

The Competitive Advantage of Taiwan

Professor Michael E. Porter
Harvard Business School

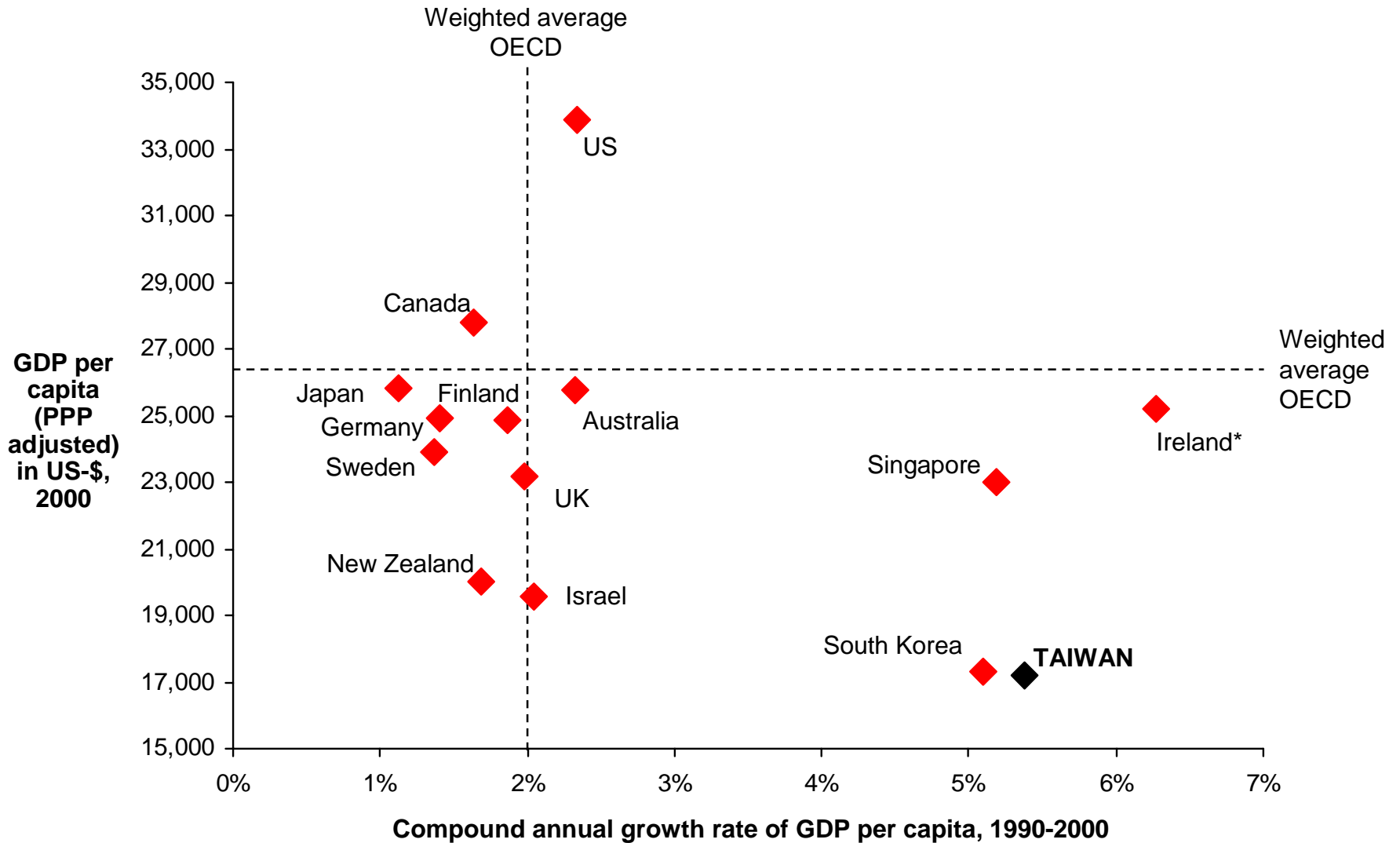
Commonwealth Speech
Taipei, Taiwan
July 31, 2001

