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China's Geographic Migration Trends & Industry Clusters

Sep. 19th, 2009

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CID's Investment Philosophy

Invest in a strategic way and create value through integration

1	Utilize different methods to predict investment opportunities
2	Analyze what are key success factors
3	Create synergistic investment by integrating comparative advantages

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Results from Past CRI Research

2008 conference demonstrated how CRI identified China's investment opportunities according to the demographic environment

Summary of 2008 Conclusions

China's Post-80s population is a baby-boomer period just like US baby-boomers after WWII

China baby boomers share similar characteristics with US baby boomers

- Growing up in favorable economic environment
- Possessing strong spending power
- Receiving better education than their parents

China baby boomers have unique characteristics from US baby boomers

- Living in one-child family
- Growing up in more technologically advanced world
- Having far larger population (up to 230 million)

China's Post-80s baby-boomers demographics create attractive industries for investment

Education | **Maternity & Baby Care** | **Internet** | **Health care** | **Brands** | Others…

Source: CID Annual Conference Report 2008

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Results from Past CRI Research

One way CRI identifies China's investment opportunities is according to the macro environment

From CRI' s Research on Macro Environment to Investment Opportunities

China's Macro Environment

Demographic environment

- Baby-boomers (post 80's) & upgrade of consumption level

Economic environment

- Geographical migration
- Adjustment of industry structure

Political environment

- Stricter requirement of environment
- New industry policies under the 11th "Five-Year Plan"

…

China's Investment Opportunities

- Education
- Maternity & baby care
- Internet
- Health care
- Brands
- Green technologies
- Creative industry
- Modern agriculture

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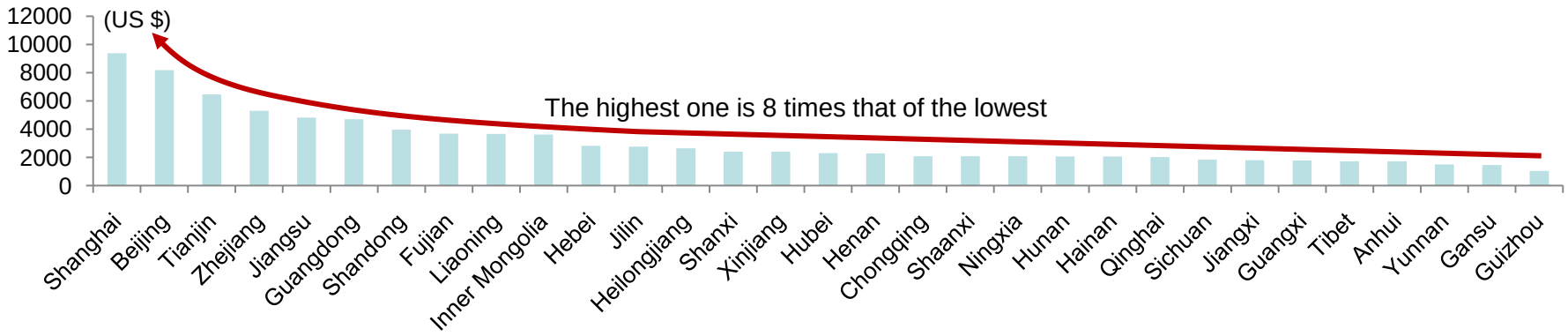
Source: CID Research Institute

Regional Differences on GDP per capita of China and the U.S.

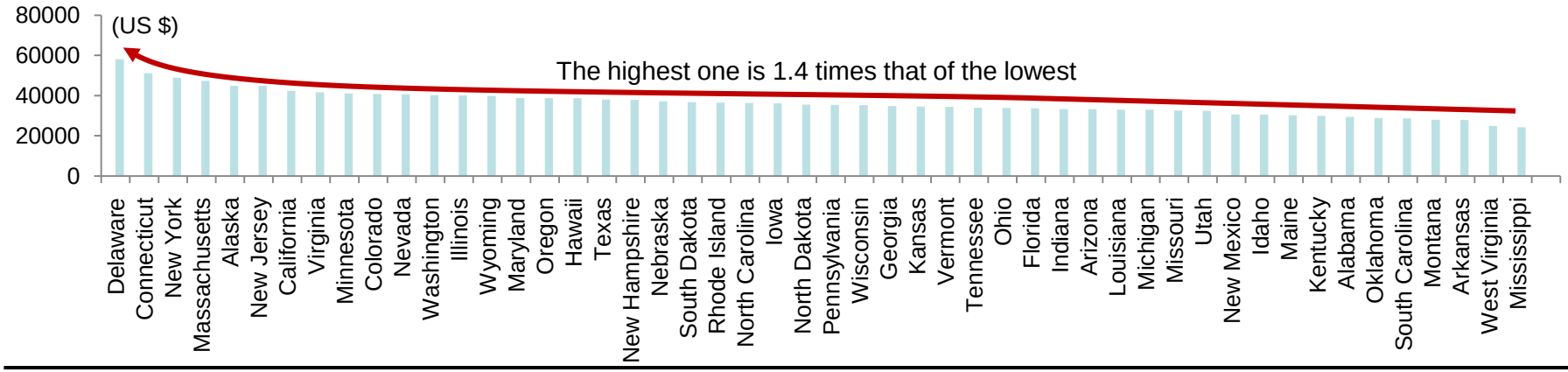
Regional difference is more significant in China than in the U.S.

GDP per capita by provinces in China (2007)



Source: National Bureau of Statistics of China

GDP per capita by states in the U.S. (2007)



Source: BEA

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Today's Discussion

CRI's method of finding investment opportunities through regional comparative analysis

Outline

Where to find investment opportunities?

Identification of industry clusters of China's key industries

Analysis of regional comparative advantages

Creation of synergetic investment in China through integration

Source: CID Research Institute

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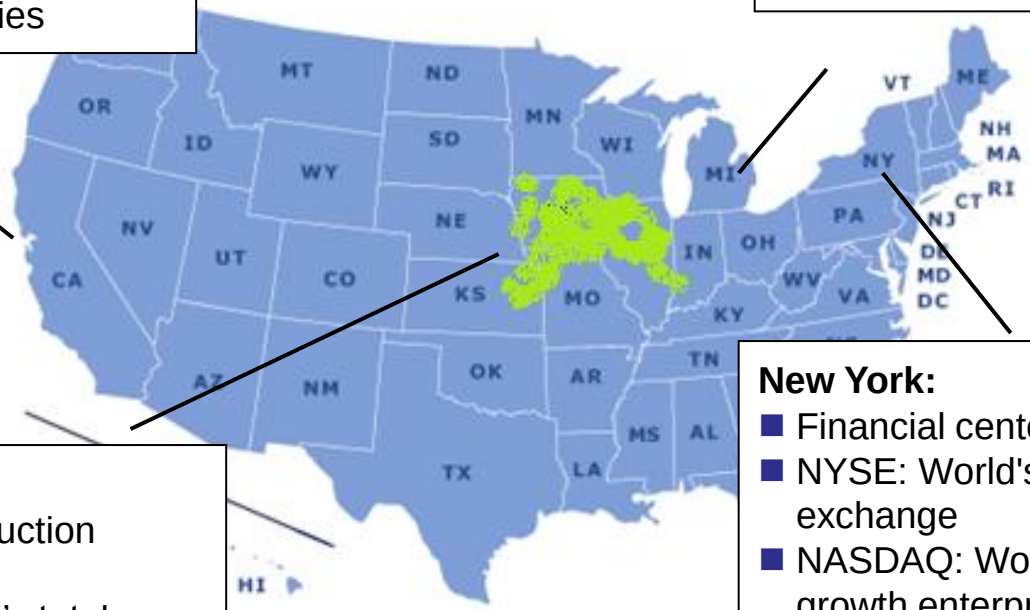
Worldwide Industry Clusters

Examples of Industry Clusters in the U.S.

Silicon Valley:
- Cluster of high tech industries
- Location of 96% of America's semiconductor companies

Michigan (Detroit):
- Cluster of automobile industry
- 24% of America's total output



New York:
- Financial center
- NYSE: World's No.1 stock exchange
- NASDAQ: World's most famous growth enterprise market

Central Corn Belt:
- Cluster of maize production industry
- Iowa: 20% of America's total amount

