

# Chinese Competitiveness: Where Does The Nation Stand?

Professor Michael E. Porter  
Institute for Strategy and Competitiveness  
Harvard Business School

*EMKT*  
*Beijing, China*  
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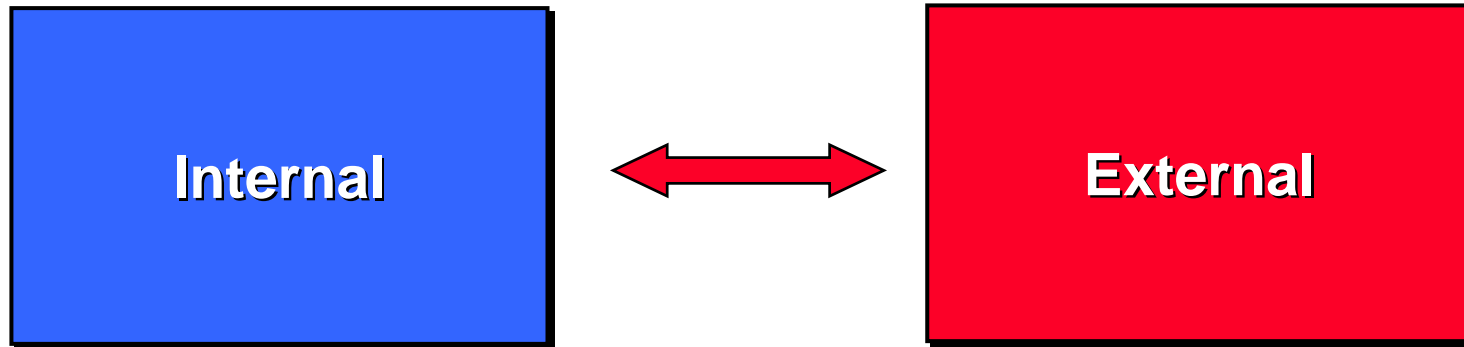
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This presentation draws on ideas from Professor Porter's articles and books, in particular, The Competitive Advantage of Nations (The Free Press, 1990), "Building the Microeconomic Foundations of Competitiveness," in The Global Competitiveness Report 2003-2004, (Oxford University Press, 2004), "Clusters and the New Competitive Agenda for Companies and Governments" in On Competition (Harvard Business School Press, 1998), and ongoing research on clusters and competitiveness. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means - electronic, mechanical, photocopying, recording, or otherwise - without the permission of Michael E. Porter.

Further information on Professor Porter's work and the Institute for Strategy and Competitiveness is available at [www.isc.hbs.edu](http://www.isc.hbs.edu)

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# Perspectives on Firm Success



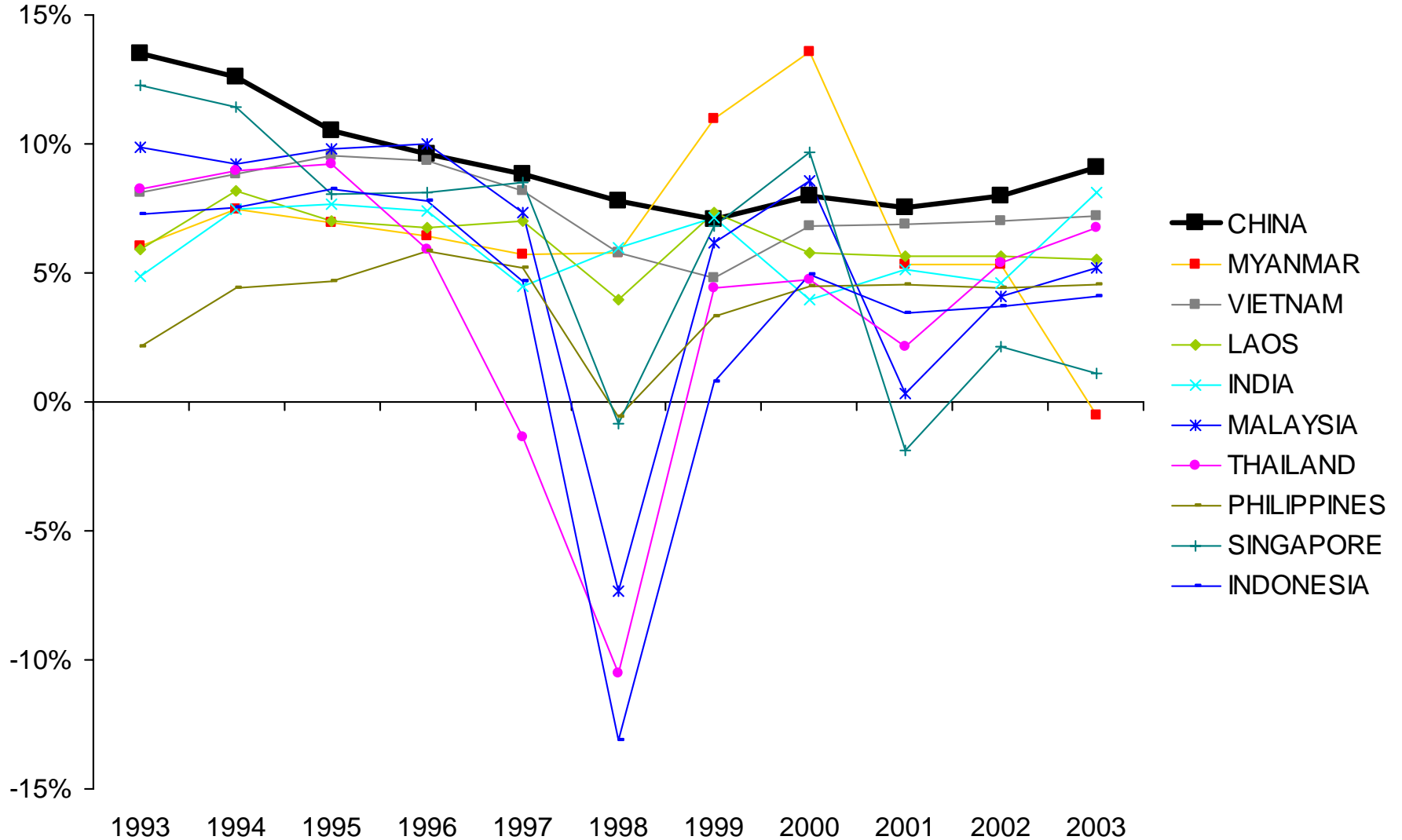
- Competitive advantage resides solely **inside** a company or in its industry
- Competitive success depends primarily on **company choices**
- Competitive advantage (or disadvantage) resides partly in the **locations** at which a company's business units are based
- **Cluster participation** is an important contributor to competitiveness

# Comparative Economic Performance

## Real GDP Growth Rates

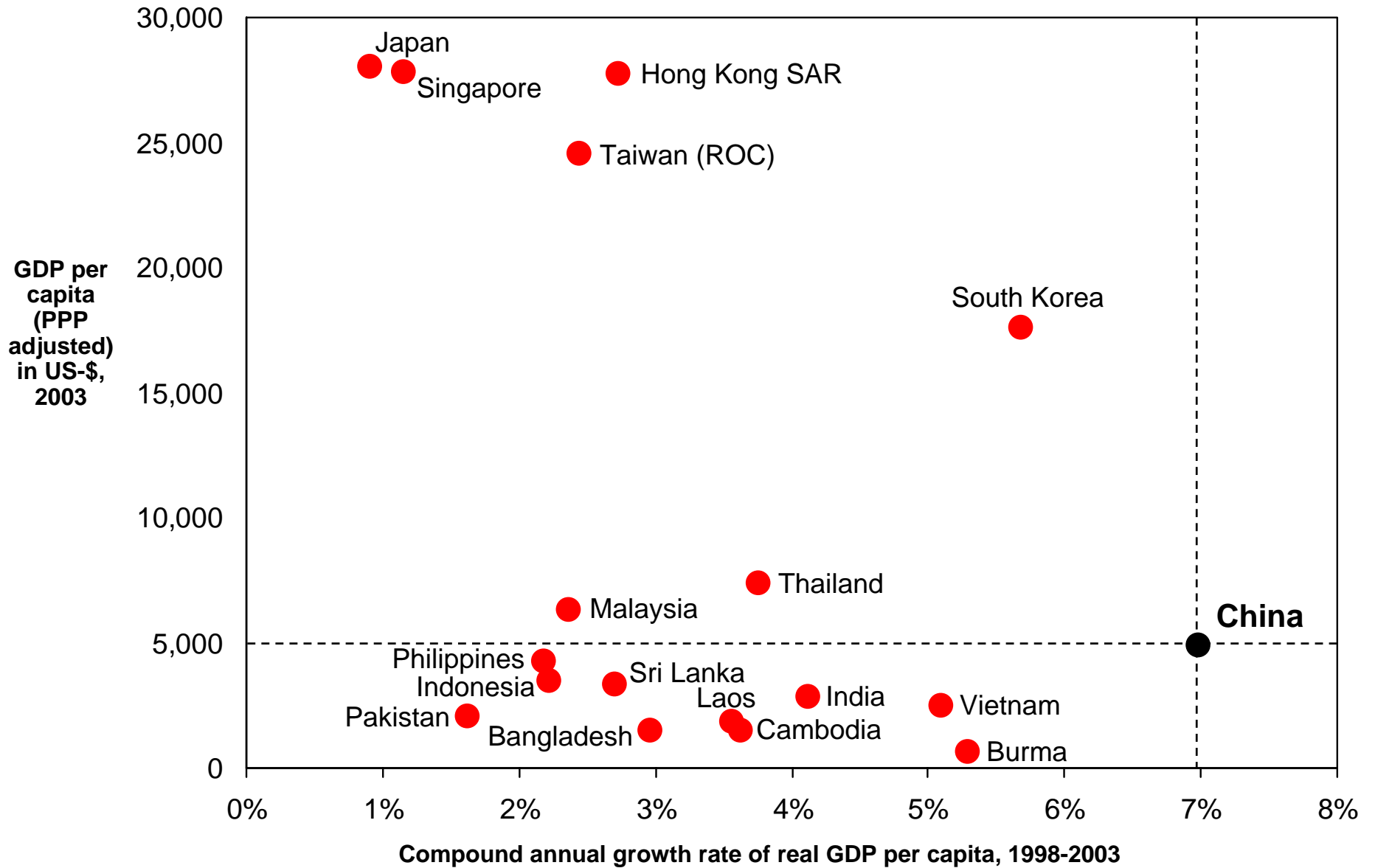
Annual growth rate  
of real GDP

Countries sorted by 1998-  
2003 annual real GDP  
growth rate (CAGR)



