europe train services.
- Chongqing's development also reflects features of the 'new normal' in the Chinese economy, including the growth in domestic markets and businesses moving up the value chain. Economic growth in China has been shifting inland, and Chongqing has consistently been at the forefront of this process. It plays an important role in two of the government's three regional initiatives – the Belt and Road Initiative and the Yangtze River Economic Belt.
- All of these developments show that China is growing in importance for international businesses. But it remains a challenging market, and many international businesses would like to see further progress in implementing the ambitious programme of reforms set out in November 2013 at the Third Plenary Meeting of the 18th Central Committee of the Communist Party of China.
- In this context, the Chinese government's initiative since 2013 to develop free trade zones (FTZs) is a welcome one. These zones should offer a platform for pilot reforms to open up the Chinese economy further, deepening its relationship with the global economy and enhance the prospects for continued globalization.

Chongqing FTZ

- Chongqing's FTZ has an important role to play in this. As with the other FTZs its goal is to pilot reforms which can enhance the opening of China's economy, but the geographical and sectoral emphasis of the various FTZs depend on their particular situation. For Chongqing, major aims are to link the Belt and Road and Yangtze River Economic Belt, and act as a strategic anchor of the ongoing policy framework to boost development of western China (Develop the West). Indeed, Chongqing's FTZ was approved alongside others which were mainly located in provinces in inland China.
- Developing the Chongqing FTZ should therefore be done with the further opening up and reform of central-western China as the guiding principle. Chongqing's location points to the importance of Chongqing looking at its external relations with other provinces of China and beyond China's borders when developing the FTZ.
- There are three main policy implications of the Chongqing FTZ, in our view.
- First, the implications for Chongqing's engagement with globalization, building on commitments of President Xi at Davos and Chongqing's record of engagement with globalization. The Chongqing FTZ can respond to this in several ways:
  - Policies should be developed to use the FTZ to spearhead further opening in trade and investment, for example by allowing foreign investors gradually to increase their share of joint ventures in industries such as automotive.
  - Given the importance of sustainability and the role of financial sectors in globalization Chongqing could develop policies to make the FTZ a hub for 'green finance'. This should be part of an ongoing emphasis on developing sustainable business in Chongqing, with a goal of making Chongqing a leading city in this regard.
  - Finally, under the theme of globalization, the Chongqing government should continue to promote the city's role and position in the global economy by stimulating greater awareness of its role in global production networks and logistics chains.
- The second, main policy implication is to use the Chongqing FTZ to promote further development of western China, the evolving Yangtze River Economic Belt and Chengdu-Chongqing Urban Cluster.
- For the Yangtze River Economic Belt, where the economic scale and market potential is significant:
  - The FTZ can be the site of experimental policies which encourage investment by businesses in 'green industries', with a particular focus on those which use the FTZ as a hub for operations along the Yangtze River and in adjacent provinces.
  - The FTZ should be used as a focus for further strategic development of infrastructure connectivity with the provinces across the Yangtze River Economic Belt which are neighbours to Chongqing (i.e. Hubei, Hunan, Sichuan, Guizhou), as well as further developing the economic corridor from Chongqing to Kunming and on to Southeast Asia.
- Likewise the Chengdu-Chongqing Urban Cluster encompasses substantial economic scale: the resident population of this area was 98.19 million in 2016, with GDP of RMB 4.8 trillion, accounting for 6.5percent and 7.1 percent of the national totals respectively. Our suggestions for the development of the FTZ in this context are:
  - The government should proactively identify some leading projects or initiatives which could bring the Chongqing and Sichuan FTZs together, and demonstrate practical opportunities for businesses. It is important that the leaderships of the two zones collaborate and coordinate their strategic plans.
  - At the same time, the two zones will be distinguished through their operation. More efficient, business-friendly and open management of the zones can act as a magnet for businesses to locate in the zone. This requires nurturing of human resources able to deliver good quality service to businesses in the zone.
- The third, broad area of policy implications relates to the ongoing need to improve Chongqing's business

environment further. This reflects an overall national goal of the FTZs.

- For Chongqing, raising the quality of economic and business activity in the FTZ is key. This includes addressing proactively further upgrading of its current two main pillar manufacturing industries, automotive and the production of notebook computers.
- In terms of the business environment, we have a number of recommendations:
  - The Chongqing government should invest in human resource development as a central plank of implementing the FTZ policies. It could review how to enhance the attractiveness of the city as a home for domestic and international talents, from easing local transport through to improving the choice and quality of education and healthcare provision.
  - There should be clearer dissemination of the key policies in the FTZ which can benefit international businesses operating in Chongqing, whether in terms of logistics, customs services or trade settlement.
  - These should feed further strategic development of Chongqing's soft infrastructure and government institutions to support more efficient and transparent governance in relation to business and economic development.
  - The FTZ can be used as a base for promoting deeper innovation networks between companies and research institutes in Chongqing and those overseas.
  - The government could make the encouragement of private enterprises a stronger pillar of the development of the FTZ.
  - Another area of focus could be trade in services, which in the first 10 months of 2016 was around USD1 billion, up 30 percent year on year, and is expected to reach USD5 billion by 2020.
  - Enhance secure and stable internet access for international businesses.

JM strategy for Chongqing

- The development of Chongqing as a globally-linked economy in inland China, and the growth of the domestic economy through urbanization and consumption are the foundation for JM's strategic commitment to the city.
- This commitment is reflected in our main businesses, including automotive dealerships, the Mannings pharmacy chain and Maxim's restaurants, and our investment in Yonghui supermarkets. In Chongqing Hongkong Land has its largest presence and holds most developable land of any city in China.
- We look forward to developing this strategic commitment to Chongqing and its leadership, including through the further development of the FTZ over the coming years.

Introduction: China and the global economy

This 12th meeting of the Chongqing Mayor's International Advisors comes at an important time for the global economy, China and Chongqing. The global economy faces uncertainty from developments in the US and Europe, and there are numerous challenges to globalization from trade protectionism and domestic politics. The growth in global GDP remains lower than its long-term average preceding the global financial crisis, though there have also been some signs in 2017 of stability and recovery in the world economy, with the IMF predicting annual global economic growth of over 3 percent.

In the context of global uncertainty, China's role in these trends has been increasingly important, including with regard to the future direction of globalization. President Xi Jinping's speech at Davos in January 2017 set out clearly the Chinese

government's commitment to globalization and to further openness of the Chinese economy. As he noted, globalization has 'powered global growth and facilitated movement of goods and capital, advances in science, technology and civilization, and interactions among peoples'. At the same time, President Xi also recognized the need 'to make the process of economic globalization more invigorated, more inclusive and more sustainable'.[1]Meanwhile, the Chinese economy has also entered a phase of a 'new normal' where growth is somewhat lower than in the past, but of a higher quality. This is reflected in the emergence of Chinese enterprises which have moved up the value chain and engaged in greater innovation.

Chongqing has played an important role in China's ongoing and changing relationship with globalization over the twenty years since the city was made a municipality reporting directly to the central government in June 1997. As discussed at the 10th and 11th CMIA meetings, Chongqing has become a high point for openness in inland China in an era of globalization. This has been through its innovative role in international production networks, the development of infrastructure connectivity (including through the Belt and Road Initiative), and its nurturing of globally-innovative businesses and services sectors. The inauguration of freight trains from Chongqing to Europe back in 2011 epitomizes this engagement, and has been reflected in the subsequent development of numerous other China-Europe train routes.

All of these developments point to the growing importance of China and of cities such as Chongqing for international businesses. The Chinese economy, even under the 'new normal', remains a key driver of global economic growth and hence of international business development. Within China itself, the geography of that growth has spread from coastal areas inland. Chongqing has consistently been at the forefront of provincial GDP growth in China over recent years, recording 10.7 percent in 2016, reaching a total GDP of RMB1.76 trillion, and on course to overtake Tianjin as the third largest economy among China's four province-level municipalities (behind Beijing and Shanghai).[2]Chongqing also features strongly in two of the 'three initiatives' which have been emphasized by the Chinese government as part of regional (区域) economic policy across China; these two are the Belt and Road Initiative and the Yangtze River Economic Belt (the third is Beijing-Tianjin-Hebei coordinated development). However, there are still substantial income and wealth gaps within Chongqing and between Chongqing and leading Chinese cities such as Shanghai – only the main urban core of Chongqing has GDP per capita approaching that of Shanghai overall. Chongqing's economy remains a microcosm of the challenges and opportunities in China.

Although China is growing in importance for international businesses, it remains a challenging market. Many international businesses in China would like to see further progress in implementing the ambitious programme of reforms set out in November 2013 at the Third Plenary Meeting of the 18th Central Committee of the Communist Party of China, and remain uncertain about the regulatory environment.[3]The competition from Chinese domestic enterprises is also growing.

In this context, the Chinese government's initiative since 2013 to develop free trade zones (FTZs) is a welcome one. As will be discussed in more detail below, these zones offer a platform for piloting and promoting the roll out of reforms which will help promote the goals of a more open Chinese economy by freeing up trade, financing, and movement of factors of production. This should help deepen China's relationship with the global economy, promote competitiveness and reform, and enhance the prospects for continued globalization.

Chongqing's FTZ has an important role to play in this, and we welcome the opportunity to understand and discuss the

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[1] *State Council (2017), 'Full text of Xi Jinping's keynote speech at the World Economic Forum', http://www.china.org.cn/node_7247529/content_40569136.htm.*

[2] *China Daily (2017), 'Guangdong's economy remains biggest, Chongqing leads growth', 7 February, http://www.chinadaily.com.cn/business/2017-02/07/content_28126256.htm.*

[3] *See recent reports from the European Union Chamber of Commerce in China, available at http://www.europeanchamber.com.cn/en/home.*

municipal government's objectives at this 12th CMIA meeting. This paper gives Jardine Matheson's (JM) perspective on issues related to the Chongqing FTZ.

Chongqing: Jardine Matheson Group's strategic commitment

JM's position starts from its strategic commitment to Chongqing. Our businesses in Chongqing reflect the fact that the last two decades have seen a rapid process of developing the city's economy not just as an important economic pole in inland China, but by developing links to the global economy. In particular, JM businesses here respond to the opportunities offered by urbanization and the growth of consumption as key drivers of the Chinese economy.

The main businesses are as follows:

- **Hongkong Land RP**: With six projects (Bamboo Grove, Landmark Riverside, Yorkville South, Yorkville North, Central Avenue and New Bamboo Grove), Chongqing is the Chinese city in which Hong Kong Land has the largest presence and holds most developable land - some 6.1 million sq.m.in gross floor area(4.1 million sq.m. attributable to Hongkong Land).Of the six projects, Landmark Riverside and Central Avenue are located in Chongqing's Free Trade Zone.
- **Zung Fu Dealerships**: Zung Fu currently operates two dealerships in Chongqing.Chongqing Zungfu4S Dealership (AH400) began operation in March 2014. The second MB 4S dealership,ChongqingRenxing, opened in late 2015.
- **Zhongsheng Group**: Zhongsheng has two dealerships in Chongqing,a Lexus Dealership and an Audi Dealership.
- **Mannings**: Mannings China currently has 20 stores in Chongqing, of which five have over-the counter (OTC) pharmaceutical services. Mannings' private label products account for about 15 percent of total sales. TwoMannings stores began operations in Yonghuicomplexes from 2015 and a few more potential sites are under discussion. By the end of 2016, Mannings Chongqing employed nearly 150 staff (including part-time staff).
- **Yonghui**: Yonghui started business in Chongqing in 2004. It now operates 103 stores, including 19 hypermarkets, 65 supermarkets, 12 community stores and 7 Bravo stores. It has signed a contract with Hongkong Land to open a Bravo store in Yorkville. Yonghui Chongqing generated revenue of RMB 12.5 billion for 2016, ranking number one in retail business in Chongqing. Sales of fresh food accounted for 39 percent of the total revenue.
- **Maxim's**: Maxim's has operated one Genki Sushi and one Ippudo Ramen in Chongqing since 2014.

These businesses and the further development of JM's strategy for Chongqing are underpinned by the work of the Jardine Matheson (China) Limited (JMC) Chongqing Representative Office. The office opened in March 2012 and covers southwest China, i.e. Chongqing, Sichuan, Yunnan and Guizhou; it has four permanent staff, three based in Chongqing and one in Chengdu.

Chongqing FTZ: implications for foreign business

In our view, the establishment of FTZs by the Chinese government since 2013 has been an important mechanism for further opening up and reforming the Chinese economy, in line with the objectives set out at the Third Plenary Meeting of the 18th Central Committee of the Communist Party of China in November 2013. Since the establishment of the China (Shanghai) Pilot Free Trade Zone in September 2013, the launch of two further phases of FTZs across China – in 2015 and 2017 – has

demonstrated the utility of this approach, and indicated the central government's ongoing commitment to gradual reform and opening up.

As can be seen from Figure 1, a common theme of all the FTZs is to pilot reforms which can facilitate trade and finance, and enhance the opening of China's economy to the outside world. The geographical and sectoral emphases of the FTZs vary substantially depending on their location and comparative advantage. For Chongqing, major aims are to link the Belt and Road and Yangtze River Economic Belt, and act as a strategic anchor of the ongoing policy framework to boost development of western China (Develop the West).

Figure 1: Strategic focus of China's pilot FTZs[4]

Location of FTZ	Year established	Strategic focus (selected elements)
Shanghai	2013	Liberalizing trade and investment, improving business environment, financial sector opening.
Tianjin	2015	Opening up Beijing-Tianjin-Hebei integrated region.
Fujian	2015	Deepening Taiwan-mainland China cooperation, promoting cooperation along the 21st Century Maritime Silk Road, for which Fujian is a "core area".
Guangdong	2015	Cooperation between Guangdong, Hong Kong and Macao (the "Big Bay Area"), a hub of the 21st Century Maritime Silk Road, leading a new round of reform and opening up.
Liaoning	2017	Raising competitiveness and openness of old northeast industrial bases, reforming SOEs.
Zhejiang	2017	Opening up coastal regions, liberalizing trade in commodities such as petroleum products.
Henan	2017	Comprehensive transport hub for the Belt and Road, economic opening in inland China.
Hubei	2017	Industrial transfer from coastal regions to central China, clustering emerging strategic and high-tech industries, linking to Yangtze River Economic Belt.
Chongqing	2017	Linking the Belt and Road and Yangtze River Economic Belt, strategic anchor of Develop the West.
Sichuan	2017	Opening up western and inland China, collaboration between inland and coastal regions.
Shaanxi	2017	Comprehensive reform and opening up in inland China, anchor for economic cooperation and cultural exchanges along the Silk Road Economic Belt.

As with many of the FTZs, the Chongqing zone is made up of three non-contiguous areas, with a total area just under 120 square kilometers. They are:

- Liangjiang (Two Rivers) New Area, which will focus on advanced industries such as high-tech equipment manufacturing, electrical components, cloud computing and biomedical industries; and modern services, including trade in services, headquarters services, e-commerce, exhibitions, business and professional services, and leasing and finance.
- Xiyong Area, which will focus on upgrading of processing trade, including information technology and high-tech equipment manufacturing, services such as bonded logistics, freight consolidation.
- Guoyuan Port Area, which aims to become a comprehensive logistics centre, with a focus on national and international transport logistics and advanced manufacturing.

As one of the FTZs approved by the State Council in the third phase of FTZs in March 2017, the Chongqing FTZ was one of a group of FTZs in this phase which were mainly located in provinces in inland China, designed to extend pilot reforms and enhance central and western China's openness and connectivity with the global economy. In relation to this, an important implication of Chongqing's spatial positioning is that there should be a continued priority given to Chongqing's logistical and infrastructure linkages to other parts of China and beyond China's border. This should enhance the role of Chongqing in the further opening and reform of central and western China's economy.

[4] *Various sources.*

As can be seen in the State Council's notice on the Chongqing FTZ,[5] the implementation of the Belt and Road initiative and other major regional initiatives such as the Yangtze River Economic Belt and the Chongqing-Chengdu Urban Cluster offer an important platform for this. The potential market which can be developed from Chongqing is substantial: there are populations of 200 million within 500 km radius and 500 million within 1,000 km radius of Chongqing.

- Developing the Chongqing FTZ should be done with the further opening up and reform of central-western China as the guiding principle. Chongqing's location points to the importance of Chongqing looking at its external relations with other provinces of China and beyond China's borders when developing the FTZ.

In the case of China's pilot FTZs, however, there is not much new that can be offered from international experience. The functions of a typical FTZ – duty-free areas with logistics for transshipment and re-export – have already been well absorbed by Chinese policy makers. Indeed, China's use of economic zones – from the early Special Economic Zones in the 1980s onwards – has been at the forefront of the subsequent development of such zones.

Chongqing and China's engagement with globalization

It is clear from the national approach to FTZs and from the specific focus of the Chongqing FTZ that an important objective of this initiative is to enhance the Chinese economy's connectivity with the global economy. This is in thecontext of a period of global uncertainty, and the questioning of globalization in both developed and developing economies, including talk in China and elsewhere of possible de-globalization. Against that background, we welcome the speech on globalization given by President Xi Jinping at the World Economic Forum in January 2017. In particular, we note his positive appraisal of globalization, whilst at the same time highlighting the need for improved management of globalization:

- President Xi said that economic globalization was a 'natural outcome of scientific and technological progress … [it has] powered global growth and facilitated movement of goods and capital, advances in science, technology and civilization, and interactions among peoples'.
- President Xi also noted that globalization is a 'double-edged sword', that has strained relations between capital and labour, and efficiency and equity, and that 'we should adapt to and guide economic globalization'.
- President Xi highlighted 'the necessity to make the process of economic globalization more invigorated, more inclusive and more sustainable' and that 'we should act pro-actively and manage economic globalization as appropriate so as to release its positive impact and rebalance the process of economic globalization'.

Our view is that Chongqing and the Chongqing government can play an important role in these processes. Chongqing's record over the last two decades has been one of engagement with globalization. The city has developed an important role in production networks in information technology hardware (notebooks and other devices) and enhanced its logistical connectivity within China beyond China's borders. It has attracted manufacturing investment by major global corporations in sectors such as automotive and ICT, capturing a large part of the global production in the latter category, and a significant proportion of China's domestic production in the former.

The Chongqing FTZ can respond to this in several ways:

- Policies should be developed to use the FTZ to spearhead further opening in trade and investment, for example by

[5] *State Council (2017), 中国（重庆）自由贸易实验区总体方案['Overall programme for the China (Chongqing) pilot free trade zone'], http://www.gov.cn/zhengce/content/2017-03/31/content_5182300.htm.*

allowing foreign investors gradually to increase their share of joint ventures in industries such as automotive.

- Given the importance of sustainability and the role of financial sectors in globalization Chongqing could develop policies to make the FTZ a hub for 'green finance'. This should be part of an ongoing emphasis on developing sustainable business in Chongqing, with a goal of making Chongqing a leading city in this regard (this is all the more important given Chongqing's historical legacy of heavy industry).
- Finally, under the theme of globalization, the Chongqing government should continue to promote the city's role and position in the global economy by stimulating greater awareness of its role in global production networks and logistics chains.

FTZs in Chongqing and Sichuan: developing western China

Because of Chongqing's advantageous geographical location, the FTZ is well positioned to bring together the evolving Yangtze River Economic Belt and the Chengdu-Chongqing Urban Cluster, two of the current three major regional policies in China.

The major priorities of the Yangtze River Economic Belt are to promote ecological or 'green' development and to develop a strong transport and logistics corridor along the provinces which straddle the Yangtze River. These represent a significant part of the Chinese economy: the 11 provinces of the Yangzi River Economic Belt – Shanghai, Jiangsu, Zhejiang, Anhui, Jiangxi, Hubei, Hunan, Chongqing, Sichuan, Guizhou and Yunnan – accounted for 42.9 percent of China's population, 41.6 percent of GDP, and 40.8 percent of total trade (in 2014). The Yangtze River Economic Belt should help connect markets and businesses along this region, which will help boost demand and narrow the gaps in development between coastal, inland and western China.

For Chongqing, the importance of its location on the Yangtze River Belt can be seen in its logistics connectivity, in particular the facilitation of movement of goods along the Yangtze River through the Three Gorges Dam, and the rail line which heads east to Wuhan and Shanghai.

Implications for the Chongqing FTZ include:

- The FTZ can be the site of experimental policies which encourage investment by businesses in 'green industries', with a particular focus on those which use the FTZ as a hub for operations along the Yangtze River and in adjacent provinces.
- The FTZ should be used as a focus for further strategic development of infrastructure connectivity with the provinces across the Yangtze River Economic Belt which are neighbours to Chongqing (i.e. Hubei, Hunan, Sichuan, Guizhou), as well as further developing the economic corridor from Chongqing to Kunming and on to Southeast Asia.

Regarding the second major regional policy initiative, in April 2016 a development programme for a Chengdu-Chongqing urban cluster was published by the National Development and Reform Commission (at the same time as three other city cluster programmes). It built on an earlier plan for a Chengdu-Chongqing economic zone or region, published in 2011. The urban cluster covers 27 of Chongqing's 40 districts (or counties) and 15 cities in Sichuan, with total area of 185,000 square kilometres, equal to 1.9 percent of China's land mass. The resident population of this area was 98.19 million in 2016, with GDP of RMB 4.8 trillion, accounting for 6.5percent and 7.1 percent of the national totals respectively. The economic concentration and market potential of this area can be seen from these statistics.

Examining the implications of this for the FTZ in Chongqing requires consideration of the relationship between the Chongqing and Sichuan FTZs. Initial plans for these two FTZs suggest that there are a number of similar objectives, and

differentiating the two in terms of strategic functionality could be difficult. It will be important for the two to coordinate the development and implementation of policies, to provide clarity to businesses. A more coordinated relationship between the two FTZs will become more important as further infrastructure connectivity integrates the Chongqing-Chengdu region more, and facilitates market development.

- The government should proactively identify some leading projects or initiatives which could bring the Chongqing and Sichuan FTZs together, and demonstrate practical opportunities for businesses.
- It is important that the leadership of the two zones collaborate and coordinate their strategic plans.

At the same time, there are two ways in which the zones will naturally differentiate themselves. The first is in terms of their location and market characteristics, and what this means for external linkages within China and internationally. The second is in terms of their operation, where more efficient, business-friendly and open management of the zones can act as a magnet for businesses to locate in the zone.

- This requires nurturing of human resources able to deliver good quality service to businesses in the zone.

This leads on to another set of issues raised by the FTZ. The further development of these regional policies which aim to integrate markets across China's provinces highlights another feature of China's economic development under the 'new normal', the increasing relative importance of the domestic market. This relates to the future of globalization, and may well account for some of the slower growth of China's import and export trade over recent years as domestic trade begins to play a relatively more important role for China's businesses. Chongqing's potential here is significant given its inland location and the populations of 200 million within 500 km radius and 500 million within 1,000 km radius of the city.

Chongqing's convenient location is not just a result of its position as the pivot between the Belt and Road and the Yangtze River Economic Belt, and as part of the Chongqing-Chengdu urban cluster. It also lies on the north-south railway from Baotou (Inner Mongolia Autonomous Region) to Guangzhou. Overall its connectivity and geographical location highlights the importance of the further development of multi-modal logistics in the city, so that it can fulfill its function of being an inland international logistics centre, an inland centre for trade in services, and supported by a role as an important functional financial centre.

Using the FTZ to improve Chongqing's business environment further

A key goal of the Chongqing FTZ is clearly to improve the business environment, to provide more effective government services in support of business activities, and to promote the rule of law in business operations. This is in line with the national policy priorities of reducing administration and devolving powers where possible, in order to further reform and opening up of the Chinese economy. In line with the aim of giving the market a 'decisive role' in the allocation of resources, these goals will be supported by the government encouraging market forces as much as possible.

For Chongqing, raising the quality of economic and business activity in the FTZ is key. The municipality's GDP is smaller than that of the other municipalities or provinces which are host to FTZs (Chongqing's GDP in 2016 was RMB1,756 billion compared to Guangdong's at RMB7,951 billion), so the scale of the economy on its own is less likely to attract international businesses. However, although it is 20th among Chinese province-level units in size of GDP, Chongqing scores 11th among Chinese provinces in GDP per capita, demonstrating the relative wealth of its economy. The concentrated growth of domestic consumption can therefore make Chongqing a particularly attractive destination for international businesses, as can be seen by JM's strategy for Chongqing.

Chongqing also needs to address proactively further upgrading of its current two main pillar manufacturing industries, automotive and the production of notebook computers. The automotive sector is a highly competitive one globally, with substantial requirements for research and development expenditure and attracting talents. While Chinese companies have grown in capacity, none have yet taken a significant role in global markets. As some companies in this sector have been doing, moving into the development of electric vehicles is one way forward, but further work is needed to identify Chongqing's competitive advantage here.

The notebook market is a challenging one, somewhat saturated and subject to rapid product cycles due to technological advances and fast-changing consumer behaviour. In this area, Chongqing played a vanguard role in bringing production networks to inland China, subsequently followed by other cities; it now needs to innovate again to stay ahead.

Chongqing, and Southwest China more generally, have a relatively good record in making foreign businesses feel welcome.[6] This needs building on further by the Chongqing government, and can act as a source of comparative advantage when compared to other provinces.

In terms of the business environment, we have a number of recommendations:

- The Chongqing government should invest in human resource development as a central plank of implementing the FTZ policies. It could review how to enhance the attractiveness of the city as a home for domestic and international talents, from easing local transport through to improving the choice and quality of education and healthcare provision (including greater English-language support for the international community).
- There should be clearer dissemination of the key policies in the FTZ which can benefit international businesses operating in Chongqing, whether in terms of logistics, customs services or trade settlement.
- These should feed further strategic development of Chongqing's soft infrastructure and government institutions to support more efficient and transparent governance in relation to business and economic development.
- The FTZ can be used as a base for promoting deeper innovation networks between companies and research institutes in Chongqing and those overseas.
- The government could make the encouragement of private enterprises a stronger pillar of the development of the FTZ.
- Another area of focus could be trade in services, which in the first 10 months of 2016 was around USD1 billion, up 30 percent year on year, and is expected to reach USD5 billion by 2020.
- Enhance secure and stable internet access for international businesses.

From an international perspective, Chongqing's location in inland China means that it is always going to have to work harder to be accessible internationally. The increase in international flight connections over recent years is welcome, and we encourage the government to continue to work to improve this, particularly connections to Europe. This is linked to the development of logistics infrastructure, which again has been strong over recent years. The recent expansion of the Chongqing Jiangbei international airport (bringing passenger capacity to 45 million journeys per year) is a welcome step, and further investment in these areas would help develop the city's connectivity further.

This can be supported by further promotion of tourism, which will contribute to the development of service industries and trade in services. Chongqing's proximity to Chengdu and Sichuan and ease of travel on the new high-speed rail lines

[6] *European Chamber Business Confidence Survey 2017, p. 54.*

could help increase the number of visitors to the city (2.6 million in 2014).

Conclusion

In conclusion, the Chongqing FTZ offers an excellent platform for piloting reforms which will enhance the opening up of inland China and further strengthen Chongqing's connections to the global economy. To do this effectively, we encourage the Chongqing government to commission and disseminate further analysis on the particular advantages of the Chongqing FTZ, the relationship between the Chongqing FTZ and other FTZs, especially the Sichuan FTZ, and to develop a strong narrative which promotes the benefits of the FTZ, including through successful case studies. Underpinning all of this will be the effective management of the FTZ, and the nurturing of human resources to facilitate this. We are confident that Chongqing's track record in engaging with the global economy over the last twenty years will enable it to respond positively to the opportunities in the future.

Report on the Chongqing Pilot Free Trade Zone

By Masami Iijima

Chairman of the Board of Directors, MITSUI & CO., Ltd.

1. Launch of the Chongqing Pilot Free Trade Zone

On April 1 of this year, a pilot free trade zone was established in Chongqing along with zones in Liaoning, Zhejiang, Henan, Hubei, Shaanxi, and Sichuan. In addition to playing a part in the large-scale development of China's Western region, the Chongqing Pilot Free Trade Zone will also function as another link in China's development alongside the One Belt, One Road initiative and the Yangtze River Economic Belt. China plans to develop the zone as an international logistics hub, and it has been attracting a great deal of attention from the moment it was launched. According to local Chinese news reports, approximately 60 investment projects in sectors including finance, logistics, and high-tech manufacturing were announced on the day of the opening ceremony, with total investments amounting to some CNY80 billion (about JPY1.3 trillion). Foreign companies account for about half of this amount.

2. Advantages of the Chongqing Pilot Free Trade Zone

The Chongqing Pilot Free Trade Zone can be considered to have the following two main advantages over other pilot free trade zones.

(1) Geographical advantage

Chongqing City, in which the Chongqing Pilot Free Trade Zone, is located is a core strategic city in China's One Belt, One Road initiative and the Yangtze River Economic Belt. Since the end of 2013, Chongqing, which the previous administration designated as one of four National Central Cities alongside Beijing, Shanghai, and Guangzhou, has also been a core strategic city under the Yangtze River Economic Belt and the One Belt, One Road Initiative promoted by the Chinese government. Under the One Belt, One Road action plan announced by the government in 2015, the strategic status of Chongqing was given concrete form as a national logistics hub in Western China, creating a logistics network linking key industries and transportation networks. In addition to being a core strategic city under the Yangtze River Economic Belt and the One Belt, One Road initiative, Chongqing is the only directly controlled municipality in Western China, and its location as the starting point of the Yangtze River route and the Chongqing-Xinjiang-Europe Railway (an international railway with a total length of 11,179 km linking China, Kazakhstan, Russia, Belarus, Poland, and Germany), which commenced operation in 2011, will allow the city to develop rapidly as a logistics base for China and Europe and further open the city up to the outside world through trade.

(2) Economic advantage

In 2016, Chongqing's GDP was approximately CNY1.8 trillion (about JPY30 trillion), representing a real growth rate of 10.7%, 4.0 points above China's overall growth rate of 6.7%. The city has also maintained a growth rate of 10.5% in the first half of this year. In recent years, China has shifted from high growth status to a "new normal" of medium-to-high growth, and while Chongqing's growth rate has tended to decline since 2010 when the real growth rate was 17.1%, it has still recorded continuous double-digit growth for 15 years since 2002, and has had the fastest growing economy in China for the past three years (2014-2016). As a destination for foreign investment, Chongqing offers the benefit of production costs of about 60% to 70% those of coastal areas in addition to its logistics and transportation convenience, and the actual value of foreign investment has remained above USD10 billion since 2011.

Chongqing's key industries are the automobile industry and the electronics industry, which last year achieved growth of 11.7% and 17.7%, respectively. Chongqing has maintained its position as China's leading center of automobile production since 2014, and last year increased production by 3.4% to produce approximately 3.16 million vehicles, accounting for more than 10% of all vehicles produced in China. In the electronics industry, the city maintains its position as the world's largest center for the production of laptop computers, with production rising 4.8% last year to over 58.42 million units, one third of all laptops produced worldwide. The number of cell phones produced also increased by 58.7% to approximately 290 million units. The automobile and electronics industries account for about 60% of the city's manufacturing output growth.

3. The Pilot Free Trade Zone's performance in introducing foreign investment

In addition to the Shanghai Pilot Free Trade Zone, the pilot free trade zones established in Tianjin, Fujian, and Guangdong in 2015 have successfully attracted foreign investment. According to China's Ministry of Commerce, investment in China increased by 4.1% in 2016 compared with 2015, and the fact that foreign direct investment in the four trade free zones of Shanghai, Tianjin, Fujian, and Guangdong increased by 81.3% over the same period to approximately CNY88 billion (about JPY1.5 trillion), accounting for approximately 10% of investment nationwide, indicates that the government's policy of granting preferential treatment to the pilot free trade zones has been a success.

In particular, a look at the performance of the Shanghai Pilot Free Trade Zone, which was the first such zone to be launched, shows that the zone was the driving force in attracting foreign investment to the city. In 2014, one year after the zone's launch, the number of foreign investment agreements concluded within the zone increased by 4.5 times the number concluded in the previous year, and the zone accounted for approximately 40% of all foreign investment in Shanghai in terms of transactions and about 30% in terms of value. While the pace of the increase in foreign investment slowed down slightly in 2015, with the number of agreements concluded increasing by about 40% compared with 2014, the zone increased its presence further, accounting for 50% of all foreign investment in Shanghai in terms of transactions and 60% in terms of value. In 2016, the value of foreign investment in Shanghai increased slightly by 0.3% compared with 2015, approximately 30% of this increase taking place in the free trade zone, which accounted for 30% of all foreign investment in Shanghai, and the zone continues to perform well. In terms of the entry of foreign-affiliated companies, approximately 17,000 foreign-affiliated companies had set up operation in the Shanghai Pilot Free Trade Zone as of at the end of 2016, 6,290 of which were new entries to the zone during the three years following its launch, accounting for about 40% of all foreign-affiliated companies

within the zone. As result of the acceleration of foreign investment and the entry of new foreign companies brought about by the launch of the pilot free trade zone, foreign affiliated companies account for over 20% of all companies in the zone (including Chinese companies), a significant increase over the 5% figure prior to the zone's establishment. In addition, the free trade zone generates one quarter of Shanghai's total GDP, and its contribution to the city's economy is clear.

4. Prospects and expectations for the Chongqing Pilot Free Trade Zone

The use of a negative list as a means of managing foreign investment is a central feature of China's pilot free trade zones that have been established for the purpose of promoting market opening, and the list was introduced at the time of the launch of China's first pilot free trade zone in Shanghai in September 2013. In the first negative list, there were 190 categories subject to restrictions, but this was revised to 139 in 2014 and was further reduced to the current 122 categories in April 2015 accompanying the launch of the three additional trade zones in Guangdong, Fujian, and Tianjin. The restrictions on foreign investment in the pilot free trade zones will be reduced to 95 categories in June this year, which means that the number of sectors affected will have shrunk to half that applicable when the system was introduced in 2013. Under these circumstances and the impetus of its strategic location and the latest round of deregulation, the newly launched Chongqing Pilot Free Trade Zone has great potential to attract active investment in China.

The new negative list, which focuses primarily on manufacturing (aircraft, ships, automobiles, rail transit equipment, communications equipment, pharmaceuticals) and services (transportation, finance, internet services, education, sports, entertainment), leans unmistakably towards a relaxation of restrictions on foreign investment, and for Chongqing, China's foremost producer of automobiles, it is likely to have a favorable effect.

Furthermore, some sectors that are sensitive for China (finance, communications, culture, education) have been dropped from the newly revised negative list, and as the Chinese government intends to assess the risk involved in relaxing restrictions in these sectors by trialing them in the free trade zones before opening up these sectors nationwide, the Chongqing Pilot Free Trade Zone is expected to play a lead role in the opening up of China's market.

As a Japanese general trading company, Mitsui & Co. has been active in Chongqing from an early stage and has developed several projects in the city, including the Chongqing Monorail, the Liangjiang New Area project, and the 7-Eleven project. We have also been participating in efforts to provide greater convenience for users and consumers by taking advantage of China's One Belt, One Road initiative to shorten logistics routes in Asia, Europe, and within China. In a recent trial run, herb tea was transported from Germany to Chongqing via the Chongqing-Xinjiang-Europe Railway, and then by air to Japan.

We believe that the Chongqing Pilot Free Trade Zone can establish superiority over the other pilot free trade zones that preceded it by complementing other national projects such as the One Belt, One Road initiative and the Yangtze River Economic Belt. We hope that the Chongqing Municipal Government will promote concrete initiatives in this area with Mitsui & Co. and other members of the CMIA (Chongqing Mayor's International Economic Advisory Council). The key to the future development of Chongqing lies in a combination of two tripartite structures, one being the "Chongqing Pilot Free Trade Zone", the "One Belt, One Road Initiative", and the "Yangtze River Economic Belt", the other consisting of the "Chongqing Municipal Government", "local companies", and "CMIA members".

Differentiated Development of the Chongqing Pilot Free Trade Zone in an Era of Exploration, Openness and Innovation

By Claudio Facchin

President, Power Grids Division and Member of the Group Executive Committee of ABB Ltd, Switzerland

In recent decades, the twin forces of globalization and urbanization have combined to strengthen cities' roles as the engines of economic growth and development as well as centers of global trade. Coastline cities with accessible harbors have been able to position themselves as global transit hubs and gateways to interior regions, dramatically adding to their economic clout and appeal.

For interior cities, growth, expansion and attracting foreign investment has been more of a challenge. Chongqing is the largest industrial city in southwest China and is one of the country's traditional industrial bases. Its automobile, iron and steel, aluminum and other heavy industry sectors accounted for more than 70 percent of the municipalities' gross industrial output. In recent years, Chongqing has seen strong growth in computers, electronics, telecommunications equipment and related industries. In 2016, for example, one-third of world's laptops was produced in Chongqing.[1]

The creation of the Pilot Free Trade Zone (PFTZ) in April 2017 will give the city a significant boost. However, if Chongqing is to develop into a hub to rival other free trade zones, such as Shanghai, Guangdong, Tianjin and Fujian, it will need to embrace digital technologies to drive manufacturing and services.

Chongqing's ambition comes at a time when data and information flows are exerting a larger impact on GDP growth than trade in goods.[2]This is mainly driven by the increased availability of data, ubiquitous connectivity between smart devices and people, and the exponential growth in processing power. A recent report by the McKinsey Global Institute (MGI) states that digital technologies that reduce the cost of production and distribution are transforming global trade in three ways. Firstly, through the creation of purely digital goods and services; secondly, with "digital wrappers" that allow multiple existing frames of data to be wrapped together into a single entity that can be more efficiently managed through a lesser amount of overhead and enhance the value of physical flows - and thirdly, with digital platforms that can facilitate cross-border production and exchange.[3]

Most advanced and innovative enterprises have embraced the above to stay competitive, drive costs, enhance productivity and optimize lead times for products and services. At ABB, we have implemented ABB Ability™ – a unified, cross-industry digital capability – extending from device to edge to cloud –with devices, systems, solutions, services, and a platform to help drive digitalization and connect to the full

[1] *http://money.163.com/17/0117/05/CAV7UIBC002580S6.html*
[2] *http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/digital-globalization-the-new-era-of-global-flows*
[3] *http://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/global-flows-in-a-digital-age*

power of the Industrial Internet of Things. ABB Ability™ helps customers in utilities, industry, transport and infrastructure develop new processes and advance existing ones by turning data insights into direct action. This includes performance management solutions for asset-intensive industries; control systems for process industries; remote monitoring services for robots, motors and machinery; control solutions for buildings, electric-vehicle charging networks and offshore platforms, and beyond. Within this capability, smart assets and devices are equipped with sensors, which enable them to "communicate" to advanced industrial internet platforms for data analysis, providing real time information to operators and users like never before.

Executing *Differentiated Development of The Chongqing Pilot Free Trade Zone* could embrace a similar approach, capitalizing on the learnings, experiences, discoveries and solutions already made available by leading technology providers and users. Creating an open, reliable and secure interconnected environment will be the basis for Chongqing's advancement and development in this *Era of Exploration, Openness and Innovation.*

Chongqing's ambitions also align with China's central government's plans to develop the western part of China and the Yangtze River Economic Belt while advancing the "Belt and Road Initiative." This means that the land-locked city of Chongqing is now on the main overland trading route between east and west China.

Chongqing as a manufacturing powerhouse

Chongqing is already a successful manufacturing powerhouse. In 2016, Chongqing Municipality reported 10.7% growth in GDP,[1] and was ranked eighth of China's top 10 best-performing first and second tier cities that same year. In the first half of 2017, Chongqing took the national lead in economic growth among 25 provincial-level regions that had released their GDP figures, with a double-digit growth of 10.5%.[2]

The Action Plan of Chongqing Smart Manufacturing 2017 is targeting a total output value of RMB 20 billion in smart equipment manufacturing, 33% higher year-on year; 2,500 industrial robots, with a more than 50% increase in the value brought by the robotics industry; and 3,500 computer numeric control machines, with more than a 10% increase in the value brought by this sector.[3]

However, Chongqing's smart manufacturing is still in its infancy, and we have yet to see the full use of the digital connectivity and advances in data analytics that are available today. In a survey by China's Ministry of Industry and Information Technology, Chongqing's "readiness ratio for smart manufacturing" lagged behind the national average.[4]The city is in need of upgrades to its manufacturing industries, which have been the backbone of its economy for more than five decades.

[1] *http://www.globaltimes.cn/content/1034636.shtml*
[2] *http://news.xhby.net/system/2017/07/26/030717447.shtml*
[3] *The Action Plan of Chongqing's Smart Manufacturing 2017; http://wjj.cq.gov.cn/upload/20170426101308514.doc*
[4] *http://www.cspiii.com/gd/2017-02-04-3520.html*

The potential of the free trade zone in energy

The Chongqing PFTZ spans nearly 120 square kilometers and comprises three sub-zones, each of which focuses on different industries. Its development objectives for the next three to five years include overseeing the construction of an international logistics hub, a port and also an inland open-economic highland that are designed to meet the goals outlined by both the "Belt and Road Initiative" and the "Yangtze River Economic Belt" development program.

ABB is a pioneering technology leader in industrial digitalization with the ability to apply digital technologies and software to industrial facilities and equipment, including our ABB Ability™ digital solutions and services.

The following three cases show how ABB has used digital technologies to transform traditional industries and can offer insights into how Chongqing can deploy similar technologies to develop its three subzones. This could help Chongqing differentiate itself both in China and as a global manufacturing and trading hub.

- **Applying technology: The emergence of smart factories**

Rising costs, increasing competition and a saturated market are now challenging Chongqing's manufacturing industries, which are regarded as the backbone of the real economy. When digital technologies are used for manufacturing, companies can achieve significant performance improvements, realize technological innovation and adapt new business models.

For example, in 'smart factories' or digitally enabled manufacturing, processes take place in real time, production is flexible and the entire value chain is automated from order to delivery. Production is monitored remotely and customer orders and manufacturing is handled automatically. Traceability is integrated into all stages of production, processing and distribution. Futuristic though this may sound, it has already been implemented in ABB's LV Installation Materials Co. Ltd. in Beijing with ABB's Manufacturing Execution Systems (MES).

MES can respond to customer orders in real time, enabling manufacturing system configuration to be set automatically according to customer needs. Automated assembly lines then assemble and test products with workers and machines. This seamlessly connects customer demand and manufacturing, resulting in shortened lead times and improved services. MES can also automatically generate production planning and scheduling based on real-time inventory levels so that new orders are generated as stock runs low or big orders are received, making operations more efficient. The status of the plant can also be monitored remotely with real-time reports and analysis for faster responses and actions.

More than 100 manufacturers across the world have applied ABB's MES to their production line. Surveys indicate that once the MES is fully operational, the average production cycle is shortened by 30%, productivity increased by 20% and operational costs lowered by 30%.

- **Applying technology: Automating logistics**

In 2014, 90% of export products manufactured in Chongqing were shipped east on the Yangtze River to coastal cities like Shanghai, where they were then exported to markets abroad. In past three years, Chongqing's transport connections have continually been developed and diversified as supply chains have shortened and local industries have moved up the value chain. Today, Chongqing is well connected with the outside world by road, rail and air.[1] The Guoyuan Port of Chongqing PFTZ is now China's largest pivotal port combining shipping with rail and highway transport, with a harbor capacity of 193 million tons of cargo and 4.1 million containers.[2]

The expansion of transportation networks makes the benefits of automating and digitalizing logistics ever more compelling – an intelligent logistics ecosystem, with sensors, cloud computing and big data, could exponentially increase efficiency, productivity and save costs. For example, a locally developed RFID-based luggage tracking system for the Chongqing Jiangbei International Airport has reduced logistics costs by RMB45 million in a year.[3] Radio-frequency identification (RFID) uses electromagnetic fields to automatically identify and track tags that are attached to objects and electronically store information.

At the 2017 Global Smart Logistics Summit, ABB showed how automation and digitalized solutions can increase efficiency and simultaneously reduce costs. ABB helped Cainiao, Alibaba's big data logistics company, cover 80% of its warehouse and logistics workflow across three major functions: storage, sorting and distribution. This fully automatic and flexible sorting system enabled the Cainiao distribution center to double handling speed and enhance handling capacity by 40%, while reducing costs by 35-50%.

- **Applying technology: Upgrading infrastructure through asset management and asset health solutions combined with wired and wireless critical communications networks**

There is a need in Chongqing to upgrade its infrastructure, including its utilities. The new PFTZ has already encouraged an influx of companies into the three sub-zones (Liangjiang, Xiyong and Guoyuan) including companies in high-tech and high-end manufacturing, producers of electronic products, as well as financial and e-commerce service providers. All require a reliable and high quality power supply.

Asset intensive installations, such as power plants, can work with smart software solutions. This technology can interpret real-time and historical data to provide operators with information that reduces downtime, increases reliability and gives customers an uninterrupted service.

For example, in Inner Mongolia, ABB was recently selected to deliver its ABB Ability Asset Health Center performance management software solution to the Inner Mongolia Electric Power Research Institute (IMEPRI), a subsidiary of Inner Mongolia Power (IMPC) in Hohhot. IMPC has provided electricity generation, transmission and distribution services for over 50 years to the Inner Mongolia Autonomous Region, which constitutes the third-largest land area among China's provinces. With growing

[1] *http://china.nlambassade.org/binaries/content/assets/postenweb/c/china/zaken-doen-in-china/chongqing/transport-and-distribution-in-chongqing--sichuan_sept-2014pdf*
[2] *http://www.chinadaily.com.cn/regional/chongqing/liangjiang/2017-07/07/content_30052892_2.htm*
[3] *http://www.ceh.com.cn/cjpd/2015/03/855001.shtml*

consumption and the boost in renewable energy, IMPC faces challenges in ensuring reliable delivery of power to the 24 million people in its province.

ABB's Asset Health Center at IMEPRI's Condition Based Monitoring lab will ensure the reliable operation of extra high voltage and high voltage transformers in the region's electric network. The new technology solution and connected devices provide actionable data that helps prioritize maintenance needs, assess risks, manage assets, reduce capital outlay, mitigate environmental impact, address regulatory needs and address safety threats.

One of the enablers of industrial digitalization is the communications network, which is a fundamental necessity in most modern industrial operations. Whether to control machines and production process, monitor fleet or robot operations, or control power distribution, without a sound communications network, these tasks will be mission impossible. This is especially true for mission-critical operations, such as grids. A secure, reliable and economic power supply is closely linked to a fast, efficient and dependable communications infrastructure. Digitalization provides opportunities for operational efficiencies and asset optimization, it also brings new complexities in maintaining these operations. With the increase of the number of connected devices, reliable communications networks with unparalleled performance and robustness based on special technology, protocols and software, become increasingly essential to maintain today's dynamic and complex digital electrical grids.

Chongqing's future

Until fairly recently, Chongqing's ambition to become a leading hub in the world's second-largest economy would have been unattainable given its location and competition from China's eastern seaports. However, with the advent of the Fourth Industrial Revolution, powered by digital technologies, and "Made in China 2025," the region finds itself with the means to drive its own development and transformation.

"Made in China 2025" is an initiative to comprehensively upgrade China's industries. It is inspired by Germany's "Industry 4.0" plan. At the heart of Industry 4.0 is intelligent manufacturing, or leveraging information technology to gain production efficiencies. In the German context, this primarily means using the Internet of Things to connect small and medium-sized companies more efficiently to global production and innovation networks so that they can not only engage more proficiently in mass production but also customize products easily and efficiently.

Chongqing's geographic location is now an advantage as it is along the Belt and Road, the Yangtze River Economic Zone and the Chongqing-Xinjiang-Europe International Railway. Chongqing must make the most of the opportunity to take advantage of the benefits conferred by the PFTZ to embrace the future as a digital powerhouse and trading hub in one of the world's most economically vibrant regions.

Strengthening the Value Proposition of Chongqing Pilot FTZ Introduction

By Manohar Khiatani

Deputy Group CEO of ASCENDAS-SINGBRIDGE Group

On 31 March 2017, China's State Council announced that it would establish seven new free trade zones (FTZs) across the country, adding to the existing four in the coastal areas of Shanghai, Tianjin, Guangdong and Fujian. The seven new FTZs started operating on 1 April 2017; three are located in the western part of China, namely, Shaanxi, Chongqing and Sichuan.

The decision to locate FTZs in inland and western China complements a larger initiative to accelerate the development of China's western region. It comes on the back of a national-level Belt and Road Initiative (BRI) that sees western China occupying an increasingly important and strategic role in connecting China with Central Asia and Europe. This increased focus and influx of resources will lend wind to the sails of western China's development. Chongqing is well-poised to be the symbol and gateway of an increasingly prosperous western region.

Chongqing's development and prospects are inextricably linked to the fortunes of the Western region. In 1997, it was designated a municipality directly governed from the Central. One of the objectives of this move was for the development of Chongqing to catalyze the development of the entire western region. Chongqing was viewed as a strategic hub that could combine the development synergies of the western region and the Yangtze River Economic Belt. These unique conditions allowed Chongqing to progress rapidly over the past two decades. It gained prominence for not only achieving but also maintaining some of the fastest growth rates in all of China. In 2016, Chongqing achieved a 10.7% growth in GDP, well ahead of the 6.7% that China achieved as a whole[1]. It also attracted USD 11.3 billion in FDI in the same year[2].In terms of industries, Chongqing is an integral part of the global laptop and automotive supply chains, with one in three laptops across the world being manufactured in Chongqing.

As the development of western China gains momentum, Chongqing needs to constantly re-invent itself to continue to play a leading role. Although it has done well in growing into a regional gateway over the past two decades, it must now be ready to raise its game by featuring more prominently on the global stage to become the unique and iconic gateway that a growing western China needs.

To this end, the establishment of Chongqing FTZ comes at an important time. We believe that by strengthening its value proposition in the areas of **connectedness, knowledge, trust and life**, Chongqing FTZ can play the dual roles of catalyst and

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[1] *"Guangdong's economy remains biggest, Chongqing leads growth" China Daily CN http://www.chinadaily.com.cn/business/2017-02/07/content_28126256.htm 7/2/2017. Web.*

[2] *Sharing of Development Opportunities (PPT), General Office of China (Chongqing) Pilot Free Trade Zone*

vanguard for Chongqing's development into a global city.

Connectedness

Connectedness is important for any aspiring global city. Connectedness goes beyond having good physical i.e. air, sea and road connections, or even trade and logistics infrastructure. It extends to building strong business networks and a global outlook and mindset.

The ability to connect has always been an important part in Chongqing's development. Goods from inland regions have been transported across China via the Yangtze and Jialing rivers since ancient times. Today, the Guoyuan Port complements the Chongqing-Xinjiang-Europe International Railway to transport river cargo from the central and western China regions via an overland route to Europe. This important and distinct value proposition was recognized when the Singapore and China governments jointly identified the Chongqing Connectivity Initiative (CCI) to be the third Government-to-Government project between China and Singapore.

The CCI aims to drive growth in China's western region by enhancing Chongqing's connectivity to western China, the rest of China, and the rest of the world. The four pillars of the CCI are Transport and Logistics, Finance, Aviation and Information and Communications Technology (ICT). Chongqing FTZ can tap on the CCI to strengthen its connectedness in these areas.

The core of the CCI's efforts to strengthen transport and logistics connectivity is the Chongqing Logistics Development Platform (CLDP). The CLDP aims to develop standards and practices to integrate different transport modes including river, railway and air to grow Chongqing into a multi-modal logistics hub. This complements specific measures to simplify customs procedures and clearances within the Chongqing FTZ. The CLDP could provide an overarching framework to guide the upgrade of airports, river ports and railway stations as well as the physical connections between these various transport nodes. It could also propose policy innovations, based on international best practices, using Chongqing FTZ as a pilot zone.

Under the finance pillar, the CCI plugs Chongqing into Singapore's strong international financial network. Corporates in Chongqing can issue RMB bonds in Singapore and repatriate the funds raised in full for the development of the western region. Equity investment funds in Chongqing can make direct investments outside of China, including in Singapore and the ASEAN region. 17 foreign banks are already present in Chongqing and there are specific measures within Chongqing FTZ to give more latitude to financial institutions to allow them to offer a wider range of products and services.

With stronger links to Singapore, corporates, funds and individuals not only gain access to more investment and financing opportunities outside of China, but also exposure and knowledge of dealing with global financial norms and requirements. This is important in accelerating the development of strong financial frameworks to support more sophisticated and diverse financial offerings in Chongqing, thus creating a virtuous cycle in strengthening Chongqing's financial sector.

Collaboration under the Aviation and ICT pillars is also taking shape. A thrice-weekly service between Singapore and Chongqing by the Chongqing-based airline West Air started in February 2017 on the back of a bilateral pledge to grow air connectivity between the two cities, thus enhancing trade and tourism flows. SG Innovate and Chongqing ICT Industry Investment Promotion Centre are working together to establish an innovation and entrepreneurship centre in Chongqing that will groom talent for Chongqing's start-up ecosystem and adopt incubation methodology from Singapore to be a springboard for firms from both countries to scale their businesses in China.

Enhancing connectivity will be a key part in Chongqing FTZ's success and the CCI can play an important part in

achieving this. The CCI accelerates the development of Chongqing FTZ by providing Singapore's best practices and frameworks as a reference and providing linkages to knowledge and funding. As a pilot and demonstrative zone, the Chongqing FTZ will allow for greater latitude and boldness in proposing policy innovations, thus enabling the CCI to realize its full potential.

Knowledge

A second value proposition that is increasingly important to global cities is knowledge. Knowledge drives growth, innovation and productivity. Economies must constantly create and harness new knowledge to remain competitive in a fast-paced and disruptive world where the only constant is change.

To be a leading hub of the western China region, Chongqing must aspire to position itself as the region's knowledge and learning hub – a hub where knowledge is not merely created but also harnessed to generate value. Chongqing FTZ can be positioned as a place where top international and local talent is attracted to, developed and retained. It should also be a place where the outcomes of research and development can be translated into tangible benefits or economic value.

In Singapore, for example, the government has put in tremendous effort over the last 15 years to create a strong knowledge and innovation ecosystem that can interact and work together closely. For instance, the One-North development helmed by the JTC Corporation, a statutory board under the Ministry of Trade and Industry, was built to support the growth of Biomedical Sciences, ICT, Media, Physical Sciences and Engineering innovation in Singapore. It is a 200-hectare development strategically positioned in the heart of Singapore designed to host a cluster of world-class research facilities and business park space as well as education institutes, residences and recreational amenities. One-North provides a work-live-play-learn environment that is conducive for innovation to flourish. The government, working through various agencies, made the effort to bring together leading universities, research institutes, industry players and entrepreneurs in One-North so that ideas and problems can be exchanged and cross-fertilized.

The government is required to play this role of coordinator as academia and business tend to operate separately and the cross-pollination of ideas does not come naturally. Similar, Chongqing FTZ would need to take steps to ensure that the benefits of knowledge and research are captured and translated to optimal economic outcomes.

The Chongqing pilot FTZ could put in place policies to attract more good universities and research institutes to set up research facilities or satellite campuses in the FTZ. This would help to attract talent from other parts of China and around the world as well as grow a pool of local talents. Chongqing FTZ could also serve as a testbed area for innovative new technologies or policies in areas such as automated vehicles, new service platforms and manufacturing technologies. If regulations in the FTZ or designated zones within the FTZ could be made more flexible for pilot testing and special approvals could be granted to companies with new ideas and products, innovation and entrepreneurship would flourish.

This climate of openness to innovative ideas and vibrant exchanges between academia and industry can cascade to firms and entrepreneurs beyond the boundaries of the FTZ, to create a more forward-looking and global outlook across Chongqing

municipality. Positioning Chongqing FTZ as a leading hub for learning and knowledge creation as well as research and development will strengthen Chongqing's appeal as a global city.

Trust

Another important value proposition is Trust.

Trust refers not only to the protection of investors and their assets – both intellectual and physical. Trust is also about consistency and continuity in government policies as well as understanding and responding to evolving business needs.

Knowledge is intimately connected to trust. When knowledge becomes an important tool in economic development, the protection of knowledge correspondingly becomes more important. The protection of intellectual property is crucial to any economy keen to bring in top-tier creative or scientific talent or the research and development facilities of global companies. China has made significant progress in the intellectual property domain over the last few years but more needs to be done. If Chongqing FTZ can convince investors that it can provide a highly secure environment for research and development, it would gain a significant edge in attracting more high-value foreign investments.

Similarly, policy consistency and continuity is another important area that foreign investors consider, particularly when looking at high-value investments or investments requiring large tranches of capital. Such investors take a long-term view. They do not want to have to frequently re-locate their investments and deal with consequential operational issues such as hiring new staff and re-training them. They therefore need to be confident that policies will not change often and the government would honor earlier commitments. The building of strong institutions would reinforce confidence to investors by putting in place appropriate policy frameworks to support these commitments to investors.

If Chongqing FTZ can develop a reputation for having a pro-business environment marked by Trust, it would be a huge advantage.

Life

To distinguish itself from other FTZs and Chongqing from other major cities in the western region, Chongqing FTZ should also position itself as a city with Life - a global city with an international outlook but with an abundantly rich and proud history.

Chongqing's cosmopolitan character dates back to imperial times when its vibrant trading scene attracted businessmen and traders from all over China. In more recent history, it has played an important role in the birth of modern China and was one of the country's key industrial centers in China's economic transformation. Signs of Chongqing's long and colourful history can be seen in many parts of the city - from the clan houses that date from centuries back to the now-abandoned old factories and printing houses that dot its city center. Chaotianmen, where the Yangtze and Jialing rivers converge, was where imperial edicts were received in ancient times. This is not yet well-known internationally.

Chongqing can use these gifts from the past to its advantage. The social and cultural vibrancy of a city can set it apart from other cities and is often correlated with its economic dynamism. The Chongqing government could consider revamping the Yuzhong district while preserving old buildings and maintaining its distinct features, and putting in modern conveniences and enhancing transport infrastructure to improve accessibility. Chaotianmen, where large scale development is taking place, could be positioned as the face of a modern Chongqing.

Singapore similarly sought to balance the old and new in creating a unique and distinctive city landscape. Along the banks of the Singapore River stand the old warehouses and colonial-style buildings that made our place in world history as one of the most important trading hubs in the East. Today, these buildings are restored and converted into restaurants, cafes, theatres and museums, maintaining their original facades with information signs explaining their earlier functions dotting the entire Clarke Quay district. At the mouth of the Singapore River stands the iconic Marina Bay Sands development – an integrated development sitting on a 570,000 square meters waterfront site, with retail, commercial and hospitality components. It has been one of Singapore's most prominent icons since its completion in 2010. The entire area is served extensively by footpaths, river cruises, bus and light transit routes, and is one of the most symbolic and vibrant areas in Singapore.

Chongqing can similarly meld its colourful history with its ambitions to be a global forward-looking city through careful urban planning and conservation efforts. A revamped Yuzhong District and Chaotianmen can be promoted across the globe as the face of Chongqing and the first port of call for business travelers and tourists alike. This image is important in giving Chongqing a unique character and to distinguish it from other Chinese cities, in the minds of investors and the global talent that Chongqing wishes to attract.

A focus on Life would reinforce Chongqing's positioning as a global city with an international outlook and proud history.

Conclusion

The Chongqing pilot FTZ is a demonstrative zone for Chongqing in the same way that Chongqing is a vanguard and icon for the rest of western China. Creating a cosmopolitan, vibrant and iconic Chongqing FTZ will set the tone of development for the rest of Chongqing and set it apart from other Chinese cities. This can be achieved by strengthening the value propositions of Connectedness, Knowledge, Trust and Life.

About Ascendas-Singbridge

Ascendas-Singbridge Group is Asia's leading sustainable urban and business space solutions provider with Assets Under Management exceeding S$20 billion. Jointly owned by Temasek Holdings and JTC Corporation through a 51:49 partnership, the Group undertakes urbanisation projects spanning townships, mixed-use developments and business/industrial parks. Headquartered in Singapore, we have projects in 28 cities across nine countries in Asia, including Australia, China, India, Indonesia, Singapore and South Korea.

In China, we have established a strong record over the past two decades. We first forayed into China with the flagship Ascendas-Xinsu project in the Suzhou Industrial Park in 1995. Today, we have deepened and expanded our footprint with urban developments across 11 key cities in China. Our portfolio in China includes the Sino-Singapore Guangzhou Knowledge City and the Sino-Singapore Jilin Food Zone. As China develops and evolves, we have similarly fine-tuned and adapted our business space solutions and offerings to meet the changing demands of Chinese businesses and consumers.

In Chongqing, we are partnering CapitaLand to develop the Raffles City Chongqing in the heart of the city. We are confident that this development can develop into an iconic symbol of Chongqing as it forges forward to become a world-class city.

Utilizing the Chongqing Pilot Free Trade Zone to Strengthen Industrial/Logistics Functions

By Koichi Miyata

Chairman of the Board of SMFG and SMBC

Summary

1. Introduction
2. Present status of, and future issues for, industry in Chongqing
3. Utilizing the FTZ to strengthen industrial/logistics functions
4. Conclusion

Main topic: Pursuing a path to development by differentiating the Chongqing Pilot Free Trade Zone

Sub-topic 1: (Search) Forerunner and latecomer advantages peculiar to the Chongqing Pilot Free Trade Zone

- How can the Chongqing Pilot FTZ be differentiated from the Sichuan, Shaanxi, and Hubei Pilot FTZ concurrently in operation, and how can a cooperative framework be constructed while avoiding resource competition?
- How can the Pilot Free Trade Zone be used to further expand/strengthen industry in Chongqing? How can Chongqing as an open inland area maintain its trade/logistics advantages as an inland city and develop as a centre for international financial services?
- The China-Singapore (Chongqing) Demonstration Initiative on Strategic Connectivity will be a pioneering and experimental initiative for the Chongqing Pilot Free Trade Zone. How can such an initiative be used to generate synergy from pilot free trade zone policies and create a development model unique to Chongqing?

Summary

The Chongqing Pilot Free Trade Zone should be utilized to (1) take advantage of existing industrial clusters to make a shift to next-generation, high-value-added manufacturing bases and (1) leverage the geographical advantages that have enabled Chongqing to prosper as a key traffic hub to strengthen its logistics functions, with the aim of bringing sustained development to Chongqing.

Effective "forerunner" efforts pursued before other FTZ to turn Chongqing into a huge development/manufacturing base for next-generation automobiles by fully utilizing the city's industrial/logistics advantages might include (1) actively attracting relevant companies from inside and outside China, (2) flexibly implementing R&D and demonstration projects, and (3) offering deregulation and tax breaks that would help attract highly skilled human resources. A system allowing foreign companies to obtain the various authorizations/licenses needed in a one-stop fashion would be valuable in attracting such companies.

As one "latecomer" effort making use of prior successes achieved at other FTZ, we would like to suggest the deregulation of leasing operations, which provide financial support for the introduction of high-end industrial machinery and sophisticated transport equipment/logistics facilities. More specifically, an environment should be created to facilitate the entry of foreign logistics companies by (1) allowing cross-border RMB business to diversify the capital procurement methods available to lease companies, (2) accepting lease payments in foreign currencies, and (3) incorporating accounts receivable factoring. In conjunction with these, (4) being the first in China to introduce a lease credit insurance program that guarantees against the credit risks of lease agreements with small and medium-sized enterprises (SMEs) would likely stimulate capital investment by SMEs.

1. Introduction

Chongqing, a central city in the upper reaches of the Yangtze River, has historically served as a major traffic hub, and is one of four centrally-controlled municipalities boasting diversified logistics infrastructure. A wide range of manufacturers, including companies in the automotive industry, have clustered here. Chongqing's real GRP growth rate year-on-year for 2016 was 10.7%, the highest among all provinces and directly-administered cities in China, and the city has maintained double-digit growth for 15 consecutive years.

Even greater growth potential is anticipated for the future, and expectations are high for (1) the future expansion of intra-regional consumption as the middle class grows and (2) the improvement of infrastructure through the coordinated pursuit of three national projects: the Great Western Development Strategy, the Belt and Road Initiative and the Yangtze River Economic Belt strategic framework.

Given this context, we believe that Chongqing should seek to realize sustained growth by using the Chongqing Pilot Free Trade Zone (hereinafter "Chongqing FTZ") established in April 2017 to strengthen its industrial/logistics functions.

In considering methods for utilizing the Chongqing FTZ, this paper will consider (1) "forerunner" efforts implemented

ahead of other FTZ and (2) "latecomer" efforts that make use of prior successes from other FTZ.[1]

2. Present status of, and future issues for, industry in Chongqing

Let us begin by examining the current status of, and future issues for, industry and logistics in Chongqing.

(1) Industry at present

Chongqing hosts a diverse range of manufacturers, including companies that produce automobiles, electronic equipment, industrial robots, medical equipment and pharmaceuticals, and liquid crystal panels. Particularly prominent are the many foreign automobile manufacturers – e.g., GM, Ford, Suzuki, Isuzu, and Hyundai – that have established joint ventures in Chongqing with local manufacturers to produce automobiles, commercial vehicles, and motorcycles. In addition, Quanta, Wistron, Foxconn, and other OEM manufacturers contracted by Hewlett-Packard and Acer are manufacturing personal computers and PC peripherals in the city. Chongqing's automobile production reached 3.16 million in 2016, the highest in the country, and the city has become of the world's largest production bases for notebook PCs.

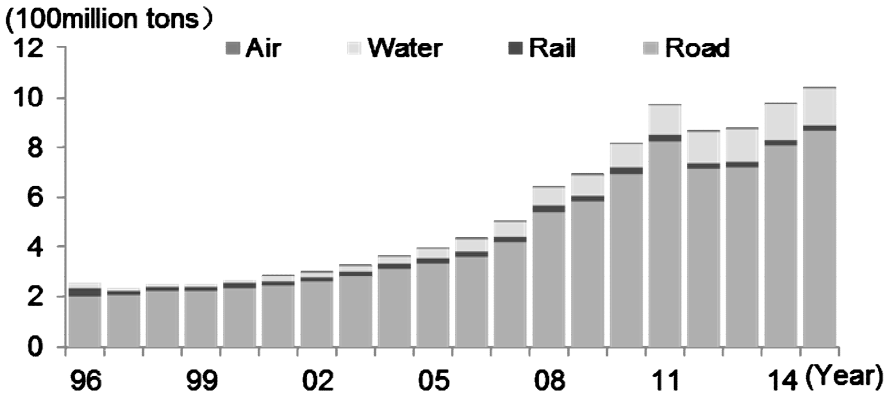
Among the reasons prompting this wide range of manufacturers to set up operations in Chongqing are (1) the city has robust infrastructure due to its long-established position as a major traffic hub, (2) major companies have been relocating to inland cities due to surging personnel costs in coastal areas, and (3) systems have been put in place to make the city a logistics hub, including the first inland bonded zone created in 2008.

(2) Present status of logistics and future infrastructure improvements

Transportation by road, water, rail and air are all available in Chongqing, and the promotion of processing trade has encouraged the formation of industrial clusters, which in turn has expanded the volume of logistics. Chongqing handled 1.04 billion tons of transport in 2015, representing a four-fold increase over the past 20 years. Road transport came to 870 million tons (4.3 times the 1996 figure), accounting for 83.7% of the whole, followed by Yangtze River waterway transport at 150 million tons (6.0 times the 1996 figure). Transport as a whole, including rail and air transport, is in an expansionary trend (Figure 1).

[1] *This paper defines "forerunner" advantages as those undertaken ahead of other FTZ/regions to achieve differentiation, and "latecomer advantages" as the further expansion of existing advantages through completed deregulation and the utilization of successful practices from other FTZ.*

(Figure 1) Cargo transport volume in Chongqing by transport means



(Sources: National Bureau of Statistics of China, Civil Aviation Administration of China)

Road, water, rail and air transport infrastructure conditions are as follows.

The logistics infrastructure for road transport includes a total of about 3,000km of highways in Chongqing as of the end of 2016. Construction has begun on four highways in fiscal 2017 that should, upon completion, increase total highway length by 239km.

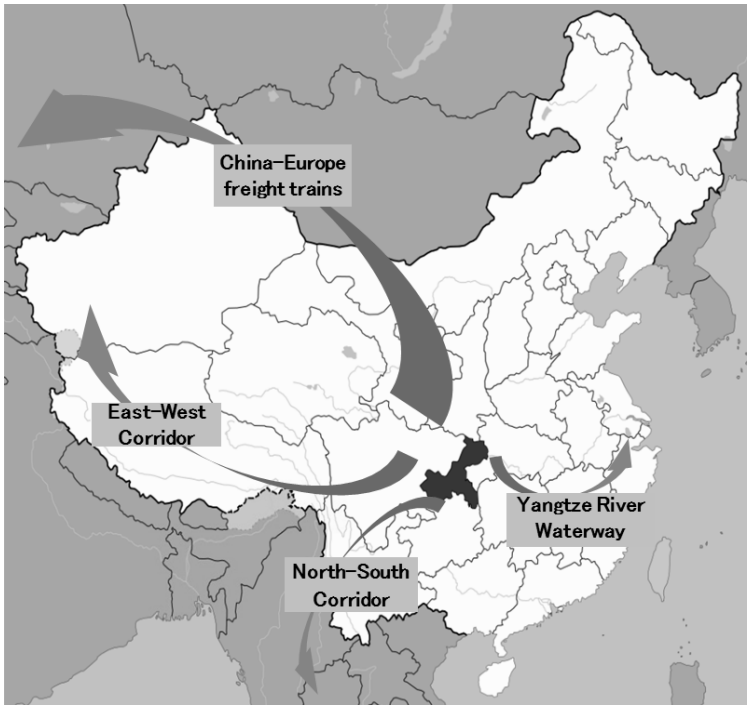
Water transport utilizes the Yangtze River, which enables 4,000- to 5,000-ton ships to navigate downstream from Chongqing, carrying cargo to Shanghai in about one week. The Chongqing Municipal Government has put forth a plan to increase container handling volume from 540,000 TEU (2015) to 800,000 TEU by 2020, and it is enhancing harbour functions by, among other steps, increasing the number of container berths.

Scheduled rail transport along the Yu'Xin'Ou Railway, a freight rail route opened in March 2011 connecting Chongqing with Duisburg (an industrial city in western Germany) has reduced transport time to about two weeks (maritime transport takes about two months) and cut transport costs to about one-fifth those of air transport. The Chongqing Municipal Government has also devised a policy to increase container handling volume on the Yu'Xin'Ou Railway from 47,000 TEU (2015) to 80,000 TEU by 2020, and transport capacity from Chongqing is expected to grow.

Chongqing Jiangbei International Airport, the city's air transport hub, was opened in 1990, and has since undergone four separate expansions/improvements. The airport managed about 250,000 aircraft departure/arrivals in 2015, serving about 36 million airline passengers (the ninth highest level in the country) and handling around 320,000 tons of air cargo. Further improvements are set to be made to increase the number of air passengers to about 45 million and the air cargo handled to about 1.1 million tons by 2020.

As these improvements/expansions are being made to logistics infrastructure, Chongqing would be well advised to strengthen its industrial/logistics functions by taking advantage of its geographical advantages: (1) its role as a hub for logistics to ASEAN in collaboration with Yunnan Province (North-South Corridor), (2) its role as a logistics hub linking up coastal regions with the interior (East-West Corridor), and (3) its role as a logistics hub with access to the Yangtze River Waterway (Figure 2).

(Figure 2) Utilizing Chongqing's geographical advantages to strengthen industrial/logistics functions



Source: Data from various materials

(3) Industrial/logistics issues in Chongqing

There are three key issues facing Chongqing in terms of industry/logistics.

First is the question of whether the city can make a dynamic shift to next-generation automotive technology (energy saving/CO_2 emissions reducing technologies, self-driving vehicles). There is now fierce competition in the global automotive industry to develop eco-friendly electric vehicles (EV), plug-in hybrid vehicles (PHV), and hydrogen vehicles and (2) next-generation self-driving vehicles fully equipped with communications functions and AI. With EV and gasoline-powered vehicles having very few compatible parts between them, lagging development would inevitably have a significantly adverse impact on the local automotive parts industry. Given that electronic equipment companies are nearly as prevalent as automobile companies in Chongqing, the city should consider approaches that puts its strengths to good use, including assembly (modular) EV production whereby manufacturers (OEM) assemble and then ship batteries, motors, inverters and other parts.

Second is the question of whether the labour-intensive personal computer assembly industry can make the transition to higher value-added upstream processes (CPUs, memory, and liquid-crystal panels). It has been noted in recent years that the manufacturing industry generates considerable added value though product planning, development of constituent parts for those products, sales and after-sales service, and that only limited added value is generated through parts assembly and similar manufacturing processes (the "smile curve"[1]). It is projected that competition with ASEAN countries and other emerging

[1] *See the following document: https://www.brookings.edu/wp-content/uploads/2012/04/20100609_china_global_steinfield.pdf*

countries over labour-intensive operations will intensify, so Chongqing should leverage existing industrial clusters to progress to operations with higher added value.

Third is the question of whether Chongqing can cope with higher logistics volume and increased diversity and sophistication in logistics needs. Expansion of the middle class is stimulating consumption among residents, giving rise to expectations of further increases in logistics volume. The growing variation in consumer needs accompanying a rise in living standards will also likely increase the breadth and sophistication required of logistics in terms of quality (time, temperature control, etc.). Suitably satisfying these quantitatively and qualitatively greater logistics needs is an essential element in realizing sustainable economic growth, so improvements must be made to logistics efficiency and transport quality (e.g., improving "cold chains" that maintain the freshness of perishable food products during transport).

3. Utilizing the FTZ to strengthen industrial/logistics functions

In light of the above, we will now examine (1) "forerunner" efforts undertaken ahead of other FTZ and (2) "latecomer" efforts utilizing successes already achieved by other FTZ as means for utilizing the FTZ to strengthen Chongqing's industrial/logistics functions.

(1) "Forerunner" advantages

It is essential that Chongqing's industrial/logistics advantages be fully leveraged if the Chongqing FTZ is to enjoy "forerunner" advantages ahead of other FTZ.