Source: sorted by CID Research Institute

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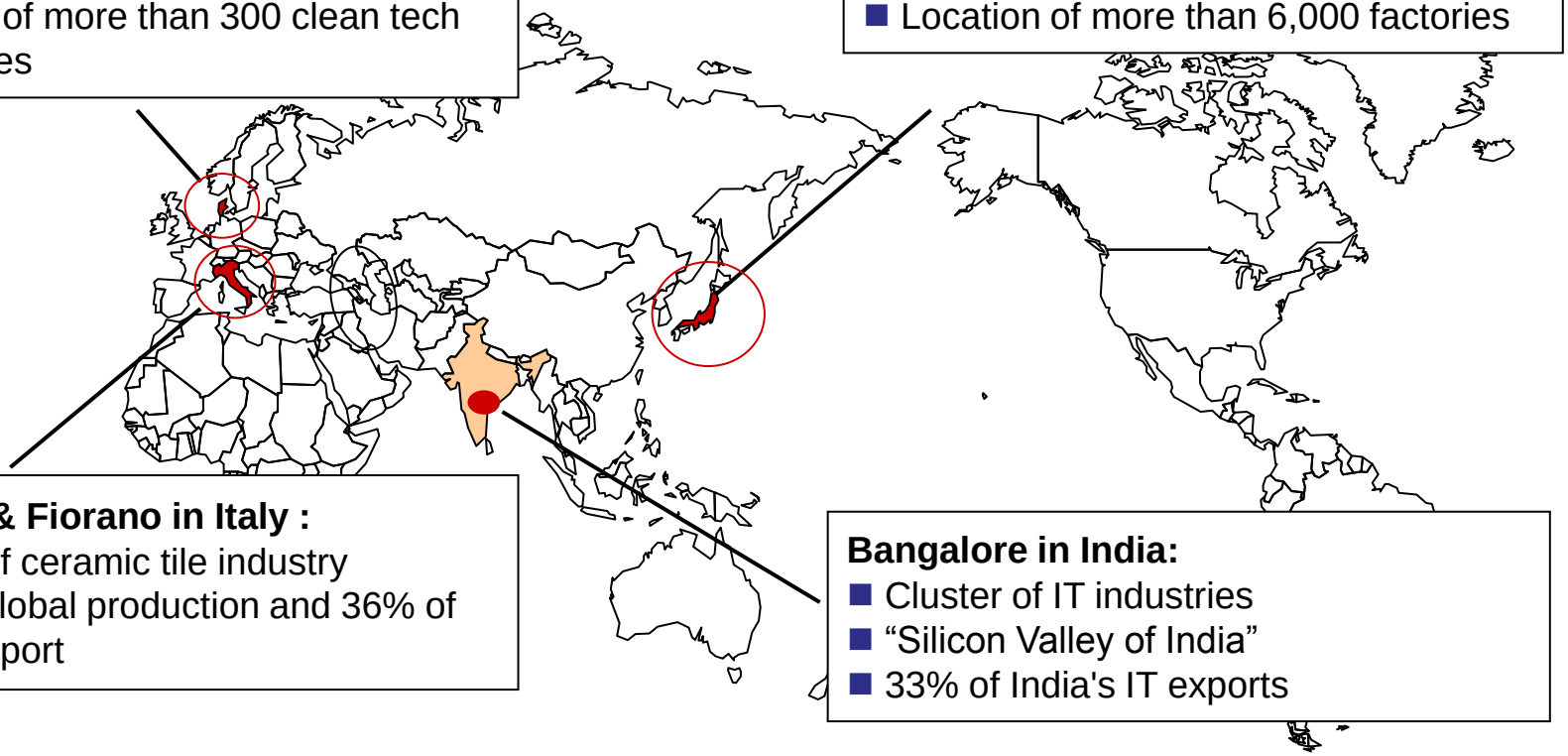
Worldwide Industry Clusters

Examples of Industry Clusters in Other Countries

Copenhagen in Denmark:
- Cluster of clean tech industries
- Location of more than 300 clean tech companies

Kobe in Japan:
- Cluster of iron & steel industry
- Location of more than 6,000 factories



Sassuolo & Fiorano in Italy :
- Cluster of ceramic tile industry
- 18% of global production and 36% of global export

Bangalore in India:
- Cluster of IT industries
- “Silicon Valley of India”
- 33% of India's IT exports

Source：sorted by CID Research Institute

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Specific Factors Driving the Formation of Industry Clusters

According to scholars' studies, industry clusters is driven by specific factors

Scholars and Their Theories about Industry Clusters	
Michael Porter (Yr 2002)	First put forward industry cluster theory in his "The Competitive Advantages of Nation"
Paul R. Krugman (Yr 1991)	Proposed New Economic Geography to interpret the phenomenon of industry clusters with the core-periphery model, "race track economy" model and etc..
Alfred Weber (Yr 1929)	Formulated Industrial location theory that an industry is located where the transportation costs of raw materials and final product is a minimum.
Marshall (Yr 1890)	First scholar to pay attention to geographical factors in industry study.

Industry clusters are driven by factors including:

- Nature resources
- Infrastructure
- Related and supporting industries
- Demand conditions
- Government economic policies and etc.

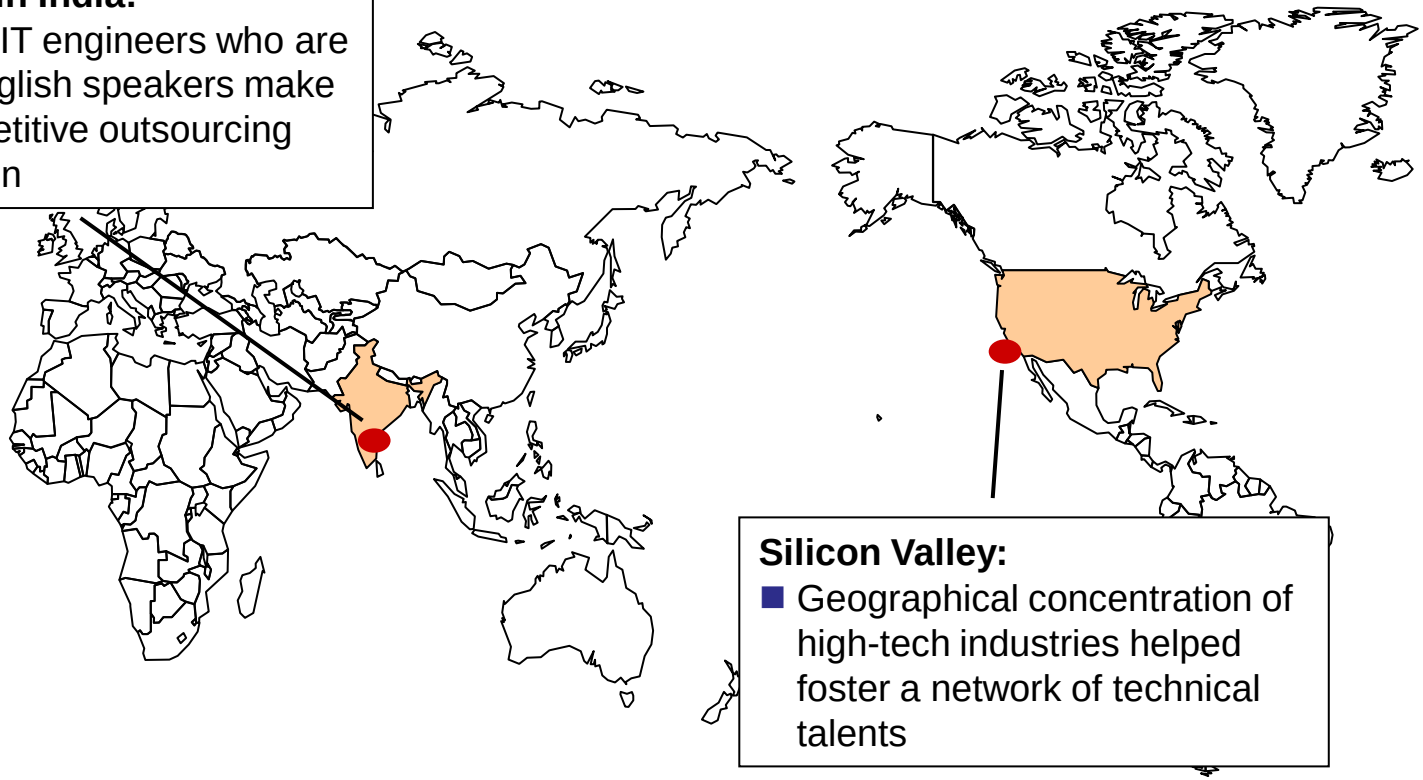
Source："Annual Report on China's Industrial Cluster Development (2007-2008)", CID Research Institute

Industry Clusters and Regional Comparative Advantages

Examples of Industry Clusters and Regional Comparative Advantages

Bangalore in India:

- Low-cost IT engineers who are native English speakers make it a competitive outsourcing destination



Silicon Valley:

- Geographical concentration of high-tech industries helped foster a network of technical talents

Source: sorted by CID Research Institute

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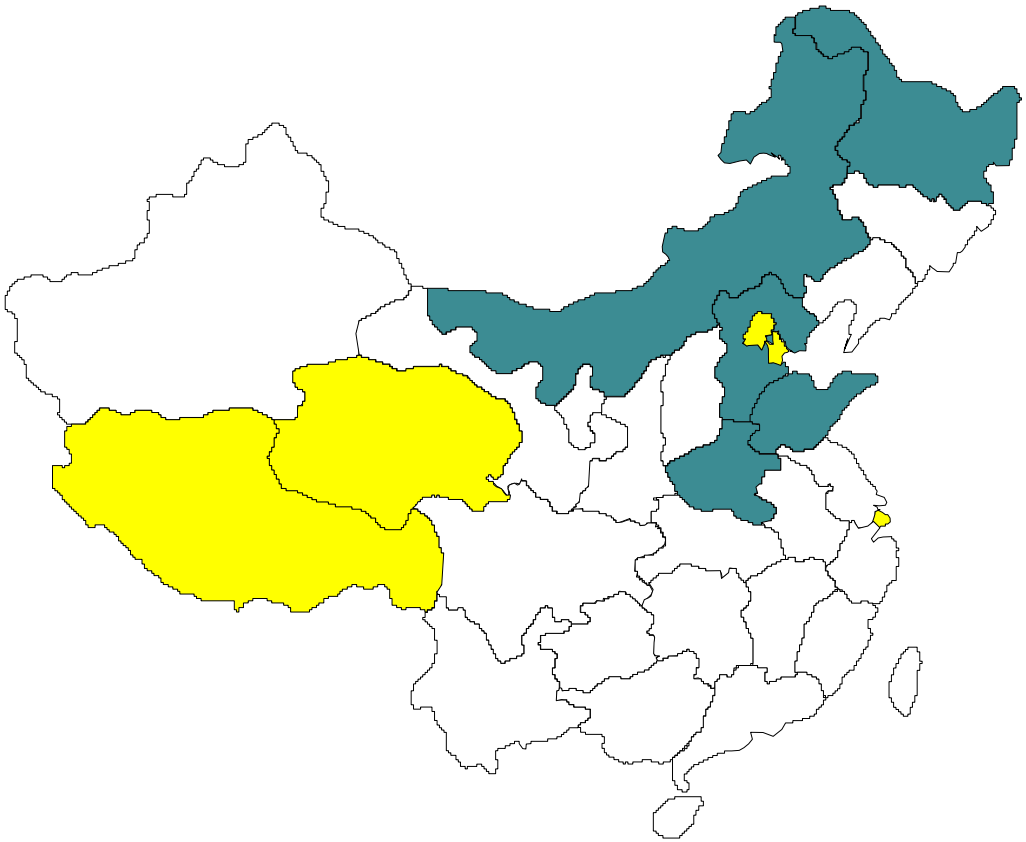
China's Regional Differences: Natural Resources