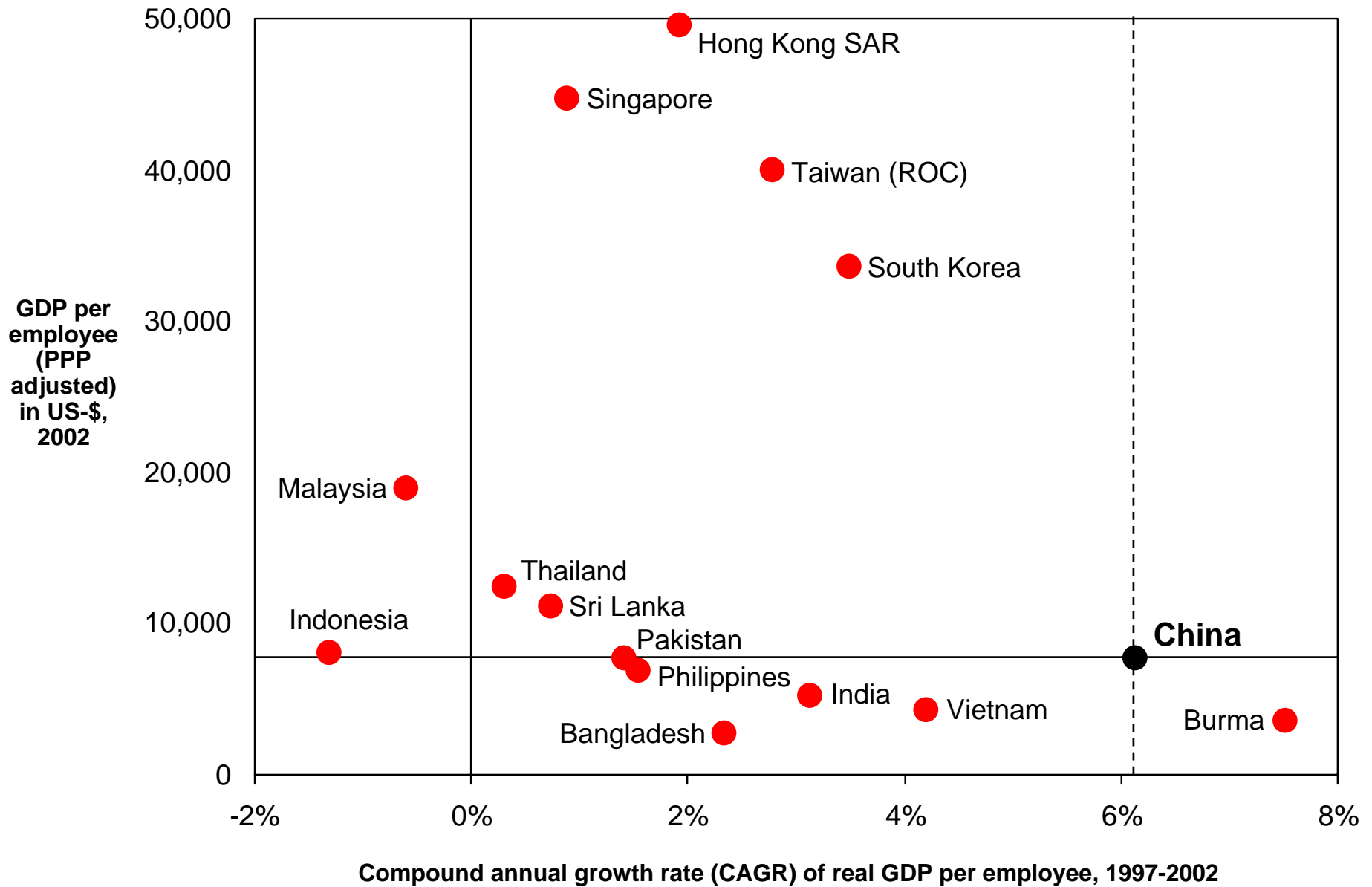
# Comparative Economic Performance

## China versus Other Asian Economies



# Comparative Labor Productivity Performance

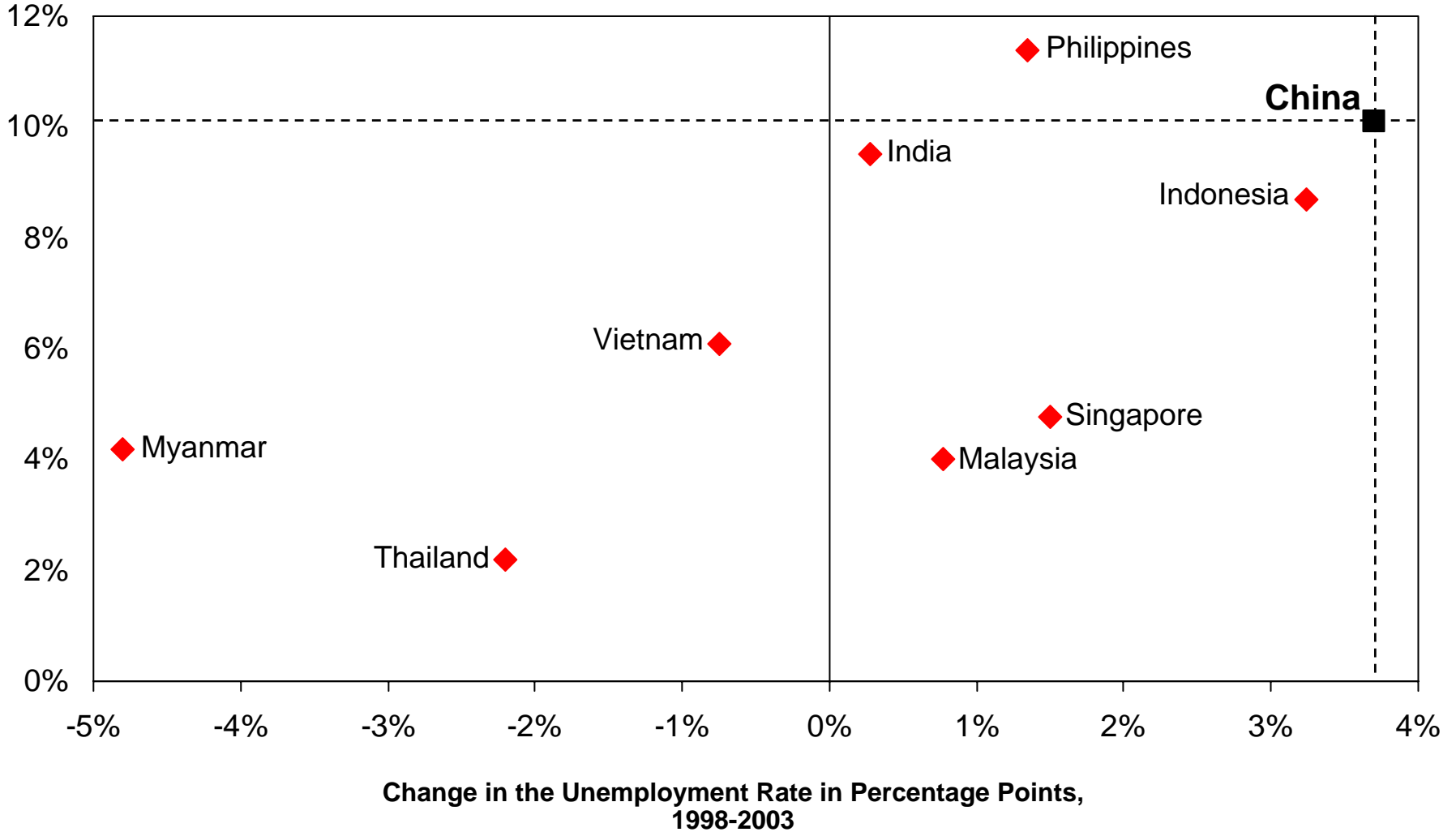
## China versus Other Asian Economies



# Unemployment Performance

## Selected Asian Countries

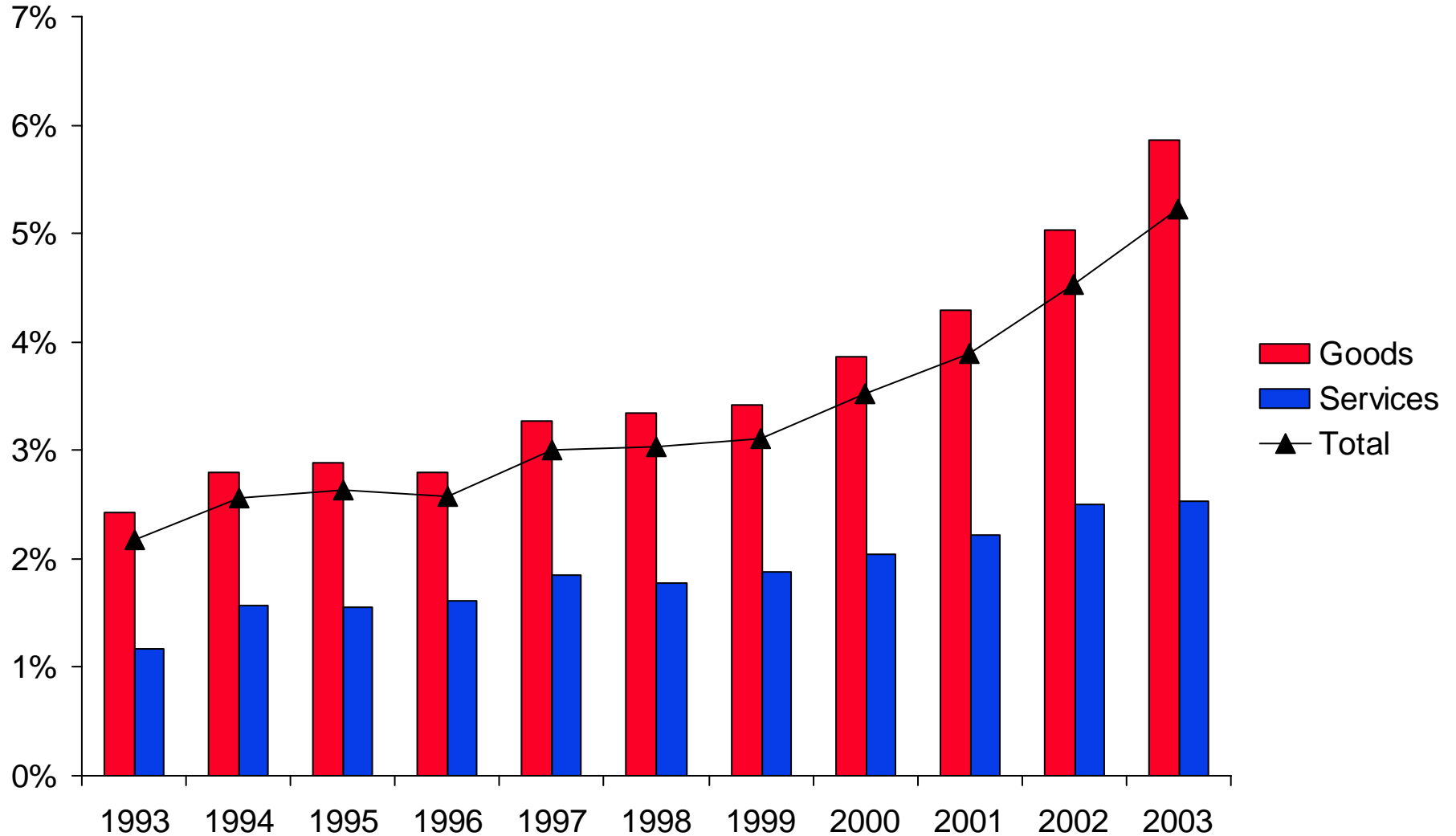
Unemployment  
Rate, 2003



# China's Export Performance

## World Export Market Shares

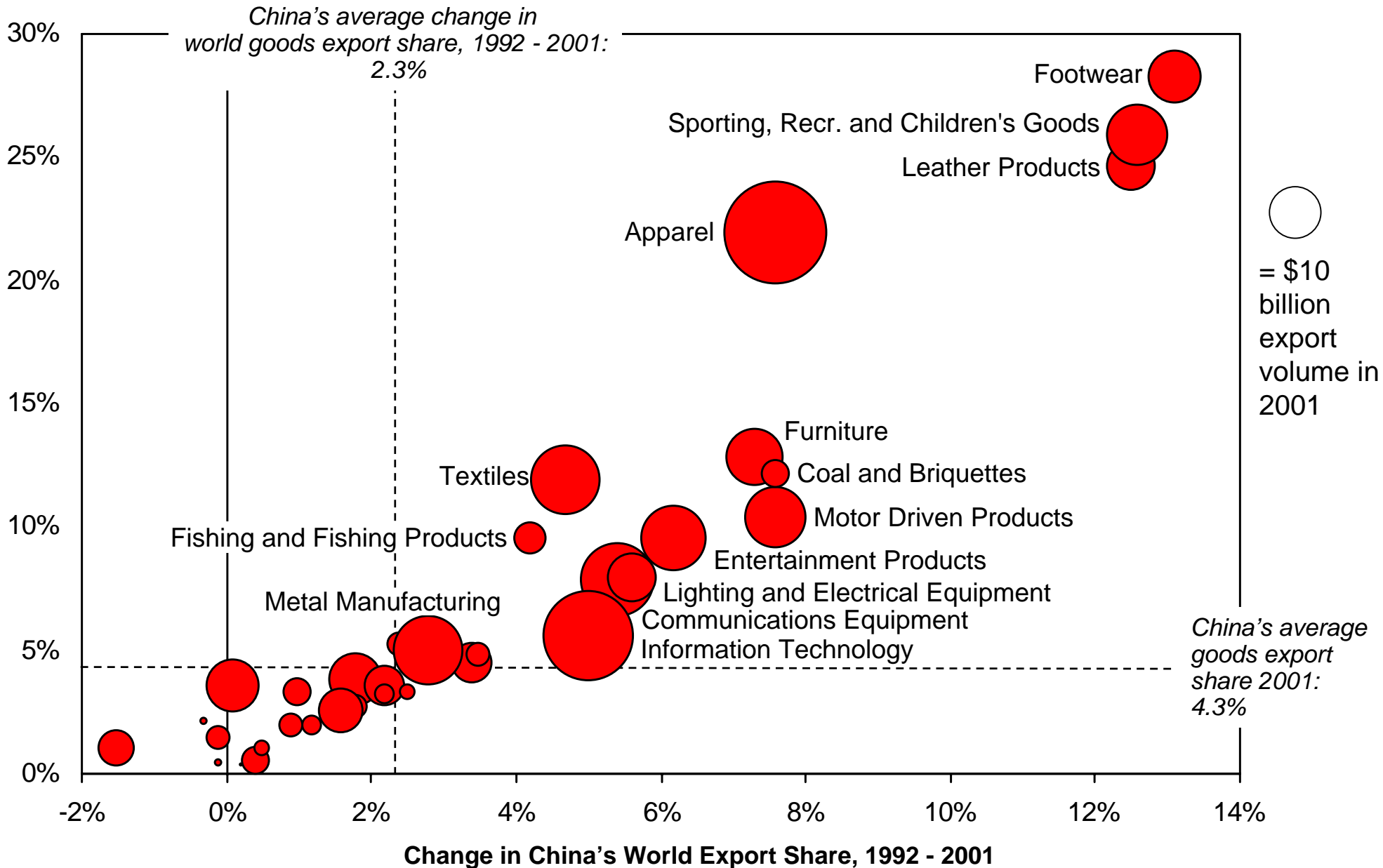
World export share in %



# China's Goods Export Share by Cluster

## 1992-2001

World Export Share,  
2001



Source: Institute for Strategy and Competitiveness, based on UNCTAD Trade Data.

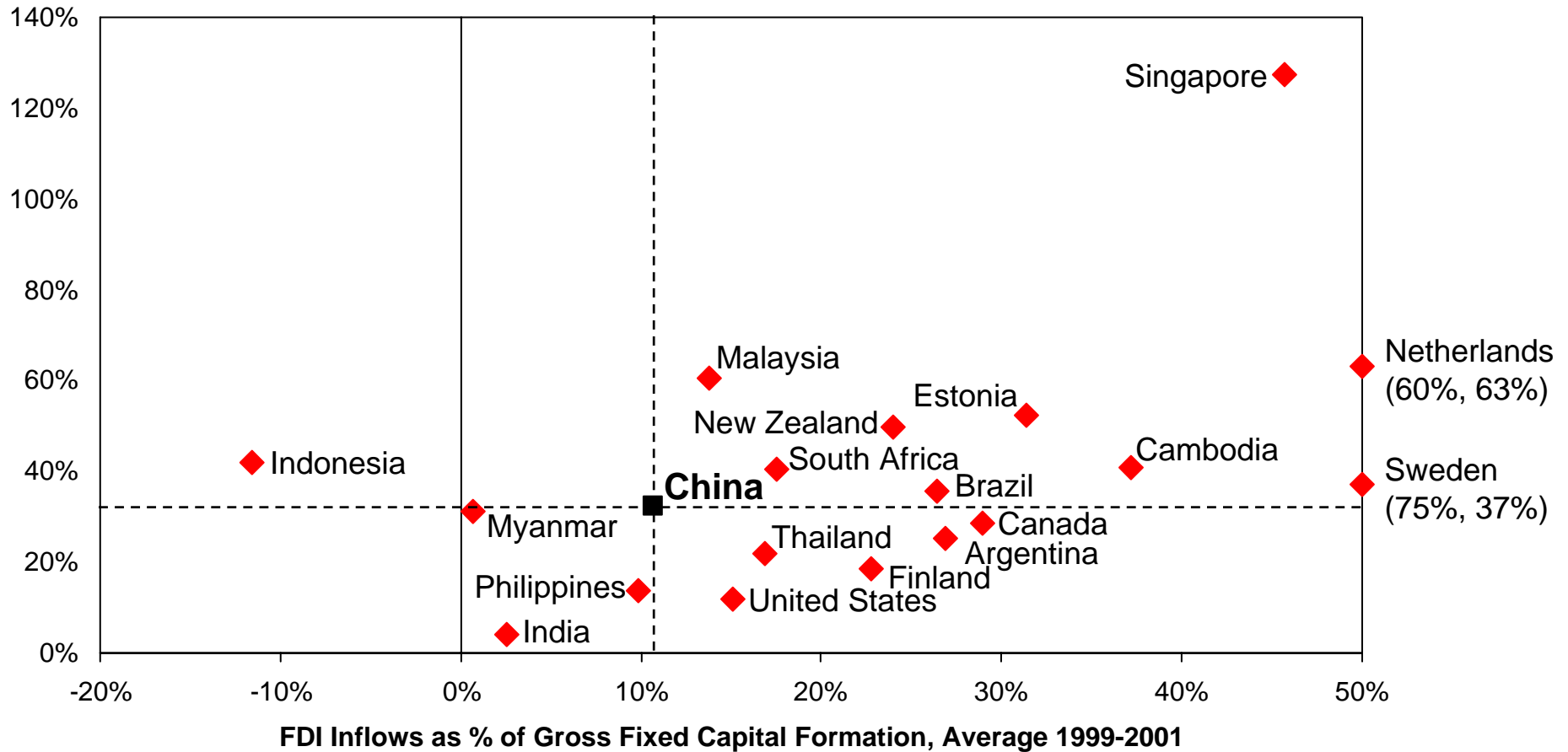


# China's Position in International Trade

- China is becoming **increasingly integrated** into the international trading system, with both exports and imports growing strongly
- China's economy is developing significant positions in a **broad portfolio** of important international industries
- China has significantly increased its imports from the **Asian region**
  - The trade balance with Asia is neutral
  - China and the other Asian countries become increasingly integrated
- Large trade surpluses with the U.S. and Europe are **danger signs** if they do not moderate in the future
  - Concerns about market openness, intellectual property, and exchange rate management will ultimately lead to political intervention, and artificial limits on imports will depress China's economic growth

# Comparative Inward Foreign Investment Selected Countries

FDI Stocks as % of GDP,  
Average 1999-2001

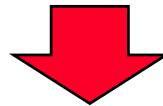


# FDI in China

- China has become the world's **largest recipient of FDI** in the world economy\*, with \$52b in 2002

## Drivers of China's Inward FDI flows

- Establishing positions to serve the strongly growing **local market**
  - Examples include recent investments by retail company's like Carrefour and many of the automotive companies
- The desire of companies not to “**miss China**”, given pressures from competitors and the **financial markets**
- Naiveté about the management and operational complexity **costs** of offshoring



- UNCTAD's evaluation of China's **inherent quality** as a location for FDI still ranks the country only at 40
- While there is little systematic data, many investors seem to earn **low or negative returns** on their investments in China

\*Luxembourg registers significantly higher values because financial transaction channeled through the country

Source: UNCTAD (2004)

# China's Economic Situation in 2004

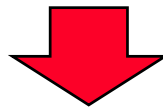
- Strong economic **growth continues** despite the 2003 SARS crisis
  - Policies to avoid overheating of the economy are likely to moderate growth slightly below the current rate
- Chinese **prosperity** continues to rise strongly, but is still only slightly above the level of the poorer Asian countries
  - Significant reduction of poverty over recent years
- **Productivity growth** in the Chinese economy has been strong. Labor is shifting from agriculture and state-owned enterprises into the private economy. However, unemployment has risen.
- China continues to grow its position in the world economy, with an increasing **export share** and **strong FDI**. However, China's international market integration is comparable to other developing countries.



- However, economic success is creating **challenges** to future success as wages and costs of doing business inevitably rise
- China's success has been **artificially inflated** by the size of the home market rather than the true profitability of China as a place to invest
- To remain on its growth path, China needs a strategy to improve the **microeconomic foundations** of its economy to support higher levels of sustainable productivity

# What is Competitiveness?

- Competitiveness is determined by the **productivity** with which a nation uses its human, capital, and natural resources. Productivity sets a nation's or region's standard of living (wages, returns to capital, returns to natural resource endowments)
  - Productivity depends both on the **value** of products and services (e.g. uniqueness, quality) as well as the **efficiency** with which they are produced.
  - It is not **what** industries a nation competes in that matters for prosperity, but **how** firms compete in those industries
  - Productivity in a nation is a reflection of what both domestic and foreign firms **choose to do in that location**. The location of ownership is secondary for national prosperity.
  - The productivity of **“local”** industries is of fundamental importance to competitiveness, not just that of traded industries
  - Devaluation **does not** make a country more competitive



- Nations compete in offering the **most productive environment** for business
- The public and private sectors play **different but interrelated roles** in creating a productive economy

# Determinants of Productivity and Productivity Growth

**Macroeconomic, Political, Legal, and Social  
Context for Development**

## **Microeconomic Foundations of Development**

**Sophistication  
of Company  
Operations and  
Strategy**

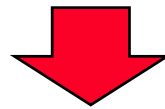


**Quality of the  
Microeconomic  
Business  
Environment**

- A sound macroeconomic, political, legal, and social context creates the potential for competitiveness, **but is not sufficient**
- Competitiveness ultimately depends on improving the **microeconomic capability** of the economy and the **sophistication of local companies and local competition**

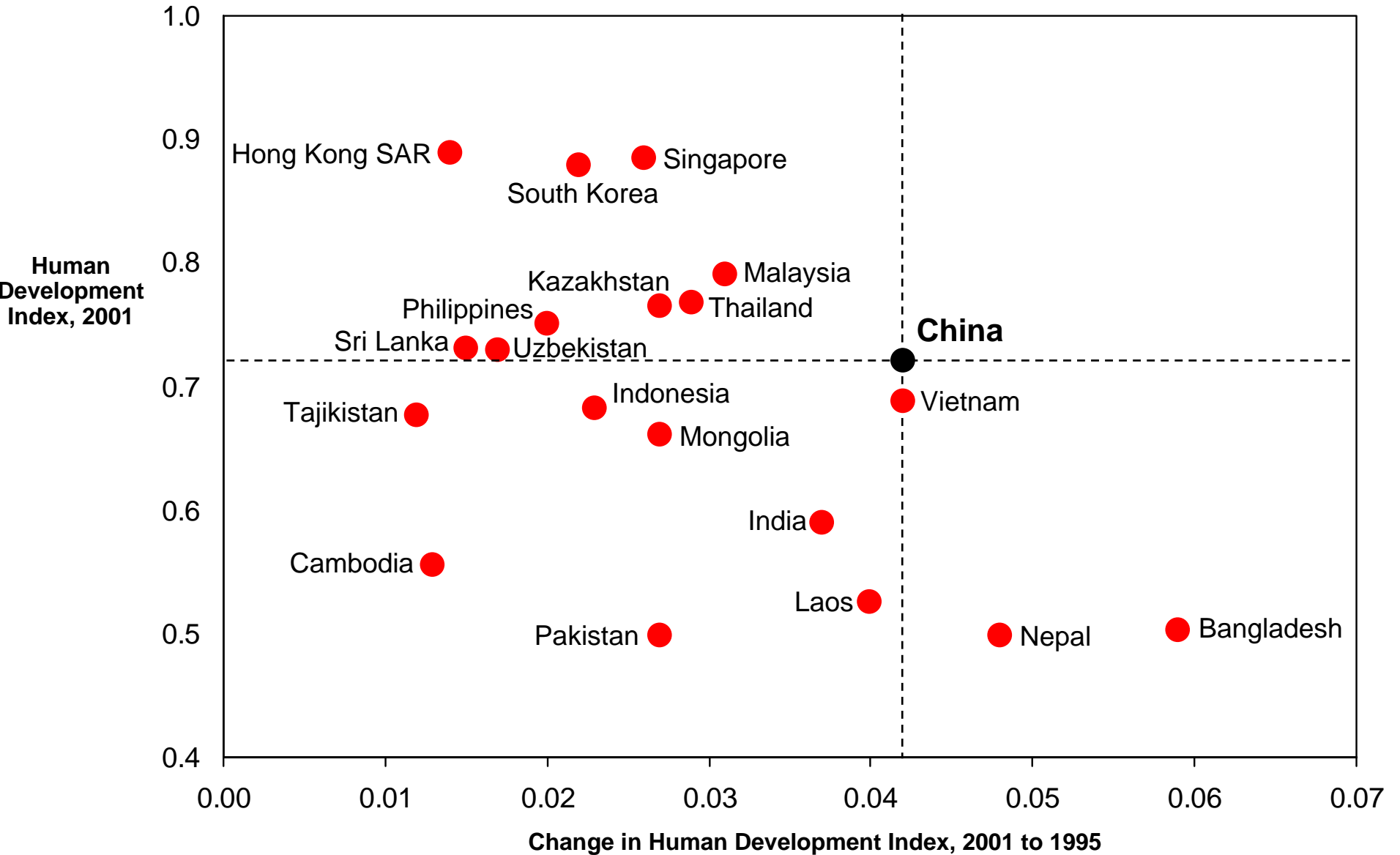
# Macroeconomic Policy

- China is **not** a traditional case of an overheating economy with high nominal but low real economic growth
  - Price inflation stands at 3.2%
  - Wage inflation is limited by significant unemployment and excess labor in agriculture and state-owned enterprises
    - The total of open and hidden unemployment is reported to be 23%, or 170m employees
- However, **government policies** are somewhat expansionary
  - The government deficit is at 2.5% of GDP, and some regions have been investing more heavily