Concretely, Chongqing should make use of the clusters of automotive and electric machinery companies to establish a major development/manufacturing location for next-generation vehicles. To that end, the FTZ should be utilized to (1) actively invite companies inside and outside China that are involved with developing next-generation vehicles, (2) provide subsidies for R&D and demonstration products and institute tax breaks, and (3) ease requirements when attracting highly-skilled human resources. A system allowing one-stop acquisition of authorizations would also be useful in attracting foreign companies.

Deregulation should also be pursued ahead of the rest of the country that would enable demonstration testing for completely autonomous vehicle operation. As self-driving vehicles must operate under all conditions – in differing weather, terrain, and traffic patterns – flexibility is needed in laws and regulations. Accordingly, Chongqing should give consideration to the "regulatory sandbox" approach being examined/adopted in Japan and other countries and create a framework that, within certain constraints, does not require confirmation/coordination based on existing regulations, laws, or ordinances (Box 1).

(Box 1) Overview of Japan's regulatory sandbox approach

Japan has a policy of introducing "regulatory sandboxes," now being introduced in other countries, within National Strategic Special Zones that allow for deregulation at the initiative of national government to enable smoother and more rapid demonstrations of "near-future technology" such as completely autonomous vehicle operation on public roads and drone use.

The revised Special Zone Law passed in June of this year stipulated that a systemic environment would be formulated and then put in place enabling demonstrations of near-future technology within a year. One specific example of this is the provision of mobility services via unmanned autonomous vehicles near Tokyo International Airport by the time of the 2020 Tokyo Olympic and Paralympic Games.

At the same time that these regulatory sandboxes are being introduced, Japan is seeking to establish a "Near-Future Technology Demonstration One-stop Centre" (name tentative) to offer consultations and information on relevant legal procedures to private business operators and, when necessary, to carry out these procedures on their behalf.

(2) "Latecomer" advantages

We propose that leasing operations be deregulated, as they have been at Shanghai FTZ and elsewhere, to gain one "latecomer" advantage that follows up on the successes already achieved at other FTZ.

The active installation of high-end industrial machinery will be necessary to boost the value added by Chongqing's industrial clusters. Steps must also be taken to increase the sophistication of transport systems with transport machinery, logistics warehouses, and logistics infrastructure able to suitably meet quantitatively and qualitatively more challenging logistics needs.

In pursuing such efforts, it is important to boost the level of Chongqing as a whole by ensuring that capital investments are made not only by large companies such as state-owned companies and foreign companies but also by local SMEs and individual entrepreneurs, but procuring the funds to purchase high-end equipment and large transport machinery poses a serious burden for SMEs. Purchasing through lease agreements could be considered as one way to reduce this burden but, with China's lease companies procuring the majority of their capital from banks within China and facing financing restrictions, the conditions are not in place to enable SMEs to purchase equipment by lease when needed.

The Guangdong FTZ has already deregulated cross-border renminbi-denominated loans and foreign-currency bond issue, and this would seem an effective approach for the Chongqing FTZ to adopt as well in order to diversify the fund procurement methods available to lease companies and to encourage capital investment by SMEs (Figure 3 on the following page). Together with expanding the means by which SMEs can procure capital, an issue of concern to the national government as well, this approach would improve Chongqing's position as an international financial service center, one of the Chongqing FTZ's objectives.

Deregulation of the leasing business is already being undertaken at certain other FTZ, and those deregulation efforts that have proven effective in attracting foreign companies should be actively adopted. Specifically, if lease companies registered in the Chongqing FTZ are allowed to engage in delivery[1] of lease fees in foreign currency to hedge against exchange risks and lower procurement interest rates, earlier capitalization of accounts receivable, and handling of factoring operations[2] to preserve limits to procurement via foreign bonds, an environment would be created to facilitate the entry of foreign logistics companies.

[1] *Under this scheme, a leaseback agreement is signed between the lease company and the customer, and the lease fee is accepted from the customer in foreign currency in exchange for the leaseback amount being paid to the customer in renminbi. This arrangement makes it possible to procure funds at relatively lower interest rates than with local loans in renminbi, while the payment being in foreign currency (US dollar, euro, yen) allows for a hedge against exchange risk.*

[2] *Accounts receivable factoring operations in renminbi offer the benefits of diversifying fund procurement methods by earlier capitalization of accounts receivable in China, and preserving foreign bond limits.*

(Figure 3) Examples of deregulation of leasing business in FTZ in Shanghai, Guangdong and Tianjin

	Shanghai	Guangdong	Tianjin
Fund procurement and investment	・Lease payments in foreign currency are permitted when 50% or more of the funds for purchasing the leased property are procured through foreign-denominated loans (foreign-denominated leases)	・Permits cross-border renminbi operations (loans, asset/collateral transfers, etc.) by the lease company with financial institutions in Hong Kong and Macau ・Cross-border foreign currency fund procurement is permitted through the issue of corporate bonds/shares for projects to lease aircraft, ships, and large-scale machinery/equipment	・Permits fund procurement by using accounts receivable factoring
Favorable treatment	・Subsidies for establishing new lease companies in the FTZ ・Subsidies toward the total amount of financing leases provided to companies in the FTZ ・Subsidies for the purchase of large-scale lease property ・Income tax deductions and financial incentives for financial personnel who have contributed to intra-regional development	・Subsidies for capital increases/asset purchases through the head offices of financial lease companies within the FTZ ・Income tax deductions and financial incentives for financial personnel who have contributed to intra-regional development	・Subsidies for establishing new lease companies in the FTZ ・Corporate tax breaks (up to five years) for new lease companies in the FTZ ・Income tax deductions and financial incentives for financial personnel who have contributed to intra-regional development

(Sources) Notifications from various FTZ

(Box 2) Present Status of Lease Transactions in China at Present

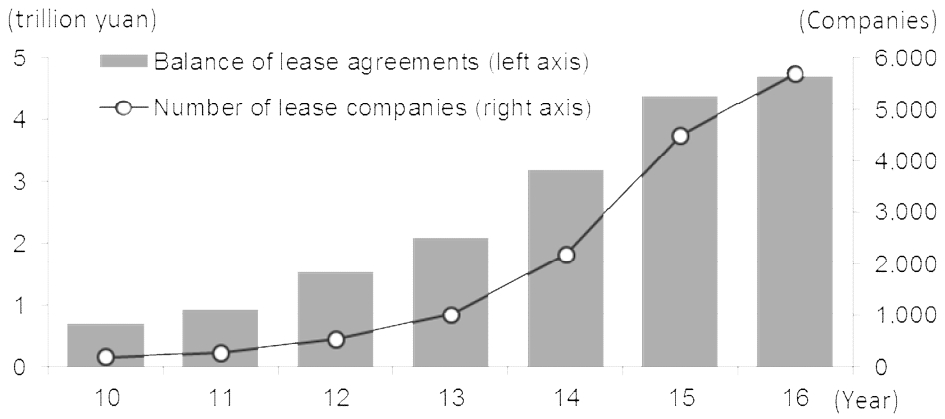
Chinese lease companies continue to expand because of the growing need for funds due to economic growth, because the ban on establishing foreign lease companies with independent capital was lifted in 2005, and because of deregulation of leasing companies in various FTZ since 2013 (reference figure on next page).

Lease companies can be divided into three types: financial institution-affiliated, domestic company-affiliated, and foreign company-affiliated. Given the difficulty of assessing the risks of targeted assets and local suppliers, the leasing of high-value items such as aircraft, ships, and infrastructure is exclusively done by financial institution-affiliated and domestic company-affiliated lease companies at present, with foreign company-affiliated lease companies mostly used for leasing relatively low-priced production equipment, construction equipment and medical equipment. The mainstay of the leasing business in China is not operating leases but financing leases.

Among the reasons for this, especially among large state-owned companies, are that (1) leaseback transactions in which leases for existing facilities are received immediately after ownership rights for these facilities are sold to a lease company for the purpose of improving cash flow, and (2) the penetration of operating leases that require remaining value be determined has been lagging because of an underdeveloped secondary market for leased equipment.

Lease transactions offer lessees (equipment borrowers) such benefits as (1) there is no need to set aside significant funds for initial investment, (2) it is possible by setting lease periods to regularly introduce cutting-edge equipment incorporating the latest technical innovations, and (3) the framework of loans from financial institutions can be preserved. Lessors (equipment lenders) also benefit from reducing their capital recovery risk and utilizing idle/excess assets.

(Reference figure) Balance of lease agreements and number of lease companies in China



(Source) China Financial Leasing Industry Report

To solidify these "latecomer" advantages, deregulation/incentive measures modelled on examples from other countries should be introduced for lease companies in conjunction with existing efforts ahead of the rest of China.

In concrete terms, adopting the lease credit insurance introduced by the Japanese government in 1973 would seem an effective means of promoting capital investment through lease agreements by small and midsize companies (Figure 4 on the next page). This is a government-run insurance system to encourage bottom-up technical innovation in the manufacturing industry that has the national government shoulder part of the credit risk stemming from lease agreements with SMEs; if the national government concludes an insurance policy with a lease company to cover a lease agreement and the lease is not paid by the lessee SME due to bankruptcy, etc., the national government will compensate the lease company for 50% of the loss incurred.

(Figure 4) Examples of lease utilization policies implemented by the Japanese government

Year implemented	Government lease utilization policy	Description
1967	System lease	・ A preferential interest rate is applied toward part (30-50%) of the purchase price when purchasing specified equipment through a leasing company
1973	Lease credit insurance	・ The government assumes 50% of credit risk for machinery leases to SMEs
1984	SME New Technology Investment Promotion Tax System (Mechatronics Investment Promotion Tax System)	・ A 7% tax deduction is available on 60% of the total lease expenses for electronic equipment leases by a SME or an individual entrepreneur totaling 2.1 million yen or more

(Sources) Various materials

Also worth considering is the introduction of the low-carbon equipment lease credit insurance[1] being offered in Japan. This is a system in which a private group (Green Investment Promotion Organization, an institution designated by the Minister of Economy, Trade and Industry) shoulders 50% of the credit risk, similar to lease credit insurance, for agreements to lease low-carbon equipment such as solar-powered equipment and high-efficiency lighting equipment. Establishing a system for leases of low-carbon equipment (including subsidies and tax breaks for lease companies) ahead of other locations will help Chongqing propel the building of a low-carbon society in China and boost energy efficiency.

Offering this insurance program to lease companies registered in the Chongqing FTZ will encourage small and midsized companies to install cutting-edge equipment, and striving to improve the competitiveness of intra-regional industry as well as production efficiency/environmental performance is crucial.

4. Conclusion

For Chongqing to achieve sustained development in future, the city will need to (1) take advantage of existing industrial clusters to make the shift to next-generation, high-value-added manufacturing, and (2) strengthen logistics functions by further improving the logistics infrastructure that has long helped Chongqing prosper as a key traffic hub, and the establishment of the Chongqing FTZ presents a singularly unique opportunity to realize these aims.

Japanese companies possess outstanding know-how and technology – in industrial and logistical matters as well as in the financing needed for their development – and these could provide robust support for implementing measures to strengthen industrial/logistics functions by utilizing the Chongqing FTZ as proposed in this paper. Our financial group has expanded to Chongqing and other parts of China via our subsidiaries SMBCCN and SMFLCN and has developed systems to support the business expansion efforts of a wide range of customers, among them local companies, and we will do our very best moving forward to aid in developing the Chinese economy.

We hope very much that this paper will prove a helpful reference for leveraging the Chongqing FTZ's advantages and for developing the logistics industry and the economy in Chongqing and the rest of China.

[1] *Program based on the Act on the Promotion of Business Activities for the Development and Manufacture of Energy-saving/Eco-friendly Products*

Developing Chongqing in Western China by Building an Integrated Value Chain

By Sanjeev Gandhi

Member of the Board of Executive Directors, BASF SE

Chongqing-Xinjiang-Europe to fuel local business

The Belt and Road Initiative presents enormous opportunities for Chongqing and all of the companies that invest in Western China.

All eyes are now on the market opportunities which will arise due to this new connectivity.

Located in the Southwest of Inland China and in the upper reaches of the Yangtze River, Chongqing covers an area of 82,400 square kilometers, governing 38 districts and counties. The registered population is 33.43 million, with permanent residents of 29.45 million and a permanent residents' urbanization ratio of 57%, and about 8 million permanent residents live in the downtown area which covers 650 square kilometers.[1]

With rapid urbanization and promise of access to new trade routes, local living standards are rising. This can lead to enormous growth in the demands of the population for better food, housing, and mobility as well as clean water and air. These represent the most important opportunity in Western China.

Some of the practical challenges of bridging China to Europe include enormous distances and high variations of temperature along with basic needs such as food, transportation, energy, and housing.[2]

This translates into new opportunities for a variety of industries. Makers of insulation panels, high quality building materials, and cold-storage vehicles and warehouses will find opportunities here. Back in 2010, China's NDRC published a development blueprint for the cold storage industry focusing on agricultural products, highlighting the need for an additional 10 million tons of cold storage capacity and an additional 40,000 refrigerated trucks by 2015.[3] Today, this need is only increasing: China is one of the top three countries in the world with high long-term growth rates in cold storage capacity.

Transporting goods long distances and over difficult terrains needs durable, lightweight and fuel-efficient vehicles, both

[1] *expochina2015.org*
[2] *BASF*
[3] *China National Development Reform Council 2010 study*

road and rail. Automakers and component manufacturers who can take up this challenge will find good business potential.

Last but not least, sustainable food production and distribution means requirement for drought tolerant crops that can thrive in tough conditions. The growing demand for nutritious food will result in farmers' growing demand for higher yields – which agchem industry can meet.

This will also require highly efficient irrigation. The manufacturer of durable, reliable irrigation systems will be serving these same market needs. At the same time, the growing manufacturing sector will need to keep wastewater clean so that it does not impact arable land. This means a need for new wastewater treatment plants and filtration systems.

Enhancing connectivity is crucial. It not only boosts trade, local production, and public infrastructure development, the economic growth will also attract foreign investment, and skilled labor to Western China for a wide spectrum of high-value jobs. In the long run, it will help to develop local markets and increase prosperity across Western China.

BASF: Single-largest investment of a major chemical player in Western China

We have done our part to contribute to the industrial upgrade and meet the growing market demand in Western China.

In 2011 BASF, received approval from National Development and Reform Commission for 400,000 metric tons per year MDI (Methylene diphenyl diisocyanate) project in Chongqing. The investment of this project totals RMB 8 billion (€860 million). BASF started first MDI production at the facility in Chongqing's Changshou Economic & Technological Development Area end of August, 2015.

We are quite satisfied with the ramp up and the utilization of our plant as we meet the growing market demand. MDI is an important component for polyurethanes – an extremely versatile plastics material that contributes towards improved insulation, provides lighter materials for cars, and helps save energy in buildings. MDI production will support these key industries in Chinas western areas. We serve important customer industries including appliances, building and construction and footwear

There is an ideal framework in Chongqing for such a plant:

All of BASF's decisions concerning plant location are guided by the following factors --- access to feedstock, long-term markets, skilled labor, a logistical network and environmental protection.

Chongqing, supported by China's 'Go West Policy', will serve as a gateway to its five neighboring provinces and act as an economic, manufacturing and logistical hub for the region.

Chongqing is not only at the center of the growing inland market but its growing network of highways, railways and existing waterways will provide us access to the markets in the rest of China, which is one of the world's largest MDI markets.

The market for MDI in the coming years in China is estimated to grow rapidly. A local production base for MDI in Chongqing can boost the local polyurethanes industry and make Chongqing a world-class manufacturing base for polyurethane raw materials and a technical service center for polyurethane products, driving and improving the polyurethane

related upstream and downstream manufacturing industries, providing more jobs, thus contributing to the economic development of China's Western area.

Fig. 1: Polyurethane is an important soling material in the footwear industry. Its versatility and robust physical properties have made it a material of choice for many footwear manufacturers. BASF is a world-leader in PU innovations. Through its Asia Footwear Technical Centre in Guangdong, China, BASF develops and manufactures footwear polyurethane products and offers tailor-made system solutions to footwear manufacturers.

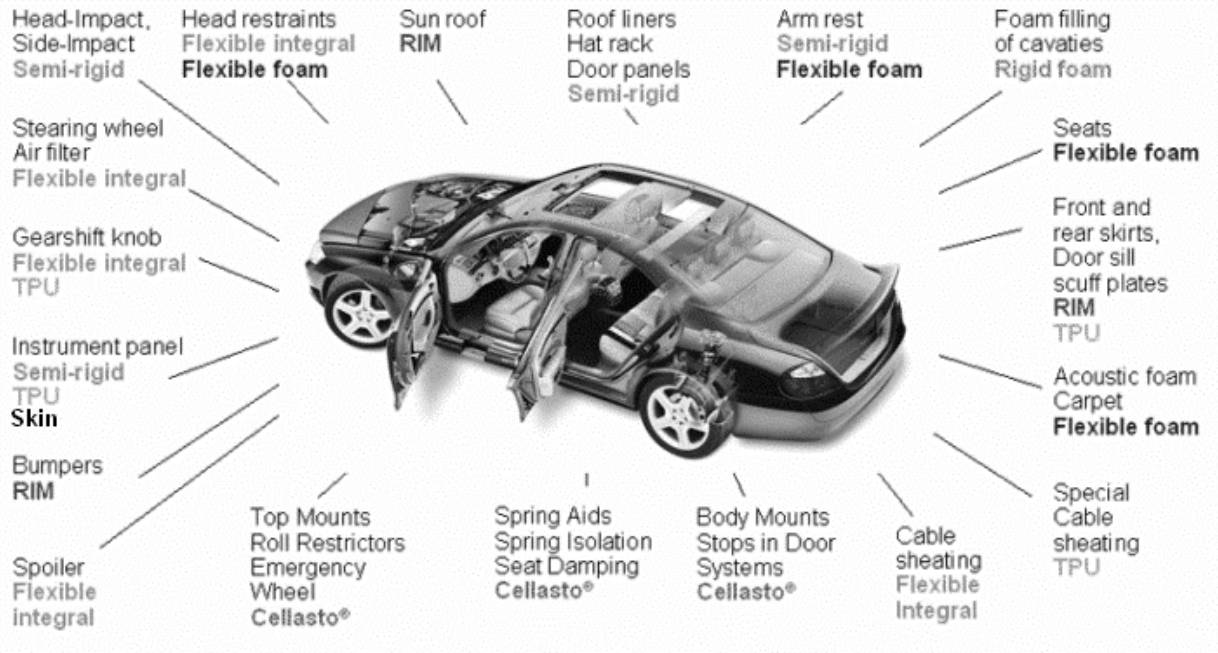


Fig. 2: Polyurethanes are as essential to automobiles as the steering wheel itself. Our PU products keep you on course. In almost all vehicles around the world. In numerous applications: instrument panels, roof linings, suspension components (Cellasto®), cable sheathing, headrests, steering wheels, gearshift knobs, seats, bumpers, door coverings, and on and on.

Chongqing has become an important production hub for many of those industries. However, the value chain is still incomplete. For example, although the automotive industry is well established and expanding in Chongqing, important component suppliers have not yet followed their OEMs into Chongqing. Currently in many value chains intermediary

producers are still in concentrated in other parts of China, such as the East China region, meaning that the raw material is produced in Chongqing, but the intermediate products are still produced elsewhere, for instance in the coastal areas. With this situation, unnecessary time, costs and complexity are incurred for logistics. At the same time, the environmental impact of increased logistics is significantly greater than consolidated production in a single area.

Example: Verbund site Ludwigshafen Integration of intermediate production with downstream outlets

Our collective vision should be a world-scale value chain. As an example, we can demonstrate how a seamless integration between upstream producers and downstream customers' functions. The production Verbund is BASF's traditional core competency.

The Verbund system creates efficient value chains that extend from basic chemicals right through to high-value-added products such as coatings and crop protection agents. In addition, the by-products of one plant can be used as the starting materials of another. In this system, chemical processes consume less energy, produce higher product yields and conserve resources. In that manner, we save on raw materials and energy, minimize emissions, cut logistics costs and exploit synergies. These solutions enable BASF to sustain competitiveness in every world region while making our customers more successful.

The Production Verbund is BASF's traditional core competency and starting point for multiple value chains, from basic chemicals right through to consumer products and system solutions. Operational excellence drives our profitability, enabling us to reduce raw material and energy use and cut costs with our closely interlinked production system.

BASF's Verbund structures and high-efficiency power plants not only reduce production costs, they spare the environment too. The Verbund offers ways to reduce emissions and waste and conserve resources. Transport distances are minimized. On a global scale, BASF realizes annual savings of more than €1 billion through its Verbund concept. Hence, the Verbund is not just a major economic asset but generates ecological benefits at the same time.

- Our production activities are more cost-effective, safer and environmentally compatible
- We save energy through efficient processes
- We reduce transport impact

The BASF Verbund is a one-source system, helping us to control production, respond flexibly and act independently. Effective networks facilitate rapid, overarching decision-making.[1]

[1] *BASF Facts And Figures 2016, www.basf.com*

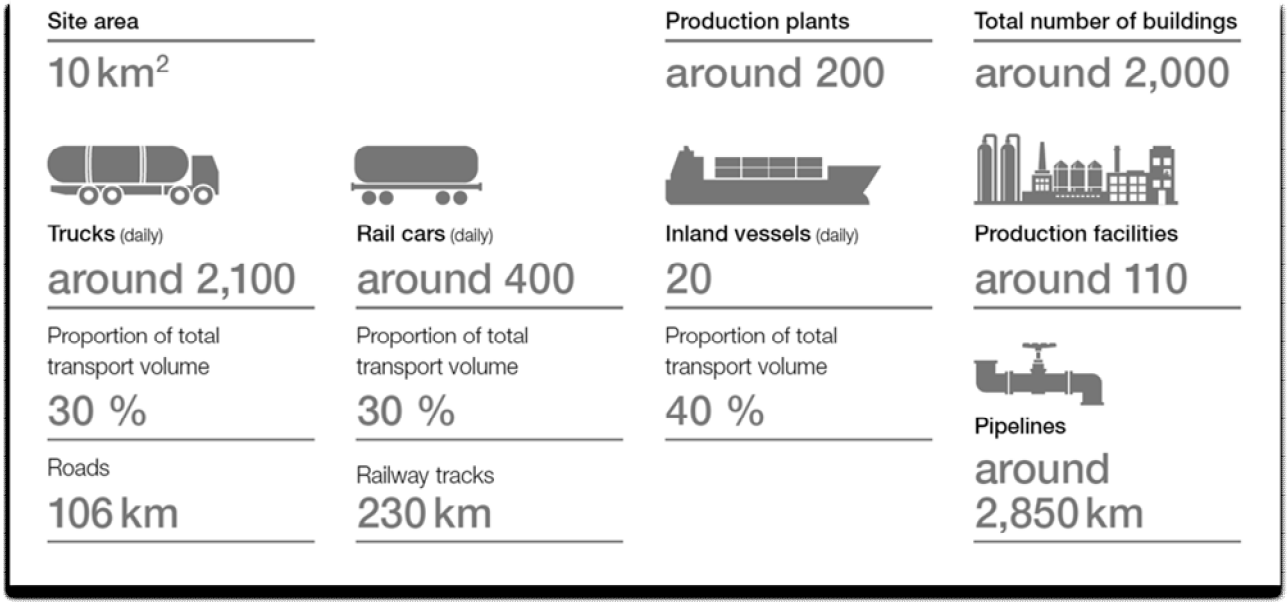


Fig. 3: Overview of BASF Ludwigshafen Verbund site

This concept can also be seen in the joint venture Verbund site of BASF and SINOPEC in Jiangsu province.

According to a study by GTZ[1] the concept of "Sustainable Development" is part of the major strategy of most of the important global corporations. Under this concept not only environmental guidelines are to be implemented but it is also important to follow the economic and socioeconomic effects of a business to the neighboring region. As such foreign direct investment can play an important additional role in the provision of employment, the economic development and environmental protection through technical innovations in a region. BASF and Sinopec Yangzi Petrochemical Co., Ltd. (YPC) invited the "Deutsche Gesellschaft für Technische Zusammenarbeit GmbH" (GTZ) to provide an

impact study on the BASF-YPC Company Limited (BYC) integrated petrochemical site (IPS) in Nanjing. This study has been addressed environmental, socio-economic and economic impacts associated with BYC.

Until 2005 a world-scale integrated petrochemical production site was built in Nanjing, Jiangsu province, and started operation. BASF holds a 50-percent stake in the joint venture project with an overall investment amounting to US$ 2.9 billion. The goal of the independent study by GTZ was to analyze the sustainability of the joint investment regarding ecological and economic impact and coherence with social goals and benefits for the location and the region. The location of the IPS is at the "Nanjing Chemical Industry Park" (南京化学工业园区, NCIP) which provides convenient access and many neighboring large petrochemical enterprises. The land for the site was leased from the government for 50 years. The commissioning phase

[1] *The impact of direct investment of BASF in Nanjing, China on the sustainable development of the region, Dr. Sonja Kurz Christian Schmidkonz Nanjing, summer 2005 https://www.basf.com/en/company/sustainability/economy/gtz-study-nanjing.html*

started end of 2004 during which the very first product (methyl acrylate) was successfully produced on December 23rd 2004. On January 7th 2005 BYC made its very first delivery of 20 tons of methyl acrylate to its first customer, Sinopec Shanghai Petrochemical Company Limited. Finally the commercial operation in all process units started in June 2005. The official opening ceremony of the IPS with national and international guests is to be held in September 2005.

The study differentiates between impacts during the construction phase of the project and expected impacts during production. In terms of economic impacts three major impacts could be observed during construction: BYC offered a huge number of jobs for construction workers. At peak times there were 14,000 workers on the site at the same time. BYC also had a strong influence on the speed of some public infrastructure projects such as roads as well as pipelines. Furthermore, BYC even financed one road within the NCIP which is now also used by the public. During production phase due to the sheer size of the project a strong influence on the sales market and its prices is expected. Furthermore BYC helps increasing the attraction of the NCIP for new businesses to settle down in the park or neighbouring areas. Later the chemical park, Luhe district as well as Nanjing city and the province will profit from increasing tax incomes from BYC. As all foreign investments in China, BYC enjoyed certain tax and duty exemptions during the construction phase and will also enjoy them for some years during production.

BYC has also major implications on the socio-economic level. Especially in the implementation of safety regulations BYC played a major positive role already during construction but also now during production and transportation of the products. Every construction worker had to pass strict safety training with a final test. The use of personal protection equipment on the construction site was strictly monitored. A major spill-over effect in terms of implementation of safety regulations during production can be seen e.g. in the chemical transportation sector. Transportation firms are selected according a strict safety checks, drivers receive training and trucks are controlled at the entrance gate to the site. Here BYC gives several examples for best practices in China. Further major socio-economic impacts during the construction of the IPS are an – at least in a short term view – growing wealth in Luhe district and Nanjing city through the expenses spent there by the workers as well as the relocation and compensation of farmers who partly moved to the city. During the production phase BYC guarantees safe jobs for the more than 1,000 employees, who mostly used to work at the joint venture partner. Furthermore public sponsorship by BYC especially in the field of education in Luhe and Nanjing city is

highly effective.

As a chemical company BYC has also potentially major impacts on the environmental situation in Luhe district and the region. Some positive implications for the production phase are the implementation of BASF environmental standards also for third party business partners. Similar to the safety standards here BYC can play a leading role in China. Furthermore the power plant built by BYC uses gas which contributes much less to the overall emission level compared to a coal based power plant. Although BYC creates additional waste which has to be burned or stored in the neighboring areas, the amount of waste is rather low compared to the production volumes at older Chinese companies. Already during the construction phase BYC had some environmental impacts on the neighboring region which are however mostly of a temporary nature. People living around the site had been affected by dirt and noise directly related to the construction of the IPS. Although no detailed investigations were undertaken it can be stated that the eco-system in the area of the site changed alone due to the construction of an IPS of this size. However, since BYC is located within a chemical park the area is already dedicated for industrial

purposes. All in all around 45 percent of the industrial park will be covered by industry, the rest by a "green belt".

Returning to Chongqing: through *Verbund* sites, we have achieved a broad and deep integration of various steps in the value chain, from basic chemicals, right through to consumer products and system solutions. A powerful industrial cluster in Chongqing, whether or not owned and operated by a sole company, can benefit from the integration of its value chains, and gain from the connectivity provided by One Belt One Road.

Investment in world-scale downstream industries is the key

To realize this goal, investment in world-scale downstream industries is key. Specifically, consolidation of industrial zones is an effective way to achieve higher production efficiency.

To do this, Chongqing needs to further develop industry by attracting tier 2, 3 and 4 companies to take advantage of raw material availability, and to extend the existing value chain upward and downward.

One Belt One Road projects can create new markets for products enabled by chemistry.

The development of downstream industries in Chongqing such as high end footwear, high end or functional textiles, automotive, furniture, insulation and building materials, and better cold chain for better and safer food supply can help bring high quality products closer to the customers in Western China, but also utilize its capacity by exporting the products using the logistics network via One Belt One Road.

Chongqing needs to further develop the value chain in particular by attracting tier 2, 3 and 4 companies to take advantage of raw material availability, and to extend the existing value chain upstream and downstream.

Expanding research in the applied sciences can be an excellent way to enhance employability for industries. The development of service industries such as logistics and transportation will serve the manufacturing industry

To further build up infrastructure that connects Chongqing with the Rest of the West, the new Silk Road is now becoming a reality. Logistics between Chongqing and other important hubs like Chengdu need to be cost effective and highly efficient. A great example is the pioneering Chongqing-Xinjiang-Europe railway link via which Chongqing has already established links with Central Asian nations, a fairly good basis for extension of cooperation.

A strong pool of trained workers can be a great potential for Chongqing's returnees: by attracting trained returning workers from the coastal areas, Chongqing's growing business sector can use the knowledge of these workers to support very high-quality, competitive manufacturing industries.

What's needed: Integrated value chain to build up Chongqing as a leader in Western China

How can Chongqing take on the role of setting and practicing the international land trade rules?

Chongqing must build on its unique strategic position in Western China for trade development and, thus, play a leading role in developing international trade across the countries along the belt and road.

Officially launched on 1 April 2017, the Chongqing Pilot Free Trade Zone (FTZ) is an important part of a third set of pilot FTZs endorsed by the government. The overall FTZ covers an area of 119.98 square km, and consists of three sub-zones:

- Liangjiang Area (66.29 square km inclusive of the Chongqing Lianglu Cuntan Bonded Port Area (8.37 square km))
- Xiyong Area (22.81 square km inclusive of the Chongqing Xiyong Comprehensive Bonded Zone (8.8 square km) and the Chongqing Railroad Bonded Logistics Centre (Type B) (0.15 square km))
- Guoyuangang Area (30.88 square km).

According to a report by the Hong Kong Trade Development Council, in accordance with the Overall Plan for the China (Chongqing) Pilot FTZ, as approved by the State Council, over the next three to five years, the Chongqing FTZ will seek to establish a high-level, high-quality free trade park in line with accepted investment and trade facilitation practices, while also nurturing a cluster of high-end industries and maintaining efficient and convenient oversight:

"It will also look to deliver a high standard of financial services, ensure the maintenance of a well-regulated and legally-compliant operating environment and provide a model of good practice for the wider business community. It will also oversee the construction of an international logistics hub, a port and an inland open-economic highland designed to meet the goals outlined under the terms of both the Belt and Road Initiative and the Yangtze River Economic Belt development program. Overall, it will also look to advance the opening up of the western region's gateway cities, while bringing to full fruition the priorities identified as part of the wider western region development initiative.

Within the FTZ, a special customs supervision area will look to offer enhanced trade facilitation through the launch of bonded processing, logistics and services. Other areas within the site will look to develop open investment strategies, refine the existing systems for investment management, provide enhanced supervisory regimes and promote innovative financial practices, while actively cultivating high-end manufacturing and the professional services sector." [1]

Not all industries are currently promoted in the FTZs. According to the Special Administrative Measures (Negative List) Relating to Foreign Investment Access, as promulgated by the State Council, some businesses and industries are deemed unsuitable for foreign investment in China's FTZs. Any foreign investment is also subject to scrutiny under the terms of the Tentative Measures for the National Security Review of Foreign Investment in Free Trade Zones.

However, rapid population growth and its geographic advantage as the gateway to Western China have given Chongqing a solid foundation for trade development. The Free Trade Zone (FTZ) provides companies with lower customs tax, simplified customs clearance procedures and better capital flow. Different regions under FTZ are closely interconnected to the ports and

[1] *http://hkmb.hktdc.com/en/1X0A9NGN/hktdc-research/China-Chongqing-Pilot-Free-Trade-Zone*

railways with the well-developed logistic infrastructure.

Conclusion

The opportunity for Chongqing in One Belt One Road and beyond are manifold. Chongqing should seize this exceptional chance to develop itself into a world class production hub to meet the enormous domestic demand right here at home.

There are significant possibilities for domestic demand in the industries which support the development of One Belt One Road.

Additionally, with the opportunities provided not only through upstream industries but also by consolidating intermediate industries into Chongqing, further synergies can be achieved.

By leveraging the possibilities of FTZs, bringing such intermediate industries to Chongqing will allow Chongqing to meet this domestic demand and further extend its influence along One Belt One Road.

The Chongqing-Xinjiang-Europe Railway (Yuxinou): Suggested Ways to Develop Overland Trade Rules

By Richard Bailey

President, Asia Pacific and Japan Region, HP, INC.

Contents

I. EXECUTIVE SUMMARY

Amid great fanfare, China held its first "Belt and Road Forum" in Beijing in May 2017, attended by delegations from at least 57 countries,30 world leaders,[1] and a host of senior executives from multinational businesses—including HP. The forum served as a showcase for China's ambitious diplomatic and economic vision for the region—officially known as the Belt and Road Initiative (BRI)—to connect China with Central Asia and Europe through industrial development, financial integration, and infrastructure construction. The May forum was personally hosted by Chinese President Xi Jinping, signaling the importance China has attached to this project.

Given Chongqing municipality's strategic location in western China, it is uniquely positioned to play a critical role in driving the future success of this regional development program. In recent months, numerous Chinese entities, including provincial and local governments across China, have sought to demonstrate their support for this prominent Belt and Road Initiative. Among them, Chongqing can play a useful role in highlighting how commercial, trade, and developmental best practices created in the municipality can inform efforts to foster best practices elsewhere, and, in the process, help develop rules—including land trade rules governing the international BRI region that largely remain unwritten—that would guide how neighboring countries interact with each other in the 21st century.

Indeed, many of Chongqing's advantages in helping to shape the BRI can be traced to the 2011 opening of the Chongqing-Xinjiang-Europe Railway (known in English as the Yuxinou Railway or "Yuxinou"). The Yuxinou has helped spur Chongqing's recent rapid economic growth, enabling the municipality to attract more Fortune 500 companies, like HP, and making Chongqing a leader in driving economic development in China's less-developed western areas by connecting the region with markets from Central Asia to Europe through a single, standardized regional transport infrastructure. This report will use the Yuxinou as an example of how Chongqing's efforts can contribute to generating best practices governing land-based trade under the BRI framework.

While efforts to promote rules and best practices relating to trade are exclusive to national and international stakeholders, subnational entities—especially those strategically located or designated as special trade areas with economic punch—can play an outsized role in influencing these efforts. For example, the Chongqing free trade zone (FTZ) is a laboratory the national government can use to assess the advantages of having unified rules and standards on matters such as transportation, customs clearance, logistics, duties, services, industry development, and dispute settlement. Local expertise in Chongqing clearly can carry national, regional, and international significance.

HP is deeply rooted in Chongqing and has experience doing business around the world, so it is naturally positioned to serve as a trusted advisor to Chongqing's leaders. In Part IV, we offer a host of specific recommendations regarding how Chongqing could both help facilitate conversations and encourage actions regarding China's participation in the international overland trade rule-making process. We will also outline what HP could do to help the municipality enhance its role as a facilitator, convener, and driver of policy conversations aimed at harmonizing the rules and practices that govern commerce and trade in one of the most important economic corridors in the coming decades.

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[1] *Zhao Bingxing, "The Belt and Road Forum: China's New Silk Road," Center for Research on Globalization, May 17, 2017, accessed August 14, 2017, http://www.globalresearch.ca/the-belt-and-road-forum-chinas-new-silk-road/5590506; Brenda Goh and Yawen Chen, "China Pledges $124 Billion for New Silk Road as Champion of Globalization," Reuters, May 13, 2017, accessed August 14, 2017, http://af.reuters.com/article/worldNews/idAFKBN18A01P.*

Summary of Recommendations

This paper offers three overarching recommendations for the Chongqing Municipal Government to consider:

1. Expand the trade volume in Chongqing to solidify the municipality's economic standing—and voice—in the long-term process to create overland trade rules;

2. Focus on trade facilitation as a starting point in the creation of rules; and,

3. Take a step-by-step approach with pilot programs in Chongqing, to first establish and foster best practices and then enable their evolution into formal trade rules.

This paper also offers a few more specific suggestions for the Chongqing Municipal Government's consideration, including:

1. Leverage the Yuxinou to grow Chongqing's trade volume and form a regional development strategy to expand foreign trade to the municipality's benefit;

2. Promote innovative measures to strengthen the Yuxinou—with goals to reduce costs and enhance transport efficiency to attract more trade along the route;

3. Take advantage of Chongqing FTZ to drive innovation in the service industries, including financial services and logistics, and pilot models for future national standards and trade rules;

4. Use modern technologies to enhance efficiency of overland trade;

5. Improve communication channels so that Chongqing can better organize and lead the effort in promoting overland trade, greater information sharing, and best practices—and by doing so become a driver in the process to coordinate and establish overland trade rules.

As the earliest supporter and largest user of the Yuxinou, HP has already demonstrated its full confidence in the future of Chongqing's development. HP first entered Chongqing in 2008; in the years to come, HP will strive to continue to anchor its regional engagement in Chongqing and along the Yuxinou—assessing, advising, and ultimately implementing ways to standardize how markets interact with each other along this major international transport artery. And HP will also strive to continue working with the Chongqing government to advanceall of the municipality's goals to facilitate enhanced trade from Chongqing to the world.

II. The CHONGQING-XINJIANG-EUROPE International RAILWAY: BACKGROUND AND Status

The establishment of the Chongqing-Xinjiang-Europe International Railway

Chongqing is one of only four municipalities—and the only one in western China—under the direct control of the central government (the others are Beijing, Shanghai, and Tianjin). Situated inland, Chongqing has had limited opportunities to participate in China's opening-up process and, compared to its coastal counterparts, has been far less engaged with the global economy.

The Chongqing municipal government has actively grappled with these issues, including how best to integrate Chongqing into China's continuing process of opening up; how to continue to advance internal and external liberalization; and, how to promote Chongqing as the gateway to China's inland areas. In an effort to break the "transport bottleneck" that has

traditionally restricted Chongqing's development, the municipal government, with Beijing's support, in 2011 opened the Yuxinou, an11,000kmintercontinental transport channel.

The Yuxinou starts in Chongqing and extends from China through five additional countries—Kazakhstan, Russia, Belarus, Poland, and Germany. By creating a new transcontinental railway transport line to Europe, Chongqingopened a new trade channel—a "New Silk Road" for the new century—connecting China's vast western region to Central Asia and Europe.

The opening of the Yuxinou has effectively resolved many of Chongqing's traditional transport disadvantages and enhanced the region's trade connections. It is estimated that in 2013, following the opening of the Yuxinou, Chongqing's foreign trade value reached $68.7 billion, compared with just $9.57 billion in 2008—an increase of 717 percent.[1] This led to Chongqing ranking tenth nationally and first among China's 12 western provinces for foreign trade value.[2]

HP has watched and participated in this transformation. In 2014, Chongqing produced 61 million laptop computers—one-third of global production—making it the world's largest laptop computer manufacturing base.[3]In fact, in August 2016, HP shipped its 100th millionth PC from Chongqing[4]—and we are a major beneficiary of the city's global manufacturing status. The accumulative import and export volume of the electronic information industry in Chongqing, dominated by laptop computer and printer products, was RMB 271.3 billion ($40.23 billion), accounting for 46.3 percent of Chongqing's total import and export value and contributing 30.8 percent to the city's trade growth rate over the same period.[5]

The railway has also enhanced Chongqing's infrastructure and investment environment and attracted many high-tech, modern service-providing enterprises to the city. Since 2010, foreign investment in Chongqing has exceeded$10 billion annually, with over 260 "Fortune500" companies setting up operations.[6]Since 2014, Chongqing has consecutively been ranked first in GDP growth among China's provinces.[7]HP is pleased to have played a role in that remarkable growth: In 2015, for example, the total economic impact, the output, of our production, as well as those of our final assembly suppliers, was about $54 billion.[8]And our investment in Chongqing, by extension, percolates throughout China: 800 engineers in our Shanghai R&D center, 1,300 service centers across 31 cities, and 4,500 retail stores.

Chongqing has gradually transformed itself from one of China's six old industrial bases into a global, value-added manufacturing base for traditional industries such as automotive, machinery, chemicals, raw materials, energy, textile, and consumer goods, as well as emerging industries, including electronic products for the global market. This transformation has

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[1] *Chongqing Shi Wai Jingmao Wei 重庆市外经贸委 [Chongqing Municipal Foreign Economic and Trade Commission], "Chongqing 2013 NianWaimaoZongZhiShouci Yue JuZhongguoXibuShouwei" 重庆 2013 年外贸总值首次跃居中国西部首位 [Chongqing's Total Value of Foreign Trade in 2013 Takes First Place in Western China for the First Time], ZhonghuaRenminGongheguoShangwubu 中华人民共和国商务部 [Ministry of Commerce of the People's Republic of China], January 23, 2014, accessed August 15, 2017, http://www.mofcom.gov.cn/article/resume/n/201401/20140100470492.shtml.*

[2] *Ibid.*

[3] *Wang Jingjing, "Chongqing Manufactures Most Laptops in the World," China Daily, January 9, 2015, accessed August 15, 2017, http://usa.chinadaily.com.cn/business/2015-01/09/content_19283344.htm.*

[4] *Chongqing Ribao 重庆日报 [Chongqing Daily], "Di Yi Yi Tai 'Chongqing Zao' HuipuBijibenDIannao Xia Xian"第一亿台"重庆造"惠普笔记本电脑下线 [The 100 Millionth "Made in Chongqing" HP Laptop Comes off the Assembly Line], Xinlang 新浪 [Sina], August 5, 2016, accessed August 15, 2017, http://news.sina.com.cn/o/2016-08-05/doc-ifxutfyw0638969.shtml.*

[5] *Chen Jun 陈钧, "Chongqing Shi 2014 NianJinChukouZongZhi 5863.2 Yi Yuan Zengzhang 37.6%" 重庆市 2014 年进出口总值 5863.2 亿元增长 37.6% [Chongqing's Total Import and Export Value in 2014 Reaches 586.32 Billion Yuan, Growth of 37.6%], Chongqing Ribao 重庆日报 [Chongqing Daily], January 16, 2015, accessed August 15, 2017, http://news.cnwest.com/content/2015-01/16/content_12060913.htm.*

[6] *Wang Yixuan 王奕璇, "Shi'erwu Chongqing shiWaimaoZengzhangChaoguo 5 Bei" "十二五"重庆市外贸增长超过 5 倍 [Chongqing Foreign Trade Grows More than 5 Times in the "Twelth Five Year Plan" Period], Chongqing Ribao 重庆日报 [Chongqing Daily], January 19, 2016, accessed August 15, 2017, http://cq.ifeng.com/a/20160119/4210826_0.shtml.*

[7] *RuiZhe "Chongqing GDP Zeng Su LingpaoQuanguo "Zui Dong Jingji Shi Zhang" ZaiZaiZaiBeiGuanhzu" 芮喆, "重庆GDP 增速领跑全国"最懂经济市长"再再再被关注 [Chongqing GDP Growth Leads the Country Under the Close Attention of a Mayor Who Understands the Economy], DabaiXinwenZhongguoQingnian Wang 大白新闻中国青年网 [China Youth Network], July 28, 2017, accessed August 15, 2017, http://news.youth.cn/gn/201707/t20170728_10392219.htm.*

[8] *"The Impact of HP Inc. on China's Economy," Enright, Scott & Associates, November 25, 2016.*

supported Chongqing's goal of developing a global industrial cluster and becoming a trade and logistics hub connecting China and Europe.

It is in this context that HP will keep expanding its already robust investment in Chongqing. The prospect of easy access to the European market enabled by the Yuxinou further cemented HP's long-term commitment to Chongqing and our growth strategy of positioning the city as HP's global computer manufacturing base. HP was honored to have been invited by Chongqing municipal leaders to be a participant in the planning and construction of the Yuxinou. Our unique experience in Chongqing has defined our China story—and it is an accomplishment of which every HP employee is proud.

HP continues to support the Yuxinou, and our Company is a direct beneficiary. Over the past few years, the railway has become our first choice in transporting HP products from China to Europe. By doing so, HP has provided a basic guarantee of freight volume to the Yuxinou line. Currently, HP products account for 45 percent of the Yuxinou's total freight.[1] Moreover, relying on the Yuxinou has significantly improved our product transport efficiency. The door-to-door transport time for HP products from China to Duisburg, Germany, averages 22 days—half the time of ocean freight and at only one-fifth the cost of air freight.[2]For multinational manufacturers of electronics and high-value-added goods, railway transport allows products to reach cross-border, inland markets at a relatively fast speed and low cost.

China's Belt and Road Initiative offers new development opportunities along the Yuxinou

While the Yuxinou was established prior to the official launch of China's Belt and Road Initiative (BRI), the momentum generated under this new national—and regional—initiative is driving the transport line's further expansion. As the starting point of the "New Silk Road," the Yuxinou, seen as an international artery linking China with Central Asia and Europe, has shifted its role from simply servicing Chongqing's economic development to supporting the broader implementation of the BRI national strategy and driving the growth of China's central and western inland areas—also of great benefit to Chongqing. In other words, the Yuxinou has become an important component of China's national development strategy.

In this context, more and more Chinese and multinational firms have begun to use the railway to expand their China-Europe trade. Thus, the railway's cargo, customers, and operation model have undergone tremendous growth. When the railway was first opened, it carried only 17 freight runs.[3]In the following two years, the railway carried40 runs,[4] all of which served the purpose of transporting Chongqing-produced goods to Europe. In 2014, there were more than 100freight runs on the Yuxinou line operating on a fixed schedule of 1-2 runs per week.[5] As of July 2017, the Yuxinou line carried334freight runs, including 207to Europe and 127 return runs.[6] Cargo transported on the line has diversified as well,

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[1] *徐润秋[Xu Runqiu] and 袁刚[Yuan Gang], Interview by ASG, July 18, 2017.*

[2] *Ibid.*

[3] *Shi Kai 石凯, "YuxinouTielu: Chongqing Xiang Xi, ChuanyueShijieXinzang"渝新欧铁路：重庆向西，穿越世界心脏 [Yuxinou Railway: Chongqing Looks West Through the Heart of the World], GuanchaZhe Wang 观察者网[Observer Network], March 29, 2012, accessed August 15, 2017, http://www.guancha.cn/politics/2012_03_29_67984.shtml.*

[4] *Wei Xiyu 魏希羽, "2013 "Yuxinou" Kaixing Ban Lie 35 Lie" 2013"渝新欧"开行班列 35 列 [Yixinou Railway 35 Runs in 2013], Hualong Wang 华龙网 [Hualong Network], February 4, 2014, accessed August 15, 2017, http://cq.cqnews.net/cqqx/html/2014-02/04/content_29664073.htm.*

[5] *Zhang Shaohu 张少虎, "Yuxinou 2014 Nian Di 100 Ban Qu Cheng Ban Lie Kaichu" 渝新欧 2014 年第 100 班去程班列开出 [100 Runs Out on the Yuxinou Line in 2014], Chongqing Chenbao 重庆晨报 [Chongqing Morning News], December 30, 2014, accessed August 15, 2017, http://www.chinadaily.com.cn/dfpd/cq/2014-12/30/content_19199873.htm;Chongqing Shi Wai Jingmao Wei 重庆市外经贸委 [Chongqing Municipal Foreign Economic and Trade Commission], "2014 NianYuxinouGongong Ban Lie KaixingJihuaZhengshi Fa Bu" 2014 年"渝新欧"公共班列开行计划正式发布 [Yuxinou Public Plan Officially Released in 2014], ZhonghuaRenminGongheguoShangwubu 中华人民共和国商务部 [Ministry of Commerce of the People's Republic of China], March 14, 2014, accessed August 15, 2017, http://www.mofcom.gov.cn/article/resume/n/201403/20140300517573.shtml.*

[6] *徐润秋 [Xu Runqiu] and 袁刚 [Yuan Gang], Interview by ASG, July 18, 2017.*

gradually expanding from mainly laptop computers at the onset to now including automobile parts, machinery, household goods, and industrial products like HP's printers.

Users of the railway have also expanded to include almost 20 companies.[1]The Yuxinou also transformed its operation from a point-to-point linear model to a more mature "dendritic model" with one main line and multiple off shoot lines. The railway's explosive growth from 2014 to 2017helped shape Chongqing into a renewed central nexus point in the ongoing opening and development of China's inland area. Chongqing has also become a first-class electronics industry base in western China, the first freight export port in western China, a leading international coffee distribution center, and the main distribution center for exports to Europe—like HP's products. Certainly, the Yuxinou and Chongqing have far more opportunities and potential for continued growth in the future. Without a doubt, BRI will be central to this process.

The Chongqing municipal government can consider taking advantage of these growth opportunities. In fact, the government has already launched a new "Yuxinou Plus" strategy that will set the direction for Chongqing's efforts to expand trade and investment and position itself in the global market. This strategy includes the following trade, transportation, and logistics measures:

1. ***Develop a multimodal, combined transportation system that includes the establishment of an Asia-Xinjiang-Europe transport and trade network along the railway line, with Chongqing at the center.***

A Chongqing-centered, sophisticated multimodal transportation network will, in the future, enable European goods to pass through Chongqing via railway and then be delivered to Asian cities within a four-hour flight radius—including Bangkok, Hong Kong, Tokyo, and Seoul. The municipality will thus become a critical hub connecting these dynamic cities. The Yuxinou will also be extended southbound through the rail-to-road combined transport; goods arriving in Chongqing on the Yuxinou can be shipped to Hanoi, via the Pingxiang Port in China's Guangxi Province, in only 40hours.

2. ***Develop areas along the railway and establish a flexible "1+N" cargo transport and distribution model.***

Chongqing plans to continue to expand the Yuxinou and areas along the route by establishing a flexible "1+N" distribution model. While "1" refers to the main line from Chongqing to Duisburg, Germany, "N" refers to any collection and distribution point chosen based on customer needing any of the countries along the route. Current collection and distribution points along the line include Duisburg, Frankfurt, and Cologne in Germany; Antwerp in Belgium; Moscow andCherkersk in Russia; Marashevich in Poland; Brest in Belarus; Almaty and Kustanay in Kazakhstan. Other collection and distribution points that will soon open include Rotterdam in the Netherlands; Kutna Na in Poland; Yaroslavl in Russia; and, Pale Du Bucai in the Czech Republic.

3. ***Build an international cooperation platform to support Chongqing's efforts to develop a global logistics hub.***

Chongqing seeks to promote more effective ways to coordinate and collaborate on transport and logistics development among countries along the Yuxinou route—a major goal will be to unify rules and standardize practices in markets served by

[1] *徐润秋 [Xu Runqiu] and 袁刚 [Yuan Gang], Interview by ASG, July 18, 2017.*

the railway. For example, China recently established a domestic China-Europe rail coordinating committee to oversee the China-Europe land transport market. And, as part of efforts to develop a world class, multimodal network, Chongqing isalso building a logistics and transport system in collaboration with the Yuxinou, Chongqing's airport, and Singapore's Changi Airport that aims to improve transport efficiency and reduce transit duration throughout the region. It is Chongqing's hope that European goods transported to Southeast Asia, Korea, Japan, Hong Kong, and other countries and regions can be transported by this speedy rail-to-air transfer, ultimately forming an international logistics transfer hub centered in Chongqing.

III. Creating international overland trade rules—and implications for the development of the YUXINOU

The importance of creating rules to govern overland trade

Overland trade directly connecting inland areas with each other or with coastal areas is experiencing faster growth in recent decades. For years, multinational corporations have had to move to different markets in search of lower production costs. They would then need to transport merchandise to consumers in markets around the world—including many inland areas—in the fastest and safest manner. This has created demand for better and more reliable ways to move goods on land. Also, continual improvements in infrastructure, along with more efficient vehicles and transport processes enabled by modern technology, have enhanced the efficiency and attractiveness of overland trade.

Nevertheless, compared to the traditional, more widely-used maritime and air-based trade routes, overland trade remains complicated. Different countries—and even different regions within a given country—often lack unified standards and rules governing overland transport. This lack of harmonization is particularly glaring for international railway freight transportation, the most common means of overland trade. For example, unlike shipping and maritime trade, international railway freight transport lacks specialized language and terminology for delivery of goods. This can cause misunderstandings that can often lead to losses and disputes—disrupting commercial transactions—and limit the attractiveness of overland trade as a viable option for companies.

Considering these challenges, further development of rules governing overland trade is needed to smooth trade flows, standardize practices, and generate greater overland trade opportunities—thereby strengthening the competitiveness of overland trade befitting a global economy in the 21st century. Improved rules could include the following elements and goals:

- Unify standards on transport vehicles, equipment, and technology to promote the convenience of freight transport;
- Establish support service systems—such as logistics and finance—to reduce transport costs;
- Utilize science and technology innovation and new-generation Internet technology to optimize overland trade procedures—such as customs clearance, inspection and quarantine, and warehousing—as well as to increase efficiency;
- Harmonize standards and rules on customs, inspection and quarantine, quality, dispute settlement, and the pricing of supporting services with countries along the trade route; and,
- Generate momentum to enhance discussions and cooperation between governments to nurture and invest in bilateral and multilateral coordination mechanisms.

Meanwhile, the establishment and continuous refinement of rules governing overland trade could be accompanied by the integration of industrial clusters along trade routes and regional supply chains. Once the development of overland trade advances to a certain stage, China and countries along the route could have the opportunity to explore bilateral free trade zones or regional free trade agreements that support China's BRI, which could provide a more sustainable and legally binding trade framework.

Challenges of overland trade rules facing the Yuxinou

The development of land trade rules could be significant to the Yuxinou's future. While the railway has launched many trade convenience measures since its inception to reduce costs and improve efficiency of cross-border railway transport, there remain a number of challenges. These include inconsistent transport standards that may directly hinder Chongqing's ability to develop a multi modal transport system; the problem that railway transport is still seen as less economically efficient than sea waybills; and, the lack of coordination on the use of new transport technology by markets along the route, prohibiting certain special goods from overland transport and limiting the types and sources of cargo allowed for overland trade.

Establishing and standardizing overland trade rules could enable Chongqing and the Yuxinouto address these challenges. However, creating overland trade rules is an extremely complex task, requiring the coordination and synchronization of market and trade practices in countries along the route through bilateral or multilateral frameworks. The negotiation, creation, and ultimately adaptation of these rules also requires national governments (actively supported by local governments and the private sector) to lead and design a comprehensive plan for the development of overland trade. Furthermore, the creation of overland trade rules requires political support—to be seen as a part of the broader national strategic agendas in countries along the route.

Chongqing uniquely positioned to establish overland trade rules

Chongqing has advantages unmatched by other inland Chinese cities—including its trade volume, operational experience, innovative policies, concentration of industries, and technical talent—that make a strong case for the city's leadership to consider creating national overland trade rules; in particular, local best practices and innovative policy ideas could be powerful driving forces.

Through years of operating and developing the Yuxinou, Chongqing has formulated a set of measures, rules, and best practices on overland trade that could be replicated elsewhere. Under the right set of circumstances, the national government could use Chongqing's example to conduct innovative pilots in other areas, and could promote best practices in countries along the railway route to build consensus and common rules. Examples of Chongqing's proven leadership on this issue include:

1. By enhancing trade volume, the Yuxinou has already enabled Chongqing to become a leader in China's efforts to write rules and foster best practices relating to overland trade.

Yuxinou boasts the highest number of trips, the best service quality, and the most international recognition and influence

among railways of its kind. It is estimated that, as of the end of December 2016, the freight value carried by the Yuxinou accounted for 80 percent of the total value of outbound freight on China-Europe railways via Alashankou in Xinjiang.[1]In 2016, the total cargo value of the Yuxinou reached RMB 16.88 billion ($2.5 billion),the highest among all China-Europe railway lines.[2]Additionally, as of February 2017, the Yuxinou became the first to have operated 1,000 runs between China and Europe.[3]As a result, Chongqing's import and export trade has maintained an annual growth rate of 20-30 percent from 2013 to 2015 exceeding the national average growth rate.[4]

As Chongqing plays a larger role in the BRI's implementation, there will likely be more Chongqing-made products to be transported to countries along the Yuxinou. More products will also be transported to China's domestic markets to meet the growing demand of Chinese consumers. As an important hub linking China, Central Asia, Europe, Japan, Korea, and Southeast Asia markets, Chongqing is well positioned to become an even more significant participant in overland trade, and Chongqing's experience provides ample rationale why Chongqing could consider participating in the formulation of rules governing overland trade.

2. The Yuxinou has developed numerous innovative measures and best practices necessary for developing overland trade rules.

Based on the Yuxinou's experience, land trade has grown under the mindset of "facilitating trade now and codifying rules later. "However, as the total overland trade volume continues to grow and the level of inter-governmental coordination and collaboration continues to increase, the Chongqing Municipal Government and other countries along the route have supported efforts to formulate conventions and common practices for overland trade.

We believe that preliminary conventions and practices developed through the experience of the Yuxinou could be replicated and, under the right circumstances, elevated to become rules governing overland trade between China and countries along the land route. Such practices could also ultimately be promoted around the world. These include:

- Establishing regular communication and coordination mechanisms between countries on the route to produce a standardized operating platform with clear division of responsibilities;

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[1] *Chongqing Ribao 重庆日报 [Chongqing Daily], "Yuxinou Cheng Zhong'ou Ban Lie Zhongyao Pinpai" "渝新欧"成中欧班列重要品牌 ["Yuxinou" Becomes Important Brand for the Central Europe], Zhonghua Renmin Gongheguo Shangwubu 中华人民共和国商务部 [Ministry of Commerce of the People's Republic of China], April 11, 2017, accessed August 15, 2017, http://www.mofcom.gov.cn/article/difang/201704/20170402555757.shtml.*

[2] *Ibid.*

[3] *Li Miaosen 李淼森, "Yuxinou Ban Lie Tupo 1000 Lie Da Guan" 渝新欧班列突破 1000 列大关 [Yuxinou to Break Through 1000 Mark], Chongqing Wangluo Guangbo Dianshitai 重庆网络广播电视台 [Chongqing Radio and Television Network], March 24, 2017, accessed August 15, 2017, http://news.cbg.cn/cqxwlb/2017/0324/7223313.shtml.*

[4] *Zhongguo Xinwen Wang 中国新闻网 [China News Network], "Chongqnig 2013 Nian Quan Nian Waimao Jin Chukou Da 687 Yi Meiyuan" 重庆 2013 年全年外贸进出口达 687 亿美元 [Chongqing's Annual Foreign Trade Import and Export Reached 68.7 Billion US Dollars in 2013], ZhongguoXinwen Wang 中国新闻网 [China News Network], January 13, 2014, accessed August 15, 2017, http://www.chinanews.com/sh/2014/01-13/5730924.shtml;Chongqing Shi Wai Jingmao Wei 重庆市外经贸委 [Chongqing Municipal Foreign Economic and Trade Commission], "Chongqing 2013 Nian Waimao ZongZhi Shou ci Yue Ju Zhongguo Xibu Shou wei" 重庆 2013 年外贸总值首次跃居中国西部首位 [Chongqing's Total Value of Foreign Trade in 2013 Takes First Place in Western China for the First Time], Zhonghua Renmin Gongheguo Shangwubu 中华人民共和国商务部 [Ministry of Commerce of the People's Republic of China], January 23, 2014, accessed August 15, 2017, http://www.mofcom.gov.cn/article/resume/n/201401/20140100470492.shtml;ZhonghuaRenminGongheguoShangwubu 中华人民共和国商务部 [Ministry of Commerce of the People's Republic of China] "2014 Nian Chongqing Wamao Tongbi Zengzhang 39%" 2014 年重庆外贸同比增长 39% [Chongqing Foreign Trade Increased by 39% in 2014], Zhonghua Renmin Gongheguo Shangwubu 中华人民共和国商务部 [Ministry of Commerce of the People's Republic of China], January 29, 2015, accessed August 15, 2017, http://www.mofcom.gov.cn/article/resume/n/201501/20150100881961.shtml.*

- Improving transport efficiency by setting a precedent of using a "unified transport order" by the two major railway systems in Asia and Europe;
- Forming transnational customs coordination mechanism that allows for a one-stop customs inspection issuing clearance for the entire route;
- Establishing a "transport cost adjustment mechanism" based on cargo volume that reduces costs for large cargo volumes and offers a yearly cost reduction for multi-year arrangements;
- Using technology to ease trade barriers and advance innovation of transportation technology for special products, and by so doing expand the composition and source of goods transported overland;
- Establishing the Yuxinou(Chongqing) Logistics Co. Ltd., a joint venture of China Railway, Russian Railways, Harbin Railways, Deutsche Bahn, and the Chongqing Transportation Group to realize seamless connection in transnational railway logistics.

In addition, the National Port Management Office has included Chongqing in its selection of six localities as the first group of pilot, "one-stop window," projects in China's inland areas. This could ultimately make Chongqing the most cost-effective intermodal transport port in inland China, as well as an international logistics collection and distribution center. This effort could also help Chongqing become central and western China's foreign trade center with integrated bonded trade, entrepot trade (trade of goods manufactured by companies in other parts in China with headquarters in Chongqing), and services trade capabilities.

3. Chongqing's Free Trade Zone will promote policy pilots and greater innovation.

The 2016 establishment of the Chongqing Free Trade Experimental Zone (FTZ) further cemented Chongqing's unique role at the nexus of the BRI and the Yangtze River Economic Belt (YREB)—making Chongqing a key actor in China's western development strategy; an international logistics hub and port in inland China; and, a leader in driving growth in China's inland areas. In the process, the Chongqing FTZ could become a pilot zone for policy and system innovation, serving as a convenient policy laboratory for Chongqing's efforts to help develop rules for overland trade.

For example, financial institutions within the FTZ could consider seeking government support for piloting the use of railway transport orders as admissible documents demonstrating ownership of goods for hypothecation purposes. If approved, this could play a role in helping to standardize rules governing financial services in overland trade in the future. In addition, the China-Singapore (Chongqing) Demonstration Initiative on Strategic Connectivity, which also provides many policy pilot opportunities, could be linked with the Chongqing FTZ for their mutual advancement.

4. Chongqing has become a mecca for high-tech and other modern industries.

The municipality's solid industrial bases and technological capabilities can provide strong backing to the railway's future development, support Chongqing's multimodal transport capacity, attract more global resources, capital, technology, and talent to Chongqing and central and western China. This could strengthen Chongqing's participation in and influence on the development of overland trade rules and bring more cooperation opportunities to other BRI countries along Chongqing's

overland trade route.

Indeed, in 2016, Chongqing released a plan to focus on the development of ten strategic emerging industries, including emerging financial services, offshore service outsourcing, international logistics, e-commerce and cross-border settlement, cloud computing and big data, and trade (both entrepot trade within its FTZs and trade of goods manufactured by companies with headquarters in Chongqing).Chongqing has also set a target for growing the strategic emerging service industry to account for more than 50 percent of the added value of the output by the service industry.

IV. HP'S Recommendations: How Chongqing could play a greater role in setting Global Overland Trade Rules

Included below are a number of specific suggestions for how Chongqing—as it works toward achieving the Chinese government's national and regional economic and development initiatives—could consider helping facilitate discussion and encourage action regarding China's participation in the international overland trade rule-making process.

General principles for Chongqing and China's national government to participate in developing rules governing overland trade

1. Become an influential voice in writing trade rules; expand overland trade to and from Chongqing

- To secure a larger role in shaping overland trade rules, China and Chongqing could consider first expanding their participation in overland trade.
- Chongqing could do so by increasing the total export and import volume of overland trade, while diversifying the composition of trade commodities and involving more countries through overland passages and multimodal transport.

2. Begin with the low-hanging fruit—promote trade facilitation first

- As it works to help set the rules for trade, the Chinese government, including Chongqing at the subnational level, could first focus on the broader aim to facilitate more trade; doing so would be helpful in securing buy-in and enthusiasm for enhanced connectivity among different national governments in the region, particularly along the Yuxinou.
- Once it has demonstrated the value of enhanced trade to various regional economies and markets—and that the benefits have become apparent to generate broad support—Chongqing could then consider moving gradually to call on Beijing and foreign national governments to promote more comprehensive trade liberalization practices and policies.

3. Work deliberatively: Establish pilot programs, develop trade conventions based on best practices, and then elevate them to become formal trade rules

- China could consider a step-by-step approach toward establishing overland trade rules. Beijing could consider doing so by first discussing, piloting, and adopting best practices, standards, and measures that have the potential to become formal trade rules before formally promoting them as international trade practices for the region.

- A simple, starting point suggestion would be to standardize how freight orders are issued by the Yuxinou. These could be made compatible with the major order formats used by different countries along the trade route.
- Although the order system is not yet a mandated requirement for international rail freight, as more trading and logistics companies adopt the system, it has the potential to become an accepted regional trade convention, and eventually to be formally included as a regional or international trade standard.

Ways Chongqing could contribute to setting international overland trade rules

1. Leverage the Yuxinou to advance Chongqing's exports, expand the scale of foreign trade, and promote trade integration along the route

A. Encourage more industrial upgrading, establishing Chongqing as a major hub for global industry

- Chongqing could consider building on its foundation of traditional manufacturing industries like automotive and telecommunications, while exploring new areas of growth—such as transport logistics and services. This approach could empower and elevate Chongqing's influence to set standards for international trade rules in the future.

B. Employ a regional development strategy to advance Chongqing's economic liberalization

- Chongqing could strengthen efforts to coordinate different economic development plans meaningful to the region, such as the BRI and the Yangtze River Economic Belt;
- Nurture a development model that encourages innovation and takes full advantage of increased linkages between coastal and inland regions; and,
- Explore the possibility to promote policies aimed at further integrating Chongqing with the global economic system.

C. Take the lead in advancing an industrial ecosystem covering countries along the Yuxinou

- Chongqing could consider accelerating the development of the Chongqing Twin Rivers National New Development Zone and identify new areas that meet the requirements of becoming pilots under the auspices of the National New Development Zones or Airport Economic Zones;
- Investigate the possibility to develop efficient customs special inspection zones, invest in international logistics ports and other related capacities, and advance the "China-Singapore (Chongqing) Demonstration Initiative on Strategic Connectivity"—also called the Chongqing Connectivity Initiative (CCI); and,
- Explore opportunities to develop new industrial zones or promote creation of free trade zones within countries along the route of the Yuxinou, taking into account the comparative advantages of different countries.

D. Use the FTZ negotiations to establish Chongqing's leadership role in trade integration

- Chongqing could consider proposing to the central government ways to continue to enhance trade with countries along the Yuxinou route, such as by promoting trade integration and free trade zone negotiations. In addition to bilateral trade negotiations with the EU and Russia, Chongqing could call on the Chinese central government to consider the implementation of a regional free trade agreement with the six countries along the Yuxinou route or a framework for closer economic and trade cooperation.

2. Explore ways to lower costs and raise transport efficiency to promote more trade

A. Highlight past successes to boost existing overland trade rules and innovative systems

- Chongqing could consider refining existing systems, current practices and standards, and explore regional and international rules as potential starting points to enhance trade practices along the Yuxinou.
- Chongqing could consider examining its experiences from operating the Yuxinou to identify success stories and explore opportunities to elevate these successful cases as international best practices when appropriate.
  - One success story to cite is how operating the Yuxinou has already led to the development of many systematic innovations, such as volume- and price-tied coordination systems, systems for integrating government leadership with market operation, and unified International Railway Freight Waybills.
  - These innovations have dramatically enhanced transportation efficiency and lowered logistics costs to the benefit of all parties and could be replicated in railway operations across the region.

B. Be a coordinator and help advance the harmonization of overland trade rules

- Chongqing could consider pushing forward efforts to standardize regional practices and conventions, including enhancing national and regional customs coordination, which could significant raise transport efficiency and lower costs.
  - For example, the customs union that include Russia, Kazakhstan, Belarus, Uzbekistan, Tajikistan, and Kyrgyzstan played a valuable role in facilitating the Yuxinou's success in connecting and operating across Central Asia. HP's business has certainly benefited from the standardization and better coordination of customs clearance practices—and we strive to continue to work with regional authorities to advance such coordination efforts across the region.
  - Indeed, there remains work to be done on the customs clearance front. For example, cargo traveling on the railroad faces additional customs clearance when it crosses the Mongolian border. As such, Chongqing could call for greater cooperation between China and Mongolia to facilitate additional customs coordination between the two countries, in effect contributing to the harmonization of overland trade rules.

C. Continue to develop the e-port system and encourage countries along the rail route to join the e-port unification system

- Chongqing could consider calling for the adoption of a single e-port system across all countries along the Yuxinou, thereby further facilitating trade across the region.
  - Chongqing has already built a unified electronic platform for processing customs declaration, inspection, processing, foreign exchange write-off, export tax rebates, and other related trade services. The city also plans to launch a single-window system for processing government services related to international trade.
  - Moving forward, the city could share a unified electronic system for processing air, water, rail, and road transport customs services, instituting a single-form system and eliminating the need for duplicate paperwork and reporting.
  - More broadly, as trade volume picks up along the route, regional authorities—with Chongqing taking the lead—could continue to expand and upgrade key border customs facilities to meet increased traffic needs. For example, as a commercial pioneer on the railway, HP benefited tremendously, and will continue to do so, from enhancements made at the Alashankou gateway.

3. Use Chongqing FTZ to promote innovation in overland trade service industries such as finance and logistics

A. The Chongqing government could consider using railway freight orders as an admissible document to demonstrate ownership of goods—which would boost efficiency and address enterprise financing needs.

- Financial institutions within the FTZ could seek government support for piloting the use of railway transport orders as admissible documents demonstrating ownership of goods for hypothecation purposes. If approved, this could play a role in helping to standardize rules governing financial services in overland trade in the future.

B. Take advantage of Port Orchard's unique and advantageous location to position Chongqing as a hub for trade and logistics

- Chongqing FTZ could consider utilizing the geographic advantage of Port Orchard, providing support by crafting policies, appropriating funding, encouraging greater application of science and technology in its operations, and facilitating more efficient customs clearance—all to benefit developing a more coordinated multimodal network;
- Chongqing may consider establishing designated ports for importing meat, fruits, grains, and plants, as well as designating comprehensive open port that offers integrated containers, automobile roll-on/roll-off, and neo-bulk cargo services airline; and,
- City leaders may also consider enhancing use of bonded logistics in Port Orchard and create a full service, comprehensive, multimodal transportation hub connected by ports and supported by air, rail, road, and waterway routes, as well as a cross-border logistics path consisting of the Yuxinou, the Yangtze River Golden Waterway, and the ASEAN land transport system.

C. Establish and enhance the logistics service systems to boost efficiency

- Chongqing government could also consider creating a foreign trade "one-stop window" model through the FTZ to establish a comprehensive service and information platform for multimodal transport logistics;
- Consider piloting a supervision and information command center for multimodal transport to enable free docking, transit, assembly, and distribution of goods suitable for multiple transport modes, including railways, roads, and waterways
  - This pilot could potentially allow claims and clearance in multiple locations and at convenient times, while enabling mutual acceptance of inspection and quarantine and legal assistance to build the FTZ as a pilot zone for overland trade and multimodal transport; and,
  - This pilot measure could help improve the efficiency of customs clearance while generating best practices for policymaking.

D. Take advantage of the synergy created by the Chongqing Connectivity Initiative (CCI) and Chongqing's FTZ to generate best practices—in particular on multimodal transport.

- Through CCI, Chongqing was able to collaborate with Singapore to significantly shorten air transport time by absorbing the practices refined in that Southeast Asian island nation in facilitating and managing multimodal transport.
- Based on this, Chongqing's FTZ could consider further utilizing the CCI platform to examine issues and challenges concerning multimodal transport, especially in terms of coordinating between land and air transport. Chongqing's FTZ could

summarize its relevant experience to generate best practices and establish standards and rules to promote the development of multimodal transport focused on overland trade.

4. Leverage modern technology to improve efficiency of overland trade

A. Use information technology (IT) to facilitate greater ease and convenience inland trade

o Chongqing could consider working more closely with other countries along the Yuxinou route to enhance communication and coordination, and encourage greater use of IT for the purposes of easing land trade.

➢ The goal could be to identify ways for Chongqing to partner with relevant governments and enterprises in countries along the Yuxinou—to explore modern IT avenues to streamline customs, inspection, and quarantine procedures, and unify basic technical standards for customs clearance and trade along the railway.

B. Consider the railway as a driver in creating big data and cross-border e-commerce platforms

o Chongqing government could consider leveraging the data resources of the railway to promote the development of big data platforms across the region; facilitate integration of big data cross-border e-commerce platforms for enterprises; and, continue extending the cross-border e-commerce industry chain to establish a big data industrial cluster.

➢ Ultimately, Chongqing's efforts could foster a whole new industry chain, integrating big data mining, cross-border e-commerce, logistics, financial services, and other new commercial models centered around the municipality.

5. Enhance communication with other regional nations so that Chongqing can position itself to play a leading role in the creation and coordination of rules governing overland trade

A. The Chongqing government could propose forming an executive committee of companies registered in countries along the trade route—an enterprise alliance of sorts.

o Chongqing could initiate setting up an executive committee of companies from countries along the trade route, including foreign trade stakeholders in sectors such as railway, airlines, manufacturers, trade, logistics, and finance. The committee, under Chongqing government's leadership, could meet on a regular basis to discuss issues important for overland trade and propose recommendations to governments along the railway route.

