China’s Geographic Migration Trends & Industry Clusters

Sep. 19th, 2009
Contents

- Introduction
- Methodology Background
- China’s Regional Differences
- Clusters of China’s Key Industries
- CID’s Integration of Regional Comparative Advantages
Contents

■ Introduction
  ■ CID’s Investment Philosophy
  ■ Results from Past CRI Research
  ■ Today’s Discussion

■ Methodology Background
■ China’s Regional Differences
■ Clusters of China’s Key Industries
■ CID’s Integration of Regional Comparative Advantages
# CID’s Investment Philosophy

*Invest in a strategic way and create value through integration*

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Utilize different methods to predict investment opportunities</td>
</tr>
<tr>
<td>2</td>
<td>Analyze what are key success factors</td>
</tr>
<tr>
<td>3</td>
<td>Create synergistic investment by integrating comparative advantages</td>
</tr>
</tbody>
</table>
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
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

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)

The highest one is 8 times that of the lowest

Source: National Bureau of Statistics of China

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

The highest one is 1.4 times that of the lowest

Source: BEA
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
Examples of Industry Clusters in the U.S.

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

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

**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

Source: sorted by CID Research Institute
Examples of Industry Clusters in Other Countries

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

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

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

**Bangalore in India:**
- Cluster of IT industries
- "Silicon Valley of India"
- 33% of India’s IT exports

Source: sorted by CID Research Institute
**Specific Factors Driving the Formation of Industry Clusters**

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

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

Industry clusters are driven by factors including:
- Nature resources
- Infrastructure
- Related and supporting industries
- Demand conditions
- Government economic policies and etc.

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
Contents

- Introduction
- Methodology Background
- China’s Regional Differences
  - Natural Resources
  - Education Resources
  - Historical Policy Preferences
  - Industry Features
- Clusters of China’s Key Industries
- CID’s Integration of Regional Comparative advantages
China’s Regional Differences: Natural Resources

Most farmland is located in northern China

Provinces With Most And Least Farmland in China (2008)

Source: National Bureau of Statistics of China
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 5% of nation’s water

30% of provinces located in southern China have access to 69% of nation’s water

Source: National Bureau of Statistics of China
Nearly half of China’s best universities are located in 4 provinces: Beijing, Shanghai, Hubei and Jiangsu

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
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.

Source: sorted by CID Research Institute
China’s Regional Differences by Industry: Agriculture

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

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
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*

Source: National Bureau of Statistics of China
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
Contents

- Introduction
- Methodology Background
- China’s Regional Differences
- Clusters of China’s Key Industries
  - Current Industry Clusters
  - Potential Industry Clusters
- CID’s Integration of Regional Comparative Advantages
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.

Beijing, Tianjin:
- Cluster of medical equipment manufacturing industries

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

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

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

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

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

Source: CID Research Institute
Current Industry Clusters: IT

*With the aggregation of talents, Beijing, Wuhan and Taiwan are the strongest in 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
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
Shenzhen, Jiangsu and Sichuan provided enterprises in green technologies with good industrial support, easy way of financing and policy preference.

**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
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)

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

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

Source: CID Research Institute
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

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

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

#### 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

<table>
<thead>
<tr>
<th>Location</th>
<th>Industry</th>
<th>Consumption</th>
<th>Education</th>
<th>Health Care</th>
<th>Green Technologies</th>
<th>Outsourcing</th>
<th>IT</th>
<th>Creative Industries</th>
<th>Modern Agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beijing</td>
<td></td>
<td>√</td>
<td>√</td>
<td></td>
<td></td>
<td>√</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tianjin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shandong</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liaoning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shanghai</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jiangsu</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zhejiang</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guangdong</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taiwan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hunan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hubei</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hebei</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sichuan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jilin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: CID Research Institute
**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

<table>
<thead>
<tr>
<th>Driving Factors</th>
<th>Education Industry 1.0</th>
<th>Cosmetics Industry 1.0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Education Resources</td>
<td>Higher Economic Wealth</td>
</tr>
<tr>
<td>Beijing</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Tianjin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shandong</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liaoning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shanghai</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Jiangsu</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Zhejiang</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guangdong</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Hunan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hubei</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sichuan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clusters</td>
<td>Beijing, Shanghai</td>
<td>Yangtze River Delta</td>
</tr>
</tbody>
</table>

Source: CID Research Institute
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

Shanghai: Potential cluster of job training

Source: CID Research Institute
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

**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

**Clusters of Chinese traditional medicine**

**Driving Factors**
- Higher economic wealth
- Sensitivity to fashion
- Cosmetics 1.0
- Related industry

Source: CID Research Institute
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.
Contents

- Introduction
- Background
- China’s Regional Differences
- Industry Clusters of China’s Key Industries
- CID’s Integration of Regional Comparative Advantages
  - Portfolio Highlights
Highlight of China’s Regional Comparative Advantages

Examples of China’s Regional Comparative Advantages

Source: CID Research Institute

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.
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

Source: CID Research Institute
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

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

Source: CID Research Institute
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

Taiwan:
- Talents in brand operation

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

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

Taiho
Huangyu Tech.

Source: CID Research Institute
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