- There are serious **infrastructure bottlenecks** in the coastal regions, and **real estate** price escalation

# Progress in Human Development Asian Countries

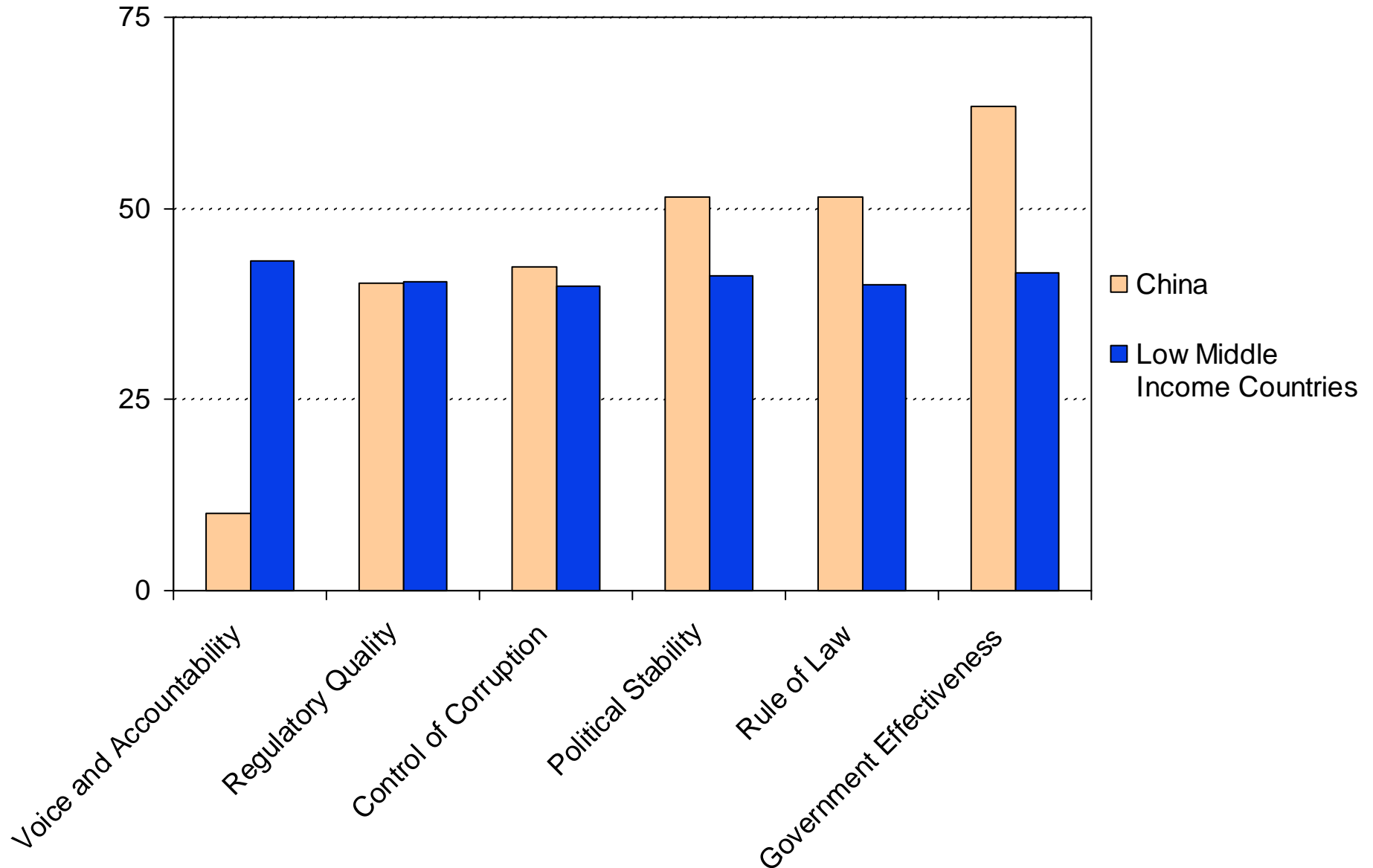




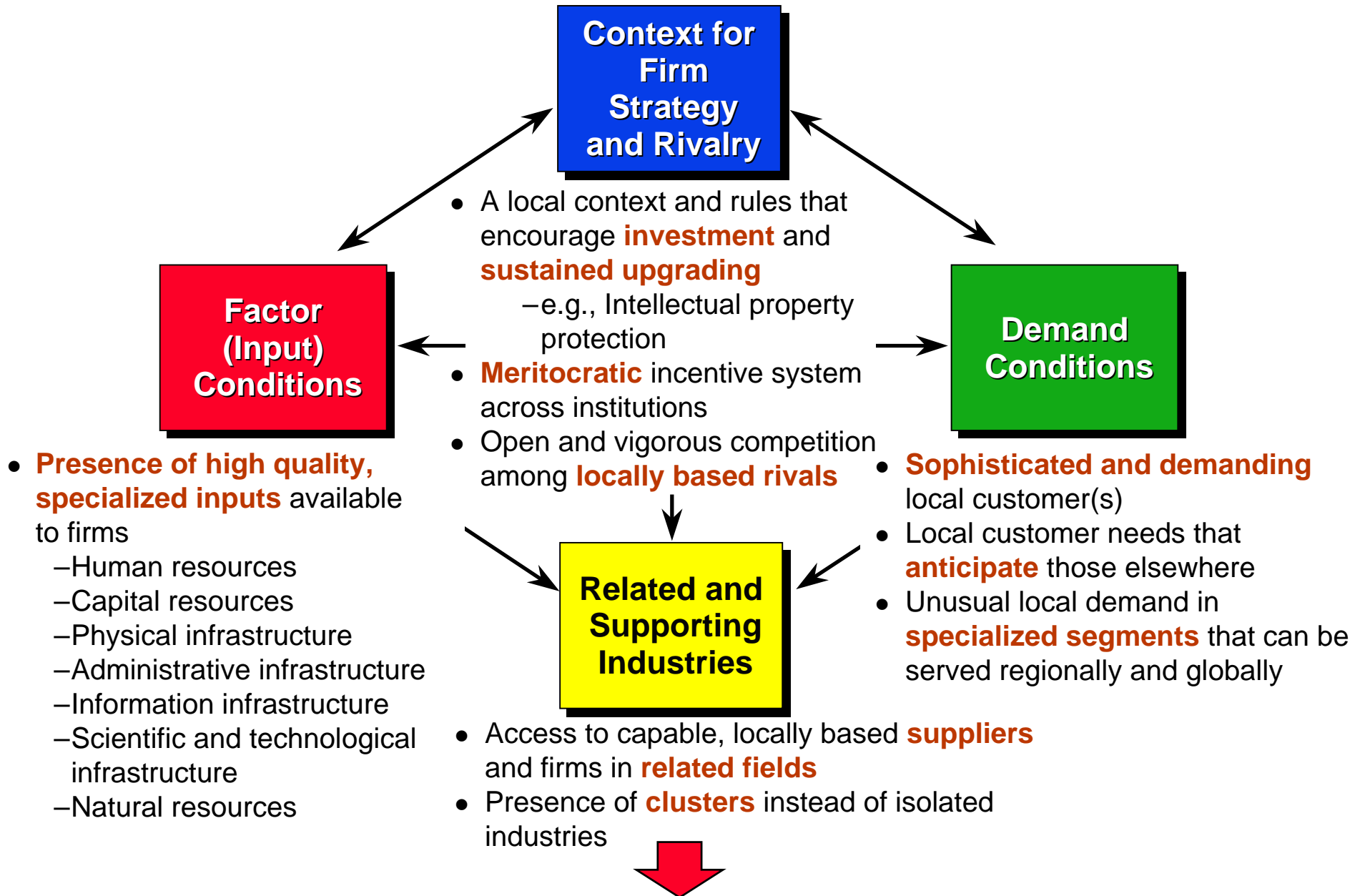
# Legal and Governmental Institutions

## China vs. Low Middle Income Countries

Percentage of  
Leading Country in  
the World, 2002

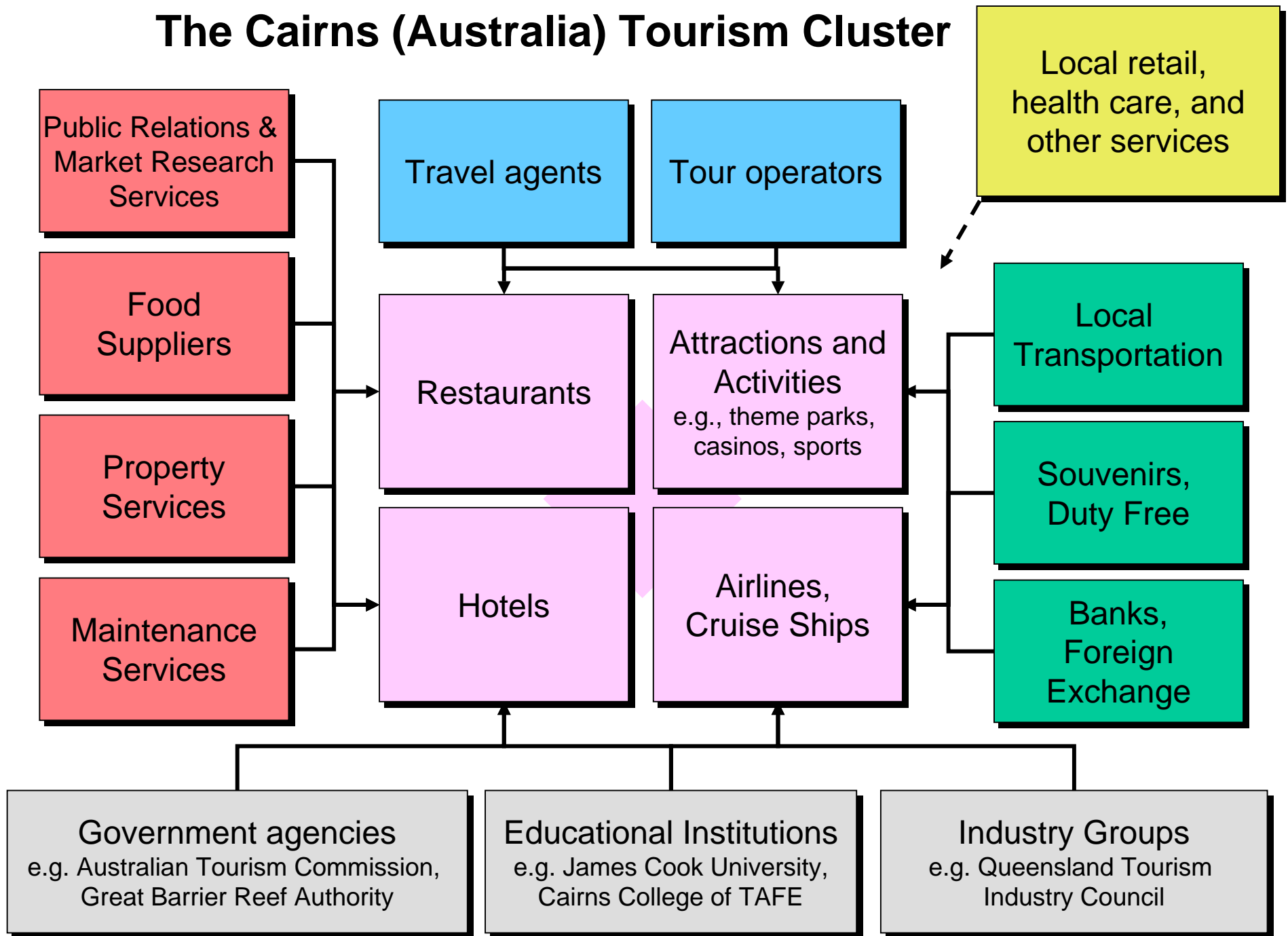


# Productivity and the Business Environment



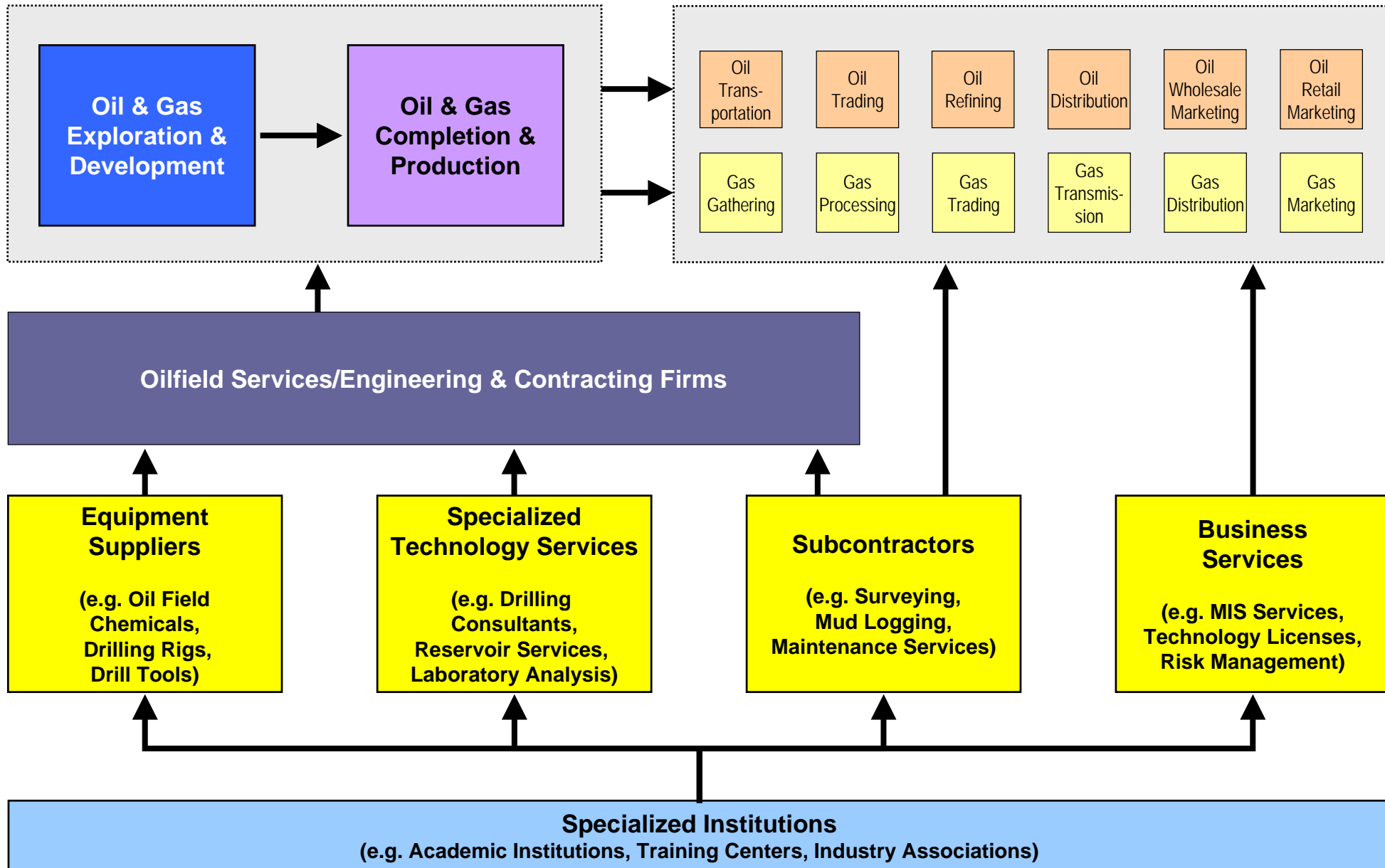
- Successful economic development is a process of **successive economic upgrading**, in which the business environment in a nation evolves to support and encourage increasingly sophisticated ways of competing

# The Cairns (Australia) Tourism Cluster



# Clusters and Competitiveness

## Houston Oil and Gas Products and Services Cluster



# Leading Footwear Clusters

## Portugal

- Production
- Focus on short-production runs in the medium price range

## Romania

- Production subsidiaries of Italian companies
- Focus on lower to medium price range

## Italy

- Design, marketing, and production of premium shoes
- Export widely to the world market

## United States

- Design and marketing
- Focus on specific market segments like sport and recreational shoes and boots
- Manufacturing only in selected lines such as hand-sewn casual shoes and boots

## China

- OEM Production
- Focus on low cost segment mainly for the US market

## Vietnam/Indonesia

- OEM Production
- Focus on the low cost segment mainly for the European market

# Institutions for Collaboration

## Selected Massachusetts Organizations, Life Sciences

### Life Sciences Industry Associations

- Massachusetts Biotechnology Council
- Massachusetts Medical Device Industry Council
- Massachusetts Hospital Association