B. Host international or regional summits and seminars on overland trade

o Chongqing could consider hosting global or regional summits or seminars/forums in major cities along the Yuxinou route for government officials, corporate representatives, and trade experts from relevant countries to discuss emerging issues and challenges relating to overland trade, potentially seeking co-sponsorship from other municipalities.

o We suggest Chongqing leaders consider using these convening events to highlight Chongqing's progress in overland trade and to discuss potential rules governing overland trade for further discussion. Major meetings could be held annually and include an annual update to related trade rules.

C. Propose and organize a multi-level comprehensive working group involving governments, international organizations, and think tanks

- Chongqing could consider leveraging the relationships that it has developed with various governments along the Yuxinou to build a comprehensive government working group, with the aim to strengthen exchange and collaboration through regular meetings and ad hoc coordination to address problems in overland trade and multimodal transport;
- HP also suggests Chongqing consider organizing a working group involving international organizations—such as the World Trade Organization (WTO), the United Nations Conference on Trade and Development(UNCTAD), the Shanghai Cooperation Organization (SCO), and ASEAN—to discuss overland trade and multimodal transport as well as the application of standards and common practices in international and regional trade; and,
- Chongqing could also consider collaborating with relevant Chinese trade research institutions to organize a working group consisting of international trade think tanks and experts to conduct regular exchanges and submit policy recommendations.

D. Propose and establish a trade and logistics technology alliance or cooperation mechanism with countries along the railway route

- Chongqing could also consider setting up a trade and logistics technology alliance with countries along the railway route, linking government and industry to conduct research, training, and field inspection with a focus on technical exchange and promotion; and,
- Chongqing could also invite financial and technology companies to join the alliance or another platform with the "ask" to provide hardware, software, financing, technical support, and solutions to the government and enterprises in Chongqing and other countries and regions along the Yuxinou route.
- These efforts could help disseminate technology and foster innovation in the region, and could also enable the emergence of a set of common practices and conventions—laying the foundation for future rules governing electronic customs and paperless trade.

E. Organize regular import expositions for countries along the Yuxinou and with BRI countries

- Chongqing government could also consider taking the lead in organizing a series of regular expositions involving countries and markets along the Yuxinou and BRI countries—helping citizens of these countries to directly benefit from overland trade and also providing a regular and trusted platform for companies to showcase their products for an increasingly dynamic and interconnected economic region.
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HP's role in supporting Chongqing

1. HP's contributions and history in Chongqing

HP has a long history in the China market, having operated in the country for over three decades. HP China was founded in 1985 as the first high-tech joint venture in the country. Our 30 years of successful development in China is due in no small part to the valuable advice and guidance that HP has received from the leadership of Chongqing in recent years. We are very grateful for that support.

The results of our successful collaboration speak for themselves: In August 2016, HP shipped its 100 millionth PC from

Chongqing.[1] This is remarkable given that Chongqing produced no personal computers in 2007. By 2015, spurred on by HP and other companies who set up facilities in Chongqing – with HP being the first major international PC manufacturer to set up shop here – the region produced one-third of the world's personal computers.[2]

In the years since our founding in China, we have continued to contribute to the region's economy—and, through it, to China's national economy. Our manufacturing operations in Chongqing support over 15,000 jobs for the region. The success here, by extension, percolates throughout the country: 800 engineers in our R&D center in Shanghai, 1,300 service centers across 31 cities, and 4,500 retail stores.

More concretely, since our earliest days, we have invested—directly and indirectly—over $2.6 billion in Chongqing.[3] In 2015, the total economic impact, the output, of our production, as well as those of our final assembly suppliers, was about $54 billion.[4] To put that into perspective: this means that just about 80 percent of our total China output centered in Chongqing.[5]

Chongqing has been, and continues to be, the backbone of our presence in China. As we look ahead to enhance our partnerships in China, we will once again look to Chongqing as our main base of support. Since HP is one of the first supporters—and largest users—of the Yuxinou, we will continue to strive to position HP as a contributor to the next stage of Chongqing and China's development, driving innovation and advanced manufacturing, as well as the development of overland trade. There are a few specific ways HP strives to continue to enhance our cooperation with Chongqing in the future:

A. Helping to spur Chongqing's inland economic and trade development

Since establishing operations in Chongqing in 2008, HP has been committed to aiding Chongqing's economic development. To this end, HP has actively increased investment and established and expanded production lines in Chongqing. Currently, production in Chongqing accounts for 60 percent of HP's global supply. HP's arrival in Chongqing helped promote the municipality's information technology sector and accelerate the vertical integration of Chongqing's supply chain. HP's foreign exports have served as engines of growth for Chongqing's foreign trade development, helping Chongqing become a foreign trade leader in central and western China. All this could help position Chongqing as a critical voice in developing overland trade rules.

B. Supporting Yuxinou's development and the creation of an overland logistics channel

HP's development in Chongqing is closely linked to development of the Yuxinou. It is because of companies with large production volumes—such as HP—that demand for the Yuxinou exists. And the benefits are mutual. The Yuxinou accelerated HP's growth in Chongqing, and HP provided the Yuxinou with a solid supply of goods to transport, currently contributing 45 percent of total freight.[6]The Yuxinou serves as a model for land transport and logistics for Chongqing, China, and the region.

C. Advocating for the development of overland trade mechanisms

Under the leadership of the Chongqing government, HP has had the honor of supporting overland land trade from China to Europe and has actively provided feedback on trade and logistics issues along the Yuxinou route. HP has also harnessed its

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[1] *Chongqing Ribao, "Di Yi Yi Tai 'Chongqing Zao' HuipuBijibenDIannao Xia Xian."*
[2] *Wang Jingjing.*
[3] *"The Impact of HP Inc. on China's Economy."*
[4] *Ibid.*
[5] *Ibid.*
[6] *徐润秋 [Xu Runqiu] and 袁刚 [Yuan Gang], Interview by ASG, July 18, 2017.*

years of business experience to offer best practices to assist the Chongqing government and Yuxinou company find ways to institutionalize overland trade mechanisms. For example, HP has partnered with Yuxinou company and other entities in countries such as Russia to explore effective technologies, logistics solutions, and standards for heated train containers during the winter, and HP will strive to continue to offer support for trade rules and best practices to be institutionalized.

D. Promoting Chongqing's global brand and its reputation in overland trade

Chongqing is inland China's undisputed trade center and is increasingly a hub for global trade. HP continues to promote Chongqing overseas, leveraging our global reach to highlight the efficiency and convenience of the Yuxinou among Yuxinou route countries and throughout Europe. This has helped to attract more companies to ship goods via the railway. HP also strives to help Chongqing recruit more air freight and logistics firms to extend their lines to Chongqing, further enhancing and globalizing Chongqing's logistics capabilities and laying the foundation for a world class, Chongqing-centered multimodal network.

2. HP's future contributions to Chongqing's development

HP will strive to continue to lend its global expertise and influence to facilitate communication between Chongqing and the rest of the world, promote the establishment of platforms to facilitate experience sharing, and assist the Chongqing Municipal Government to promote the development of overland trade rules and achieve its strategic development goals. *In these respects, we believe that HP could be especially helpful in the following three areas*:

A. Trade Promotion

o **Maintain our support for Chongqing's development by helping to expand and strengthen Chongqing's trade logistics industry**

- Support Chongqing's efforts to open up China's inland areas and develop land trade routes. HP will also strive to expand Chongqing participation in HP's global supply chain and HP's investments in Chongqing.
- Optimize HP's supply chain in China and the Asia-Pacific, including striving to increase the trade volume of HP products manufactured and sold in third country markets (such as Europe and southeast Asia) via distribution centers in Chongqing to promote Chongqing's overland trade and multimodal freight transport and build long-term demand for establishment of land trade rules.

o **Promote Chongqing and the railway abroad and help increase trade flow on its return routes**:

- Provide support as Chongqing expands its effort to attract imports from more countries along the Yuxinou;
- Participate in trade expositions featuring regional cities and use HP's global network to promote Chongqing and the Yuxinou abroad; and,
- Strive to gradually increase the trade flow on the Yuxinou's return route, encourage route countries to fully participate in trade, and promote development of electronic ports in future route countries.

B. Legal Framework

o Explore ways Chongqing could create overland trade mechanisms, including pilot programs, to codify and standardize proposed solutions.

- Continue to cooperate with the Chongqing Municipal Government, the Yuxinou Company, domestic and foreign companies, and other participants along the trade route to promote innovations in overland trade rules and logistics best practices.

o **Participate in building platforms to discuss overland trade rules by sharing HP's China and Chongqing experiences**

- Draw on HP's experience and role as a leading foreign investor in Chongqing to join discussions on new ways to craft rules to govern overland trade, as well as sharing HP's best practices from Chongqing and, more broadly, China.

o **Identify prospective land trade problems from the perspectives of enterprises and users, and explore ways to develop better, standardized trade rules to resolve issues.**

- Maintain close communication with the Chongqing government and industries and report trade and logistics problems, challenges, and needs; propose collaborative solutions for consideration; and,
- Continue to improve our practices to establish a stronger foundation for future efforts to develop land trade rules.

C. Internationalization

o **Utilize HP's global position to support Chongqing's international communication around overland trade rule development**

- Use our status as a global company and our worldwide network to assist Chongqing collect and analyze experiences, challenges, and suggestions from international partners on overland trade and multimodal transport; and,
- Provide timely feedback to Chongqing and strengthen communication with governments and industries in other relevant countries to help promote establishment of land trade rules.

o **Leverage HP's expertise and experience to promote greater cooperation between Chongqing and other countries along the Yuxinou route**

- Encourage overland trade partners to utilize high-tech measures to create a more convenient customs clearance process;
- Support the Chongqing Municipal Government's operations through best practice sharing, technical support, and training and exchange programs for officials from the Chongqing Free Trade Zone and other municipal officials involved with developing overland trade rules.

V. Call to Action

In the 21st century, as markets and economies become even more interdependent and connected, public and private entities will search for new opportunities for collaboration. For the last few decades, efforts have been made to standardize and harmonize how nations interact with each other commercially in the maritime and air domains. Now, with rising demand for more options in avenues of trade—coupled with national efforts driving greater integration and trade, such as President Xi Jinping's signature "Belt and Road" Initiative—there now exists a similar need to ensure that rules and standards will also govern land trade.

In many ways, Chongqing, situated on the edge of western China and at the opening of the revitalized "Silk Road," commands a unique opportunity to play a critical role in the development of land trade rules. In recent years, Chongqing has made tremendous investments building out the necessary commercial and industrial infrastructure to transform the city into a global trade hub. Now, with its new found economic weight, the city has the opportunity to lead regional and even global discussions on how land trade rules should be written for this century's global economy.

HP, a global company with a deep history and economic roots in Chongqing, will strive to play a positive role as an advisor and partner to Chongqing's leaders should they pursue the development of land trade facilitation mechanisms. In the years to come, HP will also work to deepen its engagement with the region along the Yuxinou—assessing, advising, and ultimately implementing ways to standardize how markets interact with each other along this major transport artery connecting an increasingly dynamic region. Finally, HP will also strive to work with the Chongqing government to advance all of the municipality's goals to facilitate enhanced trade from Chongqing to the world.

Explore Chongqing FTZ's Contribution and Innovation

By Dr. Xiaoping Yang

President of BP China and Chairperson of BP (China) Holdings Limited.

1. Practice and experience of FTZs at home and abroad

1.1 Similarities and differences between domestic and overseas FTZs

The pilot free trade zones in China represent, in nature, a new form of foreign trade zones in ordinary sense. The foreign trade zone is a specially regulated area within the borders of a country or region without barriers imposed by customs authorities, where preferential trade policies are adopted. In different countries and regions, and in different phases of history, they are known as free ports, export processing zones, foreign trade zones, bonded warehouses, tax-free zones, etc. Key policies of FTZs include customs bonding and tariffs exemption, supplemented by concessions in income-tax and other preferential policies.

Compared with FTZs by international standards, pilot FTZs of China are more about transforming trade models, opening up finance and investment related services and trade in services, transforming government functions and introducing reforms of administrative systems. It is not hard to see that "pilot" is a characteristic of China's FTZs, aimed to repeat and promote institutional innovations and success practices. It extends the basic connotation of FTZs in the general sense beyond trade and investment facilitation.

1.2 Experience drawn from overseas FTZs

The experience of FTZ development overseas shows that sound infrastructure, environment and services, in particular legislation, are key to high-standard FTZs.

1.2.1 Infrastructure, environment and services of FTZs

To make FTZs more attractive, countries have all made significant investment in infrastructure, environment and services. In Incheon free economic zone of the Republic of Korea (ROK), efforts have been made to provide U(Ubiquitous)-City and Eco-City services and functions. The Eco-City perspective, in particular, is about making the city green and environmentally friendly with low carbon footprint, to minimize energy consumption and inject strong impetus into sustainable development of FTZ. In addition, to support foreign investment, the Incheon free economic zone has set up a one-stop service zone, to provide legal, taxation and accounting consultancy service and make prior assessments on investment projects.

Many other overseas FTZs are also known for their impressive infrastructure and services provided. The Shannon Free Zone of Ireland, with state-of-the-art office space and plants, sufficient water and electricity supply as well as optical communications and broadband networks connected to major European and American cities, makes things easy for enterprises in the zone. The Aegean free trade zone of Turkey provides steady, low-cost but best-quality services to enterprises, including water, electricity, natural gas, Internet access, as well as transportation, customs declaration and exhibition services at a reasonable cost. Apart from these basic services, it also provides security and other special services, and gives tremendous support to high-tech innovation. The conference hall within the FTZ, with advanced facilities, is able to house a large audience, making it convenient for high-tech companies to launch new products.

1.2.2 Customs regulation policy adjustment of FTZs

FTZs are closely associated with import and export flows, in which customs authorities play a significant role. To facilitate business, FTZs around the world introduce policies to optimize customs supervision and to make things as easy as possible for enterprises without violating laws.

The McAllen FTZ of the United States has introduced a weekly customs declaration policy, allowing enterprises on the zone to fill in declaration forms only once a week, instead of going through the procedure at every unloading.

The Port of Rotterdam also provides multiple facilitating policies, including a 24-hour customs clearance system on every day except for Sundays, pre-arrival notification, risk analysis and electronic inspection. With these policies, the cargo owners may send customs-designated containers to inspection without holding up the inspection-exempted goods. It increases clearance efficiency and avoids customs holds. The port also replaces inspection with management of account books and inventory data. The customs authorities may replace traditional inspection with verification of accounting statistics of eligible companies. The customs authorities would issue permissions of different categories to companies accordingly, to determine how much convenience they enjoy in terms of import-export procedures.

All in all, the customs regulation system is aimed at facilitating business. Chongqing may coordinate with customs authorities to reach a package deal that truly benefits businesses.

1.2.3 Supporting legal framework of FTZs

In most cases, legislation is adopted before FTZs are established. In only a small number of cases, FTZs are set up before their governing law comes into existence, and relevant laws are then formulated to adapt to the development of the FTZs.

The United States firstly released the Foreign-Trade Zones Act, defining the nature and functions of FTZs, and providing the legal ground and standards for FTZs across the country. Two years later, the very first FTZ was established in the country. The Act has been amended a number of times according to evolving situations, driving the growth of FTZs in the US.

To ensure smooth development of the Manaus free trade zone, the Brazilian government has, since 1976, promulgated 19 acts and decrees, providing protection, incentives and preferential conditions to foreign investment and the import of foreign advanced technologies, and at the same time, lay out strict restrictions to ensure growth of domestic industries and meet localization targets.

1.3 Experience drawn from the development of coastal FTZs in China

1.3.1 Efforts to develop coastal FTZs in China

China's FTZs also take infrastructure development very seriously. Take Shanghai FTZ, China's first FTZ, for example. Its FTZ boasts a mature transportation network of waterway, railway, expressway, aviation and urban rail transit. The city enjoys the first-rate harbor infrastructure, and is catching up with world-class international port cities in terms of storage facilities and the distribution and transportation system. It is now exploring the possibility of putting in place a distribution and transportation system with air bridge service in cooperation with Shanghai Pudong International Airport.

As to customs supervision, the regulatory principle of "open entry at frontier, safe and effective control at secondary line and free flow within the zone" is implemented. The international trade single window system has been launched and tentative steps taken to establish a regulatory system for cargo status by category.

As to legislation, China has amended and implemented relevant provisions of 3 laws, 17 administrative regulations, 3 State Council documents and 3 departmental regulations approved by the State Council. The Shanghai Municipal People's Congress has implemented the *Regulations on China (Shanghai) Pilot Free Trade Zone*, providing comprehensive regulations in the form of local legislation on institutional innovation and specific reform measures of the pilot zone.

1.3.2 Fruits of China's coastal FTZ development

Since its establishment, Shanghai FTZ has made daring explorations in investment, trade, finance and in-process and subsequent regulation with institutional innovation as the core and by streamlining administration and delegating power to lower levels, combining delegation and administration, and optimizing services, and produced a number of reform fruits.

On December 21, 2014 and November 10, 2016, drawing experience from established pilot FTZs, the State Council issued the Notice on Promoting Repeatable Experience of China (Shanghai) Pilot Free Trade Zone and the Notice on Doing a Good Job with Repeating and Promoting Experience of the New Batch of Pilot Free Trade Zones. It demanded the whole country to copy and promote FTZ practices in investment management, trade facilitation, finance, opening up services, in-process and subsequent regulation, and in areas under special customs oversight to promote FTZ institutional innovations for customs oversight, inspection and quarantine – 48 practices and innovations in total – and specified the deadline. It's learnt that most of these practices and innovations have been introduced into Chongqing FTZ and the rest are either in testing or in the process of introduction.

It's noteworthy that after drawing experience from the City of London, Shanghai decided to co-locate the staff of the Pilot FTZ Steering Committee and Pudong New Area People's Government, so as to integrate relevant government functions and provide institutional support for the Pilot FTZ to assume and exercise the power delegated by the central government and ministerial-level authorities. What's more, Shanghai was the first in China to establish the governance structure of "common governance + statutory agencies", and has set up Lujiazui Financial City Council and Development Bureau to give play to the role of self-discipline and improve the regulatory effect.

Besides, some of Shanghai Pilot FTZ's attempts in opening up the financial sector and in innovations are also worth learning. It has made progress in capital account convertibility, market-based interest rate reform, reform of the foreign exchange administration system, RMB cross-border usage and service innovation, and in building an international financial market and a risk prevention system. The free trade accounting unit system is also in place. Well Tianjin FTZ is known for its financial innovations in combining industrial production with finance and in particular for its institutional innovation in finance leasing.

2. Positioning and development philosophy of Chongqing FTZ

2.1 Positioning

A key stop on the Belt and Road and the Yangtze River Economic Belt, Chongqing is a transportation hub with the international railway connecting Xinjiang and Europe, with water, land and air transport facilities, three Class I ports, and corresponding bonded zones, all in favor of the development of foreign trade. Chongqing FTZ is thus positioned by such advantageous natural and geographical conditions and economic foundation to be: a strategic pivot for Western Development and an interconnection hub for the Belt and Road initiative and the Yangtze River Economic Belt strategy. This is what distinguishes Chongqing FTZ from other pilot FTZs.

Besides, Chongqing FTZ stresses the development of advanced manufacturing because only with a big, competitive manufacturing industry can Chongqing truly play its role as a strategic pivot in Western Development.

2.2 Development philosophy

To make Chongqing FTZ a great success and tap its potentials in contribution and innovation, we first need to understand the idea behind China's FTZ program. We believe that China's FTZs have the following traits. First, as far as the benchmark is concerned, they are playing by international rules and aim for a level higher; secondly, as to the arena, they are opening up more areas to the outside world and deepening institutional reform; thirdly, as to the mechanism, they draw lessons and promote useful experience from pilot projects. These three dimensions of traits multiply with each other to form a three-dimensional policy framework. Each dimension is based on the other two.

We understand that it should be an expectable fruit and a possible path towards innovation for pilot FTZs to advance reform by further opening up to foreign investment, improve governance capacity and establish international rules in areas where they might be pacesetters.

Therefore, Chongqing should seek breakthroughs based on local characteristics. Only by so doing can it outperform coastal FTZs in innovation and development.

3. Explore possible breakthroughs and innovations for Chongqing FTZ

3.1 To actively prepare for possible circumstances and issues that might arise in the process of opening to foreign investment, and sum up experience and lessons for the rest of the country

In June this year, both the central government and Chongqing FTZ released their respective 2017 negative list of market access for foreign investment, reducing special administrative measures on market access. We are confident that China will continue to further and accelerate her opening up to foreign investment and we have every reason to believe that the negative list, both the national version and the local version of Chongqing FTZ, will be cut further.

Hence in response to industries on the negative list, we suggest Chongqing evaluate local reality as soon as possible, sort out local industries with development basis, experience and potentials and make efforts to actively attract foreign investment.

Meanwhile it should conduct the stress test and the risk test to prepare for further opening other industries to foreign investment in the FTZ and other parts of the country, and sum up the experience and lessons drawn in the process for the reference of other FTZs and the rest of the country.

3.2 To further reform the customs oversight mode, promote and popularize "Chinese" practices of convenient and efficient customs clearance and develop China-led rules for land-borne trade.

Since Chongqing is in the hinterland of China, we may start with rail transport and consider developing land-borne trade rules through institutional innovation.

The Master Plan on China (Chongqing) Pilot Free Trade Zone proposes to: "support the establishment of multi-modal transportation customs regulation center in the pilot FTZ, and build an international logistics system covering railway, highway, water and air transport"; "develop the China-Europe land-borne trade passageway, rule system as well as international railway transport system; …develop international sea-rail combined transport, and cross-regional and cross-border land transport; "with the China-Europe railway as the key… gradually realize information exchange, mutual recognition of regulatory results, and mutual assistance in law enforcement; and explore cooperation with other countries along the Belt and Road to create a safe, convenient trade supply chain."

To this end, we suggest Chongqing keeps reforming and improving the regulatory mode, follow the idea of "open entry at frontier, safe and effective control at secondary line and free flow within the zone", actively reshape the customs clearance procedures and streamline regulatory formalities. For example, resident companies fill in the customs clearance form only once a week to save the time and cost. Cargoes are allowed to enter the FTZ directly with the presentation of the inward manifest, and import/export records and formalities for international transit, consolidation and deconsolidation are simplified. The electronic regulatory information network is promoted and oversight is tightened by through the comparison of import/export lists, electronic account management, intelligent management of checkpoints and risk analysis to better align second-tier regulation with first-tier regulation. An inspection and quarantine regulatory mode that "is convenient for import/export and can effectively prevent safety risks" is under exploration, the third-party quality inspection and certification system for exports is in place, and the certificate of origin system for transit cargos is established. By streamlining formalities and reducing the time of customs clearance, Chongqing FTZ makes it more convenient for businesses and mitigates its regulatory workload at the same time.

Based on that, the pilot FTZ is supported to cooperate and communicate with other countries and regions along the Belt and Road in aspects of customs, inspection and quarantine, certification and permission and standard measurement, introduce "China's standards" into other countries and regions based on mutual recognition of regulatory authority, and pave the way for the establishment of China-led land-borne trade rules.

3.3 To improve oversight on international e-commerce, strive to solve the exchange settlement difficulty for export-oriented e-commerce companies, and help them gain dominance in forming international e-commerce rules.

Chongqing FTZ should seize the opportunity presented by the current prudent macro management policy for foreign exchange, which is mainly aimed to "stimulate the inflow of foreign exchange", draw experience from previous attempts (such as the Express Exchange Settlement platform initiated by Chongqing), understand typical modes practiced in other parts

of the country (such as Jinhua City Implementation Measures for Foreign Exchange Administration for Personal Trade (trial) in Zhejiang province), and summarize their experience and lessons. Based on that, it should actively explore ways to fundamentally solve conflicts and problems caused by the failure of China's foreign trade and foreign exchange administration system to adapt to the soaring development of e-commerce in the post-financial crisis era and against the backdrop of international trade fragmentation. A typical problem to be solved is that cross-border e-commerce companies are disqualified for the certificate of exchange settlement for export because they are not classified as general trade importers/exporters in China.

The above explorations and reform mean a lot for China to take over the initiative in establishing international e-commerce rules and lead global governance in international economic and trade affairs. Only by so doing can we match China's key position in the international trade arena and leadership in the global e-commerce market.

3.4 To actively open up the financial sector and deeply integrate with the Belt and Road Initiative

As the demonstration window for the opening up of Chinese financial sector and the experimental zone for cross-border RMB services, FTZs should deeply align with the Belt and Road Initiative through financial innovation and strengthen in-depth cooperation and connectivity with other financial markets along the Belt and Road. Chongqing FTZ may make full use of the China-Singapore demonstration project to connect to the Singaporean financial market, facilitate investment and financing through cross-border loans and offshore financing against domestic guarantee, promote two-way investment and support infrastructure and industrial interconnectivity.

Conclusion

Chongqing FTZ will surely promote China's hinterland to further open up to foreign investment and improve its investment environment, and provide more international, convenient services and institutional advantages for resident companies. Its embrace of the Belt and Road Initiative will create opportunities for multinational corporations including BP at home and overseas markets.

BP is one of the leading foreign investors in the oil and gas sector in China. Thanks to relentless efforts in the past four decades, our business activities in China include exploration and development, petrochemicals manufacturing and marketing, aviation fuel supply, oil products retailing, lubricants, oil and gas supply and trading, LNG terminal and trunk line and the chemicals technology licensing. Our Yaraco JV with Sinopec has been successfully operated for 21 years since it was established in 1995.

As a multinational energy company, BP has operations in over 70 countries around the globe and has cooperation projects in many countries and regions along the Belt and Road, including Indonesia, Russia and the Middle East. Many of these projects are in partnership with Chinese NOCs, such as China National Petroleum Corporation (in Iraq), Sinopec (in Angola in West Africa) and China National Offshore Oil Corporation (in Australia, Indonesia and Argentina).

We believe that the development of the FTZ will consolidate Chongqing's strategic advantage and accelerate it to integrate into the international market. We are looking forward to further our cooperation with Chongqing in more areas on this open and international platform, and would like to contribute our advantages and rich experience in the energy sector, business operation and management, branding, innovation and cross-border investment to Chongqing's sustainable prosperity.

Differentiation Between Chongqing Pilot Free Trade Zone and Other Free Trade Zones, and Development of Financial Services

~ Recommendations for Future Initiatives Based on Case Studies of Other Countries ~

By Takahiko Yasuhara

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1. Chongqing's advantages and Establishment of the Chongqing Pilot Free Trade Zone

(1) Chongqing as a test site for new reforms and open-door policies

Chongqing, a city driving the implementation of national strategies

The State Council of the People's Republic of China announced on 31 March 2017 a general plan for the establishment of seven pilot free trade zones (FTZ), including Chongqing. (The other six zones are in Liaoning, Zhejiang, Henan, Hubei, Sichuan, and Shaanxi provinces.) This announcement marks the third round of FTZs to be established in China, coming after those in the city of Shanghai in September 2013 and Guangdong Province, Tianjin City, and Fujian Province in April 2015.

Chongqing is the node that connects the areas covered by China's Belt and Road Initiative and the Yangtze River economic belt, and has been positioned as an important strategic base for supporting China's strategy to develop the western regions of the country. It will be transformed into an international logistics hub for China's inland regions, and is expected to become a location of strategic importance for promoting economic access to and development of these regions.

(2) Chongqing's advantages

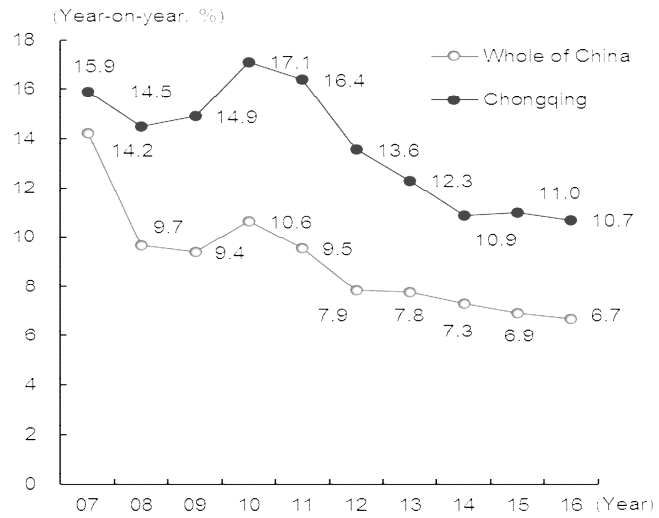
One significant reason for such expectations is the combination of the various advantages Chongqing enjoys.

The first of these is its geographical advantage. Chongqing occupies a geographical position that promotes it as a center for collaboration with the eastern regions of China via the "golden waterway" of the Yangtze River. It is also the point of origin for the China-Europe railway (known as the "Yu'Xin'Ou Railway"), making it a hub that connects the Yangtze River basin with Central Asia and Europe in the west by rail. Furthermore, Chongqing's geographical advantage offers it the potential of becoming a bridge that facilitates exchanges between China and countries to the south, such as Southeast Asian nations, via the Yu'Xin'Ou Railway and the south-bound highway corridor. Chongqing also has the potential to become an

essential node connecting the area covered by the Belt and Road Initiative with the Yangtze River economic belt, and which promises to contribute significantly to the development of China's mid-western regions.

The second advantage of Chongqing is the growing strength of its industrial base. The evidence for that is underscored by GDP growth figures. The real GDP growth rate of Chongqing in the past 10 years (2007 – 2016) has consistently surpassed the national growth rate for all of China, and ranked first in the country in 2016 at 10.6% (Figure 1). The average real GDP growth rate for the past 10 years was 13.7%, higher than Hubei Province (11.8%) Sichuan Province (11.6%), and Shaanxi Province (12.3%).

Figure 1: Real GDP growth rate of Chongqing [Average annual real GDP growth rate from 2007 – 2016]



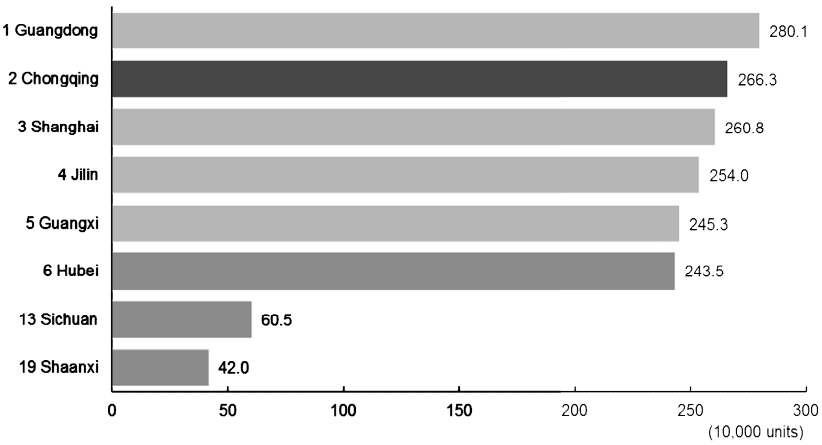
(Unit: %)

Chongqing	13.7
Shaanxi	12.3
Hubei	11.8
Sichuan	11.6
Whole of China	9.0

Source: National Bureau of Statistics of China, CEIC Data

One feature of Chongqing's industrial base is the agglomeration of leading automotive industries from China's inland areas positioned there. Chongqing's automobile production volume for 2016 was 2,663,000 units, ranking second in China after Guangdong Province, and exceeding the production volumes of all other locations with third-round designated FTZs—Hubei Province (2,435,000 units), Sichuan Province (605,000 units), and Shaanxi Province (420,000 units) (Figure 2). The automotive industry is a key industry that will drive global innovation in the future through fusion with IT, as represented by technologies such as self-driving cars and cars powered by new energy. It is worthy of special mention that there are also many IT-related companies in Chongqing, including those in industries related to the production of mobile phones and laptop computers. The IT industry is an indispensable element in future innovation, and it is fair to say that this concentration of automotive and IT industries, both of which promise to play an important role in technological development, puts Chongqing at an even more advantageous position than Hubei, Sichuan, and Shaanxi Provinces.

Figure 2: Automobile production volume categorized by province/direct-controlled municipalities/autonomous regions (2016)



Source: "Comparison of automobile production volume: More than 2 million units for seven provinces, with Guangdong, Chongqing, and Shanghai taking the lead" (Yicai Media Group, 11 April 2017)

2. Chongqing's challenges in achieving further growth, and Japan's "Investments for the Future Strategy 2017"

Chongqing's geographical and economic advantages and its important role in driving the development of the areas covered by the Belt and Road Initiative, the Yangtze River economic belt, and China's western regions may require the city to apply the successes of existing pilot FTZs such as Shanghai City, and to utilize Chongqing's pilot FTZ to experiment with various innovations.

(1) Strengthening experimentation to further enhance Chongqing's strengths in the logistics, automotive, and IT sectors

In particular, it may prove important to conduct experiments in order to further enhance Chongqing's strengths in the logistics, automotive, and IT sectors. One reference for such experimentation is Japan's "Investments for the Future Strategy 2017", which promotes experimentation with various socioeconomic innovations in strategic areas such as mobility and FinTech.

(2) Responses to the advent of an era of population decline

How the city responds to increasing population decline holds the key to enhancing Chongqing's role in China's national strategies. Currently, Chongqing holds a superior position in terms of population growth—average annual permanent population growth rate for 2011 – 2016 was 0.87%, surpassing the national average of 0.52%, as well as the average growth rates for Sichuan Province (0.52%), Hubei Province (0.44%), and Shaanxi Province (0.37%). However, looking at overall trends in China, it is an unavoidable fact that the pace of decline in the working-age population will accelerate in the future.

For that reason alone, countering the decline in working-age population by creating attractive living environments to draw in outstanding human resources, and to extend the healthy lifespans of Chongqing's citizens, are significant challenges to overcome in order for Chongqing to move ahead of the competition as a pilot FTZ location. In that sense, "Investments for the Future Strategy 2017", which aims to extend people's healthy lifespans of the people, can serve as a very useful reference for Chongqing.

(3) Establishing institutional frameworks to enable bold experimentation

In addition, "Investments for the Future Strategy 2017" also sets forth the introduction of a regulatory "sandbox" system for Japan's National Strategic Special Zones, and aims to establish frameworks to enable even bolder experimentation. This spirit is reflected in China's establishment of pilot FTZs, and Japan's initiatives can be considered very relevant to China and Chongqing in this respect.

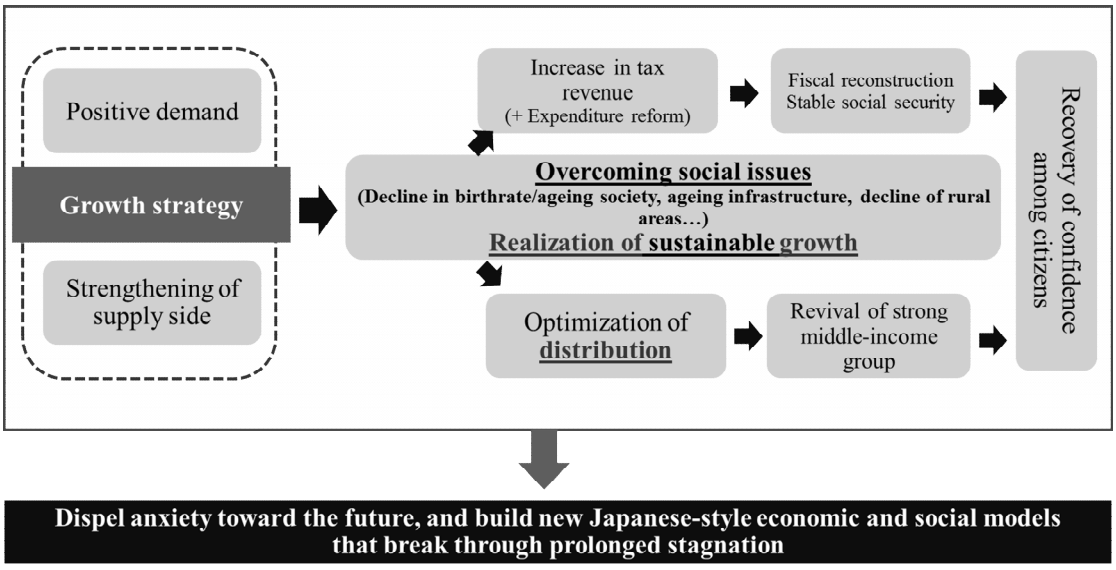
Based on this recognition, the following section introduces Japan's "Investments for the Future Strategy 2017", and leads into the strategy's implications for Chongqing.

3. Japan's "Investments for the Future Strategy 2017"

(1) Investments for the Future Strategy 2017 and Society 5.0

The Abe administration formulated their first growth strategy in 2013, and thereafter, have revised it every year. The fifth version of the strategy, titled "Investments for the Future Strategy 2017", was published in June this year. First, we will touch briefly on the objectives of the Abe administration's economic policies, known as "Abenomics".

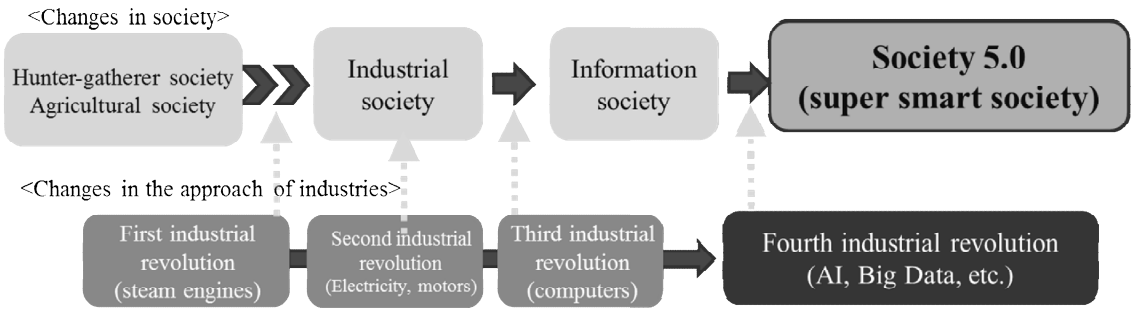
Figure 3: Overall schematic diagram of Abenomics



Source: Industry Research Department, Mizuho Bank

The most serious structural issue faced by Japan is its declining birthrate and aging population. This problem is contributing to growth in wealth disparity and financial deterioration, and gives rise to anxiety among the citizens for their future as well as long-term economic stagnation. The administration is making a strong push to dispel anxiety among corporations and citizens regarding the future, and the growth strategy is positioned as a core effort in achieving that goal. Against this background, the solution put forward in the growth strategy was the realization of "Society 5.0 (super smart society)".

Figure 4: Society 5.0



Source: Prepared by Industry Research Department, Mizuho Bank based on materials from the New Industrial Structure Committee of the Industrial Structure Council, METI

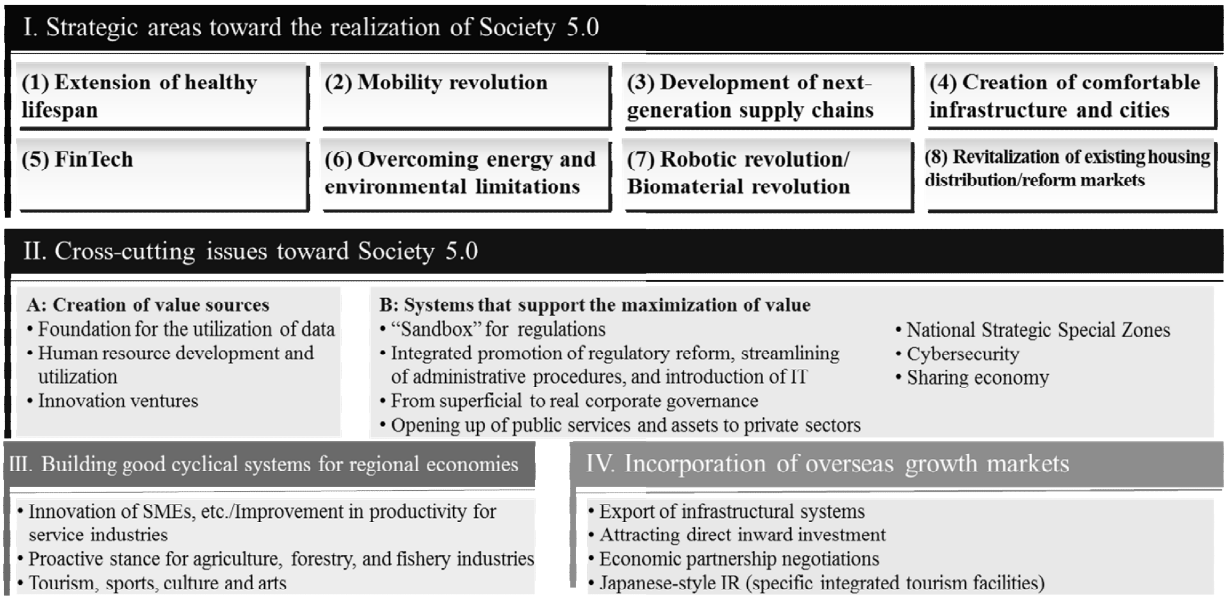
"Society 5.0" refers to the fifth society that follows on from the past four kinds of economic societies that humankind has built through history—hunter-gatherer societies, agricultural societies, industrial societies, and information societies; in short, "Society 5.0" is used to signify the new society that we should establish going forward. It is defined as a human-oriented society where a high degree of fusion between digital and physical space contributes to eliminating disparity due to region, age, sex, language, etc., and to bringing about a balance between economic development and the resolution of social issues through the provision of goods and services that are finely tuned to meet the diverse existing and potential needs of society, and where the people can live comfortable, vibrant, and high-quality lives. It also encompasses the promotion of initiatives aimed at the realization of such a society.

While Japan is confronted by social issues such as a declining population and aging society at a pace that surpasses the rest of the world, Japan's "Investments for the Future Strategy 2017" takes the approach of conversely turning this situation into a strength and taking advantage of it. One example of this approach is the idea that problem-solving innovation will lead to significant potential demand. Although there is a shadow of uncertainty about advancements in artificial intelligence robbing people of their jobs, this risk is relatively low in Japan where the declining population has given rise to concerns about labor shortages; hence, the country will be able to take bold and drastic steps toward improving productivity. The strategy also puts forward the idea of first taking bold action, then establishing a system, rather than taking excessive steps to prevent failure from the outset. The problem of a declining population and aging society is shared by China, and we believe that China is likely to be more adept at acting first and establishing a system second.

(2) Strategic focuses of the "Investments for the Future Strategy 2017"

The following table is a summary of the Investments for the Future Strategy. The strategy sets forth eight strategic focuses that have been selected based on the perspectives explained in this report up to this point, as well as policy measures for developing the infrastructure to deal with cross-cutting issues that are shared across all the strategic focuses. Here, we would like to discuss three of the strategic focuses.

Figure 5: Overview of the "Investments for the Future Strategy 2017" (Key measures)



Source: Prepared by Mizuho Research Institute, based on "Investments for the Future Strategy 2017"

The first area that we are focusing on is extending people's healthy lifespans. By 2025, one in every three people in Japan will be 65 years or older; Japan is becoming a super-aging society unique among the countries of the world. To overcome the problems brought about by an aging society, it has outlined its vision for a society that aims to help the elderly live healthy and active lives for as long as possible, through the establishment of an efficient medical and nursing care system that utilizes data, IT, and robots, as well as through prevention of illness and the promotion of healthy lifestyles. As shown in the following graph, Japan's social security costs are expected to increase substantially as a result of the aging society. Striking a balance between minimizing the increase in fiscal burden and maintaining the high-quality social security system that Japan has built up to date is becoming an increasingly serious problem. As shown in the figure below, it is necessary to promote—as a part of Japan's industrial and social security policies—measures to reduce medical and nursing care costs by developing health and prevention services in the private sector that do not rely on public insurance, and by extending the healthy lifespans of the elderly, and in so doing, minimize Japan's fiscal burden. Conversely, there is immense potential demand in this field. If Japan is able to build new solution models and export these models to other parts of the world that will be confronted with similar problems in the future, it could contribute to resolving global issues.

In realizing the policy of streamlining and industrializing social security, a strong focus has been placed on the active utilization of data. Japan holds a massive volume of high-quality data in areas such as medical care, nursing care, and prevention, based on its world-class national health insurance system that covers the entire country. From a global perspective, the country possesses what amounts to a virtual treasure trove of real data from nursing care sites. Unfortunately, the data is not consolidated, but decentralized and poorly utilized. To build a foundation for providing citizens with optimal levels of health management, medical consultation, and medical care services, Japan's growth strategy sets out the goal of developing a new database through a government-led initiative, targeted for full-scale implementation in FY2020.

The second strategic focus is the realization of the mobility revolution. This focus covers not only improvements in technology such as that used for self-driving cars, but points out the direction that the country should take to achieve advancements in mobility services and improvements in logistical efficiency through means such as world-leading demonstration experiments, accumulation of data, and development of systems, and to resolve social issues such as maintaining transportation networks in regional areas, eliminating labor shortage in the logistics sector, and reducing traffic accidents.

In the pursuit of improved mobility services through unmanned self-driving vehicles, a strong emphasis has been placed on the establishment of systems, technological development, and creation of an environment for and development of demonstration experiments. Driver shortage is one issue already beginning to have an impact on corporate strategies in the logistics sector. As shown in the top row of the following table, introducing truck convoying on highways within the next three years—with only the first truck in the column driven by a human being and the remaining trucks behind driven through unmanned self-driving technology—has been established as a goal, and tests on actual public roads are scheduled to commence next year. A collaborative project involving all automotive manufacturers in Japan to develop the 3D maps that are a key element in the implementation of self-driving technology is currently under way.

Figure 6: Policy measures and initiatives related to self-driving technology

Policy measure	Overview
Convoy travel of trucks on highways	• Convoy travel of trucks with unmanned self-driving trucks at the back of the procession by 2020, with the aim of commercializing truck convoy travel on highways in 2022 • Start of tests on public roads in 2018
Public-road testing of unmanned self-driving vehicles	• Implementation of public-road testing in regions, in more than 10 locations across the country, starting from this fiscal year, with the aim of realizing mobility services through unmanned self-driving vehicles in 2020
Development of high-precision 3D map data	• Establishment of joint venture company between the Innovation Network Corporation of Japan (public-private fund) and 10 Japanese automotive manufacturers, ICT companies, map-making companies, etc. • Consultations toward standardization with overseas companies in anticipation of global business

Source: Prepared by Industry Research Department, Mizuho Bank, based on "Investments for the Future Strategy 2017," etc.

The third strategic focus is the promotion of FinTech. Initiatives in this area are contributing more and more to Japan's economic and financial growth through advancements in financial services and improvements in user convenience and corporate productivity, while maintaining consideration of areas such as user protection. Japan's Financial Services Agency has put in place measures to facilitate demonstration experiments related to FinTech, as well as accelerated efforts toward the practical application of block chain technology in the financial services sector. Some of the measures that have been formulated include the promotion of open innovation centered around open API (Application Programming Interface), so that FinTech companies can utilize banking networks to apply their cutting-edge ideas and technologies to actual financial services.

Figure 7: Policy measures and initiatives related to FinTech

Policy measure	Overview
Development of environment for innovation, etc.	• Putting in place measures by the Financial Services Agency to facilitate demonstration experiments related to FinTech • Acceleration of initiatives toward the practical application of block chain technology in the financial services sector • Promotion of open innovation centered around open API (Application Programming Interface), so that FinTech companies can utilize banking networks to bring their cutting-edge ideas and technologies to actual financial services
Cooperation and collaboration with international human resources and overseas authorities	• Utilization of international cooperative frameworks related to FinTech and the financial authorities of countries such as the United Kingdom and Singapore • Promoting the starting up of financial businesses in Japan by outstanding human resources from overseas
FinTech action plan to strengthen growth capacity of companies	• IT and cloud development for corporate accounting, including SMEs, etc. • Promoting IT systematization for commercial information
Promotion of cashless systems, etc.	• Support for cashless systems with the aim of reducing the cost of card payments and improving convenience for consumers • Promoting the setting up of ATMs that accept cards issued by financial institutions overseas

Source: Prepared by Mizuho Bank, based on "Investments for the Future Strategy 2017," etc.

(3) Initiatives that utilize the framework of the National Strategic Special Zones

The Japanese government has pushed forward with reforms outlined in the Act on National Strategic Special Zones enacted in December 2013. Presently, the following ten areas have been designated as National Strategic Special Zones, and new policy measures regarding regulatory reform and other matters have been introduced, as detailed in the table below.

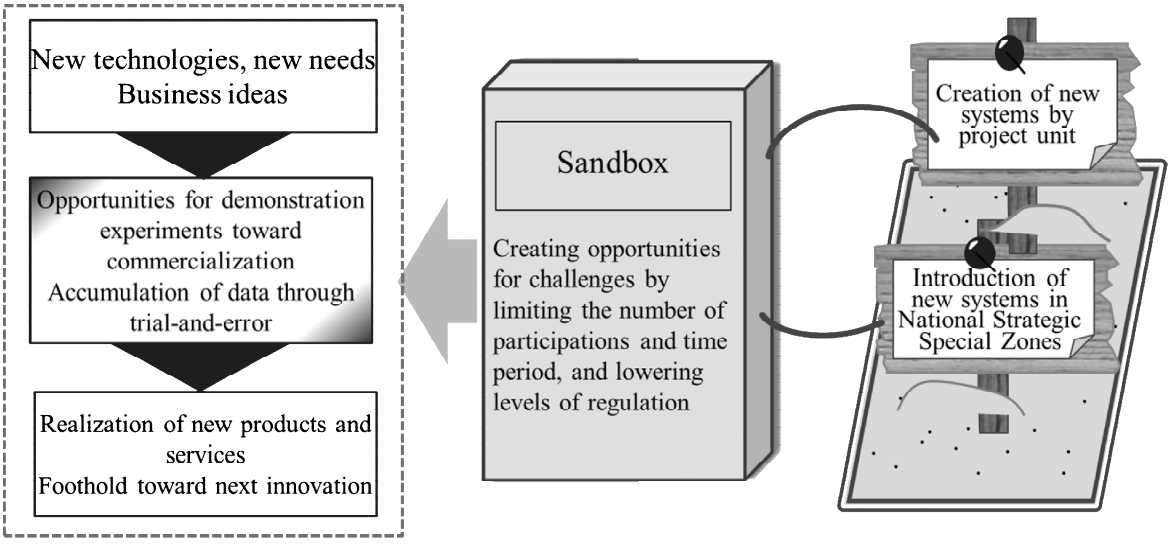
Figure 8: Areas designated as National Strategic Special Zones and related policy measures

10 National Strategic Special Zones	New measures to be taken
•Tokyo Metropolis (Tokyo Metropolitan region, Kanagawa Prefecture, Chiba City and Narita City in Chiba Prefecture) •Kansai region (Osaka Prefecture, Hyogo Prefecture, Kyoto Prefecture) •Niigata City in Niigata Prefecture •Yabu City in Hyogo Prefecture •Fukuoka City and Kitakyushu City in Fukuoka Prefecture •Okinawa Prefecture •Semboku City in Akita Prefecture •Sendai City in Miyagi Prefecture •Aichi Prefecture •Hiroshima Prefecture and Imabari City in Ehime Prefecture	(1) Speedy establishment of the "sandbox" system for regulations through the establishment of "ex post facto check rules" (2) Accelerated promotion of public-road testing toward the realization of complete self-driving (3) Accelerated promotion of demonstration experiments for over-sea flights of compact unmanned aircraft (drones) (4) Promotion of the acceptance of foreign talents in a wide range of fields (5) Promotion of the acceptance of foreign talents in fields such as FinTech (6) Review of the lighting regulations to encourage the conversion of existing offices to nursery schools

Source: Prepared by Mizuho Bank, based on "Investments for the Future Strategy 2017", etc.

The creation of a project-based system known as a "regulatory sandbox" is a newly-introduced policy measure. This system, already introduced in countries such as the United Kingdom and Singapore, temporarily suspends the application of regulations for a project at the advance request of participants and other parties. This policy measure holds strong appeal as a departure from the approach of establishing rules and systems before innovation in favor of the idea of first taking the plunge and then establishing systems (rather than expend excessive effort to prevent failure from the outset).

Figure 9: Concept of the regulatory sandbox system



Source: Prepared by Mizuho Research Institute based on materials from the Council on Investments for the Future

4. Recommendations for Chongqing's development

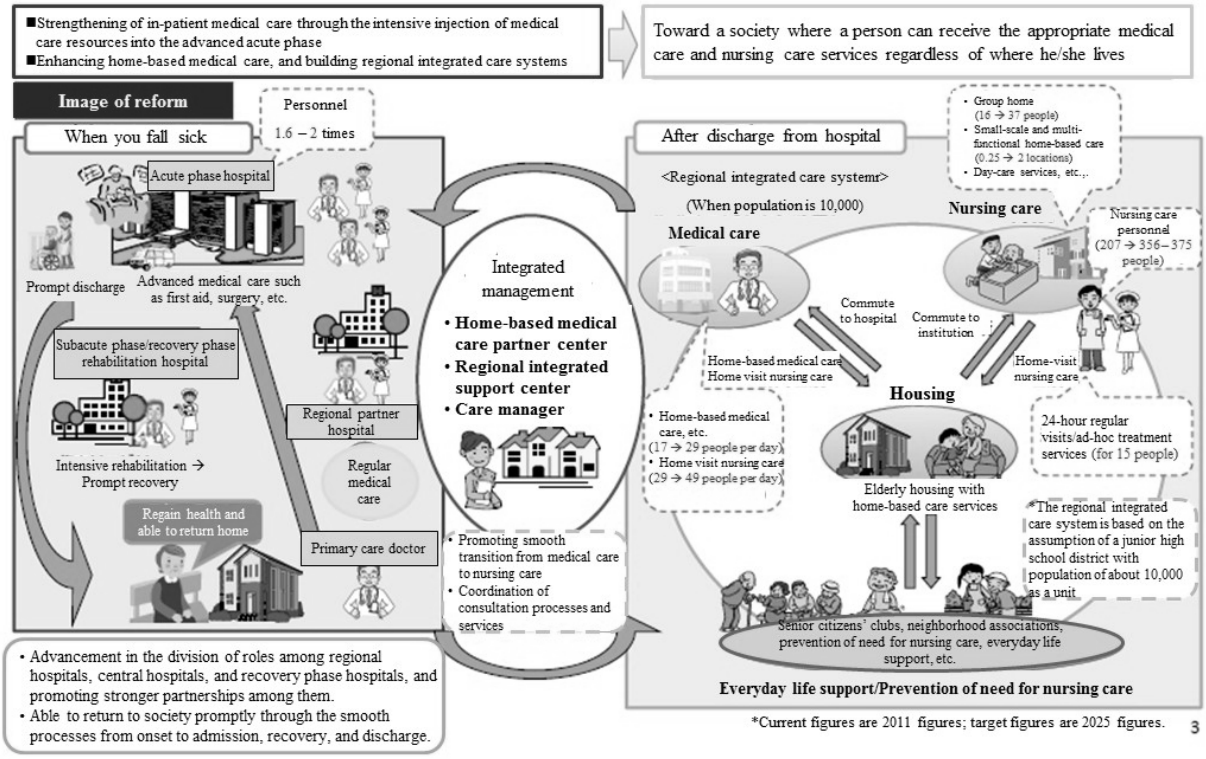
Japan's growth strategy, as introduced in the passages above, shares many similarities with China's policies, including the 13th Five-Year Plan for Economic and Social Development, the Belt and Road Initiative, and the introduction of pilot FTZs. While taking these common points into consideration, we offer three recommendations that can contribute to Chongqing's development as a city.

(1) Collaboration with Healthy China 2030

The outline of the plan for a "Healthy China," set forth under the section for "Better Education and Health for All Citizens" in the 13th Five-Year Plan for Economic and Social Development, was announced in August 2016. It establishes citizen health as a top priority, promoting a shift in emphasis from the treatment of illness to the promotion of health. Along with promoting the development of systems to provide medical and nursing care, as well as early detection, early treatment, and early rehabilitation, it places importance on prevention with the aim of suppressing the onset of diseases and reducing fiscal burdens. The plan aims to help build a healthy citizenship, as well as to extend people's healthy lifespans and to counter the decline in China's working-age population.

Japan entered what is called its "population onus" period around 1990, and continues to be confronted by the resulting issues of prolonged weak economic growth and a decline in working-age population. The first strategic focus established in the recent Investments for the Future Strategy 2017 was the extension of healthy lifespans. Below we would introduce a case study regarding the promotion of a regional integrated care system in relation to this challenge. A regional integrated care system refers to a system that offers housing, medical care, nursing care, and preventive/everyday life support services in an integrated manner to enable the elderly to continue living their preferred lifestyles, in the area they are accustomed to, until the end of their lives (even when they require serious nursing care). This system focuses particularly on housing, seeking to promote the provision of housing, medical care, and nursing care services in cooperation with regional medical and nursing care institutions, and to minimize the need for admission to costly facilities.

Figure 10: Overview of regional integrated care system



Source: Prepared by Mizuho Bank based on the Cabinet Secretariat website

Utilization of information and communication technology (ICT) is vital to building a regional integrated care system. When using various services such as hospitals, basic medical institutions, and nursing care services, integration of patients' information concerning medical care, nursing care, and everyday life support can contribute to speeding up and improving the efficiency of services. In addition, it can also help to reduce the incidence of duplicate examinations. We have reports that the building of information-sharing networks between remote medical care facilities and operators is already underway in parts of advanced cities in China, but there are also many examples of ICT applications in Japan that can serve as useful references. These include the sharing of information by various facilities and personnel (doctors and nurses, rehabilitation staff, pharmacists, care workers, etc.); emergency systems that are in operation 24 hours a day, 365 days a week, and which contribute to reducing the burden on home care doctors; and efficient visit and schedule management methods. These developments in Japan serve as potential references for future initiatives in China and elsewhere.

(2) Promoting the logistics revolution through the utilization of advanced technology

The manufacturing industry is already experiencing labor shortage issues. Although the use of robots is becoming increasingly widespread among advanced factories, similar problems are also likely to emerge in the logistics industry sooner or later. In Chongqing, which is a major node connecting the areas covered by the Belt and Road Initiative with the Yangtze River economic belt, as well as an important strategic hub that supports the development strategy for the western regions of China, innovation and development in the field of land transportation, such as trucks, is essential. Japan, which is facing the

problem of a declining birthrate and aging population ahead of China, aims to bring about the realization of the mobility revolution. By improving technologies such as those used for self-driving cars, and through demonstration experiments, the accumulation of data, and the establishment of appropriate systems, it also aims to advance mobility services and streamline logistics, so as to resolve the issues of maintaining regional transportation networks and eradicating labor shortage in the logistics sector.

It is highly possible that labor shortage could become a bottleneck in promoting the logistics revolution in Chongqing. This is another reason to look forward to cooperation between China and Japan for mutual prosperity.

(3) Further utilization of pilot FTZ as a test field, and acceleration of innovation

While the global economy has recently been undergoing a process of gradual recovery, political risk and protectionism are on the rise in Europe and the United States, and geopolitical and other downside risks persist. Going forward, along the normalization of financial policy in the United States, there is also the risk that a rise in interest rates in the United States and appreciation of the US dollar could bring about capital flight and disorder in global financial markets. Against this background, China's situation also seems to call for prudent policy management. During this highly uncertain period, to ensure both development and stability, it is necessary to give serious and cautious thought to the appropriate pace for moving forward on the various reforms and innovations introduced with different policies. In that sense, harnessing Chongqing's pilot FTZ as a test field for building new technologies, for identifying new needs and business ideas, and for promoting innovation, may be an effective approach in light of current economic conditions. In addition to those of other pilot FTZs in China, initiatives related to Japan's National Strategic Special Zone system may also offer opportunities for sharing and applying experience and knowledge. We may expect China and Japan to further intensify their cooperation on such initiatives in the future.

Going forward, Mizuho Financial Group aims to continue contributing to the development and success of Chongqing, to the best of our ability, based on the knowledge and knowhow that we have gained in Japan, China, and globally.

[END]

Creating and Strengthening the Factors of the Financial Market

By Gérard Mestrallet

Chairman of the Board of ENGIE

Introduction

As the only municipality located in the inner Chinese provinces, Chongqing is a main focus of the Great Western Development Strategy of China, with a unique geographic position and solid industrial foundations. Chongqing, the largest City in the western region with a heavy industrial base, develops a very dynamic activity to drive the West China's economy and more specially, the economic center at the upper reaches of the Yangtze River.

The ambition of the China Central Government to establish the Chongqing Pilot Free Trade Zone in august 2016 demonstrates the Municipality is developing at an unprecedented pace facing three main challenges:

- *becoming a regional transportation hub:* taking advantage of its prime location on the Belt and Road Initiative, Chongqing invests heavily in infrastructures. The network of roads and railways connecting Chongqing to the rest of China has been expanded and the connectivity with the cities involved in the development of the Belt and Road Initiative will enable Chongqing to emphasize the importance of transportation and other logistics in order to accommodate industry demand.
- *developing the regional economy*: Chongqing's economy is dependent on domestic market and its rapid industrialization and urbanization process. Unlike Chinese coast cities, 80% of Chongqing's industrial products go to the domestic market. Much of Chongqing's economic strength lies in heavy industry and a growing multinational corporation presence.
- *building into a regional financial center*: the goal is to develop a balanced activity in banking, securities and insurance, knowing that the development of the financial sector is a key factor for economic development.

Based on these considerations, the importance of the financial sector for the development of economic activities and the growing competition both in China between mainland financial centers and in the Asian area, the Municipality of Chongqing will accelerate the development of its financial sector to make it a key pillar of the Municipality's economy.

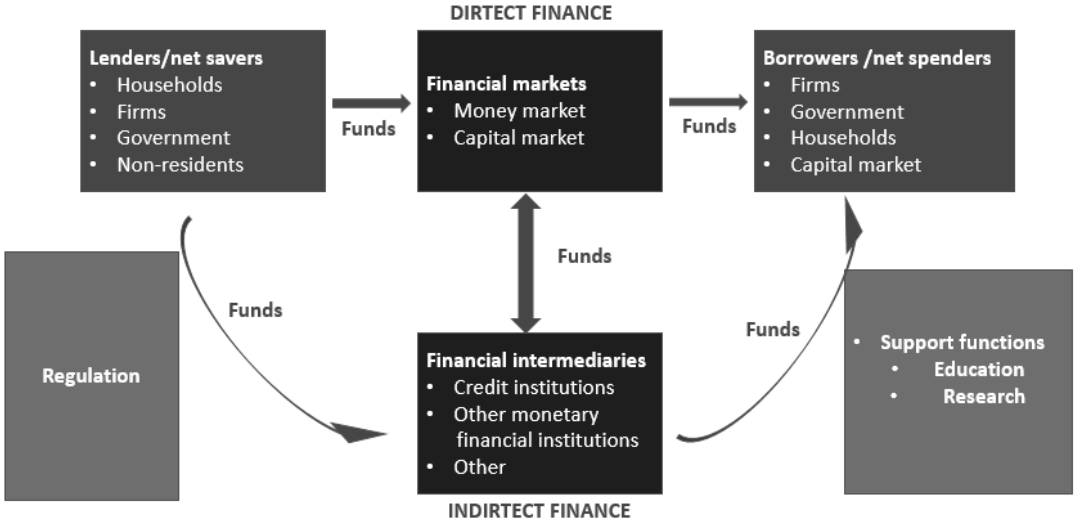
Within the below a proposal is set out of an implementation strategy to develop a strong financial center:

1. the role of the financial industry and the key factors for strengthening a financial center
2. recommendations for Chongqing to forge itself as an attractive financial center competing the existing financial centers in China (Shanghai, Shenzhen, Hong Kong) and the region (Tokyo, Singapore)

1. The role of the financial industry and key factors to strengthen a financial center

1.1. The role of the financial industry

Functions of financial systems(source: European Central Bank)



The role of finance in modern societies is crucial and vital. A well-developed financial sector is a prerequisite for defining a path of economic development characterized by sustainable, long-run economic growth.

The primary function of finance is the provision of external funds to end-users in order to meet their needs. **Financial markets are designed to serve the long-, medium- and short-term funding needs of households, businesses and productive investment in an environment providing oversight, transparency and accountability.**

A financial center could be described as a "public utility service" essential for the real economy. The basic role of finance is to provide individuals, corporates or public entities with investment or savings services as well as lending services, i.e., using short-term deposits to finance long-term loans. Financial institutions serve the real economy directly but also indirectly, through securitization of credits or hedging. It is important to highlight the crucial role of responsible lending activities of banking organizations in order for them to better meet the credit needs of households and businesses.

Undoubtedly, with a higher exposure to complex risks, households need to adopt a long-term savings strategy to face every challenge of life (housing, education, health, retirements…). The role of life insurance and pension schemes will become dominant.

On the other hand, a financial center also serves corporations and institutional investors in their daily operations. The priority is that the market rules must be clearly defined and secured among all the market players. Above all, the performance of a financial center is subject to the condition of full security of transactions.

Between issuers and investors, financial institutions (banks, brokers…) develop their activities in intermediation. Financial intermediaries acquire, process and evaluate information about potential borrowers. Financial intermediaries are organizations or individuals that play a facilitative role in the supply chain for financial products.

Finally, in order to ensure an efficient functioning of capital markets, a financial center needs the presence of lawyers, accountants, consultants… which bring their services to users and investors. **The objective is to build an ecosystem that gathers a sufficient number of institutions, players and market professionals with specific roles and expertise in the different fields of cash management, financial supply chain, liquidity management, payments processing, company valuation....**.

Altogether, a financial center is a « services center » that combines sizable factors and players which interact and contribute to facilitate access to financial services and markets. **The strategic challenge of a financial center is to identify the right combination of activities based on existing forces that will create synergies and attractiveness**.

1.2. factors to strengthen a financial center

A regional center generally includes a highly open and internationalized market, a regulatory regime with best international practices as well as a free flow of information and capital. Moreover, a true financial center needs to be open, with large capital liquidity, and is a place for international players to invest freely.

The **Chongqing financial center could gain a competitive edge as a financial centre** by leveraging on developing following core attributes. As the world economy keeps moving, **the Chongqing financial centre should focus on developing a critical mass of investors, securing a large presence of issuers, offering a wide range of financial innovative products and risk management tools.**

The legal, supervisory and tax regime should ensure that the **regulatory environment is not burdensome and does not account for a hurdle to innovation nor risk-taking**.

A financial centre also gains recognition as an international business centre when it attracts **regional and global talents**. In the global economy which we operate in, businesses locate and re-locate according to where talent and manpower are competent and readily available.

Finally, the development as a financial centre requires the **identification and promotion of key competitive advantages and centers of excellence that can be harnessed on**.

Based on other countries' experience, the promotion of a financial centre is a mission that should be carried out by a specific organization. This **promotional body**'s aim should be to actively promote the factors of attractiveness abroad towards investors, influence trade policy and regulation, publish news and research on the sector…

2. Building a strong regional financial center with targeted specializations

2.1. Strengthening generic attractiveness criteria

A financial center to be recognized internationally and regionally implies **trust, confidence and expertise**. It must then demonstrate its ability to fulfill the following criteria:

- *attractive business environment and market access*: the priority is to reinforce political support for doing business, reduce level of risks and create attractive regulatory and fiscal environment. Through the establishment of the Free Trade Zone, the CPC Central Committee and the State Council have expressed a strong political support and specific measures to Chongqing to be a competitive and attractive business-friendly city. Offering incentives on both local income tax and enterprise tax would definitely be a plus in facilitating trade and investment.
- *a viable investor destination and a critical mass of financial activities:* the priority is to encourage the presence of institutional investors and of corporate headquarters in Chongqing and also, to facilitate banks (with a national and international status), brokers, lawyers, audit and accounting services, multinational corporations, rating agencies, specialized IT expertise to open branches and develop activities in Chongqing.
- *a stable and competitive regulatory framework*: the priority is to set-up an efficient regulatory framework enforcing

efficient & transparent market practices. It is important for Chongqing to maintain and strengthen governmental relations through regular high-level exchanges and dialogues notably with the regulators (CSRC, CBRC, CIRC) and the People's Bank of China, based on research and oriented user's needs.

- *a solid ecosystem structured around competitive financial infrastructures in payments, markets & securities*
- *people and talents*: the priority is to offer high level education and training for professional talents and develop MBA degree for local and international students and build alliances and partnerships with international schools and universities specialized in finance, risk management and regulation.

In the framework of the MOU signed between Paris EUROPLACE and Chongqing Financial Affairs Office, regular conferences/roadshows could be jointly organized to promote the Chongqing's financial market towards international investors and corporate. Discussions on regulatory issues could also be a topic of interest between Paris and Chongqing. And, specific academics partnerships as well as educational exchange-programs should be considered by French and Chongqing universities/schools.

In addition, any financial centre must be *easily accessible* (airport, train, roads, telecommunications) and *a dynamic economic and cultural regional centre*. In that field, Chongqing has already invested heavily in infrastructures to expand its transport means (roads, railways…) to be a key strategic point of the Belt and Road Initiative.

2.2. The choice of relevant specializations for a differentiating development

In China, Beijing, Hong-Kong and Shanghai and in Asia, Singapore and Tokyo are already important international financial centers with strong specializations.

In the same time, the size of China, the evolution of technology and the global development of the world should facilitate the positioning of various specialized financial centers and their interactions. Rather than based on size and concentration of financial functions, the priority should focus on proximity towards the users with the purpose to articulate the proper «density» of financial expertise among a network of complementary financial centers.

In this perspective, Chongqing has already major assets to leverage.

Our recommendation is to orientate Chongqing to below relevant targeted specializations based on its existing core attributes:

2.2.1. Hub for corporate bonds

The international corporate bond markets is today one of the main source of corporate long term financing. The bond market is a means for corporate to directly finance their investments and diversify their risk by selecting rigorous investors. On the other hand, the bond market widens the scope of assets available to investors, institutional and private. It could complete the actual savings offer for Chinese investors: property (with high transactions cost and prices moves), bank deposit (offering diminutive interests) or shares.

The Chinese corporate bond financing is developing and should become one of the main sources of corporate long-term financing in the future, knowing that the People's Bank of China allow foreign central banks and overseas lenders to access and start investing in its domestic interbank bond market. In such context, our strong recommendation is to create in Chongqing a corporate bond platform accompanied by an information plan on issued securities as well as rating facilities and specific actions to promote the market towards Chinese and international investors.

2.2.2. PPPs and project finance

Financing infrastructural projects is a challenge when banks, due to stricter capital ratios, are reluctant (or prevented) to provide long term lending. At the same time, new infrastructure projects especially in the Belt and Road Initiative, are one of the main supports for a sustainable growth. The objectives are to serve corporate development and infrastructures projects and to define and coordinate an efficient financing framework, which will enable public actors, builders, operators and banks to co-finance infrastructures projects

Few areas could be explored

- developing Public-Private Partnerships schemes
- defining balanced responsibilities between financial institutions, corporates and government
- setting-up a comprehensive and balanced risk qualification (rating)

2.2.3. Insurance

With this effort to accelerate urbanization and convert more rural people into urban residents, Chongqing develops its housing and land market. Therefore, in this current period of a booming real estate development, insurance has become a necessary industry in Chongqing.

Few areas could be explored

- fostering insurance products innovation
- signing partnerships (joint-ventures) with renowned insurance companies which have a strong global worldwide position

2.2.4. Financial innovative technologies

Chongqing is already a high-tech center with the Chongqing High-Tech Industrial Development Zone. Our proposal is to leverage this force and organize a process to concentrate financial entrepreneurial projects by the organization of a financial cluster within the newly launched Chongqing Free Trade Zone. This cluster would reinforce and value the relations between research centers (universities), IT SMEs and Financial institutions, with an active support of the local authorities.

Conclusion

Setting up a financial center requires time, resources, strong motivation and dedication. The efforts devoted to reach this objective must be collective and all players must be posted to work in the same direction. The above-listed priorities are:

- attracting more investment from multinational corporations;
- encouraging financial institutions to open branches and subsidiaries;
- establishing financing platform and providing sound financing environment;
- strengthening different fields of education and fostering the training of professional talents.
- Identifying financial specializations (corporate bonds, insurance, project financing, innovative finance) for Chongqing to differentiate from other financial centers.

Accelerate the Uptake of Digitalization Across Free Trade Zone for Broader and Deeper Transformational Development in Chongqing

By Chris Houghton

Senior Vice President and Head of Region North East Asia, Ericsson Group

Chongqing has been identified as an important gateway city to open up China's west. As the latest addition to China's Pilot Free Trade Zones, Chongqing Government officially launched the Chongqing Pilot Free Trade Zone (FTZ) in April this year, aiming at making its FTZ key to driving the city's overall development.

We've noted that the official Master Plan for the China (Chongqing) Pilot Free Trade Zone has outlined a series of strategic positioning and focuses for Chongqing to become a major connectivity hub for the "Belt and Road" Initiative and the Yangtze River Economic Belt development program.

To address how the Pilot FTZ will facilitate Chongqing's opening up and upgrading, we would like to share with you our thoughts and views, from the perspective of an enterprise, particularly in the ICT sector, on how enterprises can embrace the opportunity and what the government can do for enterprises. We would also like to share some information as a reference on how the Swedish government does in encouraging and support enterprises to meet the challenges.

Embrace digitalization for unprecedented transformation of industry and society

Today, we face some of the greatest challenges and the most exciting opportunities in history. Exponential growth in computing capacity is fueling big data. Big data is fueling artificial intelligence and machine learning. And artificial intelligence is fueling automation, releasing time and energy for innovation and creativity.

The expanding number of connected things and the importance of an Omni channel consumer experience, are fundamentally changing how organizations conduct business. And it is all happening at speeds we've never experienced before.

We call it digital transformation and our society is becoming increasingly digitized as digital infrastructures and interactions are increasingly central to the functioning of our societies, economies, and lives.

We believe that 5G is the next chapter of telecom networks designed to meet ever-more advanced and complex sets of performance requirements. And it represents a new way of thinking in the approach to generational changes in mobile technology.