This presentation draws on ideas from Professor Porter's articles and books, in particular, The Competitive Advantage of Nations (The Free Press, 1990), "The Microeconomic Foundations of Economic Development," in The Global Competitiveness Report 1998, (World Economic Forum, 1998), "Clusters and the New Competitive Agenda for Companies and Governments" in On Competition (Harvard Business School Press, 1998) and ongoing statistical study of clusters, Competing for Prosperity: The Microeconomic Foundations of Development, forthcoming, and "What is Strategy?" (Harvard Business Review, Nov/Dec 1996). 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.

Taiwan's Current Malaise

- Recent economic downturn
- Highest unemployment in decades
- Uncertainty of future relationship to China

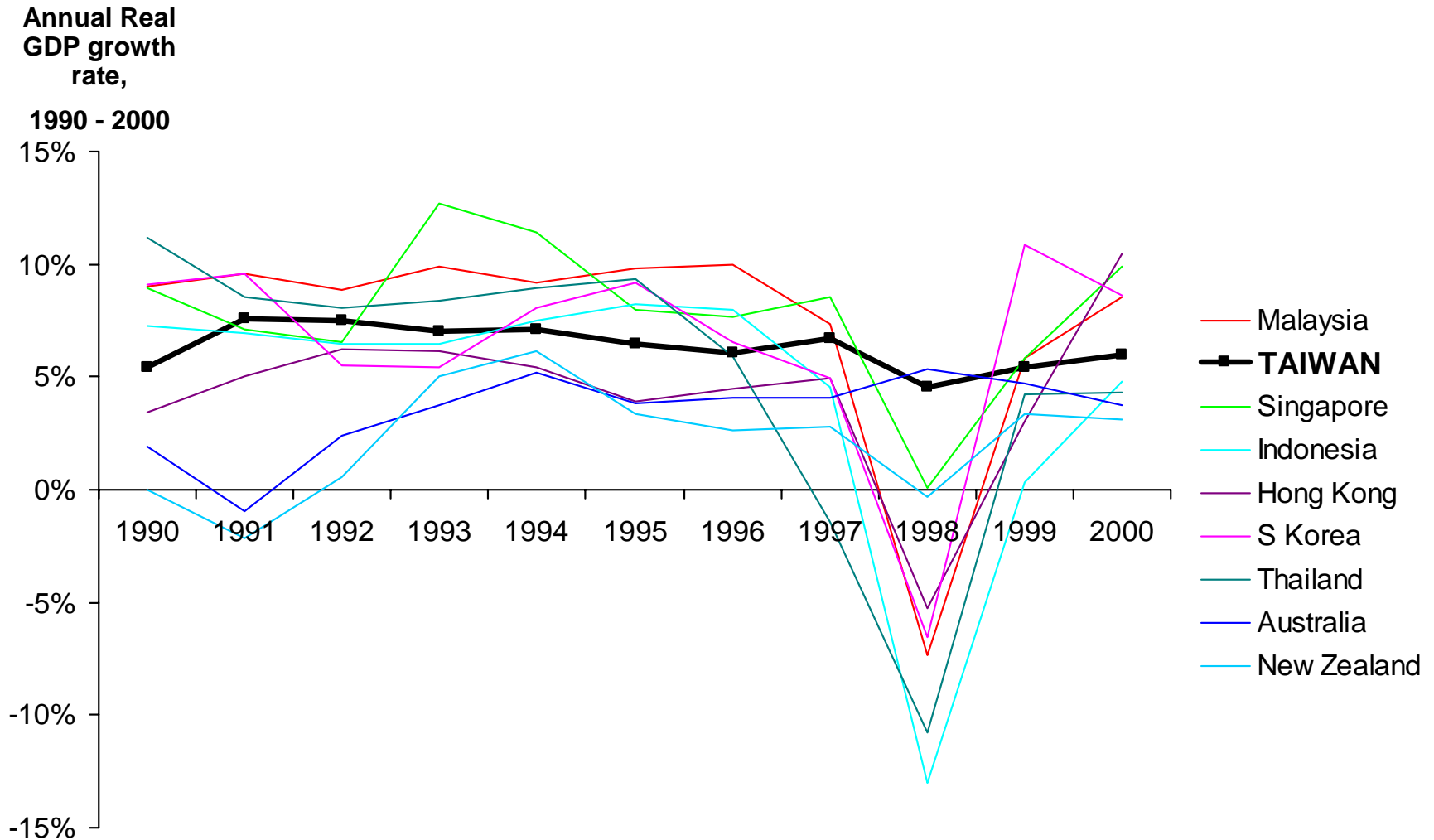
Taiwan's Economic Performance



Note: Irish GNP per capita is about 20% lower than the reported GDP per capita figure due to large dividend outflows to foreign investors. We use GNP per capita for Ireland because it is more representative. For other countries GDP and GNP are very similar.