### General Industry Associations

- Associated Industries of Massachusetts
- Greater Boston Chamber of Commerce
- High Tech Council of Massachusetts

### Economic Development Initiatives

- Massachusetts Technology Collaborative
- Mass Biomedical Initiatives
- Mass Development
- Massachusetts Alliance for Economic Development

### University Initiatives

- Harvard Biomedical Community
- MIT Enterprise Forum
- Biotech Club at Harvard Medical School
- Technology Transfer offices

### Informal networks

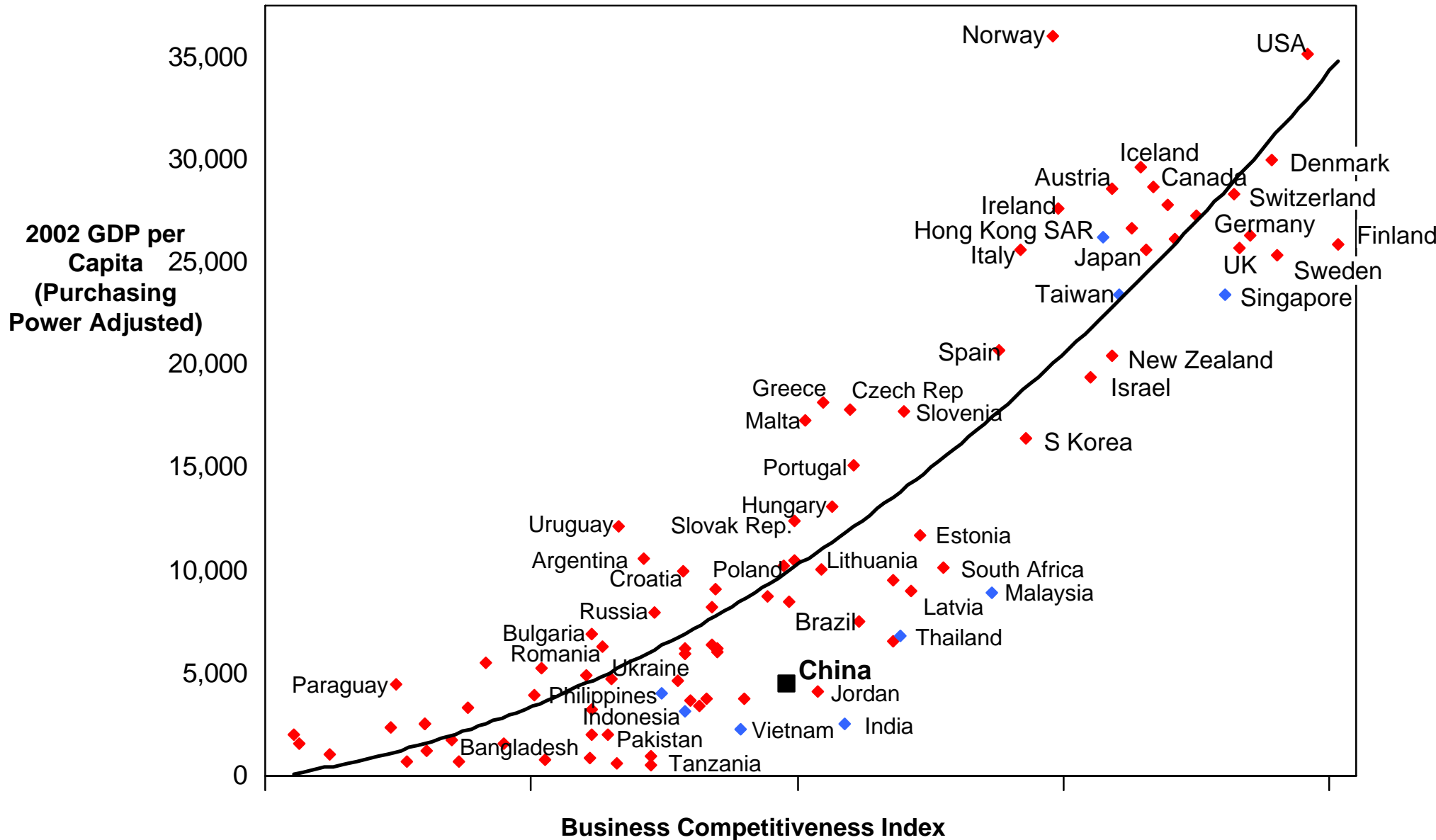
- Company alumni groups
- Venture capital community
- University alumni groups

### Joint Research Initiatives

- New England Healthcare Institute
- Whitehead Institute For Biomedical Research
- Center for Integration of Medicine and Innovative Technology (CIMIT)

# Global Competitiveness Report 2003

## The Relationship Between Business Competitiveness and GDP Per Capita



Note: Selected Asian countries in blue  
 Source: Global Competitiveness Report 2003  
 GCR China 2003-20040528

# Microeconomic Foundations for Prosperity

## China's Overall Position

- The measured quality of China's business environment would support a significantly **higher** GDP per capita
  - This “underperformance” is typical of many Asian countries and signals strong growth potential
  - For China, the business environment data may also be skewed by the country's richer coastal regions
- However, China still **lags** many of its Asian neighbors in overall business environment quality
- **Key weaknesses** in the Chinese business environment are present in areas such as the context for competition, capital markets, physical infrastructure, and human resources



# Business Competitiveness Rankings

## Asian Countries in 2003

Country	Business Competitiveness Index	Company Operations & Strategy	National Business Environment	GDP per capita
Singapore	8	12	4	21
Japan	13	6	20	17
Taiwan	16	16	16	20
Hong Kong SAR	19	22	15	13
Korea	23	19	25	29
Malaysia	26	26	24	44
Thailand	31	31	32	51
India	37	40	36	76
<b>China</b>	<b>46</b>	<b>42</b>	<b>44</b>	<b>64</b>
Vietnam	50	53	48	80
Sri Lanka	57	52	58	72
Indonesia	60	62	60	75
Philippines	64	48	71	67
Bangladesh	86	86	85	84

# China's Competitiveness Agenda

- **Address key productivity barriers in the Chinese business environment**
- **Adopt a cluster-based approach to economic development**
- **Improve China's potential for innovation**
- **Create economic strategies at the regional and city level**
- **Shift the roles of government, business, and other institutions in economic development**



- **Upgrading the microeconomic foundations of sustainable prosperity in China**

# Company Operations and Strategy

## China's Relative Position 2002

### Competitive Advantages Relative to GDP per Capita

Country Ranking, Arrows  
indicate a change of 5 or more  
ranks since 1998

Capacity for Innovation	25
Control of International Distribution	25 
Company Spending on R&D	28
Extent of Branding	30
Breadth of International Markets	33 

### Competitive Disadvantages Relative to GDP per Capita

Country Ranking, Arrows  
indicate a change of 5 or more  
ranks since 1998

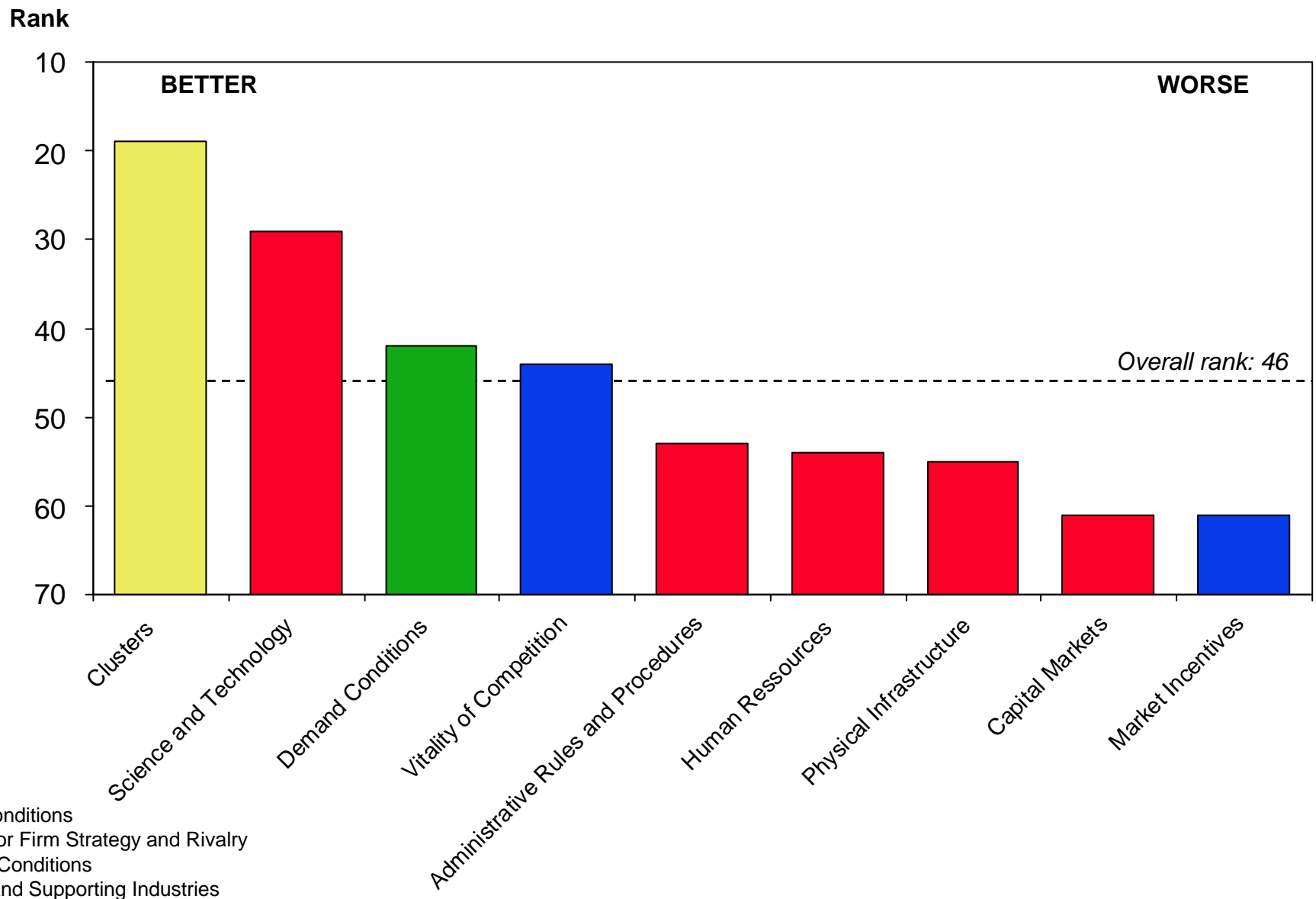
Extent of Marketing	73
Prevalence of Foreign Technology Licensing	67 
Nature of Competitive Advantage	56 
Extent of Staff Training	54 
Value Chain Presence	54
Degree of Customer Orientation	50 
Reliance on Professional Management	50 
Extent of Regional Sales	49 
Extent of Incentive Compensation	48
Production Process Sophistication	46 
Willingness to Delegate Authority	43

Note: Rank by countries; overall China ranks 46 (42 on Company Operations and Strategy, 64 on GDP pc 2002)

Source: Global Competitiveness Report 2003

# National Business Environment Overview

## China's Relative Strengths and Weaknesses



# Context for Firm Strategy and Rivalry

## China's Relative Position

### Competitive Advantages Relative to GDP per Capita

Country Ranking, Arrows  
indicate a change of 5 or more  
ranks since 1998

Extent of Locally Based Competitors	7	↑
Decentralization of Corporate Activity	24	
Intensity of Local Competition	24	↓
Extent of Distortive Government Subsidies	25	
Centralization of Economic Policy-making	28	
Favoritism in Decisions of Government Officials	40	↓
Business Costs of Corruption	41	

### Competitive Disadvantages Relative to GDP per Capita

Country Ranking, Arrows  
indicate a change of 5 or more  
ranks since 1998

Existence of Bankruptcy Law	81	
Regulation of Securities Exchanges	80	
Protection of Minority Shareholders	78	
Foreign Ownership of Companies	75	
Tariff Liberalization	71	↓
Hidden Trade Barrier Liberalization	63	
Prevalence of mergers and acquisitions	56	
Intellectual Property Protection	55	
Effectiveness of Anti-Trust Policy	48	
Cooperation in Labor-Employer Relations	48	
Efficacy of Corporate Boards	47	↓

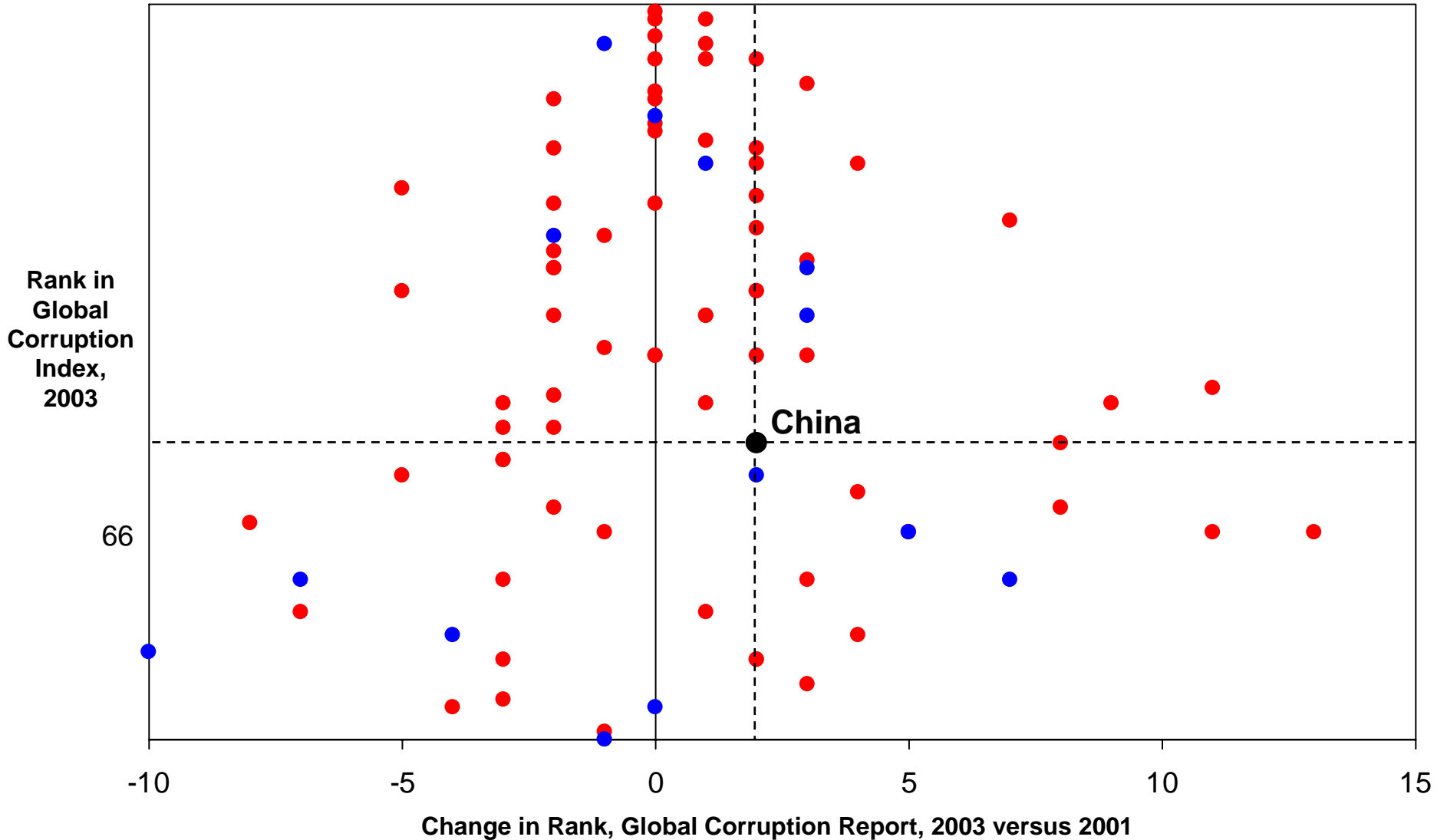
Note: Rank by countries; overall China ranks 46 (44 on National Business Environment, 64 on GDP pc 2002)

Source: Global Competitiveness Report 2003

GCR China 2003-20040528

# Corruption

## Transparency International Global Corruption Report



Note: Asian countries in blue, constant country sample

Source: Global Corruption Report, 2003

GCR China 2003-20040528

# Factor (Input) Conditions

## China's Relative Position

### Competitive Advantages Relative to GDP per Capita

Country Ranking, Arrows  
indicate a change of 5 or more  
ranks since 1998

University/Industry Research Collaboration	20	↑
Quality of Scientific Research Institutions	28	↓
Railroad Infrastructure Quality	36	
Administrative Burden for Start-Ups	36	
Local Equity Market Access	42	↑
Police Protection of Businesses	44	↓
Quality of Math and Science Education	44	

### Competitive Disadvantages Relative to GDP per Capita

Country Ranking, Arrows  
indicate a change of 5 or more  
ranks since 1998

Extent of Bureaucratic Red Tape	95	↓
Ease of Access to Loans	71	
Financial Market Sophistication	71	
Quality of Management Schools	69	
Availability of Scientists and Engineers	67	
Air Transport Infrastructure Quality	66	↑
Quality of Electricity Supply	59	
Cell phones per 100 people (2002)	59	
Judicial Independence	58	↑
Internet users per 100 people (2002)	56	
Telephone/Fax Infrastructure Quality	56	
Quality of Public Schools	56	
Venture Capital Availability	55	↓

Note: Rank by countries; overall China ranks 46 (44 on National Business Environment, 64 on GDP pc 2002)

Source: Global Competitiveness Report 2003

# Factor (Input) Conditions

## China's Relative Position (Continued)

### Competitive Advantages Relative to GDP per Capita

Country Ranking, Arrows  
indicate a change of 5 or more  
ranks since 1998

### Competitive Disadvantages Relative to GDP per Capita

Country Ranking, Arrows  
indicate a change of 5 or more  
ranks since 1998

Patents per million Population (2002)	55	
Overall Infrastructure Quality	53	↑
Port Infrastructure Quality	50	↑
Quality of Educational System	48	
Adequacy of Public Sector Legal Recourse	47	↑