5G coupled with the cloud will be the engine upon which many of the most interesting applications can run. That engine will also be the enabler of the Internet of Things (IoT).

Understanding these shifts can help policy makers, business leaders, and workforce move forward, because as society continues to embrace 5G, the IoT and the cloud, the role and responsibility of governments and regulators will continue to increase.

For Ericsson, it's important for us to engage in discussions with these stakeholders and to explain to them what technology is capable of and where it's taking us. As a technology leader and global player, we're in a strong position to share our advice and experience and act as trusted advisors.

We've noted that Chongqing government intends to take full advantage of the FTZ to strengthen Chongqing's role as an integrated transportation hub and a major inland port opening up to the outside world, and also to optimize the open platforms integrating the three functions of the airport, railway and the inland river port, namely, hub function, bonded area function and port function.

The Master Plan for the China (Chongqing) Pilot Free Trade Zone also reveals that the FTZ will have a primary focus on nurturing a cluster of high-end industries, with a particular emphasis on high-end equipment, core electronic parts, cloud computing and biomedicine.

We suggest that Chongqing government consider to accelerate the uptake of digitalization across the FTZ as a top priority for facilitating the clustering of high-end industries and professional services, as we are now entering in an age of cross-industry collaboration and consolidation around digital services and platforms which are playing an increasingly central role in value chains and in value creation.

Sweden: high-achieving economy benefiting from early and enthusiastic adoption of ICT

Here, we would like to share what the Swedish government has been doing in this respect.

Sweden has been perceived to have high digital competitiveness by international comparison. In EU's DESI (Digital Economy and Society Index) from 2015, Sweden ranks among the top countries.

In the World Economic Forum's Global Information Technology Report 2016, Sweden keeps its 3rd position as one of the top 7 high-achieving economies benefiting from early and enthusiastic adoption of ICT.

The seven, including Finland, Switzerland, **Sweden**, Israel, Singapore, the Netherlands and the United States, are all known for being early and enthusiastic adopters of ICT and their emergence is significant as it demonstrates that adoption of ICTs – coupled with a supportive enabling environment characterized by sound regulation, quality infrastructure and ready skills supply among other factors – can pave the way to wider benefits.

In May this year, the IMD World Competitiveness Center in Switzerland released a report on the digital competitiveness of economies.

The report, titled IMD World Digital Competitiveness Ranking 2017, was designed to assess the capacity and readiness of an economy to adapt, explore and make the most of the digital transformation.

Sweden is ranked No. 2 among the top 10 economies, including Singapore, **Sweden**, The United States, Finland, Denmark, The Netherland, Hong Kong, Switzerland, Canada, and Norway, which have become the most competitive digitally in the world.

The report says that governments around the world are investing in scientific and technological infrastructure in order to enhance value creation and prosperity in their countries via the digital economy.

Therefore, readiness toward digital transformation is now being emphasized by an organizational tendency to adopt new technologies and related processes. Such inclination requires shifts in behaviors and responsibilities.

Business Sweden is the official name of the Swedish Trade and Invest Council, owned by the Swedish Government and the industry. It was founded in January, 2013, by a merger of the Swedish Trade Council and Invest Sweden.

Business Sweden's purpose is to help every Swedish company to reach its full international potential and help companies abroad to reach their potential by investing in Sweden. It is operationalized through a close collaboration with Swedish embassies, consulates, and chambers of commerce throughout the world.

Swedish SME urged to be more global through digitalization

In August 2016, Business Sweden released a research report titled "Internationalization through digitalization", urging Swedish small and medium sized enterprises (SME) to put digitalization in the center of their international expansion strategy.

The report is based on research conducted by Business Sweden in 2015, including six in-depth interviews with successful, digitally advanced Swedish companies, as well as a survey with 150 Swedish exporting SME respondents. The finding of the report shows that even though Sweden is generally considered to have a high digital maturity, Swedish SMEs are limited by untapped use of digital tools in terms of international marketing and sales.

By examining the implications of the on-going digitalization on the internationalization of Swedish companies, the digital maturity among SMEs in Sweden, as well as key digital marketing and sales activities that enable international growth, the report says that every company should have digitalization on their agenda and all parts of the company should be involved in the digitalization journey, including the top management, because digitalization is larger than the IT department and it is a core mind-set without limitations.

Based on the research and extensive experience from working with companies on their internationalization journey, the report concluded five key success factors for companies to expand internationally through digital channels.

Success factor 1: Do your digital homework Map the digital maturity of your company, and the digital prerequisites for your international business. Create a clear and fact based view of what needs to be developed in order to succeed internationally through digitalization.

Success factor 2: Develop your international business model digitally Challenge your existing business model and expansion plans to develop a digital way of working that enable new opportunities in international markets.

Success factor 3: Leverage big data Big data is not only for big companies. Today, there are numerous analytical tools that can provide a small company with important insights through the use of big data, and make it more relevant across markets globally.

Success factor 4: Apply the multi-channel approach Include digital channels in your analogue work. Complement the physical meeting with digital tools to streamline and strengthen the personal processing and relationship.

Success factor 5: Strive for digital symbiosis Integrate digital technologies, channels and tools in your international operations. Do not put digital questions in a separate box, but use digital solutions to help you grow faster than your problems. (More details can be found in "Internationalization through Digitalization: Key Success Factors for Digital Growth," Business Sweden, August 2016)

The Swedish government has also been taking steps to improve the overall framework conditions for business: there is visible progress in several areas of the political and regulatory environment and the business and innovation environment. For example, Sweden slashes the number of days it takes to start a business from 16 to 7. Driven to an important extent by the business sector, digital technologies are making themselves felt in terms of economic impact and an improvement in social impact.

Support digital upgrades for SMEs as a priority in the digital strategy

We've noted that in April 2016, the China Association of Small and Medium Enterprises announced it would invest about 2 billion yuan ($309 million) to help small and medium enterprises with digital upgrades in the era of Internet Plus.

The association decided to establish an Internet Plus committee, which will be dedicated to exploring supporting methods for small and medium enterprises by utilizing internet technologies.

We hope Chongqing government will also give strong support to SMEs in Chongqing in their digital upgrades and include this action in the digital strategy.

SMEs are considered as a backbone of many developing and developed economies of the world. They are also highly regarded as the driving force to any major economy across the globe.

However, SMEs' own lack of awareness regarding digital platforms and services' potential to help their business grow and perform efficiently is one of the biggest constraint on growth.

It is well noted that digital transformation is changing our world at speed. Investments in new technology, business models, supporting systems and processes are changing the way companies operate in an increasingly digital economy. This new paradigm will require new competencies and skillsets for the workforce.

Ericsson: empower workforce with proficient digital competence

Take Ericsson for example. In order to empower the workforce in company, we in Ericsson recently launched the Digital Skills Academy on the Ericsson Academy Learning Portal. It is intended to be knowledge hub for developing skills needed in a digital world, helping employees to address many of the core skills needed to navigate the digital world, quickly identify any gaps in your own knowledge, and act to quickly resolve them.

As it is an inevitable trend that we are now in the midst of digital transformations, we need to embrace these new concepts, build digital skills and awareness and apply this in our everyday work.

We would like to reiterate that with our leading technologies, strong expertise and growing presence in Chongqing, Ericsson will fully support Chongqing government in its FTZ development.

Global open platform to support Chinese enterprises in digital transformation

Here, we would like to share with you our latest business case in this respect. In June, China Telecom and Ericsson launched the China Telecom IoT Open Platform. It will enable enterprises to deploy, control and scale the management of IoT devices through partnerships. With this platform, enterprise customers can integrate their business processes with the managed connectivity service offered by China Telecom to create highly reliable IoT solutions. China Telecom and its industry customers will use the platform to drive the digital transformation of industries in China and beyond.

The China Telecom IoT Open Platform is also a global connection management platform, which will support China's "One Belt One Road" strategy and accelerate the deployment of IoT solutions and services.

We are also well prepared to work in partnership with local enterprises and government organizations to accelerate the uptake of the digital transformation for broader and deeper development in Chongqing.

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Accurately Position Investment Open-up Jointly Build the Bright Future of Chongqing FTZ

By James D. Farley, Jr.

Executive Vice President and President, Global Markets, Ford Motor Company

Introduction

As a major manufacturing base and logistics center in west China, Chongqing's pivotal importance as a megacity is now being further enriched with new roles to fulfill. With the third batch of Free Trade Zones (hereinafter called as FTZ), Chongqing will take up the responsibility of reform and opening up with light shed on trade facilitation and investment open-up as the two major tasks.

The article serves to dive deep into the strategic value of China's FTZ policy based on the successful practice from home and abroad; and outline the keys to the success of Chongqing FTZ – accurate positioning of investment open-up. It is thus proposed that the FTZ should fully capitalize on the advantage of Chongqing being China's auto manufacturing base, seize the emerging opportunities in NEV manufacturing, intelligence and interconnectivity and autonomous driving technologies and further liberalize foreign investment within the area.

To promote and liberalize foreign investment in auto industry, three proposals are made in areas of industrial policies, export incentives and emerging business support, so that Chongqing could ultimately play a unique leading role among the 11 FTZs nationwide.

Chapter I Strategic Positioning of Chongqing FTZ

With the approval of the State Council, Chongqing Free Trade Zone was officially established on April 1, 2017. As the third batch of free trade areas, Chongqing FTZ's overall strategic positioning and development objectives have been straight and clear -- to deepen reform and opening up; to support the implementation of the 'the Belt and Road' strategy, to prosper Yangtze River Economic Belt and catalyze the development of the West.

The three areas of Liangjiang Area, Xiyong Area and Guoyuangang Area within the 120 square kilometers FTZ are respectively equipped with customs special supervision areas such as bonded port or logistics center for trade facilitation, all of which are separated from the rest of the FTZ that focus on investment attraction. Among all the potential industries calling for investment, high-end manufacturing and modern service industry enjoy top priority.

With a clear outlook on the strategic positioning and major tasks, Chongqing FTZ is now turbocharged with trade and investment to steer itself towards a high-end, top-quality FTZ with radiant influence upon its peers.

Chapter II Overview of Domestic and Foreign FTZs

2.1 Global FTZ Development Status

The first FTZ in modern age was established in Ireland in 1959. With the sweeping economic globalization, continuous innovation and changes are taking place to FTZ both within and without, leading to various derivatives of bonded zone, export-processing Zone, free port, etc. Below are the key attributes they share in common despite some subtle differences:

- Up to the State (or the highest administrative authority) to decide its regional positioning, basic framework and management mechanism;

• Serve as the experimental platform for policies and institutional innovation to accommodate the country's overall economic strategy;

• Strictly separate the exclusive area from the rest of the country; goods delivered to an area within the territory but outside the pass are exempted from conventional customs supervision;

• Make clear area division based on respective functionality, e.g., processing trade center, commercial consumption center, tourist resort, logistics hub, industrial clusters, etc.

• Grant more management flexibility and policy incentives for a more favorable environment for domestic and foreign investment.

2.2 The Essence of China FTZ and Its Strategic Importance

Ever since 1990s, China followed the international practice of setting up bonded areas, export processing zones, bonded logistics park and other customs special supervision area, with thoughts given to China's specific characteristics. And after years of practice, the customs special supervision area has realized a large scale of foreign trade import and export, strong processing and manufacturing capability and rich social and economic benefits. However, these areas are still essentially short of a veritable FTZ, especially regarding the geological requirement of being within the customs territory that hampers potential breakthrough in customs supervision system.

With the world economy pivoting east and the rise of China's economy, it has become imperative to accelerate the transformation of foreign trade growth and to innovate foreign capital utilization. How to further open up at a larger scale in deeper level with more areas covered? How to coordinate development between areas with different resources and pillar industries? These are the two major questions to answer for China’s economy and regional development.

On September 27, 2013, the State Council approved the establishment of the Shanghai FTZ, first of its kind in China with Chinese characteristics manifested. It being located outside the customs territory marked a major breakthrough of China FTZ’s customs special supervision area, which will further facilitate trade with neighboring economies and contribute to world trade at large.

Moreover, the innovative policies for investment liberalization add up to its strategic significance. With exclusive right granted, the FTZs could enjoy more flexibility in making policy breakthroughs and innovations catering to the demand of regional development and strategically encourage promising domestic and foreign investment. More importantly, the successful experience of FTZ, once organized into a system, would serve as invaluable reference for those outside the area to selectively duplicate practices according to their own specific situation.

2.3 Successful Case: Shanghai FTZ

As the first batch of free trade pilot area, Shanghai has always been nimble in its pace of opening-up. As an area dense with e-commerce and IT businesses and FOE regional headquarters, the Shanghai FTZ has been effective in exploring investment opportunities in telecom value-added services.

In January 2014, MIIT and the Shanghai Municipal government released opinions on opening up value-added telecom services in the Shanghai FTZ, relaxing the 50% cap on foreign capital participation in online data processing and transaction management to 55%. And shortly after, MIIT decided to duplicate the successful practice of the FTZ to the entire city and

fully remove cap on foreign investment in this realm. It was less than 2 years that the full adoption of the FTZ practice was realized, a strong manifestation of the strong driving force and high effectiveness of FTA.

It was exactly because of the removal of foreign investment cap, foreign companies including Ford applied for value-added telecommunications business license in the Shanghai Free Trade Zone where they veritably experienced the convenience of the streamlined review process with higher efficiency and less miscommunication. In the age of leaping development in IT and "Internet +", these policy breakthroughs has brought unprecedented opportunities to the Shanghai FTZ. Policies for emerging industries effectively attract competitive and forward- looking FOEs, which further strengthens its appeal to talent, capital and hi-tech industries.

Chapter III Accurate Positioning as the Key to Success

As the largest industrial city and manufacturing center in the west, Chongqing's automobile production and sales has been higher than national average for years, making it a pioneering city in auto manufacturing. With strong supporting infrastructure and dense industrial cluster, Chongqing has successfully attracted OEMs from the U.S., Europe, Korea, Japan and domestic indigenous brands. In 2014, Chongqing became the largest automobile production base with

2.63 million annual production and more than 3.04 million units in 2015, up 15.5%. Liangjiang District contributed about 70% to the total volume, making it the largest auto production area in the west or even the nation at large.

With the gradual implementation of the national NEV strategy, Chongqing will bring to full swing its edge in experience, talent and R&D capabilities and strive towards the most competitive city of NEV. As was specifically mentioned in the 13th FYP, Chongqing will make

continuous effort in automobile industry upgradation, build a more comprehensive industrial cluster of automobile manufacturing and components, and develop NEVs and smart vehicles.

There is every reason that Chongqing should make full use of the piloting privilege and precisely position investment open-up areas according to the mid and long term industrial plan – seize the emerging opportunities in NEVs, interconnectivity and autonomous driving technologies, further open to foreign investment, and take decisive moves in industrial policies, export incentives and emerging business modes.

Chapter IV Recommended Actions: Breakthrough, Innovation, Cultivation, Guidance

In order to accurately position investment open-up areas so that the Chongqing FTZ could play a leading role for the other 11 FTZs, below are three proposals for further foreign investment promotion in Chongqing FTZ.

4.1 Industrial Policy Innovation to Create Positive Momentum for the NEV Growth

To support the implementation of the national NEV strategy, a comprehensive policy system has been established over years on industrial development, technological capabilities, financing and taxation, management, covering all industrial chains from R&D, application and adoption. The local OEMs and parts suppliers have been committed to developing of NEV technologies, including BEV, PHEV and FCVs, which are attached with revolutionary importance to the auto industry. To

better regulate the development of NEVs and energy saving vehicles, MIIT recently released the draft mandate of parallel management of CAFC and NEV credits. And we, as a member of the industry, are fully aligned with the government's goal of emission cut and energy conservation, and will be willing to play our part in the successful implementation of China's NEV development strategy.

As for Chongqing, it would be nothing short of challenging to realize the transformation from fuel driven vehicles to pure electric vehicles and the subsequent reshuffle of industrial chains; not to mention the more time-consuming process of the infrastructure construction, consumer habit cultivation. Years would be needed to make all of these possible considering the auto industry's capital intensity, high fixed cost and complicated supply chain. That is why we propose a longer lead-time for OEMs within the FTZ and allow at least one-year delay of the enforcement. Meanwhile, more flexibility would be needed to optimize the current credit system, without compromising the overall environmental protection goal. It is our firm belief that after factoring in all the industrial norms and market dynamics, these policy innovation and readjustment would play a positive role in realizing the sound and orderly NEV development.

4.2 Further Optimize Import and Export Incentive Policies

According to the current planning of the Chongqing FTZ, most of the trade facilitating measures such as selective taxation are restricted within the customs special supervision area which takes up only 26% of the total area. To propel export upgrade and make the best of the city's advantage as an international trade and logistics hub, it is proposed to extend tax incentives to the entire FTZ, so that local OEMs could fully enjoy the export tax returns (including tax rebates to certain imported components) and other trade facilitating incentives. The encouragement to vehicle export will help accelerate the pace of China's 'Go Global' realization and thus help China's global vision for its auto industry.

4.3 Encourage Emerging Business Modes through Policy Guidance

The advent, development and adoption of each revolutionary technologies and product hinge on a favorable market environment and policy dynamics. At present, traffic congestions are the top concern shared by most megacities. It is estimated that more than 50 minutes are consumed on commuting one-way, ranking first in the country. Shanghai, Chengdu, Wuhan, Shenzhen, Nanjing and Chongqing closely followed with more than 40 minutes on average. Coordination between public and private departments through technologies would be crucial to solve the thorny problem of the megacities.

As China is now at the forefront of intelligent and connected vehicle development, foreign companies like Ford have placed strategic importance in the China market for new technologies. Take Ford for example, the smart mobility engineers have been testing the V2I technology that allows the intelligent connection between vehicles and road infrastructures. Ford will use this signal-based speed-guide (TLOSA) system on its future products upon successful testing result. With this application, the switching time of the traffic lights would be predicted according to the relevant traffic condition data from the road infrastructure before recommending to the driver a safe driving speed for minimum waiting and avoid traffic congestion.

It is our sincere hope that the Chongqing FTZ could make full use of its pioneering status, establish the demonstration area for intelligent interconnectivity and autonomous driving technologies, realize the connection between vehicles and infrastructure and enable data sharing. Meanwhile, we expect more beneficiary polities to further boost technological innovation and more flexibility in areas like traffic monitoring, license approval, etc. The business

community is committed to working together with the government to explore and set new standards for ICV and autonomous driving.

Chapter V Chongqing FTZ's Role to Support the Full Opening Up of the China Market

With the ever more vibrant world trade and more intertwining international relations, the success of one country no longer comes at the price of another's failure; rather, it is mutual benefit that lays the foundation. Instead of focusing only on the benefit of one country itself, considerations should also be given to other countries' legitimate interest. Only by realizing mutual benefit will the development strategy be given full play thus creating maximum benefits.

Given that protectionism is gaining momentum, China, as a big emerging economy, should not shy away from the responsibility of defending trade liberalism. Therefore, it would be of vital importance to promote open world economy by propelling the FTZ development and trade- facilitating regimes, which will further promote the free flow of commodities and services all over the world.

The piloting privilege enjoyed by the FTZ adds up to the profound strategic importance of the China FTZs. Those within the FTZ are granted special right to make corresponding breakthroughs and innovation based upon their competitive advantages in a well-organized manner before duplicating those successful practices to other non-FTZ areas, which spells the very significance and value of China's FTZs. We are in firm belief that it is a road must be taken for China to proceed with the FTZ practice before striving for high-level economic development at larger scale and more profound economic transformation.

Region In-depth Cooperation with “Belt and Road” Initiative and Yangtze River Economic Belt Strategy

- Expanding Foreign Trade and Stimulating the Domestic Automotive Market through the Used-car Industry

By Susumu Hosoi

Director & Chairman, ISUZU Motors Co., Ltd.

1. Necessity of China's Reform and Opening-up

1.1 China's economy in the process of economic globalization

Since the Reform and Opening up, China's economy has made remarkable achievements, and China has gained increasing presence in the global economy. In 2010, China surpassed Japan to be the world's second largest economy. China's GDP now accounts for 15% of the world’s total GDP[1]. Meanwhile, China's relations with the world economy are becoming increasingly close. In 2015, China's exports accounted for 12.6% of the world's total, establishing a substantial lead against second-ranking United States and making China the world's largest exporter[2]. In addition, in 2015, China's foreign investment amounted to USD 145.67 billion, surpassing Japan (USD 113. 43 billion) and ranking second only to the United States (USD 299.97 billion)[3]. Therefore, China's economy today is arguably inseparable from the world economy.

Figure 1: World GDP by country, %

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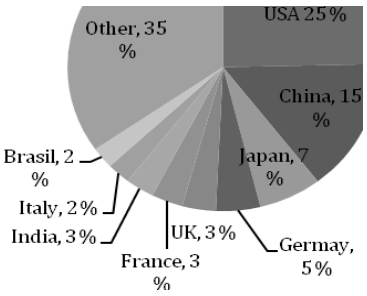
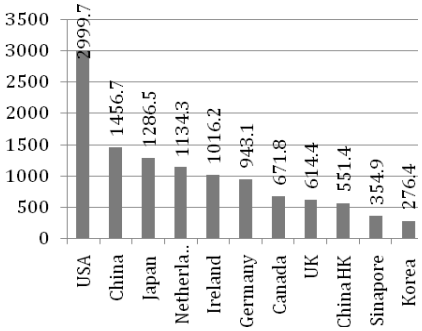


Source: International Monetary Fund (IMF),*World Economic Outlook Database, April 2017*Compiled from (http://www.imf.org/external/pubs/ft/weo/2017/01/weodata/index.aspx)

Figure 2:China's direct foreign investment, USD 100 million



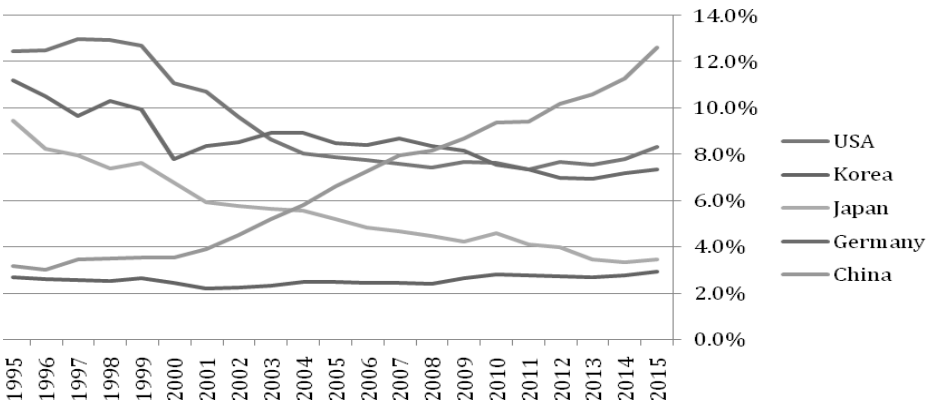
Source: China Statistical Bulletin of Outward Foreign Direct Investment and 2016 World Investment Report of the United Nations

[1] *International Monetary Fund (IMF) <World Economic Outlook Database, April 2017>*

[2] *Data comes from the United Nations Comtra database*

[3] *Statistical Bulletin of China’s Outward Foreign Direct Investment of the State Council and 2016 World Investment Report of the United Nations*

Figure 3:Proportion changes of major countries in the world's total exports, %



Source: Compiled from the United Nations Comtra database

1.2 Pilot free trade zones in China's Reform and Opening-up policy

In recent years, as China's economy has shifted from rapid development to the New Norm, adjusting the economic structure and further expanding the reform and opening-up has become an inevitable choice. In the early stage of Reform and Opening-up, China participated in the international division of labor by taking the opportunity of economic globalization and focused on taking the opportunities created by other countries. But in the new era of Reform and Opening-up, China shall actively participate in and guide the formulation of international rules, and proactively create opportunities for common economic development for itself and other countries. In the process of world multi-polarization and economic globalization, building a new open economic system is crucial for China to further develop its economy and gain leadership in international competition.

In this context, China proposed a foreign strategic conception represented by the Belt and Road Initiative in order to deepen regional and international cooperation with other countries in the world. In 2013, the Chinese government set up the Shanghai Pilot Free Trade Zone as one of the important initiatives to build a new open economic system. Afterwards, to promote the experience gained from Shanghai Pilot Free Trade Zone, the Chinese government established pilot free trade zones in 7 provinces and municipalities including Chongqing. It's evident that while continuously expanding the range of pilot free trade zones, the Chinese government also expects the free trade zones in different regions to explore and innovate new ideas and ways of Reform and Opening-up based on their characteristics in addition to performing their basic functions. It is widely anticipated that Chongqing, as a crucial hub of the Belt and Road Initiative and the Yangtze River Economic Belt and an important pivot of the western development strategy, will make full use of its geographic advantages to create a path of differentiated development.

2. Automotive industry in the global market

2.1 Globalized development of the automotive industry

Seizing the opportunity of industrial globalization to improve the position of Chinese industries in the global value chain is crucial for China in its process of further expanding Reform and Opening-up through pilot free trade zones. Next, we will elaborate on this through the example of Chongqing's pillar industry – the automotive industry.

The automotive industry has been regarded as an important industry in the national economy for its wide coverage of fields, long value chain and great impact on the overall economy. Automobile manufacturing requires the massive use of raw materials such as iron and steel, aluminum, basic materials and fibers as well as electronic components and mechanical appliances, which are basically traded within the global scope. Moreover, with the continuous development of emerging economies and the growing popularity of automobiles, the automobile manufacturing industry has gradually formed a transnational system of global production and supply. Therefore, compared with other industries, the automotive industry is arguably the industry most deeply involved in international investment, international division of labor and international trade. The world's major vehicle and parts manufacturers no longer restrict their production and sales to their home countries, but are spreading their tentacles to other countries through overseas local production or export of products to other countries. The importance of the automotive industry is self-evident no matter by the degree of globalization of foreign investment or international trade.

2.2 Globalization of China's automotive industry

In the past twenty years, like China's economy, China's automotive industry has achieved rapid growth in a relatively short period of time. In 2016, China's automobile output exceeded 28 million units, accounting for 30% of the world's total output[1].

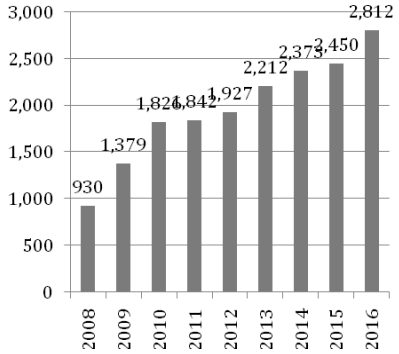
As China's automotive market is expanding year by year, China's global presence is increasingly strengthening. Meanwhile, in the context of rapid market expansion, vehicle manufacturers have expanded production capacity at a rate much faster than the actual market demand, resulting in the current domestic automobile overcapacity. Digesting overcapacity requires expanding domestic demand as well as promoting the export of automobiles.

Now, China's total exports accounts for 12.6% of the world's total, while China's share in global automobile exports is far less, only 5%.

The automotive industry has developed into one of the pillar industries in China, and held a decisive position around the world. We believe that in the context of the globalization of the automotive industry, China's automotive industry needs to further open up and raise the level of international capacity cooperation.

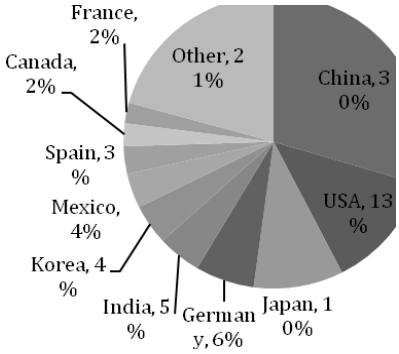
[1] *OICA (International Organization of Motor Vehicle Manufacturers) data*

Figure 4: China's automobile production,10,000 units



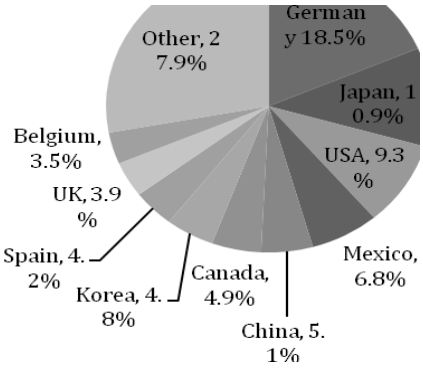
Source: Compiled from OICA (International Organization of Motor Vehicle Manufacturers) (http://www.oica.net/) data

Figure 5 :Global automobile production by country, %



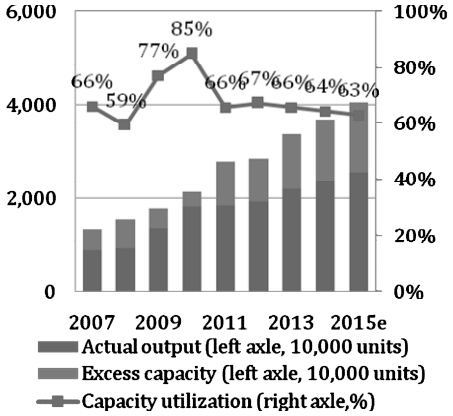
Source: Compiled from OICA (International Organization of Motor Vehicle Manufacturers) (http://www.oica.net/) data

Figure 6: Global automobile exports by country



Note) Merchandise trade, total exports (718+782+783+784+786) of SITC78 road transport vehicles (including hovercraft), excluding SITC785 motorcycles and bicycles
Source: Compiled from UNCTAD (http://unctad.org/) data

Figure 7: China's automobile production capacity, actual production and utilization rate over the years



Source: Compiled from FOURIN *China Automotive Monthly* (July 2015) data

3. Used-car market in the automotive industry

3.1 Importance and necessity of developing the used-car market

3.1.1 Position of the used-car market in the automotive industry value chain

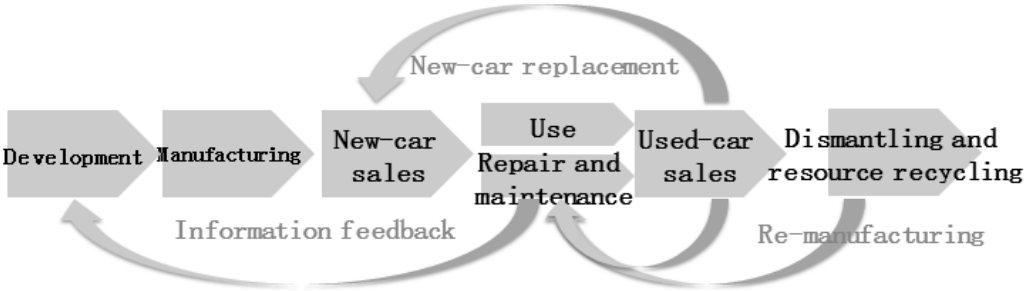
As mentioned earlier, a long value chain is one of the characteristics of the automotive industry. When China's automotive industry is in the growth period and the Chinese society is in the early stage of automobile popularization, great significance has been attached to the "development-manufacturing-sales (new cars)" process in the automotive industry value chain. However, with the increasing popularity of automobiles, automobile ownership continues to rise, while the growth rate

of production and sales has slowed down, and the automotive aftermarket has gradually attracted attention. For the automotive industry, the aftermarket arguably plays a crucial role in the formation of new business opportunities and new values. Extending the value chain and promoting the cooperation between different value chain elements can create a high value-added automotive industry.

The automotive aftermarket covers a wide range of services. The whole life cycle of a vehicle from leaving the production line to final scrapping involves not only transport services (taxis and transportation), shared services, leasing, operation management, road rescue, vehicle insurance, vehicle inspection, maintenance, spare parts supply and modification services, but also the re-manufacturing and metal recycling of some reusable parts during the sales, scrapping and dismantling of used cars. Thus, the automotive industry also has a long value chain after the sales of new cars.

In the global automotive market, not only is the investment and trade characterized by the process of "development - manufacturing – sales" being globalized, the developed countries and automobile giants are also promoting the globalization of the "used-car sales - dismantling and resource recycling" process by increasing exports to emerging countries.

Figure 8 :Status of the used-car market in the automotive industry value chain



3.1.2 Effects of the used-car market

Used cars often give a negative impression because Chinese consumers tend to reject or have concerns about the goods used by others and many people in the automotive industry doubted that the circulation of used cars and parts may affect the sales of new cars and parts. In fact, the used-car market can not only promote the popularization of vehicles, heighten consumer enthusiasm for vehicle replacement, boost new-car sales, but exert a positive impact on the environment, economy and society through recycling.

First of all, due to their lower prices than new cars, used cars can meet the demand of small and medium-sized enterprises, low- and medium-income groups, developing countries, poor countries and other economically weak groups. As aforesaid, China's automobile production and sales have achieved rapid growth, but its automobile penetration rate remains low compared with developed countries, equivalent to the level of Japan in the 1970s. Thus, small and medium enterprises and low- and medium-income groups still have huge potential demand for vehicles. Exploring such potential demand can help stimulate China's economy. In addition, although these consumer groups can also be potential consumers of new cars, encouraging them to purchase used cars before they can afford new ones can both stimulate the automotive aftermarket, and create potential demand for vehicle replacement in the future.

Second, from the perspective of the supply of used cars, once the used-car market is formed, people will more than ever

recognize the value of used cars, which will help shorten the vehicle replacement cycle, thereby promoting new-car sales. If the second-hand vehicles can be traded at higher prices, the owners only need to pay the price difference between new and used cars, thus heightening the enthusiasm of economically strong enterprises and individuals for vehicle replacement.

The circulation of used cars should be expanded to the international market rather than being restricted within the domestic market. Today, it is mainly developed countries that export used cars to developing countries, which means that the exporting countries will transfer some of their vehicle ownership abroad, thus creating a corresponding vehicle replacement space within their own countries.

Finally, from the perspective of environmental protection, the automobiles, the replaced parts during maintenance, the parts of scrapped vehicles and recyclable parts can be re-manufactured so as to promote the development of circular economy and the effective utilization of resources.

3.2 Development status of China's used-car market

3.2.1 Size and current development of China's used-car market

China has become the world's largest automotive market, with new-car sales continuing to grow. In 2016, China's new-car sales reached 28.03 million units in 2016. With the development of the new-car market, China's used-car market has gradually taken shape in recent years. In 2016, China's used-car sales reached 10.39 million units. In the future, China's used-car market is expected to further expand and its used-car sales are expected to reach 20 million in 2020[1].

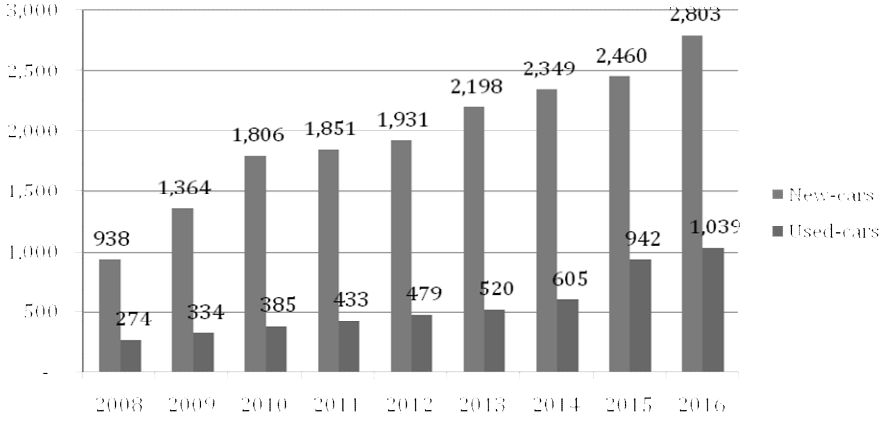
In the past when China was still in the early stage of automobile popularization, there were fewer used cars and parts. But with the increase of car ownership, China has entered the formation stage of the used-car market. In China, the process from new-car sales to their circulation into the used-car market takes about 7 years on average (In Japan, vehicles last for 14.9 years according to the vehicle crapping standard in 2015[2]). Given the continuous growth of China's new-car sales, the necessity of creating a used-car transaction and scrap vehicle processing market will become increasingly apparent.

The Chinese people have always valued "decency", which has a direct impact on their consumer behavior. As a result, they are often more willing to buy new, stylish goods. But in recent years, with the increasing number of used-car advertisements, consumers' acceptance for used cars has also increased year by year. In the future, the Chinese people's demand for used cars is expected to emerge as it does in Japan.

[1] *Comments by Luo Lei, Deputy Secretary General of the China Automobile Dealers Association*

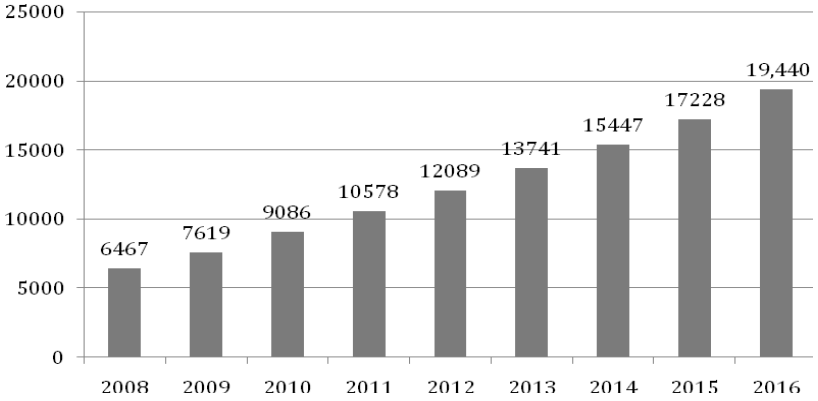
[2] *Implementation Status of Automobile Recycling and Reuse Law by the Automobile Department of the Ministry of Economy, Trade and Industry and the Reuse Promotion Office of the Ministry of Environment, Japan (September 30, 2016)*

Figure 9: Sales of new and used cars in China over the years (2008-2016, 10,000 units)



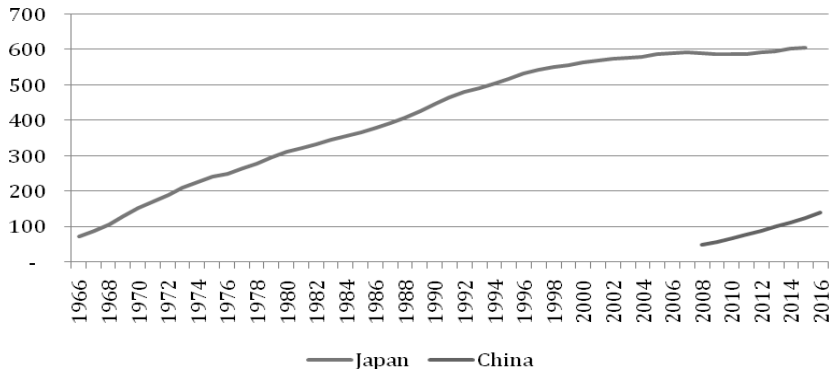
Source: Compiled from data of the China Association of Automobile Manufacturers

Figure 10: China's car ownership over the years, 10,000 units



Source: Compiled from data of the National Bureau of Statistics of China

Figure 11: Car penetration rate in China and Japan over the years, unit/1,000 people



Source: China's car penetration rate: calculated based on China's car ownership and total population released by the National Bureau of Statistics of China. Japan's car penetration rate: calculated based on Japan's car ownership (excluding motorcycles) released by the Vehicle Inspection Registration Information Association and Japan's population released by the Bureau of Statistics, Ministry of General Affairs of Japan.

China's used-car transaction is usually conducted through the "agencies (intermediaries)" in the "used-car transaction market". According to the results of the survey entitled Top 100 Companies of China's Used-Car Market in 2015, the agencies accounted for as much as 95% of the top 100 companies. The agencies may not offer a reasonable price, and are not fully assured about the actual situation of vehicles, which has partly contributed to consumers' concern about used cars and hesitation in buying them. In recent years, China has seen the emergence of online platforms providing used-car transaction services between individuals, but due to defects in credit review, quality assurance and maintenance systems, only a few number of online used-car transaction platforms are trusted by the consumers.

By the end of 2016, China's car ownership had reached 194 million units. As the relevant Chinese government departments have foreseen the continuous expansion of the used-car supply market and the necessity of building a perfect market environment, they have launched a series of policies and measures to promote the normative and active development of the used-car industry. In March 2016, the General Office of the State Council issued the *Several Opinions on Promoting Convenient Used-Car Transaction*, which has revoked the policy of restricted transfer-in of used cars and aim at promoting convenient used-car transaction and creating a market environment for free circulation of used cars. Afterwards, in order to implement the Opinions, 11 ministries including the Ministry of Commerce and the National Development and Reform Commission jointly issued the *Notice on Promoting Convenient Used-Car Transaction and Quickly Vitalizing the Used-Car Market* in June 2016. The main content of the Notice included promoting used-car transaction in different places, consolidating the management of used-car circulation information, strengthening the construction of a used-car credit system for market participants, accelerating the innovation of used-car circulation patterns and other detailed implementation rules. If these policies and initiatives can be effectively promoted and implemented, the domestic used-car market is expected to become increasingly mature and perfect.

In addition, there are some restrictions on the import and export of used cars at both the policy and practical level.

Although there are no policies that explicitly "prohibit the export of used cars", actual used-car export requires obtaining an export license, 3C certification and manufacturer authorization by going through a variety of complicated procedures, which are difficult to be achieved. Meanwhile, Article 37, Chapter 7 of the *Automobile Trade Policy* (Order of the Ministry of Commerce No. 16 of 2005) promulgated by the Ministry of Commerce in 2015 stipulates that "the state prohibits importing, in any form, used cars and their assemblies, fittings and right steering wheel cars (except for sample right steering wheel cars used for developing export products). This indicates that the law forbids the import of used cars.

3.2.2 Status quo of the used car parts re-manufacturing market in China

With the popularization of automobiles, the demand for dismantling and reusing automobiles will expand rapidly in China. In order to develop the automotive re-manufacturing industry, the Chinese government announced the *Administrative Measures for Pilot Re-manufacturing of Automobile Parts and Components* in 2008, which has allowed the approved pilot enterprises to attempt at the re-manufacturing business. Now, ten years have passed, but still, policies contrary to the re-manufacturing industry development policy exit. For example, the *Administrative Measures for the Recycling of Scrapped Automobiles* (Order No. 307) promulgated in 2001 stipulated that "five major assemblies (engines, transmissions, front axles, rear axles and frames)" dismantled from scrapped automobiles shall be sold as scrap metal to iron and steel enterprises for use

as raw materials in smelting, and prohibited any entity or individual from using the "five major assemblies" from scrapped automobiles for re-manufacturing. These restrictions at the policy level have seriously hindered the recovery and reuse of high value-added parts and components, and the development of the re-manufacturing industry.

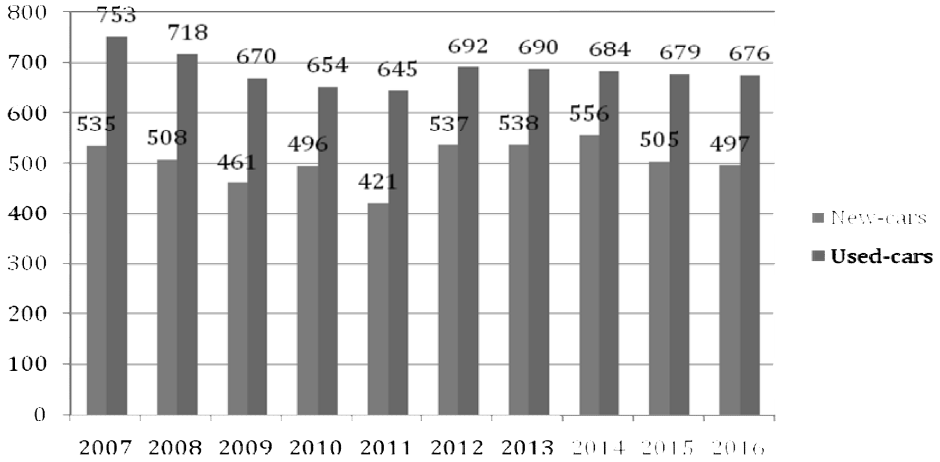
In addition, due to its worry that improper handling may cause environmental pollution, the Chinese government has adopted policies that prohibit or restrict imports of waste and renewable resources that cannot be properly handled domestically. Most of used car parts including the "five major assemblies" have been brought under the category of Import Prohibition. Therefore, the source of used car parts for re-manufacturing can only be restricted to within China, thus hindering the development of the automobile parts re-manufacturing industry.

3.3 Case of Japan's used-car market

3.3.1 Overview of Japan's used-car market

In Japan, the used-car market continues to expand with the popularity of automobiles. Japan's used-car sales exceeded new-car sales for the first time as early as in 1992[1]. In 2016, Japan's used-car sales reached 6.76 million units. Given the fact that the ownership of many used cars is first transferred to agents before purchasers, double counting exists, so the actual used-car sales were about 3.38 million units (about half of the statistical figure). In 2016, Japan's new-car sales were 4.97 million units, so the ratio of new and used-car sales was about 3:2. That is, Japan's used-car sales accounted for 40% of total car sales, showing the huge size of its used-car market.

Figure 12: Japan's new and used car sales over the years (2007-2016, 10,000 units)



Note) Used-car sales include initial registration, ownership transfer, and name change registration of used cars.

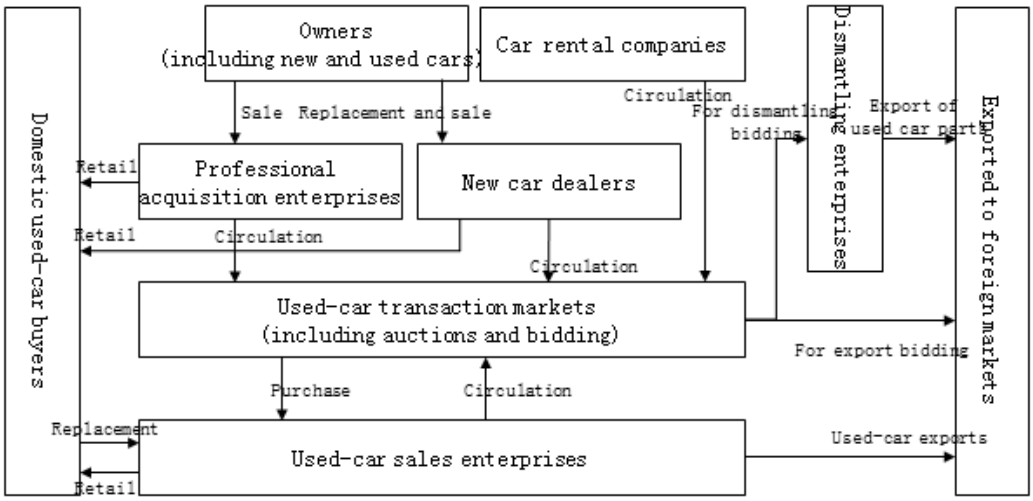
Source: Compiled from data of the Japan Automobile Manufacturers Association

The formation of such a large used-car market in Japan is inseparable from the support of its mature value chain and related systems. As shown below, a series of used-car-related business enterprises including acquisition, professional sales,

[1] *Used-car sales include initial registration, ownership transfer, and name change registration of used cars.*

servicing, assessment, auction, export and dismantling have actively participated in the whole process from the transfer of used cars from sellers to buyers to the dismantling of used cars.

Figure 13: Circulation structure of used cars in Japan



Source: Compiled from public data

In 1960s, when Japan was in the period of rapid economic development, automobiles gained popularity rapidly and some small-scale, independently- operated used-car sales enterprises emerged. Until 1980s, large car auctions organized by auction enterprises appeared. After 1990s, enterprises specializing in the acquisition of used cars emerged and became active. After a long period of transition, the circulation structure of used cars in Japan has gradually developed to be what it is today. In recent years, although the used-car transaction processes and methods have experienced some changes due to the popularization of internet, the basic circulation structure has remained unchanged.

First of all, used-car circulation in Japan depends on the used-car evaluation system. In order to assure consumers of the quality of used cars and promote the circulation of used cars, the Japanese Ministry of Economy, Trade and Industry (METI) and Ministry of Land, Infrastructure, Transport and Tourism (MLIT) authorized the establishment of Japan Auto Appraisal Institute (JAAI), a third-party evaluation organization. JAAI is responsible for fairly appraising vehicles under the supervision and guidance of METI and MLIT. JAAI has exclusive appraisers across 52 branches nationwide who offer vehicle appraisal services.

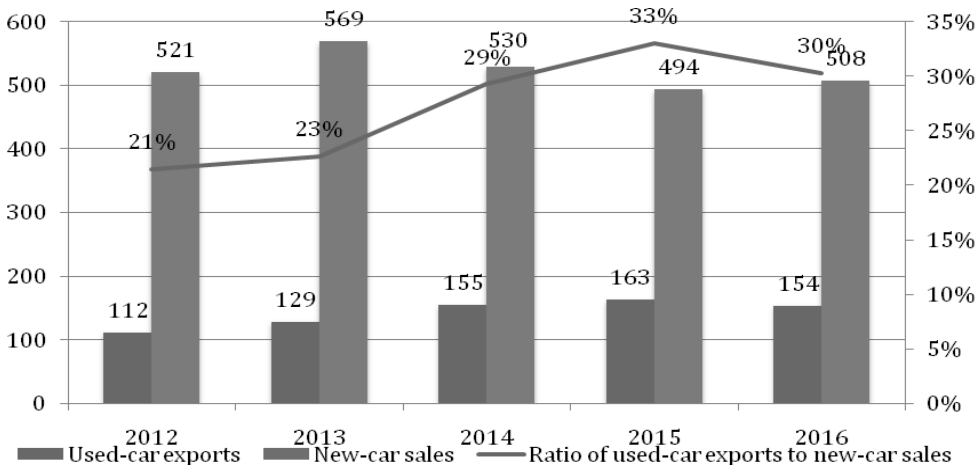
Furthermore, used-car transaction activities organized by used-car sales enterprises and professional automobile acquisition enterprises are carried out at the automobile auction (AA) venues across all prefectures. At the AA venues, an auction for a variety of vehicles such as almost new cars, used cars and accident cars will be held once a week and a deal is concluded when the bidding price reaches the seller's expected amount. The AA venue has provided a transaction platform for used-car-related professionals and is a core element of the used-car circulation process.

In addition, used-car transaction has been expanded to the whole world. Japan has begun to expand its used-car exports

since 1980s partly because of the demand of developing countries for cheap used cars from developed countries and partly because of the high maintenance level of Japanese vehicles and high quality and credibility of Japanese used cars appraised through the used car evaluation system.

In 2016, Japan exported 1.54 million used cars. On the whole, Japan's car ownership is still growing, though at a modest rate. The reduction in Japan's car ownership caused by used-car exports is arguably made up by new-car sales. Thus, used-car exports have promoted the new-car sales in Japan. Japan's used-car exports were approximately equal to 30% of new-car sales, which fully proves that the effect of used car exports cannot be underestimated.

Figure 14: Japan's new-car sales and used-car exports over the years (10,000 units, %)



Note) The annual statistical period is from April of the current year to March of the following year.

Source: New-car sales: Compiled from data of Japan Federation of Automobile Sales Association.

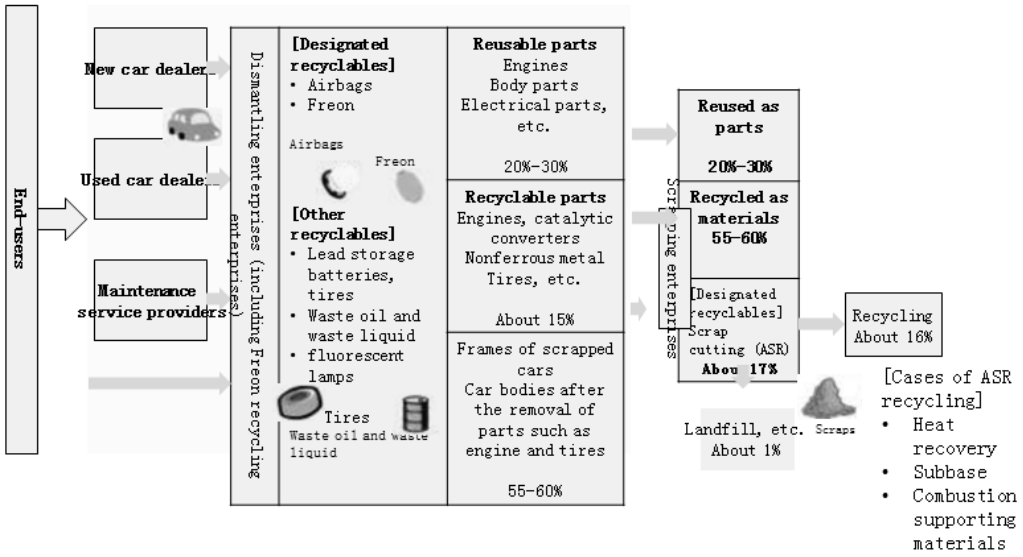
Used-car exports: Compiled based on the Implementation Status of Automobile Recycling and Reuse Law issued by the Ministry of Economy, Trade and Industry over the years.

Japan has a high car penetration rate. In addition to used-car transaction, Japan has formulated policies on automobile dismantling and reuse so as to establish a high quality recycling society, cultivate the reverse logistics industry and enable effective reuse of used car parts.

Japan's *Automobile Recycling and Reuse Law* (Law No. 87 of 2002) has specified the responsibilities and obligations of car users, and the re-utilization obligations of dismantling enterprises and encouraged the recycling and reuse of useful parts from scrapped automobiles. When calculated by weight, 20%-30% of parts from dismantled automobiles can be re-manufactured and 55%-60% reused as materials. In 2012, Japan's automotive recycling market reached JPY 238 billion, among which reusable parts (parts dismantled from automobiles and reused after visual inspection and cleaning without repair) were JPY 129 billion and re-manufactured parts (parts dismantled from automobiles are further dissembled and then assembled with new replacements of worn or aged parts) JPY 109 billion. The parts reuse market has developed into an integral part of Japan's automotive industry[1].

[1] *Compiled based on the data of the Society for Specification Formulation of Recycled and Reused Parts for Automobile Repair in August 2014*

Figure 15: Summary of the automobile dismantling process for recycling and reuse



Source: Compiled based on the data of the Society for Specification Formulation of Recycled and Reused Parts for Automobile Repair

3.3.2 Relevant cases of Isuzu Motors

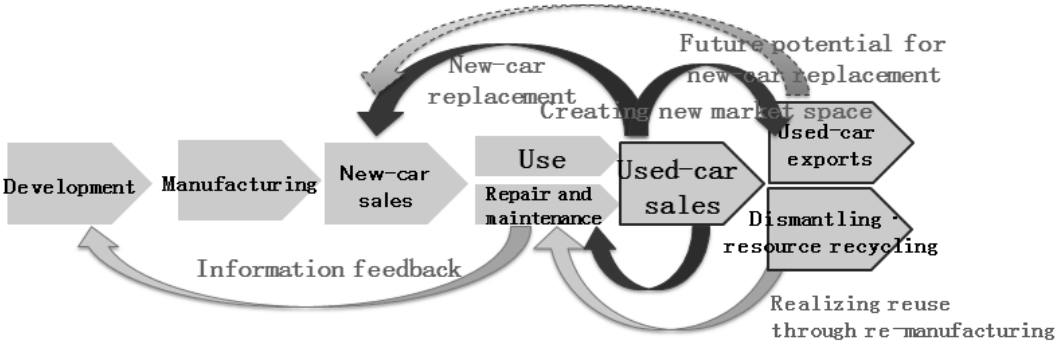
3.3.2.1 Used car-related case of Isuzu Motors

In order to stimulate the car replacement demand of owners of 3~5-year-old cars and create greater commercial value through flexible use of quality used cars, Isuzu Motors has always been committed to the used-car business. Specifically, Isuzu Motors will promote economically strong customers to replace their vehicles bought or leased 3-5 years ago and enter the information about these low-age, quality used cars into a database for sales and lease. Several years later, these used cars will be re-circulated or exported through the company's used-car circulation system or auction. Some of the vehicles will be sent for scrapping and dismantling (Re-manufacturing after scrapping and dismantling will be discussed later in detail).

In 2015 (April 2015 - March 2016), Isuzu Motors sold 24,000 new cars[1], but produced 69,000 used cars, among which 42,000 units (about 60% of the total) were repurchased by Isuzu Motors, 14,000 units were re-circulated into the market through other channels, and 13,000 units (about 19% of the total) were scrapped and dismantled. Among the 56,000 used cars re-circulated into the market, 24,000 units (42%) remained in Japan and 32,000 units (58%) were exported. Thus, exporting Japanese used cars abroad can effectively stimulate domestic demand for new cars. In addition, Isuzu Motors expects to gradually penetrate into emerging markets with great potential through the export of used cars. If Isuzu Motors' used cars are favored by the users in these emerging countries, they will probably choose Isuzu Motors' new cars when they can afford them as a result of national economic development.

[1] *Compiled based on Isuzu Motors' public performance data*

Figure 16: Schematic diagram of Isuzu Motors' used-car business



Regarding the used-car circulation business, Isuzu Motors established a subsidiary UMAX as early as in 1999 to provide professional integrated solutions for used trucks. UMAX's operations include the sale of used trucks, the auction of used trucks and the matchmaking business for sales of used trucks based on the internet platform. Meanwhile, Isuzu Motors is the only large truck manufacturer in Japan that has a permanent auction venue.

Regarding the auction business, Isuzu Motors sold 15,000 used cars by action in 2015, accounting for 25% of its used cars in circulation. Used cars available for transaction by auction are sold not only in Japan, but exported overseas. In addition, Isuzu Motors set up a department specifically for overseas export business in 2015 as an attempt to further strengthen its used-car export business.

Figure 17: Isuzu Motors' used-car transaction venue
(an auction venue on the left and a bidding venue on the right)

Source: Homepage of Isuzu Motors UMAX (http://www.umax.co.jp/ima/about.html)

With its expertise, Isuzu Motors has provided a wealth of commercial vehicle products for the society, established a real-time inventory and transaction database, and cultivated a group of professional appraisers for accurate assessment on used cars. On this basis, Isuzu Motors has implemented a double confirmation policy through the mileage system of the Japan Automobile Appraisal Association and Japan Auction Association, thus having gained trust from a vast number of users. In addition to the conventional buying, recycling and sales operations, Isuzu Motors has also organized bidding activities.

Figure 18: Schematic diagram of Isuzu Motors' used-car transaction information (vehicle information on the left and transaction information on the right)

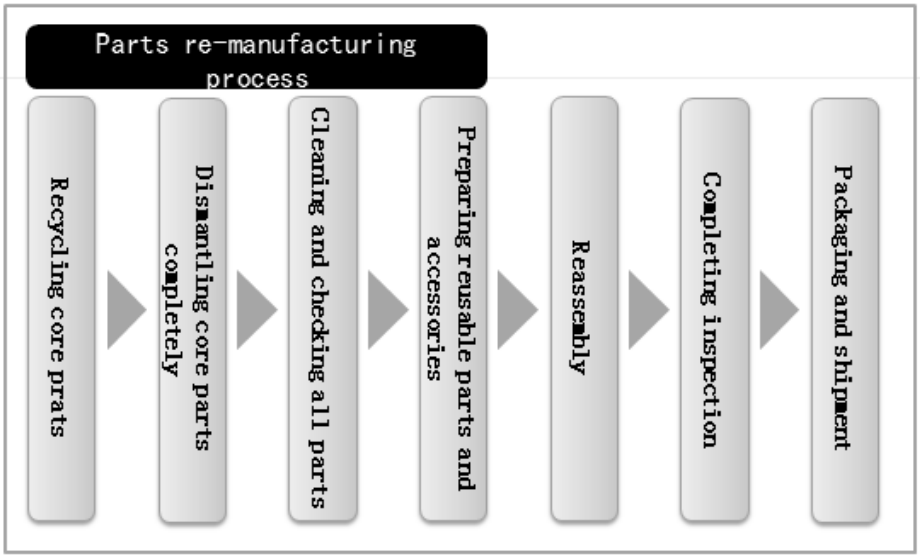
Source: Homepage of Isuzu Motors UMAX (http://www.umax.co.jp/u-con/function1.html)

3.3.2.2 Re-manufacturing business-related case of Isuzu Motors

In Japan, major automobile manufacturers have already carried out used parts re-manufacturing operations. In 2002, Isuzu Motors set up Isuzu Engine Manufacturing (Hokkaido) Co. Ltd. to specialize in the production of engines. Since 2010, the production base has carried out re-manufacturing operations for engines and transmissions, the core components of commercial vehicles.

Used parts will be decomposed and cleaned by re-manufacturing parts manufacturers designated by Isuzu Motors upon scrupulous review and then reassembled with new replacements of worn and aging parts. These re-manufactured parts will be labelled with "E-Parts" and enter the market as Isuzu Motors' original re-manufactured parts. Isuzu Motors provides "manufacturer quality" re-manufactured products for customers based on its professional manufacturing technology accumulated over the years and stringent specification and quality management. E-Parts not only ease the environmental load of the earth, but also help to reduce customers' vehicle maintenance costs.

Figure 19: Isuzu Motors' re-manufacturing process



Source: Homepage of Isuzu Engine Manufacturing (Hokkaido) Co., Ltd.

4. Suggestions to the Chongqing Municipal Government

In the context of economic globalization, China, as the world's second largest economy, will further promote Reform and Opening-up in the future to deepen its relations with other countries across the world and boost the sustained growth of its economy.

Chongqing was approved to set up a pilot free trade zone in 2017. In this context, Chongqing will stand at the forefront of the new era of Reform and Opening-up and promote the economic development of the surrounding areas as a vanguard force.

We believe that the Chongqing Pilot Free Trade Zone should give full play to the solid automotive industry foundation of Chongqing and the Yangtze River Economic Belt and the geographical advantages of Chongqing as an international logistics hub to realize differentiated and characteristic development. China is regarded as an automobile power in terms of either automobile production and sales volume, technology or industrial agglomeration, and Chongqing is a key city in China. As the automotive industry is a highly globalized field deeply involved in the international division of labor, China may further tap the market potential through operations such as exporting used cars and re-manufactured parts to surrounding emerging countries.

This Report will provide suggestions from three aspects: ① Relaxing policies on the import and export of used cars and used car parts, and simplifying the administrative examination and approval procedures, ② Establishing an international used-car transaction platform, ③ Improving the used-car credit guarantee system.

4.1 Relaxing policies on the import and export of used cars and used car parts, and simplifying the administrative examination and approval procedures

First of all, to develop industries in the global market, Chongqing should eliminate trade and circulation barriers as much as possible. As mentioned earlier, China has clearly banned the import of used cars and used car parts, and set various barriers to the export of such goods, which makes it hard for enterprises to carry out export operations.

Chongqing and the Yangtze River Economic Belt have a solid automotive industry foundation and a wealth of relevant resources. If Chongqing can give full play to its advantages to bring together domestic used cars or import used cars and used car parts from developed countries for modification or re-manufacturing and then export them to the developing countries with strong demand, it may become an international cooperation base along the used-car value chain. This will not only create new business opportunities for Chongqing-centered automobile-related industries, but also cultivate a new export industry for Chongqing's economy.

From Japan's case, we can see that used-car sales can also stimulate consumers' demand for new cars. Similarly, China can transfer some of its domestic car ownership abroad through the export of used cars, thereby promoting new-car sales in the domestic market.

To this end, we suggest that Chongqing take the lead in relaxing policies on the import and export of used cars and used car parts, and simplifying the administrative examination and approval procedures in the Chongqing Pilot Free Trade Zone.

4.2 Establishing an international used-car transaction platform

In China, used-car transaction markets are often small where transactions are concluded mainly through intermediaries (agencies). A few number of used cars are professionally recycled and transacted through sales companies (operation companies) and auction companies. As used-car sales continue to increase, China has entered the used-car transaction market formation period. In the future, large-scale and standardized used-car transaction markets will gradually take shape. We suggest that the Chongqing Municipal Government explore the feasibility of building an international used-car transaction platform from the perspective of global circulation.

In Japan, used-car auctions are attended by many foreign buyers, who purchase Japanese used cars based on domestic demand. By providing such a world-oriented open transaction place, the government can promote foreign trade.

The traditional used-car transaction generally requires car confirmation on the spot, but in recent years, a growing number of transactions are conducted through the internet and APPs in China's used-car market dominated by passenger vehicles. China has a higher level of innovative application than developed countries in terms of internet transactions. So China should flexibly use these resources to build an advanced international transaction platform with Chinese characteristics.

4.3 Improving the used-car credit guarantee system

As mentioned earlier, without the support of a credit guarantee system, it would be difficult to ensure the smooth import and export of used cars and used car parts, as well as the sound development of a used-car transaction platform. Therefore, in order to ensure the healthy development of the used-car market, we suggest taking relevant measures to effectively establish and improve the used-car credit guarantee system.

Unlike new products, used products vary in past using experiences and current status. So, a product evaluation and credit guarantee system becomes the basis of used-product transaction. Credit guarantee is particularly important during international transactions and transactions via the internet and APPs, where the buyers make judgment mainly based on the information provided by the sellers. The *Notice on Promoting Convenient Used-Car Transaction and Quickly Vitalizing the Used-Car Market* issued in 2016 placed particular emphasis on consolidating the management of used-car circulation information and improving and strengthening a credit system for market participants, reflecting the focus on the establishment of a credit system at the national level. With a solid automotive industry foundation, Chongqing should actively undertake relevant tasks in this process.

Chongqing's taking the lead in building a new business model centered around the used-car business in the context of China's further promotion of Reform and Opening-up and the establishment of the Chongqing Pilot Free Trade Zone will help strengthen the overall vitality of China's automotive industry and promote the formation of new industries while giving full play to its automotive industry advantages on a global scale.

In the context of the establishment of the pilot free trade zone and further promotion of Reform and Opening-up, Chongqing may give full play to the solid automotive industry foundation of Chongqing and the Yangtze River Economic Belt and the geographical advantages of Chongqing as an international logistics hub to realize differentiated and characteristic development, thus achieving rapid economic development and accelerating the globalization of Chongqing's economy.

Regional Linkage, "the Belt and Road" and Yangtze River Economic Zone Deep Integration of Strategy

By Chey Tae-won
Chairman & CEO of SK Holdings

Table of Contents

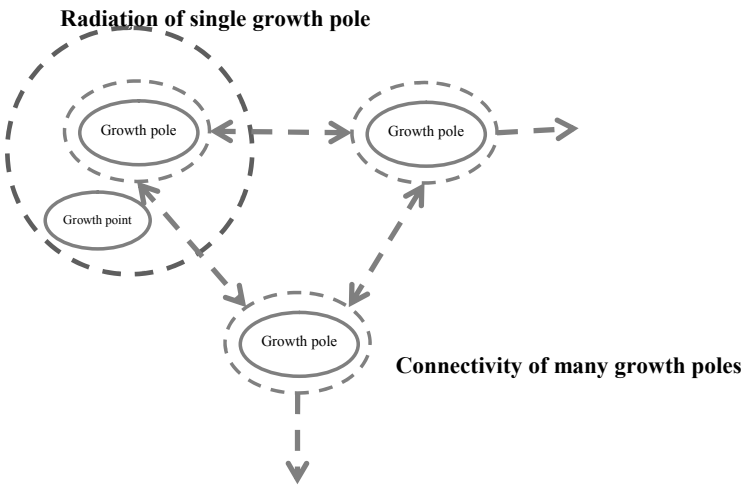
1. Understanding and Cognition to Regional Linkage Development

1.1 Connotation of regional linkage

Regional linkage refers to the exertion of regional advantages, mutual cooperation and mutual exchange of needed products, the achievement of optimal distribution of resources, and the formation of linkage development pattern through the innovation in the infrastructure sharing, industry linkage, big market construction, administrative system integration and other aspects within the specific territorial scope or specific geographical region, thus promoting the regional joint development. Regional linkage refers to the comprehensive linkage of economy, policy, social cultural activity between the regions, and the smooth flow in capital, labor force, technology and other production factors.

Based on the spatial dimension, the linkage region includes one (many) economic growth center(s) at least which could achieve the stronger radiation and aggregation effect to the surrounding regions, namely the "growth pole". The linkage pattern either radiates and mobilizes the surrounding underdeveloped areas with the single growth pole, gradually forming the new growth point and thus driving the whole regional development; or causes the difference and complementarity among many growth poles, thus achieving the connectivity and linkage development.

Fig.1 Schematic Diagram of Regional Linkage



Based on the industrial dimensions, the difference shall exist in the leading industry of all linkage regions, and the industrial linkage development is achieved through the division coordination of industry and the complementarity. The industrial linkage not only includes the mutual coordination and integration among primary industry, secondary industry and tertiary industry, also includes the horizontal linkage and vertical linkage in the different fields of the same industry and in the same field and industry.

1.2 Development experience of international regional linkage

Based on the regional economic cooperation in the world, there is not only the regional spatial linkage pattern with double growth poles at the port cities and regional center cities, such as the New York - Chicago regional linkage in America,

but also the regional linkage pattern which centers on certain key city and forms radiation in the surrounding regions, for example, regional linkage of Busan Economic Circle in South Korea.

1.2.1 New York and Chicago in America

New York, located in the northeast coast of America, is the estuary of Hudson River. Chicago is the largest industrial center city of the Great Lakes region in America, and the regional center in the inland. In 1825, the Erie Canal which connects Hudson River and Lake Erie was completed and navigable, which lets the Great Lakes region connect New York Harbor, and it became the main watercourse of the navigable canal system in New York, forming the water bond of trade routes from Middle West to Atlantic. The industrial products and agricultural products in Chicago and the surrounding regions are transported to New York from Erie Canal, and the cargos in harbor are carried back to Chicago. So both cities achieve the organic bond through the Erie Canal, forming the regional spatial linkage pattern with double growth poles. Such linkage lets New York, which had smaller scale than Philadelphia and Boston at that time, rapidly develop into the largest harbor and city in America. While the Chicago, as center city and the inland to support New York, jointly forms one industrial development axis with Detroit as Motor City, Cleveland with developed petrochemical industry, Pittsburgh with the developed iron and steel machinery industry, and other small and medium-sized industrial cities. The rapid development of such industrial belt and the rising of Chicago drive the economic development of the whole Middle West.

Fig.2 Regional Linkage Pattern with Double Growth Poles in America New York-Chicago

1.2.2 Busan economic circle in South Korea

Busan, located in the southeast of South Korea, is the second largest city in South Korea, and also owns the Port of Busan which is the largest foreign trade port in South Korea. Depending on Port of Busan and a series of natural good harbors such as Ulsan Harbor, Pohang Harbor, etc. in the east coast, centering on Busan and extending to the Ulsan, Pohang, Changwon, Yeosu and other surrounding southeastern coastal areas, the shipbuilding, automobile manufacturing, machinery, petrifaction, textile and other industries gather here, forming the Busan economic circle which is only inferior to Seoul economic circle in South Korea and is also the second largest industrial area.

There are different leading industries in different areas within Busan economic circle: Busan is the shipbuilding and automobile industry; Pohang is steel manufacturing industry; Ulsan is the petrifaction, shipbuilding, automobile and other industries; Changwon is the electrical and mechanical industry; Geoje is shipbuilding industry, and Yeosu is the oil refining and petrochemical industry. Many large-scale enterprises also gather here, for instance, the shipbuilding industry includes the Hyundai Heavy Industries, Samsung Heavy Industries, Daewoo Shipbuilding Marine Engineering Co., Ltd, STX, Hyundai Mipo Dockyard, tec.; Automobile manufacturing industry includes the Hyundai Motor, GM Korea, Renault Samsung, etc., and the petrochemical industry includes SK, GS Caltex, etc. These singly-focused and mutually-supported industries form the cluster, leading the development of manufacturing industry in South Korea.

1.3 Development experience of regional linkage of mature FTZ in China

From 2013 to 2015, China successively set up 4 free trade zones, namely Shanghai, Guangdong, Tianjin and Fujian, and they also proactively promote the linkage development with the surrounding regions.

1.3.1 Tianjin FTZ (Integration of the Beijing-Tianjin-Hebei Region)

As one of four free trade zones, Tianjin Free Trade Zone started to jointly forge the integration of the Beijing-Tianjin-Hebei Region with Beijing and Hebei from 2014 to promote the transformation and upgrading of regional industry cooperation, jointly construct the regional science and technology innovation and the talent highland, and achieve the development of regional linkage. Three regions in the integration of Beijing-Tianjin-Hebei have their own focus: Beijing is the scientific and technological innovation center, leading the original innovation and foundation innovation; Tianjin forges the advanced R&D manufacturing base, develops the high-end manufacturing industry and conducts the R&D of manufacturing industry and the industry innovation; While Hebei focuses on expanding the transfer and application of scientific and technological achievements to achieve the transformation and upgrading to the traditional manufacturing industry.

On the one hand, Tianjin undertakes the innovation resource from Beijing to support its subsequent development; On the other hand, Tianjin achieves the regional linkage through the construction of traffic network. The traffic network of "four longitudinal, four horizontals, one ring" is arranged in Beijing-Tianjin-Hebei Region to connect the regional center cities, important towns and main industry gathering areas. The interurban railway and high-speed rail shorten their distance and promote their economic contact. It only spends half hour in taking high-speed rail between Beijing and Tianjin, and it only needs two hours to take high-speed rail from Tianjin to Hebei. Meanwhile, the trains from the northeast could connect Hebei through Tianjin, so Tianjin becomes the railway hub station in Beijing, Tianjin and Hebei.

1.3.2 FTZ in Shanghai, Guangdong and Fujian

Shanghai Free Trade Zone mainly grasps the single international trade window to promote the customs clearance integration in the Yangtze River delta region, forms safe, efficient and convenient port management system, and promotes the logistics pattern innovation along the coast and the Yangtze River.

Free Trade Experimental Area in Guangdong focuses on deepening the Guangdong-Hong Kong-Macao cooperation to

boost Guangdong-Hong Kong-Macao free service trade, promote the transformation and upgrading of processing trade, drive the transformation and upgrading of industry in Pan-Pearl River Delta and inland areas, and construct the demonstration area for the deep cooperation in Guangdong, Hong Kong and Macao.