Most farmland is located in northern China

Provinces With Most And Least Farmland in China (2008)



Highest-5 provinces cumulatively account for 34% of nation's farmland and primarily located in northern China

Lowest-5 provinces cumulatively account for 2% of China's farmland

Source: National Bureau of Statistics of China

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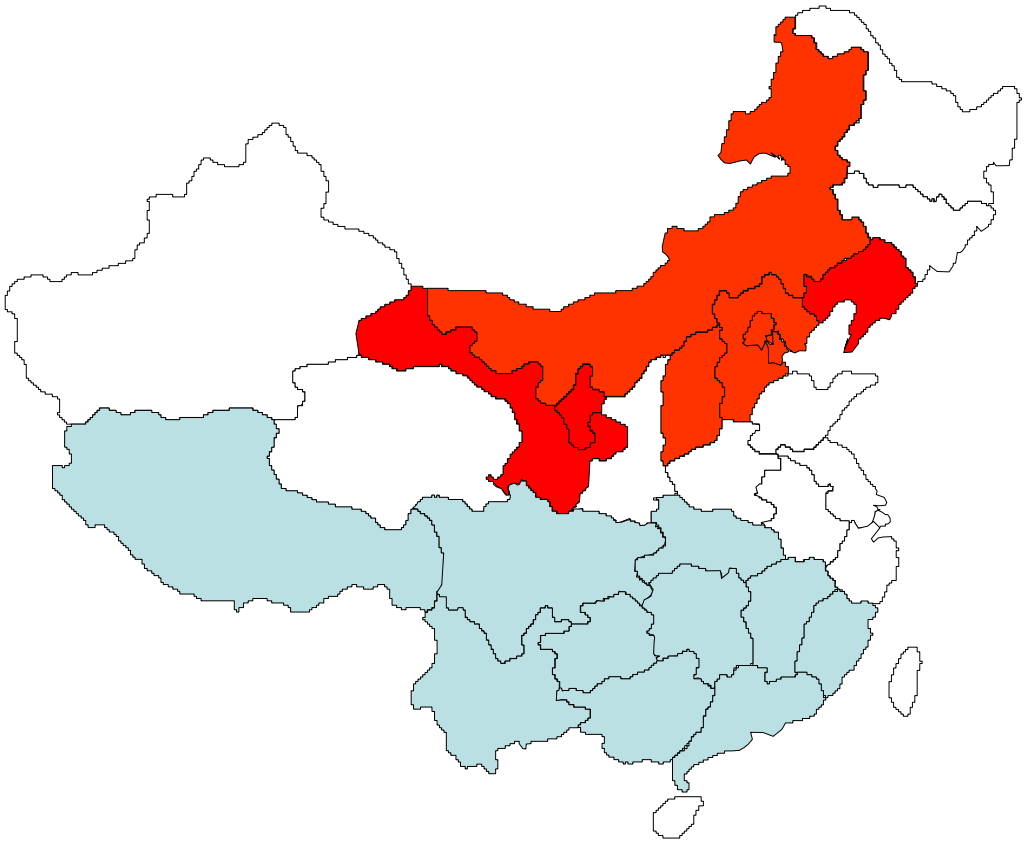
China's Regional Differences: Natural Resources

Water is abundant in southern China but lacking in the north

Provinces With Most And Least Water in China (2008)



30% of provinces located in northern China have access to <u>5%</u> of nation's water

30% of provinces located in southern China have access to <u>69%</u> of nation's water

Source: National Bureau of Statistics of China

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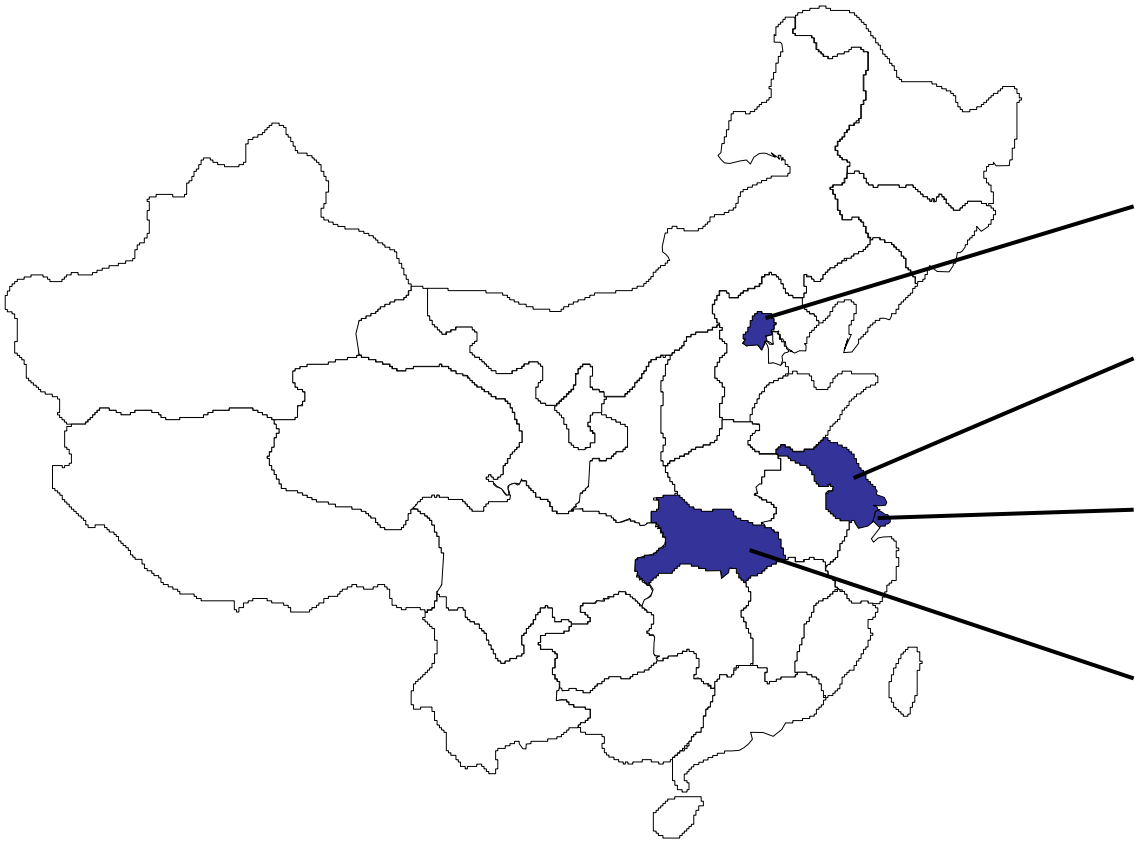
China's Regional Differences: Education Resources

Nearly half of China's best universities are located in 4 provinces: Beijing, Shanghai, Hubei and Jiangsu

Top-100 University Distribution in China (2009)