Note: Rank by countries; overall China ranks 46 (44 on National Business Environment, 64 on GDP pc 2002)

Source: Global Competitiveness Report 2003



# Demand Conditions

## China's Relative Position

### Competitive Advantages Relative to GDP per Capita

Country Ranking, Arrows  
indicate a change of 5 or more  
ranks since 1998

Government Procurement of Advanced Technology Products      8

Buyer Sophistication      41 

### Competitive Disadvantages Relative to GDP per Capita

Country Ranking, Arrows  
indicate a change of 5 or more  
ranks since 1998

Consumer Adoption of Latest Products      61

Stringency of Environmental Regulations      54

Presence of Demanding Regulatory Standards      52

Laws Relating to Information Technology      49

Note: Rank by countries; overall China ranks 46 (44 on National Business Environment, 64 on GDP pc 2002)

Source: Global Competitiveness Report 2003

# WTO Accession and China's Business Environment

- Reduction of average **tariff rates** to 10% by 2005
- Removal of all **quantitative trade restrictions**
- Transparent and automatic licensing of foreign companies in many **service** sectors, including banking, telecommunications, etc.
- Non-discrimination rules for **foreign investors**, including end to mandatory technology transfer requirements
- Enforcement of foreign **intellectual property rights**
- Elimination of **export subsidies** not allowed by WTO- rules
- Participation in the **WTO arbitration** mechanisms
- **MFN access** to all other WTO member markets



- First annual review of compliance in December 2003 showed China to be **on track** to deliver on its commitments

# China's Competitiveness Agenda

- Address key productivity barriers in the Chinese business environment

- **Adopt a cluster-based approach to economic development**

- Improve China's potential for innovation
- Create economic strategies at the regional and city level
- Shift the roles of government, business, and other institutions in economic development

# The Role of Clusters in Economic Development

## Overview

- Clusters are **critical drivers of prosperity and innovation** in national and regional economies
  - The health of the cluster strongly influences the level of productivity that companies can achieve
  - Regional prosperity depends on significant positions across a number of competitive clusters
- A focus on clusters reveals the **opportunities** and **constraints** in the business environment
  - Overall economic development efforts gravitate to cross-cutting areas such as taxes and trade protection that affect all companies
- Clusters provide a **new way of thinking** about an economy and organizing economic development efforts
  - More aligned with the nature of competition and microeconomic factors that influence competitive advantage
  - Bring together firms of all sizes to identify common opportunities, not just common problems
  - Recast the roles of the private sector, government, trade associations and educational and research institutions in economic development

# Related and Supporting Industries

## China's Relative Position

### Competitive Advantages Relative to GDP per Capita

Country Ranking, Arrows  
indicate a change of 5 or more  
ranks since 1998

Local Availability of Components and Parts	6
Local Availability of Process Machinery	6
Extent of Product and Process Collaboration	18
State of Cluster Development	29
Local Supplier Quantity	32
Local Availability of Specialized Research and Training Services	38

### Competitive Disadvantages Relative to GDP per Capita

Country Ranking, Arrows  
indicate a change of 5 or more  
ranks since 1998

Local Supplier Quality	45
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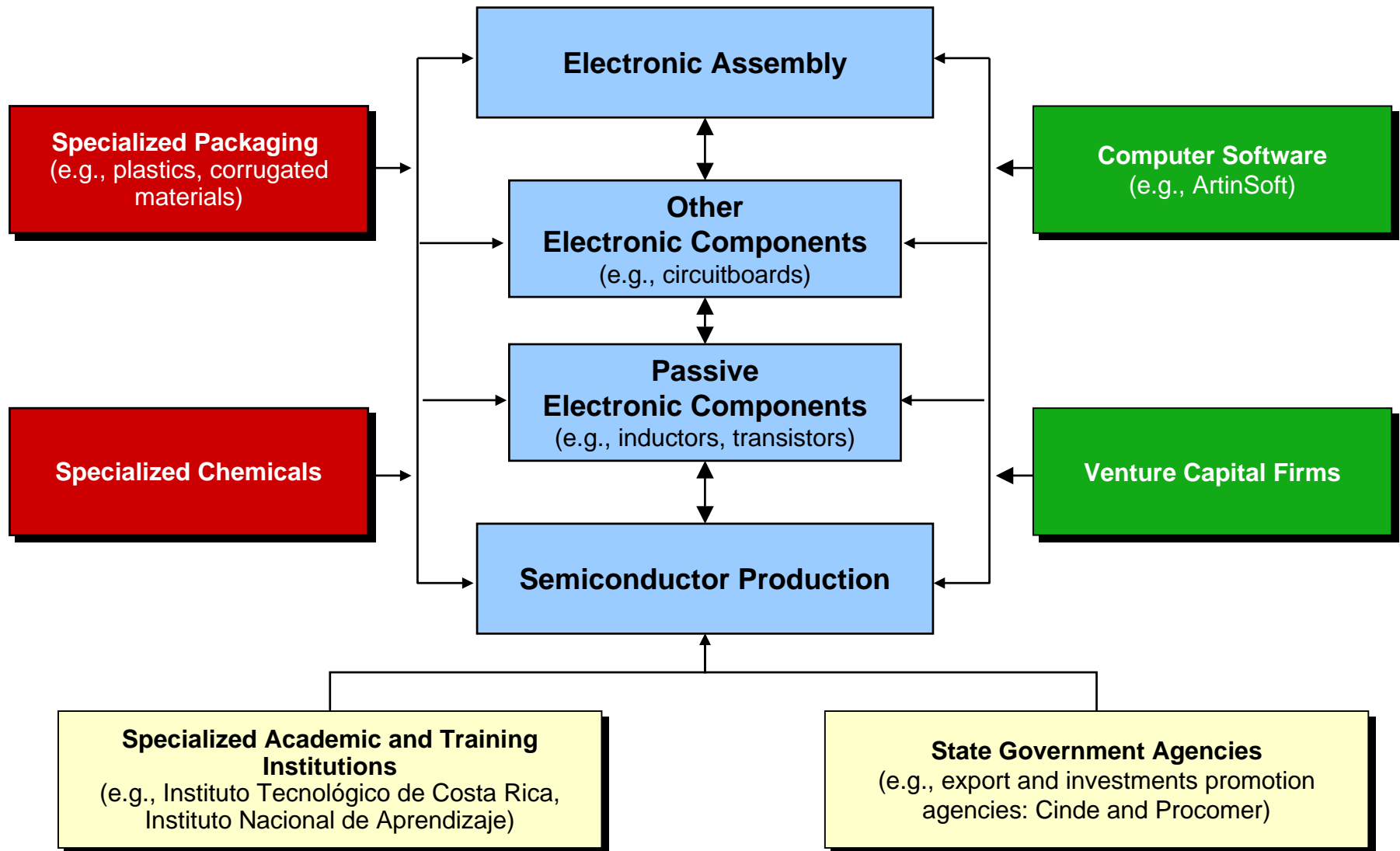
Note: Rank by countries; overall China ranks 46 (44 on National Business Environment, 64 on GDP pc 2002)

Source: Global Competitiveness Report 2003

# The Yangtze River Telecommunications Cluster

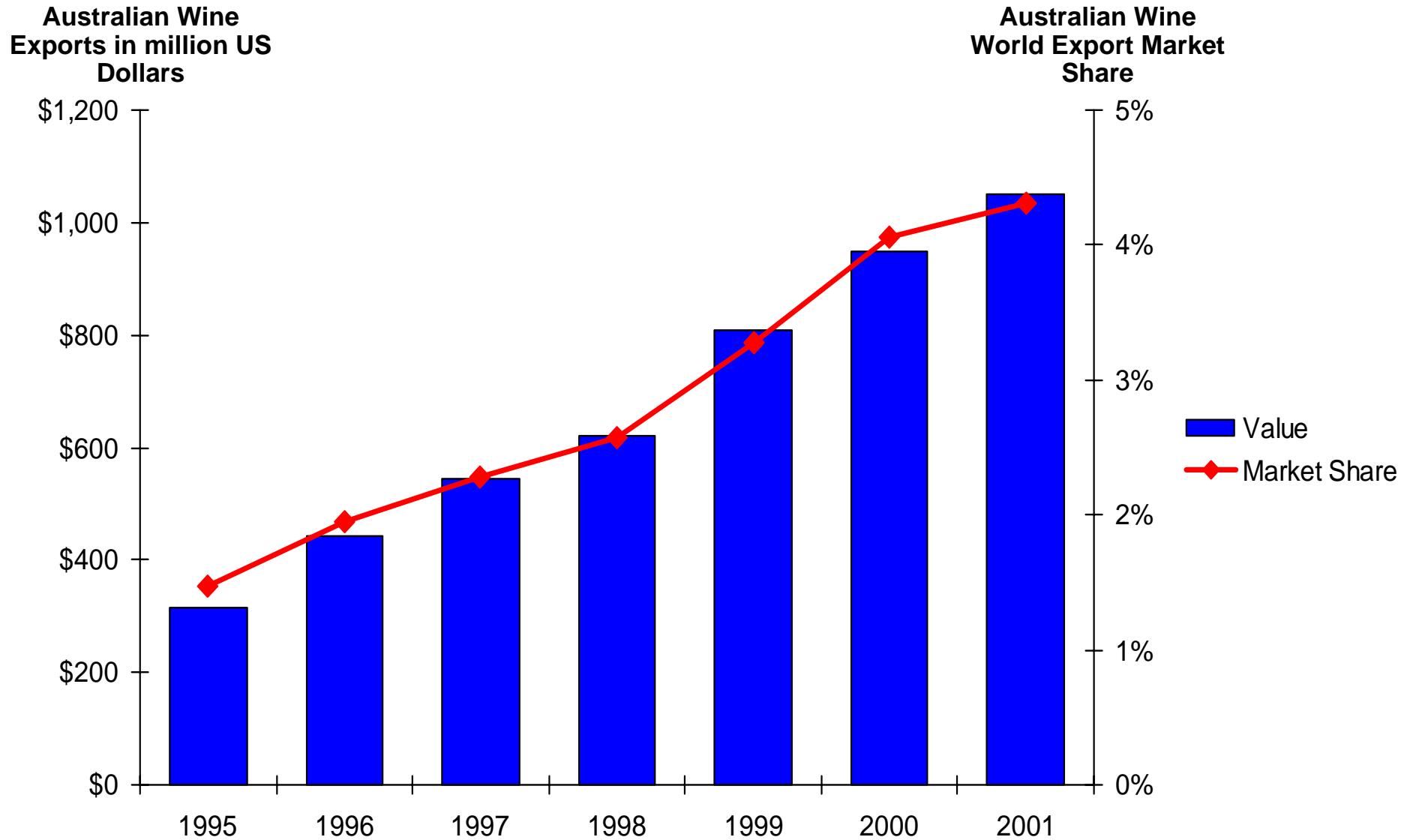
- The Yangtze River Delta has become home to a wide array of manufacturers in telecommunication equipment
  - The cluster has been the focus of economic policy since the mid-1980s
- The cluster has benefited from access to low cost, well educated labor, the presence of related electronics manufacturing clusters, strong infrastructure, and a quickly growing market
- The cluster is increasingly moving to serve domestic demand and more domestically-owned companies are emerging
- The challenge for the cluster is to move from being a production site to becoming a more advanced center for production and products
  - For example, local universities are poorly linked to companies in the cluster

# The Costa Rica Information Technology Cluster



# The Australian Wine Cluster

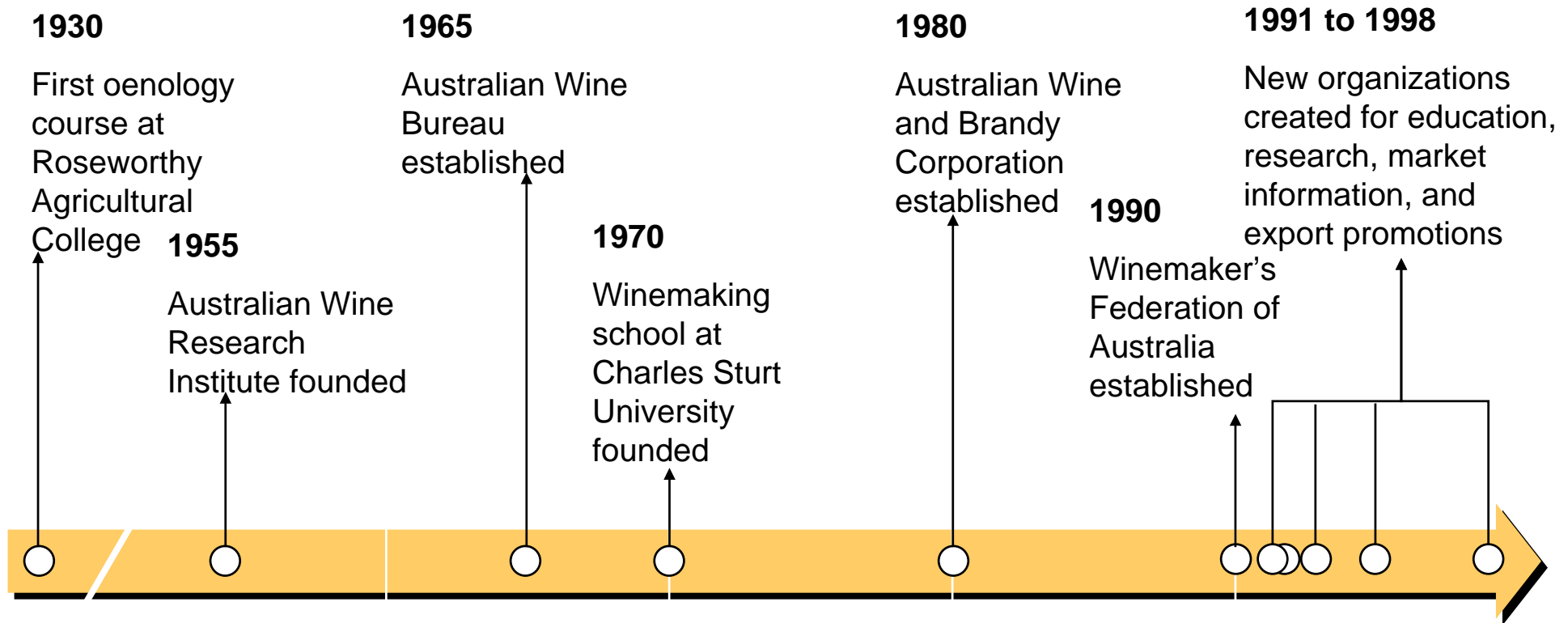
## Trade Performance



Source: UN Trade Statistics



# The Australian Wine Cluster History



## 1950s

*Import of European winery technology*

## 1960s

*Recruiting of experienced foreign investors, e.g. Wolf Bass*

## 1970s

*Continued inflow of foreign capital and management*

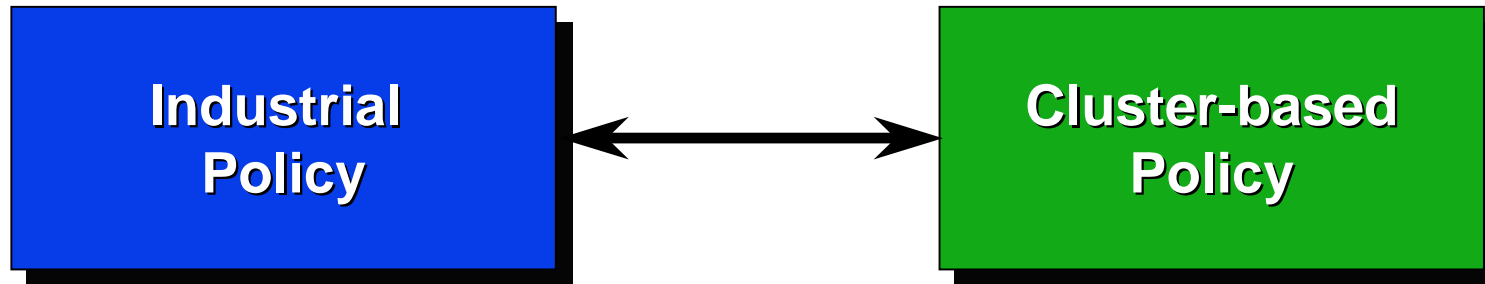
## 1980s

*Creation of large number of new wineries*

## 1990s

*Surge in exports and international acquisitions*

# Cluster Policy versus Industrial Policy



- Target desirable industries / sectors
- Focus on domestic companies
- Intervene in competition (e.g., protection, industry promotion, subsidies)
- Centralize decisions at the national level



**Distort competition**

- **All** clusters can contribute to prosperity
- Domestic and foreign companies both enhance productivity
- Relax impediments and constraints to productivity
- Emphasize cross-firm and cross-industry linkages / complementarities
- Encourage initiative at the state and local level