Free Trade Experimental Area in Fujian focuses on deepening the cross-strait cooperation, and proactively promotes the investment trade, personnel contact and open cooperation mode of service industry with Taiwan, of which Xiamen area strives to extend the policy in part free trade experimental areas to the whole Xiamen or Xiamen-Zhangzhou-Quanzhou metropolitan area, and strengthens the industry cooperation and policy linkage with Free Economic Pilot Zone in Taiwan.

2. Advantages for Chongqing to Connect "the Belt and Road" and Yangtze River Economic Zone

2.1 Regional and traffic advantage

Chongqing is the important geographical center to radiate the Southwest China, Northwest China, Central China and the upstream and midstream region of the whole Yangtze River, with obvious special space and regional advantage. It is the geographical node of "the Belt and Road" and Yangtze River Economic Zone, and the outstanding strategic location which links the east and the west and connects the south and the north.

For traffic, it basically forms the comprehensive three-dimensional traffic system which consists of railway, highway, waterway, civil aviation, pipeline and rail transport.

2.2 Basic advantage for economic development

Through the period of anti-Japanese war and assistant capital, after the "three-line construction", China Western Development and many national constructions, Chongqing has become the largest comprehensive industrial base in the Southwest Region.

For the main industry development, through the "vertical integration" of industry chain, Chongqing forges and forms the largest electronic information industry cluster in the globe which gathers five brands, six whole businesses and over 860 part manufacturers; Led by Changan Automobile, it converges 10 brand automakers and 1000 auto part manufacturers, and forms the largest domestic auto industrial cluster of "1+10+1000" by supporting development.

The export-oriented economy develops rapidly, the export trade value only with notebook as core products reached RMB 300 billion in 2014.

2.3 Direct jurisdiction system and policy advantage

Chongqing is the only direct-controlled municipality and national center city in the west and mid of China, and is the important strategic hub to connect and link several countries. The support of a series of strong national policies such as China Western Development, the approval of Chongqing Xiyong Bonded Area, State-level New Areas-Liangjiang New Area and Chongqing FTZ, lets Chongqing undertake more and more important strategic position and function in Chinese development.

In January 2017, the State Council officially replied *"The 13th Five-year Planning" of China Western Development* (hereinafter referred to as *Planning*). It is the fourth five-year planning (plan) of China Western Development officially

replied by the State Council to implement the economic policy with differentiation in Western region.

In February 2017, the National Development and Reform Commission and the Ministry of Commerce issued the *Advantage Industry Directory for Foreign Investment in Central and Western Regions (Amendment in 2017)* (hereinafter referred to as *Directory of Central and Western Regions*), which was implemented on March 20, 2017, and conformed to the *Directory of Central and Western Regions* of new version and the foreign investment project in construction. The relevant preferential policies could be shared.

2.4 Basic advantage of population development

In 2016, the resident population in Chongqing reached 30.48 million and continuously kept the stable growth of 0.2 million - 0.3 million population for 10 years. Constantly enhancing the absorptive capacity of population in the surrounding provinces and cities, Chongqing is gradually becoming the transfer and cluster center of population in Western region.

In 2016, the school enrollments of Regular Institutions of Higher Education in the whole city reached 741,000, and the total number of college graduates reached 183,000, of which nearly 2/3 graduates select the employment in Chongqing, which shows Chongqing owns stronger talent reserve base and talent attraction advantages.

3. Chongqing FTZ Participates in the Regional Spatial Linkage Practice of "the Belt and Road" and the Construction of the Yangtze River Economic Zone

3.1 Direction of regional spatial linkage in Chongqing

Depending on Yangtze River Golden Waterway, high-speed rail, expressway and cross-border trains, by constructing the logistics channel of river-ocean combined transport and railway-ocean combined transport, Chongqing forms the linkage development with the downstream of Yangtze River, Asian-Pacific region, Western China, Europe, Central Asia, Guizhou, Yunnan, ASEAN and other cities and regions. As the important node city of "the Belt and Road" and Yangtze River Economic Zone, Chongqing achieves their effective linkage.

3.1.1 East linkage

In *Development Plan Outline of Yangtze River Economic Zone*, Chongqing, Wuhan and Shanghai are listed as the center cities in three urban agglomerations along the Yangtze River and the three growth poles in Yangtze River Economic Zone. Shanghai-Wuhan-Chengdu expressway connects the above three cities, which constructs the land resource flow channel along the Yangtze River. Depending on the Yangtze River Waterway, they develop the combined transport freighter of river and sea by cooperating with Shanghai, Ningbo and other ports, constructing the waterway channel from the upstream area of Yangtze River to the eastern coastal even to the Asian-Pacific region, and promoting the import and export trade of goods. The iron ore, chrome ore, petroleum coke and other bulk cargoes imported from Australia in the steel mill of Sichuan, Guizhou and Chongqing regions have the custom inspection in Shanghai, then trace the Yangzi River upwards to Guoyuan Harbor for transfer, which saves transport time and cost that the route from Port of Zhanjiang to Sichuan by railway.

Fig.3 Schematic Diagram of Yangtze River Economic Zone

Chongqing eastward blends in the Yangtze River basin region with the strongest economic strength in China, the largest scale, the best development condition and the largest development potential through the land route and waterway, and extends to the coastal area in the Eastern China and the Asian-Pacific region; On the one hand, Chongqing discovers the huge domestic demand potential in vast upstream and midstream region and promotes the expansion of economic growth space from the region along the coast to the region around the river and the inland; on the other hand, it forms the complementary advantages and the collaborative interaction between upstream, middle stream and downstream and shortens the development gap in east-central-west regions.

3.1.2 West linkage

Chongqing is located in Chengdu-Chongqing urban agglomeration, and the Chengdu-Chongqing high-speed rail shortens their traffic time to about 1 hour. Chongqing and Sichuan also keep the long-term close cooperation all the time. In 2015, Chongqing and Sichuan concluded and signed the *Work Memorandum about Strengthening Provincial and Municipal Cooperation To Jointly Construct the Chengdu-Chongqing Urban Agglomeration* to accelerate the construction of Chengdu-Chongqing economic zone and Chengdu-Chongqing urban agglomeration, promoting the demonstration area construction of the adjacent region in the west of Chongqing and in the east of Sichuan and the Sichuan-Chongqing cooperation. They also proactively promote the integration construction of traffic facility. Except for construction of comprehensive transportation network of expressway and railway, they also jointly promote the networking engineering of Electronic Toll Collection (ETC) of expressway and the urban bus "One-Card".

Depending on the "Chongqing-Sinkiang-Europe International Railway", Chongqing applies to establish one of 3 inland temporary railway ports - "Chongqing railway port", and sets up the first inland vehicle import port and the railway bonded logistics park. The "Chongqing-Sinkiang-Europe International Railway" has accumulatively operated 1130 shifts on the basis of one shift/every day. Based on the cooperation with Europe, Central Asia and other countries, merchandises of round trip are constantly enriched; the operation time is constantly shortened, and the market competitiveness of the "Chongqing-Sinkiang-Europe International Railway" is also constantly improving.

3.1.3 South linkage

Chongqing has obvious industry complementation relation with Guizhou and Yunnan, forming base of regional industry linkage. By fully utilizing the Chongqing-centered industry chain and industry cluster in the upstream of Yangtze River, Chongqing southward develops along the Chongqing-Guizhou line and Chongqing-Kunming line, and expands the resource optimization by virtue of the heavy chemical industry and advanced manufacturing industry to enhance the radiation aggregation ability. Chongqing also cooperates with Guizhou Province in energy, tourism resources to jointly plan the construction of traffic, water conservancy and other major infrastructure, such as the conclusion and signing of *Cooperation Memorandum To Jointly Promote Waterway Development in Wujiang Drainage Area* with Guizhou, joint development of Wujiang River waterway channel, etc. It also strengthens the border trade port cooperation with Yunnan Province to encourage the Chongqing enterprises to develop in Yunnan.

Chongqing sets up the logistics channel with Vietnam, Singapore, Burma and other ASEAN countries, opens the "five fixed" (fixed point, fixed line, fixed train, fixed time and fixed price) cross-border highway freight train to ASEAN and the "Chongqing-Guangxi-Sinkiang" train, and cooperates with Shenzhen, Guangxi and Yunnan to develop land-ocean combined transport and railway-ocean combined transport, achieving the contact trade between the machine electricity, building materials and other products in Chongqing and the fruits, foods, timbers and other goods in Southeast Asia.

3.2 Emphasis of regional spatial linkage in Chongqing

3.2.1 Construction of regional transportation hub

The transportation has important effect to regional economic development, population flow and administrative efficiency transfer. The regional spatial linkage shall fully exert the role of large-scale traffic artery and regional traffic hub. The low traffic density is one of important reasons to restrict the economic development in the upstream basin of Yangtze River.

Chongqing will comprehensively construct 8 high-speed rail lines with Xi'an, Zhengzhou, Wuhan, Changsha, Guizhou, Kunming, Chengdu and Lanzhou from 2016 to 2030, forming “pozidriv” type high-speed railway network. At that time, Chongqing will comprehensively achieve the high-speed rail linkage with important urban agglomeration in China. The comprehensive traffic network of expressway and high-speed rail could achieve the aggregation and radiation of goods in Yunnan, Guizhou, Sichuan, Shaanxi, etc.

Chongqing Guoyuan Harbor is the largest combined linkage hub harbor of inland waterway, railway and highway in China. In June 2015, the special line of Guoyuan Harbor railway was comprehensively opened. It connects the Chongqing-Huaihua Railway and directly connects "Chongqing-Sinkiang-Europe International Railway" linage channel, achieving the seamless connection between the golden waterway of Yangtze River and "Chongqing-Sinkiang-Europe International Railway", and the connection between Yangtze River Economic Zone and Central Asia and Europe.

Chongqing owns 1 main Airport-Chongqing Jiangbei International Airport and 2 feeder airports-Wanzhou Wuqiao Airport and Qianjiang Wulingshan Airport. Chongqing Jiangbei International Airport has three runways for operation, and the annual passenger throughput reaches 40 million. At present, Chongqing has 60 international (regional) air routes. Up to 2020, it plans to add over 10 international air routes every year to forge the international aviation hub. By utilizing the developed

international air route network of Singapore and the fifth traffic right through Chongqing, Chongqing also plans to strengthen the passenger and cargo linkage of two airports and promotes the connectivity of two international hub airports with the world.

Based on the matching and coordination of railway, Yangtze River Waterway, highway, aviation and other traffic infrastructure, Chongqing constructs the three-dimensional traffic network with combined transport of river, ocean and land, builds the regional traffic hub of "the Belt and Road" and Yangtze River Economic Zone. Chongqing could achieve the regional linkage with the surrounding regions, one-hour economic circle, middle-sized and small cities along the coast and river to guarantee the efficient flow of manpower, materials, technology and other production factors.

3.2.2 Establishment of core idea of ecology first

Yangtze River Economic Zone has severe situation to develop the ecological environment. It is necessary to conform to the ecology first and green development in case of promoting the development in Yangtze River Economic Zone. The cities along the Yangtze River such as Shanghai has attempted to set up regional environment resource transaction platform in recent years, organized the Environmental Protection Industry Union and set up the ecology environmental compensation institution in the upstream and downstream of Yangtze River basin. Besides, Shanghai also owns the advanced technology in soil remediation, aquatic product aquaculture, etc. as well as the experience to construct the international eco-island in Chongming District. Chongqing could set up the core idea of ecology first by drawing lessons from experience and introducing the technology, and make more contribution to ecological environmental protection of Yangtze River when developing the regional economy.

3.3 Regional market linkage in Chongqing

Chongqing jointly sets up the customs clearance cooperation platform in Shanghai-Chongqing-Sichuan area with Chengdu and Shanghai customs, and builds the golden channel of import and export between Chongqing and Shanghai by connection of Chongqing-Shanghai railway, Domestic Feeder of Yangtze River and air transportation. From January to October 2016, the export goods with customs transfer in Shanghai from Chongqing reached 5.896 million tons with the total value of USD 13.04 billion, and the cargo quantity accounts for 91.4% of customs transfer (including regional custom clearance) business volume in Chongqing customs district in the same period, so Shanghai port becomes the port with the largest business volume of Chongqing customs transfer and regional customs. From January to October 2016, the import & export (including regional custom clearance) goods volume from Chongqing customs to Chengdu customs reached 5763.3 tons with the cargo value of USD 6.29 billion, increasing by 18.3% and 33% on year-on-year basis; and the import & export (including regional custom clearance) goods volume from Chengdu customs district through Chongqing port reached 52,000 tons, with the total cargos value of USD 3.25 billion.

Chongqing also strengthens the customs clearance cooperation with "the Belt and Road" countries to improve the customs clearance efficiency. Chongqing has achieved the mutual recognition of customs inspection, information sharing, law enforcement and mutual assistance with over 20 European countries, and formed the "One-Card" custom clearance mode of "one-time customs declaration, one-time inspection and one-time release", reducing the customs clearance time and cost of enterprises. In 2016, the import & export trade between Chongqing and the neighboring countries reached USD 18.1 billion,

ranking No. 1 in Western China, and the import & export of cross-border e-commerce increased by 1.8 times.

4. Chongqing FTZ Participates in the Industry Linkage Practice of "the Belt and Road" Region

4.1 Regional advantage industry analysis

Based on the strategy of "the Belt and Road" and Yangtze River Economic Zone, Chongqing conducts the regional industry linkage, and needs to analyze what industry advantages Chongqing and the main countries along "the Belt and Road" own.

4.1.1 Advantage industry analysis of Chongqing

In 2016, the total output value in Chongqing ranks the 20th in the whole country, and per capita total output value ranks the 10th, which far leads other surrounding provinces, so Chongqing is the developed province in Western region. In recent decades, Chongqing economy rapidly develops, the proportion of local total output value has increased to 2.36% in 2016 from 1.85% in 2005. Chongqing always has a higher industrial degree. After the development of more than ten years, the service industry proportion further is improved on the basis of keeping higher industrial degree. In 2005, the proportion among primary industry, secondary industry and tertiary industry was 13.4: 45.1: 41.5, while in 2016, the proportion was 7.4: 44.2: 48.4, so the economy starts to change into service age. Meanwhile, the domestic market occupancy of the secondary industry constantly improves from 1.78% in 2005 to 2.62% in 2016, of which the domestic industry market occupancy increases to 2.44% in 2016 from 1.66% in 2005, with rapid increase.

Based on the 2.35% proportion that Chongqing industry accounting for the national industry (the national industry market occupancy in 2015 in bracket), the following industries are the competitive industries in Chongqing: railway, shipbuilding, aerospace and other transport equipment manufacturing industry (8.49%), automobile manufacturing industry, (6.61%), computer, communication and other electronic equipment manufacturing (3.55%), gas production and supply industry (2.91%) and nonmetal minerals mining and separating industry (2.56%). Besides, the following industries also have a certain position: printing and recording medium reproduction industry (2.32%), medicine manufacturing industry (2.02%), papermaking and paper products (1.91%), nonmetal mineral products industry (1.87%), instrument, meter, culture and office mechanical manufacturing industry (1.77%), electrical machinery and equipment manufacturing industry (1.67%), tobacco manufacturing industry (1.55), metal products industry (1.54%), coal mining and washing industry (1.45%), agricultural and sideline food processing industry (1.35%), etc.

In the above advantage industries or the industries with certain position, except the national status of the tobacco product industry has reduced since 2010, other industries have risen accordingly, of which the following industries have the fastest progress: the railway, shipbuilding, aerospace and other transportation equipment manufacturing industries, the computer, communication and other electronic equipment manufacturing, and the automobile manufacturing industry.

Table 1 Domestic Market Occupancy of All Industries in Chongqing (%)

Year	2010	2011	2012	2013	2014	2015
Coal mining and dressing industry	1.39	1.19	1.05	1.14	1.21	1.45
Petroleum and natural gas extraction industry	0.67	0.07	0.09	0.09	0.19	0.77
Ferrous metals mining and dressing industry	0.42	0.12	0.12	0.14	0.15	0.16
Nonferrous metals mining and dressing industry	0.16	0.07	0.06	0.08	0.10	0.10
Nonmetal minerals mining and dressing industry	**2.40**	**1.75**	**1.78**	**1.88**	**1.99**	**2.56**
Farm and sideline products processing industry	**1.01**	**1.04**	**1.05**	**1.09**	**1.21**	**1.35**
Food manufacturing industry	0.99	0.94	0.87	0.96	0.98	1.10
Beverage manufacturing industry	1.14	1.03	1.00	1.05	1.05	1.13
Tobacco industries	**1.73**	**1.73**	**1.74**	**1.76**	**1.69**	**1.55**
Textile industry	0.60	0.55	0.53	0.52	0.48	0.47
Textile and garment, shoe and hat manufacturing industry	0.31	0.43	0.45	0.49	0.53	0.54
Leather, fur, feather (wool) and their products	0.71	1.01	1.04	1.15	1.20	1.26
Wood processing and wood, bamboo, cane, palm, grass products industries	0.23	0.28	0.26	0.29	0.44	0.60
Furniture manufacturing industry	1.00	1.25	1.15	1.44	1.21	0.88
Papermaking and paper products industry	**1.35**	**1.06**	**1.32**	**1.51**	**1.78**	**1.91**
Printing and reproduction of recorded medium	**1.48**	**1.55**	**1.52**	**1.90**	**2.03**	**2.32**
Stationery and sporting goods manufacturing industry	0.05	0.49	0.26	0.46	0.55	0.62
Oil processing, coking and nuclear fuel processing industry	0.15	0.13	0.15	0.13	0.16	0.19
Chemical materials and chemical products manufacturing industry	1.09	1.19	1.03	0.95	0.97	1.06
Pharmaceutical manufacturing industry	**1.49**	**1.41**	**1.43**	**1.50**	**1.61**	**2.02**
Chemical fiber manufacturing industry	0.12	0.10	0.03	0.07	0.08	0.15
Non-metallic and mineral products industry	**1.42**	**1.49**	**1.51**	**1.59**	**1.73**	**1.87**
Ferrous metals smelting and rolling processing industry	0.89	1.06	0.93	0.95	1.00	1.05
Nonferrous metals smelting and rolling processing industry	1.32	1.23	1.13	1.15	1.26	1.37
Metal products industry	**0.81**	**1.19**	**1.07**	**1.14**	**1.26**	**1.54**
Ordinary equipment manufacturing industry	1.28	1.10	1.07	1.11	1.29	1.41
Special equipment manufacturing industry	0.98	0.75	0.68	0.86	0.94	1.05
Automobile manufacturing industry (transportation equipment manufacturing industry)	**4.40**	**4.48**	**4.50**	**4.92**	**5.63**	**6.61**
Railway, shipbuilding, aerospace and other transportation equipment manufacturing industry			**7.40**	**7.81**	**9.16**	**8.49**
Electrical machinery and equipment manufacturing industry	1.13	1.30	1.42	1.33	1.47	1.67
Computer, communication and other electronic equipment manufacturing industry	**0.39**	**1.24**	**2.07**	**2.78**	**3.35**	**3.55**
Instrumentation and stationery & office mechanical manufacturing industry	**1.72**	**1.43**	**1.91**	**1.77**	**1.82**	**1.77**
Recycling and disposal of waste recycling and processing industry	2.98	2.98	1.13	1.27	0.60	0.88
Electrical power and heating power production and supply industry	1.10	1.15	1.12	1.23	1.26	1.31
Gas production and supply industry	**2.46**	**2.45**	**3.20**	**2.93**	**2.24**	**2.91**
Water production and supply industry	1.90	1.77	1.66	1.57	1.73	1.66

Source: Calculated on the basis of STATS data

4.1.2 Advantage industry analysis of main countries along "the Belt and Road"

Based on the summary of advantage industry and main import & export commodity categories in the main countries along " the Belt and Road", we could know that the advantage industries in Western Asia countries and part Central Asian countries are mainly the oil and gas exploitation and the associated product processing industry, and the consumer goods import has a larger proportion; The high-end manufacturing industry of South Korea and Japan has obvious advantages; Most South Asian countries that mainly engage in the agricultural cultivation and cotton manufacturing, with a bigger demand for industrial products; ASEAN countries focus on the agriculture, mining and manufacturing industry, with a bigger demand for international trade; the machine building industry in the Commonwealth of the Independent States and the central and eastern European countries owes certain advantage; The African countries along "the Belt and Road" mainly engage in the agriculture and textile, meanwhile, they have relatively rich mineral resources, with a bigger demand for industrial products.

Based on "the Belt and Road" strategy, Chongqing cooperates with the neighboring countries by comprehensively considering the industrial advantages, resources, markets, etc., promoting the trade contact.

Fig.4 Schematic Diagram of "the Belt and Road"

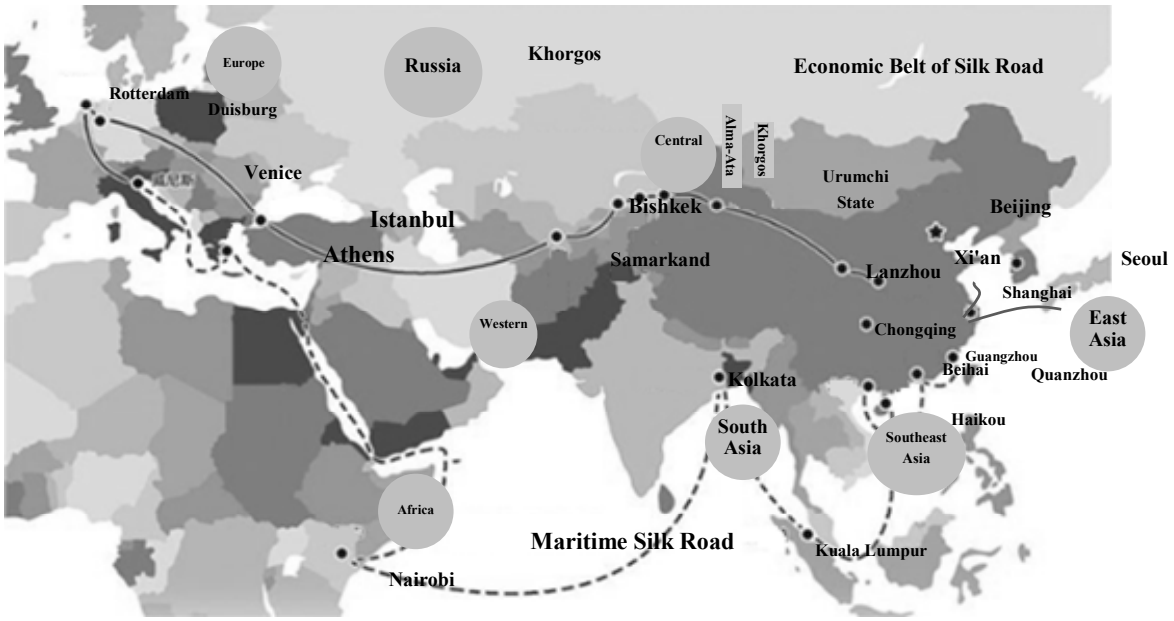


Table 2 Advantage Industry and Main Import & Export Commodity in Main Countries and Regions along " the Belt and Road"

Location	Countries or Region	Advantage Industry (main)	Main Export Commodities	Main Import Commodities
East Asia	South Korea	Shipbuilding, automobile, petrifaction, electronic engineering, steel, textile, medical cosmetology, etc.	Semiconductor, automobile and parts, wireless communication machine, ship, petroleum product, electronic products, steel products, chemicals, etc.	Electromechanical products, minerals, base metal and products
	Japan	Electronic, automobile and chemical industry	Automobile, electrical appliances, general machines, chemical products, etc.	Minerals, electromechanical, chemicals, textile, etc.
	Mongolia	Animal husbandry and mining industry	Minerals, textile products and animal products	Minerals, machinery equipments, foods, etc.
Western Asia	Iran	Oil and gas exploration	Oil and gas, metallic mineral, leather, carpet, fruit, dried fruit, caviar, etc.	Cereals oils and foodstuffs, drug, transport tools, mechanical equipments, livestock, chemical raw materials, beverages, tobacco, etc.
	Iraq	Oil and gas exploration	Crude oil, natural gas, date palm, chemical fertilizer, etc.	Means of production, food, etc.
	Turkey	Mining, agriculture products and textile	Power, clothing, food, textile products, metal products and transport equipments	Machinery, petroleum, chemical products, semi-finished products, fuel and transport equipments
	Saudi Arabia	Petroleum and petrifaction	Petroleum and its products, date palm and animal products	Grain, sugar, tea, textile product, etc.
	UAE	Oil and gas exploration	Petroleum, natural gas, petrochemical products, aluminum pig and few native products	Grain, machinery and consumer products
	Qatar	Oil and gas exploration	Petroleum, LNG, gas condensate synthetic ammonia, urea, ethylene, etc.	Machinery and transport equipment, food, industrial raw materials, light industrial products, drug, etc.
	Kuwait	Oil exploitation	Petroleum and chemical products	Machinery, transport equipment, industrial products, grain, food, etc.
	Greece	Maritime transport and tourism	Food, flue-cured tobacco, Petroleum product, textile product, olive oil, cement, etc.	Raw materials, Petroleum and its products, natural gas, commodity, traffic transport equipment, etc.
South Asia	India	Chemical industry and cotton textile industry	Textile, jewelry, machinery, chemical industry, leather, handicraft art and other finished products; Agriculture products, mine and other primary commodities; Petroleum and finished oil	Petroleum products, electronic products, gold and silver, machinery, chemical products
	Pakistan	Cotton textile industry	Rice, cotton, textile products, leather products, carpet, etc.	Petroleum and petroleum products, machinery and transport equipment, steel products, fertilizer and electrical products, etc.
	Bangladesh	Agriculture	Tailoring, leather and its products, frozen fish and shrimp, shoes, jute and its products, etc.	Cotton and cotton yarns, electromechanical equipment, petroleum and its products, steel, chemicals, grain, household appliances, plastics, rubber products, etc.
	Afghanistan	Agriculture	Natural gas, carpet, dry and fresh fruit, wool, cotton, etc.	Food, motor vehicle, petroleum products, textile products, etc.
	Sri Lanka	Agriculture and mining	Textile products, clothing, tea, rubber, coconut and petroleum product, jewel	Mineral fuel, mechanical equipment, transport equipment, electromechanical and knitting products
	Nepal	Agriculture	Vegetable oils, copper wire, cashmere products, carpet, tailoring, leather, agricultural products and handicraft works	Coal, petroleum products, wool, drug, machinery, electrical appliance, chemical fertilizer, etc.
Central Asia	Kazakhstan	Petroleum and natural gas, mining, agriculture and husbandry	Minerals, metal and products, chemical products, flora and fauna products, etc.	Machinery, equipment, vehicle, instrument and meter, chemicals, minerals, etc.

Location	Countries or Region	Advantage Industry (main)	Main Export Commodities	Main Import Commodities
	Uzbekistan	Agriculture, livestock husbandry and mining industry	Natural gas, oil, power, cotton, gold, energy products, mineral fertilizers, ferrous metal, nonferrous metal, textile products, food, machinery and automobile	Oil, power, machine and equipment, food, chemical products, ferrous metal and nonferrous metal
	Turkmenistan	Crop farming and livestock husbandry (main)	Natural gas, petroleum products and ginned cotton	Grain, meat and light industrial products
	Tajikistan	/	Non-precious metal and its products	Vehicle mechanical equipment, minerals and chemical products
	Kyrghyzstan	Agriculture and husbandry (main)	Precious metals, chemicals, agricultural products, etc.	Petroleum products, second-hand automobile, clothing, chemical products, natural gas, etc.
ASEAN	Singapore	Electronic, petrifaction, finance, navigation, trade and service industry	Electronic, mineral fuel, plastics and its products, machinery, organic chemicals, etc.	Mineral fuel, machinery, electronic, ship, furniture, etc.
	Malaysia	Rubber latex and rubber industry	Petroleum, palm oil, disk and rubber	Mechanical transport equipment, food, tobacco, fuel, etc.
	Indonesia	Mining industry	Petroleum, natural gas, textile products, timber, rattan products, handicraft works, shoe, copper, coal, pulp and paper products, electrical appliance, palm oil, rubber, etc.	Mechanical transport equipment, chemical products, automobile and parts, power generating equipment, steel, plastic products and cotton
	Burma	Mining and agriculture (main)	Unsawn timber, converted timber, agricultural products, minerals, etc.	Equipment and electromechanical products, textile products, motorcycle fittings, chemical products, etc.
	Thailand	Trade and manufacturing industry	Automobile and parts, computer and parts, integrated circuit plate, electrical appliance, primary plastic, chemical products, petrifaction products, jewelry, tailoring, shoes, rubber, furniture, processing seafood, canned, rice, cassava, etc.	Electromechanical products and parts, industrial machinery, electronic products parts, automobile parts, building materials, crude oil, papermaking machinery, steel, integrated circuit plate, chemical products, computer equipment and parts, household appliance, gold jewelry, metal products, fodder, fruit, vegetable, etc.
	Cambodia	Agriculture (main)	Clothing, shoes, rubber, rice and cassava	Fuel, building materials, mobile phone, machinery, food, beverages, drug, cosmetic, etc.
	Vietnam	Mining and agriculture (main)	Coal, rubber, textile products, petroleum, shoes, rice, timber and wood products, coffee	Motorcycle, mechanical equipment and parts, textile raw materials, refined oil, steel and leather
	Brunei	Oil and gas exploration	Crude oil, LNG, methanol, etc.	Machinery and transport equipment, industrial products, foods, chemicals, etc.
	Philippines	Agriculture and manufacturing	Electronic products, clothing and relevant products, cathode copper, etc.	Electronic products, mineral products, traffic and industrial equipment
The Commonwealth of Independent States (CIS)	Russia	Machinery, metallurgy, oil and gas exploration, coal and chemical industry	Petroleum, natural gas and other minerals, metal and its products, chemical products, mechanical equipment, vehicle, jewel and its products, timber, pulp, etc.	Mechanical equipment, vehicle, food, agricultural raw materials products, chemicals, rubber, metal and its products, textile clothing commodities, etc.
	Ukraine	Mining, mechanical manufacturing and metallurgy	Ferrous metal and its products, inorganic chemical materials, chemical fertilizer, timber, textile products, aluminum products, locomotive, etc.	Natural gas, petroleum, ground transport equipment, paper, plastic products, drug, grain, lathe, etc.
	The Republic of Belarus	Machinery, metallurgy, agriculture and husbandry	Minerals, mechanical equipment, vehicle, chemicals, rubber, ferrous metal and its products, food, agricultural and sideline products	Minerals, mechanical equipment, traffic and transport means, ferrous metal and its products, chemical products, rubber, foods, agricultural and sideline products
	Azerbaijan	Oil and gas exploration	Petroleum and its products, natural gas, fruit and vegetable, ferrous metal and its	Mechanical equipment, food, vehicle and fittings, ferrous metal and its products,

Location	Countries or Region	Advantage Industry (main)	Main Export Commodities	Main Import Commodities
			products, chemical products, tobacco and wine, etc.	timber, drug, furniture, commodity, etc.
Central and Eastern Europe	Poland	Mining, steel, automobile manufacturing, mechanical manufacturing, etc.	Mechanical equipment, automobile, metal and its products, agricultural products, clothing and textile products	Mechanical equipment, minerals, chemicals, automobile, metal and its products
	Czech Republic	Mechanical manufacturing, chemical industry, metallurgy, textile, shoemaking, timber processing, glass manufacturing, brewage, etc.	Electromechanical products, transport equipment, base metal and products	Electromechanical products, base metal and products, transport equipment and textile products
	Romania	Mechanical manufacturing, petrifaction, power, steel and textile	Petrifaction products, Petroleum equipment, agricultural equipment, trucks and agricultural products	Machinery equipment, iron ore, natural rubber, coke, nonferrous metal and other industrial raw materials
Africa	Ethiopia	Agriculture and husbandry (main). Foods, beverages, textile and leather processing	Coffee, oilseeds, leather and gold	Machinery, automobile, petroleum products, chemical fertilizer, chemicals, etc.
	Benin	Agriculture (oil palm plantation), food processing, textile and building materials industry	Cotton, cashew nut, palm oil and other primary commodity	Consumer goods, mechanical equipment, fuel, etc.
	Kenya	Agriculture, manufacturing and tourism (main)	Tea, coffee, flowers and plants, cement, sisal hemp, pyrethrum, sodium carbonate, leather, meat, petroleum products, etc.	Crude oil, machine electricity, steel, vehicle, drug, chemical fertilizer, textile clothing, high-tech products, etc.

Remark: The above information is neatened according to the public reporting data; The conditions about Western European countries in omitted.

4.2 Foreign trade in Chongqing

Foreign trade product category and trade volume reflect the industrial competitiveness in export region and the supply balance in import regions. Analyzing the import & export condition owns the proactive significance to guide the foreign industry investment or adjust own industrial structure.

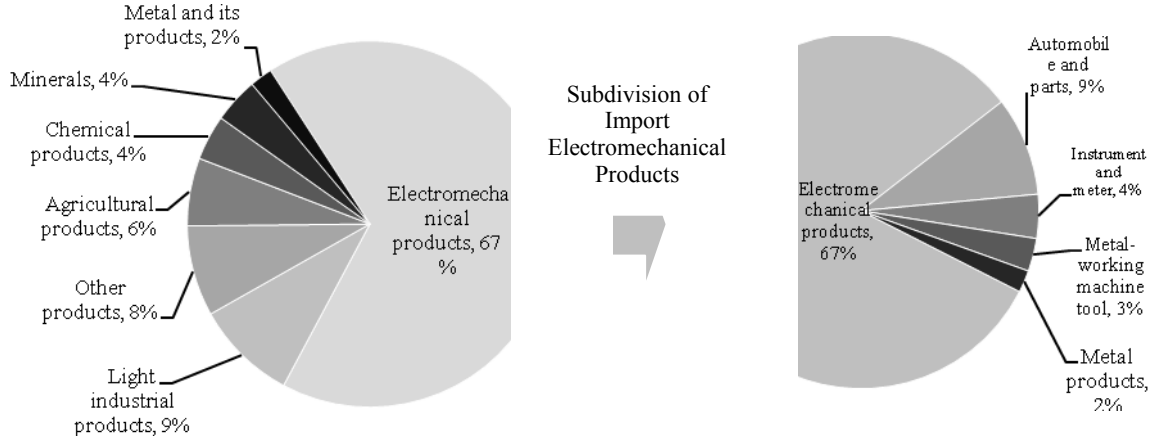
4.2.1 Import trade

In 2016, the total import trade amount in Chongqing reached RMB 146.24 billion, increasing by 22.1% on year-on-year basis, of which the import from Asian accounted for 78.5%.

In the import goods, the electromechanical products accounted for 67%, decreasing by 4% than 2015. The proportions of the light industry, chemical industry and minerals accounted for 9%, 4% and 4%, respectively, and all of them increased by 2% than 2015, which indicated the status of import rises.

In the electromechanical subdivision category, the import proportion of electronic information electromechanical products further increased to 82% in 2016 from 80% in 2015, increasing by 2%. The import proportion of automobile and parts, instrument and meters decreased to 9% and 4% in 2016 respectively from 10% and 5% in 2015.

Fig.5 Category and Amount Proportion of 2016 Import Product in Chongqing

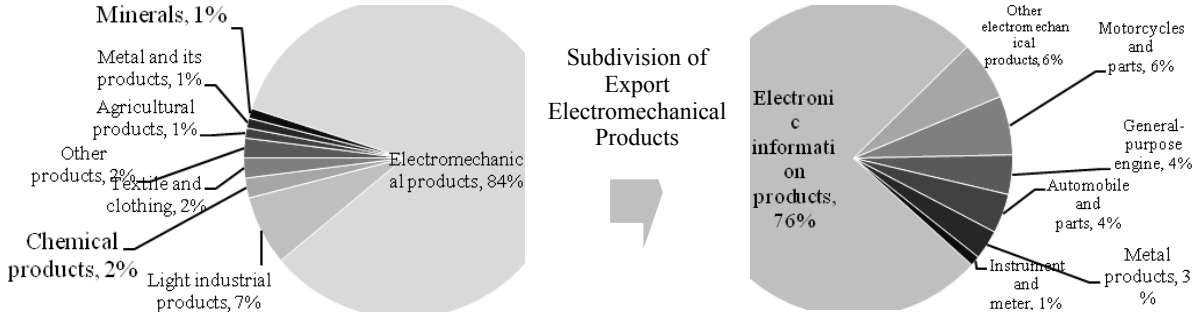


4.2.2 Export trade

In 2016, the total export trade amount in Chongqing reached RMB 265.27 billion, decreasing by 22.4% on year-on-year basis, of which the trade proportions exported to Asia, Europe and North America were respectively 38.0%, 24.1% and 25.5%.

In the export goods, the electromechanical products accounted for 84% absolute proportion, increasing by 8% than 2015, and the advantage status of the electromechanical products is further improved. The export proportions of the light industry and textile clothing products were respectively 7% and 2%, decreasing by 7% and 2% respectively in 2015, and the export status of them further decreased. In the electromechanical subdivision category, the electronic information electromechanical products accounted for 76% absolute proportion, increasing 12% than 2015, so the focusing effect of product export further increased.

Fig.6 Category and Amount Proportion of 2016 Export Product in Chongqing



Remark: All data of import & export in Chongqing, foreign investment utilization and foreign investment are from the Chongqing Commerce Commission.

4.3 Foreign investment introduction and foreign investment of Chongqing

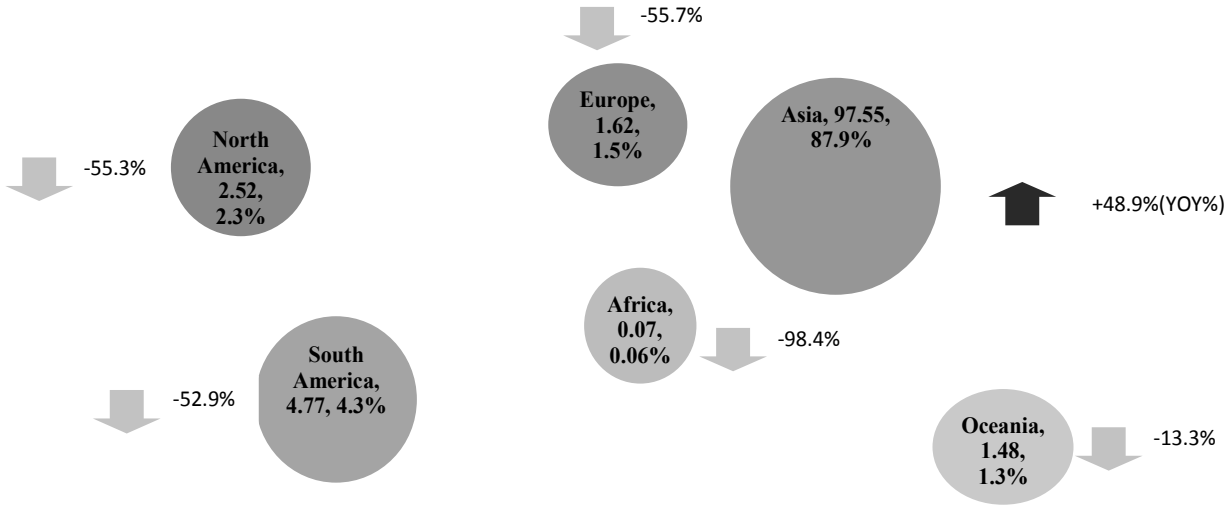
Foreign investment introduction could effectively solve the conflict in Chinese industrial structure, and achieve the adjustment and updating of industry structure. Meanwhile, the foreign investment could expand the market demand and shift the excessive capacity, which is conductive to achieving the industry balance between supply and demand. Analyzing the foreign investment introduction and foreign investment of Chongqing owns the guidance significance to carry out the international industrial cooperation in the future.

4.3.1 Foreign investment introduction

In 2016, Chongqing actually utilized the foreign investment of USD 11.34 billion, increasing by 5.4% on year-on-year basis. There were foreign merchants from 39 countries (regions) to invest in Chongqing, of which the investment from Asian merchants accounted for 88% absolute proportion. The top three countries (regions) in investment were respectively: China Hong Kong, Singapore and South Korea, and their total paid-in investment accounted for 82.1% of all investments.

In 2016, the investment from countries and regions along " the Belt and Road" was USD 9.92 billion, increasing by 43.3% on year-on-year basis, of which the countries and regions with larger investment amount and larger year-on-year increasing amplitude were respectively: Singapore (USD 3.202 billion, 3.6 times), South Korea (USD 1.33 billion, 1.6 times), Japan (USD 207 million, 0.8 times), China Macao (USD 183 million, 189 times), United Arab Emirates (USD 160 million, 0), Taiwan (USD 58 million, 2.7 times).

Fig.7 2016 Sub-regions Amount and Proportion of Actual Foreign Investment Utilization in Chongqing (USD 100 million, %)

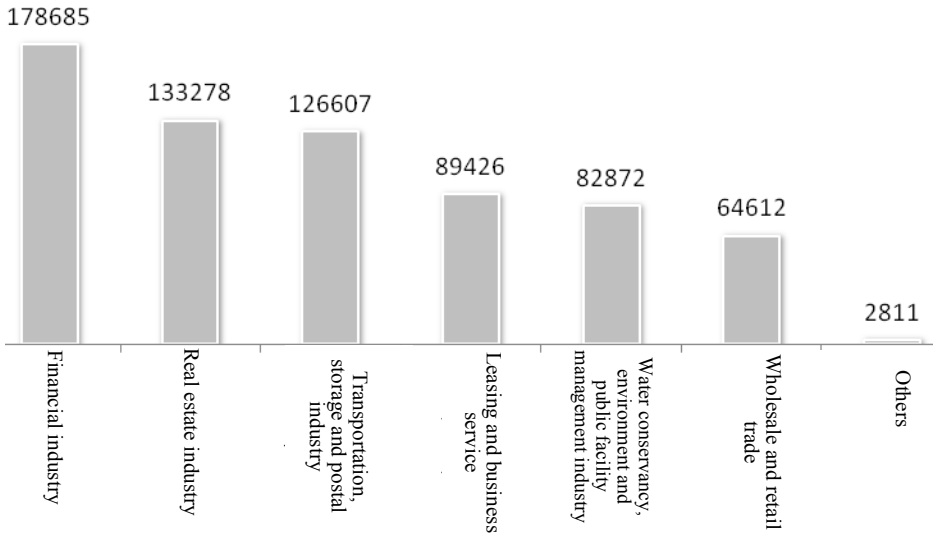


In 2016, the actual foreign investment amounts of the secondary industry and the tertiary industry in Chongqing reached USD 4.41 billion and USD 6.78 billion, respectively, increasing by 3.1% and 24.1% on year-on-year basis, and the amounts accounted for 38.9% and 59.8% of the total actual foreign investment amounts. The actual foreign investment amounts were

mainly from the manufacturing industry of the secondary industry (USD 4.27 billion, 37.6%), the financing industry of the tertiary industry (USD 1.79 billion, 15.8%), the real estate (USD 1.33 billion, 11.8%) and the transportation logistics (USD 1.27 billion, 11.2%).

Fig.8 2016 Sub-industries Amount and Proportion of Actual Foreign Investment Utilization in Chongqing (USD 100 million, %)

Fig.9 2016 Subdivision Industry Amount and Proportion of Actual Foreign Investment Utilization of Tertiary Industry in Chongqing (USD 100 million, %)



4.3.2 Overseas Investment

In 2016, the actual foreign investment amount of Chongqing was USD 2.43 billion, increasing by 70.5% on year-on-year basis. The number of investment destinations increased to 49 in 2016 from 39 in 2015. The top three countries and regions in actual investment amount were China Hong Kong, America and China Macao, respectively, and their actual investment amounts respectively accounted for 50.3%, 22.8% and 5.7% of the total amounts in the whole city. Other countries and regions also included Benin, Tanzania, East Timor, Netherlands, Thailand, Canada, Mauritius, Kenya, Liberia, Laos, Uganda, Russia, etc.

Within longer period, the state-owned enterprises are always the overseas investment entity of Chongqing. In 2000, there

were only 4 private enterprises in 27 overseas investment enterprises of Chongqing, only accounting for 14.8%. In recent years, with the development and growth of the private economy, the foreign investment of private enterprises is increasingly active. In 2016, the actual investment amount of private enterprises has accounted for 71.0% of the total amount in the whole city, and the private enterprises have become the entity of overseas investment development.

The top three actual foreign investment industries were respectively: automobile manufacturing industry, wholesale and retail trade, radio and television and satellite transmission services, and their total actual investment amount accounted for 31.8% of the total amount in the whole city.

4.4 Situation of Chongqing participating in international capacity cooperation

Chongqing adheres to the combination of "bringing in" and "go-global", and develops the regional market with neighboring countries through the division and cooperation of industry.

The world-class electronic information industry cluster is formed through the introduction of 5 international well-known brands, 6 agent industrial and commercial and more than 850 part supporting manufacturers. In 2016, the notebook computers manufactured in Chongqing accounted for 1/3 of the world. Actively integrate into the global automotive industry layout, introduce the whole vehicle manufacturing enterprises, such as Ford, Suzuki and Hyundai, etc., introduce a batch of automobile part manufactures through the construction of Zondar Automobile Industrial Park and China-South Korea Industrial Park, etc., and build an important global automobile industry base. Driven by these pillar industries, enterprises in Germany, France, Austria, Ukraine and other countries have come to invest, and there are more than 270 enterprises in the world's top 500 enterprises in Chongqing.

Meanwhile, actively support the local enterprise to "go-global" Changan Company establishes the R&D Center in Turin, Italy and Birmingham, Britain, and Lifan Group invests to establish the factory in Russia, Iran, Ethiopia and other countries, which extends Chongqing automobile industry into related countries of "the Belt and Road". Osell establishes the office in more than 10 countries, such as Russia and Poland, etc., which promotes more than 5000 enterprises to supply the products to overseas markets. Many enterprises participate in industry mergers and acquisitions of Southeast Asia, Africa and Eastern Europe, and develop new energy, ecological environmental protection, equipment manufacturing and other industries. More than 70% of Chongqing foreign labor cooperation and engineering contracting concentrate in the neighboring countries of "the Belt and Road". The "go-global" of these enterprises not only drives the employment, but also promote the local economic development.

5. Suggestion on Deepening of Chongqing to Participate in "the Belt and Road" and Regional Linkage Development of Yangtze River Economic Zone

5.1 Linkage development on logistics facility and market

1) Facility connectivity

Chongqing should further improve the railway, highway, waterway and air traffic network in the surrounding areas, promote the rapid flow of production factors, continue to promote the opening of the China-Europe Train railway port, and

continuously improve the operational level of "Chongqing-Sinkiang-Europe International Railway" and ASEAN logistics channel.

2) Market

Further strengthen the regional linkage with Shanghai, and form the double growth poles on Yangtze River Economic Zone by virtue of the development mode of Chicago and New York in the America.

On the basis of the existing logistics cooperation, strengthen the customs clearance integrated cooperation with the 4 FTZs of Shanghai, Hubei, Wuhan, Zhoushan of Zhejiang and Chengdu of Sichuan along the Yangtze River Economic Zone, to achieve goods trade facilitation. Actively achieve information sharing and connectivity in the field of market procurement trade and international goods distribution.

At the time of developing the economy, set up the core concept of ecological priority, and pay attention to protecting the ecological environment of the Yangtze River.

Strengthen the international customs cooperation along "the Belt and Road". Vigorously promote the customs temporary supervision cooperation in Central and Eastern Europe, as well as Sino-Kazakhstan, open the "Green Channel" for fast customs clearance of agricultural products in Sino-Russian, Sino-Kazakhstan, Sino-Tajikistan and Sino-Kyrgyzstan, and actively promote the mutual recognition of Sino-Russian border port supervision results, and mutual recognition of China-Europe and China-Singapore AEO cooperation, as well as other cooperation projects. Improve the customs cooperation mechanism in Central Asia, Lancang River-Mekong River and European areas.

Promote the sharing and mutual intelligibility of resources, market and talents between Chongqing and regions along "the Belt and Road" and Yangtze River Economic Zone through facility connectivity and port facilitation to further deepen cooperation and linkage development.

5.2 Linkage development of industry

1) Promote the construction of overseas economic and trade cooperation zones and let enterprises "go-global"

In recent years, the construction speed of China's overseas economic and trade cooperation zones has been speeding up, and the management level of cooperation zones has been continuously improved. It has become an important platform and carrier for Chinese enterprises to "go-global". At the end of September 2016, Chinese enterprises have set up 77 overseas economic and trade cooperation zones invested in 36 countries, mainly including four categories, namely manufacturing, resource utilization, agricultural processing and trade logistics, and involving textile, home appliances, steel, building materials, chemical industry, automobile, machinery, minerals processing and other industries.

The cooperation between Chongqing and neighboring countries of "the Belt and Road" can combine with own industrial advantages firstly to assist power, automobile and motorcycle, equipment, chemical industry and other advantage industry enterprises to "go-global" through establishing overseas factory and regional sales center. Support the enterprise to establish overseas Chongqing outstanding commodity exhibition chains in neighboring countries of "the Belt and Road", Hong Kong, Macao and Taiwan, as well as sister cities of Chongqing. Based on "Chongqing-Sinkiang-Europe International Railway", explore to establish overseas logistics system in neighboring countries of "the Belt and Road" and Chongqing enterprise's

overseas industrial park with the priority of automobile assembly and sales. Promote the Chongqing rail transit and wind power, photovoltaic, waste incineration power generation and other new energy industry enterprises to invest in overseas markets, to drive equipment manufacturing industry and plant export. Promote the transfer of natural gas chemical industry capacity to overseas, and increase the investment of automobiles, general machinery and other manufacturing enterprises.

Organize local enterprise in Chongqing and leading industry enterprises along Yangtze River Economic Zone to "go to sea together", and conduct cluster development in the appropriate countries and regions along "the Belt and Road". For example, carry out the investment cooperation of agricultural products processing and cotton textile industry in countries and regions in Central Asia, South Asia and ASEAN which takes agriculture and husbandry or crop farming as the main status; Carry out the development cooperation of mining industry in the Commonwealth of the Independent States, Africa, ASEAN and other countries combining with the technical reserves and advantage in mineral exploration and development of Chongqing. It can be considered that establish the verseas characteristic industrial park in local to conduct the promotion.

For the cooperation in power, transportation, petroleum and petrifaction, building and construction, as well as other traditional fields, the countries and regions with rich resources but lack of infrastructure can be considered.

In addition, the investment cooperation in leasing and business services, wholesale and retail trade, financial industry and other service fields shall be promoted continuously. For example, support and assist real estate enterprises. Drive the upstream and downstream firms of construction industry and catering enterprises in Chongqing to "go-global" together based on investment development of overseas urban complex projects in countries and regions in West Asia, ASEAN, Central and Eastern Europe with good economic development, larger population, larger foreign trade proportion and relatively developed tourism industry, to form the benign interaction of investment on driving engineering contracting and trade exports. Carry out more service trade in Philippines and Indonesia with relatively low human capital and ASEAN countries with fewer resources.

In the future, it is expected Chongqing's investment in different countries (regions) will become more diversified, and investment differences will gradually emerge.

It should be emphasized that the process of participating in the "going-global" of foreign investment cooperation enterprises is also a process of participating in the local market competition. In order to remain invincible in the competition, it is necessary to further strengthen the overall strength of the enterprise. At the same time, it is also necessary for Chongqing to establish an organizational leadership mechanism to help enterprises "go-global". For example, organize private enterprises to visit neighboring countries of "the Belt and Road". Deepen the connection with relevant government agencies and chambers of commerce organization in the neighboring countries. By investigating the overseas investment development of Chinese enterprises and overseas industrial parks, to understand the status quo and problems of "going-global" of enterprises.

In addition, the professional and international accounting firms, law firms and other local intermediary organs serviced for the foreign investment cooperation are required to be developed to effectively help solve the previous preparation, due diligence, legal, accounting and public relations of international investment management and economic cooperation.

2) Focus on key countries and regions along "the Belt and Road" and Yangtze River Economic Zone, and "bring in" the high-tech enterprises, traditional advantage enterprises and strategic emerging industries

Through the introduction of high-tech, innovative products and advanced management experience, to continuously optimize traditional industries, promote the supply-side structural reform, cultivate and strengthen strategic emerging industries, and boost the industry gradually toward high-end.

With Chongqing FTZ and China-Singapore (Chongqing) strategic connectivity demonstration project as the carrier, actively explore the national treatment and negative list management mode before the admittance, improve the approval and service processes of major projects, and further optimize the introducing investment environment. Focusing on the ten major strategic emerging industries, five major items in service trade, head office trade and carrying trade, to carry out specialized, clustered and differentiated investment promotion at home and abroad with the provinces along the Yangtze River Economic Zone.

Carry out the third party market cooperation with developed countries along "the Belt and Road" to achieve win-win and multi-win by combining with cost performance of Chinese manufacturing industries, market potential of developing countries and technical advantage of developed countries. Such as the cooperation in the fields of automobile, component manufacturing, high-end equipment manufacturing and electronic information, etc. in South Korea, Japan and Germany, etc.

It also can discuss cooperating with the advantage countries and regions along "the Belt and Road" in finance, aviation, logistics, communications, medical and other service trade fields.

5.3 Linkage development of other aspects

Vigorously promote the international communication and cooperation. Promote the establishment of a private dialogue and exchange mechanism between Sino-Germany, China-Europe, Sino-US and China-Japan-South-Korea, and organize technical exchanges and cooperation focusing on intelligent manufacturing, standard setting and demonstration of industrial applications.

Strengthen the exchanges and cooperation on culture, art and education with all countries along "the Belt and Road", and promote cultural harmony and the people connected.

In conclusion, if Chongqing participates in the deep integration of strategy of "the Belt and Road" and Yangtze River Economic Zone, Chongqing shall not only ensure the facility connectivity and smooth trade, but also fully realize its own advantages, clear its position, make overall arrangements of regional overall interests, and form a good pattern of coordination, difference and linkage development in the process of "going-global" and "bringing in" of the industry.

(End)

To Further Open Up Investment， More Efforts with Greater Precision

By Dr. Dan Sun

Vice President, Asia Pacific Region, Honeywell

Introduction & Trends

Many critics have warned of China's potential fall into the "middle income trap", where fast growing economies that achieve "middle income status" become stagnant because they lose their low-cost competitive edge and are unable to transform their economies.

Pundits have equally predicted a wave of "reshoring", where companies would migrate factories from China to other low-cost countries and even back to the US, given China's rising labor cost.

While these concerns sound logically, they have not happened in any significantly negative way.

As an example, our own in-house analysis showed that while China's headline labor cost is 40% higher than Mexico, our China factories can be just as cost competitive as our Mexico factories, once productivity is factored in. And that is even before considering other strategic benefits such as access to market, access to supply base, ability to integrate R&D, scale of economy and increasingly, access to talent.

But it is not just about cost, because China continues to transform the economy, the industry structure, and technology adoption. China now leads in many industry sectors and are actively exporting its capability. These range from high speed rail, solar panels, wind turbines, and increasingly nuclear power, digital technologies, and even commercial aircrafts.

To facilitate trade, the internationalization of RMB will be a key catalyst going forward, where we see RMB playing an increasingly important role as a trade currency as well as a reserve currency. Only recently and in the first half of 2017, the European Central Bank (ECB) invested an equivalent to €500 million of its foreign reserves in RMB, reflecting China's acceptance as one of Europe's largest trading partners, as well as a growing acceptance in Europe of China's status as a global economic superpower.

Therefore, China is expected to become a greater force in the global marketplace, taking on multiple roles as a producer, a consumer, an innovator, and a financier. And Free Trade Zones will play a pivotal role as part of this transformation, becoming a window between China and the rest of the global economy.

Best Practices

Successful Free Trade Zones (FTZ) around the world have established themselves as a regional hub. They share in a few common characteristics:

1. Tax – Tax is handled transparently and seamlessly, often with zero paperwork unless the goods are imported from the FTZ for domestic consumption

2. Process – Customs clearance is extremely quick, often measured in hours and not days. This is both a function of process efficiency, clarity in regulation, and good rule of law

3. Transportation – FTZ acts as a logistics hub where goods can be transported to their final destinations. This necessitates connection with efficient transportation (often intermodal transport), and value added logistics services (such as re-packaging, de-consolidation and consolidation)

4. Technology – Modern technologies have to be employed to provide to provide all aspects of goods handling – e.g. real time visibility of status, electronic documentation, electronic processing, etc. etc.

The Dubai's DMCC (Dubai Multi Commodities Centre) is a worthy example to study. It was established in 2002 as a strategic initiative of the Dubai government, with a mandate to provide the physical, market and financial infrastructure required to establish Dubai as a hub for global commodities trade. Since its establishment, DMCC has become a critical growth driver in the region:

- DMCC is the leading Free Zone in the UAE, having grown from 28 member companies in 2003 to over 13,000 member companies today including 150 Chinese companies employing 45,000 people
- Dubai now is the world' leading physical gold market
- Dubai now is one of the world's Top 3 hubs for diamond trade
- The UAE now is world's largest re-exporter of tea with 60% share of the market

The success of the DMCC could be attributed to the following key success factors:

1. **Tax Exemption** – exemption on personal and corporate income tax for 50 years
2. **Flexible Solution for company incorporation** – ability to set up any type of business, a brand, subsidiary, or new limited liability company
3. **Easy Process** – provides access to a wide range of services on the member portal from any device, anytime and anywhere in the world, ensuring a rapid response to any requests
4. **Established Infrastructure** – offers International living standard with advanced office buildings, hotels, residential apartments, international schools and retail outlets
5. **Unified Supervision** – a unified supervision system that manages the entire DMCC
6. **Financial Services** – offers investors sophisticated financial products and has established various strategic joint ventures to achieve this, e.g. DCAM (Dubai Commodity Asset Management), DMCC Trade flow (an electronic system that brings together all parties involved in inventory based financing)
7. **An ecosystem of industries** – leverages trading hub to expand into financial service and real estate sectors to drive economy growth further

Progress of Chongqing FTZ

Chongqing has implemented many of the key success factors listed above, including:

1) 27 initiatives to support growth of Chongqing FTG – where enterprises within the FTZ will benefit from simplified procedures, integrated supervision over the China-Europe (Chongqing) International Rail Shipping Channel, reduced processing time, and support for new industries

2) 15 measures to strengthen financial services – through increasing banking entities, innovative financial services, and support for cross border investment & financing

3) 14 Immigration Policy Measures Facilitating Chongqing's Opening Up – providing greater latitude for "high level foreign talent" to work, visit, and permanently reside in Chongqing

4) The China-Singapore (Chongqing) Demonstration Initiative on Strategic Connectivity – focusing on modern connectivity and services for financial services, aviation, transport logistics, and information technologies

The policy platform is set up in a positive direction. The important task ahead of Chongqing is how to implement and with speed.

Recommendations for Chongqing

The success of the FTZ will depend largely on the international trade. In particular, based on Chongqing's strategic geographical locations, trade with Europe will be crucial. Our recommendations encompass the following areas:

1. **Support Chinese manufacturers to comply with EU standards** (e.g. CE and others) – by working with relevant certification authorities to set up branch office in Chongqing FTZ. Provide support for Chinese manufacturers to acquire the necessary product certification for exporting to the EU. And facilitating councils / associations of export manufacturers so that experiences can be shared. Enterprises who register in the Chongqing FTZ can gain privileged access for support.

2. **Promote bilateral trade**. A healthy trade has to be bilateral, and Chongqing should also stimulate consumption of European goods. This means consumers on both the China side and Europe side need to develop a stronger acceptance and appreciation of one another, by promoting tourism between Europe and Chongqing, fostering cultural exchange, stimulating consumption of European consumer goods, promoting language trainings.

3. **Leverage established industrial base to develop digital adjacencies** – digitization, AI, and cloud applications will be pervasive and applicable to all industries. Special incentives could be set up to support development of digital technologies. Since many of these would be services in nature, this requires a whole new set of skills within the enterprise to develop, market, sell new offerings, and service customers. The combination of an industrial base and a knowledge base would be a formidable competitive advantage compared to other tech savvy nations such as India, allowing Chongqing to act as a digital

R&D center (or outsourcing) for European enterprises.

4. **Become the bridge for European companies to enter China market**. As the most developed hub in western China, and a key station along the One Belt One Road, Chongqing could be positioned as the bridge between Europe and China. Since most of the large European enterprises already have presence in China, the first opportunity would be to support upstream suppliers as well as downstream service suppliers of these European enterprises. The second opportunity would be to serve small & medium European enterprises who are seeking to grow their business in China. Thirdly Chongqing could also be a service hub for Chinese enterprises (especially in western China) to do business with Europe.

While we emphasize European companies due to the geographical linkage to Chongqing, US companies are also important. U.S. Fortune 500 companies with a well-established presence in China could also use Chongqing as a gateway to serve their European base.

5. **Overcome the misconception China made goods**. Despite China's improved product quality and technology advances, today there are still misconceptions and mixed feelings about Chinese product quality, which must be overcome in order to proliferate China export. The focus should be on supporting and incentivizing enterprises capable of producing high quality goods. The perception of China product quality must be changed for the better.

Closing

Chongqing has come a long way in its development over the years, and GDP has been growing consistently. The challenge for Chongqing is not "scale", but rather the "diversity" of industries that can put Chongqing on a long term sustainable path, a path which is contemporary with the changes in the world.

The Free Trade Zone is very timely development and if done well, could turn Chongqing into China's window to Europe, and vice versa. While there are many best practices from leading FTZ around the world to be referenced, Chongqing has a lot of unique advantages and will necessitate its own unique development path.

Unleashing the Power of Innovation in the Chongqing Free Trade Zone

By Hannes Androsch

Chairman of the Supervisory Board of AT&S

INTRODUCTION

The municipality of Chongqing is an economic success story for China. The city has witnessed remarkable economic growth over the past few years, and in fact led China's growth rate table for three consecutive years in 2014, 2015 and 2016[1]. Chongqing's economic achievements can be attributed to the city having diverse and competitive manufacturing sectors, with the automobile and electronics industries in particular being the largest drivers of growth for the city.

In order to make Chongqing into an even bigger economic powerhouse, in April 2017 the China State Council announced that the city would become a Pilot Free Trade Zone (FTZ). FTZ status will enable Chongqing to cut restrictions on the flow of capital and to create rules on trade and investment which are in line with global standards. This initiative aspires to generate greater inbound investment as Chongqing becomes more accessible to the national and international economy. The FTZ will also support the further development of high-end industries. For instance, the Liangjing Area within the FTZ will be dedicated to nurturing clusters of high-end companies, especially those that specialize in core electronic parts, cloud computing or biomedicine[2].

Greater investment and the promotion of high-end industries are necessary conditions for Chongqing to develop further economically. But they are not sufficient. The FTZ should also encourage innovation to ensure the sustained economic growth of Chongqing over the long term.

Innovation driving sustainable economic growth is one of the most consistent findings in macroeconomics over the past few decades[3]. In fact, arguably the most important reason East Asian economies, such as that of Japan, Korea and China, were able to catch up with Western economies because innovation was at the core of their growth strategies. Moreover, in a world where competition is increasing at an exponential rate, being able to innovate in order to stay ahead of competitors becomes fundamental.

Fortunately, the Chongqing municipal government has focused on positioning innovation at the heart of the FTZ. The aim of this whitepaper is to provide the government with suggestions from AT&S's perspective on how to promote innovation in the FTZ, such that economic growth can be maintained over the long haul. The focus will be on how to foster innovation especially in the electronics and technology industries, since this is the area AT&S is most familiar with and because these industries play a large role in Chongqing's economic output. In particular, over the next few chapters the whitepaper will explore the following ways of fostering innovation:

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[1] *http://www.chinadaily.com.cn/business/2017-02/21/content_28278754.htm*

[2] *http://china-trade-research.hktdc.com/business-news/article/Facts-and-Figures/China-Chongqing-Pilot-Free-Trade-Zone/ff/en/1/1X000000/1X0A9NGN.htm*

[3] *https://www.uschamberfoundation.org/enterprisingstates/assets/files/Executive-Summary-OL.pdf*

1. Instigatingfinancial innovation

Financial innovation can attract both foreign businesses into the FTZ, and help domestic firms in the FTZ establish themselves abroad. However, this approach does present some risk to destabilizing the local financial sector, but the risk can be mitigated.

2. Developing innovative entrepreneurs

It is important to make entrepreneurs in the FTZ think and act innovatively, since they are then more likely to produce innovative solutions. Innovative entrepreneurs can be developed by implementing five important measures, that will be elaborated in detail on pages 7-9.

3. Using e-governance to optimize the management of innovation

The government should use information and communications technology to deliver government services, exchange of information, communication transactions, integration of various stand-alone systems and services between government-to-customer (G2C), government-to-business (G2B), government-to-government (G2G) as well as back office processes and interactions within the entire government framework.

4. Innovating product design through crowdsourcing

Crowdsourcing, or using the internet to gather ideas from interested parties around the world, can lead to innovation in design, resulting in better and more competitive products.

5. Conclusion: A government-led approach to innovation and economic development

For innovation in the FTZ to succeed, the government needs to be an active central actor that drives the process, rather than leaving firms to their own devices.

CHAPTER 1

Instigating financial innovation

The Chongqing FTZ is recommended to drive innovation in the financial sector in order to attract foreign businesses into the area, as well as help domestic businesses establish operations abroad. This will strengthen the FTZ's assimilation with the international economy, thereby further promoting the GDP growth rate of Chongqing.

Some financial innovation schemes are already underway within the FTZ. For instance, the current practice of requiring advance approval for foreign investment projects as well as the detailed examination and approval of foreign-invested enterprise contracts is being phased out. It is being replaced with a system where foreign investors are assessed in a similar fashion to domestic investors[1]. This change will make it faster and more efficient for foreign businesses to invest in the FTZ.

Nevertheless, more could be done in terms of financial innovation. Below, we explain how the FTZ can financially innovate to firstly attract foreign business, and secondly to facilitate the expansion of domestic companies overseas. However, financial innovation does present a danger of destabilizing Chongqing's financial sector, and the final part of this chapter will examine how to address that issue.

Attracting foreign businesses into the FTZ

In order to attract foreign direct investment (FDI) into the FTZ, it is important to recognize that foreign investors are attracted to environments where financial regulation is not excessive or discriminatory, where they can perform their business operations at a profit, and where they are not exposed to unnecessary risks[2]. Bearing these three facts in mind, the FTZ can attract FDI by implementing the following financial innovations:

- **Creating easy-to-understand financial regulations that do not lead to excessive red tape, and do not discriminate in any way between foreign and domestic firms.** Foreign investors want to conduct business in the most efficient and straightforward way possible. Therefore, financial regulation should not be confusing to understand or lead to lots of paperwork, since this will frustrate the ability of foreign companies to run their business efficiently. Furthermore, regulations should not provide preferential treatment to domestic firms over foreign corporations, otherwise foreign investors will consider this to be an unjust state of affairs and will be less enticed to doing business in the FTZ.

- **Making sure the corporate taxation system is competitive with other regions around the world.** Foreign companies, like domestic ones, are primarily concerned with increasing their revenue and making profits. They are therefore attracted to parts of the world that have lower levels of corporation tax. Thus it's important for the FTZ to have competitive corporate tax rates– this means it should at least match the standards of other FTZs in China and be better than rates in the US.

- **Liberalization of free trade with the international economy, by removing obstacles to the free transfer of**

[1] *http://china-trade-research.hktdc.com/business-news/article/Facts-and-Figures/China-Chongqing-Pilot-Free-Trade-Zone/ff/en/1/1X000000/1X0A9NGN.htm*
[2] *https://www.oecd.org/investment/investment-policy/2506900.pdf*

capital, labour or investments. In order to enable foreign firms to expand their operations into the FTZ in a comprehensive manner, this inevitably requires laws regarding free trade with the international economy to be liberalized. In particular, foreign firms should be allowed to freely transfer their capital, labour and investments into (and out of) the FTZ.

- **Legal protection against arbitrary expropriation of assets or capital by the state or other actors**. Foreign firms need to be reassured through legal protection that any of their assets will not be arbitrarily seized, otherwise they will consider doing business in the FTZ to be too risky and will stay away.

- **Making sure the competitive environment in the FTZ is fair, healthy and that no unfair practices are allowed to exist.** This follows from the abovementioned point that foreign enterprises are adverse to investing in risky environments. Hence competition in the FTZ should be fair and should not allow any firm to engage in deception, fraud or any other unethical practice to gain an advantage over another firm.

- **Offering financial incentives to encourage FDI into the FTZ, such as tax breaks, grants, and subsidies.** A foreign firm (especially in the high-tech manufacturing industry) expanding into another region can be an expensive strategy. The high cost involved may deter some foreign companies from doing so. The government can reduce this cost and incentivize foreign companies to move into the FTZ by providing financial inducements, such as subsidies or grants.

Helping domestic businesses establish themselves abroad

It is important for the FTZ to establish financial policies that help domestic businesses expand abroad, since they may have already reached their peak in terms of growing through the local Chongqing market. Expanding abroad can thus help domestic firms earn more revenue from other markets, and also make them more competitive globally.

There are a number of financial innovations which the Chongqing government can implement to help domestic businesses in the FTZ expand overseas. They are as follows:

- **Providing financing, such as loans or bonds, to help domestic companies establish a foothold overseas.** This financing is especially important when domestic firms are expanding to emerging markets, where the financial infrastructure is weak and it is difficult to procure finance from local financial institutions. The Export-Import Bank of China already does this to some extent for certain domestic businesses across China. A similar service should be provided for domestic companies in the Chongqing FTZ.

- **Providing political risk insurance to domestic firms expanding overseas.** Domestic firms, especially those expanding to unstable regions, may be rightly concerned about how political risks in those regions could undermine their operations. These risks include civil war, terrorism, and weak rule of law that could lead to violations of contracts or the unjust expropriation of assets. Political risk insurance can cover domestic firms in Chongqing's FTZ from these dangers abroad and increase their confidence in expanding overseas.

- **Liberalization of free trade with the international economy, by removing obstacles to the free transfer of capital, labouror investments.** In order to enable domestic firms to expand their operations out of the FTZ in a

comprehensive manner, this inevitably requires laws regarding free trade with the international economy to be liberalized. In particular, domestic firms should be allowed to freely transfer their capital, labour and investments out of (and back into) the FTZ.

- **Providing financing to help firms in the FTZ expand through acquiring or merging with firms abroad.** Firms in the Chongqing FTZ may have a lack of knowledge and expertise regarding how to operate in countries abroad. However, by merging with or acquiring foreign firms, they can absorb the expertise and talent of those firms, thus making the transition to overseas markets easier. This strategy is not new to China, as it has been done as part of the Belt and Road initiative. The strategy should be extended for firms in the Chongqing FTZ looking to expand abroad.

The challenges financial innovation brings to the financial sector of Chongqing

The abovementioned recommendations do not come without a degree of risk in terms of potentially destabilizing the financial sector of Chongqing (and China more broadly). For example, providing financial incentives (tax breaks, subsidies) to encourage FDI into the FTZ, or offering finance to help domestic companies establish themselves abroad or merge/acquire foreign companies, will adversely affect the government's budget. This can make it difficult for the government to finance public services or build infrastructure within the FTZ, among other problems.

How can this challenge be mitigated? The government has to carefully estimate how big the negative impact will be on its budget due to taking such measures. If the impact is too large, then the amount of financial resources the government is willing to spend should be reduced accordingly. Alternatively, the government can calculate whether economic growth generated by FDI in the FTZ or domestic firms moving abroad will eventually offset and make up for any deficiencies in the budget. If so, it can still go ahead with the measures.

Lastly, the above measures include "Liberalization of free trade with the international economy, by removing obstacles to the free transfer of capital, labouror investments". Deregulation of free trade always has associated risks, which have been debated by economists for decades. For instance, liberalization will mean that domestic Chinese companies in Chongqing will have to compete increasingly with foreign firms. If they are unsuccessful, this could lead to local job losses and even factory closures of domestic industries, harming the Chongqing economy.

The counter argument is that trade liberalization is more likely to help the Chongqing economy rather than harm it. While one possibility of increased competition may mean that some domestic firms are in danger of going out of business, the other possibility is that domestic firms will adapt to foreign competition and become more efficient and competitive.

Trade liberalization can also attract large multinational companies that are willing to invest greatly in Chongqing's economy. AT&S, which has been active in Chongqing since 2011 and has constructed the first high-end IC substrates plant in the region, will have invested a total volume of roughly €480 million there by mid-2017. Other multinational firms, drawn by the financial innovations of the FTZ, may contribute similar amounts, hugely benefiting the local economy.

However, if the Chongqing government feels that particular industries in the FTZ do require protection from foreign investment, it can prevent foreign investment from entering these industries. Indeed, the China State Council has listed several industries that are not suitable for foreign investment within the FTZs of China[1].

[1] *See the list here (in Chinese): http://www.gov.cn/zhengce/content/2015-04/20/content_9627.htm*

CHAPTER 2

Developing innovative entrepreneurs

A critical way to encourage product innovation within the FTZ is for the Chongqing government to implement measures that enable entrepreneurs in the FTZ to think and act innovatively. If entrepreneurs are allowed to think and act innovatively, firms in the FTZ are much more likely to develop innovative products or solutions.

Five measures in particular are highly important for fostering innovative entrepreneurs[1], and are discussed below.

Measure 1: Giving entrepreneurs access to cutting edge knowledge through collaboration and innovation hubs

For entrepreneurs to think and act innovatively, they above all need access to innovative knowledge. The government thus needs to ensure that robust knowledge-generating institutions are in place in the FTZ for entrepreneurs to collaborate with and gain actionable insights from. These institutions include universities, research establishments, think tanks or science parks. While the FTZ presently has a few of these institutions, more should be established and the degree of collaboration between these institutions and companies should be intensified. Furthermore, the government must ensure that the knowledge these institutions share is consistent with what the industries in the FTZ specialize in. For instance, if many firms in the Chongqing FTZ specialize in semiconductor technology (as many of them do), the institutions must produce knowledge that is relevant to this sector.