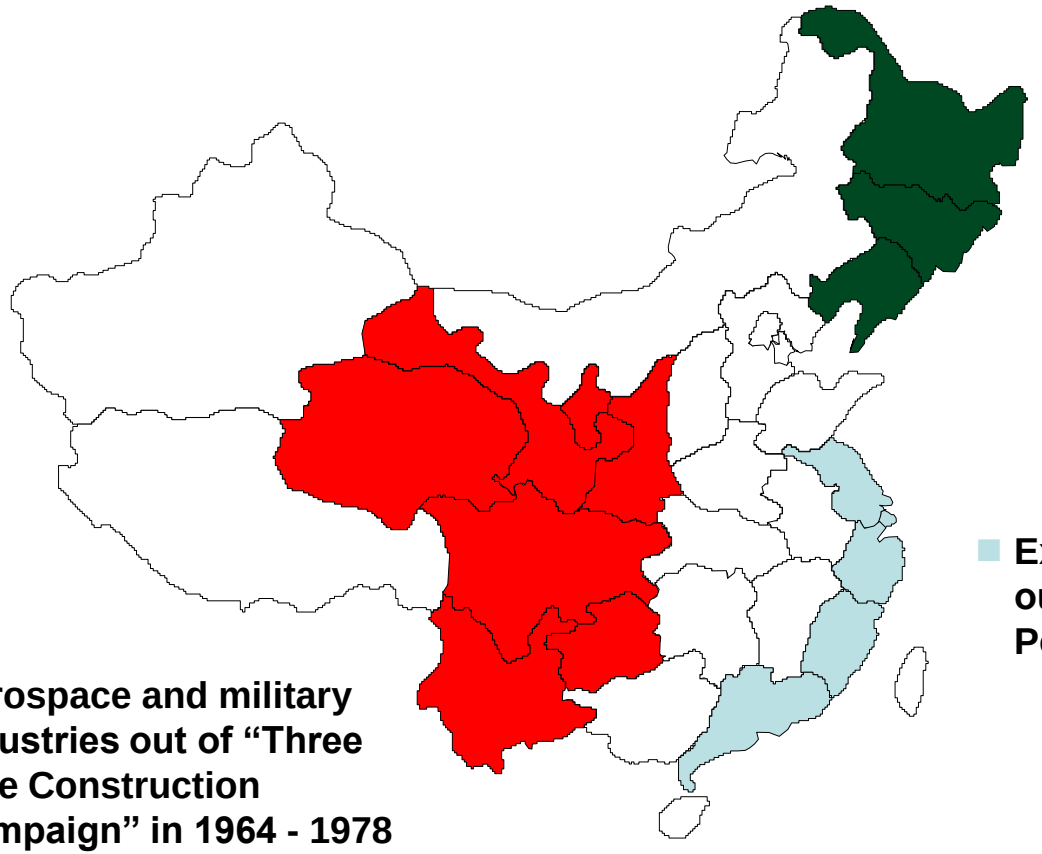
- **Beijing: 16 of Top-100 University**
  e.g. Tsinghua, PKU
- **Jiangsu: 14 of Top-100 University**
  e.g. NJU, SEU
- **Shanghai: 9 of Top-100 University**
  e.g. SJTU, Fudan
- **Hubei: 7 of Top-100 University**
  e.g. HUST, WHU

Source: China Institute of Education and Science

China's Regional Differences: Historical Policy Preferences

Under historical governmental policy plans, areas across China have various growth patterns and outcome

Areas Developed Under Different Policy Impact in China



- **Traditional heavy manufacturing recovered because of "Revitalizing Northeast China Campaign" since 2003**
- **Export-oriented light industries out of "Reform and Opening Up" Policy since 1978**
- **Aerospace and military industries out of "Three Line Construction Campaign" in 1964 - 1978**

Source: sorted by CID Research Institute

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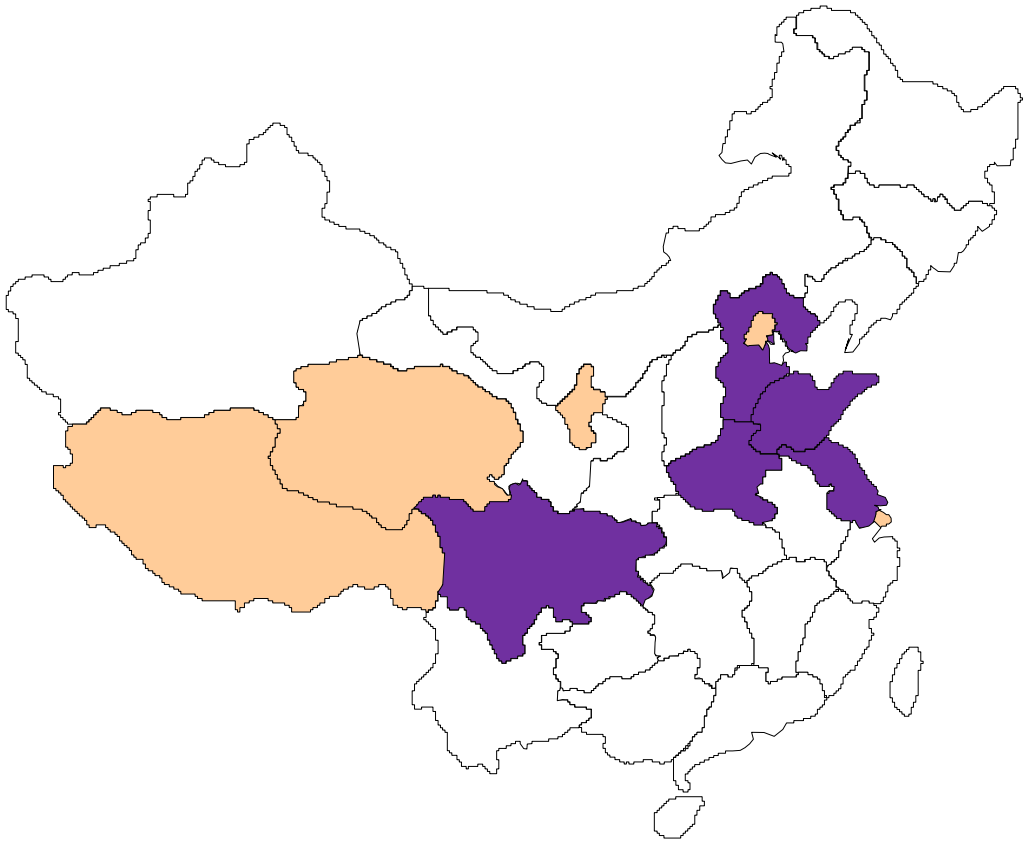
China's Regional Differences by Industry: Agriculture

Agricultural contribution to national GDP mainly comes from Shandong, Henan, Sichuan, Jiangsu and Hebei provinces

Rankings of Provinces in China by GDP from Agriculture



Provinces whose GDP from agriculture rank top-5 cumulatively account for 36% of the total

Provinces whose GDP from agriculture rank bottom-5 cumulatively account for 2% of the total

Source: National Bureau of Statistics of China

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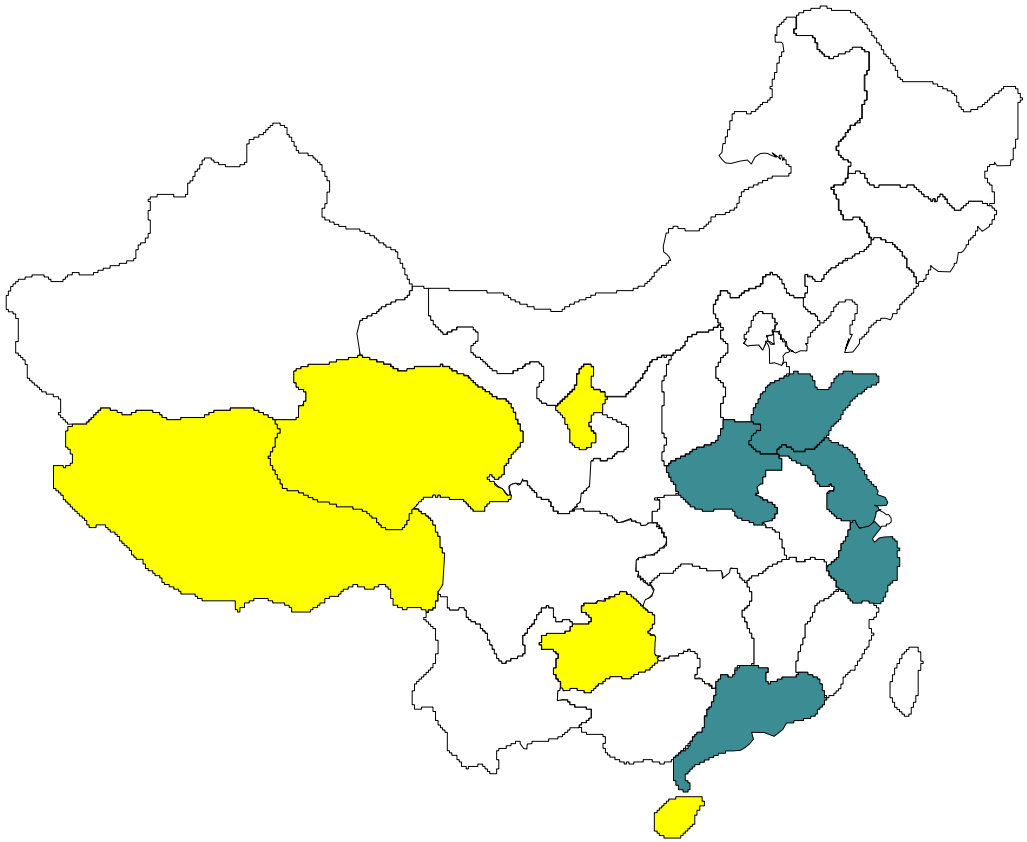
China's Regional Differences by Industry: Industrials

Henan province and other four provinces in the eastern coastal China contribute 46% of China's GDP from industrials

Rankings of Provinces in China by GDP from Industrials



Provinces whose GDP from industrials rank top-5 cumulatively account for 46% of the total

Provinces whose GDP from industrials rank bottom-5 cumulatively account for 2% of the total