**Enhance competition**

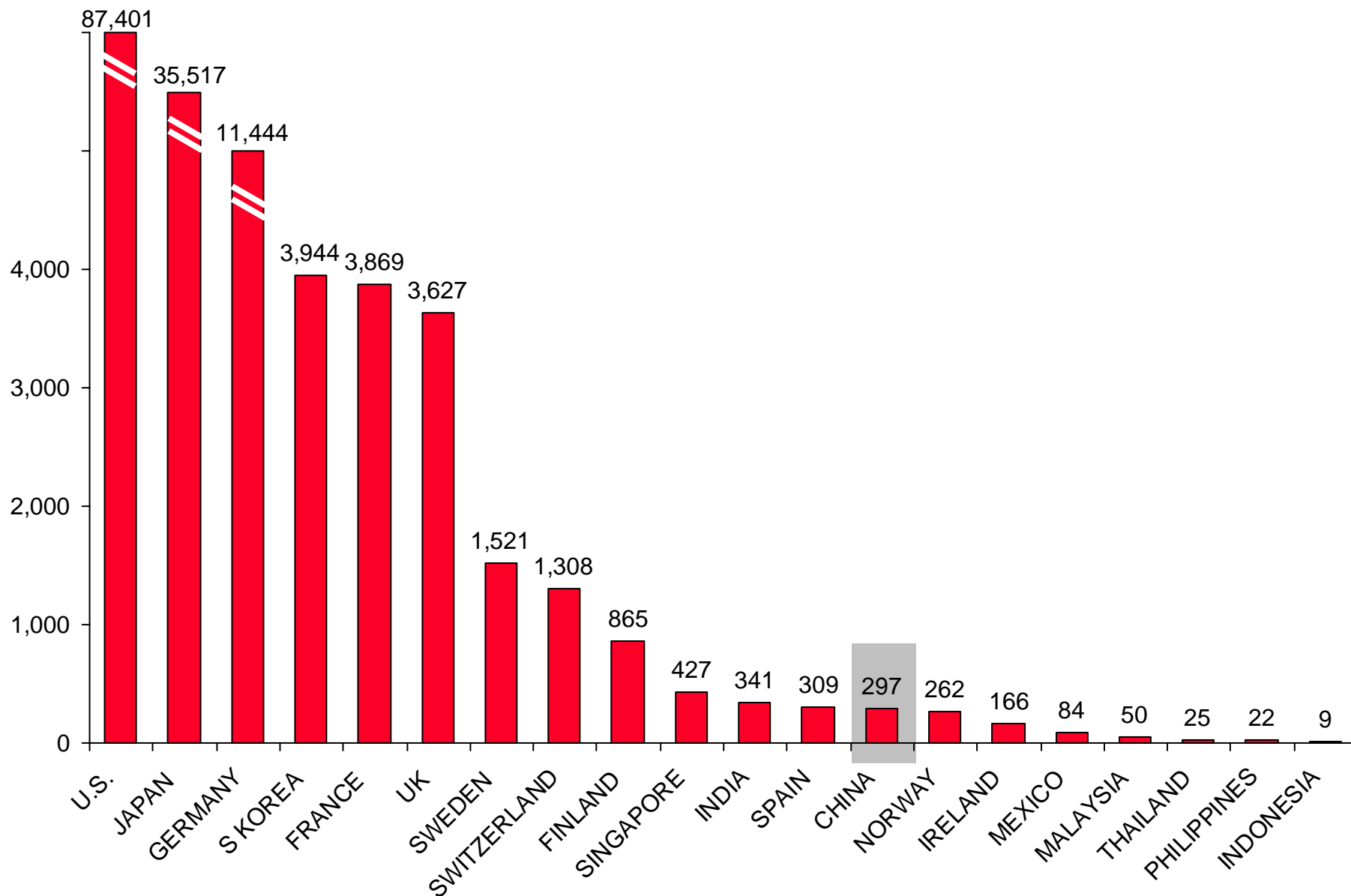
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- Adopt a cluster-based approach to economic development
- **Improve China's potential for innovation**
- Create economic strategies at the regional and city level
- Shift the roles of government, business, and other institutions in economic development

# International Patenting Output

## Selected Countries

U.S. patents  
granted in 2003



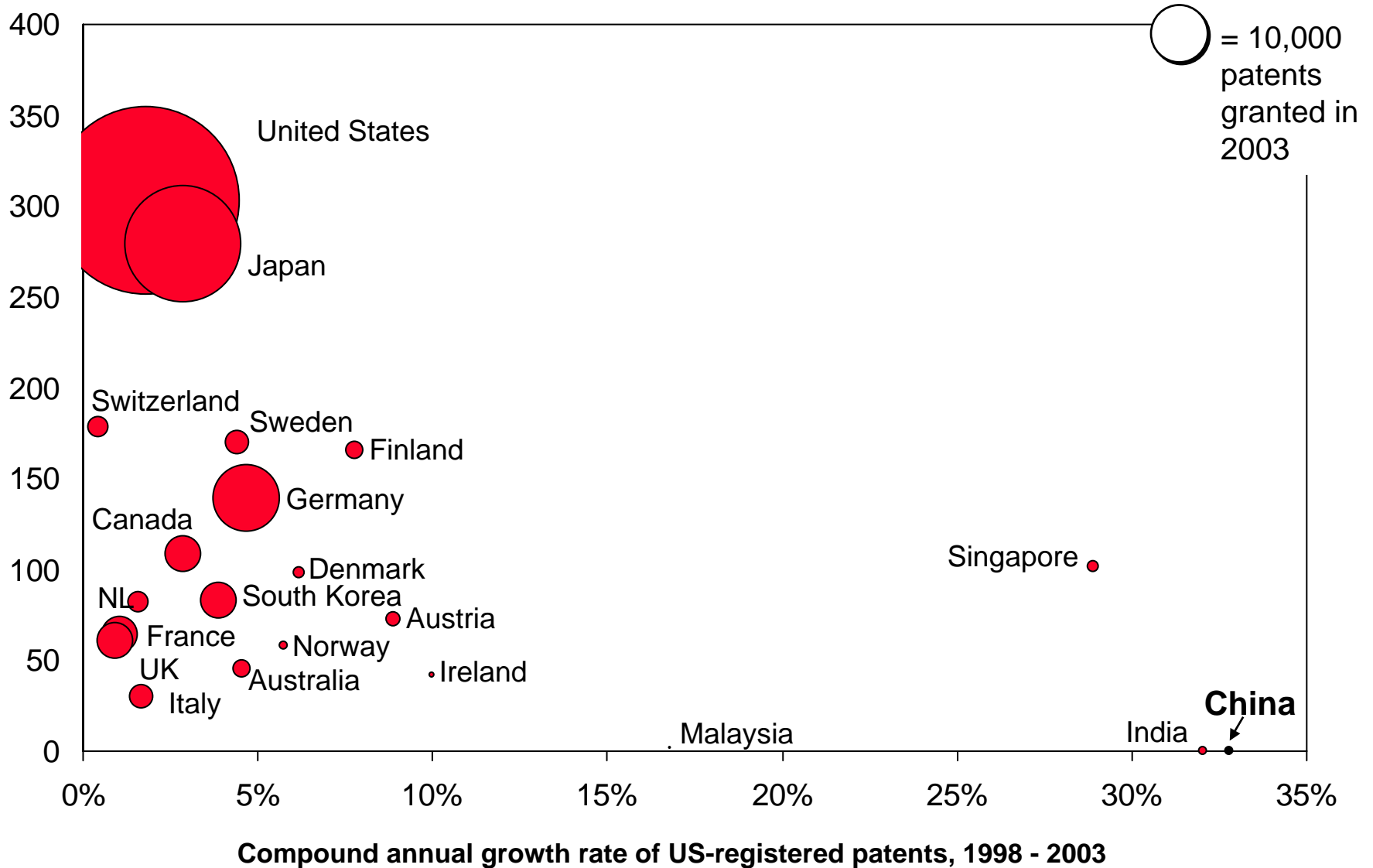
Source: US Patent and Trademark Office ([www.uspto.gov](http://www.uspto.gov))

GCR China 2003-20040528

# International Patenting Output

## Selected Countries

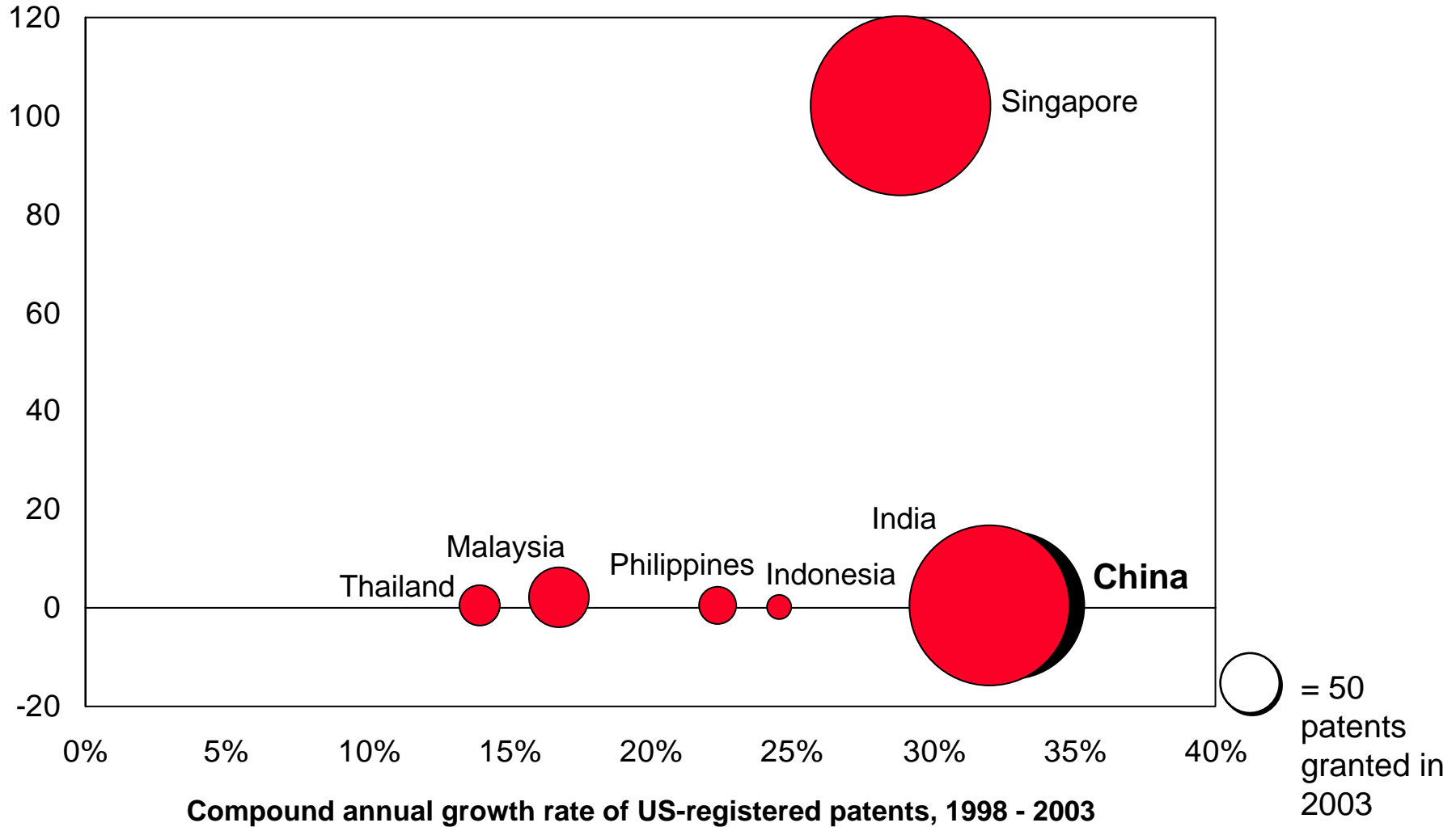
Annual U.S. patents per 1 million population, 2003



# International Patenting Output

## Selected Asian Countries

Annual U.S. patents per 1 million population, 2003



# Chinese International Patenting by Institution

## U.S. Patents

Organization	1997	1998	1999	2000	2001	2002	Patents Issued 1997-2002
HON HAI PRECISION IND. CO., LTD.	0	0	0	6	41	80	127
CHINA PETROCHEMICAL DEVELOPMENT CORP.	5	6	5	11	10	14	51
UNITED MICROELECTRONICS CORPORATION	3	5	4	3	2	1	24
WINBOND ELECTRONICS CORP.	0	0	2	2	4	6	14
FOXCONN PRECISION COMPONENTS, CO., LTD.	0	0	0	0	1	10	11
CHINA PETROCHEMICAL CORPORATION (SINOPEC)	1	1	1	1	1	4	10
GREAT NECK SAW MANUFACTURERS, INC.	0	0	0	2	2	4	8
<b>TSINGHUA UNIVERSITY</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>7</b>
DELTA ELECTRONICS INC.	0	0	0	0	0	5	5
SEIKO EPSON CORPORATION	0	0	0	0	1	4	5
INTERNATIONAL BUSINESS MACHINES CORPORATION	0	0	1	1	2	1	5
JIANGSU GOODBABY GROUP, INC.	0	0	2	0	2	1	5
LECO STATIONERY MANUFACTURING CO., LTD.	0	2	1	0	2	0	5
SHENZHEN STS MICROELECTRONICS CO. LTD	0	0	0	0	0	4	4
INVENTEC CORPORATION	0	0	1	0	0	3	4
GL DISPLAYS, INC.	0	0	0	0	3	1	4
<b>SHANGHAI INSTITUTE OF BIOCHEMISTRY, CHINESE ACADEMY OF SCIENCE</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>4</b>
<b>THE HONG KONG UNIVERSITY OF SCIENCE &amp; TECHNOLOGY</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>4</b>
BASF AKTIENGESELLSCHAFT	0	0	0	0	0	3	3
CHINA PETROLEUM CORPORATION	0	0	0	0	0	3	3

Note: Shading indicates universities, research institutions, and other government agencies

Source: US Patent and Trademark Office

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# Japanese International Patenting by Institution

## U.S. Patents

Organization	1997	1998	1999	2000	2001	2002	Patents Issued 1997-2002
CANON KABUSHIKI KAISHA	1,346	1,872	1,753	1,826	1,779	1,815	10,391
NEC CORPORATION	1,095	1,625	1,837	2,001	1,929	1,811	10,298
HITACHI, LTD	895	1,080	1,000	1,023	1,254	1,575	6,827
MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.	736	1,016	1,026	1,111	1,395	1,485	6,769
SONY CORPORATION	764	1,200	1,222	1,155	1,134	1,257	6,732
TOSHIBA CORPORATION	843	1,146	1,180	1,213	1,133	1,117	6,632
FUJITSU LIMITED	883	1,164	1,153	1,116	1,118	1,170	6,604
MITSUBISHI DENKI KABUSHIKI KAISHA	891	1,080	1,053	1,010	1,184	1,369	6,587
FUJI PHOTO FILM CO., LTD	466	546	539	541	582	686	3,360
SHARP KABUSHIKI KAISHA (SHARP CORPORATION)	384	539	495	541	496	500	2,955
HONDA GIKEN KOGYO KABUSHIKI KAISHA (HONDA MOTOR CO., LTD.)	340	386	452	445	547	632	2,802
SEIKO EPSON CORPORATION	202	273	276	361	458	587	2,157
RICOH COMPANY, LTD.	315	375	381	389	341	301	2,102
NIKON CORPORATION	475	562	340	249	248	214	2,088
TOYOTA JIDOSHA K.K.	211	386	402	342	328	294	1,963
YAZAKI CORP.	225	268	293	292	331	309	1,718
MURATA MANUFACTURING CO., LTD.	150	217	268	302	320	444	1,701
MINOLTA CAMERA CO., LTD.	158	303	365	333	304	238	1,701
DENSO CORPORATION	7	124	303	366	423	465	1,688
SANYO ELECTRIC CO., LTD.	164	251	238	251	286	366	1,556



# Korean International Patenting by Institution

## U.S. Patents

Organization	1997	1998	1999	2000	2001	2002	Patents Issued 1997-2002
SAMSUNG ELECTRONICS CO., LTD.	557	1,247	1,452	1,374	1,378	1,274	7,282
HYUNDAI ELECTRONICS INDUSTRIES CO., LTD.	153	211	241	293	532	391	1,821
LG ELECTRONICS INC.	110	212	224	218	245	334	1,343
DAEWOO ELECTRONICS COMPANY, LTD.	215	319	272	120	54	14	994
LG SEMICON CO., LTD.	119	235	310	251	42	30	987
<b>ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE</b>	<b>58</b>	<b>120</b>	<b>130</b>	<b>124</b>	<b>72</b>	<b>89</b>	<b>593</b>
HYUNDAI MOTOR CO., LTD.	72	92	93	60	99	145	561
SAMSUNG DISPLAY DEVICES CO., LTD.	43	84	72	65	66	33	363
<b>KOREA INSTITUTE OF SCIENCE AND TECHNOLOGY</b>	<b>29</b>	<b>44</b>	<b>41</b>	<b>35</b>	<b>35</b>	<b>49</b>	<b>233</b>
LG. PHILIPS LCD CO., LTD.	0	0	1	10	56	136	203
SAMSUNG ELECTRO-MECHANICS CO., LTD.	18	46	29	18	35	42	188
<b>KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY</b>	<b>6</b>	<b>20</b>	<b>17</b>	<b>34</b>	<b>34</b>	<b>46</b>	<b>157</b>
SAMSUNG AEROSPACE INDUSTRIES, LTD.	27	42	31	23	10	3	136
GOLDSTAR COMPANY, LTD.	84	32	13	1	2	0	132
SAMSUNG SDI CO., LTD.	0	0	0	0	26	104	130
<b>KOREA RESEARCH INSTITUTE OF CHEMICAL TECHNOLOGY</b>	<b>11</b>	<b>15</b>	<b>21</b>	<b>28</b>	<b>27</b>	<b>17</b>	<b>119</b>
HYNIX SEMICONDUCTOR INC.	0	0	0	0	4	96	100
LG INDUSTRIAL SYSTEMS CO., LTD.	5	14	36	17	14	4	90
LG INFORMATION & COMMUNICATIONS, LTD.	3	3	1	18	23	37	85
KIA MOTORS CORP.	10	42	7	1	7	10	77

Note: Shading indicates universities, research institutions, and other government agencies

Source: US Patent and Trademark Office

# National Innovative Capacity

## China's Rankings

### Competitive Advantages Relative to GDP per Capita

Country Ranking, Arrows  
indicate a change of 5 or more  
ranks since 1998

#### *Science and Technology Base*

University/Industry Research Collaboration	20	↑
Quality of Scientific Research Institutions	28	↓
Local Availability of Specialized Research and Training Services	38	

### Competitive Disadvantages Relative to GDP per Capita

Country Ranking, Arrows  
indicate a change of 5 or more  
ranks since 1998

#### *Human Resource Base*

Quality of Management Schools	69
Availability of Scientists and Engineers	67
Quality of Public Schools	56
Quality of Educational System	48