The government must also make sure that knowledge can easily be exchanged between these institutions and entrepreneurs. This can be done, for example, via promoting the secondment of entrepreneurs in research institutions.

The most effective way to encourage knowledge exchange, however, is by establishing innovation hubs within the FTZ. These hubs would be areas where research institutions and international or local companies can collaborate in terms of R&D, such as through joint-research projects which involve both entrepreneurs and academics. The research institutions could be state-owned (such as universities) or privately-owned (such as think tanks). Having some privately-owned institutions in the hubs is recommended because it can lead to fresh ideas.

Entrepreneurs can also acquire knowledge by investing in their companies' R&D departments. The government can strengthen these departments by providing financial support. This leads to the next important measure…

Measure 2: Giving entrepreneurs access to funding

For entrepreneurs to innovate successfully, they need finance and capital to fund the implementation of their innovative ventures. This includes funding for the R&D of innovative products, the manufacturing of innovative products, and bringing those innovative products to market. However, it can be challenging to gain funding for innovative ventures from financial institutions. This is because the return on investment of new and creative products upon entering the market is difficult to predict. For this reason, banks, venture capitalists and investors are less likely to provide funding for innovative ventures

[1] *https://www.innovationpolicyplatform.org/content/innovative-entrepreneurship*

compared to traditional ventures that have a proven track record of success.

The Chongqing government must therefore encourage financial institutions within the FTZ not to shy away from financing innovative projects. The government can also provide public funding to support innovative ventures, such as through grants, loans or subsidies. Such public funding is especially important for entrepreneurs of start-ups or small businesses that lack sufficient collateral to procure private investment. However, the government should not give public money away on a whim. It should only provide funding for highly innovative projects with a high likelihood of market success, otherwise public money will go to waste and harm the Chongqing economy. Specific criteria for projects to qualify for said the funding must be specified and communicated clearly in order to regulate the types of projects put forward.

Measure 3: Giving entrepreneurs access to highly skilled labour

In order for entrepreneurs in the FTZ to innovate successfully, they require a highly skilled workforce that is capable of implementing innovative projects. The goal of the Chongqing government should therefore be to amplify the number of highly skilled workers within the FTZ.

One way to achieve this is to attract highly skilled labour from overseas or the coastal cities. This requires a relaxation of immigration and migration policy, as well as building facilities that workers find appealing. Such facilities include high quality residential property, good restaurants, diverse entertainment venues, strong international schools, and vibrant nightlife locations. One important reason cities such as Shanghai or Shenzhen are able to attract highly skilled workers is because they have such facilities, and Chongqing must follow in their footsteps.

In addition, the Chongqing government should also develop highly skilled local labour. It can do this by making sure universities in the region work towards cultivating high-performing graduates. Universities should consult with the leading industries in the FTZ, such as the electronics and automobiles industries, and ask what sorts of skillsets they require from graduates that will enable them to innovate. Such skills should then be taught in degree courses. Universities should furthermore incorporate some degree of Western curricula, to ensure that local graduates do not lack any skills compared to foreign workers who have been educated in the West.

Measure 4: Creating an innovative culture among entrepreneurs

Often, entrepreneurs can be adverse to innovation because they fear they might fail if the proposed venture is too risky. If such an attitude exists among entrepreneurs in the FTZ, they are unlikely to think and act innovatively. The government should therefore develop a culture within the FTZ whereby innovation and risk-taking are viewed positively.

The government can develop training and educational programs in the FTZ aimed attaching entrepreneurs that taking risks can lead to big rewards rather than failure if done correctly. Using case studies of successful entrepreneurs who have innovated (especially if there are any examples within the FTZ) can help drive the point home in a powerful way. Inviting innovative entrepreneurs from companies such as AT&S or others to give talks about how innovation is a recipe for success can also foster innovative attitudes within the FTZ. Lastly, the government should make it clear how much support innovative entrepreneurs will have, such as access to funding and knowledge as stated above.

Measure 5: Creating a favourable regulatory framework for innovation

The last measure to encourage innovative entrepreneurship is to ensure the regulatory framework of the FTZ does not punish innovation. For example, there need to be strong Intellectual Property laws, such that entrepreneurs are assured that any original products they develop are protected. Hiring laws should not make it challenging to employ highly skilled workers to work on innovative projects. Bankruptcy regulations should not be so strict such that entrepreneurs are paralysed from innovating because in the event of failure, creditors will seize all their assets.

By implementing the above five measures, an innovative spirit will be fostered among entrepreneurs in the FTZ, leading to them design innovative solutions. One reason AT&S has been successful as a company is because it provides innovative solutions, and therefore the company highly recommends these measures such that entrepreneurs in the FTZ can achieve similar success.

CHAPTER 3

Using e-governance to optimize the management of innovation

This chapter examines how the Chongqing government can manage innovation within the FTZ in a way that is efficient, transparent, and cost effective. In particular, the government is advised to manage innovation using e-governance. An e-governance strategy involves the government using information and communications technology, especially the internet, to deliver information and services to government stakeholders (such as citizens or businesses)[1].

Chongqing and other Chinese cities already have some degree of e-governance in place. Three recommendations are provided below on how Chongqing can develop its e-governance strategy to manage and drive innovation within the FTZ in an optimal manner. In particular, the government has to use e-governance to inform, to communicate with, and to perform transactions with firms.

Recommendation 1: Using e-governance to give firms access to valuable information

The government should establish websites that disseminate crucial information to firms about innovation. This includes information on financial innovation the government is currently carrying out, as covered in Chapter 1, such as trade liberalization policies that help firms in the FTZ expand abroad or help foreign firms move into the FTZ. There should be webpages that explain the measures the government is taking to promote innovative entrepreneurship, as highlighted in Chapter 2.

These websites must be regularly updated with a regular drumbeat of current information, such as the government's progress on trade liberalization policies or its establishment of institutions that generate innovative knowledge for entrepreneurs to draw upon.

Instead of just featuring text, it is better for the websites to incorporate graphics and videos, since this will make them

[1] *https://www.britannica.com/topic/e-government*

easier to understand and digest by visitors.

This recommendation is arguably the most significant of the three, because if the government implements policies to encourage innovation, firms will not be able to take advantage of such policies unless they are informed about them. The websites should be accessible to users within and outside of China, since it is important for firms outside of China to also know about the policies in order to consider expanding their footprint to the FTZ.

Recommendation 2: Using e-governance to communicate with firms

E-governance should not be used merely to broadcast information, but also to communicate. In particular, firms should be able to provide feedback to the government regarding its innovation policies. This feedback includes any concerns firms may have about the policies, requests for certain policies to be further clarified upon, or suggestions on how the policies can be improved. The government should then respond to such feedback accordingly, and in a timely manner. To facilitate such communication with firms, the government can use online technologies such as e-mail, discussion forums, and live chat.

Communication with firms is important for two reasons. Firstly, it can strengthen innovation policy making, since firms can provide vital feedback on areas where certain policies need to improve. For example, firms may provide feedback that policies to enlarge the number of highly skilled workers in the FTZ (measure 3 in Chapter 2) are not having the intended effect, which allows the government to tweak those policies to increase effectiveness.

The second reason communication is important is because it involves firms in the policy making process, which will inspire them to pursue innovation. If firms believe that their input to innovation policies is taken seriously, they are more likely to think that the Chongqing government has their best interests at heart and this will motivate firms to cooperate with the government's agenda of driving innovation in the FTZ.

Recommendation 3: Using e-governance to conduct transactions with firms

Lastly, e-governance should be utilized to conduct transactions with firms. In particular, if firms need to complete any application forms to benefit from innovation policies, they should be able to complete these forms online rather than by hard copy only. For example, if the government is willing to provide subsidies or tax breaks to support innovative ventures (measure 2 in Chapter 2), entrepreneurs should be able to apply for such funding online.

Allowing firms to conduct transactions electronically will save on costs and allow such transactions to be processed more efficiently, which will accelerate the rate of innovation within the FTZ.

Face-to-face interactions are still important

Nevertheless, if Chongqing uses e-governance to improve the transparency and efficiency of managing innovation in the FTZ, it should still enable firms to interact with government officials face-to-face if required. Government offices staffed by experts should be available to firms if they require assistance with innovation, because the internet cannot be a substitute for human interaction when it comes to providing expert help and support. E-governance should therefore supplement face-to-face interactions, rather than replace them entirely.

The role of AT&S in e-governance

Technology developed by AT&S helps make e-governance a reality. In particular, e-governance requires mobile devices, computers and servers for data storage, exchange and analysis, as well as the facilitation of online communication and transactions. Mobile devices, computers and Servers are built using high end IC substrates and Substrate-like-PCBs (SLP), all of which are produced by AT&S, including in AT&S's manufacturing plants in Chongqing.

CHAPTER 4

Innovating product design through crowdsourcing

Given that the pace of change in the electronics and technology industries is accelerating by the day, firms operating in these industries must frequently innovate in the design of their products, otherwise they risk falling behind their competitors. The Chongqing FTZ is the home of many technology and electronics companies, and the government is advised to encourage these companies to innovate their product design in order to ensure their long term survival and health.

How can innovation in product design be promoted? One method is through developing innovative entrepreneurs as discussed in chapter 2. Another strategy is for the government to advocate crowdsourcing among firms to inspire innovation. The sections below will explain what crowdsourcing is, how it can help with innovation, how it is carried out, and how the government can encourage crowdsourcing within the FTZ.

What is crowdsourcing and how can it help with innovation?

Crowdsourcing is a simple concept which can have powerful results. It involves firms using the internet and online platforms to receive creative design ideas from many qualified people all around the world. The people who contribute ideas are external to the firm. They may be engineers, designers, inventors, artists, intellectuals, academics or students. Potentially hundreds to thousands of people can be solicited for their creative input.

Crowdsourcing helps with innovation in two primary ways. First of all, since crowdsourcing means a large pool of people contribute creative ideas, crowdsourcing enables a firm to select the most innovative idea from an ocean of entries[1]. The idea selected is likely to be highly innovative since it has been singled out from many sources.

Crowdsourcing also helps with innovation because it looks to outside sources for inspiration. People from outside a firm can provide a fresh and totally new perspective on design issues compared to internal employees. This is why some of the world's largest firms, including AT&S, despite having highly qualified internal research staff, have nonetheless used crowdsourcing to seek out innovative ideas to enrich the design of their products.

[1] *https://dailycrowdsource.com/training/crowdsourcing/what-is-crowdsourcing*

How is crowdsourcing carried out?

Normally, crowdsourcing is carried out by a firm setting up an online contest where it invites entries to solve a design-related problem. The person who contributes the most creative, or innovative idea is then given a prize, which could range from cash, a scholarship or even the offer of employment. The contest could be distributed through social media channels, a dedicated microsite, or specific crowdsourcing platforms[1]. The winning entry ideas are used by the firm to modernize the design of its products.

For example, a microelectronics firm (such as those in the FTZ), may wish to gather ideas for an innovative printed circuit board (PCB) design. It would post its request online, providing the performance goals required from the design and any design constraints (such as only using an FR-4 resin substrate). The firm could limit entries to people with particular backgrounds, experience or qualifications. It can also stipulate the submission format to be a presentation, a video, a report, and so on. The firm would then use a panel of experts to review submissions, and finally award a prize to the winning entry[2]. AT&S conducted a similar crowdsourcing competition a few years ago to gather creative ideas on how PCB design would evolve by the year 2025[3].

Crowdsourcing is powerful because it can be more cost-effective than spending money on internal R&D, and it can often lead to more innovative results. Furthermore, it can generate publicity for a firm in a way internal R&D cannot, since posting a contest online inevitably increases the public's awareness of a firm. This is not to suggest that crowdsourcing should replace internal R&D, as this remains crucial for innovation. That said, crowdsourcing should certainly complement a firm's R&D efforts.

How can the government encourage crowdsourcing within the FTZ?

One way the Chongqing government can encourage firms in the FTZ to use crowdsourcing is by introducing a law making it mandatory for firms to roll out crowdsourcing initiatives at certain intervals, say once a year. But this option may not be well received by companies which don't want to be dictated to, especially since the purpose of a FTZ is to provide firms with a high degree of autonomy in their operations. The better option is for the government to educate companies about the benefits of engaging in crowdsourcing, such that firms are convinced that crowdsourcing has an important role to play in helping them innovate their product designs, thus encouraging them to willingly adopt crowdsourcing.

Education can be provided through various means. The government can produce a website or a physical booklet for firms which explains the benefits of crowdsourcing. The government can also set up workshops within the FTZ that train firms on how to effectively conduct crowdsourcing.

Last but not least, the government can provide funding to firms, especially smaller ones with smaller budgets, to help them pay for the prizes of crowdsourcing competitions.

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[1] *E.G. Cad Crowd is a crowdsourcing platform for soliciting design ideas: https://www.cadcrowd.com*

[2] *http://resources.altium.com/design-for-manufacturing-dfm/hyperloop-shows-how-crowdsourcing-integrates-community-into-pcb-design-prototyping*

[3] *AT&S crowdsourcing competition (in German): https://www.neurovation.net/de/ats*

CONCLUSION

A government-led approach to innovation and economic development

The core argument of this whitepaper is that the role of the government is fundamental to promoting innovation within the Chongqing FTZ and thereby driving economic growth. Whether it's through financial reform (Chapter 1), building innovative entrepreneurs (Chapter 2), managing innovation through e-governance (Chapter 3) or encouraging crowdsourcing (Chapter 4), the government is the key actor that should facilitate innovation within the FTZ.

A counter neo liberal argument is that the government should not be heavily involved in stimulating innovation and economic growth, and that firms are most likely to innovate and grow when they are left to compete against each other in an environment with little to no government intervention. When the government tries to intervene, it usually impedes rather than promotes innovation and growth. The neo liberal argument is a popular one, especially in Europe, however it can be refuted with strong empirical evidence.

As mentioned in the introduction, many East Asian economies enjoyed rapid economic growth because they focused on innovation. In fact, their focus on innovation was driven and managed by the government. Without the government's involvement, those economies would not have been able to innovate and grow at the rate they did. This fact was first observed by the political economist Chalmers Johnson in 1982 in his ground breaking book, *MITI and the Japanese Miracle*, where he showed how the Ministry of Trade and Industry in Japan played a fundamental role in promoting innovation and economic growth in the country. Academics later observed a similar pattern of government-led innovation and growth in other East Asian economies, such as China, Singapore and Korea.

The Chongqing government should therefore have confidence that by leading innovation in the FTZ as outlined in this whitepaper, positive results will follow. Furthermore, the recommendations in this whitepaper will help China make great strides in achieving its Made in China 2025 objective, which is to transform the country into an innovative manufacturing power, an objective that was reiterated by Premier Li Keqiang in his 2017 government report[1].

Chongqing has provided many benefits to the business of AT&S. In fact, AT&S achieved significant revenue growth and improved earnings in the first quarter of 2017/2018, largely because of high revenue generated from its manufacturing plants in Chongqing[2]. Therefore, AT&S wants to give back to Chongqing and contribute in any way it can to help Chongqing and China embrace greater innovation. This whitepaper is the starting point of that contribution.

[1] *http://news.xinhuanet.com/english/china/2017-03/16/c_136134017.htm*

[2] *http://ats.net/blog/2017/07/26/first-quarter-201718-ats-starts-financial-year-significant-revenue-growth-improved-earnings/*

Recommendations and Outlook on Construction of Chongqing “the Belt and Road Initiative (BRI)” Global Innovation Valley

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Chapter One: Pilot Free Trade Zones and Changes in Global Economy

I. History of China's Special Economic Zones and the Background of Pilot Free Trade Zone Emergence

China's economy has gone through the following stages of development since the reform and opening-up: exploration and experiment, expansion and deepening, reform and adjustment, the second transition, etc. There have been new types of special economic zones rising in response to the very needs of development at each stage, driving the economy forward rapidly and improving the level of opening-up progressively. Pilot Free Trade Zones have been reckoned as the bridgehead and bellwether leading innovation and reform, and taking part in global competition and cooperation under the conditions of the new era.

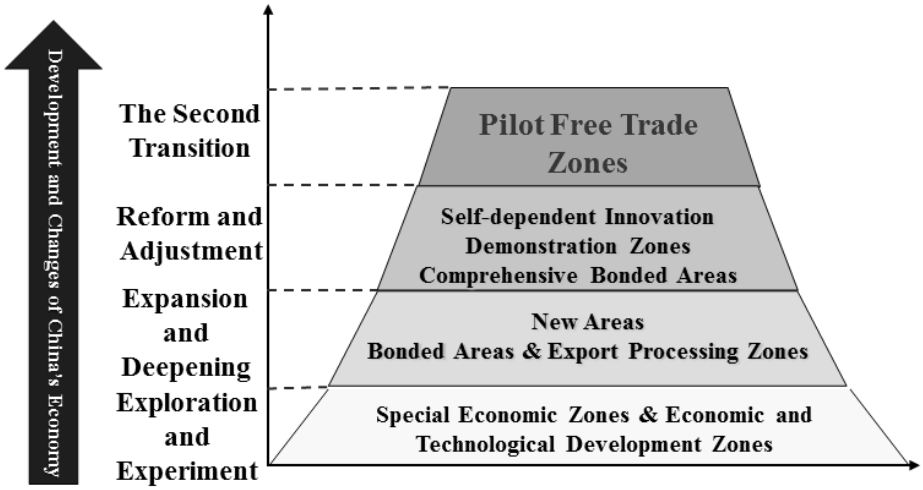


Figure 1. Changes of China's Development Zones

The development and growth of China's economy began in 1978.It was recognized that there were great gaps between China and developed countries in science and technology, management level, and production level. Besides, comparing with those countries, China's economic model was rather single along with that China was marginalized in market-driven allocation of resources. Against such backdrop, China established the guideline of reforming domestically and opening-up to the world. Thus, special economic zones and economic & technological development zones emerged as the times demand, serving as an epitome of China's exploration and experiment of the new economic model during that era.

With the inflow of foreign capital speeding up in the 1990s, in order to solve the issues of muddled import and export management, rampant smuggle of processing trade, complicated customs procedures for enterprises and so on, China established export processing zones in accessible areas like ports and airports. By doing so, effects as expanding exports, increasing foreign exchange, optimizing the storage, and controlling increments were achieved. The "bonded area" established in 1990 was positioned as "bonded warehousing, export processing, and entrepot trade "with its operations done "inside the territory while outside the customs". The first national new area – Pudong New Area was established in 1992, which carried out active exploration and bold practice in strengthening the environmental, innovational advantages as well as its hub function and service function.

After China's accession to the WTO in 2001, the inflow of foreign direct investment (FDI) was accelerated, which led to the high-level growth of China's economy. Meanwhile, the industrial structure was rather backward, the development level of industry was too low, and issues including the quality of economic development and deviation in benefits became increasingly prominent. In this predicament, the Chinese government relaunched and established a number of new areas including the Chongqing Liangjiang New Area. The government repositioned the development of specific areas, and gave full play to the potential competitive advantages of the very areas on the basis of further integration of resources so as to solve the long-standing problems that plagued China's economy including similarity in industrial structures and overcapacity.

On the other hand, in order to perfect the system and mechanism of scientific and technological innovation, accelerate the development of strategic emerging industries and transform the pattern of economic development, in 2009, the first self-dependent innovation demonstration area was set up in Beijing – The Zhongguancun National Demonstration Zone. Aiming at further simplifying the procedures, improving the system, and unifying supervision mode in those relatively mature zones like bonded areas and export processing zones, the government established the comprehensive bonded area in 2012, integrating multiple export-oriented functional areas.

In the second transition of China's economy, the government decided to set up China's first pilot free trade zone in 2013 – Shanghai Pilot Free Trade Zone, requiring it "to break through boldly, try boldly, and improve independently." In 2014 and 2016, the Party Central Committee and the State Council set up the second batch of three pilot free trade zones (Guangdong, Tianjin and Fujian) and the third batch of seven (Liaoning, Zhejiang, Henan, Hubei, Chongqing, Sichuan and Shaanxi) pilot free trade zones in succession to further expand the scope of influence of free trade zones, and formally formed the new "1 + 3 + 7" pattern connecting the north and south, traversing the east and west, linking each key area. How to upgrade China's economy has become an important issue for the Free Trade Zones.

II. Advanced Cities' Strategies along with Changing Global Economy

Facing today's great trend of economic globalization and knowledge economy, China reacted promptly as usual. Meanwhile, major developed countries around the world are also acting positively, making new policies and adopting new measures to meet the new challenges of the times and improve their international competitiveness.

In order to promote the reform and upgrading of the economic structure, to enhance the international competitiveness of all the industries, and to build an active international economic base, Japan established a National Strategic Special Zone for the first time in 2014, reforming the existing systems boldly to promote the development of regional economy and even national economy. The reform mainly consisted of urban revitalization, entrepreneurship, introduction of foreign talents, tourism, medical care, education, primary industry (agriculture, forestry, fishery) and advanced technology. The scope of influence covered ten different regions among the entire country. Each region developed a reform initiative in line with the local situation according to advantageous local industries. The national strategic special zones, especially the Greater Tokyo Area, each launched a series of policies aimed at stimulating the Japanese economy and improving international competitiveness so as to encourage entrepreneurship and the introduction of foreign talents.

Table1 An Overview of Some Policies for Japan's National Strategic Special Zones

Reform Items	Policy Details	Date of Implementation
Entrepreneur Support Centre	· Set up a One-stop Entrepreneur Support Center to encourage entrepreneurs including foreign ones to set up business. The Centre has simplifies the process, combiningthe procedure window and the consultation window into one.	2015.7
Civil Servants' Entrepreneurship	· A civil servant's settlement of pension would not be affected if he returns to the system within certain period of time after he starts a business or enters a start-up business. · Establish a "Talent Flow Centre" to liberalize the talent flow from state-owned enterprises or big business to start-ups so that start-ups' demands for talents can be satisfied.	2015.7
Public Interest Incorporated Foundation	· Simplify the application procedure for public interest incorporated foundations. (cut down to one month)	2015.7
The Introduction of Foreign Talents in Related Industries	· Introduce foreign talents related to Japanese competitive cultural industries including animation, games, and Japanese cuisine,provide them with information and various preferential policies so as to support Japanese cultural output.	2016.5
Credit Guarantee System	· Establish a credit guarantee system to make it easier for corporations to raise capitals.	2017.5

As Australia's economic, cultural, and financial centre which has been awarded "The Most Admired Knowledge City" by the World Capital Institute, Melbourne once adopted a number of strategies for a successful transition: science, technology and information communication as the foundation, the innovation ability and urban culture as the environmental support, knowledge-based talents as a key element and the gathering of industry, university and research as an effective way to promote Melbourne's transition to a knowledge city.

In the context of globalization, knowledge city as a new urban development strategy is in line with the wave of global economic and social development, and is a manifestation of a city's transition answering to the call of the times. By adopting a kind of development concept that encourages the cultivation, flow and innovation of knowledge, it harvests global innovation in the era of knowledge economy to be its capital for global competition.

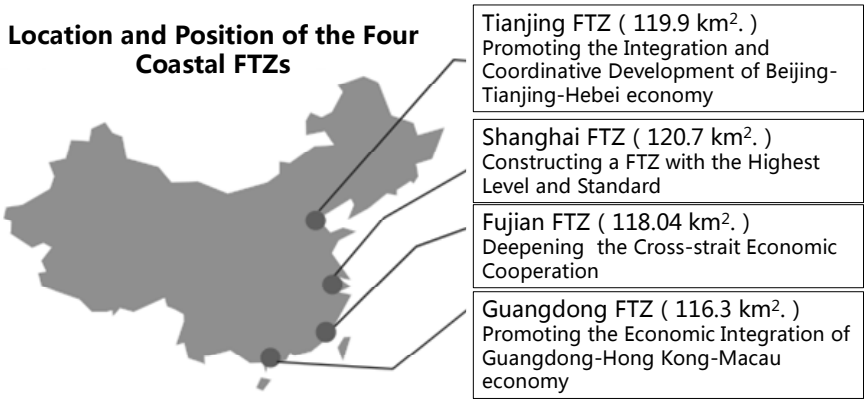
Figure2 Melbourne's Development Model of Knowledge City

III. The Status Quo and Common Tasks of Pilot Free Trade Zones

(I) The Status Quo of Pilot Free Trade Zones in Shanghai, Guangdong, Fujian and Tianjin

On July 3rd, 2013, the State Council officially approved the establishment of China (Shanghai) Pilot Free Trade Zones. In 2015, the second batch of Free Trade zones were established in Guangdong, Fujian, and Tianjin.

Figure 3. Location and Position of the Four Coastal FREE TRADE ZONEs



Since the establishment of Shanghai Free Trade Zone, its concept of reform and innovation and over 100 institutional innovations have been replicated and applied nationwide. On the other hand, though the experience of the Shanghai Free Trade Zone also shows that the single-point breakthrough comes relatively easy, meanwhile, to promote with the construction of free trade zone, it is necessary to solve the fragmentation of reform, integrate reform measures, link all the departments and create a big environment for practical implement of reform. The second batch of free trade zones – Guangdong, Fujian and Tianjin not only share a common task, but also have their own differentiated tasks closely related to their geographical location and industrial economy.

Table2 The Generality and Characters of the Second Batch of Free Trade Zones

	Guangdong FREE TRADE ZONE	Tianjin FREE TRADE ZONE	Fujian FREE TRADE ZONE
Generality	Replicate the experience of the first round of financial reform in Shanghai; take institutional innovation as the core, encourage innovation, and tolerate failure.		
Characters	Backed by Hong Kong and Macao， carrying out two-way cross-border RMB financing, promoting trade liberalization and economic integration of Guangdong, Hong Kong and Macao.	Oriented towards Northeast Asia, promoting the upgrading of Beijing-Tianjin-Hebei manufacturing industry and coordinative economic development, focusing on the development of financial leasing industry, supporting large-scale equipment industry in "going out".	Oriented towards Taiwan, focusing on cross-strait economic, trade and finance cooperation, promoting the construction of the Maritime Silk Road.
Composition	Areas: Guangzhou Nansha New Area, Shenzhen Qianhai Shekou, Zhuhai Hengqin New Area	Areas: Tianjin Port, Tianjin Airport,Central Business Districtof Binhai New Area	Areas: Fuzhou, Xiamen, and Pingtan

(II) Common Tasks of Pilot Free Trade Zones: Investment, Finance, Trade and Administrative System Reform

The name of "China (___) Pilot Free Trade Zone" itself conveys two meanings: firstly, the zone is replicable across the country and its achievement is promoted nationwide; secondly, the zone should act as a pilot, combining local features to carry out the risk assessment for the opening-up in every sphere at higher level and on a larger scale nationwide.

The opening-up and reform of the zone complement each other. The opening-up urges the reform while the reform promotes the opening-up. The third batch of newly established zones are the same as the previous two batches, with institutional innovation as the core and replicability as well as applicability as the basic requirement. They will carry out reform exploration in the fields of investment, trading, innovation of financial system, supervision in the process and afterwards, etc., and they will become opening-up highlands on the basis of effective prevention and control of risks.

Free Trade Zone, as an outpost of the further opening-up of China's economy, has to provide not only convenience for the introduction of foreign capital but also support for the export of domestic capital. Investment, trading, and financial system are closely related to economy for they could pave the way for elements including capital and services to cross borders while the reform of administrative system and the transition of government functions can secure the implementation of opening-up. Thus they could incubate an open environment for business operation and investment, getting closer to those high-level international business parks.

Chapter Two: The Role of Chongqing Pilot Free Trade Zone

I. Tasks for Chongqing on its Road towards a World City

In the year when the Chongqing Pilot Free Trade Zone was born, it was a top priority to grasp opportunities, look for feasible solutions to practical problems, determine the development direction and help Chongqing to stand out in the new era. Concluding and objectively analysing the tasks for Chongqing on its road towards a world city through the city's positions in the evaluation systems released by various research institutes over the world is undoubtedly a shortcut to quick self-understanding and precise improvement.

(I) Chongqing's Position in the GaWC (Globalization and World Cities) World City Evaluation System and its Tasks

The conception of world cities was first proposed by Geddes, a British expert in city and regional planning. It refers to cities where the vast majority of the most important commercial activities take place. On the whole, these cities generally share features like a developed economy, agglomeration of high-end industries, advanced communication network infrastructure, and international influence. Building the city under a goal of growing into a world city with international influence can not only facilitate Chongqing's industrial restructuring and improve its international competence, but also satisfy the need of speeding up strategic upgrading and collaborative development among regions.

In the 2016 World City Evaluation System established by the research team from authoritative international organization GaWC (Globalization and World Cities), Chongqing is positioned at the 13th of Chinese cities, belonging to the Gamma class, which means a global city that connects small regional/ national economy with global economy, or one that possesses global strength in fields other than advanced service industry. GaWC mainly takes the advanced service industry as a starting point and

surveys the distribution and association of multinational companies and their branches over the world. Therefore, the ranking in GaWC's world city list reflects Chongqing's global economic value and network position in international trade, international shipping, international logistics and other aspects. [1]

Figure 4. 2016 GaWC World City List Chinese Cities

World City Class		Implication	Chinese City	Position
Alpha Class	Alpha++	World cities like London and New York which are far more integrated than all the other cities	N/A	World cities that play a role in global economy
	Alpha+	World cities that are highly integrated, closely related to London and New York , with advanced service industry covering the Pacific Asia	Hong Kong, Beijing, Shanghai	
	Alpha	World cities that link major regional economies to the world economy	N/A	
	Alpha-		Taipei, Guangzhou	
Beta Class	Beta+	World Cities that are instrumental in linking their region or state to the world economy	N/A	World cities that play a role in regional economy
	Beta		Shenzhen	
	Beta-		Chengdu, Tianjin	
Gamma Class	Gamma+	World cities that link smaller regions or states to the world economy, or ones with global capacity in industries besides advanced service industry	Nanjing, Hangzhou, Qingdao	
	Gamma		Dalian, Chongqing, Xiamen	
	Gamma-		Taichung, Wuhan, Suzhou	
High Sufficiency Class		Cities that are not overtly dependent on economic output of world cities, and have highly self-sufficient industries	Jinan, Kaohsiung	Mainly small provincial cities and traditional manufactur-ing cities
Sufficiency Class		Cities that are not overtly dependent on economic output of world cities, and have self-sufficient industries	Kunming, Fuzhou, Macau, Ningbo, Zhengzhou, Nanning	

(II) Chongqing's Position in the NRI Evaluation Index System for International Level of Chinese (Mainland) Cities and its Tasks

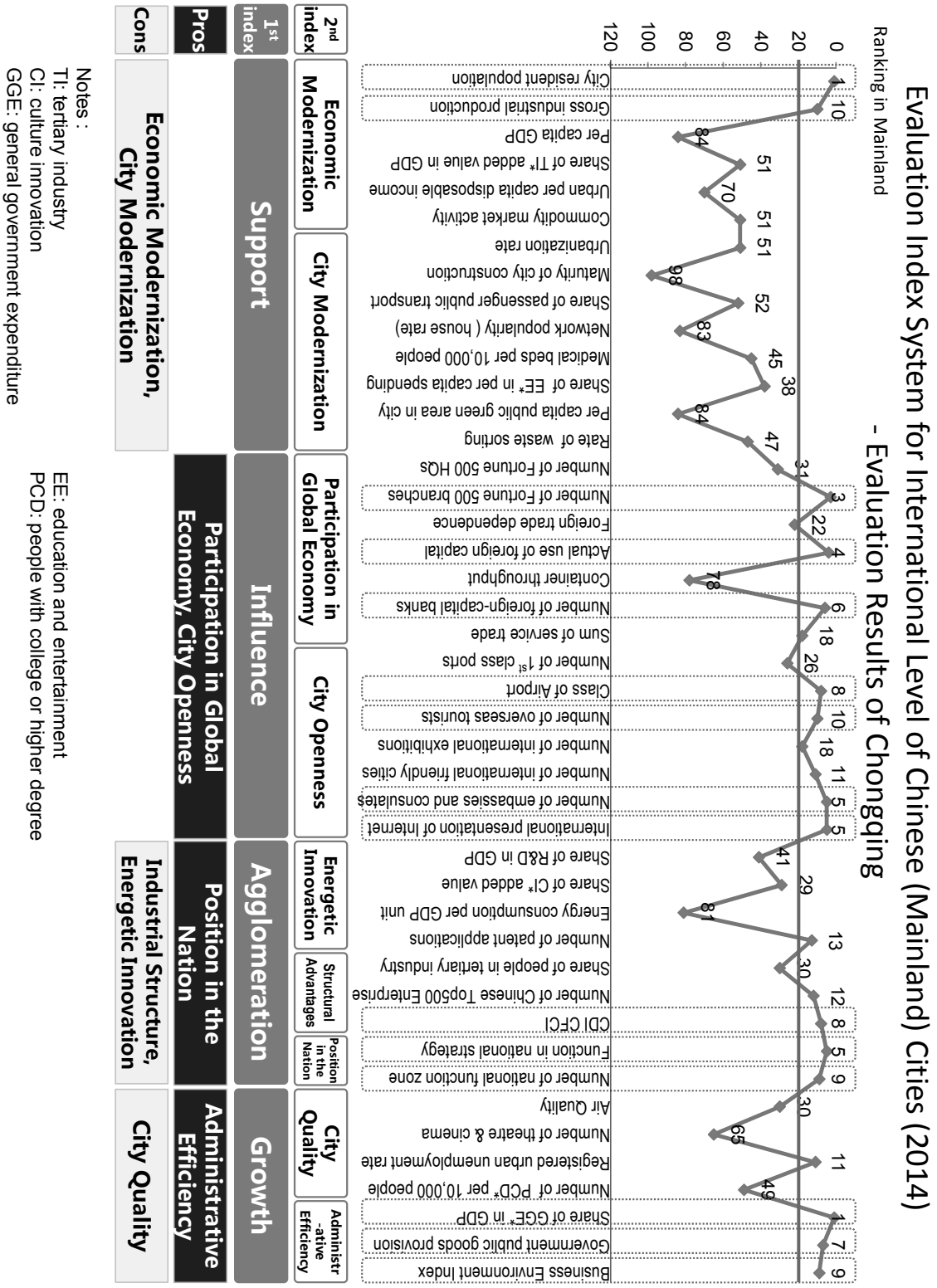
Nomura Research Institute Shanghai Limited, the Chinese branch of Japan's biggest comprehensive consultancy Nomura Research Institute, has constructed an "Evaluation Index System for International Level of Chinese (Mainland) Cities" based on research results and empirical analysis methods of world city evaluation index systems from home and abroad. This system includes 4 first-level indexes, which are support, influence, agglomeration and growth, 9 second-level indexes, and 44 third-level indexes that support the former two classes of indexes. the international level and the position in world cities of Chongqing is evaluated in this system.

According to the analysis of the four first-level indexes, it is not difficult to find that the major advantage of Chongqing lies in its influence, while agglomeration and growth need to be improved, and support is in shortage. Based on the analysis of the nine second-level indexes, it is obvious that Chongqing ranks among top ten of 100 Chinese cities in four aspects including administrative efficiency, international positioning, industrial advantages, participation in global economy, where it enjoys comparative advantage. However, it is apparently left behind in energetic innovation index (74), city modernization index (65). And its performance is far from satisfactory in the third-class indexes in support of these two second-class indexes, which include city construction maturity (98), Internet popularity (household rate) (83), energy consumption per unit of GDP (81), the

[1] *According to the data provided by the official website of GaWC: http://www.lboro.ac.uk/gawc/*

share of R&D in GDP (41) and others. What's more, there is also room for Chongqing to improve in city quality (29), city openness (12), and other second-level indexes.

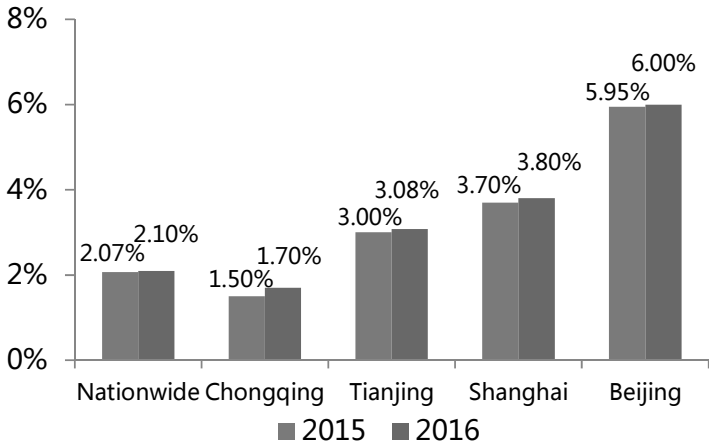
Figure 5. NRI Evaluation Index System for International Level of Chinese (Mainland) Cities (2014) _ Evaluation Results of Chongqing



The above statistics indicate that Chongqing has a distinctive position in the strategic plan of the country, and enjoys excellent geographical advantages and preferential policies. Meanwhile, the government's favorable administrative efficiency has created an advantageous environment for Chongqing to participate in international economy division of work based on a solid industrial foundation. In addition, Chongqing actively carries out international exchange and cooperation, and vigorously introduces foreign capital, maintaining high-level economic openness. However, Chongqing has also faced many problems and challenges in the process of city development and construction: industrial structure is uneven, traditional industries account for a large proportion, economic growth pattern needs to be optimized; city public transport, the Internet, urban green and other infrastructure construction need to be improved, public service for citizens is poorly guaranteed; the degree of urbanization is not high enough, urban and rural structure conflicts are prominent, new urbanization is a hard task; urban residents have relatively low disposable income, life quality can still be largely improved, the fruits of economic development have not really benefited the general public.

(III) Chongqing's Lack of Energetic Innovation during its Development towards a World City

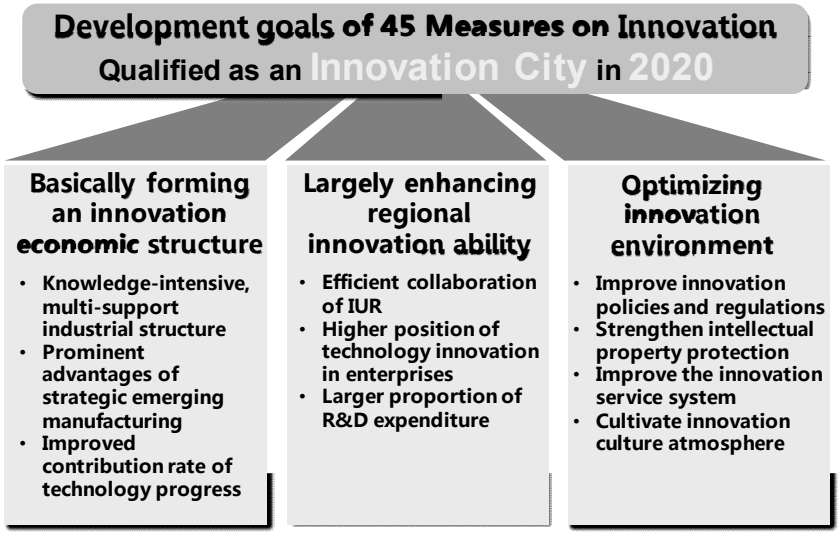
Figure 6. The Comparison of Chinese Municipalities' Proportion of R&D Expenditure in GDP



In terms of innovation and research that decides a city's potential for development, the proportion of research expenditure in GDP, namely the intensity of research finance support, can be taken into consideration. The proportion of Chongqing in 2015 was 1.5%. The research expenditure of the whole society increased by 20% in 2016, and the proportion increased to 1.7%. Despite a relatively quick rise, the proportion of Chongqing is still below 2.1%，the average intensity of research finance support, and forms a more obvious contrast with the proportions of the other three municipalities. The energetic innovation needs to be improved.

As "Mass entrepreneurship and innovation" is going on in full swing all over China, Chongqing should also take the opportunity to develop its Free Trade Zone and bring innovation up to the height of a significant strategy in the city's leap-forward development towards a world city. In 2016, Chongqing Hi-tech Industrial Development Zone became the 17th approved national independent innovation demonstration area. In the same year, Liangjiang New Area was officially selected into the first batch of "innovative and entrepreneurial" demonstration bases in China. Both of these two events have provided good policy foundation.

Figure 7. Development Goals and Contents of 45 Measures on Innovation



Chongqing also proposed to build itself into the innovation centre in west China, achieve innovation-driven development. At the Ninth Plenary Session of the 4th CPC Chongqing Municipal Committee, "45 Measures on Innovation" was passed to take innovation development as the core of city growth and human resource development as a priority for innovation to promote development. It was made clear that the key task in future should be strengthening innovation and innovation system, enriching science and technology resources, and reinforcing the close relationship between technology and the development of economic society.

II. The Position of Chongqing in "the Belt and Road Initiative"

(I) An important strategic fulcrum for Go-West Campaign of China

Chongqing is the only municipality in the central and western regions, the central hub of the upper reaches of the Yangtze River and the important strategic fulcrum of Go-West Campaign of China. As Chongqing is located at the joint of three areas in Go-West Campaign of China — the upper reaches of Yangtze River Economic Belt, West Longhai-Lanxin Line Economic Zone, and Special Economic Zone of Nanning, Guiyang and Kunming, it can link up through Yangtze River Economic Belt and play the role of connecting the developed eastern areas and the western areas rich in resources. Meanwhile, among western provinces and municipalities, Chongqing has relative comparative advantages in science and education, talents, industries and other aspects. It ranked first among western regions in both economic growth and total foreign trade value in 2016[1], and made significant achievement in the structural reform of the supply side.

(II) The intersection and connection point of the BRI and Yangtze River Economic Belt

[1] *According to Statistical Bulletin of the National Economic and Social Development of Chongqing in 2016*

In the national strategic plan of the BRI, Chongqing startsthe Silk Road Economic Belt in the west, and continues Yangtze River Economic Belt from the east whose population and GDP accounts for more than 40% of the whole country. This makes a large economic hinterland, influencing a big market of 300 million people from the surrounding 6 provinces. Chongqing also gathers three major transport hubs, four first-class open ports (of which the aviation port in Jiangbei International Airport, the water port in Chongqing Port, and the railway port in Tuanjie Village are located in the Pilot Free Trade Zone), three bonded supervision areas. Therefore, it has a unique advantage in the development of transportation and logistics, foreign trade and other aspects, and has a good foundation for building an inland international hub and port highland. Chongqing is the only city in the southwest area that integrates water, land and air transportation. Chongqing Bonded Port Area is committed to building an airport international commercial trade logistics park, which integrates modern logistics, trade, e-commerce, headquarter economy, settlement centre and supporting facilities in the west, becoming a modern logistics distribution base that radiates Chongqing and even the whole country.

In terms of land transport, Chongqing relies on Chongqing-Xinjiang-Europe Railway and builds an international trade corridor and regulation system, which reaches in the west countries and regions along the Silk Road Economic Belt (especially in Europe). This facilitates rapid transportation of IT products, automobile and auto parts, machinery products, etc., and becomes the core strategic resources and the largest comparative advantage during the internationalization of Chongqing. Meanwhile, Chongqing also relies on Chongqing-Kunming Trans-Asian Railway and the South Highway logistics channel to develop sea-rail transport and cross-border international land transport and further strengthen the cooperation with ASEAN countries in the field of investment and trade. When it comes to water transport, Chongqing Port has become the largest container assembly port, bulk cargo transfer port, roll-on/roll-off vehicle collecting and distributing port in the upper reaches of the Yangtze River, making it the shipping centre and the largest water port in the upper reaches. At present, Chongqing has also opened 44 international routes to overseas destinations, and implemented a policy of 72-hour Transit without Visa to citizens from 51 countries.

In recent years, Chongqing has strived to develop multimodal transport, and plans to rely on Chongqing-Guizhou and Chongqing-Shenzhen railways to realize sea-rail transport abutting the Maritime Silk Road. The largest intermodal hub port of railway, water and road in China's inland water has already been built in Guoyuan Port. Chongqing will also be devoted to building three open platforms, including Liangjiang New Area national strategic platform, the platform of water, railway, and airport connecting the world, and the industrial platform of national development zone. It expects to become a key city of economy, finance and commerce and an open highland in inland China.

III. Profile and Plan of Chongqing Pilot Free Trade Zone

(I) Present Situation and Features of Chongqing Pilot Free Trade Zone

In 2017, Chongqing ushered in the Pilot Free Trade Zone, thus forming a pattern of "four-zone superposition", namely the advantage superposition of Pilot Free Trade Zone, the first National New Zone in inland China, National Independent Innovation Zone, and the China-Singapore (Chongqing) Demonstration Initiative on Strategic Connectivity. In face of such opportunities in this era, Chongqing will further open up, and promote an open system of great platform, great channel, great clearance,

great cluster, great environment and the construction of an open highland in inland China. The implementation scope of Chongqing Pilot Free Trade Zone is about 120 square kilometres, covering Liangjiang Area, Xiyong Area and Guoyuan Port Area[1].

Table 3. Profile of Three Areas of Chongqing Pilot Free Trade Zone

	Coverage (km^2)	Position	Function Division
Liangjiang Area	66.29	High-end industry and high-end element gathering area	· Emerging industries: high-end equipment, electronic core components, cloud computing, biomedicine · Modern services: headquarter trade, service trade, e-commerce, display and trade, warehouse allocation, professional services, financial leasing, R&D design
Xiyong Area	22.81	Trade transition and upgrading demonstration area	· Productive services: electronic information, intelligent equipment and other manufacturing industries, bonded logistics transport and distribution · Optimize the development pattern of processing trade
Guoyuan Port Area	30.88	Multimodal transport logistics center	· Develop service industries such as international transshipment, consolidation and distribution · Explore the innovative development of advanced manufacturing

As for the development direction of Pilot Free Trade Zone, Chongqing has to focus on the following regional features:

1. Chongqing is located on the connection point of the BRI and the Yangtze River Economic Belt.
2. Chongqing is located on the connection point of the Yangtze River Economic Belt and Chengdu-Chongqing City Group.
3. The advanced manufacturing and modern logistics industries in Chongqing have paved the road for industrial transfer.
4. The China-Singapore (Chongqing) Demonstration Initiative on Strategic Connectivity

(II) Plans on Chongqing Pilot Free Trade Zone and Response to Economic Globalization, Knowledge Economy

The development goals of Chongqing Pilot Free Trade Zone have fully embodied the spirit of system innovation and deepening opening-up. The development goals in the Master Plan for China (Chongqing) Pilot Free Trade Zone issued by the State Council are:

- A high-level, high-standard Free Trade Zone with investment and trade convenience, high-end industrial agglomeration, efficient and convenient management, sophisticated financial service, orderly legal environment, and strong radiation effect.
- To build an international logistics hub as well as port highland to serve the BRI construction and the development of Yangtze River Economic Belt; to form a new pattern of all-round opening up for portal cities in the western regions; to promote the implementation of China's Go-West Campaign.

Facing the trend of economic globalization and knowledge economy, world level should be reached in all aspects from administrative management to industrial development, from the trade upgrading to financial opening:

- to optimize legal environment, perfect supervision system and improve management service efficiency on the basis of system innovation and construction
- to further open the investment field by improving the utilization quality of foreign investment and introducing capital,

1 Notice of the State Council about Printing and Distributing the Overall Plan for China (Chongqing) Pilot FREETRADE ZONE No.19 Document of the State Council (2017)

technology, high-end talents on one hand, and building foreign investment service system to encourage local enterprises to go out and explore the international market on the other hand

- to improve trade and industrial chains, enhance technology and added value, support the development of "Internet +", promote the integration of Internet and industry, head for the higher end of industrial chain and value chain
- to boost the innovation and development of cross-border financial service, facilitating cross-border trade and the settlement of investment and financing
- to establish a multimodal transport supervision customs centre in the Pilot Free Trade Zone, building an international logistics and transport system covering train, road, water, air, etc.
- to achieve win-win situation with the locational advantage of Chongqing and foreign cooperation platforms

Based on the above analysis, ***Nomura Holdings, Inc.*** suggests that the Chongqing Pilot Free Trade Zone can utilize late-mover-advantage, learning from the experience of earlier domestic Pilot Free Trade Zones in China and similar foreign Free Trade Zones, combining Chongqing's industrial, population and locational advantages to build a BRI Global Innovation Valley. Creative, innovative and start-up talents throughout the world will be attracted here for communication and cooperation, integrating international wisdom and experience, achieving resource integration and synergy effects. The BRI Global Innovation Valley will be of Chongqing characteristics and bring new models of value creation. It can promote the upgrading of traditional industries and thus create innovative economic models, influencing both home and abroad, leading the second economic transition of Chongqing, the western regions and even China.

Chapter Three: Proposal on the implications and specific projects of Chongqing "Belt and Road Initiative" Global Innovation Valley

I. Definition, Significance and Objectives of Chongqing "Belt and Road Initiative" Global Innovation Valley

(I) Definition of Chongqing BRI Global Innovation Valley

An open and innovative pilot area focusing on Chongqing's advantageous industries, promoting international communication and cooperation, integrating international wisdom and experience, aiming at the creation of new value, helping traditional industries to upgrade.

(II) Position of Chongqing BRI Global Innovation Valley

An international innovation highland in China's inland areas focusing on the BRI construction, leading the overall development of the region.

(III) Significance and Ultimate goals

Robert Lucas, a professor of Economics at the University of Chicago, suggested in 1988 that innovative talents could

greatly improve productivity and that gathering such enterprises would generate the knowledge spill over and lead the entire region to sustainable development.[1] In 2002, the American economist Richard Florida pointed out in his "Creative Class"[2] theory that creative talents who pay attention to originality of work and expression of personal will, and can continuously provide value for the society through brainwork have become the source of regional economy growth. The famous Japanese professor, expert on social entrepreneurship theory, Tasaka Hiroshi[3]elaborates further that knowledge economy is not just the simple sum of personal knowledge and wisdom, but a high-quality brand image based on mutual trust and credit as a result of good relationship and value exchange between talents. It also represents the aggregation effect generated from all kinds of high-level intellectual capital including a vibrant cultural environment.

Such intangible capital, which is based on the value of talents, has become the decisive factor of knowledge economy both at regional economy level and at enterprise operation level. Only through making good use of such important capital can enterprises gain initiative in market competition and instil vitality into regional economic development.

Meanwhile, vibrant regional economy will promote innovation and entrepreneurship, with Silicon Valley in California and the Research Triangle Park in North Carolina being examples. Once the talents in these areas start to innovate, they are more likely to succeed: they can realize their ideas through enterprises and research institutions and receive investment more easily. The creative urban environment not only provides the soil for innovation and entrepreneurship, but also offers nutrients.[4]

The value of innovative talents is not just personal knowledge, ability and wisdom, but also all effect enhanced by dynamic interactions. The accumulation of advanced intellectual capital makes it possible for intelligence, knowledge, and creativity to be transformed from individual features into a cohesive group, allowing enterprises and even the entire region to maximize the output and benefit. The starting point of all the intellectual capital–talents, is the source of regional economic vitality. And the appeal for innovative talents has been a decisive factor in regional competitiveness. Therefore, Chongqing BRI Global Innovation Valley must attract regional, national and even global talents, achieve "diverse creative integration", build a "knowledge network system" and lead the way to tackle "active new challenges". These are the key to smooth development and the completion of expected missions.

On the other hand, overviewing the current development model of enterprises in the world, mature large enterprises tend to lose the initial innovative vitality and passion for challenges at certain stage, due to factors like internal differentiation and external pressure. They are more inclined to apply a more stable and conservative model in the main business at vested interest market. On the contrary, start-ups seek rapid development through actively creating new value for the society and thus become not only the biggest source and the main driving force of innovation, but also a group with strongest challenge spirit and reform consciousness. Such a special group may grow into a local or even international giant in the future, and they may also be merged into large enterprises, supporting the transformation and upgrading with strong innovative power. Their importance is self-evident. Therefore, to develop innovative elements in Chongqing Pilot Free Trade Zone, it is advisable to prioritize the construction of a BRI Global Innovation Valley, targeting mainly at start-ups.

From a regional perspective, the innovation valley should be based on Chongqing Pilot Free Trade Zone, creating hardware and software environment for innovation and start-ups in the entire city, integrating resources, encouraging the cooperation between government, users, industries, schools, researchers, industry associations, NGOs, etc. Pilot projects can lead

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[1] *《Journal of Monetary Economics》On the mechanics of economic development Robert Lucas(1988)*
[2] *The Rise of the Creative Class, Richard Florida (2002)*
[3] *『目に見えない資本主義』田坂広志（2009）*
[4] *《Annual Review of Sociology》The Sociology of Entrepreneurship PH Thornton(1999)*

advantageous industries to upgrade, drive development through innovation, link upstream and downstream industries, try to radiate surrounding provinces and cities, expand Chongqing's influence on Chengdu-Chongqing City Group, central and western regions, the Yangtze River Economic Belt and even countries along the BRI. This innovation valley can be the locomotive in Chongqing's construction of western innovation center and the synonym for innovation and start-ups in Chongqing. It can help Chongqing to become the largest hub city in China's inland and a vibrant global city.

II. Proposals and Recommendations on Specific Projects for Chongqing "Belt and Road Initiative" Global Innovation Valley

According to the above analysis, focusing on BRI Global Innovation Valley, ***Nomura Holdings, Inc.*** offers proposals and recommendations on three major projects: "Cater-for-your-needs" Innovation Challenge Support Window, Challenging Pilot Program of Strategic Industry and The Planning of an Energetic Innovation City.

(I) "Cater-for-your-needs" Innovation Challenge Support Window

Setting "Cater-for-your-needs" Innovation Challenge Support Window in BRI Global Innovation Valley means to get to the front line of innovation activities, to gather the demands of talents and enterprises during their tackling of innovation challenges as well as the bottlenecks they encounter while founding start-ups. A direct channel should be set for direct communication and consultation with the Chongqing Municipal Government and even relevant departments of the central government, aiming at improving existing policies or designing new systems. In this way, there will be concentrated power in helping individuals or enterprises to create new value more smoothly, and thus improving their motivation.

"Cater-for-your-needs" Innovation Challenge Support Window will not only respond to the individual cases in Innovation Valley—surely and quickly, but will also create a variety of supportive systems to develop innovative atmosphere and optimize innovation environment proactively by integrating cases and resources. The following aspects are closely related to innovation and start-ups, promoting the motivation of talents, running along the life circle of enterprise. And they are worth considering:

1. Reform and innovation of policy system

Innovation Challenge Support Window will try to reform and innovate the policy system under the auspices of government, coordinate the relationship and communication between various government departments, reduce administrative intervention, simplify the examination and approval procedures, shorten the approval process, compress examination time, improve administrative efficiency, enhance public service, and optimize the innovative and entrepreneurial environment for BRI Global Innovation Valley.

2. International Innovation Cooperation Mechanism

The Global Innovation Valley can make full use of its own policy advantages, lower market access threshold, and establish international innovation cooperation mechanism. On one hand, deeper communication leads to a more efficient docking mechanism for innovation and start-up resources, combining Chongqing's enterprises with global technologies for innovative results. On the other hand, this valley can expand the regional radiation intensity of Chongqing, create agglomeration effect, build a new structure of sustainable development, and ultimately lead to model innovation and technology transfer.

3. Policies to Attract Domestic and Foreign Talents

Featuring a small size, limited resources, poor stability, huge risk, etc., small and medium-sized enterprises (SMEs) often

lack systematic and sound management system, rely excessively on the individual initiative of the operators or core technical staff. Nor do they have a sustained, complete human resource management system, which is why they often suffer from great brain drain and limited manpower budget. Through measures like information sharing and policy assistance, Innovation Challenge Support Window can help SMEs with targeted and planned introduction of talents, improve education and training mechanism to cultivate a number of high-quality managers with management ability and technical talents with professional knowledge. With such help, talents are more likely to achieve success. Incentive mechanism will also be provided (such as the transfer of government shares to individuals) so that talents can enjoy long-term stable development.

4. Market-oriented Intermediary Agencies under Government Regulation

SMEs focus on the development of applied technologies and the innovation of business model, with their innovative results enjoying a high commercial application rate. Playing an important role, they are the main body and the source of innovation for BRI Global Innovation Valley. In order to reduce the risks of SMEs during the process of founding, investment, financing and development, and to ease the information asymmetry between relevant parties, it is necessary to have intermediary agencies providing professional services. These intermediary agencies can use their advantages like talents, experience, channels, resources, etc. to provide capital, finance, technology, legal and other information services for the two sides, and thus effectively integrate necessary elements for start-ups and all kinds of business activities.

In order to promote the sustainable development of SMEs in the valley, Innovation Challenge Support Window will openly recruit, support and develop innovative intermediary agencies on behalf of the government, promote this industry to expand its influence and help its construction. On the other hand, Innovation Challenge Support Window will solve problems like unreasonable charges and unregulated operations in the intermediary market, strengthen the regulation of market intermediary organizations, introduce new assessment and evaluation system as well as subsidy mechanism, in order to achieve market-oriented intermediary service under government regulation. Intermediary agencies with high quality, wide range of business, strong technical capacity, good service reputation and low charge will be recommended by the government. But ultimately the enterprises can choose by themselves.

The institutional framework and service drafts of market-oriented and standardized intermediary agencies under government regulation are as follows:

Figure 8. Market-oriented Intermediary Agencies under Government Regulation

5. Open Data Sharing System

It has become a consensus among people from all fields that more accurate and rapid decision-making can be achieved thanks to the development, opening and effective use of big data. On one hand, open data sharing platform is conducive to the openness and transparency of government information, the efficiency of government work, promoting the integration of

government regulation and social supervision. On the other hand, this platform can also explore the coordinated development of large data and traditional industries, boost business innovation, and further release economic potential.

Currently, Chongqing has built a platform for sharing and exchanging social public information resources, mainly related to the city's credit system construction, corporate database and key tax-related information exchange, etc. However, the data is still only available for government departments, although it could achieve maximum benefit by being open to enterprises and the public. Obstacles like imperfect laws and regulations, lack of overall planning and guidance, technical immaturity, unstandardized management are the main reasons for that.

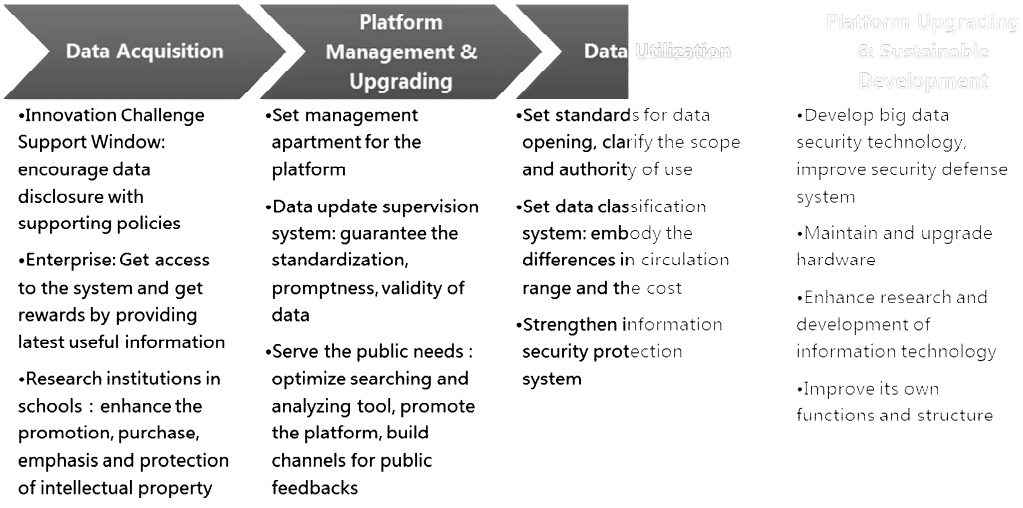
Therefore, it is suggested that Innovation Challenge Support Window can serve as a coordinator for relevant government departments, building a cross-industry, cross-platform, and cross-regional open data sharing system in which a variety of stakeholders cooperate with each other, involving the participation of non-profit organizations such as higher learning institutions, scientific research institutions, related enterprises, trade associations as well as the public. The system will not only serve the value innovation and maximized results of enterprises, but also the scientific research of higher learning and its institutions. It will serve the general needs of the public and ordinary consumers as well. With experience of open data in foreign governments and enterprises, considering Chongqing's existing industrial base, market demand, the direction of future urban design and planning, it is necessary and urgent for the following areas to take the lead in building open data sharing platforms:

Table 4. Advice on the Four Areas Related to Open Data Sharing Platform within Innovation Challenge Support Window

Industry	Advice on data platform
Advanced Manufacturing	• Include modern design technology, advanced manufacturing technique, automation technology, modern management technology (including modern enterprise management technology and modern logistics technology, etc.) into the resource sharing system.
Transport	• Build the city's integrated transportation network, promote the digitalization and intelligent operation of transportation infrastructure. • Improve information collection and monitoring system for road, railway and air transport, develop and apply big data of traffic.
Logistics	• Speed up the construction of digital city logistics and distribution system and cross-regional multimodal transport information system.
Architecture	• Establish and apply an Internet-based collaborative work system, realize digital delivery and full-life information sharing from design, construction to operation and maintenance. • Build industry construction information disclosure system, provide information services including geological exploration, environmental and energy monitoring for the public, enhance the utilization of public industry information.

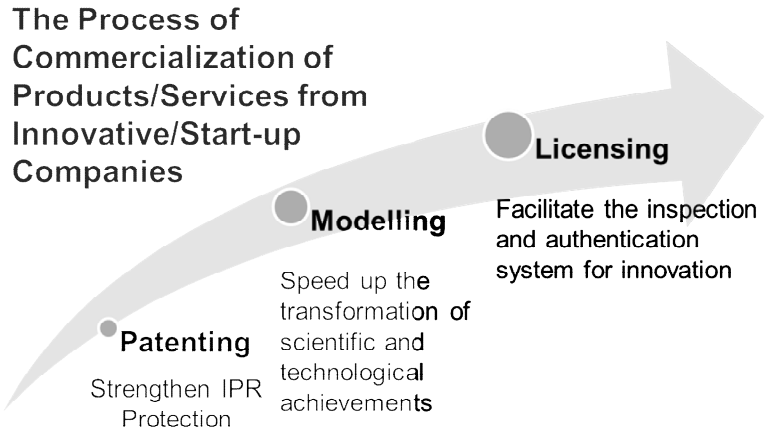
Considering the four steps from data acquisition, platform update and management, data use, platform upgrade to sustainable development, Chongqing Free Trade Zone can build open data sharing platform with the following measures:

Figure 9. Blueprint for the Construction of Open Data Sharing Platform



6. Support Commercialization and Industrialization

Figure10 Measures to Support Commercialization



Combined with the information during the investigation in Chongqing, it is suggested that the Innovation Challenge Support Window should take the following three measures, focusing on the general process of commercialization and industrialization of innovative products and services, so that the innovative companies and start-up businesses can transit smoothly from R&D design to product commercialization with favorable conditions and great support.

- Strictly strengthen the protection of intellectual property rights

• Improve the system of intellectual property protection, step up the fight against infringement and strengthen the convergence mechanism between administration and judiciary.

• Simplify the acquisition procedure of intellectual property, reduce the acquisition cost of intellectual property and increase fiscal spending and financial support.

- Speed up the transformation of scientific and technological achievements

• Further the communication, cooperation and resource sharing between enterprises and research institutions and push the close integration of industry, universities and research (IUR).

• Decentralize the use of scientific research results to improve the enthusiasm of scientific research personnel and then raise the income from the transformation of research results.

- Facilitate inspection and authentication system for innovation

• Introduce professional comprehensive inspection and authentication organizations in key areas into Innovation Valley.

• Promote the third-party acceptance system, lower entry barriers, strengthen ongoing supervision and post accountability.

• Encourage the "Internet+ inspection and authentication" to promote the open sharing of facilities and equipment between units.

7. Push Forward the Reform of Science and Technology and Finance, Encourage Innovation and Entrepreneurship

At present, there is a big financing gap for innovative enterprises of science and technology. They have difficulties in fund raising. SMEs of science and technology raise funds through private lending, which is of high interest rates and increases the burden on the enterprises. In order to promote the coupling of financial innovation and technological innovation, it is important to establish a virtuously interactive legal system and to provide a higher level of legal protection and policy incentives for the development of financial innovation and technological innovation. Such measures as trying to build a credit system for enterprises of science and technology, protecting the transactions of property rights, establishing financial risk assessment agencies, exploring the evaluation and guarantee funds of intangible assets and constructing an insurance system for venture capital can be considered to raise the chance of survival for SMEs and start-up businesses while arousing the enthusiasm of creative and innovative talents and stimulating public entrepreneurship and innovation.

[Case Study] Suguyaru Ka: Do-it-now Section（すぐやる課）

In the 1960s, Matsudo, as a satellite city of Tokyo, carried out a large-scale residential development. Therefore, its population rocketed but the construction of transportation and drainage facilities lagged behind. The responsible government departments shifted blames to each other while the citizen’s daily needs were hardly met. In this context, Matsumoto Kiyoshi, the founder of Matsumoto Kiyoshi Drugstore and then the mayor of Matsudo in Chiba Prefecture, Japan, he proposed the idea of setting up a Suguyaru Ka: Do-it-now Section which was positioned to get rid of the long-standing problems and facilitate the citizens’ life. It was first established in Matsudo in October 1969. At the beginning, 9 out of 10 requests and complaints from the citizens were about the infrastructure problems like drainage ditch blocks, uneven roads and waterlogged roads. Later, the content evolved with the city’s development and the citizens’ lifestyle changes, but Do-it-now Section had stayed true to its service concept of "solving the problems in citizens’ life" for more than forty years and never wavered.

Since then, Do-it-now Section in Matsudo has handled more than 140 thousand cases. It has been praised by the citizens for its immediate execution and was considered by many other local authorities as a good example to follow suit. Now there have been over 300 similar departments across Japan. Apart from its traditional responsibilities, it also actively deals with the new social challenges brought about by problems like aging. For instance, in 2017, the Do-it-now Section in Katsushika District in Tokyo absorbed some new businesses from the publicity department to meet new demands of the people, such as accepting complaints, petition requirements from the residents to the district mayor, liaison meetings for leaders from autonomous regions, meetings for residents and their district mayor to exchange opinions, consulting rooms, social surveys and etc., thus further improving its functions.

Table 5 General Introduction of Suguyaru Ka: Do-it-now Section

	Suguyaru Ka: Do-it-now Section （すぐやる課）
Time and location of establishment	· October 1969, Matsudo
Purpose of establishment	· Get rid of the long-standing problems, solve the citizens' difficulties immediately and facilitate the citizens' life
Service methods	· Phone, fax, mail and etc.
Department slogan	· Deal with the emergencies ASAP without delay
Major businesses	· Clearance of wasps, management of other animals, better road facilities and bicycle parking, garbage disposal and etc.
Working principles	· Tasks that can be solved quickly: rush to the scene, cooperate with relevant departments and solve immediately · Time-consuming and difficult tasks: never leave them to others, communicate with relevant responsible departments and entrust a third-party to solve

- What "Cater-for-your-needs" Innovation Challenge Support Window can learn from this case

The "Cater-for-your-needs" Innovation Challenge Support Window in the BRI Global Innovation Valley plays a similar role for the innovative enterprises and entrepreneurs in the valley. As a comprehensive support organization, it will keep in close contact with the administrative government departments, research institutions, colleges and universities and enterprises. On one hand, it can take measures like establishing cooperation mechanisms with foreign cities, promoting reform in policies and innovation, so that the environment for innovation and entrepreneurship can be actively optimized. On the other hand, in cooperation with the relevant responsible departments, it can immediately deal with the many possible problems within the establishment and development of the enterprise, provide business consulting and offer tailored solutions with the help of intermediaries, so that the enterprises in the valley will no longer "have no one to turn to". Its mission is to solve the problems of the enterprises and it shall keep improving its abilities and service level to meet the enterprises' growing and diversified needs for development.

(II) Challenging Pilot Program of Strategic Industry

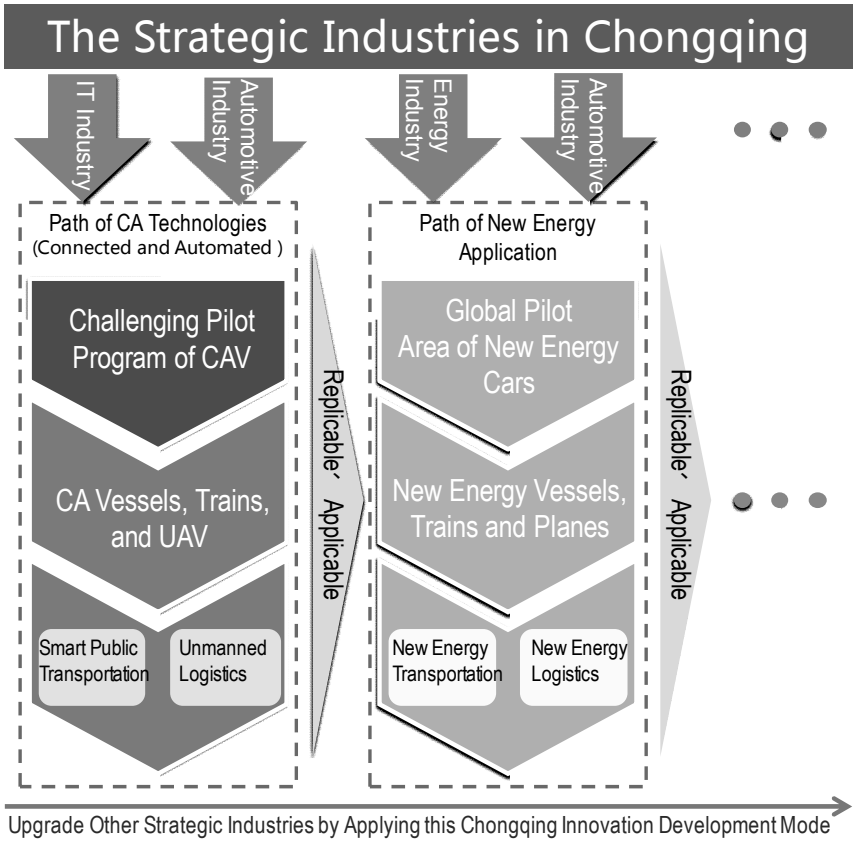
Chongqing is solid in industry. In recent years, in order to push industrial restructuring and promote industrial modernization, Chongqing has achieved initial results in planning the development of the top ten key industries as emerging strategic industries. The Free Trade Zone can make full use of the existing industrial accumulation and preferential policies. With the advantageous industries with Chongqing characteristics as its base, the SMEs as main body, innovation and entrepreneurship as driving force and advanced new technology as its aim, the Pilot Free Trade Zone will show its unique advantages. On specific industries, Challenging Pilot Program of Strategic Industry that can be replicated and promoted will be established to achieve sustainable development and to drive the industrial and economic structure upgrade in Chongqing.

Considering that Chongqing's whole manufacturing industry is mainly driven by two industries and one of which, the automotive industry, has a solid foundation, a mature industry chain and other advantages, despite the restriction of factors such as imperfect external laws and regulations on the testing and development of new automobiles, it is suggested to first build a smart networking Challenging Pilot Program of Connected and Automated Vehicles(CAV) and form a long-term development pattern and operation model in this regard.

With the development of advanced science and technologies such as the Internet, communications, big data, cloud computing and intelligent manufacturing, the connected and automated vehicles will become an important carrier to promote the integration of industrialization and information building, and it will also be one of the most important directions of Chongqing and even China's automotive industry restructuring and upgrade. From the automotive design and manufacturing, consumption and service, vehicle maintenance, to finance and insurance, public transport management, logistics and transportation and urban public management, connected and automated vehicles are of wide impact and extensive value, thus its strong radiation effect should not be belittled.

Internet of things, new energy vehicles and smart cars are the top ten emerging strategic industries in Chongqing. Chongqing, with strong industrial capacity has the largest automotive industry base in China and a mature automobile-relevant industrial ecology and cluster. At the same time, in recent years, great efforts have been made to develop information technology industry, and now it has many key parks, such as Xiantao Data Valley and Internet industrial park, with good technical environment. In addition, in November 2016, the smart car integrated system test area i-VISTA officially opened in Liangjiang New area, Chongqing. It is supported by China Automotive Engineering Research Institute Limited in cooperation with many other units like Chang'an, China Mobile, HUAWEI, and Tsinghua University. It has been established as an international-level advanced experimental demonstration area.

Figure11 Development Pattern for Challenging Pilot Program of Strategic Industry



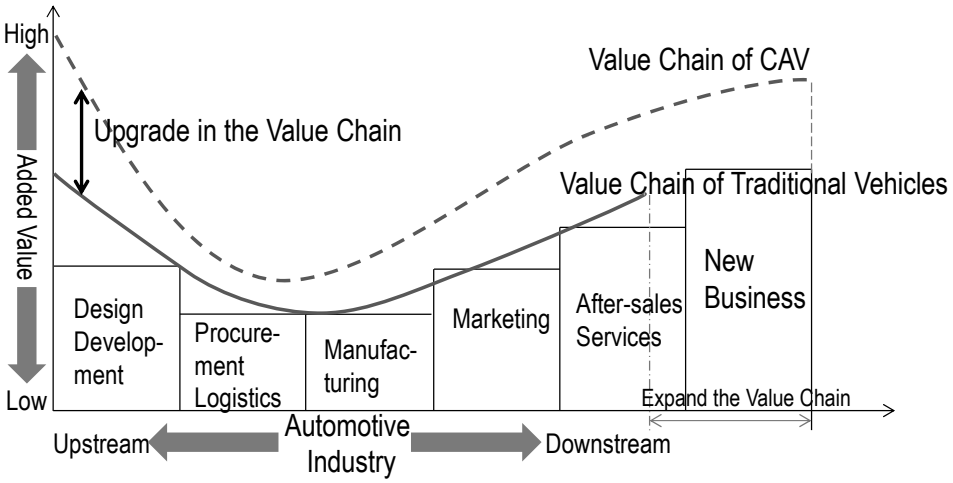
In such background, it's proposed to establish "Challenging Pilot Program of CAV" in BRI Global Innovation Valley. It will be integrated with the existing automotive industry in Chongqing, attracting talents from all over the world. Especially with

the preferential policies and comprehensive support system provided by the Innovation Challenge Support Window, hopefully, skillful, experienced talents and small/medium-sized innovative corporations from developed countries on the BRI, such as Germany, Singapore will be attracted. Challenging Pilot Program of CAV will also interact with i-Vista and extend cooperation in all possible means for instance making full use of the data center, Internet Industrial Park and other infrastructures. This program will accelerate the formation of the whole industrial chain and ecology of Connected and Automated Vehicles, make Chongqing a pioneer in the industry and boost other relevant industries. Once the technologies of CAV ripened, they could be applied to other transportation vehicles like train, vessels and unmanned aerial vehicles(UAV). Thus a brand-new integrated sea-air-land transportation and unmanned logistics system will be formed. Such system will largely contribute to Chongqing's building of Global Smart Logistics Hub and High Land of International Port, raise Chongqing's radiation effect and create a favorable environment for talents and capitals.