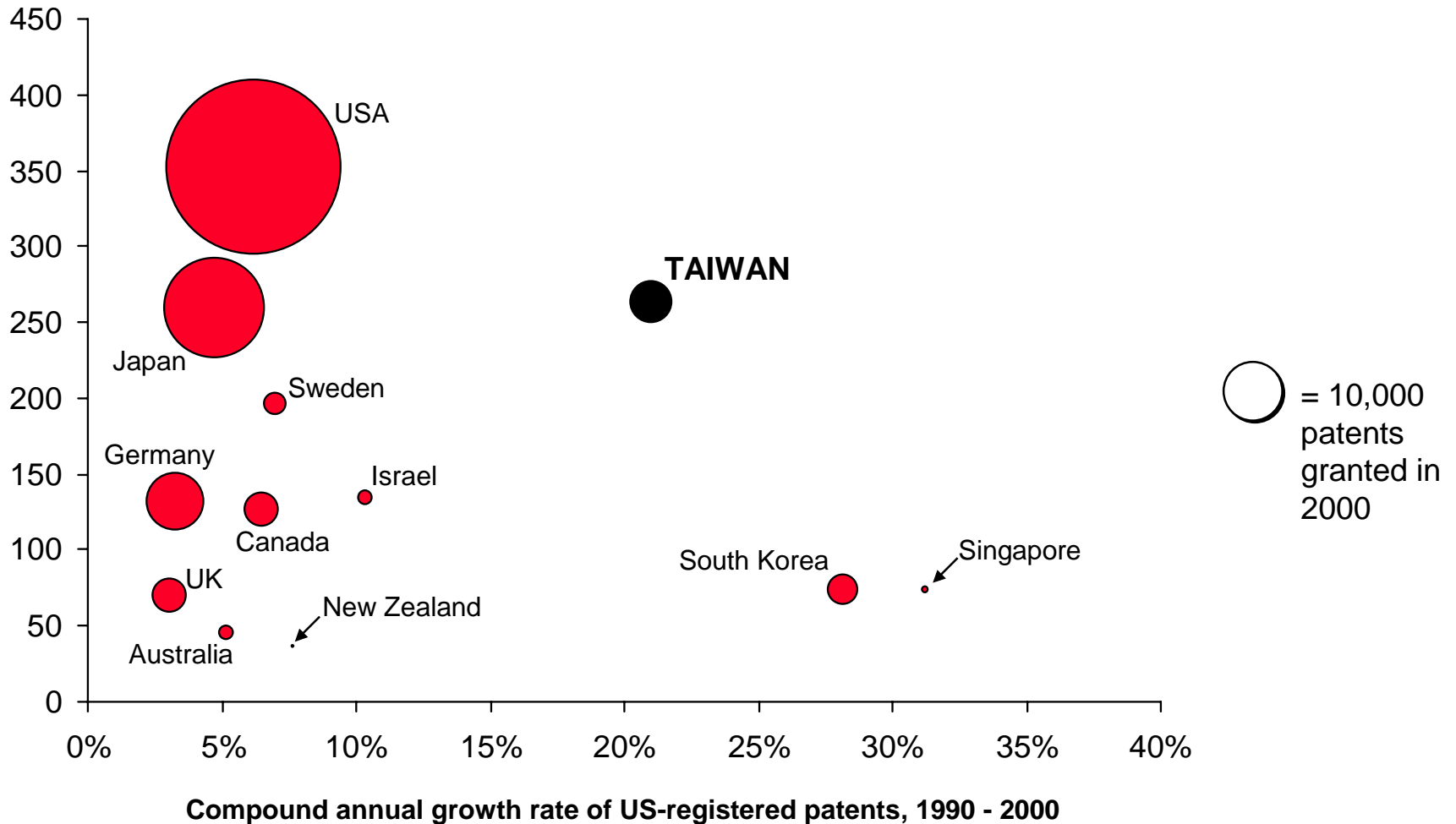
Source: WEO

Asian Economic Performance By Country



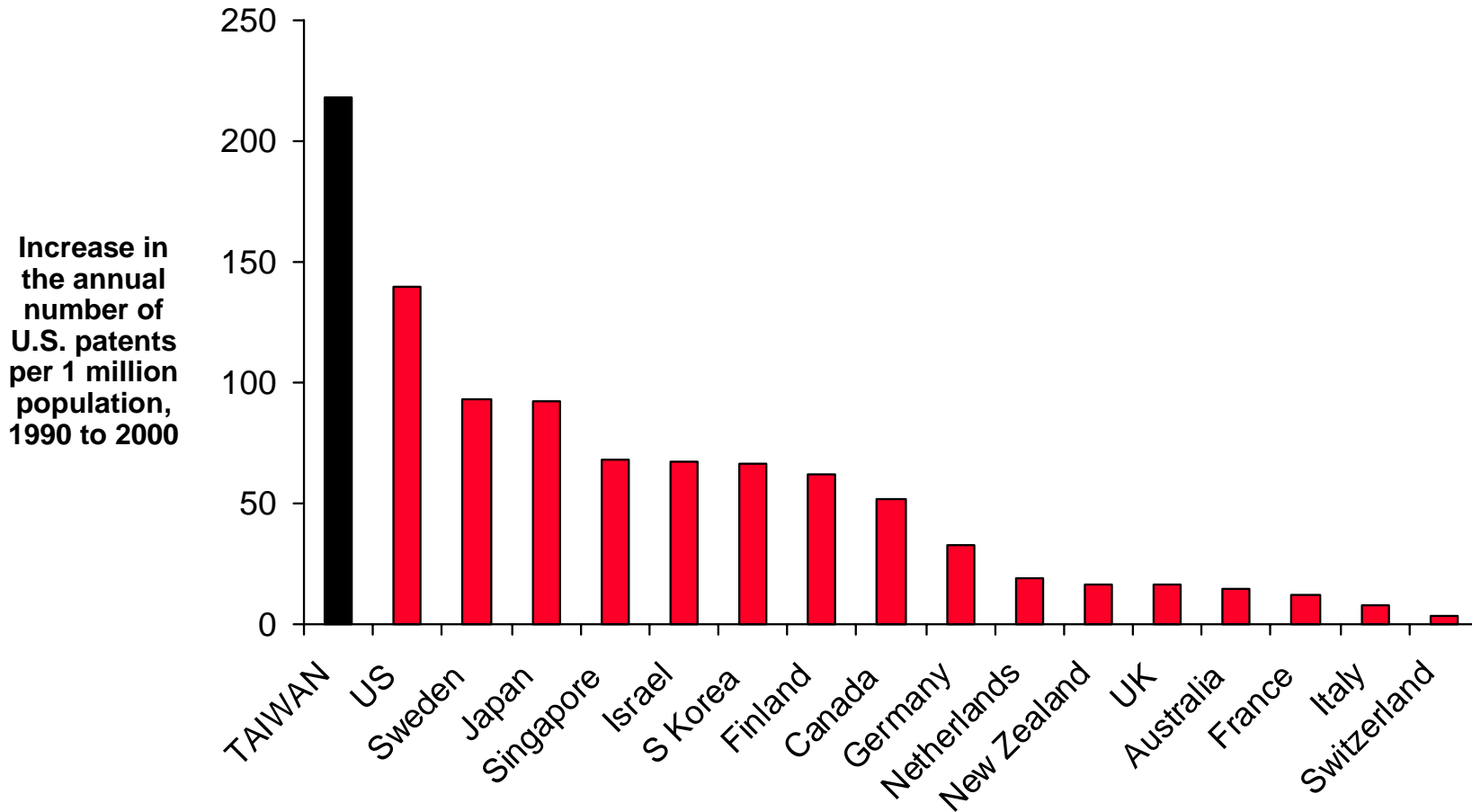