#### *Regulations and Incentives*

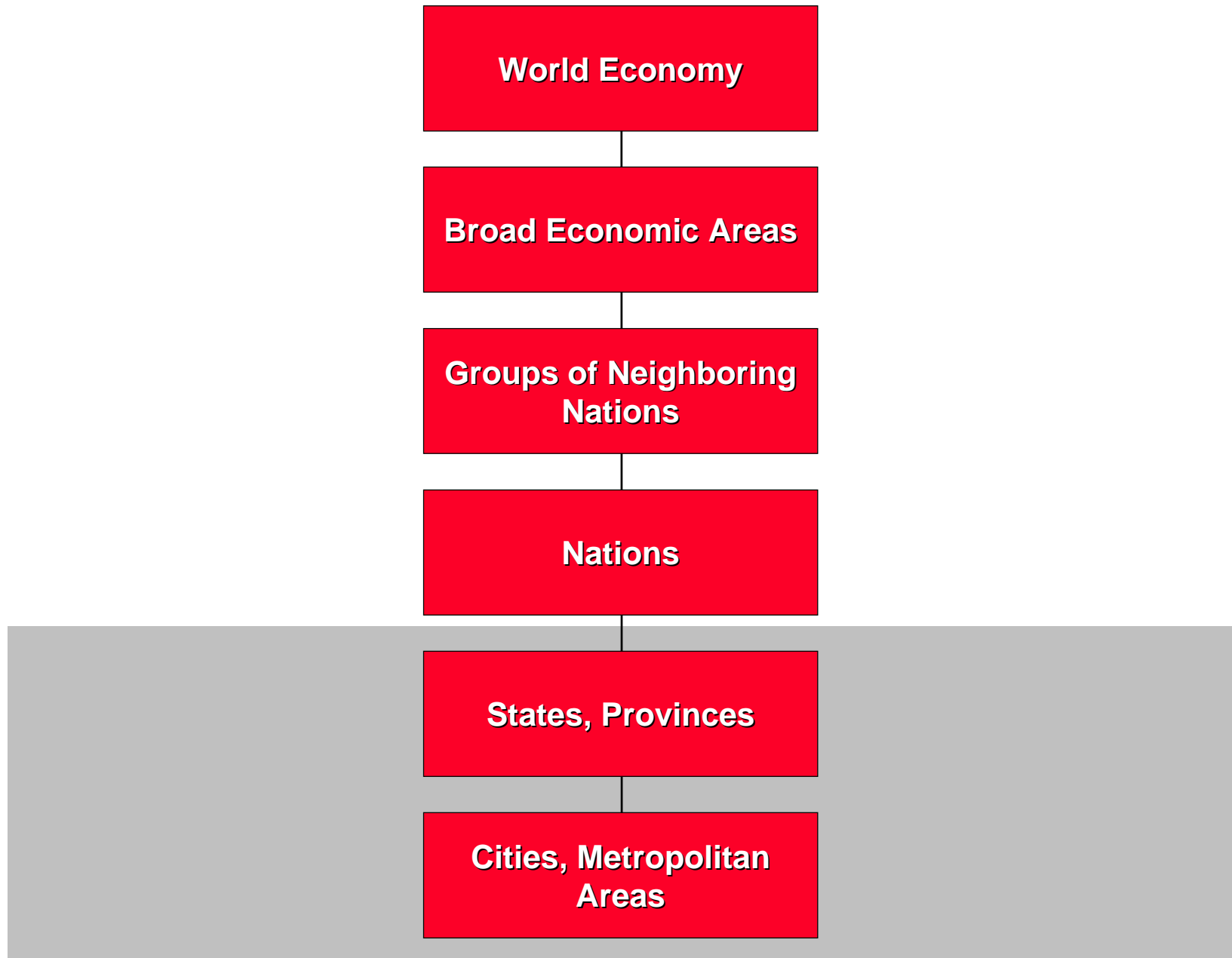
Intellectual Property Protection	55
Stringency of Environmental Regulations	54
Presence of Demanding Regulatory Standards	52
Laws Relating to Information Technology	49

# China's Competitiveness Agenda

- Address key productivity barriers in the Chinese business environment
- Adopt a cluster-based approach to economic development
- Improve China's potential for innovation
- **Create economic strategies at the regional and city level**
- Shift the roles of government, business, and other institutions in economic development

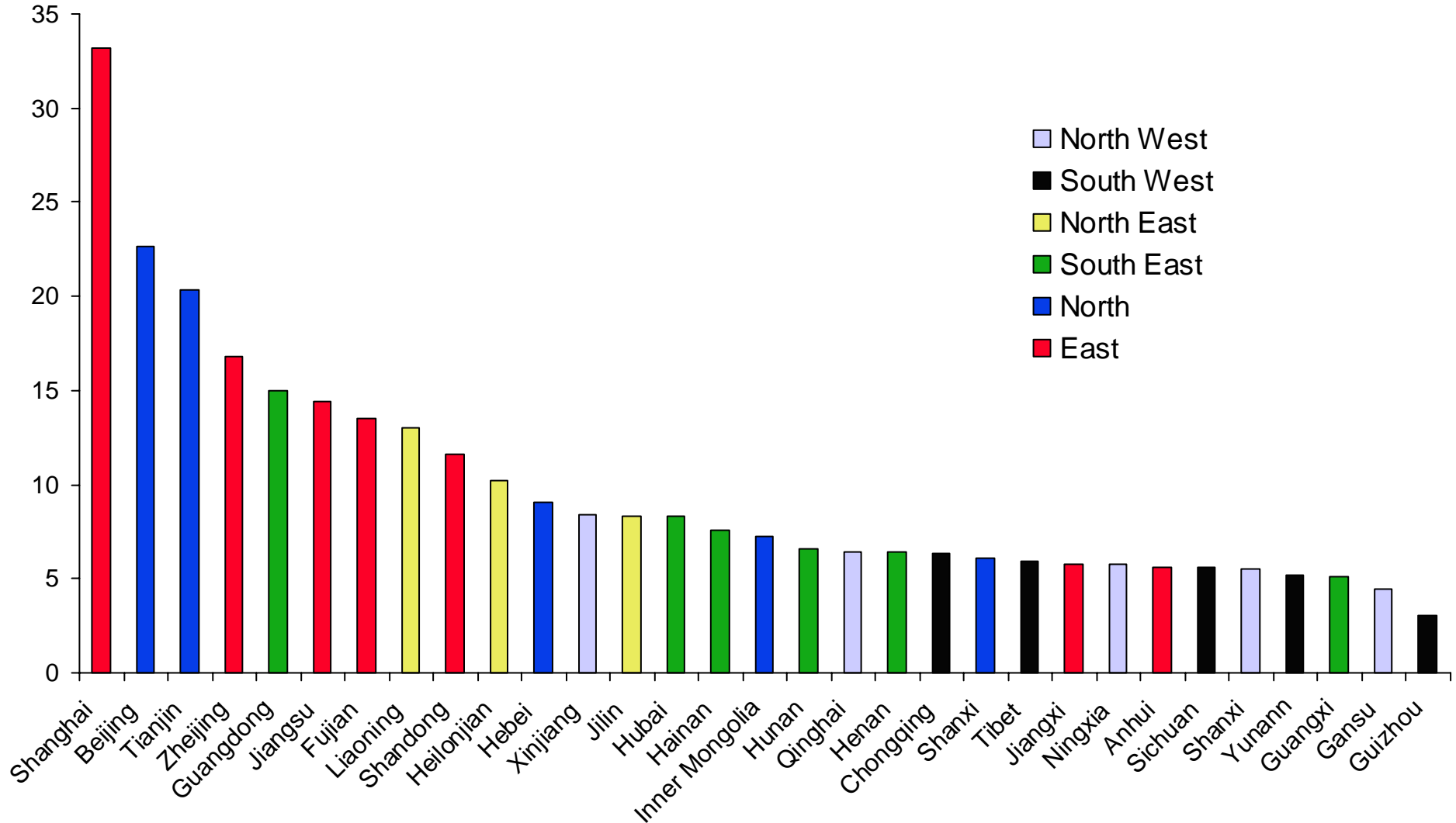
# Influences on Competitiveness

## Multiple Geographic Levels



# Regional Prosperity in China

GDP per capita  
in 1'000 Renminbi, 2002



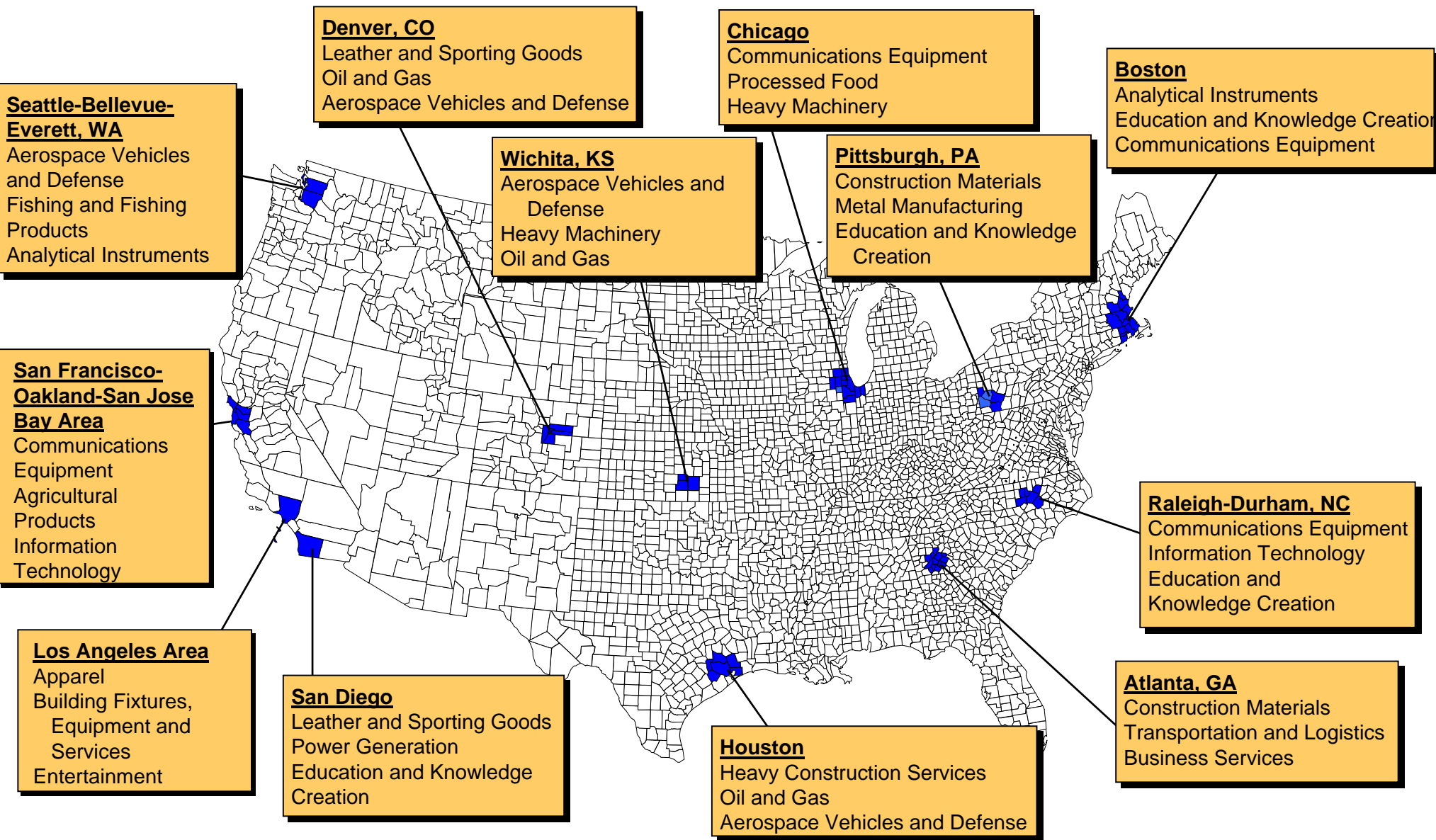
Note: 1 Renminbi = 0.12 US-\$

Source: EIU (2004)

GCR China 2003-20040528

# Specialization of Regional Economies

## Select U.S. Geographic Areas

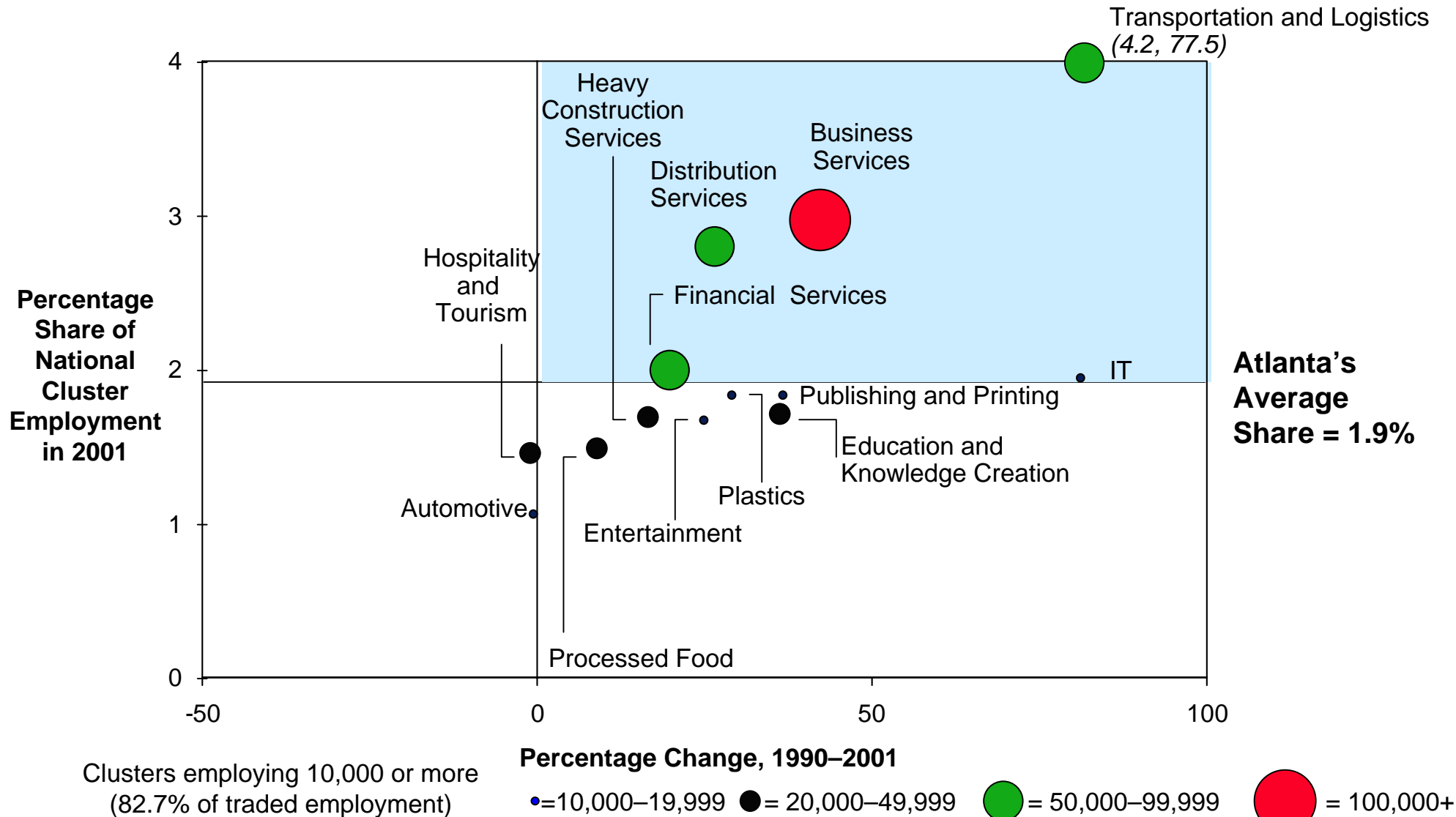


Note: Clusters listed are the three highest ranking clusters in terms of share of national employment

Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School

# Traded Specialization of Regional Economies

## Atlanta Metro Area



Clusters employing 10,000 or more  
(82.7% of traded employment)

Percentage Change, 1990–2001

● = 10,000–19,999 ● = 20,000–49,999

● = 50,000–99,999

● = 100,000+

Note: Uses narrow cluster definitions to avoid overlap

Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School

# China's Competitiveness Agenda

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# Shifting Responsibilities for Economic Development

## Old Model

- **Government** drives economic development through policy decisions and incentives



## New Model

- Economic development is a **collaborative process** involving government at multiple levels, companies, teaching and research institutions, and institutions for collaboration

# Roles of Government in Economic Development

- **Improve the macroeconomic, political, legal, and social context**
  - Establish a **stable and predictable** macroeconomic, legal, and political environment
  - Improve the **social conditions** of citizens
- **Upgrade the general business environment**
  - Improve the availability, quality, and efficiency of **cross-cutting or general purpose inputs, infrastructure, and institutions**
  - Set **overall rules and incentives** governing competition that encourage productivity growth
- **Facilitate cluster formation and upgrading**
  - Identify **existing and emerging clusters**
  - Convene and participate in the identification of **cluster constraints** and **action plans** to address them
- **Lead a collaborative process of economic change**
  - Create institutions and **processes for upgrading competitiveness** that inform citizens and mobilize the private sector, government at all levels, educational and other institutions, and civil society to take action

# Role of the Private Sector in Economic Development

- Take an **active role** in upgrading the local infrastructure
- Nurture **local suppliers** and attract new supplier investments
- Work closely with local **educational and research institutions** to upgrade **quality and create specialized programs addressing cluster needs**
- Provide government with **information** and **substantive input** on regulatory issues and constraints bearing on cluster development
- Focus **corporate philanthropy** on enhancing the local business environment



- An important role for **trade associations**
  - Greater influence
  - Cost sharing

# China's Competitiveness Agenda

- **Address key productivity barriers in the Chinese business environment**
- **Adopt a cluster-based approach to economic development**
- **Improve China's potential for innovation**
- **Create economic strategies at the regional and city level**
- **Shift the roles of government, business, and other institutions in economic development**



- **Upgrading the microeconomic foundations of sustainable prosperity in China**

# Selected References on Clusters, Competition, Innovation, and Regional Economies

Professor Michael E. Porter

- “The Economic Performance of Regions”, Regional Studies, Vol. 37, 2003
- “UK Competitiveness: Moving to the Next Stage”, with Christian Ketels, DTI Economics Papers, No.3, London: 2003
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# Selected References on Clusters, Competition, Innovation, and Regional Economies