After the layout of Connected and Automated industrial chain, the development model and the experiences of Challenging Pilot Program could be applied to other traditional strategic industries in Chongqing urging for upgrading, for instance the new energy industry. Thus a Chongqing-style development model will be formed, which will be not only replicable but also applicable.

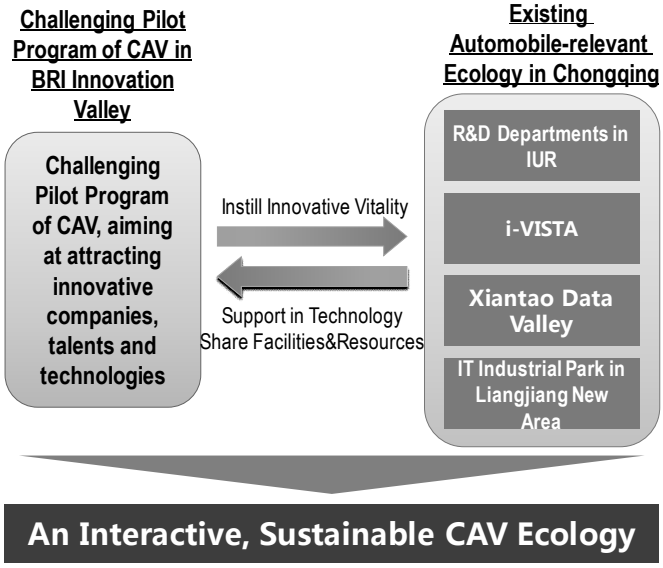
As the first step of the vision above, the success of "Challenging Pilot Program of CAV" will undoubtedly play a crucial role. The specific measures for the implementation of the program are as follows:

Figure 12 Comparison of Value Chains of CAV and Traditional Automotive Industry



1. To promote domestic and international communication on the connected and automated vehicle technology: promoting international CAV cooperation projects and introducing foreign talents and advanced technology. With the help of "Cater-for-your-needs" Innovation Challenge Support Window, international business incubator can be built with joint efforts to help promote the transfer of technology transactions and scientific and technological achievements. On one hand, it can achieve the effect of bilateral hatching; on the other, it expands the intensity of radiation at home and abroad and forms an agglomeration effect, creating a First-mover advantage for the connected and automated vehicles with Chongqing characteristics and seizing the high-end of industrial chain.

Figure 13 Vision on the Development of Smart Networking Automobile International Challenging Pilot Program



2. To encourage SMEs in the pilot project to form a positive interaction with the key enterprises or large institutions in the related industries in Chongqing to break the bottleneck of innovation in large enterprises as well as to provide adequate resources and technical support to small and medium enterprises and start-ups to form a fertile soil for businesses to grow. Thus a win-win situation can be achieved and emerging local automobile companies can be born and then thrive in Chongqing. It is important to make full use of the existing resources in all test areas, data valleys and industrial parks to achieve the sharing of infrastructures and test bases, cultivating cross-cutting areas of innovative seeds. On the other hand, through exchanges and cooperation between enterprises, achievement exhibitions and other activities, large enterprises and SMEs are encouraged to interact with each other. So while the large enterprises with strong economic bases are provided with fresh blood of innovation, the innovative achievements of small and medium-sized start-ups can also be timely transferred, providing a good economic foundation and market resources for the further development of SMEs. The upstream, midstream and the downstream of the industrial value chain can reach a benign interaction, creating a smart networking automobile ecosystem and realizing the truly sustainable development of industry.

3. To improve the relevant laws and regulations through driving tests: At present, in China, relevant laws and regulations on CAV are insufficient. Problems such as the legalization of road tests have not been solved yet and are still in the gray area of the law. As long as they can guarantee safety supervision, the pilot bases can give full play to the advantages as a Free Trade Zone, carry out technology testing and driving simulations relevant to CAV, introducing the confirmation of responsibility targeting connected and automated vehicles and other pilot regulations. The technology together with the system can not only attract domestic and foreign enterprises which want to take the challenge but are hindered by the lack of conditions, promote the development of connected and automated vehicles industry in Chongqing, but can also provide valuable experience for the making of laws related to CAV across the country and even around the world.

[Case Analysis] An Overview of the Development of Food Valley in the Netherlands

With smooth terrains and mild climate, the Netherlands is one of the world's largest exporters of agricultural products. The Netherlands ties with the United States and France for the world's three major vegetable and fruit production countries, and

accounts for a quarter of vegetable export in Europe. The food industry in the Netherlands is characteristic of large trade surplus and products with high added value.

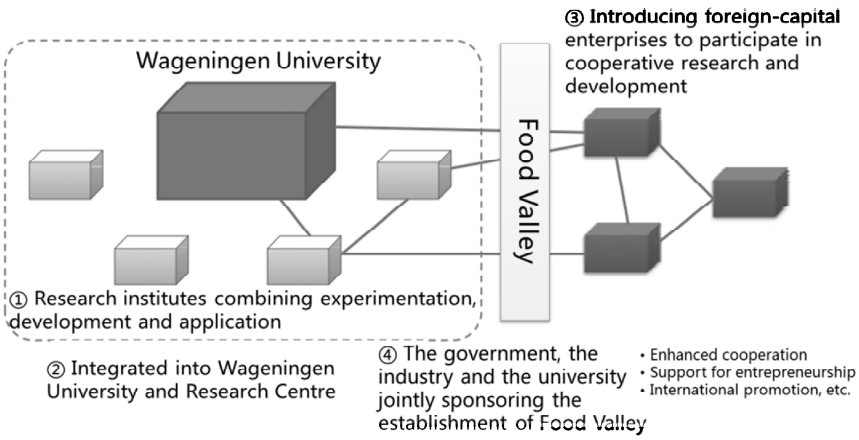
Food Valley in the middle of the Netherlands is a major component of the robust Dutch agriculture industry. Food Valley hinges on Wageningen University and Research Centre (WUR), and concentrates numerous international top-class food multinationals and research institutes. It is the home of the Dutch food and nutrition research cluster and the only business incubator in Europe specifically for agribusiness enterprises.

In 2000, the Dutch government cooperated with the regional strategic industry, the food industry, and developed a "Bio-partner" strategic plan, through which the government and private institutions would join forces to support biotechnology-related start-ups. A batch of new life science companies were established benefiting from the policy, the majority of which are based on universities. The commercialization of university research was thence set in motion, spurring a rapid growth of life sciences in the Netherlands.

WUR, with Wageningen University as its main body, was thereby established. The research institute and the university become a model of benign interaction and mutual advancement. In 2004, on the basis of WUR, the leading companies in food industry cooperated with the Dutch government and the Gelderland Province founded Food Valley NL, managing to attract foreign companies and building up a core structure combining industry, academia, research and utility.

In addition to promoting cooperation among the industry, the academia and the research institutes, the Dutch government also actively promotes the development of food industry and enhances the industry's long-term competitiveness through investment and legislation. On the one hand, the government employs public research and development funding to complement with private funds. On the other hand, it undertakes efforts to overcome legal barriers and to pave the way for production and commercialization of achievements in scientific research.

Figure 14 Core Structure of Food Valley



For example, in 2005, the Dutch government allocated €10 million research funding to Wageningen University for the development of cisgenesis potatoes. The funding is followed by the commercial world, the academia and the government urging a more flexible legal control over the technology both within the Netherlands and in the EU. Once the EU relaxes its control over the labelling of cisgenesis products, the commercialization of potatoes and apples based on the same technology can be just around the corner.

The success of Food Valley is primarily due to its combination of the government, the industry, the university, the research

institutes and the application. It also benefits from a sound environment of innovation as well as extensive international network and influence. In order to encourage development, Food Valley has taken the following five measures:

1. To promote the integration of enterprises, research institutes and universities. It is necessary to utilize the influences of the market in resource allocation, to orient research to market demand, and to combine the upstream with the downstream of the production chain, in order to form an ecological network in Food Valley.

2. To provide substantial support for innovative projects. Food Valley strived to bridge technological transfer while at the same time encourage entrepreneurship and the opening of branch offices, and give proper support in accordance with their stage of development.

3. To introduce talents in agricultural and food business from Europe and even the world, so as to exploit the effect of knowledge spillover.

4. To establish extensive international cooperation with other agricultural and food industrial parks, to expand the commercial network, and to bring business opportunities to the enterprises and institutions in Food Valley.

5. To hold international conferences, exhibitions and other activities regularly. Popularize information related to Food Valley and show achievements of research in Food Valley, thus enhance the intensity of radiation and acquire international influence.

Through these measures, Food Valley has now gathered more than 1,500 private enterprises in food and chemical-related fields, and has become the most authoritative research center of agriculture and nutrition in Europe and even the world.

(III) The Planning of an Energetic Innovation City

Site selection is one of the major decisions every enterprise faces. Similarly, Talents, like wise birds, choose their trees when they nest. Therefore, to attract global talents to settle in Chongqing, it is crucial to grasp the decisive elements behind their choice, and to accordingly building an innovative city.

Harvard University Professor Edward Glaeser pointed out that urban amenity is the key factor behind talents' decision to settle in a city. In pursuit of their quality of life, many highly-educated Americans choose to live in metropolises such as San Francisco, despite high rental, land prices and other challenges. Urban amenity includes four aspects: substantial commodity market and service, delightful urban landscape, well-developed public service and low crime rate, as well as convenient transportation and communication infrastructure.

Professor Richard Florida, referred to in previous chapters, gives another set of solution under his theory of Creative Class. He believes the "creative class" also pursues "quality of place," on the grounds of which he further proposes three dimensions:

- ✓ A combination of urban construction and natural environment, providing a vibrant urban environment for the innovative lifestyle.
- ✓ A diversified population composition, indicating an embracive city with abundant opportunities.
- ✓ A rich and colorful social life with favorable conditions for interpersonal relationships, enabling talents to draw inspiration from everyday life.

It is therefore obvious that in order to attract talents to settle in Chongqing, a livable social environment and a vibrant urban atmosphere are as crucial as policy support and industry development. To build the BRI Global Innovation Valley, it is necessary to start from urban planning and the city spirit, and to create an environment attractive, livable and liberal for talents.

Three targets should be met in order to build up an innovative, vibrant city:

✓ To develop public amenities and meet the residents' need of transportation, health and education services. Create a "green" and "livable" city. Improve the residents' quality of leisure life.

✓ To create an inclusive social and cultural environment so as to meet talents' higher demand and to deepen their sense of belonging to Chongqing.

✓ To integrate innovation into the city spirit, to plant the seeds of innovation, and to broaden the channels of innovation and entrepreneurship, in order to realize "popular entrepreneurship and innovation."

Based on the experts' theories and the target of building an energetic innovation city, the following measures are proposed:

1. To Create a City Suitable for Talents to Demonstrate their Abilities

Chongqing has been known as the "mountain city." It is a city of three dimensions and a city that never bores one's eyes. Chongqing is also a "city of bridges," deriving along the coast of Yangtze River, with the bridges as the vessels to interconnect the parts of the city. However, in order to build an energetic innovation city, it is necessary to start from the city itself, perfect infrastructure, take on a forward-looking perspective, ponder over the development of the city in future, and map out corresponding plans:

1) To assure the coverage of green areas, and to enhance the quality of network communications. Chongqing has a unique urban landscape and advantageous natural resources. Urban planning should fully consider the coverage of green areas, combine the picturesque architecture with the aesthetic nature, and improve the outlook of the city. Refining the pipeline system in the city and ensure the infrastructures, especially communication infrastructures will also contribute to a reliable and secure services for urban development.

2) To improve the public transportation network and reduce commute time. According to the ranking of commute distance and time among 50 cities nationwide in 2014, the average commute distance in Chongqing, more than 14 km, ranked the 9th among the 50 cities, with an average commute time 43 minutes. Along with the urbanization of Chongqing and the simultaneous construction of the Free Trade Zone, the National Innovation Demonstration Zone and China-Singapore Demonstration Initiative, the urban functional development zone will receive the major part of population inflow and attract a large number of talents to settle and work. It is therefore necessary to perfect the transportation facilities in the urban functional development zone, improve public transport capacity, reduce commute time, and avoid rush hour congestion.

3) To exercise tight control over house prices and attract talents to settle. The house prices in first-tier cities including Beijing, Shanghai, Guangzhou and Shenzhen remains high, which substantially squeezes the talents' living space in the long run. Chongqing, on the other hand, with its rich urban land reserves and its "land coupon" system, becomes the only "lowland" of house prices among the first-tier and the new first-tier cities. In the future, if Chongqing can hold tight control over the rise of house prices and ensure the supply of public rental houses and other various housing supplies, the affordable house prices may become a major factor to attract talents.

4) To improve residential facilities and enhance the level of education and health care. For living and working in peace and contentment, talents need not only accommodation but also complete residential facilities such as public transport, health services, educational facilities, and commercial facilities, among which educational facilities require special attention. It is not practical to improve the quality of education at one stroke, whereas Chinese nationals consider education as one of their highest priorities. In addition, an energetic innovation city needs a multi-level education system, which trains talents at all levels and gives a powerful impetus to urban development.

5) To enrich commercial and recreational facilities and meet various spiritual needs. Leisure and cultural activities are an important component of modern life. Modern, high-quality commercial recreational facilities are indispensable to modern cities.

From residential areas to business districts, multi-level commercial facilities are needed to meet the diverse needs of different groups of people. Talents of various kinds can therefore live in Chongqing not only comfortably but also happily.

2. To Integrate the Spirit of Innovation and Entrepreneurship into Chongqing People's Everyday Life

If innovation and entrepreneurship are remote from every citizen's life, people will only regard setting up one's own business as challenging and inaccessible. An atmosphere as such in a city is not conducive to innovation and entrepreneurship, which should not be confined to the Global Innovation Valley, the National Entrepreneurship and Innovation Model Bases, the National Innovation Demonstration Zone and other industrial parks, but should reach out to residents. It is essential not only to popularize what innovation and entrepreneurship are, but also to show people how to carry them out. It is crucial to encourage people to dream big and try hard, making the dream of innovation and entrepreneurship accessible as well as helpful on people's way to success.

1) To plant the seeds of innovation and entrepreneurship

An example of Startup Café is here used to demonstrate the significance of urban facilities to cultivating a culture of innovation and entrepreneurship. The Group Innovation Space in Chongqing has already established a Startup Café featuring "consulting downstairs, entrepreneurship upstairs," though its influence limited within the Space. Startup Cafés should be closer to people's life, set in the city center with easier transportation, facing larger groups of audience, and providing a full range of information services. The door should be open to people from all fields, who may consult the permanent entrepreneurial mentors about how to start business from scratch and realize the entrepreneurial dream. They may also consult about their difficulties in different stages of entrepreneurship, or share them with other entrepreneurs and seek common solutions. Startup Cafés can regularly hold innovation lectures and entrepreneurial experience sharing sessions for the public. The fundamental significance of Startup Cafés is to encourage those not yet intending to start their own business to understand entrepreneurship, to satisfy people's curiosity of entrepreneurship, and to plant the seeds of innovation and entrepreneurship among the public. For those bearing plans in mind, Startup Cafés help them identify the possible approach and solve their difficulties, so as to make entrepreneurship more accessible.

2) To serve early-stage business and to encourage re-challenge

In fact, the role of Startup Cafés should not be limited to the above-mentioned enlightenment effect. Startup Cafés should be a branch of the Innovation Challenge Support Window inside the city, and provide the early-stage entrepreneurs with space for communication and discussion, operational guidance for entrepreneurial teams, professional training related to registration, tax and legal issues, as well as paid services such as web design and trademark design. Startup Cafés should truly aim at solving problems for entrepreneurs. Entrepreneurs can also share their success and failure experiences, publish their needs for talents, products and/or services as well as consultation. The mentors in Startup Cafés will provide services matching both supply and demand. Those who have experienced failure in the past can also come to Startup Cafés and share their stories, in order to learn from their failure and be prepared for the next start. The Innovation Challenge Support Window and other companies can also initiate subjects in Startup Cafés and search for solutions from the public. This may be the first barrel of gold for a start-up.

3) To cultivate the spirit of innovation and entrepreneurship among students

Innovation and entrepreneurship should go into university campus, and the spirit of innovation and entrepreneurship should be cultivated among students early. Rich and colorful competitions and activities will be intended for students in different age groups and at different levels, in order to develop their thinking pattern of identifying problems and solving problems. The activities include tours to innovation industrial parks, science and innovation competition for teenagers, business simulation competitions, etc. People of all ages are thus included into the development of urban innovation, and an environment of

innovation and entrepreneurship is thus built.

[Case Analysis] The Development of Innovation City in Munich

Munich is the largest city in Southern Germany, the third largest city in Germany, on the banks of River Isar north of the Alps. It is a major center of economy, culture, technology and transportation in Germany, and also one of the new economic centers in the country. The per capita GDP in 2015 is about $ 65,000. The service sector is the main drive of local economy, accounting for 76%. It is the center of bioengineering, software industry and service industry, known as the "European Silicon Valley." It is also the center of insurance industry in Germany. Industry accounted for 24% of the economy, with the headquarters of many manufacturing companies located in the city.

In the 1970s, taking the opportunity of Munich Olympics, the Bavarian state government vigorously promoted the construction of transport infrastructure in the state, and built the world's largest urban public transport system relative to the population (about 1.5 million), including well-developed subway networks, trams, buses and trains. During the same period, Bavaria used the advantages as late starters, introduced advanced equipment and technology, vigorously developed modern manufacturing industry, and completed the transformation from traditional industry to modern industry. In 1988, with emergence of the concept of EU integration and the deepening of economic globalization, urban planning formulated the principles of "moderation, compound and promotion" so as to build a "vibrant Munich." Through optimizing land use, the city integrated living with working as well as shopping and leisure, promoted the development of urban green spaces and sites for activities, and improved the quality of citizens' leisure life.

Figure 15 Area Around Olympia Park

Since 1990s, Munich, based on its enormous advantage of scientific research and industry, vigorously developed scientific and technological innovation, and established a well-developed system of government support and intermediary service. By 2004, more than 30 incubators are located in Munich and its neighboring regions, connecting universities, research institutes, business organizations, advisory services, capital investment and financial institutions in the Munich Metropolitan Region, and continue to support the growth and development of new companies.

The local government sponsored and built the Munich founders centers, which reinforce the creation and development of enterprises. There are three major types of center. The first type of founders centers is the most basic, with members being entrepreneurs from various fields. The second type includes science and technology guidance centers for entrepreneurs, which assist the entrepreneurs with improving their immature business entrepreneurial environment, and help bridge collaboration between high-tech start-up enterprises and research institutions. The third is science and technology centers intended for specific

projects, providing young entrepreneurs with favorable conditions in relevant science and technology fields, including bio-engineering, logistics, energy, medicine, pharmaceutical and other key high-tech industries.

The Munich Business Plan Competition (MBPW) also continuously introduces talents to entrepreneurship in Munich. It is an innovative competition co-sponsored by industry and universities, aiming to encourage young people to start a business and establish a network of young entrepreneurs in the Munich region.

In addition, the advanced exhibition industry in Munich is also indispensable to the construction of external contact network and the promotion of urban innovation. Numerous international science and technology expositions are held in Munich. They become platforms for international communication within the industry, attracting many professionals and enterprises. They also foster the development of local industrial and technological tourism, and become a representation of the city's external radiation.

- The Significance to the Development of an Innovative, Vibrant City in Chongqing

The building of an innovative city in Munich provides valuable experience for Chongqing. Aiming to become China's largest inland hub city and a cosmopolitan city of full vitality, Chongqing should not only rely on its traditional advantageous industries and strong industrial bases to develop advanced manufacturing industry and modern service industry, but also provide a reassuring environment of development to innovative talents as well as SMEs through sensible urban planning and policies. It is crucial to actively facilitate and extend collaboration with the Yangtze River Economic Belt and the countries along the BRI, to construct the external contact network, and to revitalize urban development. Only with the mature and convenient infrastructure, leisure and comfortable natural ecology, open and inclusive cultural environment, can Chongqing become a radiant, powerful and attractive modern metropolis.

(End)

Innovating and Improving the Functional Financial Center and Serving the Real Economy

By Farhan Faruqui

Group Executive, International for ANZ's Institutional Business in Asia, Europe and America.

Executive Summary

Chongqing is aiming to strengthen its position as a centre of strong economic growth in China by leveraging its Free Trade Zone (FTZ) and tapping into the opportunities arising from financial innovations.

This research paper addresses how financial innovation in Chongqing can contribute to the real economy. In particular, two examples are identified; financing of small to medium size enterprises (SMEs), and the role of smart documents and contracts. The Shanghai FTZ provides some valuable insights into how Chongqing can help SMEs achieve their potential and help boost the economy, while the innovation of smart contracts provides an example of the opportunities that the digital economy and financial services innovation presents.

The paper uses these examples to build and suggest four key recommendations for Chongqing.

Recommendation One

Chongqing should develop a plan to actively encourage financial innovation, particularly in areas that benefit SMEs. As seen in countries such as Australia, competitive financial markets can produce a range of innovative financial products. The availability of a broad range of financial products allows SMEs to achieve their maximum potential.

Recommendation Two

Smart contract technologies are changing the pace of trade globally. Chongqing should explicitly consider how its FTZ can be leveraged to facilitate the introduction of smart contract technologies. In particular, the benefits of removing any barriers to the use of these technologies, such as regulatory constraints, should be carefully considered.

Recommendation Three

Smart contracts can be facilitated by government, but are ultimately led by businesses themselves. Businesses in Chongqing could work with government to consider how specific industries can position themselves to leverage smart contracts. Part of this assessment should involve a business considering the extent to which its industry could benefit from smart contracts. Where a material benefit is identified, a plan should be established for the development of smart contracts for that business.

Recommendation Four

Chongqing should closely monitor its progress under the FTZ so that it is able to identify sectors that have benefited. For example, in the case of the Shanghai FTZ data was kept that allowed identification of individual sectors performance under the FTZ. This information is helpful in order to monitor, adjust and refine the FTZ over time.

1. Introduction

This research paper, prepared for the 12th Annual Meeting of the Chongqing Mayor's International Advisory Council, considers the role of financial innovation and the boosting of cross-border financial services in serving the real economy.

This research paper first defines financial innovation and briefly discusses the history of free trade zones (FTZs) in China. Then at section 2, this paper considers Shanghai's experience with financial service development since becoming an FTZ and the lessons this provides for Chongqing as it enters its own FTZ journey. Section 3 of this paper will discuss the role of smart contracts in enabling the next wave of financial innovation to serve the real economy.

1.1. Financial innovation

A country's financial system can be thought of as having three crucial functions, to manage risk, to match savings with investment, and to match payments between buyers and sellers.

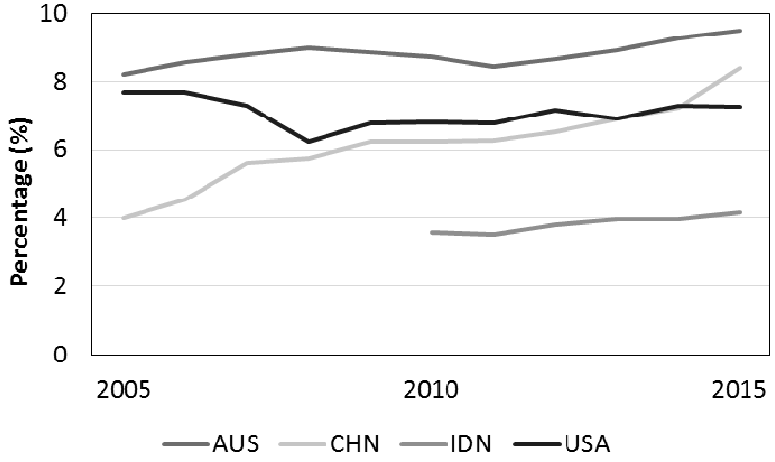
Financial innovation within the financial system has been defined by the Chinese government to include financial products, financial instruments, and service models.[1]Financial products and instruments can be defined as facilities which either allow a person to make a financial investment, manage financial risk or to make non-cash payments.[2] These include derivatives, securities and stocks. Service models broadly relate to how businesses make products and how they provide them to customers.[3]

Given these definitions, financial innovation can include capital market tools, securitization and internet finance.[4] According to Wang Zhaoxing, Vice Chairman of the China Banking Regulatory Commission, financial innovation should focus on supporting the real economy, foster development of the green economy as well as make fundraising easier for small and medium enterprises.[5]

Chart 1.1 highlights how the finance and insurance services sector has grown in China over a 10-year period; it has doubled in size as a proportion of China's GDP, increasing from 4% to over 8% from 2005 to 2015, signifying its growing importance for the Chinese economy. The sector appears to be trending upwards for Australia and Indonesia, with the US remaining relatively stable. The Chinese finance and insurance services sector is proportionately larger than that of the United States to GDP.

[1] *Information Office of Shanghai Municipality (2016).*
[2] *Corporations Act 2001 (Cth) s 763A.*
[3] *Magretta (2002)*
[4] *Wang Zhaoxing, Vice Chairman of the China Banking Regulatory Commission (2017)*
[5] *Ibid.*

Chart 1.1: Percentage value added contribution of the finance and insurance services sector to GDP by country



Source: OECD National Accounts at a Glance (2017)

As China already has a strong presence in financial services, the FTZs provide an opportunity for China to further boost this presence domestically, but particularly on a global scale.

The importance of the financial services sector is also found in the potential role of financial intermediaries to influence the level of domestic savings. That is, the more advanced a financial system becomes, with increasingly sophisticated and innovative intermediaries, the larger the mix of financial products available. This in turn will have an effect on the level of savings held by intermediaries, thus, impacting the real economy.

1.2. Free Trade Zones in China

Special Economic Zones (SEZs), can be thought of as precursors to today's FTZs, were commissioned in Shenzhen, Shantou, Zhuhai, and Xiamen in 1979. Their goal was to test progressive domestic economic policies for implementation on a national scale. Their development was based on four underlying objectives: (1) incremental experimentation and workforce education through trade, supported by government policies; (2) attraction of foreign capital to promote export growth and generate domestic employment; (3) to overcome the common problem of limited resources by supporting large scale investment with outside capital; and (4) to facilitate economic liberalisation through policy measures and private innovation.[1]

Chongqing was declared an FTZ on 1 April, 2017.[2] As such, Chongqing is one of the latest additions to China's FTZs as part of its Belt and Road initiative. Chongqing's FTZ, spanning 120 square kilometers, included three geographic regions: Liangjiang, Xiyong and the Guoyuangang areas.[3]

The Chongqing FTZ is set to become a part of a pilot zone of inland free trade. This will include various features such as a convenient investment and trade environment, efficient supervision, complete financial services in addition to an appropriate

[1] *China Research Center (2015).*
[2] *HKTDC Research (2017).*
[3] *Ibid.*

legal environment for business.[1]

The Chongqing-Xinjiang-Europe intercontinental railway plans suggest that Chongqing will become a centre of international logistics, inland services trade and inland finance.

This research paper provides some insights into how the Chongqing FTZ can effectively leverage the benefits of opening a FTZ, in terms of trade and financing innovation in particular.

1.3. Shanghai's FTZ experience

The experience of other FTZs can be drawn upon by relatively new FTZs such as the Chongqing FTZ. This research paper looks at the experience of Shanghai's FTZ to examine some of the measures that can drive success for the Chongqing FTZ.

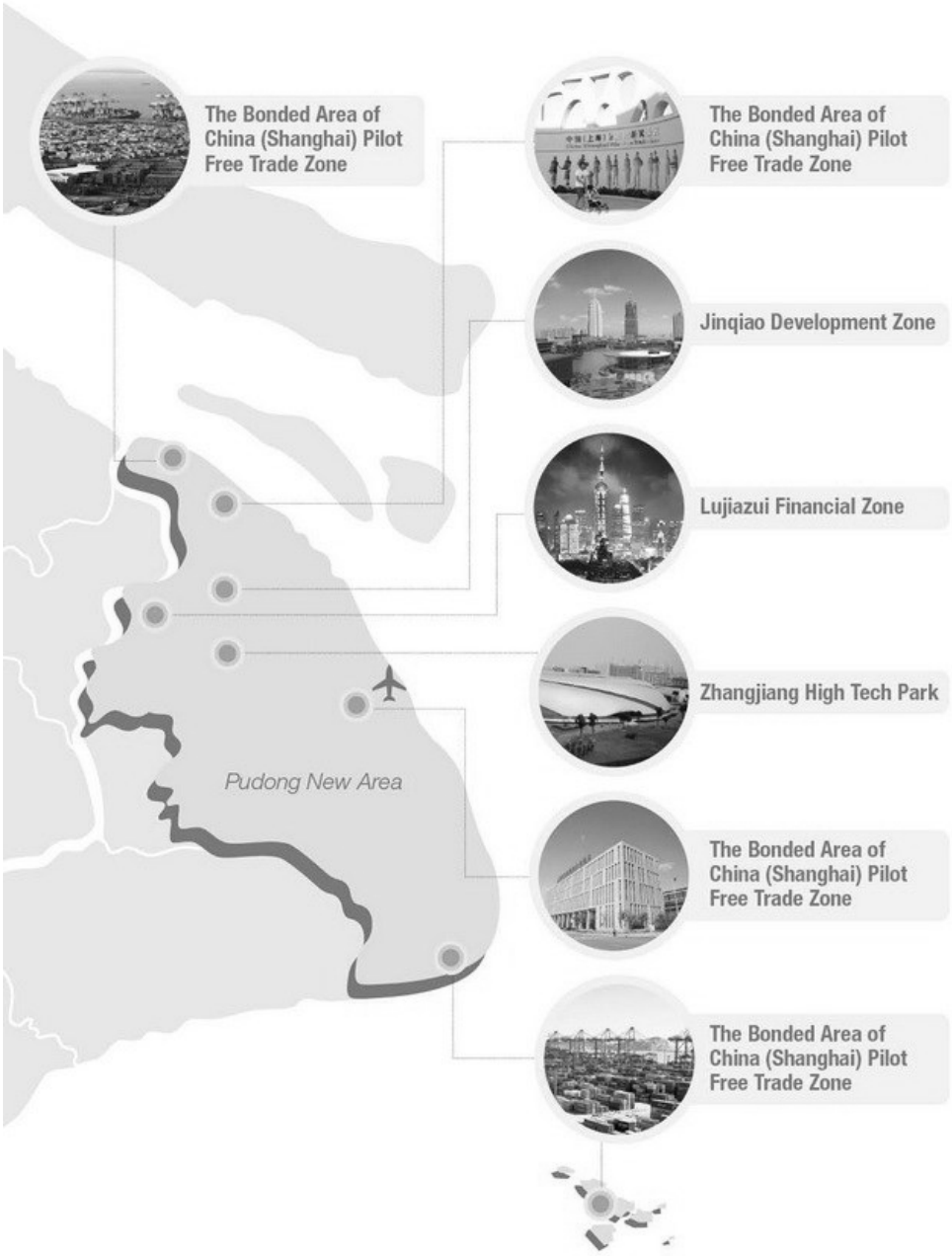
Shanghai's FTZ was officially opened on 29 September 2013.[2]It is seen as a part of the One Belt, One Road plan, which is about creating a modern version of the ancient land and sea Silk Road trade routes from China to Europe.

Its aim is to usher in a new wave of foreign investment, financial reform and business innovation through a reduction in restrictions that can impede foreign businesses in China. According to the Export Council of Australia, it operates as a "test-bed for more efficient economic policies and procedures".[3] Testing potentially destabilising reforms in a limited area like the Shanghai FTZ, allows for a process of trial and error, such that the most successful initiatives can be implemented on a broader scale across the country.

The Shanghai FTZ is a 120 square kilometer area made up of seven areas of Shanghai.[4] These areas include the Waigaoqiao FTZ and the Pudong Airport FTZ as part of the bonded areas used as experiment fields to test policies, Lujiazui Financial Zone, Jinqiao Development Zone, Zhangjiang High Tech Park and the Expo Park Development Zone consisting of land in Pudong, Yaohua and Qiantan.

[1] *Chongqing FTZ blueprint*
[2] *China (Shanghai) Pilot Free Trade Zone (2017a).*
[3] *Export Council of Australia (2015), p. 5.*
[4] *China (Shanghai) Pilot Free Trade Zone (2017a)*

Figure 1: Map of the Shanghai FTZ



Source: China (Shanghai) Pilot Free Trade Zone (2017b)

The Shanghai FTZ has allowed unrestricted foreign capital investment in all industries, but for a small number that are named on a 'negative list'. The advantages of unrestricted foreign capital investment includes a lack of a need to obtain pre-approval to establish a foreign investment project or foreign-invested enterprise.[1]

The Shanghai FTZ "should deepen and improve investment management systems with the negative- list approach as the

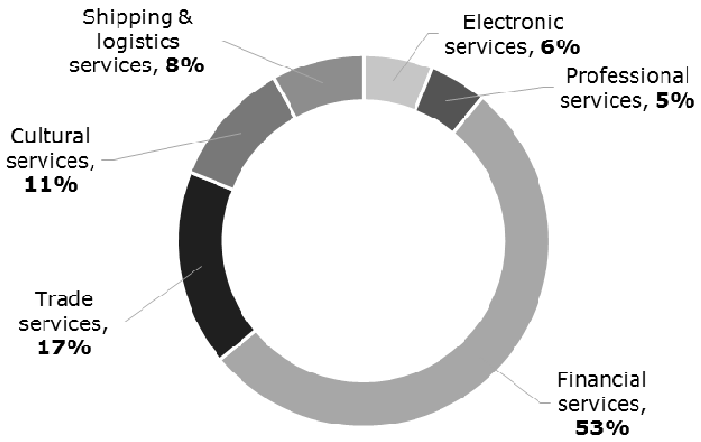
[1] *Deloitte (2015).*

core, the trade regulation system focusing on trade facilitation, the financial innovation system aimed at capital account convertibility and liberalisation of the financial services, and the system of on-going and ex post supervision with the transformation of government functions as the core".[1]

The Shanghai FTZ has seen many benefits since the implementation of the FTZ. During its 12th five year period plan, the trading volume of financial markets rose from around 500 trillion Yuan in 2011, to approximately 1,500 trillion Yuan in 2015.[2] In 2016, the Shanghai FTZ accounted for nearly a quarter of Shanghai's GDP, and by the end of 2014 it had more than 23,243 newly registered companies establish themselves.[3] According to researchers from the Shanghai University of Finance and Economics, the FTZ has increased Shanghai's GDP growth rate by 1.89 percent since it was launched.[4] Over 400 more financial institutions set up in Shanghai FTZ as of 2015.[5]

The FTZ is utilising different tools to encourage efficiency and innovation, including lower-cost financing opportunities. The sector that appears to have experienced the most benefit from the Shanghai FTZ, is the financial services sector. The following Figure 1 highlights that the majority of new businesses in the Shanghai FTZ are in the financial services sector (53%), while the next highest sector trade services only contributed 17% of new businesses.

Figure 2 New businesses in the Shanghai FTZ by sector



Source: CBRE Inc

Financial innovation in the Shanghai FTZ has been categorised by the World Economic Forum into four areas:[6]

1. Free trade accounts – where both domestic currency and foreign currencies are regulated by the same rules.

2. Currency exchange and remittance for investment and financing – where cross-border payments, receipts, and exchanges involved in direct investment by enterprises can be processed directly by banks.

3. Interest rate marketization– which allows financial institutions in Shanghai to independently price the foreign currency deposits of enterprise clients.

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[1] *State Council (2015).*
[2] *Reuters (2016).*
[3] *China (Shanghai) Pilot Free Trade Zone (2017a).*
[4] *Yin Hua and Gao Weihe, Shanghai University of Finance and Economics.*
[5] *China News Agency (2016).*
[6] *World Economic Forum (2015).*

4. Renminbi cross-border use – where banks provide cross-border Renminbi settlement services directly in current accounts to their FTZ clients.

According to the Shanghai Financial Services Office, examples of key successes in financial innovation have included cross-border bill paying, financing for smaller business, the return to domestic listings, care for the elderly and a new international gold exchange.

To be clear, there are many areas that could be focused on, but we have chosen small and medium sized enterprises (SMEs). This is because SMEs play an important part in the economic development of all countries. By virtue of their size, SMEs have been found to have many advantages over larger enterprises, they have been found to be essential in "improving the competitive environment, creating opportunities for development and adaptation of new technologies, occupying niche markets that are not profitable for large companies, [and] anchoring in local economies by capitalizing local resources (financial, material, of labour and informational)".[1]

SMEs are also more likely to innovate and are the main drivers of growth in many countries around the world.[2]In 2013, the National Bureau of Statistics of China found that SMEs provide around 80% of urban employment, contribute 50% of fiscal and tax revenue, and account for 60% of China's GDP.[3]

Therefore, the remainder of Section 2 of this report focuses on financing of SMEs.

2. Financing SMEs in the Shanghai FTZ

Financing SMEs should be considered crucial for the continued development of any economy. However, SMEs are usually seen as higher risk to banks because of their lack of qualified collateral and lack of credit repayment track record, by virtue of being in the initial stages of business.[4] In China, there is a shortage of credit rating assessments for SMEs, and low incentives for them to build their credit reputation.[5]It has been noted that while constraining small business innovation, lack of finance can make smaller firms shed staff, or lead to bankruptcy.[6]

The Shanghai FTZ has the potential to improve this. Through greater financing opportunities afforded by the innovations of the FTZ, SMEs can themselves focus more on expanding their activities, thus, growing and contributing to the economy more. An example of how the FTZ is enabling greater financing opportunities is reducing the cost of borrowing for SMEs.

Case Study ANZ Small Business

As a major bank, ANZ has helped countless small businesses achieve their goals through various arms of support, from funding to general business set up.

One business that has been helped by ANZ is iframes, which sells top-brand designer eyewear at prices at a discount to normal retail prices, and allows for the next day delivery of hundreds of in-stock items.[7] The business has raised funding from ANZ twice in 15 months, and is on its way to potentially opening up in international markets.

[1] *Aceleanu, Livia, &Serban (2014)*
[2] *Boston Consulting Group (2015)*
[3] *OCBC Wing Hang (2014).*
[4] *Ibid.*
[5] *Ibid.*
[6] *NSW Business Chamber (2013).*
[7] *ANZ Business Hub (n.d).*

According to the founder, Edward Lakman, the successful experience so far has been down to being able to dispatch and deliver quickly around Australia and NZ for free, where it can sell up to 60% below the prices in retail stores.

iframes raised funds at an early stage, which involved an application process that was conducted entirely over the phone with ANZ. Their funding was part of ANZ's A$1 billion lending pledge at the time, which helped iframes to buy stock, enabling its next day shipping model, and to drive a strong marketing campaign. However, it quickly became clear that the funding was not enough. In this situation ANZ quadrupled its line of credit due to the results iframes achieved in its first few months of trading.

The business achieved critical mass and became profitable within twelve months, which would not have been otherwise possible.

Source: ANZ Business Hub

The Shanghai FTZ is helping to lower funding and foreign exchange costs for SMEs through free trade accounts and cross-border funding.[1]

Free trade accounts connect the Shanghai FTZ with markets located overseas, which enables SMEs to conduct transactions with more ease. Financing SMEs is always challenging in any context, and the FTZ makes it easier to meet their financing needs for cross-border trade and investment.

The FTZ helps Chinese companies, particularly those engaged in foreign trade, to obtain lower yuan-denominated funding from overseas, where costs of finance are lower than on the Chinese mainland.[2]This is not an insubstantial advantage, with rates of borrowing being up to a third lower than offshore rates. Non-resident companies can also enjoy these benefits with free trade accounts.[3]

In addition to cheaper lending rates in general, cross-border funding channel sallow the banks flexibility in setting interest rates for SMEs that would usually attract such high lending rates due to weak credit records, that they may not otherwise be able to receive financing.[4]

As an example, Huarui Bank is the first private bank to be registered in the Shanghai FTZ and is pushing to help private SMEs.[5] It recognised that many private SMEs, which are not able to gain finance from big banks, want to take advantage of the FTZ's trading, investment and financing convenience. It has developed a one-stop financial service product for SMEs, which helps them with issues such as company registration, opening of free trade accounts and cross-border remittance.[6]

Assistant President and Chief Risk Officer of the bank, Xie Qiang noted that the traditional ways of risk management meant it was "difficult for startups that have great growth potential but haven't been able to turn a profit to get loans from commercial banks"[7]. Utilising the FTZ's policies, they can work with venture capital firms to assess investment value and the growth prospect of borrowers as an alternative method of risk mitigation.

In principle, this can enable SMEs to make better investments, expand their operations and introduce more innovations. In addition, cross-border trade and investment is being encouraged through these reforms. Since SMEs contribute significantly

[1] *Jianmin, F. (2015a)*
[2] *Dai Haibo, Deputy Director of the Shanghai FTZ Administrative Committee.*
[3] *Clyde & Co (2014).*
[4] *Jianmin, F. (2015a)*
[5] *China Daily (2016).*
[6] *Ibid.*
[7] *China (Shanghai) Pilot Free Trade Zone (2015c)*

to employment, there are broader economic benefits to be had through the creation of more jobs.

Financing is also an issue for SMEs in Australia. The Australian Financial System Inquiry of 2014 noted that interest rates charged to SMEs on their business loans are generally higher than those charged to large businesses and on mortgages.[1] This is typically due to SMEs having less documentation and shorter financial histories, making it more costly for banks to obtain enough information to make accurate credit assessments. So in that sense, the differential that is observed is sensible and reflects the relatively higher risk of lending to SMEs.

That said, SMEs operating in Australia benefit from a competitive banking sector. A range of specialist financial products have developed that SMEs operating in Australia can take advantage of. ANZ, for example, provides small businesses with secured and unsecured lending and have recognised the need for specialised capabilities in order to serve their small business customers efficiently.[2] The ANZ website allows people to find a 'small business specialist' by location, enabling easier communication with relevant advisers close by.[3]

Small businesses can obtain various loans from ANZ such as ANZ Business Saver, Business Loan and Business Overdraft products. For example, the Business Saver facility is a residentially secured business loan for amounts of $50,000 AUD or more,[4] with a low variable interest rate, flexible repayment options and no early repayment fees, while the ANZ Business Loan product involves a choice of secured or unsecured finance,[5] variable or fixed interest rates and flexible repayment options, for amounts above $10,000 AUD).

ANZ also provides a One Day Business set-up online, which guides small businesses step-by-step through the setting up of their business and business bank account, without having to visit multiple websites or suppliers.[6]In addition, it provides a suite of banking products in a package that makes it easier for small business. The ANZ Business Start Ups Package is one example of this. [7]It enables small businesses to set up everyday business transaction accounts, and choose whether they want to add on ANZ Merchant Services (ability to accept card payments from customers with waived application and monthly fees) and ANZ Business One Visa (short term credit with the benefits of a Visa credit card).

Much of this product variety can be attributed to Australia's competitive banking sector. The FTZs in both Shanghai and Chongqing will help improve the competitiveness of the banking sector in China. As a result, Chinese SMEs are going to see increasing access to the kind of innovative financial products that are available in Australia.

This is consistent with a key component of the Chongqing FTZ's development goals which is to deliver a high standard of financial services.[8]

The Shanghai FTZ has shown that a liberalisation in finance can open up more avenues for SMEs, and it is reasonable to think that the same benefits will come about as a result of the Chongqing FTZ.

3. The role of smart documents and contracts in the Chongqing FTZ

Smart documents and contracts have a vital role to play in the Chongqing FTZ. FTZs in general are likely to provide the

[1] *Financial System Inquiry (2014).*
[2] *ANZ (2014).*
[3] *ANZ (2017a).*
[4] *ANZ (2017b).*
[5] *ANZ (2017c).*
[6] *ANZ (2013).*
[7] *ANZ (2015).*
[8] *HKTDC (2017).*

necessary conditions for providers of smart documents and contracts to enter the market. Additionally, it reduces regulatory barriers that might inhibit the use of smart documents and contracts.

Smart documents can be defined as documents that include built-in collaboration, workflow and security features that can be turned on or off on demand, and the ability to track views, annotations and version histories.[1]

Smart contracts usually refer to computer applications in which contracts are written into computer code and perform or execute automatically.[2] Put another way, they can be thought of as comprising of computer code which facilitates or enforces a set of rules. One way to think about this is as smart contracts displacing the role that commercial lawyers currently play in drafting and exchanging paper contracts.

There are different views on the extent to which this is likely to occur, but what seems clear is that at a minimum the more repetitive contract writing and interpretation aspects could be covered by smart contracts. In any case, lawyers would have an important role to play in the development of smart contracts technology.

Smart contracts can be built on blockchain or other distributed ledger technology platforms. Blockchain can be thought of as database technology where information is shared across a network of users who each hold a full and updated copy of the records. It is a form of distributed ledger technology that uses "cryptographic tools and a distributed consensus process to create a significant innovation in traditional record keeping"[3]. Smart contracts are an application on the blockchain which verify and execute the terms of a contract, which removes the need for humans to monitor compliance and enforcement.[4]

So these smart contracts have the potential to undertake a lot of the 'work' currently undertaken by commercial lawyers. As an example, a trade finance smart contract could be programed to make payment upon confirmation of the delivery of a shipment. Another example is a derivate smart contract, where payment could be calculated on the basis of the value of an underlying asset at a point in time.

Smart documents and contracts are having an increasing role in today's digital economy. Gartner predicts that by 2022, more than 25% of global organisations will be using smart contracts.[5]The combination of smart contracts with the blockchain platform could have significant implications for the economy.[6] The key is disintermediation, meaning that transactions can occur between two untrusted parties without an intermediary. Since most of "our global financial/commerce system and government is made up of centralised intermediary organisations who are performing these transactions on our behalf"[7].

Smart documents and contracts can be found in different forms, from bills of lading to self-executing contracts replacing LCs, dematerialising paper, automated contract execution, release of payment, and cancellation of guarantee, to name a few.

One of the key ways in which the benefit of smart documents manifests themselves is through time savings.

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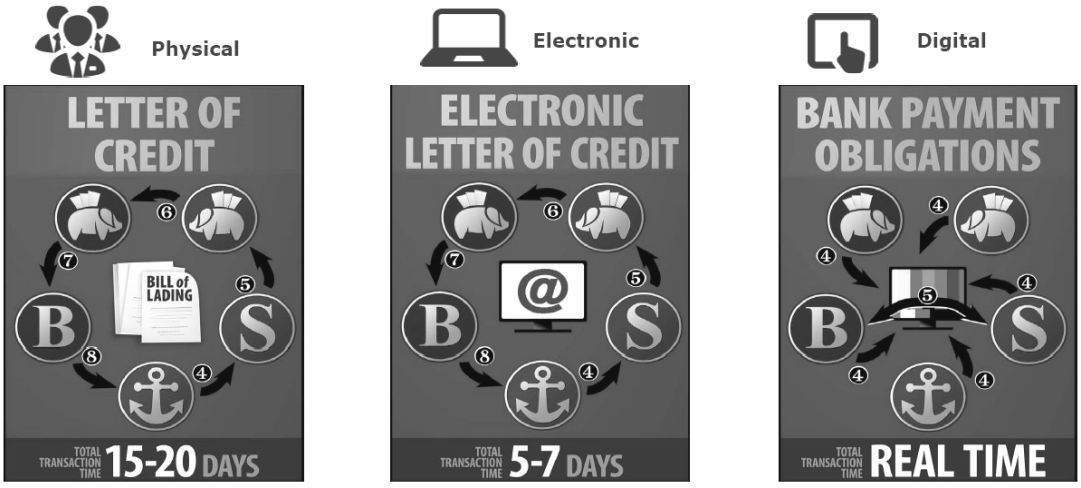
[1] *Chandler (2014).*
[2] *ANZ (2016).*
[3] *Chartered Accountants Australia and New Zealand (2017).*
[4] *Eyers (2016a).*
[5] *Gartner (2017).*
[6] *Pascall (2016)*
[7] *Ibid.*

Figure 3: Digitising documentary trade



Source: ANZ (2017d)

Figure 3 highlights that the digital transactions will occur in real time, compared to a 15-20 day process using physical documents and 5-7 days using electronic documents.

Case Study Full Profile AgriDigital

Australian company Full Profile has developed the world's first blockchain-enabled commodity management platform.[1] It is a cloud-based transaction platform that enables grain growers and buyers and bulk handlers to manage contracts, deliveries, invoices, payments and inventory in one place.[2] It is connected to a blockchain network that provides fast and secure payment for the delivery of grain, upon delivery.

The AgriDigital pilot utilised a private version of the Ethereum blockchain and facilitated the automatic execution of smart contracts consisting of grain purchase and settlement agreements.[3] Effectively, this is solving entrenched agricultural industry issues such as eliminating counterparty risk where growers are paid immediately and improving trade settlements[4]. In addition, it will enable stock reconciliations and reporting and traceability from source to consumer.[5]

It is heralded as having significant potential to transform the agriculture industry, which is said to employ 40% of the global workforce.[6]

Source: Eyers (2016b), Full Profile (2015), Redman (2016), Full Profile (2017), Weston (2016).

Another benefit is a decreased risk of fraud through the finance process. Traditionally, trade finance processes have been largely paper-based, risky and open to fraud. One of the reasons for this is that when, as it still usually is, trade finance is

[1] *Full Profile (2015).*
[2] *Full Profile (2017).*
[3] *Eyers (2016b).*
[4] *Weston (2016).*
[5] *Ibid.*
[6] *FAOStat in 2011,based on a global workforce of 3.3 billion people.*

based upon paper based contracts, it lacks transparency among all stakeholders. This means that those wishing to commit fraud are able to exploit this and can secure finance from multiple banks using the same invoices as collateral.

The problem is not trivial, a Chinese probe into trade financing found nearly US$10 billion in fraudulent deals.[1]This was in regards to a scandal involving metal supplies in Qingdao and Penglai. There was a suspicion that different banks and trading houses were holding separate titles for the same metal, due to duplicate receipts being used to pledge metals several times as collateral for loans.[2]It is still the case that trade finance is largely paper based and involves a significant amount of manual processing. There are low margins and a low level of technology adoption.

What this means is that the client faces a high cost of service, long payment times, high cost of regulatory compliance, and an increased cost of capital. This in turn acts as a drag on economic growth and development.

Digitisation in trade financing, in particular through smart documents and contracts, has the potential to dramatically improve the efficiency of trade finance. The future will be more data driven, with a far greater level of automated processing, machine learning and artificial intelligence.

What this means is that transactions will be based on the exchange of data instead of paper, there will be improved returns through better risk management and increased transparency across the trade value chain, improved compliance through enhanced visibility, lower cost with increased operational efficiency and an increased ability to access trade finance.

There has been work done using smart documents and contracts around the world, including ANZ, which is a leader in digitising documentary trade. It is the largest in terms of eDocumentary Credit volume in Australia and number five globally. The following case study details its work in bank guarantees, which is itself crucial in any trade financing process.

Case Study ANZ and Bank guarantees

Bank guarantees are an unconditional undertaking by the bank to pay another party on behalf of their customer, in the event their customer defaults on their contractual obligations to the other party.[3] They are also paper-based, leading to inefficiencies.

There are costs, risks and delays associated with physical document management, challenges in tracking, reporting and overall transparency of a guarantee's status, and a lack of standardisation in the manual effort required to review and negotiate terms and conditions of a guarantee.[4]

In April 2017, ANZ and Westpac partnered with Scentre and IBM to show that a blockchain solution could be used to replace the current paper-based process. The aim was to reduce the potential for fraud, drive standardisation and increase efficiency for the three primary parties involved in bank guarantees for commercial property leasing; tenants, landlords and banks.

A blockchain network was set up between the parties to digitise and reliably share information relating to the bank guarantees in circulation. Where a paper guarantee is normally issued, the bank creates a new entry on the shares ledger representing a 'digital guarantee'. The tenant and landlord can then immediately see the guarantee and carry out the process upon 'receipt' of the guarantee. At all times, there is a reliable record of the state of the guarantee, providing a single source of truth, thus reducing potential for fraud etc.

Source: ANZ, IBM, Scentre Group and Westpac (2017)

[1] *Wu Ruilin, Deputy Director of the Supervision and Inspection Department of China's State Administration of Foreign Exchange (2014)*
[2] *Financial Times (2014).*
[3] *ANZ, IBM, Scentre Group and Westpac (2017).*
[4] *Ibid.*

Trade finance is important, according to the World Trade Organisation it accounts for more than US$10 trillion of exports annually.[1] Global trade finance providers, made up largely of banks,[2] sell trade finance services and products such as letters of credit and hedging products. The Chongqing FTZ will mean that businesses looking to trade internationally will be more easily able to access the best trade finance services globally, and this will include the latest and most competitive smart contracts and documents.

The enabling of yuan-denominated cross-border payment for trade in the Shanghai FTZ is likely to play its part in the innovation of smart contracts. Cross-border payment allows companies that have online payment service licenses who are either incorporated in Shanghai or run subsidiaries in the FTZ to provide Renminbi settlement for cross-border trade.[3]In conjunction with the Renminbi being the third most active currency used in trade finance in 2016,[4] the Shanghai FTZ is better placed to take advantage of smart contracts.

As a result, the Chongqing FTZ can look to the Shanghai FTZ in setting itself up for financial services innovations such as smart contracts, further benefitting the overall Chinese economy.

3 Conclusion

Chongqing will continue to have an important role to play in the Belt and Road Initiative, and hence, China's economic development. Chongqing's economic growth has been impressive. In 2016, the Chongqing economy is reported to have grown by 10.7 percent,[5] and has recently led China in economic growth for the 10th straight quarter with 10.5 percent growth.[6]

Chongqing's recently established FTZ positions it to help China meet its goal of enhancing "its participation in multi-lateral trade arrangements"[7] and building "economic partnerships with key blocs"[8]. The experience of other FTZs including Shanghai, provide useful examples for how Chongqing can innovate and improve financial service delivery.

This research paper has considered how two areas of financial innovation can benefit Chongqing and the broader economy, through its new FTZ.

Financing remains a key issue for many SMEs and how they innovate. The implementation of the Chongqing FTZ and subsequent financial liberalisation akin to Shanghai, means that SMEs will not be as restricted in growing their operations. As a result, SMEs will be able to unlock their potential as the 'engine room' for growing the Chinese economy.

Smart documents and contracts provide a new innovation for various industries including the financial services industry. Their application to various use cases have highlighted the benefits of real-time transactions using digital systems. FTZs mean that areas such as Chongqing are better placed than other areas to capitalise on these technological advances, due to the liberalisation of their financial and trade systems.

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[1] *World Trade Organisation (2015).*
[2] *Global Finance (2016).*
[3] *Peoples Bank of China 30 point Guideline (2014).*
[4] *SWIFT (2016).*
[5] *21st Century Business Herald.*
[6] *Ibid.*
[7] *RFi Group (2017).*
[8] *Ibid.*

By opening itself up financially and trade-wise through the FTZ, Chongqing is helping to ensure that it continues to lead the way and support China's economic prosperity.

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Innovation and Strengthening of Functional Financial Centers, and Providing Services to the Real Economy

How Financial Centers Can Capture Fintech and Other Innovations

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In April 2017, the Chongqing Pilot Free Trade Zone (PFTZ) was established. An enormous business opportunity is about to arise as many overseas corporates invest in Chongqing, attracted by the intensive regulatory easing for trade and investment in the Free Trade Zone. In time for its opening, many investment deals have been finalized with corporates from wide-ranging areas such as finance, logistics and manufacturing, as well as foreign corporates, indicating the high expectations for the Free Trade Zone.

Regarding the theme that has been assigned to me, "Innovation: Innovation and Strengthening of Functional Financial Centers, and Providing Services to the Real Economy," the key for further development of the Chongqing PFTZ is effort for innovation. International market competition has already become active, with plans for financial centers being announced in various countries and cities and different initiatives being implemented. In recent years, with the development of fintech, innovation is becoming increasingly important for these financial centers. I would like to present my views on how financial centers can capture innovation, as symbolized by fintech, drawing upon cases in Tokyo and overseas.

1. Purpose of Chongqing PFTZ

Chongqing is the largest city in western China, located at an advantageous geographical point that connects to three routes of the Silk Road Economic Belt of the One Belt One Road (OBOR) strategy. In fact, among the seven PFTZs established this time as the third batch, Chongqing PFTZ is assigned the development policy of "supporting OBOR and the Yangtze River Economic Belt, and serving as a global logistics hub."

In terms of the finance business, the PFTZ is expected to supply funds to the OBOR strategy and the commercial infrastructure projects in the Yangtze River Economic Belt, and to strengthen its funding function, financial regulations will be eased in the Liangjiang area.

The policy for each PFTZ is established based on the regional characteristics and development policy for the zone. In terms of financial regulations, Chongqing has the most relaxed regulations of the seven PFTZs. This speaks for the high regard for financial business in the Chongqing PFTZ.

Figure 1: Position and Development Plan for the Chongqing PFTZ

Area	119.98 ㎢
Development policy	Support area for OBOR and the Yangtze River Economic Belt, global logistics hub
	Liangjiang area: high-end facilities, core electronic parts, cloud, biopharma, EC, promoting opening up/reforming financial business Xiyong area: IT, AI manufacturing, transit services, etc. for bonded logistics Guoyuan Port: international transit and collection services

(Source) BTMU (China) Newsletter on Procedures and Systems (April 17, 2017 edition)

Figure 2: Comparison of the Seven New PFTZs

Policies	Liaoning	Zhejiang	Henan	Hubei	Shaanxi	Sichuan	Chongqing
a) Consider an RMB/FCY account management system for PFTZ	○	○	○	○	○	○	○
b) Issuance of on-shore RMB bonds by a PFTZ corporate's off-shore parent or subsidiary	○	—	○ (※1)	○ (※1)	—	—	—
c) Opening of an off-shore RMB account by a PFTZ lease company for cross-border RMB lease business	○	—	—	—	—	—	○
d) Support for cross-border two-way RMB pooling by multinationals	○	○	○	○	○	○	○
e) Further simplification of pooling management, easing entry conditions for multinationals in central management of FCY funds	○	○	○	○	○	—	○
f) Allowing FCY income for qualified lease companies in the PFTZ	○	○	○	○	○	○	○
g) Support the incorporation of qualified fund products in pre-approved products between mainland and Hong Kong in PFTZ	○	○	○	○	○	—	○
h) Gradually allow off-shore corporates to enter commodity futures trading	○	○	○	○	—	—	○
i) Support qualified PFTZ corporates to issue off-shore bonds and bring the proceeds into onshore China	—	—	○	—	—	○	○
j) Support qualified PFTZ corporates to become listed off-shore and bring the proceeds into onshore China	—	—	—	○ (※2)	—	—	○
k) Support qualified PFTZ corporates' investment in securities off-shore	—	○ (※3)	○	○ (※3)	○	○	○ (※3)
l) Support qualified PFTZ corporates' investment in securities on-shore	—	—	○	—	—	○	○

※1 For Henan and Hubei, off-shore parent companies only.

※2 Support science and technology companies in becoming listed overseas through a foreign financial institution, and conducting off-shore M&A and special purpose purchases.

※3 Zhejiang and Chongqing: RMB investment only, Hubei: ODII and RQDII-certified securities management institutions only.

(Source) BTMU (China) Newsletter on Procedures and Systems (April 17, 2017 edition)

2. Keys for the Further Development of Chongqing PTFZ

(1) Requirements for the establishment of a global financial center

While the development of tangible elements such as urban infrastructure functions are important for establishing a global financial center, the key to its success are intangible elements, such as tax and other systems for investment and finance, as well as human resources.

Figure 3: Key Requirements to be Met in Establishing an Global Financial Center

① Presence of a mega market as a backland
② Reliable investment information
③ High degree of information disclosure
④ Fair and open market
⑤ Active incorporation of innovations
⑥ Simple and clear tax system for investment/finance
⑦ Availability of services in English
⑧ Securing competent personnel
⑨ Availability of an urban residential environment
⑩ Convenience of access

While Items ① through ⑦ above are required for all of the regions, in recent years, Item ⑤ ”active incorporation of innovations” is becoming particularly important. At the center of the various areas of innovation is the newly emerging fintech, for which various countries and cities have started to search for ways to incorporate (explained later).

Further, for those of us in a non-English-speaking region, Item ⑦” Availability of services in English” is a high hurdle. In fact, it is an area in which foreign investors strongly seek improvement for the Tokyo market, and includes prompt distribution of regulatory and other information in English, setting up a public contact point to support finance-related procedural matters in English, and providing basic market information in English.

For Item ⑧” Securing competent personnel,” means to attract skilled overseas human resources must be explored, as competent personnel must be sought after abroad if they cannot be secured domestically. To do so, a government initiative will be required for receiving skilled human resources from overseas. In the Tokyo market, it is often said that Japanese as well as non-Japanese talents are difficult to secure due in part to the life-time employment system.

Item ⑨ “Availability of an urban residential environment” is essential for attracting personnel with English language skills and highly-skilled talents in infrastructure-related business. In addition to preferential treatment for expats, it will be necessary to provide a high-quality urban residential environment by expanding international schools, preparing advanced health care centers and upgrading amusement, entertainment and leisure facilities (including around-the-clock operation).

Further, upgrading the urban infrastructure to improve Item ⑩ “Convenience of access” is also essential, including the presence of a hub airport connecting to various parts of the world and improving train, bus, taxi and other public transport (including around-the-clock operation).

As described above, establishment and development of a global financial center requires upgrading different tangible and intangible urban infrastructures, as well as financial infrastructures, to attract and secure various corporates and human resources from around the world.

(2) Capturing fintech companies – cases in Tokyo and the U.K.

As mentioned earlier, it is becoming increasingly important to actively capture innovations to establish and develop a global financial center. Increasing efforts are being made to capture fintech, which is an innovative reform of business models realized by start-ups using the Internet. Cases from Tokyo and London are described below.

a. Tokyo･･･Global financial city plan

Currently, a study led by the Governor of Tokyo is underway to make Tokyo into a global financial hub. A final report is due to be completed in the autumn of 2017, but an interim report similar to the final draft is already available.

According to the interim report, Tokyo's plan is characterized by its heavy focus on asset management and fintech. The focus on asset management comes from the understanding that for the aging and depopulating Japanese society afflicted with social issues, making effective use of its 1,800 trillion yen (as of end-2016) in personal financial assets is crucial, and to do so, it is necessary to improve asset management functions. As it is difficult to realize the Tokyo global financial city plan by itself, the Tokyo government is requesting the national government for assistance.

The plan positions fintech as a growth area, and attracting/developing fintech companies is being handled as a focus initiative. The initiatives identified to achieve this include a review of the tax system, and particularly the improvement of administrative procedures, urban residential environment and investment education for attracting non-Japanese experts in finance. A particularly novel initiative is the Regulatory Sandbox, which is being actively adopted in other countries in recent years.

Figure 4: The Vision of the Tokyo Global Financial City Initiative

Vision: Smart Financial City Tokyo

- The financial hub of Asia
- An agglomeration of people, money and technologies
- A focus on asset management and fintech
- Investor- and customer-oriented

(Source) Interim report of the "Council for Designing the Global Financial City Tokyo", Tokyo Metropolitan Government

【Figure 5: The Tokyo Government's Initiatives for the Global Financial City Plan】

Category	Proposed Initiatives	Parties Promoting the Initiatives		
		Tokyo Gov.	National Gov	Private Sector
A) Infrastructure underpinning growth	A-1) Revision of the tax system	◎	◎	
	A-2) Regulatory Sandbox	○	◎	
	A-3) Improved living environment for skilled global human resources	◎	○	◎
	A-4) Providing administrative procedures in English and preparing a consultation framework	◎	◎	
B) Players in financial services/ asset management	B-1) Investment education for developing experts in finance	◎	○	○
	B-2) Developing emerging fund managers (EMP, investment management platform, etc.)	◎	○	◎
	B-3) Establishing a promotion framework	◎	○	◎
	B-4) The Tokyo Prize	◎		○
C) Investing in growth	C-1) Attracting and fostering fintech	◎	◎	○
D) The public (Tokyo residents)/ investors	D-1) Investment education for the general public	○	◎	○
	D-2) Fiduciary duties and thorough corporate governance	○	◎	○

◎: Main party in charge, ○: Party promoting initiatives in collaboration with the main party

(Source) Interim report of the "Council for Designing the Global Financial City Tokyo", Tokyo Metropolitan Government

b. U.K.・・・Regulatory Sandbox

Regulatory Sandbox is a system launched in the U.K. (by FCA, the Financial Conduct Authority) in 2016. It aims to promote fintech and other innovations and competition, and is a regulatory easing policy that temporarily suspends existing regulations. The system is highly appreciated by fintech companies, and has been adopted in Singapore, Abu Dhabi, Hong Kong, Australia, Malaysia and Taiwan so far. It is also being considered for adoption in Japan, not only by Tokyo but also by the Japanese government.

Under the Regulatory Sandbox, the financial authorities allow, with certain limitations, business ideas to be experimented with. If the results are good, the service will be released on a full scale. In the U.K, business idea applications have been collected twice, and 146 applications have been received, 55 ideas approved for testing, and 42 tests already begun. The business ideas are wide-ranging, and include electronic money, an overseas remittance service, a travel insurance service using smartphones, a robot advisor, a cross-border settlement service, virtual currency, an exchange risk aversion service for SMEs and individuals, and an insurance service. A considerable number of fintech companies have been gathered through the Regulatory Sandbox.

The third group of applications is currently being received. This type of initiative should also be effective for promoting innovation.

(3) Establishing a global financial center primarily for supplying funds for infrastructure

Due to the expectations on Chongqing PFTZ to enhance the financial industry by serving as the fund-supplying function for OBOR and the Yangtze River Economic Belt, it will be designed as a unique global financial center as well as fulfilling the above requirements for global financial centers.

Judging by the development policy of Chongqing PFTZ, it will naturally become a global financial center and point of agglomeration for overseas and domestic private funds to be invested in infrastructure. To achieve this, and to be chosen over the other global financial centers of China and elsewhere, Chongqing PFTZ has to attract various capital, funds and human resources from within and outside China. Of course, geographical proximity alone would not be sufficient to attract Chinese or other investors; it will be necessary to consider special institutional incentives, as shown below. These incentives can be effective even if applied only to infrastructure-related funds and human resources.

Furthermore, for fintech, measures concerning systems/procedures and subsidies/taxation will determine the success in attracting investments. Attracting fintech companies into the Chongqing PFTZ may lead to the creation of innovative schemes and services for supplying funds to the infrastructure.

Figure 6: Main expected incentives

【Institutional/procedural incentives】
- Allowing the selection of the governing law
- Allowing not only IFRS but a wide range of accounting standard options
- Allowing the creation of applications and disclosure of earnings reports and other information in English

【Incentives in subsidies/taxation】
- Preferential tax treatment (exclusion from taxation of interest, dividends and capital gain, and reduction or exemption of corporate tax, local tax and personal income tax, etc.)
- Preferential treatment and subsidies for recruiting/fostering financial experts with high English language skills
- Preferential treatment and subsidies for IT/system investment

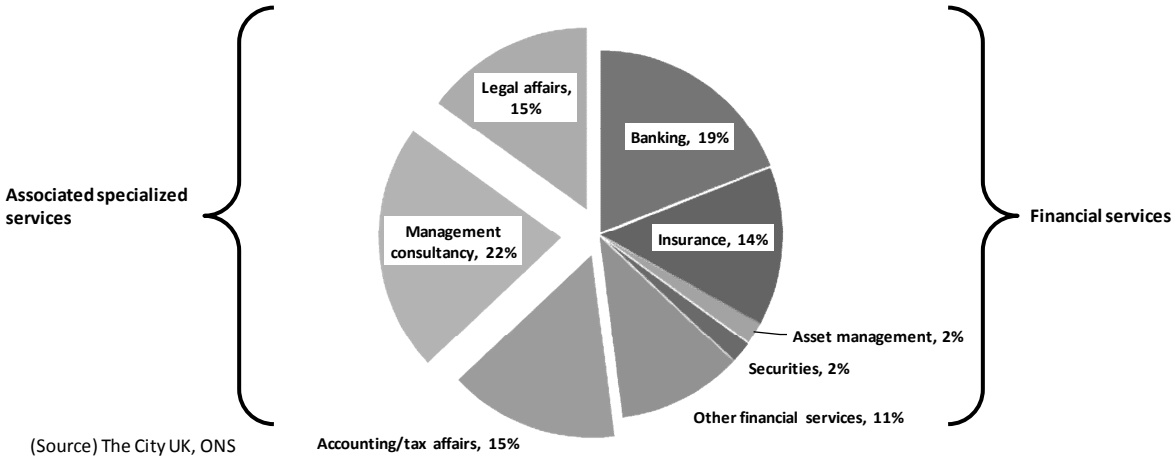
3. The great effect of global financial centers on the economy and jobs･･･London's case

Establishing a global financial center has great effects. In this report, the case of London is described as an example. London is a world-class financial center alongside New York. The financial sector is Britain's core industry and contributes enormously to the British economy and job creation.

In terms of the economy, the financial services industry has earned approximately 190 billion pounds in 2014 (12% of Britain's GDP), and paid 66 billion pounds in taxes (taxes paid by the financial services industry, including personal income tax) (11% of Britain's total tax income). In terms of jobs, approx. 2.18 million people (7.4% of all employees) were employed in financial services or associated specialized services in 2014. More than half of them, or 52%, work in associated specialized services, such as accounting/tax affairs, management consultancy and legal affairs, which are not direct financial services.

Furthermore, regarding the area of fintech, British fintech companies had sales of approximately 7 billion pounds (approximately 1 trillion yen) and created 60,000 jobs in 2015. The financial services industry is bringing enormous benefits to London, though the negative impact of Brexit is worrying going forward.

Figure 7: Breakdown of the 2,180,000 Employees in Britain's financial and associated specialized services sector



(Source) The City UK, ONS

4. Measures to promote innovation in Chongqing PFTZ···attracting fintech companies

For a global financial center to promote innovation, it is essential to attract a broad range of fintech companies in great numbers. The key points in doing so are described below.

(1) China has an advantage in some fintech areas

While Europe and the U.S. are thought to be at the forefront of fintech, far ahead of others, this is not necessarily true. For instance, the Chinese market for mobile settlement services is also growing significantly, dominated by Chinese companies' services such as Alipay and Wechat Pay.

One of the fastest-growing areas in fintech is virtual currencies (whose prices increased 10-fold in the past two years). For Bitcoin which accounts for half of the virtual currencies market, Chinese companies and their machines have a 70% share in an important function called mining, which creates packaged blocks of transaction record data. China has a great presence in the fintech area, and Chongqing PFTZ has a pool of promising corporates and human resources that it can capture close by.

Figure 8: Changes in Bitcoin price

(2) Active involvement in the fintech field to resolve confusion

Having a significant growth potential, fintech could experience twists and turns as it grows going forward. One example is Bitcoin, which split due to disagreement between the stakeholders on how to enhance its transaction processing capabilities. Such confusion is common in high growth areas, and must be overcome in order to achieve further growth.

This also applies to global financial centers attracting investors. When such incidents occur, they too, in their role as stakeholders, should work up a sweat to solve the issues; doing so would strengthen the trust of the fintech company in the center, which in turn would attract even more fintech companies.

(3) Response to security issues

In considering the future of fintech, one inevitable challenge is the issue of security. For instance, blockchain, which is a core technology for supporting virtual currencies, is still in its infancy, without a fixed set of security requirements or means to ensure security. In fact, blockchain was hacked last year, resulting, surprisingly, in a loss of virtual currencies.

It must be said that fintech has still not reached the level of security required for a social infrastructure, and more security incidents like this may occur in the future. A global financial center, which is a social infrastructure, needs to recognize the growth of fintech, but at the same time, fully consider the security aspects when further promoting fintech.

“Revitalization” of Chongqing Free Trade Zone
A Discussion on Financial and Talent Service Innovation

By Shuzo Sumi

Chairman of the Board of Tokio Marine Holdings, Inc.

Chapter 1 Revitalization of the Free Trade Zone(FTZ) via financial innovation

The development of Chongqing relies mostly on manufacturing, logistics and financial industries. Among them, financialindustry plays an extremely important role to support real economies; manufacturing and logistics. This chapter describes the issues of financial services and proposals for solving them.

1. Challenges in Chongqing financial services

This section describes the issues of financial services in Chongqing from the perspective of domestic finance and trade finance.

(1) Domestic Finance

In domestic finance, the following three issues can be mentioned.

① **Finance of micro enterprises.**

② **Risks caused by excess production in the manufacturing industry and excess inventory of real estate are transferring into financial institutions.**

③ **Improvement of financial risk managementcapability by financial supervisory authorities.**

(2) Trade Finance

① **Credit risk of Chinese companies is not transparentfrom the viewpoint of overseas business partners.**

② **Cumbersome international trade business procedures.**

2. Recommendations

Byaddressingthe issues above, Chongqing cantransform itself into the world’s most advanced FTZthrough a series of bold innovations.

The innovations would include scientific risk management, which quantify risks by analyzing transparent, accurate and

open data. In other words, it is a risk management utilizing most advanced digital technologies.