Source: National Bureau of Statistics of China

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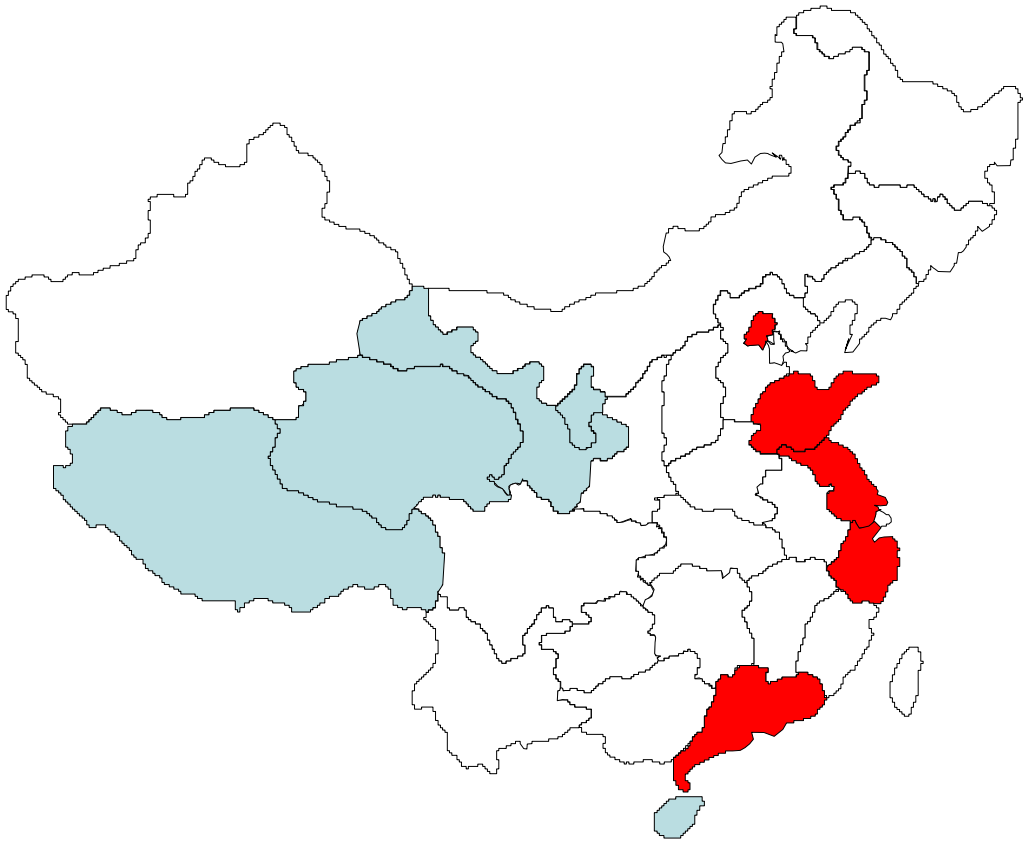
China's Regional Differences by Industry: Services

Services contribution to national GDP mainly comes from the most developed provinces, such as Beijing, Guangdong

Rankings of Provinces in China by GDP from Services



Highest 5 provinces whose GDP from services cumulatively account for 42% of the total

Lowest 5 of provinces whose GDP from services rank bottom cumulatively account for 2% of the total

Source: National Bureau of Statistics of China

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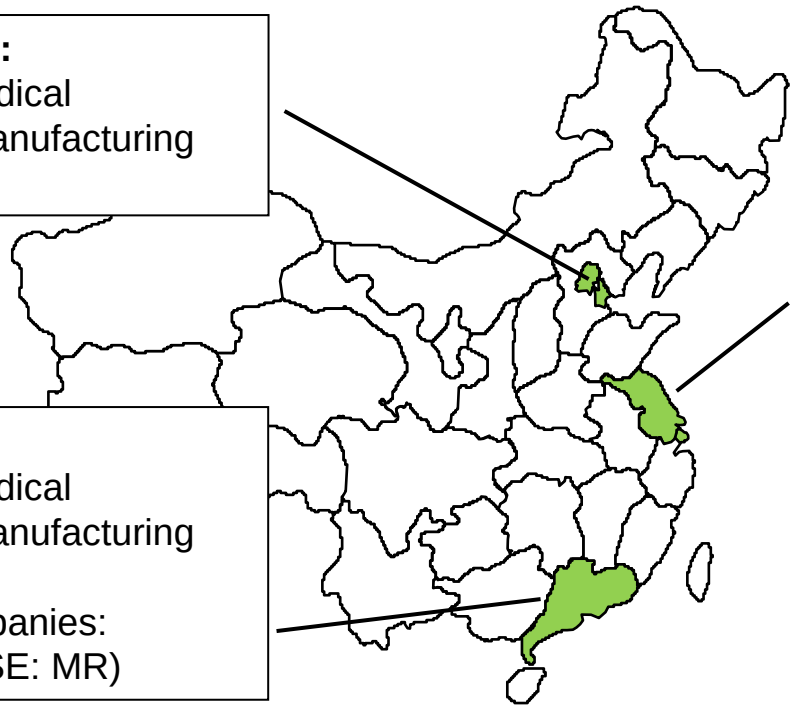
Current Industry Clusters: Health Care

Strong R&D foundation in Beijing, Tianjin, Shanghai and Shenzhen favors the manufacturing of high-value medical consumables, medical equipment, CRO and etc.

Industry Clusters of Health Care

Beijing, Tianjin:
- Cluster of medical equipment manufacturing industries

Shenzhen:
- Cluster of medical equipment manufacturing industries
- Leading companies: Mindary (NYSE: MR)



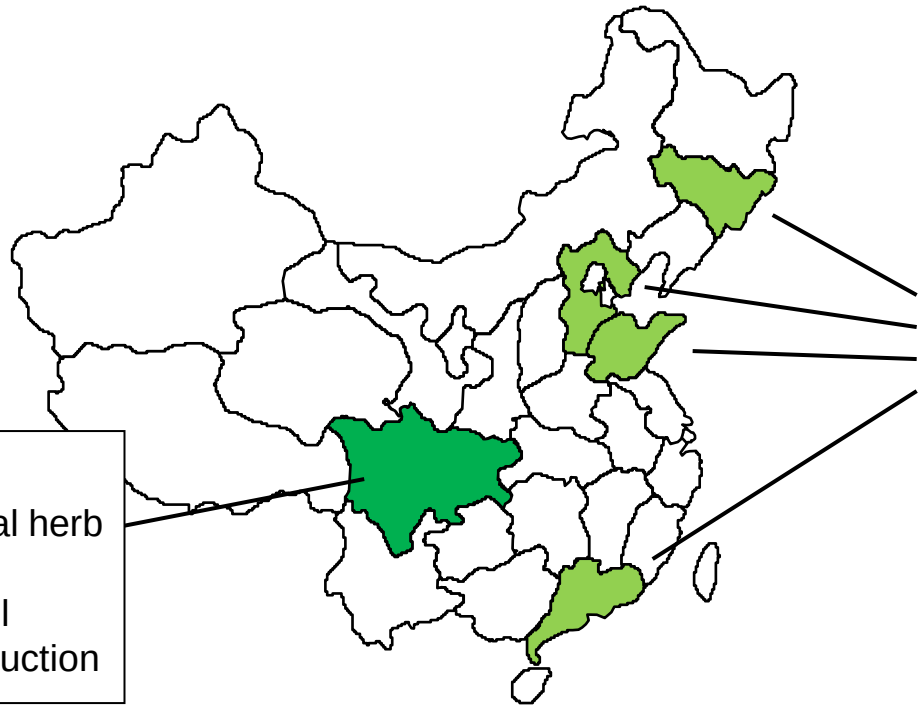
Shanghai, Jiangsu:
- Cluster of high-value medical consumables and CRO industries
- Leading companies: Pharmatechs (MYSE: WX)

Source: CID Research Institute

Current Industry Clusters: Health Care

Clusters of Chinese traditional medicine formed where there are local natural resources and historical foundation

Industry Clusters of Health Care



Jilin, Shandong, Guangdong, Hebei:
- Clusters of Chinese traditional medicine
- 44% of industry's total profit in China

Sichuan:
- Clusters of medical herb production
- 1/3 of China's total medical herb production

Source: CID Research Institute

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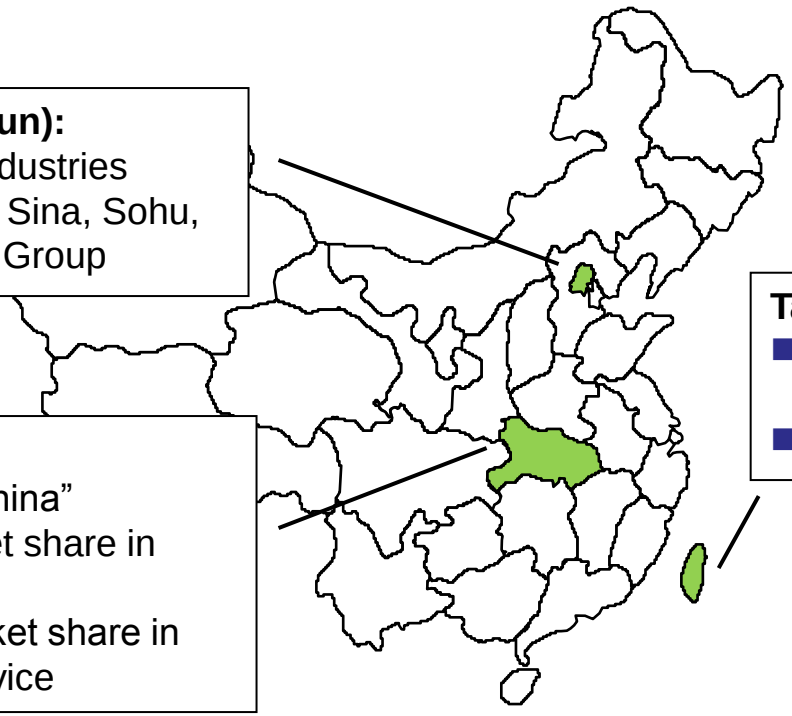
Current Industry Clusters: IT