International Patenting Output

Annual U.S. patents
per 1 million
population, 2000



○ = 10,000
patents
granted in
2000

International Patenting Output

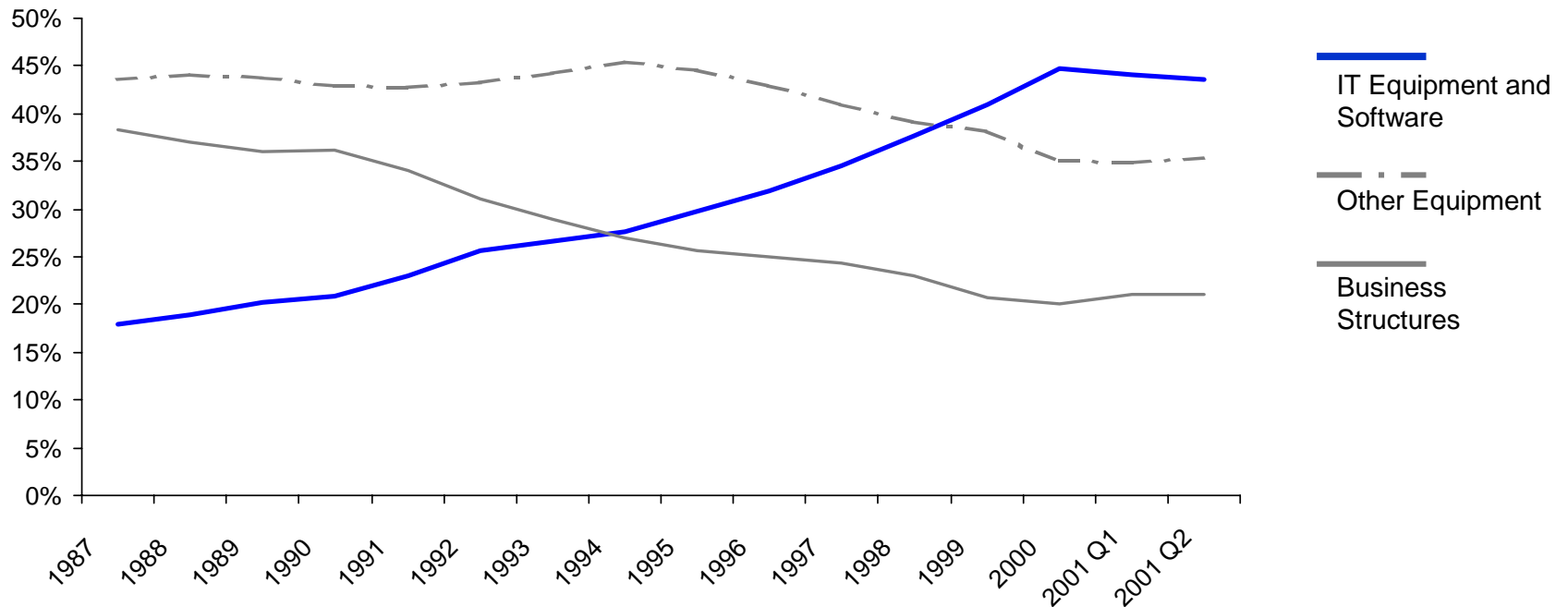


Source: US Patent and Trademark Office (www.uspto.gov). Author's analysis.