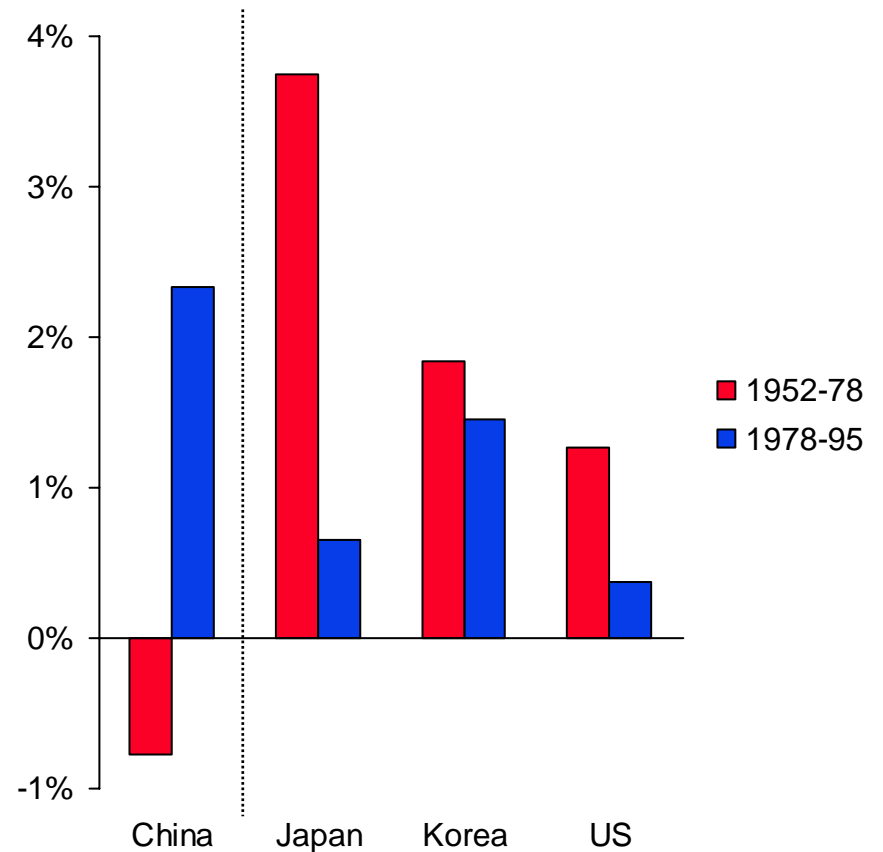
Professor Michael E. Porter

- “Enhancing the Microeconomic Foundations of Prosperity: The Current Competitiveness Index” in The Global Competitiveness Report 2001-02, New York: Oxford University Press, 2001
- “Innovation Lecture,” published by the Dutch Ministry of Economics, 2001
- “National Report: Clusters of Innovation Initiative,” (with the Council on Competitiveness, Monitor Group, and ontheFRONTIER), Washington, DC: Council on Competitiveness, 2001
- “Clusters of Innovation Initiative: San Diego Report,” (with the Council on Competitiveness, Monitor Group, and ontheFRONTIER), Washington, DC: Council on Competitiveness, 2001
- “The Current Competitiveness Index: Measuring the Microeconomic Foundations of Prosperity” in The Global Competitiveness Report 2000-01, New York: Oxford University Press, 2000
- “Location, Competition, and Economic Development: Local Clusters in a Global Economy,” (Economic Development Quarterly, February 2000, 15-34)
- “Locations, Clusters, and Company Strategy” in The Oxford Handbook of Economic Geography, (G. L. Clark, M.P. Feldman, and M.S. Gertler, eds.), New York: Oxford University Press, 2000
- “Attitudes, Values, Beliefs and the Microeconomics of Prosperity,” in Culture Matters: How Values Shape Human Progress, (L.E. Harrison, S.P. Huntington, eds.), New York: Basic Books, 2000
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- The Competitive Advantage of Nations, New York: The Free Press, 1990

# Backup

# Total Factor Productivity Performance

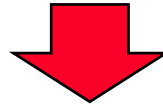
- In the post-1978 reform period China registered solid TFP growth
- More recent estimates indicate TFP growth rates between 2% - 4% for the late 1990s
- This performance is no surprise given the massive shift from agriculture to industry
- Agriculture (and transportation/telecommunication) had the strongest sectoral TFP growth according to one study





# China's Economy in Perspective

- While China has been growing strongly over the last two decades, it still has a long **way to go**



- Despite its impressive growth and its huge population, China's **total GDP** is at roughly 25% of the U.S. or EU level and at less than 50% of the Japanese level
- Despite its impressive growth in exports, China's share of the **world export market** is below that of countries like the UK and France
- While China has become the largest recipient of inward FDI\*, it's **FDI level** is at roughly 35% of GDP which is similar to the region and to the average of developing economies overall



- Chinese prosperity measured by GDP per capita remains relatively low, despite some improvement of key social indicators

\*Luxembourg registers significantly higher values because financial transaction channeled through the country

Source: UNCTAD (2004), EIU (2004), WTO (2004)

# Weakness in the Chinese Business Environment

## Financial markets

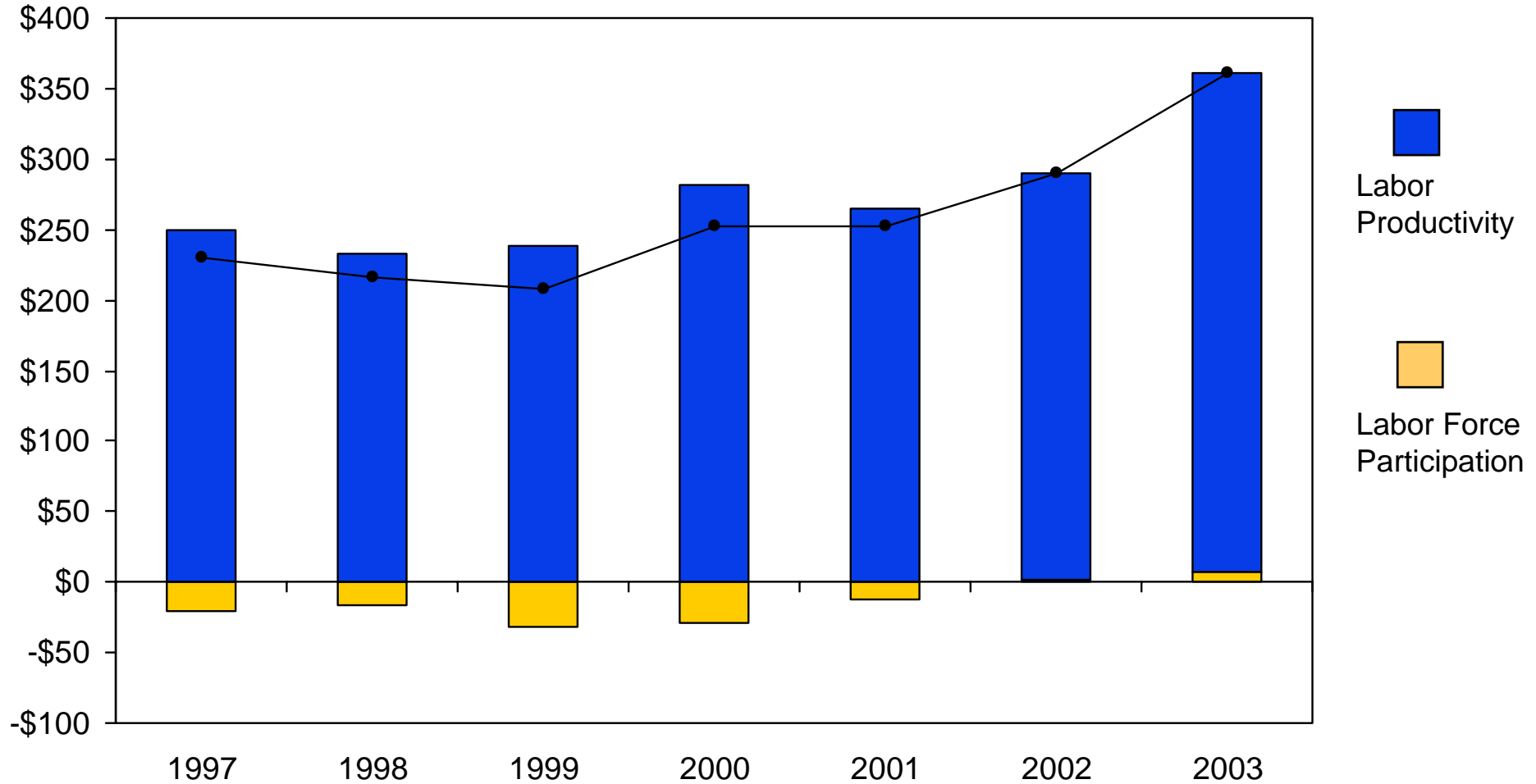
- Private sector companies have relied heavily on internal financing or foreign investors
- Banks (state-owned) have traditionally propped up inefficient government-owned companies, although reforms are occurring
  - Share of non-performing loans estimated to be 25% - 50%

## Competition

- The intensity of rivalry in China is high, though many rules and regulations still tilt the playing field among companies
  - State-owned companies are supported to avoid social hardship and foreign companies are forced to make concessions
  - These goals can over time be only achieved in fair competition in an adequate policy environment
- The full implementation of China's WTO commitments is critical to remove these imbalances

# Decomposing Chinese GDP per Capita Growth

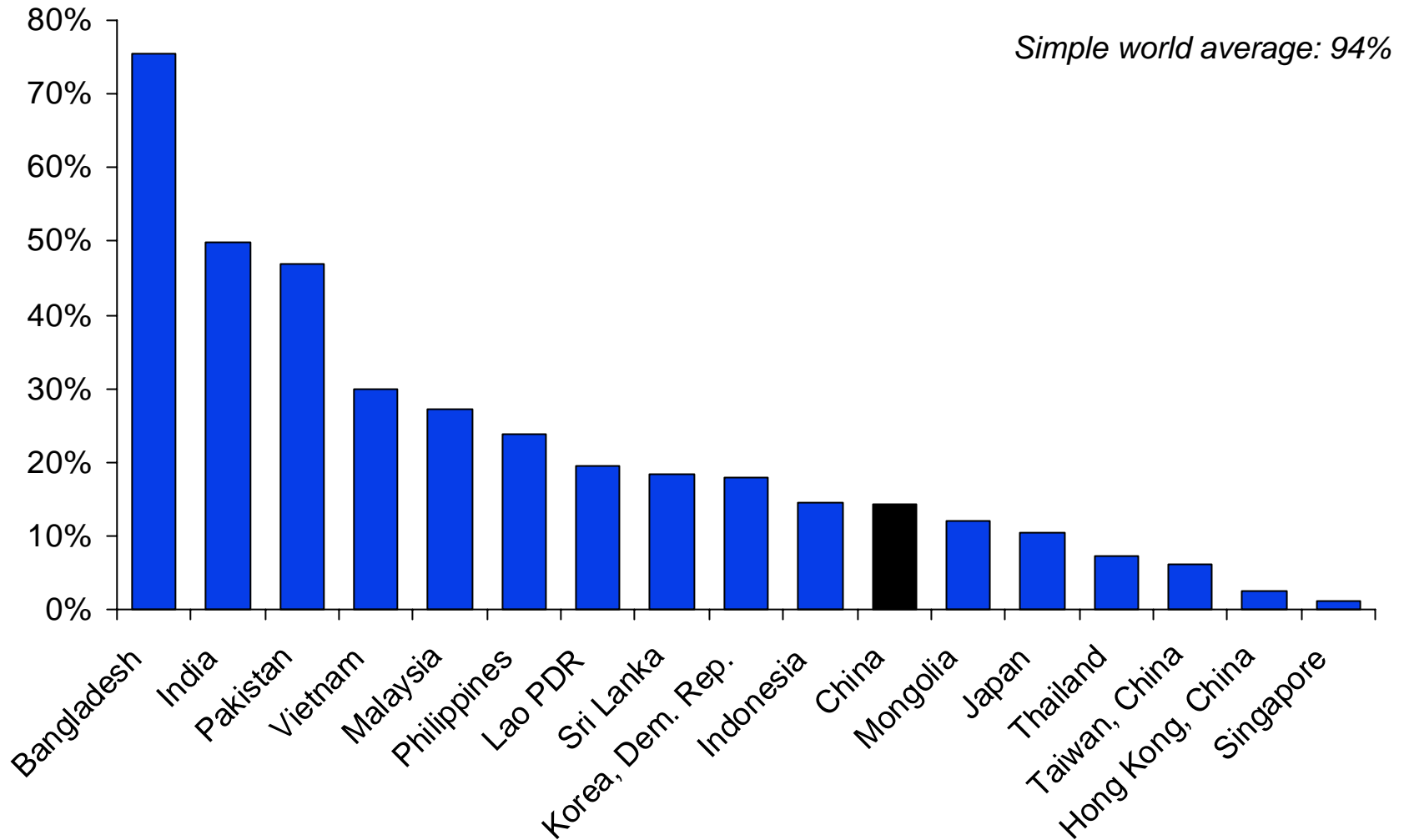
Contribution to change in real GDP per Capita (PPP adjusted)



# Ease of Business Formation

## Asian Countries

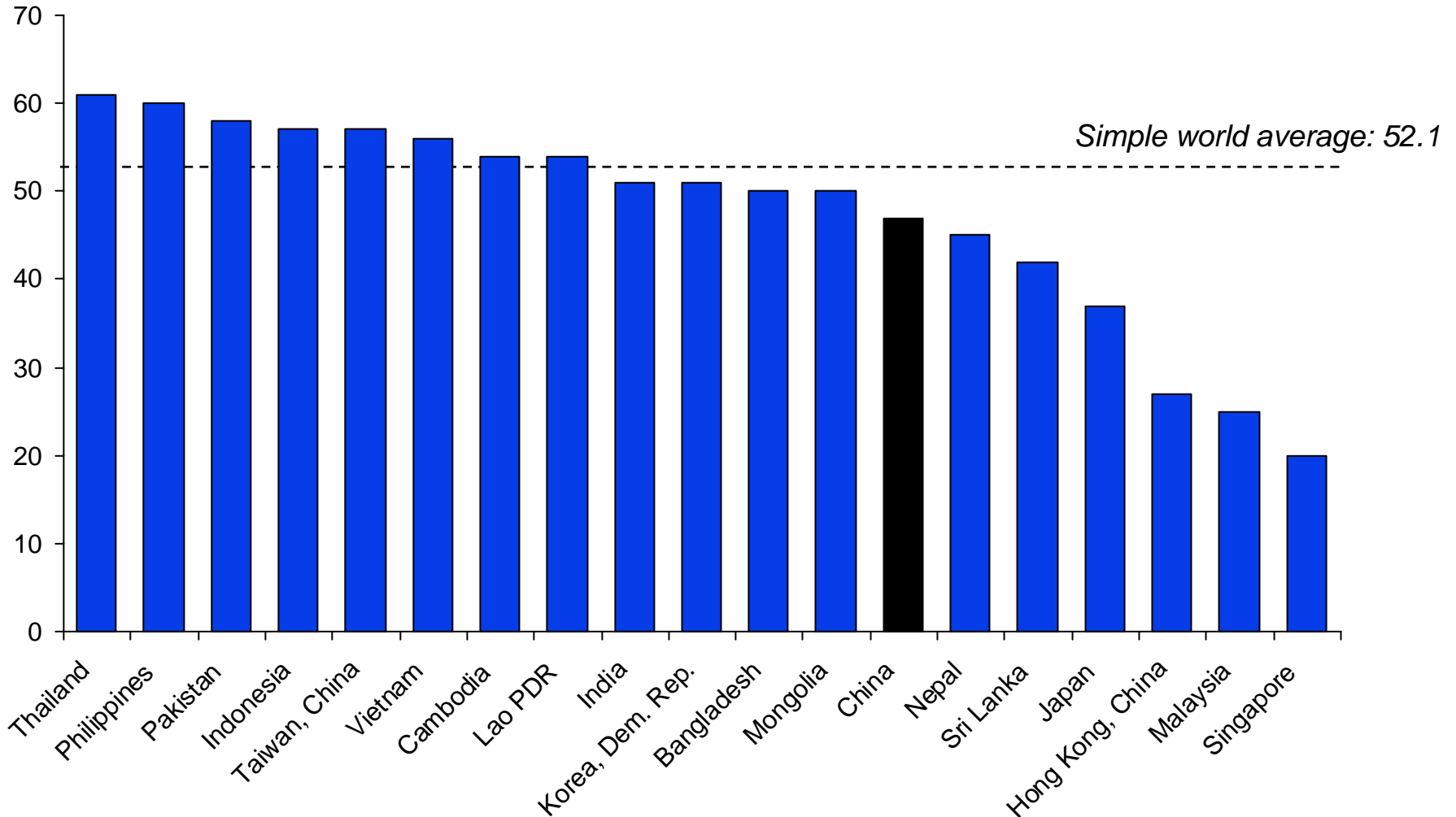
Cost of Business Formation  
relative to GDP per capita



# Labor Market Regulation

## Asian Countries

Stringency of Labor Market Regulation, (0-100)



# The Chinese Fireworks Cluster

- China is the **world's largest producer and exporter** of fireworks. The cluster employs 600,000 people and is worth \$1.2bn per year. The cluster earns \$400 million per year in exports and accounts for 90% of the world trade in fireworks. Four regions produce the majority of fireworks in China. Several have a history of making fireworks going back over a thousand years.
- Historically safety has been poor characterized by **frequent explosions causing many deaths**. The industry relies heavily on child labor.
- Liuyang City in Hunan Province imposed **stricter safety standards**, raising the cost of opening a factory by 50%. The city invested \$60 million in technical upgrades and closed 10,000 small workshops that didn't meet the new standards. However, production thrived and the area now **accounts for 60% of exports**.
- Jiangxi province, China's second largest producer, declared all fireworks production would cease in 2004 following a deadly blast in 2002.
- In January 2004, the State Council adopted industrial **safety regulations** requiring three-year renewable licenses for mines, construction, chemical, fireworks, and explosives firms.