With the aggregation of talents, Beijing, Wuhan and Taiwan are the strongest in IT

Industry Clusters of IT

Beijing (Zhongguancun):
- Cluster of internet industries
- Leading companies: Sina, Sohu, Baidu, Transn, CTG Group

Wuhan:
- "Optical Valley of China"
- 12% of global market share in optical fiber cable
- 40% of China's market share in photoconducting device



Taiwan (Hsinchu):
- Cluster of IT manufacturing industries
- Leading companies: TSMC, Acer

Source: CID Research Institute

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Current Industry Clusters: Outsourcing

Dalian is a typical cluster of software outsourcing because there are a large work force who know Japanese and Korean languages

Industry Clusters of Outsourcing

Dalian:

- Cluster of software outsourcing industry
- 54% of Liaoning province's output

Source: CID Research Institute

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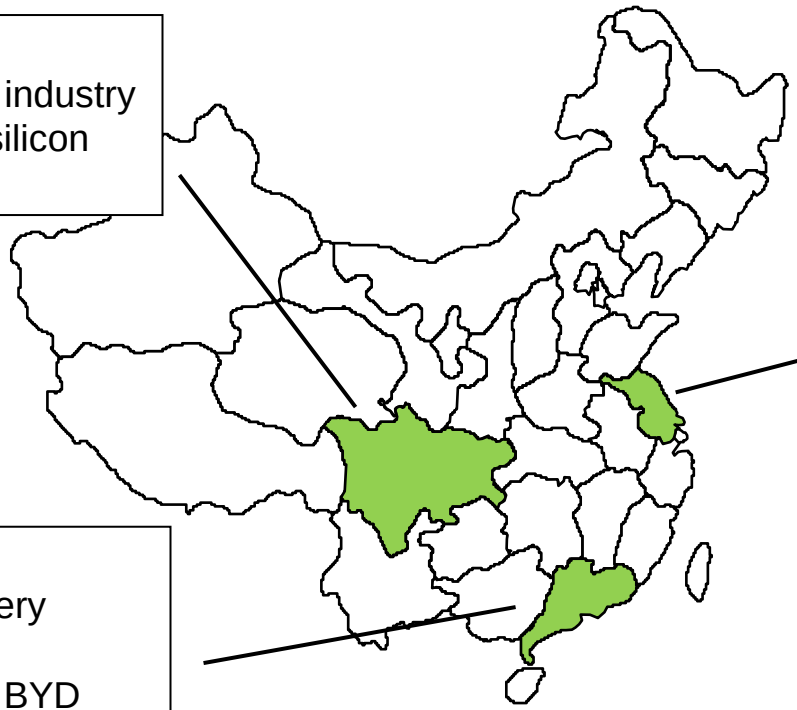
Current Industry Clusters: Green Technologies

Shenzhen, Jiangsu and Sichuan provided enterprises in green technologies with good industrial support, easy way of financing and policy preference

Industry Clusters of Green Technologies

Sichuan:
- Cluster of polysilicon industry
- No.1 of China's polysilicon capacity



Jiangsu:
- Cluster of PV industry
- 60% of China's capacity of PV industry
- Leading enterprise: Suntech

Shenzhen:
- Cluster of Li-ion battery industry
- Leading companies: BYD

Source: CID Research Institute

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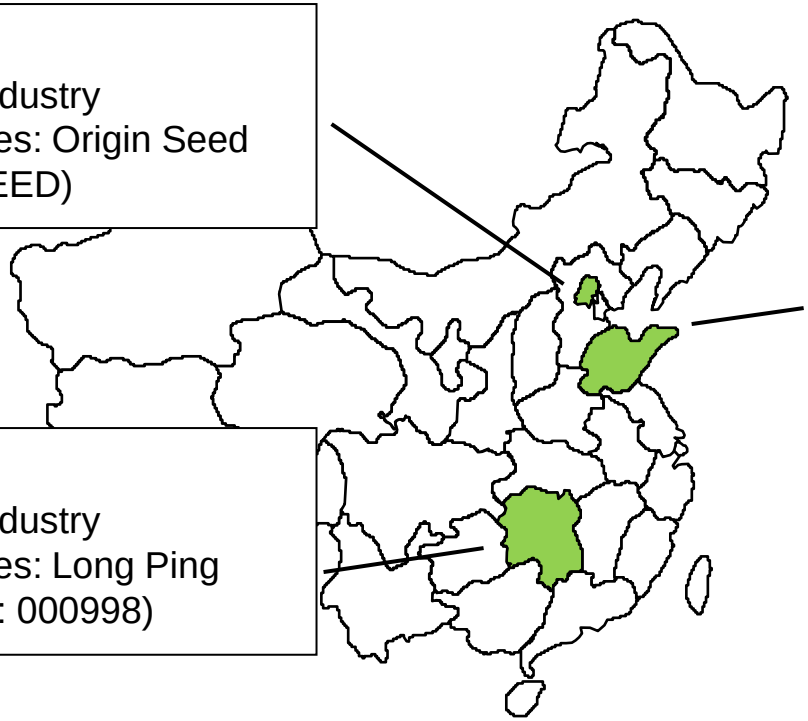
Current Industry Clusters: Modern Agriculture

Large arable area in Shandong facilitates its agriculture industry with a good natural environment. Strong R&D ability in Beijing, Henan and Shandong adds to the development of high-tech agriculture

Industry Clusters of Modern Agriculture

Beijing:
- Cluster of seed industry
- Leading companies: Origin Seed ltd. (NASDAQ: SEED)



Shandong:
- Cluster of modern agricultural industries
- Shouguang: China's export vegetable center
- Leading companies: Denghai Seed (SZSE: 002041)

Changsha:
- Cluster of seed industry
- Leading companies: Long Ping High-Tech (SZSE: 000998)

Source: CID Research Institute

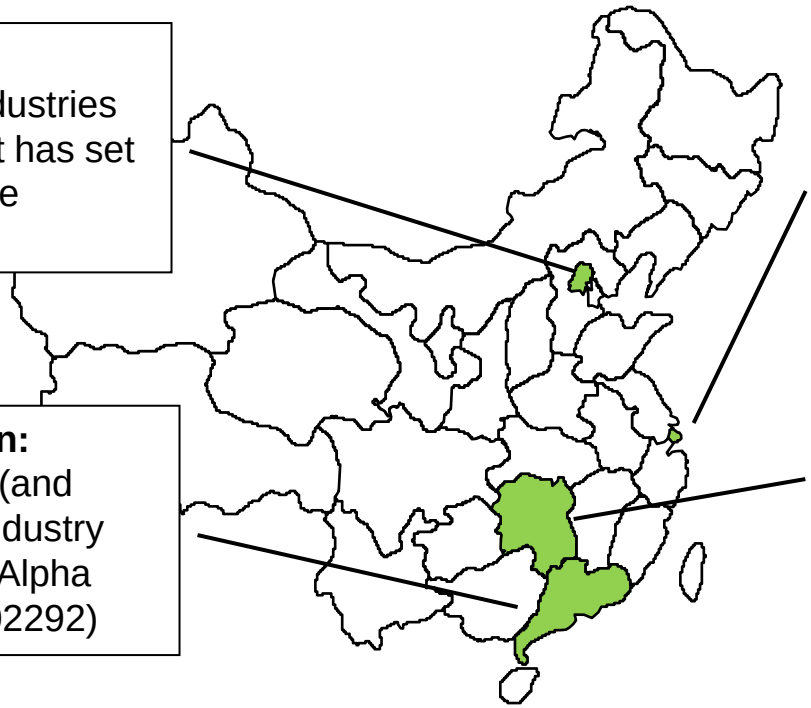
Current Industry Clusters: Creative Industries

The cultural atmosphere as well as economic development level leads to clusters of creative industry in Beijing, Hunan, Guangzhou and Shenzhen

Industry Clusters of Creative Industries

Beijing:
- Cluster of creative industries
- The local government has set the industry as its core industry

Shanghai:
- Clusters of game industry
- Leading companies: Shanda (NASDAQ: SNDA)



Guangzhou, Shenzhen:
- Cluster of Animation (and cartoon derivation) industry
- Leading companies: Alpha Animation (SZSE: 002292)

Hunan:
- Cluster of creative industries
- The first province to give open policy to movie and culture industry

Source: CID Research Institute

Current Industry Clusters: Summary

Locations of the clusters of China's key industries is summarized in the table below

Locations of the Clusters of China's Key Industries

Location / Industry	Consumption	Education	Health Care	Green Technologies	Outsourcing	IT	Creative Industries	Modern Agriculture
Beijing		√	√		√	√	√	√
Tianjin			√					
Shandong			√					√
Liaoning					√			
Shanghai	√	√	√				√	
Jiangsu	√		√	√				
Zhejiang	√							
Guangdong	√		√	√			√	
Taiwan					√	√		
Hunan							√	√
Hubei						√		
Hebei			√					
Sichuan				√				
Jilin			√					

Source: CID Research Institute

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From Current to Potential Clusters: Analysis of Driving Factors

CRI built up a method to analyze the factors driving the formation of industry clusters