The issues and solutions described in this section are not unique to Chongqing. They are also applicable to any other citiesin China or cities in other countries.However, that doesn't mean the solutions are easy to implement. If Chongqing can take advantage of the FTZ, it will be able to accelerate reform project more boldly.

(1) Domestic finance issues

① Microenterprise financing

Generally, it is difficult for micro enterprises to raise funds from banks because of their low credibility. In order to obtain a loan, they have to submit detailed documents such as financial reports and also have to provide collaterals in many cases.

However, there is a successcase in Japan.. An EC (Electronic Commerce) company in Japan is making loans quickly to companies (mostly micro companies) who open stores in the EC platform, through its affiliated bank.

Loan applications can be done online.No document submission or collateral is required. Credit review is done instantaneously. This is because the EC company constantly monitors the sales, inventory turnover rate, loan repayment status,etc., of the shops on its EC platform.That is to say, the EC company has far more detailed credit information than other ordinary banks.

The EC company offers a portal for stores that allow them to manage orders, shipments, payment collection, sales, customer relationships, and etc. The "loan application" button appears only on the companies' screen that meet certain criteria. That is why the credit review is completed within a second. Because loan repayment is automatically withdrawn from the sales of the company, there is little risk of default, so collateral is also unnecessary.

In this way, if the relevant data can be obtained and the loan repayments are secured, even micro companies can be financed quickly. As there are huge EC companies in China, the same method can be applied to solve the financing challenges of microenterprises.

② Risks caused by excess production in the manufacturing industry and excess inventory of real estate are transferring into financial institutions.

Fundamentally, problems of excess production and excess inventory should be resolved by the businessstrategy of each company and the policy of the state.But financial sector may also be able to help solve those problems by controllingfinancing.

China is introducing the "Industry 4.0" that optimizes the whole manufacturing value chain bydemand forecasting, production planning, manufacturing management, sales management, and settlement. It is enabled by sharing the large amount of data throughout the supply chain.Bycombining "Industry 4.0" with financial services, appropriate financing based on objective demand forecast, inventory management, and sales managementwill be possible (sometimes by Artificial Intelligence), and therefore help prevent excess production.

Financial control can also be an effective means against the problem of excess inventory of real estates. TheJapanesebubbleeconomyin the latter 1980's was caused by the banks which offered excessive loans to companies and landownerswith land ascollateral. So, it is necessaryto financereal estate businesses based on objective demand and supply forecast, not on optimistic expectations.

③ Improvement of financial risk managementcapability by financial supervisory authorities..

Financial risk is difficult to control because various risks are complicatedly intertwined, and when problems occur

somewhere, the crisis expands in a chain. Since modern financial transactions are carried out by computers in microseconds and the network is spreading all over the world, unexpected market movements in any countries can cause domesticfinancial turmoil.

In the domestic financial market, risks of the real economy such as manufacturing or real estate businessare being transferred to the financial sector in the form of loans, stocks, bonds, etc. We must grasp these risks in a bird's-eye view, identify each other's interrelationships, quantify them, and respond quickly upon any sign of systemic risk.

It is not easy to calculate the amount of risk from complexly intertwined risk factors and findthe symptoms of systemic risk from those daily movements. These are no longer possible for humans, and methods to measure and manage financial risks by monitoringanalyzing vast amount of data such as stock prices, currency exchange rates, interest rates in seconds using Artificial Intelligence is being developed.

Although artificial intelligence isnot yet capable of predicting systemic risks, accurately, it is indispensable to start collecting standardized, transparent and accurate data for future financial risk analysis.

(2) Challenges in trade financing

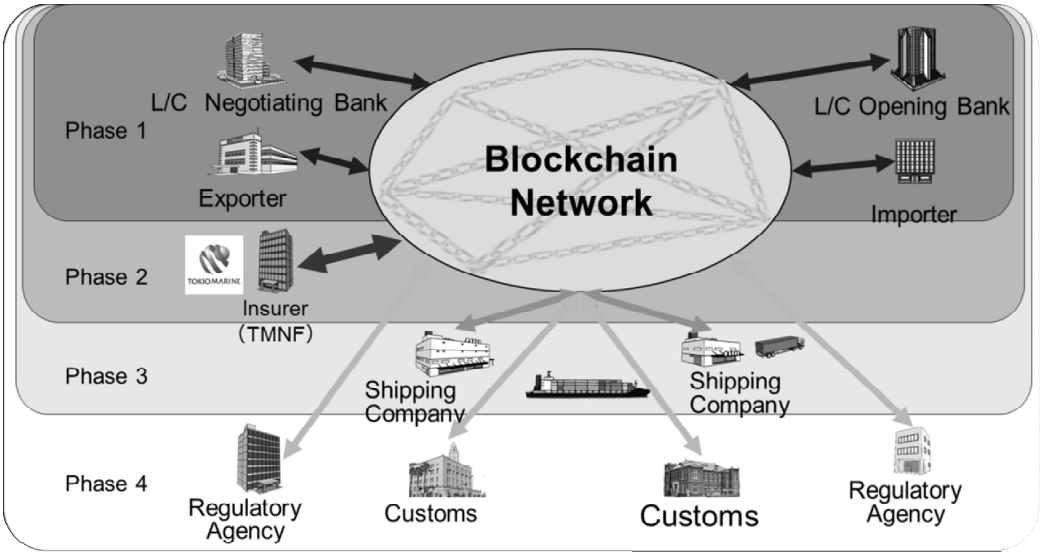
① Corporate credit risk

Acquiring credit information of business partners is an important issue for companies engaged in overseas trades. The business chances will expand if trustworthy credit ratings of Chinese companies based on subjective and transparent data will be disclosed.

② Electronic trade procedures

It is also necessary to digitize the trade businessprocedures that are currently done on paper, and transform it into speedy and highly reliable process.

For example, Tokio Marine& Nichido is now testing Blockchain technology to digitize the cumbersome importing and exporting documents with Blockchain technology.It is expecting to digitize all of the trade processes and make it more speedy and efficient.



Chapter 2 Talent Acquisition

Needless to say, the most important factorfor innovation is acquiring talents.

In order to promote innovation, it is necessary to invite talents with various abilities from all over the world. Even in the era of Internet, it is essential that the core technical talents work in Chongqing, not from the virtual space.

Chongqing must be an attractive cityfor the world's top talents.The more attractive it is, the more talents will come in.

According to the *China Livable City Research Report* issued by the Chinese Academy of Sciences in June 2016, for the first time the name of Chongqing was ranked in the top 10, which proved its significant charm.

On the other side, its charms shall be improved from an international perspective as well, to attract talents from abroad.The tables stated in the next sections can be useful references.

1. Easiness of living in the city

Table 1 is an index prepared by a UK research firm to measure the easiness of living in the city, ranging from safety, health care, culture and environment, education and infrastructure.

Table 1 Livability Rating Indicator

1: Stability (weight: 25%)	4: Education (weight: 10%)
Prevalence of petty crime	Availability of private education
Prevalence of violent crime	Quality of private education
Threat of terror	Public education indicators
Threat of military conflict	5: Infrastructure (weight: 20%)
Threat of civil unrest/conflict	Quality of road network
2: Healthcare (weight: 20%)	Quality of public transport
Availability of private healthcare	Quality of international links
Quality of private healthcare	Availability of good quality housing
Availability of public healthcare	Quality of energy provision
Quality of public healthcare	Quality of water provision
Availability of over-the-counter drugs	Quality of telecommunications
General healthcare indicators	
3: Culture & Environment (weight: 25%)	
Humidity/temperature rating	
Discomfort of climate to travellers	
Level of corruption	
Social or religious restrictions	
Level of censorship	
Sporting availability	
Cultural availability	
Food and drink	
Consumer goods and services	

Source：Economist Intelligence Unit

2. Easiness of living for expatriates

In Table 2, another researchcompany in the UK evaluated the city that is livable for foreign workers and made a ranking

list, using a different index from the above. Unfortunately Chongqing is not on the list, but it can be in the future by always having those index in mind and keep improving.

Table 2 Livability Rating Indicator

1．Singapore	10．Tokyo
2．Adelaide	Yokohama
Brisbane	12．Melbourne
Sydney	13．Aukland
5．Osaka	Darwin
6．Wellington	15．Hong Kong
7．Nagoya	23．Shanghai
Perth	???. Chongqing
9．Canberra	

Source: ECA International

Conclusion

It is no doubt that Chongqing will develop into a more attractive city, that attracts more technologists from all over the world. More information and funds will flow into the city and more people overseas will work for Chongqing ether in real or by way of telecommuting. By doing this, Chongqing will develop into the world's most advanced FTZ ahead of other trade zones.

Hope this paper will be helpful for Chongqing's success.

Smart Manufacturing's Growth in Chongqing Drives the Development in Western China

By YIN Zheng

Executive Vice President and China President of Schneider Electric

Part I: Introduction: The China effect on global innovation and Chongqing effect on western China development.

The innovation landscape in today's world is evolving in a big way. As technological innovation figures prominently in global economic growth, innovation activities have become increasingly active around the world, and innovation has gone globalized and multi-polar. Looking ahead, developed countries are expected to lead global innovation in the years to come, but the new global innovation landscape provides opportunities to their developing peers to integrate global innovation resources, quickly upgrade their industries, and climb onto a higher position in the global division of labor and value chain.

The "Made in China 2025" strategy represents a shift in the country's manufacturing industry from cost and efficiency driven to innovation-driven, as well as in the overall economic transformation from being led by investment, export and traditional manufacturing to homegrown innovation and development. This strategy, along with the "Internet Plus" national action plan, points to a pathway for China to move from "the world's factory" to the global center for smart manufacturing. China in the future will not only be the manufacturing base of the global production system but also an active zone in the global innovation network and build its own competitive advantages.

In the annual council meeting last year, we discussed the prospects of Chongqing to be included in the third group of pilot Free Trade Zones (FTZs) in China. Now, this city is already one of seven pilot FTZs in the third group. This is China's speed. Its experience in China in the past 30 years tells Schneider Electric that China has begun to play a leading role rather than a catch-up role in infrastructure construction, urban renovation, mobile Internet and many other areas. This is a significant change.

This change means everything we are doing today is not just for the next three years or five years but for the next three decades or even five decades—not just for Chongqing but for the whole western China.

1. Chongqing, a strategic pivot to the future of western China

Why Chongqing?

FTZs are a new model and driver for China to improve its economic performance in the new era. Different from the previous four FTZs in the coastal region, five out of seven FTZs in the third round are in the hinterland. As China's economic opening-up is spreading from eastern to central and western regions, FTZs are emerging as flagship drivers in central and

western China as well as in the northeast.

The establishment of a FTZ in Chongqing indicates the strategic position of this city in China's Western Development Strategy. It also testifies to its status as the gateway city in the opening-up of western China and its unique geographical advantage as the connecting point of the Belt and Road Initiative and the Yangtze River Economic Belt. This distinguishes the Chongqing FTZ from other FTZs.

Covering nearly 120 km^2, the Chongqing FTZ, in which the Liang Jiang New Area accounts for two thirds of its territory, is committed to building high-end industries with advanced factors of production, such as high-end equipment, core electronic components, cloud computing and bio-pharmaceutical. Hewlett-Packard, the largest PC manufacturer in the world, has established its presence in Xiyong, which strives to become a model zone in upgrading and transforming traditional processing trade. Manufacturing, particularly electronic information and smart equipment, is its priority. Meanwhile, the Guoyuangang transport hub aims to become a multimodal transport logistics and distribution center.

The Chongqing FTZ, an important platform to implement national strategies, will attract favorable policies, competitive industries and other resources. At the same time, as a window for international exchanges and cooperation, industries in Chongqing will embrace new opportunities in China's industrial upgrading, transformation and outbound investment activities.

The establishment of FTZ represents a historic opportunity for Chongqing, blessed with a favorable location, prominent strategic position, solid industrial basis and a complete industrial system. In an era of globalized allocation of innovation resources, openness and cooperation, the Chongqing FTZ can leverage its favorable location and policy platform, create an enabling environment for innovation, and enhance the efficiency of its innovation system in the evolving global innovation landscape in an effort to make itself the innovation center and a window for opening-up in Western China.

"Made in Chongqing" moving towards the high-end of the value chain

When we think of "Made in Chongqing", the two pillar industries—automobile and electronics—come to mind. According to the data released by Chongqing Municipal Economic and Information Technology Commission in February 2017,[1] the automobile industry in Chongqing generated an output of 539 billion yuan, up 11.7% and contributing 25.4% to the total municipal industrial output; the electronic industry created an output of 499.9 billion yuan, up 17.7% and contributing 33.8% to the total municipal industrial output. The two industries combined contributed nearly 60% of Chongqing's industrial output. At the same time, these two pillar industries face challenges in upgrading and transformation.

In 2016, Chongqing produced 3.16 million automobile vehicles[2]—400,000 more than Guangdong, the second largest provincial producer in China. Among them, passenger vehicles accounted for 89%, up three percentage points higher than the previous year. In 2016, the average unit price of automobile vehicles produced in Chongqing was 90,000 yuan, still quite far away from the target unit price of 100,000 yuan put forth in the city's three-year automobile industry revitalization plan 2012-2015. Chongqing's automobile industry is large but not strong.

[1] *Source: "Overview of the Performance of Chongqing's '6+1' Pillar Industries in 2016" released by Chongqing Municipal Economic and Information Technology Commission in its official website.*

[2] *Source: data released by Chongqing Municipal Economic and Technology Information Commission in January 2017.*

According to the Chongqing Municipal Economic and Information Technology Commission,[1] in 2016, Chongqing produced 58.422 million notebook computers, up 4.8% year-on-year, and 13.746 million printers, down 5% year-on-year. The production volume of monitors and integrated circuits (ICs) increased by 34.8% and 38.7% respectively. The city also produced 287 million mobile phones, up 58.7% year-on-year, and 1.45 million liquid crystal displays (LCDs), up 457.5%. Monitors, ICs and mobile phones have replaced notebook computers and become the new pillars of the electronic manufacturing industry of Chongqing.

Despite these emerging industries, the Chongqing manufacturing industry remains at the lower end of the value chain. Take mobile phones for example. In 2016, Chongqing produced 287 million mobile phones,[2] accounting for 15% of the national total. Among them, only 112 million were smart phones, accounting for less than 50%. In 2016, the total output of the mobile phone industry in Chongqing reached 101.5 billion yuan with an average unit price of 357 yuan.

In the Chongqing Municipal 13th Five-Year Plan for Building a Nationally Important Modern Manufacturing Base released in January 2017, the city proposed that—guided by the "Made in China 2025" strategy and driven by reform, opening-up and innovation—it will move fast and focus on the deep integration of the new-generation information technology and manufacturing, especially smart manufacturing, and strive to bring its manufacturing industry onto a higher level and reach four trillion yuan in total industrial output by 2020; by 2025, the city will establish a nationally important modern manufacturing base featuring rational layout, improved structure, advanced technology, and good quality and returns, and the manufacturing industry as a whole will take a leading position in China.

There is enormous potential for Chongqing to move up to the high end of the value chain and make its industries smarter Chongqing will be made more competitive by smart manufacturing, such as data analytics, the Internet of Things (IoT), connected products, and smart factories based on advanced materials, digital design, simulation and integration, and advanced robotics.

The Chongqing FTZ boasts a unique geographical location, strong appeal due to its favorable policies, and unprecedented space for imagination. For Chongqing, it's critical to identify distinctive industries and development priorities on the basis of its geographical features. In the context of the "Made in China 2025" strategy, smart manufacturing and sustainable development can become Chongqing's signature priorities

Part Two: Schneider Electric's Three Recommendations for the Chongqing FTZ

In its 180-plus years of history, innovation has always been the DNA of Schneider Electric and a primary driver for Schneider Electric to continue moving forward in different eras. As an MNC with business around the world, Schneider Electric has witnessed and participated in the development of an innovation-driven economy in many countries. Since its first joint venture in Tianjin in 1987, Schneider Electric has firmly taken root in China for three decades. We have witnessed and contributed to China's reform, opening-up, and economic and social development. Chongqing is of strategic importance to Schneider Electric in its business in central and western China. We feel honored and are committed in the development of the Chongqing FTZ.

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[1] *Source: "Overview of the Performance of Chongqing's Electronic Manufacturing Industry in 2016" released by Chongqing Municipal Economic and Information Technology Commission in its official website in February 2017.*

[2] *Source: "An Analysis Report on Chongqing's Manufacturing Industry—Upgrading and Transformation Needs to Speed up in the Two Pillar Industries of Automobile and Electronics" by the research institute of 21st-Century Business Herald.*

Schneider Electric wishes to put forward three recommendations on "Promoting 'Made in Chongqing' with Innovation":

I. Make Chongqing the innovation center in western China

1. Cultivate and support an efficient innovation platform and a collaborative R&D ecosystem

In the Bloomberg Innovation Index 2017, China ranks 21st, the highest among emerging market economies. Although it ranks 9th in the concentration of high-tech public companies, China ranks only 43rd in productivity, concentration of R&D people, and efficiency of higher education, which are critical indicators of economic growth, industrial upgrading and corporate innovation.

From the perspective of Schneider Electric, an effective innovation platform and a collaborative ecosystem, which are essential to fostering innovation and thus driving industrial transformation and upgrading, should bring together different industries, entrepreneurs, academia/universities, R&D labs, manufacturers, and international players. This platform can drive:

- knowledge and best practice sharing
- testbeds and certification
- scientific research cooperation
- collaboration on standards
- big data and e-commerce promotion
- communication along the industrial value chain
- faster, better innovation

For example, the development of Schneider Electric's EcoStruxure would not have been possible without the strong ecosystem of partners involved. Following the principle of open and collaborative innovation, we developed this IoT-enabled solution for specific markets with Microsoft, Intel, and a robust group of developers, data scientists, hardware, and service partners. It integrates automation and energy management technologies with data-driven measurement and analytical technologies to help the client maximize the value of the IoT and create smarter, more efficient and secure ways of operation.

2. Support businesses in establishing R&D centers in the FTZ and push the manufacturing industry to move onto the high end of the value chain.

A company's innovation capability can, to a certain extent, be measured by its investments in R&D centers and the talents hired in those centers.

Among the Global 500 that have entered the China market, a large number of them have established their global R&D centers and regional headquarters in China—half of them in Shanghai. Chongqing can learn from Shanghai's successful experience and maximize its advantages as latecomer in light of its local conditions and positioning.

By 2016, 260 out of the Global 500, including Honeywell, Roche and Novartis, had established their R&D centers in Shanghai Zhangjiang Hi-Tech Park. In 2017, Apple will invest half a billion dollars in four Chinese R&D centers, including one in Shanghai that will open later this year. PwC China launched its Shanghai Innovation Center to help turn Shanghai into a global, technology-driven innovation hub. Many other MNCs are following suit.

The presence of many MNCs has made Shanghai the earliest innovation center in China with substantial growth in the

number of innovation outcomes and a city that can compete internationally in terms of breadth and depth of innovation. Consider, for example, the number of granted invention patents, which are most indicative. In 2016, granted invention patents in Shanghai reached 20,086, up 14.1% year-on-year, second only to Beijing which is home to a large number of national research institutes, and much higher than Shenzhen which was 17,665, up 4.18% year-on-year. According to KPMG's 2017 global technology innovation report, Shanghai is the No.1 city in the next four years to rival Silicon Valley, followed by New York, Tokyo and Beijing. No other Chinese city could be found in the top ten.

An open China needs more innovative cities, and Chongqing has the potential to become the largest innovation center in western China. As emerging economies keep increasing their input into homegrown technology and talent, their innovation resources are maturing. MNCs are looking beyond developed countries for innovation bases. The traditional international pattern, in which R&D is conducted in developed countries and production takes place in developing countries, is changing. MNCs are upgrading from globalized production to globalized R&D and from "made in emerging economies" to "innovated in emerging economies". As more and more MNCs establish their presence in the city, Chongqing's manufacturing industry is confronted with a transformative challenge from breadth to intensity and from low end to high end. Innovation is no longer driven by cost, efficiency and scale, but by upgrading brought about by technological revolution.

Innovation figures prominently in the electronic information industry. As the most important electronic information manufacturing base in western China, Chongqing already boasts a number of bases that produce monitors, ICs, mobile phones and notebook computers, an advantage to build a new-generation information industrial cluster. Rapid technological progress requires companies to be technologically savvy to innovation and keep increasing input into R&D. By establishing R&D centers in Chongqing, companies can maximize their global innovation resources, sharpen the core competitiveness of Chongqing's electronic information industry, and eventually generate more added-value.

Chongqing needs to ride on the waves as innovation resources have gone global and multi-polar. It needs to fully leverage the FTZ platform, build an open innovation policy regime, and improve its innovation environment by removing policy barriers to cross-border flow and cooperation of innovation factors and activities including R&D and talents. The city needs to encourage more MNCs to set up regional R&D headquarters in the FTZ, increase input into R&D, and foster a center of innovative technologies to lead its manufacturing industry towards smart manufacturing and the high end of the value chain.

II. Vigorously Promote Smart Manufacturing for Green and Sustainable Development

Smart manufacturing technology is an integral part of the Chongqing FTZ. Advanced manufacturing will enhance Chongqing's overall competitiveness and make the city ready for being upgraded to the innovation center of central and western China. In practice, smart manufacturing will also promote sustainable development in Chongqing. Digital industrial transformation will increase energy efficiency and better conserve energy and other resources. Chongqing can make the best use of the synergy between smart manufacturing and sustainable development.

The growth model featuring high input, high consumption and high emission still prevails over the Chinese industry as a whole, leading to serious environmental problems. With energy-intensive industries badly in need of energy efficiency transformation, Chongqing needs to establish as quickly as possible a green manufacturing system with intensive technological contents, low resource consumption and less environmental pollution.

Since the start of the 13th Five-Year Plan period and in particular the release of the "Made in China 2025" strategy, green

development as one of the five development concepts has been brought onto an unprecedented high status. In the industrial sector, green development has become a more comprehensive concept, covering traditional concepts of energy conservation and emission reduction, and new concepts such as green factory and green manufacturing.

According to the Industrial Green Development Plan 2016-2020 released in 2016 by China's Ministry of Industry and Information Technology (MIIT), by 2020, green development will become a general requirement for all fields and all processes in the industrial sector; mechanisms to promote industrial green development will take shape; and an efficient, clean, low-carbon and circular green manufacturing industry will become a new driver of growth and a new edge in international competition. In terms of specific indicators, by 2020, energy consumption for a unit of industrial output among large- and medium-sized enterprises will be reduced by 18%, CO_2 emission by 22%, water consumption by 22% and discharge of major pollutants in key industries by 23%.

We recommend smart manufacturing in Chongqing be realized through three pathways:

First, Chongqing needs to move faster in upgrading and transforming traditional industries, push forward the green transformation of steel, chemical, construction materials and other traditional manufacturing sectors in an all-round way, rapidly develop the new-generation recycle processes, techniques and technologies, and vigorously spread processes and technologies featuring efficient energy use, less pollution, waste utilization and innocuous treatment.

Second, the city needs to move faster in growing new materials, new energy, high-end equipment and biological industries, and vigorously develop high-performance and light-weight green new materials as well as green bio-processes and bio-products. It can also promote energy conservation and carbon reduction by building smart grid, smart architecture, integrated multi-networks, and smart logistics etc.

Third, the city needs to promote efficient and circular use of resources. Enterprises need more support in strengthening their technological innovation, management and capacity for lean manufacturing, and in significantly reducing their energy, resource and water consumption. A circular production model needs to be rolled out to encourage chain symbiosis and resources sharing among businesses, industrial parks and industries.

In Schneider Electric's own example of EcoStruxure for Industry, we are seeing energy reductions of up to 30%. Advanced manufacturing and sustainable growth do go hand in hand. Chongqing therefore should promote energy management in its major manufacturing bases, R&D, and commercialization of related hardware and software products. It also should prompt joint efforts with neighboring cities to achieve efficiency gains throughout central and western China.

III. Build an adaptive talent system for a "smart manufacturing" future

1. Attract high-caliber talents for innovation

Smart manufacturing demands more talented people. To gather and motivate them is an important driving force behind economic and social development. Building a larger pool of high-caliber talents can help Chongqing participate in international competition for talented people and become more capable of homegrown innovation.

In its opening-up policy, China not only needs to attract investment and industry but more importantly, high-caliber talented people to create more value through innovation. For Chongqing, more MNCs will not only stimulate the municipal economy but also bring with them advanced technologies, management expertise and talented people with international vision.

In addition to favorable tax and economic policies, the city can make itself more attractive by introducing favorable visa, residence, social security and employment (for their spouses and children) policies as well as service for starting up business and medical service.

In 2017, Chongqing launched the "Swan Goose" (*Hongyan*) plan to attract talented people in China and other countries. According to this plan, in the next five years, the city will attract 1,000 to 2,000 talented people from China and other countries every year, with a focus on the "6+1" pillar industries, ten strategic emerging industries, ten strategic emerging service sectors and seven distinctive profitable agricultural sectors. The plan will reward both talented people and their employers and through its "one-stop" service platform, provide services to help talented people settle down in Chongqing.

2. Cultivate skilled workers to increase industrial maturity

The booming digital ecosystem requires a completely new set of skills for talented people. For example, smart manufacturing needs multi-disciplinary people who know both data analytics and technical engineering. Like many places in China, the Chongqing FTZ faces such challenges as industries in different stages of development and transformation of traditional industries, particularly among SMEs. Industries face different stages of digital development as many companies are still operating in the age of Industry 2.0, especially some SMEs in traditional industries such as food and beverage, textile, and steel.

Chongqing can create coaching projects by collaborating with MNCs and local champions and encourage local businesses to provide retraining for their employees. The city could offer incentives (e.g., subsidies or tax breaks) for SMEs with low competencies and budgets to participate in coaching projects.

As an example, in 2016, Schneider Electric signed a comprehensive strategic cooperation agreement with SIASUN. It covers talent cultivation, industrial experience sharing, building intelligent plants, and jointly developing intelligent solutions for the industry. This cooperation will enhance intelligent production of SIASUN itself and improve SIASUN's innovation and product development capacity.

In addition, Chongqing can also introduce internationally advanced vocational training projects to help local vocational schools' train skilled workers adapt to advanced manufacturing.

Schneider Electric's "BipBop vocational education" charity project aims to explore a talent cultivation model featuring good interaction and joint development between enterprise and vocational education, and help young people in need get access to reasonable opportunities for career development. With robust support from the Chongqing government, the project was launched in Chongqing's Wanzhou Vocational Education Center in September 2016. We helped the school upgrade its electric, automation control and other professional labs, and conduct teaching, field training and research activities. So far, Schneider Electric has donated teaching equipment and textbooks worth 700,000 yuan, and held three training workshops to equip teachers there with skills to combine theoretical teaching with business practice. As many as 300 teachers and students have benefitted from this project. Based on Schneider Electric (Chongqing) Co. Ltd. in Wanzhou, we have deepened cooperation with the school on curricular design, post competency model and teaching by experts in classroom in order to train students into skilled workers for industrial automation, high-end manufacturing, energy management, etc.

Part Three: Conclusion

Western China is indispensable in the development of the whole country, as is Chongqing in the development of western China. The establishment of the Chongqing FTZ, a historic opportunity, has put forth further and higher requirements on the transformation and upgrading of its manufacturing industry. As the frontier of an innovation-driven economy and a window of opening-up in western China, the Chongqing FTZ needs to build a favorable environment for innovation. At the same time, it needs to improve the efficiency of its innovation system, push the manufacturing industry move into the high end of the value chain, build a green, livable and sustainable city, and finally, create a new type of manufacturing center attractive to innovation resources, high-caliber talented people and a new generation of skilled workers.

The Chongqing FTZ has just taken its first steps and Schneider Electric is committed to grow together with Chongqing, and witness the leapfrog development of the entire western China driven by the Chongqing FTZ.

Guiding the Ecosystem of “Intelligent Manufacturing in Chongqing”

By Dr. Yongdong Wang

Microsoft Corporate Vice President, STC Asia and CTO, Asia Pacific R&D Group

Abstract

Chongqing should seize the historical opportunity to ultimately build “Intelligent Manufacturing in Chongqing”, and set up city brand image of intelligent manufacturing by virtue of establishing an ecosystem of “R&D-innovation-talent” in the field of AI, creating a western silicon valley of AI, enhancing the position of Made in Chongqing in the value chain.

Contents

Summary

The establishment of China (Chongqing) Pilot Free Trade Zone brings new opportunities for the development of Chongqing. As a city with profound industrial tradition, Chongqing's upgrade of manufacturing industry should focus on future-orientated digitalization and intelligent transformation. On a global scale, the prelude to the fourth industrial revolution has long been opened. With the release of the*2016-2020 Development Plan for Intelligent Manufacturing* and the *Development Plan of the New Generation Artificial Intelligence*, Chongqing should seize the historical opportunity to ultimately build "Intelligent Manufacturing in Chongqing", and set up city brand image of intelligent manufacturing by virtue of establishing an ecosystem of "R&D-innovation-talent" in the field of AI, creating a western silicon valley of AI, developing advanced manufacturing industry, and enhancing the position of Made in Chongqing in the value chain.

"Intelligent Manufacturing in Chongqing" is facing the best historical opportunity

The rise of manufacturing has become the most important leverage in competition among countries. Since the mid-18th century, global industrialization has experienced the first industrial revolution characterized by the invention and application of machines, the second industrial revolution characterized by the widespread use of electricity, and the third industrial revolution mainly marked by the application of information technology. Since the new century, the extensive penetration of information network technology, coupled with breakthroughs in new materials, new energy, biology and other areas, is spawning a new round of technology and industrial change. In the context of a new round of revolution, the manufacturing production mode, development pattern, industrial ecology, etc. of the manufacturing industry will experience a revolutionary change, and manufacturing industry will become a battlefield of the global economies.

With the release of the *China Manufacturing 2025*, *2016-2020 Development Plan for Intelligent Manufacturing* and other development plans, Chongqing is also promoting the supply-side structural reform and adjusting the industrial structure. According to the work report of Chongqing Municipal People's Government, in 2016, Chongqing's pillar industry continued to be mighty, and the emerging industry continued to grow. The output value of the automobile and electronics manufacturing industry increased by 11.7% and 17.7% respectively, while the output value of the strategic emerging manufacturing industry exceeded more than 270 billion Yuan, an increase of over 50%.

In this context, the development of "Intelligent Manufacturing in Chongqing" is facing the best historical opportunity. So we propose to guide the construction of the ecosystem of "Intelligent Manufacturing in Chongqing" with AI, in a bid to drive the development of intelligent manufacturing industry.

What is AI?

In 1956, a seminar named Summer Research Project on Artificial Intelligence which was held at Dartmouth College in the U.S, was identified by academia and industry as the origin of AI research.

AI is a new type of engineering science, aimed at researching and developing the theory, method, technology and application system to simulate, extend and expand human intelligence, which covers areas such as robot, voice recognition, image recognition, natural language processing, as well as expert system, etc. After nearly 60 years of development since it

was put forward in 1956, AI concept has gradually evolved from the single function into the universal function equipment, from the single into the complex scenario, and from the simple into the complicated behavior. As recognized as "future" of 21th centuries, AI has been deemed as the frontier of human tech and the pearl of crown in scientific research..

■ **Typical products and technologies of AI**

The current technological advancements enable us to access AI technologies and products in every aspect of our lives, but we may not necessarily have deep feelings in this regard. In light of this, we will briefly introduce some typical products and technologies of AI in the mainstream.

Firstly, machine vision and image recognition. Microsoft aimed to "facilitating computers to see, listen, read and learn" when it set up Microsoft Research in the early 1990s. That is to say, the core task of machine vision and image recognition was making machines "see", endowing them with the visual ability comparable to or even surpassing that of human beings.

At present, based on HD image capture devices, sensors, and cloud computing, AI's ability to identify image details in particular field has exceeded that of the human eyes. The Windows 10 operating system has supported biometrics such as faces, iris, fingerprints, etc. a long time ago. In the U.S., NYPD has applied face-recognition technology to catch various suspects and terrorists across the state. Some payment instruments in China have also introduced face-scanning technology. But these are just the beginning.

The research and application field of machine vision and image recognition is extremely broad, ranging from mathematical theory to practical application, from the physical system to software development, and from low-level image processing to high-level image understanding. We have made great progress while confronted more challenges. In terms of practical products, the current mature orientation includes face detection, tracking, recognition, image search, object detection, tracking, recognition as well as navigation and obstacle avoidance for unmanned vehicles, etc.

Secondly, sound related technologies, including natural language interaction, voice recognition, and voice synthesis, etc. Voice is the most natural and convenient form of communication between people. However, it is not simple when a person wants to talk to machines represented by computers. The researchers of machine voice are committed to making the "conversation thread" with machine's participation natural, fluent and highly reliable and to realizing the human-computer voice interaction by developing language technology. This is because, from the perspective of the practical application, AI is required to understand the instructions of its master and give effective feedback to the instructions with a natural voice in numerous application scenarios. Apple Siri, Microsoft XiaoIce, and Microsoft Cortana, which we have already been familiar with, have a large number of loyal users and follow their respective path towards better speech capabilities and interaction performances.

Thirdly, the AI personal assistant, or the practical AI helper. The present popular smart phones and smart home products (such as Alexa built in Amazon Echo) are usually equipped with intelligent voice assistants developed by the manufacturer, while Microsoft Cortana provides another option across platforms. The reason of developing AI personal assistance is quite simple that it is another attempt of high tech giants to innovate a new way of interaction after the wide application of touch-interaction. In the meanwhile, constraints are also existent. For instance, if touch-interaction requires fewer steps, less time but returns higher efficiency, why would users choose AI instead of touch-interaction? In this sense, most of the machine assistants, including Microsoft Cortana, are still not mature, thus urging us to speed up the innovation of this field. Taking Microsoft Search Technology Center Asia as an example. Based on the technical accumulation of Microsoft in AI, big data,

and cloud computing, we try to make Cortana more intimate to users by letting it learn more about the user's preferences and habits with more efficient and intelligent interactive services in their work and life.

■ **Commercialized products of AI**

The invincible AlphaGo in Go is not strange to us. We could say that the acquiring the creator of AlphaGo – DeepMind - is the most successful business that Google has done so far - although acquiring Android has already proved the vision of Google's investment team. However, it's clear that AlphaGo has stronger potential of applications. According to the disclosure, DeepMind, in collaboration with Google's data center team, has found a new way to manage the cooling system in the park after using technologies similar to those utilized for AlphaGo, thus, saving up to 15% of the energy consumption in buildings.

Amazon Echo, a smart speaker is another successful story. Focusing on Alexa which is a built-in AI voice assistant, Amazon has sold more than five million of them in two years and has initially built its own application platform of a smart home.

IBM Watson is worth raising as well. Not long ago, IBM announced that the global headquarter worth of $200 million for the Watson IoT was completed in Munich and has been officially operated. Before that, Watson had moved into such areas as healthcare, cyber security, and education, etc. In February, Watson came to China to see patients on a voluntary basis. In a hospital in Tianjin, he received favorable comments from doctors for spending two hours treating 21 patients.

■ **AI and smart manufacturing**

When it comes to the relationship between AI and intelligent manufacturing, the extend of intelligence is the key, which largely relies on three IT technologies, including information technology, industrial technology, and intelligent technology. Only when these three ITs merge together to a great extent will they drive the whole manufacturing industry to grow towards intelligent manufacturing.

AI can improve the production efficiency of advanced manufacturing and increasing profit. It is reported that the rate of good products of a Zhejiang-based rubber company whose output ranks the third largest in the world has increased yield by 3%-5% after introducing a cloud computing industrial brain when 1% can increase the profit by 100 million Yuan. Different from the practice of quality control which relies on experiences in the past, the industrial brain uses AI algorithm that can handle and analyze the property of each piece of rubber and match the optimal synthesis solution in a short time, therefore stabilizes the performance of mixing rubber, greatly reducing the processing costs. The industrial brain has also changed the original global parity purchasing model of the company by connecting the data in production and that in manufacturing in a bid to optimize the production and the distribution.

Besides, with introducing AI technology, manufacturers can reduce the number of operators and improve operational efficiency. The Port of Qingdao, for example, is home to Asia's first fully automated wharf, which has independently constructed the world's leading control system of intelligent production, adopted the IoT perception, communication navigation, fuzzy control, information networks, big data, cloud computing, security protection and other advanced technologies. It integrated with wharf operation, equipment control, gate control, electronic data exchange and website appointment and query, and other systems. All mechanical equipment there is driverless and throughout the whole process from handling, transport, storage, sending to receiving containers, each process is unmanned. Nine remote operators who

work in rear production control center undertake the workload to be done by more than 60 people in a traditional wharf, thus reducing the number of operating staff by approximately 85%, and improving the efficiency by about 30%. The working efficiency of wharf design can reach 40 containers per hour. Therefore, this wharf has the fastest loading and unloading efficiency in the world.

They are not individual cases. Nowadays, industrial robots have been widely utilized. For instance, 70% of the staff manufacturing cars are robots. What's more, a few harsh conditions such as the place producing integrated circuits is full of smell and dust. Though not suitable for human beings to work, the environment of this kind is just where the machines will distinguish themselves. It is understood that at present, such scientific and technological achievements of intelligence with independent property rights in China as character recognition, speech recognition, Chinese information processing, intelligent monitoring, biometrics, industrial robot, the service robot, and driverless cars, etc. have been put into a wide range of practical applications.

The advanced (or future) model of AI development is the so-called general intelligence, namely the intelligent robot in a real sense simulating human thinking mode to perform various tasks in all kinds of environment. After the robot is endowed with an AI brain, it will be intelligent enough to work with the man and communicate with other machines. This is the digital workshop or smart factory featured by large-scale and mass productions, the place where we should use robots to perform the work. Or when it comes to smart manufacturing, we refer to making intelligent everything from the finished products to the whole life cycle.

How to promote the development of intelligent manufacturing industry with AI in Chongqing Pilot Free Trade Zone?

According to the overall plan of Chongqing Pilot Free Trade Zone, the functions and goals of the manufacturing and related industries in the Free Trade Zone are as follows: "in Liangjiang area, we strive to build it into a high-end industry anda hub for high-end resources, in an effort to mainly develop high-end equipment, electronic core components, cloud computing, bio-medicine and other emerging industries"; "in Xiyong area, we manage to build it into the transformation and upgrading demonstration area for processing trade, to mainly develop electronic information, intelligent equipment and other manufacturing industries"; "in the Guoyuan Port area, we aim to construct a multiple transport logistics center, in order to mainly develop international transit, goods collection, less than container load (LCL), dispatch and other services, and explore the advanced manufacturing innovation and development".

In the recently published *Development Plan of the New Generation Artificial Intelligence*, the specific content on integrated innovation of China's manufacturing and AI is as follows: "In order to promote China to a great power in manufacturing, the government will focus on building up capacities and providing resources on following areas: key technology and equipment of intelligent manufacturing; the core support software; industry Internet and other system; conducting R&D on intelligent products and intelligent connected products; intelligent manufacturing enabling tools and systems; as well as intelligent manufacturing cloud service platform, promoting the new manufacturing modes, such as intelligent process manufacturing, intelligent discrete manufacturing, network co-manufacturing, remote diagnosis, as well as operation and maintenance services, in a bid to work out standard system of intelligent manufacturing, promoting the establishment of artificial intelligence of full life-cycle of manufacturing.

Integrating the status quo of industry development, the overall program of the Chongqing Pilot Free Trade Zone and the

Artificial Intelligence Development Plan, Chongqing's intelligent manufacturing industry can focus on the development of AI, in order to drive the manufacturing industry upgrade.

Combined with Microsoft's long-term research and development experience in AI technology, as well as the unique conditions of Chongqing, we have the following suggestions for the vigorous development of AI:

■ **Creating innovation advantages with R&D system**

In today's world, competition between either countries or enterprises cannot be separated from the competition at the technical level. R&D is the necessary means to form scientific and technological advantages. According to the World Top 2500 R&D Investors[i] released by European Commission, the company that ranked first in R&D investment in 2015 worldwide was Volkswagen, with the R&D investment of 13.6 billion Euros. Microsoft's R&D investment was 11 billion Euros, ranking fifth in the world and second among software companies, second only to Google's parent company Alphabet. Huawei is an enterprise with the most R&D expenditure in China, with R&D investment of 8.4 billion Euros, ranking 8th in the world.

RANK ON 2016	COMPANY	COUNTRY	R&D IN 2015 (€BN)	R&D INTENSITY (%)	RANK CHANGE 2004-2016
1	VOLKSWAGEN	Germany	13.6	6.4	up 7
2	SAMSUNG ELECTRONICS	South Korea	12.5	8.0	up 31
3	INTEL	US	11.1	21.9	up 11
4	ALPHABET	US	11.1	16.0	up > 200
5	MICROSOFT	US	11.0	14.1	up 8
6	NOVARTIS	Switzerland	9.0	19.4	up 14
7	ROCHE	Switzerland	8.6	19.4	up 11
8	HUAWEI	China	8.4	15.0	up > 200
9	JOHNSON & JOHNSON	US	8.3	12.9	up 3
10	TOYOTA MOTOR	Japan	8.0	3.7	down 5

R&D investment is only an indicator that impacts the results of R&D. Although that more investment should bring the corresponding R&D results, the construction of R&D system is more important. Taking the internal innovation system of Microsoft China as an example, horizontally, the mid-and long-term R&D institutions and the recent product development agencies rely on each other in combined efforts. Vertically, we also encourage every team to innovate from bottom to top and I think that this is also very useful for Chongqing to build its own innovation system and obtain innovation advantages.

■ **Microsoft's R&D System**

China has the most vital innovation of R&D talent resources and potential users in AI. In addition, China is also the world's largest internet and mobile market. From the perspective of demands, it can absolutely embrace any practical R&D achievements of AI, therefore further expand technologies, products, services and solutions to other regional markets. Thus, I believe that China will become an innovation center of global AI industry, the both the starting and original point of a much anticipated smart future.

Reviewing the process of its development in China, Microsoft has established the Microsoft Asia-Pacific Research and Development Group (ARD), which is one of the milestones of Microsoft's long-term investment and development in China and the rest of Asian-Pacific region, symbolizing Microsoft's fruit in building a complete software innovation ecosystem in this region. ARD has become an innovation base with the largest investment, the most complete functions and the most comprehensive organizational structure of Microsoft outside the United States. ARD brings together a complete innovation chain of fundamental research, technology incubation, product development, and strategic partnerships, with subordinate organizations represented by Microsoft Research Asia (MSRA), Search Technology Center Asia (STCA), Cloud and Enterprise Group of Microsoft(China), Microsoft Operating System Group China, Microsoft Asia Center for Hardware (Microsoft MACH), as well as Microsoft ARD Strategic Cooperation and Outsourcing Division. With properties in Beijing, Shanghai, Shenzhen, Suzhou, Taipei and Tokyo, ARD boasts a team of over 3,000 distinguished scientists and engineers, and is the largest and most comprehensive R&D base for Microsoft outside the United States. Meanwhile, it is also the significant symbol for Microsoft's scale-up, systematic and fully localized R&D in China.

Since its establishment, MSRA has grown into a world-class research institution of computer fundamentals and application, which is committed to promote the development of the cutting-edge technology in the whole field of computer science, and rapidly transferring the latest research achievements into Microsoft's key products in China and the rest of the world, in a bid to help improving consumers' computing experience. Meanwhile, targeting at researching on the next-generation disruptive technology, MSRA helps the Company realize its long-term development strategy and great vision for future computing.

STCA shoulders the important responsibility of exploring and implementing Microsoft's AI technology strategy. Based in Beijing and Suzhou, our China team supports important products including Microsoft XiaoIce, Cortana, Bing Search Engine, Office 365. In September, 2016, we opened a new R&D building in Suzhou. Microsoft (Suzhou) has now developed into a team of about 600 from a small founding team. I believe that "China will become a global R&D base for AI" because of its fast development and great contributions to the Company's core products.

■ Creating a Western Silicon Valley of AI

Chongqing, a historic and cultural city, is one of the three major heavy industry centers in China and with rapid development of its light industry since the 1990s. It has many geographic advantages: located at the critical location of the "Belt and Road" and the "Y"-shaped Yangtze River Economic Zone, and "Yuxin'ou" (Chongqing-Xinjiang-Europe) International Railway, being hubs for three major transportation methods, i.e. water, land and air, and owning three national first-class ports with their bonded areas. Such significant geographic advantages and vital strategic position enable Chongqing becoming a unique role in China's opening-up policy and regional economic development.

In the future, Chongqing's greatest advantages will be its vast usable land, rich human resources, and extensive application and maturity of information, communication and transportation technologies. In the past, Chongqing was undermined by too many rivers and mountains, and inconvenient traffic. But now all these disadvantages have been converted into advantages. Bridges used both as highway and light railway are built over the Yangtze River. Tunnel piercing technology employed by Jinyun Mountain and Zhongliang Mountain is becoming mature, and the flat topography on the other side is fully used, which vitalizes the college town and Xiyong Microelectronic Industrial Park. As a high speed rail network in cross and saltire is built in Chongqing during the 13th "Five-year Plan", more potential of Chongqing's economic development will

be released.

As known, all the recent industrial revolutions in mankind history, especially the waves of sci-tech progress, brought brand-new industrial agglomeration and clusters without exception. Silicon Valley is the most well-known place where a very rare ecosystem of science and technology is formed through a large number of universities, R&D institutions, and technology enterprises. In order to better develop Chongqing's AI industry, we suggest creating a western Silicon Valley of AI in Chongqing.

Three core conditions for industrial agglomeration:

- Agglomeration of R&D talents: R&D resources; cultivation and supply of advanced talents.
- Aggregation of industrial chains: a complete group of enterprises for R&D, products and applications, in particular, small and medium-sized enterprises (SMEs) which can exert great promotions of applications.
- Windowing of industrial development: whether the environment is suitable for the development of new technology, and innovation industry. Winners in technology industry take all, and can easily gather in a certain geographic region, thus forming an industrial zone, but at the same time, the windowing can be gone in a flash.

Chongqing's advantages:

- Agglomeration of R&D talents: in terms of talents, happiness index of people working and living in Chongqing is much higher than those in the first-tier cities. Besides lower housing price and more job opportunities, Chongqing also enjoys lower congestion index, shorter commuting time and less consumption cost. Data of2017 shows that people who emigrate from Beijing, Shanghai, Guangzhou and Shenzhen mainly immigrate to Chongqing, Hangzhou, Chengdu, Xiamen and Suzhou. Chongqing is the most popular one.
- Aggregation of industrial chains: Chongqing possesses established industrial basis. For example, Chongqing introduced SAIC, BAIC, Ford, Hyundai and other important domestic and overseas automobile enterprises, and became one of the largest automobile production bases in China. In 2016, the output value of Chongqing's automobile industry was 540 billion yuan, an increase of 11.4%, and the output was 3.16 million units. Among all provinces and cities in China, Chongqing was the only one with output exceeding 3 million units. In China, one in every eight cars was "made in Chongqing". In the same year, the output of notebook computers was 58 million, accounting for one third of the global output. In other words, one in every three notebook computers worldwide was "made in Chongqing".
- Window period of industrial development: at present, there is no mature AI industrial cluster in China and neither all over the world.

■ Improving the ecosystem by better talent system

As mentioned above, Chongqing is the most popular city of talent immigration. Chongqing, a typical immigrant city, is welcoming in large-scale immigration waves which results in rapidly expanding population and urban scale in Chongqing. Continuous immigration into Chongqing also brings the immigration of various cultures, which fuse into Chongqing's local culture constantly, forming a new Chongqing culture. Introduction and flow of external talents will certainly bring new vitality and profits to the enterprises. Therefore, it is necessary to properly allocate internal talents cultivated by local enterprises, intelligently introduce and retain external talents, so as to make new and good ongoing changes for the development of science and technology, while keeping the technology talents renewed.

Forming a new ecology of the sci-tech industry by guidance from the government

As a driver and leader of AI technology industry, Microsoft always believes that our vision can only be realized by making joint efforts with the whole ecosystem. Besides Microsoft's efforts, partners with government included also play a vital role in the ecosystem.

The "government" not only suggests the government organizations, but also involves the policy environment and the industrial policies. The support and guidance from the government are vital to the formation and development of sci-tech industry ecology. Taking Microsoft (Suzhou) as an example, over the years, Suzhou Government and the Park Management Committee have provided good supporting measures in strong support of high-tech enterprises including Microsoft, achieving those enterprises' thriving there. Meanwhile, as AI leaders like Microsoft develop continuously, Suzhou is witnessing realizing a slowly emerging industry cluster.

If Chongqing can seize the great opportunity of constructing Pilot Free Trade Zone, a world-class AI industrial park may take shape in West China, forming leadership under sci-tech industry, enhancing independent R&D capabilities of core technology and driving the manufacturing transformation.

Encouraging innovative enterprises to settle down as a start for improvement of talent system

In addition to increasing policy support of innovative and entrepreneurial talents, it is also necessary to encourage and support innovative enterprises to settle down, so as to provide good entrepreneurial environment for innovative talents, and finally develop a perfect ecosystem relying on talents.

Hangzhou is a good example for relying on emerging internet enterprises to attract talents. Hangzhou, with e-commerce companies represented by Alibaba gathering, expands its demand for talents in various sectors including finance, logistics, marketing, big data, and cloud computing. Chongqing is very important to create a two-way virtuous cycle and an ecosystem where talents are attracted and retained through the transformation of traditional manufacturing to intelligent manufacturing, and, in turn, the digitalization and intelligentialization of the manufacturing industry are driven by talents.

Here, what I can share with you is that in the United States, Microsoft is also cultivating a deeper external system, by establishing better relationships with scholars and entrepreneurs who research on start-ups, making investment in the AI field, and encouraging researchers and entrepreneurs to establish AI startups. In China, Microsoft Accelerator roots itself in China's native ecosystem to provide high-quality venture capital services throughout the whole life cycle of enterprises for the entrepreneurial ecosphere. Every year, there will be two mass selections in the Greater China Region, and 15 to 20 companies will finally be selected for the 4- to 6-month project, and they will enjoy lifelong alumni services. Microsoft Accelerator provides alumni startups with all-round high-quality services including strategies, investment and financing, technical products, sales markets, brand public relations, and transaction processing.

Reviewing Microsoft's origin, journey and mission, we would find that talents are always the core of everything. Talents are the driving force and cornerstone to achieve our vision. Taking STCA as an example, in this research institution, we have researchers and engineers from all over the world, who realize seamless collaboration across different time zones and cultural backgrounds. There is an old joke among us who are engaged in IT innovation, that is, IT fundamental research, technology incubation, and product development sound very difficult and "high-end, magnificent and classy", but in fact, two things are

enough: a human brain and a computer. I guess, with its unique advantage in "human brain resources", and multiple other factors such as geographic location, policy, culture and environment, Chongqing will certainly play a vital role in technology sector in China and even the whole world.

Conclusions

The above are some of my suggestions regarding the planning of Chongqing Pilot Free Trade Zone. Chongqing should seize such historical opportunity to create a western Silicon Valley of AI, by building an ecosystem of "R&D-innovation-talent" in AI sector, and establish the city brand image of intelligent manufacturing by enhancing the position of Made in Chongqing in the value chain, and realize the image of "Intelligent Manufacturing in Chongqing".

Over the past 30years, the innovative ecology established by Microsoft and the industry peers and partners, enabled us to face up to the brand-new challenges in the era of disruption and reform, and to live up to the vision for future. We will, with knowledge from rich practices and experiences, give full support to China's reform and opening-up journey.

The 2016 EU Industrial R&D Investment Scoreboard
http://iri.jrc.ec.europa.eu/scoreboard16.html

Leveraging the Industrial Internet of Things to Advance "Made in Chongqing"

By Echo Jin

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Global manufacturing is witnessing the dawn of the Fourth Industrial Revolution. The World Economic Forum predicts the Fourth Industrial Revolution will be an unparalleled transformation in speed and scale, characterized by "emerging technology breakthroughs in fields such as artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3-D printing, nanotechnology, biotechnology, materials science, energy storage, and quantum computing."[1]

The manufacturing sector is uniquely poised to unlock the economic benefits of the Fourth Industrial Revolution. The industrial Internet of Things is already being viewed as a critical tool for manufacturers to achieve a competitive advantage. Policy makers are increasingly interested in how IoT-enabled smart manufacturing can contribute to national competitiveness.

The Chinese central government's *Made in China 2025* ten-year action plan seeks to develop advanced manufacturing and leverage emerging technologies such as IoT. Chongqing's strong industrial base, coupled with the local *Made in Chongqing* industrial plan specifically calls for workforce development, intelligent equipment, industrial robots and numerical control machines. These factors position Chongqing well to implement smart manufacturing. This paper discusses the positive impact, and applications of, Industrial IoT and explores what business and governments can do to cultivate a stronger competitive sector in Chongqing.

1. The case for the Industrial Internet of Things

Global trends

By 2025, the Internet of Things will have a total potential annual economic impact of up to $11 trillion per year, roughly 11% of global GDP, according to the McKinsey Global Institute—and 40% of this value is expected to accrue to developing countries. Business to business applications will generate about 70% of the potential value, with consumers capturing 90% of the benefits. The industrial IoT (IIoT) could improve productivity worldwide by 10-25%, resulting in savings of $633 billion to $1.8 trillion. Specifically, application of IoT in industrial settings is expected to create annual value of $1.2-3.7 trillion.[2] By 2019, 85% of organizations anticipate using IoT, according to a survey conducted by HPE/Aruba.[3]

In China, overall IoT is estimated to add $500 billion to China's GDP by 2030, reaching up to $1.8 trillion with additional investments and policy measures. Further estimates indicate that IoT specific to manufacturing could contribute an

[1] *https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond*
[2] *McKinsey Global Institute, The Internet of Things: Mapping the Value Beyond the Hype, June 2015*
[3] *HPE/Aruba The Internet of Things: Today and Tomorrow, http://www.arubanetworks.com/assets/eo/HPE_Aruba_IoT_Research_Report.pdf, 2017*

estimated $196 billion to cumulative GDP, which could grow to $736 billion with targeted investments.[1]

Recognizing the competitive advantage that industrial IoT will provide, countries around the world are working with industry on smart manufacturing initiatives. For example, Singapore's government has committed $2.3 billion for advanced manufacturing and engineering in a bid to create a leading global manufacturing hub. Korea's Ministry of Science, ICT, and Future planning has developed a $350 million investment plan through 2020 in eight revolutionary smart manufacturing technologies. Germany's Industrie 4.0 initiative is investing $221 million in R&D for smart manufacturing, in collaboration with industry, academia, and government. In the U.S., the federal government fostered public-private consortiums and regional hubs to focus on R&D around specific technologies, including digital manufacturing/design and smart manufacturing innovation.

2. Industrial IoT makes manufacturers more competitive

Manufacturing with IoT creates smarter factories that can drive critical business outcomes such as increased efficiency, reduced cost structures, and improvements in overall competitiveness. Industrial IoT enables manufacturers to:

- Use less energy and raw materials;
- Improve operational efficiencies and production times
- Leverage analytics and intelligence to shift maintenance from reactive to proactive and prolong useful equipment life;
- Quickly identify and correct manufacturing problems;
- Monitor performance and use of installed equipment;
- Align production more closely to demand to reduce waste and environmental impact; and
- Unlock data to improve insights for supply chain and customer experience.

IoT in Manufacturing

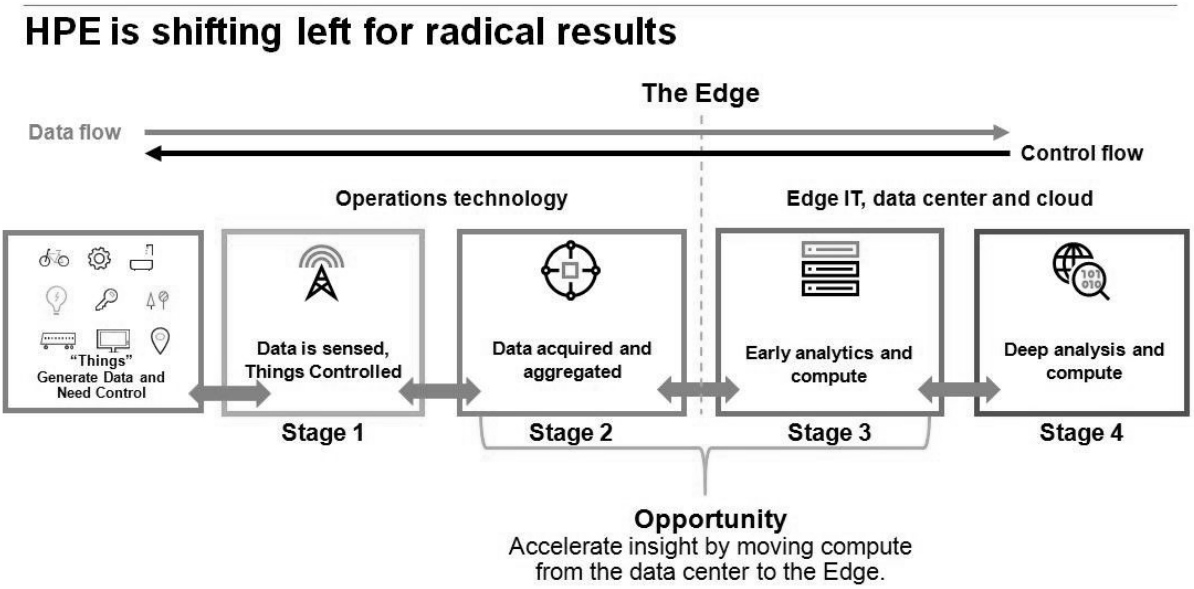
- ✓ **Condition Monitoring**
- ✓ **Predictive Maintenance**
- ✓ **Asset Management**
- ✓ **Inventory Management**
- ✓ **AR and Visual Remote Guidance**
- ✓ **Improved Safety**
- ✓ **Collaborative Design**
- ✓ **3D-printing**
- ✓ **Pollution Management**
- ✓ **Physical Security**

For these reasons, manufacturers globally are embracing IoT-enabled production as a competitive advantage.

Power of Computing at the Edge

The drive to extract immediate insight from data is causing high-end compute functions and data analytics to increasingly migrate closer to the edge of the network where the "things" are. Edge computing shifts left the processing power and knowledge generation away from the data center, streamlining access to relevant data, lowering the risk and cost of transporting data across the network, and ultimately accelerating time to insight and resulting actions.

[1] *Accenture, How the Internet of Things Can Drive Growth in China's Industries, 2015*



Implementing systems with intelligent edge capabilities addresses several challenges of IIoT implementation, namely:

a. **Time to insight:** Data processing at the edge eliminates communication latencies to central systems and enables real-time responses. It improves time to insight and time to action, producing Big Data insights more rapidly;

b. **Cost:** Edge solutions eliminate the costs of bandwidth and storage, both financially and as opportunity costs;

c. **Security:** Fewer points of vulnerability are introduced when data is stored locally, narrowing the vectors available for attack. Data is not exposed on a local network or in transit to a data center;

d. **Compliance:** Specific geographic data handling requirements can require additional compliance work on data before it can cross borders. Edge processing enables geo-fencing to mitigate regulatory conflicts; and

e. **Data duplication and corruption:** Moving data takes a toll on data reliability and increases the chance of corruption. The intelligent edge also eliminates redundancies of storing data twice, locally and at the data center.[1]

In fact, an HPE/Aruba survey found two-thirds of organizations who reported seeing 60% or more return on investment in IoT say that they are moving server compute to the edge.[2] The edge is such a powerful and useful tool, that it is predicted more than 40% of data from IoT will be processed at the edge.[3]

[1] *HPE blog: 5 challenges of Industrial IoT: Edge computing to the rescue*

[2] *HPE/Aruba Report The Internet of Things: Today and Tomorrow, 2017 http://www.arubanetworks.com/assets/eo/HPE_Aruba_IoT_Research_Report.pdf*

[3] *IDC/HPE Study, December 2016*

Manufacturing IoT Case Study: HPE and GE

HPE and GE Digital are partnering to unite cutting-edge Internet of Things (IoT) technologies from HPE with GE's industrial expertise and its Predix platform to bring digital know-how to the industry sector. Together, the two companies enable industrial analytics from the edge to the cloud. This alliance offers a combination of HPE's market leading hardware with GE's for industry, by industry software to deliver a new suite of solutions for customers seeking to transform their businesses with real-time analytics and insights. As part of this agreement, HPE will be a preferred storage and server infrastructure provider for Predix cloud technologies. To enhance the service offering and accelerate time to market, HPE provided support for the design, implementation and rollout of the Predix platform, through its services and infrastructure offerings. GE also leverages HPE technology for much of its virtual infrastructure as well as some OEM offerings. HPE helps power the Predix platform with its IoT-optimized hardware and software. GE's Predix platform is a preferred software solution for HPE for industrial-related use cases and opportunities. The two companies are jointly developing long-term partnerships to support the aerospace, oil and gas, manufacturing, automotive and energy industries.[1]

3. Outlook for China and Chongqing

China's and Chongqing's economic plans contemplate how the Fourth Industrial Revolution will change the face of manufacturing, and make specific recommendations to prepare the nation and the region for the future.

a. Made in China 2025

China's first-ten-year action plan, *Made in China 2025*, provides a long-term strategic roadmap focused on economic and societal development in the face of industrial change trends. The plan aims not only to promote transformation and steady development of traditional manufacturing, but also to accelerate development of advanced manufacturing in the context of the new technological revolution. A key feature of the plan is the combination of modern manufacturing with emerging information technology.

Made in China 2025 arose from the combination of three major factors:

1.) A growing scarcity of natural resources and rising labor costs in China;
2.) Multinationals' shift of production to Southeast Asia as an attractive competitor to China; and
3.) Technological initiatives such as Industry 4.0 in Germany and an industrial renaissance in the U.S. motivated China.

b. Made in Chongqing

As one of the oldest industrial bases in China, Chongqing is naturally suited to take a leadership role in building the nation's modern manufacturing infrastructure.

This industrial base, coupled with Chongqing's skilled workforce and location (that connects middle and western China

[1] *http://h22168.www2.hpe.com/us/en/partners/ge-digital/index.aspx*

by railway and Yangtze River) has propelled Chongqing to hold the nation's lead GDP position for 10 consecutive quarters.

In the first half of 2016, Chongqing's GDP reached RMB800 billion, a 10.6% increase over last year, and 3.9% higher than the national GDP. In the first half of 2017, Chongqing industrial value added in increased 10.4%, 4.2% higher than the national average.[1]

Chongqing could strengthen its innovation capabilities through increased R&D investment and talent development at the mid/advanced level. Production volumes are currently limited by the small scale of strategic new industries and few technology companies. Relatively high resource and logistics costs are also a constraint.

The Chongqing government's 13th 5-year-plan, *Made in Chongqing 2025,* and the related 2017 action plan are promising steps. The detailed 2017 action plan establishes goals for intelligent equipment, industrial robots and numerical control machines, and outlines plans for R&D centers. *Made in Chongqing 2025* stresses first and foremost deep integration of information technology and industrialization. This integration will contribute to the transformation of manufacturing models, supply chain structure, as well as creation of new industries. Digitalization, networking, informatics, service innovation, and green business are the new trends of industrial development. Industrial Internet of Things, big data, virtualization and other technologies will reconfigure the manufacturing technology ecosystem.

Made in Chongqing rightly places major emphasis on talent development, including the collaboration between enterprise and schools, talent acquisition, and talent retention. While smart manufacturing is based on the integration of information technology and industrialization, people and talent continue to underpin the technologies. The development of a skilled talent pool that can support the implementation and operation of IoT-enabled manufacturing will be a critical success factor. HPE University illustrates the type of public-private partnership that could address Chongqing's workforce needs of the future.

IoT Talent Development Case Study: HPE University

HPE has a long history of talent development experience partnering with government, enterprises, and academia. In China, for example, HPE University has been working with Zunyi municipal government on Big Data Thousand Talents Training Program. In partnership with Zunyi Software Industrial Park (University Students Innovation and Entrepreneurial Park), HPE University is developing the talent pool to support the government's plans to attract 20 leading enterprises, 200 start-ups, train 5,000 big data and software talent, and to create 10,000 jobs. The program will build the software park as a well-known big data and software center in China within five years.

4. How Industrial IoT can accelerate Made in Chongqing

Chongqing's industrial clusters will benefit from Industrial IoT, as demonstrated by concrete use cases on the next page.

Chongqing has a robust automotive manufacturing sector, with involvement from multinational and local brands and their suppliers. What changes can we expect in the automotive industry in the next three to five years with the development of industrial IoT? Connected factory components quickly identify and correct manufacturing problems. Connected and digitized factory components provide increased visibility into understanding and holistically managing the value chain. Factory

[1] *Chongqing Statistics Bureau*

equipment can self-assess and automatically order a needed spare part, freeing factory personnel to focus on higher-value activities. Virtual design and digital assembly allow more customized and personalized products at a lower cost, also fostering more design-focused companies.

The oil and gas industry, another example of a large sector in Chongqing, has a number of potential applications for industrial IoT. In natural resource extraction, safety requirements are always extremely strict and even minor accidents can cause dreadful consequences. Regular and thorough inspections of working fields are essential. With the help of industrial IoT - sensor devices, combined with advanced analytics software – better insights can be generated, while reducing the risk of human error in checking equipment. This can be accomplished through "edge" computing technology where analytics happen on the spot to deliver real-time visibility into equipment and processes. In other words, the IoT architecture no longer needs to transmit device data over a wide area network.

Automotive IoT Case study: HIROTEC

HIROTEC Group, one of the largest private production companies in today's global automotive market, wanted to leverage Industry 4.0 innovations to tackle a perennial challenge: unplanned downtime. Unplanned downtime costs North American automotive OEMs **$361 per second**.

Pairing an IoT platform from HPE partner PTC with HPE Edgeline systems, HIROTEC boosted its already formidable operations technology capabilities with cutting-edge predictive analytics. This IoT deployment resulted in **100% reduction in time** to manually inspect production systems, enabling technicians to re-invest that time in tasks that drive more value to production workflows. It also eliminated the need to invest in new Computer Numerical Control (CNC) machine via analysis that supported improved efficiencies and elimination of process bottlenecks.[1]

Refinery IoT Case study: Texmark Chemicals

Texmark Chemicals, Inc., is a Texas petro-chemical processing and manufacturing company that provides custom contract manufacturing (tolling) of specialty and high volume chemicals to many of the world's leading chemical companies. Texmark is the #1 merchant producer of DCPD in North America, a polymer precursor used to make everything from inks to bathtubs.

Texmark's first business priority is safety, and it spends nearly 1,000 hours a year on employees' plant walks to check equipment safety. Texmark deployed HPE Aruba WiFi solutions, and cut in half the cost of deploying a hardwired network, while maintaining the plant's safety level. With HPE Edgeline Converged IoT platform and HPE Pointnext as an HPE Micro Datacenter, Texmark realizes high-speed data capture and analytics. The Edgeline system runs Texmark's Distributed Control System software, integrating its operations technology and IT into a single system.[2]

[1] *HPE Customer Story: HIROTECH: From smart manufacturing, to smart factory — to smart enterprise https://h20195.www2.hpe.com/V2/GetDocument.aspx?docname=A00003335ENW*

[2] *HPE Customer Story: Texmark Chemicals deploys IIoT at the edge in showcase Refinery of the Future, https://h20195.www2.hpe.com/V2/GetDocument.aspx?docname=A00015985ENW*

5. Considerations for a successful Industrial IoT deployment

Implementation of IIoT range from discrete pilot projects to complete transformation of an entire manufacturing process, from supplier inputs to end product distribution.

Last year, HPE surveyed nearly 80 clients who had implemented IoT projects, and found the following six key factors in successful IoT deployments.[1]

a. Make sure change management is prominent in your IoT planning

Change management is an important consideration for any project, but it is particularly critical to the success of IoT projects because they can significantly impact people and processes. This holds true not only for internal stakeholders, but also external partners, such as suppliers, who may be affected.

b. Align business needs with technology by sharing your plans across the organization

The power of IoT stems from the ability to securely exchange and share information from multiple sources within your organization, and across processes and people. Thus, IoT projects should begin with a holistic, all-encompassing security framework that makes it possible to securely unlock siloed data, share the data, and use it to promote insights.

c. Define a sustainable framework by starting small and doing your due diligence

IoT often introduces new concepts, new technologies, and new business models. It is important from the outset to define a sustainable IoT framework, assess your implementation capabilities, and identify small projects with quick wins.

d. Security, privacy, and compliance must be addressed holistically from the outset

The scale and diversity of IoT means that traditional security solutions are wholly inadequate. New connections, mobile devices, converged infrastructure, and integrated networks create myriad new security and privacy issues. In today's digital and algorithmic businesses, security must be baked in "by design," from I/O to CEO, to ensure business continuity.

e. **Verify reliable access to your data sources**

One challenge with IoT comes from gathering and securely transporting, mining, and storing data that today are locked away in siloed stores. This data must be reliably accessed to obtain actionable insights and expand the value chain. This requires reach and visibility into devices and their data, thereby changing the data lifecycle and opening new privacy and compliance concerns.

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[1] *HPE Business White Paper: Doing IoT Right: 6 Essential Lessons for Business Leaders*

f. Deploy a sustainable architecture in which new and old solutions coexist

IoT often involves merging of new solutions with older technologies and processes. In most cases, the new cannot simply replace the old. Instead, the two must be integrated—and this can create incompatibilities.

To realize the full potential of the industrial Internet, businesses and governments will need to overcome a number of important hurdles relating to corporate culture, technology availability, staffing and budget perceptions, and security concerns. [1]

6. Government's role in the development of Industrial IoT

As noted earlier, governments around the world, including China, are proactively promoting industrial IoT and related technologies through various policies, such as R&D, public-private partnerships, and workforce development.

Government policies should facilitate the deployment of IoT-enabled infrastructure and foster the development of ecosystems that promote open innovation.

China, and Chongqinq specifically, can foster timely and effective adoption of IIoT, which in turn will nuture a strong competitive sector:

a. ***Workforce development:*** Government and industry must work together to develop the workforce with the right skills and education to support the Fourth Industrial Revolution. The World Economic Forum estimates that 65% of children entering primary school today will grow up to perform occupations that currently do not exist.[2]. Manufacturing jobs will change with IoT, moving beyond repetitive tasks and into higher skill levels that require computing and analysis. Training programs should address not only future workforce, but reskilling of the current workforce. Workforce development will require collaboration between industry and academia, including specific initiatives to address anticipated skills gaps.

b. ***R&D investment and incentives for modernization:*** Research and development investments lead to the innovations and breakthroughs for the future. Targeted R&D around industrial IoT will accelerate innovation in this space. Additionally, government incentives for manufacturers to modernize by using IoT will also drive a more rapid adoption of the IoT-enabled systems and solutions to create factories of the future.

c. ***Public-private collaborations***: Local governments can facilitate creation of a consortium or other industry platform that allow companies, both domestic and international, to share best practices and foster collaboration around industrial IoT.

d. ***Open standards:*** Common standards will facilitate the adoption and growth of industrial IoT. Standards developed through open and global collaborative processes with industry and open source communities spur innovation and allow global supply chain interoperability. Country-specific standards will only bring isolation from the global manufacturing supply chain.

e. ***Investment in digital infrastructure***. The success of industrial IoT depends heavily on the presence of robust infrastructure, such as ubiquitous broadband connectivity and sufficiently available spectrum in bands suitable for IoT applications.

f. ***Data security and privacy protection*****:** The emerging and fragmented nature of the IoT marketplace, coupled with few, if any, common security standards, put IoT devices and networks–whether personal, industrial or infrastructure–at risk of

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[1] *HPE blog: Industrial IoT is Challenging, but Manufacturers are Leading the Way*

[2] *World Economic Forum, The Future of Jobs: Employment, Skill and Workforce Strategy for the Fourth Industrial Revolution, January 2016.*

cyber attacks. Cyber security and privacy regimes must be flexible enough to address evolving threats and new technologies, while maintaining access to global technologies and preserving businesses' ability to innovate.

Government plays an important role in industrial IoT development by implementing favorable policies, such as those described above, to realize the full development and positive potential of industrial IoT technologies in China and Chongqing.

7. Conclusion

Although today's IoT is still in its early stages, we already witnessing its powerful impact and potential. As with the Internet decades ago, IoT is a disruptive technology that will revolutionize not only business, but society.

Industrial IoT presents an enormous opportunity for individual manufacturers, regions, and nations to advance their competitiveness. We are just beginning to witness the potential benefits of implementing IoT technologies, from small project to across the supply chain.

The efficiencies and insights that IoT provide, particularly those gleaned from computing at the edge, will transform the modern manufacturing enterprise.

Chongqing's strong industrial base and central location, combined with the workforce and investment measures from *Made in China* and *Made in Chongqing,* create conditions for Chonging to seize this unprecedented opportunity to become a leader in industrial IoT adoption in the nation, and perhaps the world.

About HPE

Hewlett Packard Enterprise is an industry leading technology company that enables customers to go further, faster. With the industry's most comprehensive portfolio, spanning the cloud to the data center to workplace applications, our technology and services help customers around the world make IT more efficient, more productive and more secure. HPE has a comprehensive portfolio of IoT compute, data analytics, security, and connectivity solutions and services, as well as a robust ecosystem of top-tier partners.

Hewlett Packard Enterprise (HPE) was founded on Nov. 1, 2015, following the separation of Hewlett Packard Company, and is headquartered in Palo Alto, California, United States. HPE has a long history in China, first establishing operations in 1985. HPE's "In China, For China" strategy has contributed to the rapid development of China's modernization and IT infrastructure. HPE Chongqing was established twelve years ago, in close cooperation with the Chongqing government. In 2007, the company moved to Xiyong Microelectronics Industrial Park, as the first Fortune 500 enterprise tenant. HPE stands ready to contribute our IoT expertise and solutions to help private and public-sector organizations in Chongqing prepare for a world where everything computes. Learn more at **hpe.com/IoT.**