Example of How to Analyze

	Education Industry 1.0			Cosmetics Industry 1.0		
Driving Factors	Education Resources	Higher Economic Wealth	Level of the Services	Higher Economic Wealth	Supporting Industry， like Packing, OEMs and etc.	Sensitivity to Fashion
Beijing	√	√	√	√		
Tianjin						
Shandong						
Liaoning						
Shanghai	√	√	√	√	√	√
Jiangsu	√				√	
Zhejiang					√	
Guangdong		√	√	√	√	√
Hunan						
Hubei	√					
Sichuan						
Clusters	Beijing, Shanghai			Yangtze River Delta （Shanghai, part of Jiangsu and Zhejiang, The Pearl River Delta (part of Guangdong)		

Source: CID Research Institute

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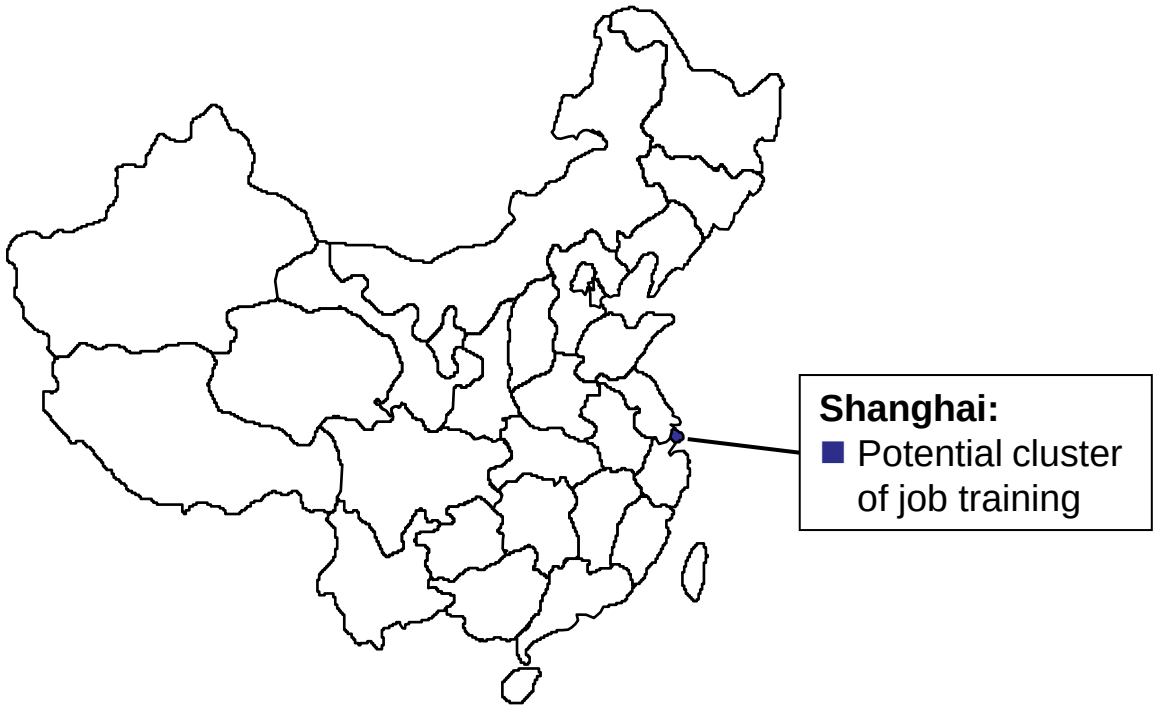
Potential Industry Clusters: Education 2.0

CRI predicts that job training, an emerging sub-sector in education, will form its cluster in Shanghai on the basis of CRI research

Potential Industry Cluster of Job Training

Driving Factors

- Well-educated labor force
- Agglomeration of top companies demanding for trained employees
- Level of the services



Source: CID Research Institute

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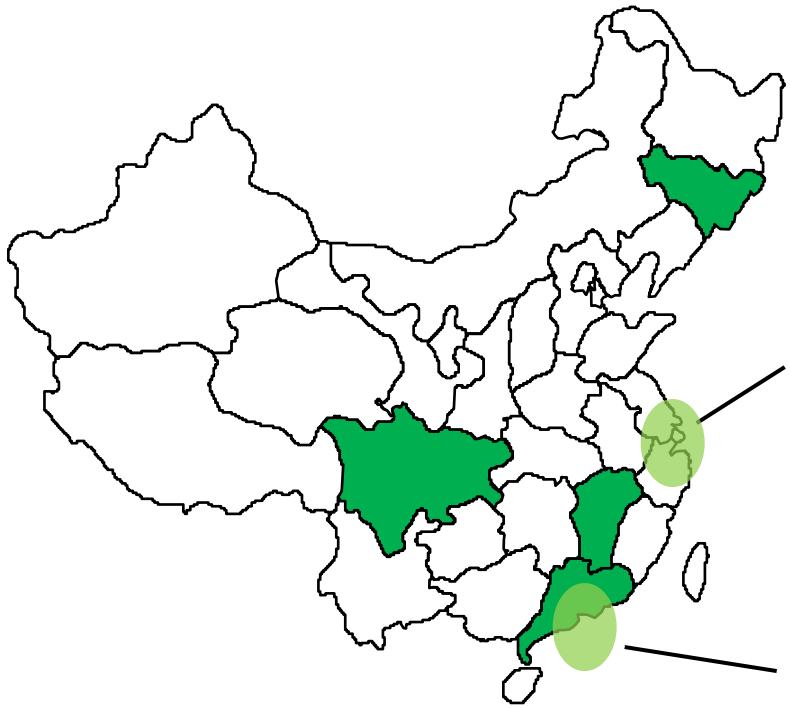
Potential Industry Clusters: Cosmetics 2.0

CRI predicts that new investment opportunities in cosmetics, like local brands and franchising will form its cluster in Yangtze and the Pearl River Delta

Potential Cluster of Cosmetics Industry

Driving Factors

- Higher economic wealth
- Sensitivity to fashion
- Cosmetics 1.0
- Related industry



Clusters of Chinese traditional medicine

Yangtze River Delta:

- Potential cluster of cosmetics 2.0

The Pearl River Delta:

- Potential cluster of cosmetics 2.0
- Specialized in new brands with the concept of Chinese traditional medicine

Source: CID Research Institute

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Summary

- **There are regional differences on the distribution of nature resources, education resources, historical policy preference and industry features**
- **CRI has surveyed the current industry clusters of China's key industries for VC investment**
- **Analyzing the driving factors of industry clusters, with the knowledge of regional differences, CRI is able to predict potential clusters for future investment opportunities**

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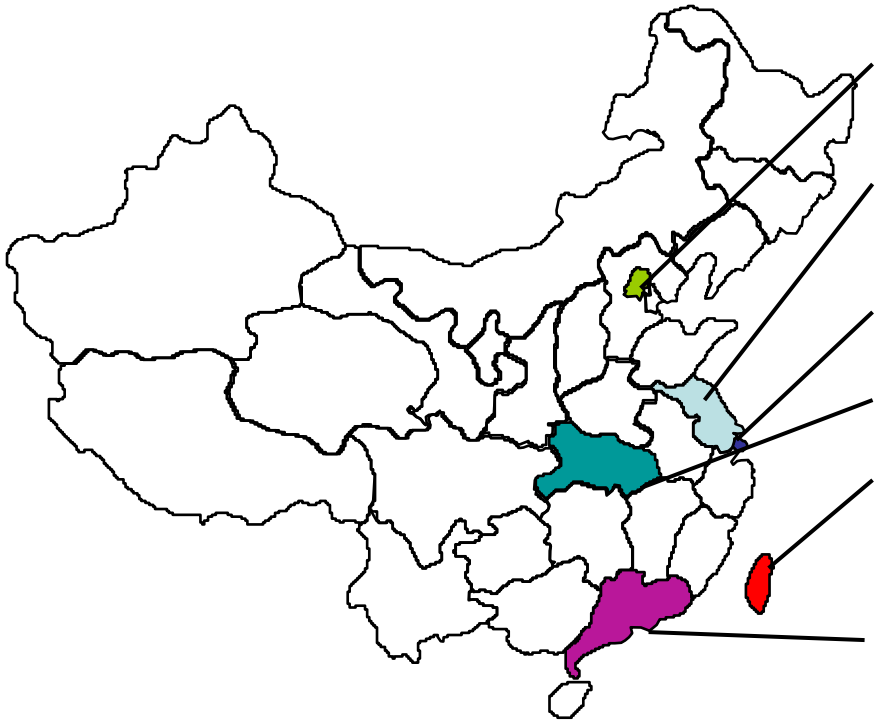
Highlight of China's Regional Comparative Advantages

Examples of China's Regional Comparative Advantages



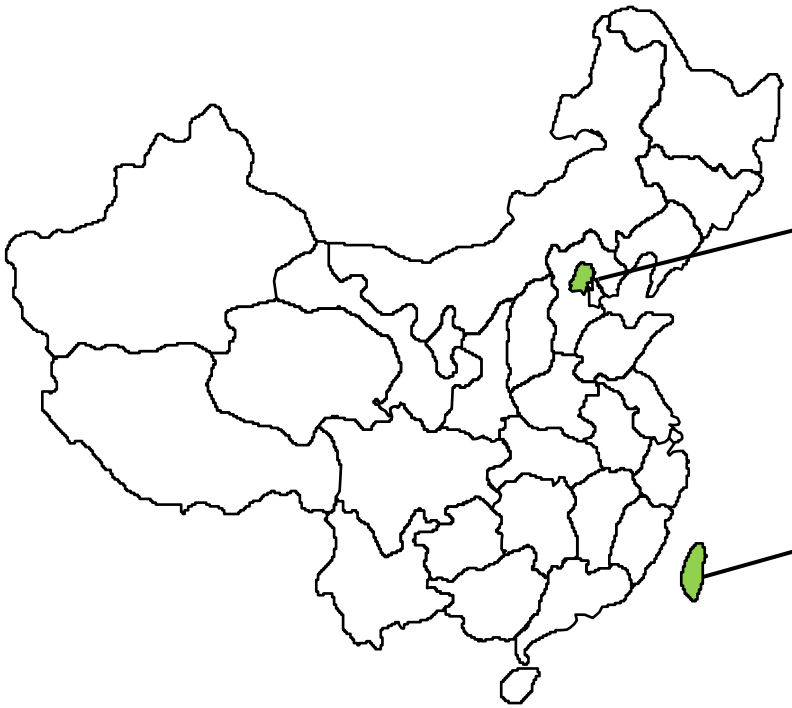
	Today's Comparative Advantages
■ **Beijing**	Education resources, entrepreneurs back from overseas, IT talents
■ **Jiangsu**	Strong foundation in manufacturing of integrated circuit, and etc.
■ **Shanghai**	Sensitivity of fashion
■ **Wuhan**	Optical communication industry
■ **Taiwan**	Management, technical talents, and abundant Localized foreign education contents
■ **Guangdong**	Strong foundation in manufacturing of cosmetics, electric components and etc.

Source: CID Research Institute

Portfolio Highlights: DKW

CID introduced management talent to DKW as its CFO. Leveraging Taiwan's education contents and the education basis in Beijing, DKW is able to strengthen its competency

Integration of Industry Clusters and DKW



Beijing:
- Education,
- Entrepreneurs
- IT Talents

Taiwan:
- Management talents
- Abundant localized foreign education contents

Digital Knowledge World
数字博识
www.d-edu.com

Source: CID Research Institute

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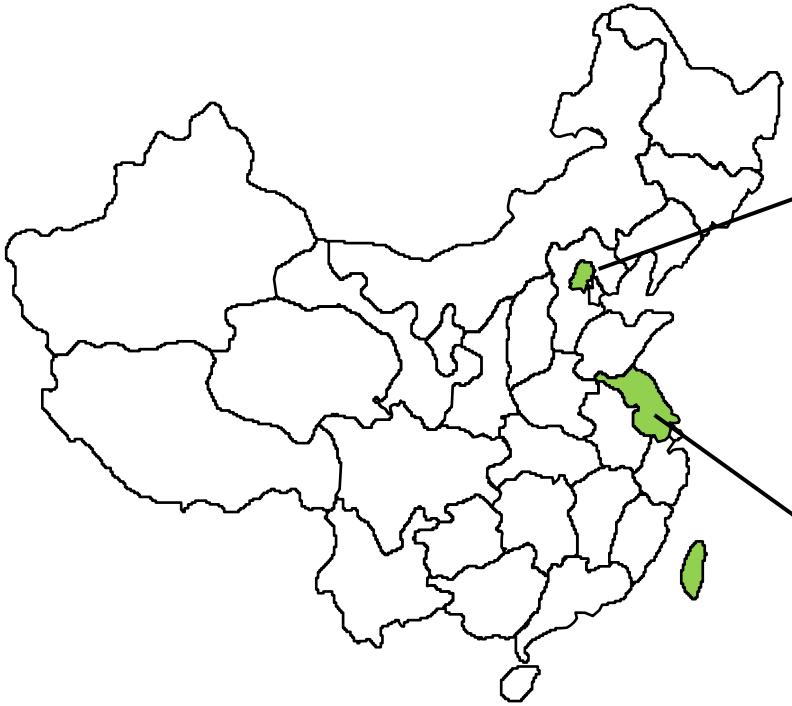
Portfolio Highlights: AMBOW

CID leverage of Ambow's foundation in education industry with CID's relationship in IT industry in Kunshan to built up a new business model in IT job-readiness training

Integration of Industry Clusters and AMBOW



Beijing:
- Aggregation of China's top universities
- Cluster of education industry

Kunshan:
- Taiwan's companies invested in IT industries in this area
- Strong demand for qualified IT employees

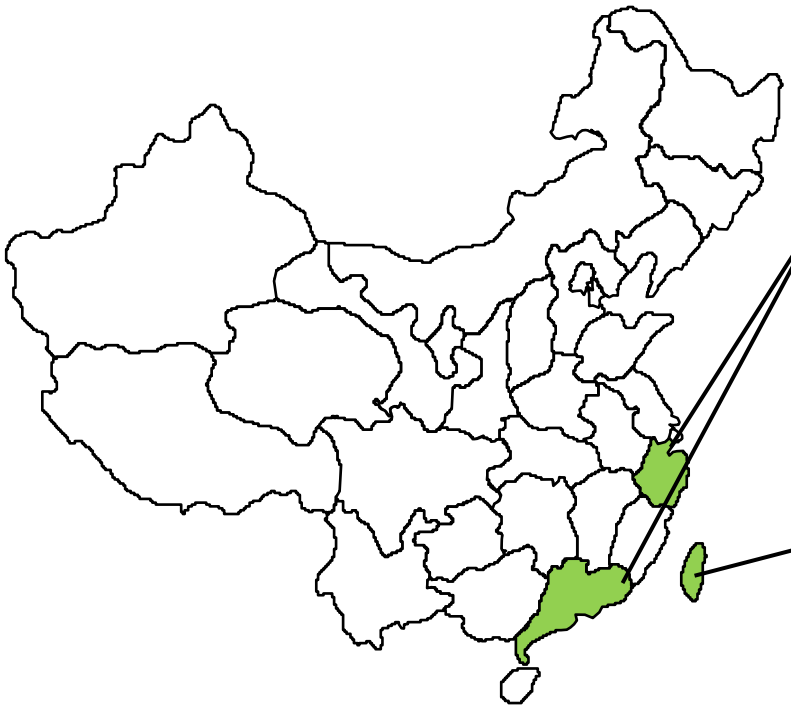
AMBOW EDUCATION GROUP

Source: CID Research Institute

Portfolio Highlights: Young Fast

CID helped Young Fast by leveraging IT talents in Taiwan and the low cost labor for manufacturing electric components in mainland China

Integration of Industry Clusters and Young Fast



The Pearl River Delta & Yangtze River Delta:

- Clusters of manufacturing of OEMs of electric components

Taiwan:

- Clusters of IT industry
- Aggregation of IT talents
- Strong in technology

YOUNGFAST

Source: CID Research Institute

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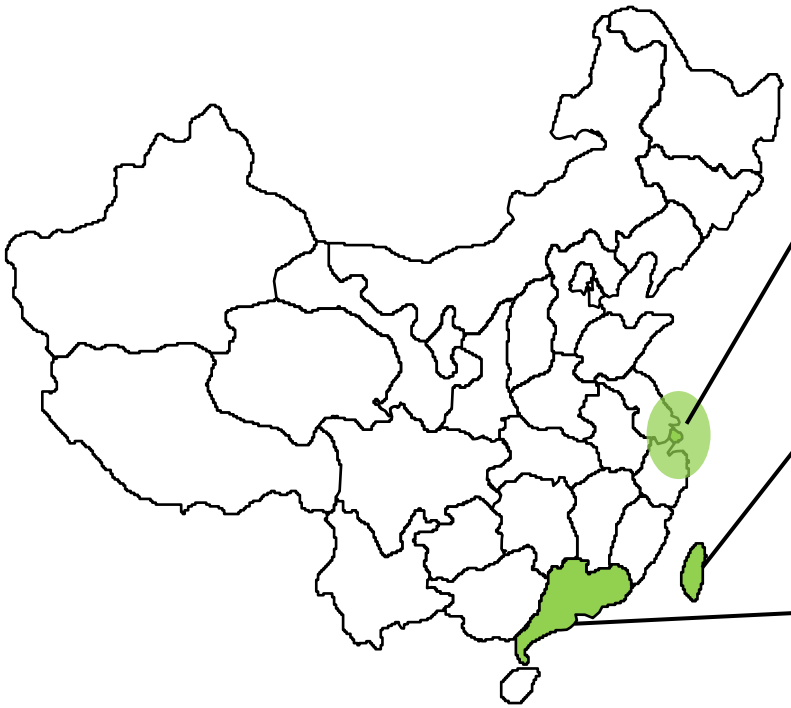
Future Portfolio: Cosmetics

CID will continue to analyze regional comparative advantage as way to take advantage of regional strengths in the future

Integration of Industry Clusters and Cosmetics Industry



Yangtze River Delta:
- Clusters of cosmetics industry, strong in manufacturing, good sensitivity of fashion

Taiwan:
- Talents in brand operation

The Pearl River Delta:
- Clusters of cosmetics industry, complete value chain of the industry

Taiho

Huangyu Tech.

…

Source: CID Research Institute

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Conclusion

- **CRI analyzes industry clusters and the driving factors to predict where to find future investment opportunities**
- **Regional comparative advantages are identified on the basis of the understanding of industry clusters**
- **CID increases value in its investments by integrating regional comparative advantages from across the region**