U.S. Information Technology Investment

Share of Real Private Non-residential Investment by Type

Share of Real
Private US Non-
Residential
Investment



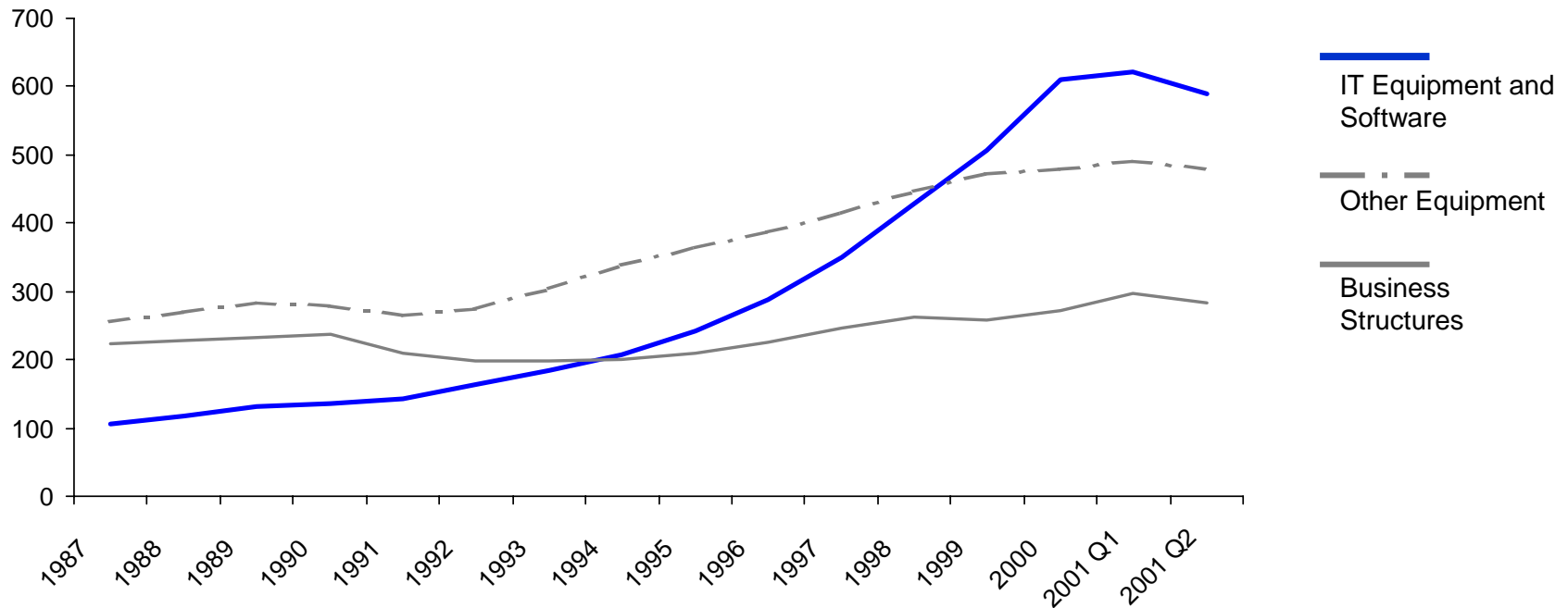
Note: Quarterly data seasonally adjusted at annual rates

Source: BEA, author's calculations

U.S. Information Technology Investment

Level of Real Private Non-residential Investment by Type

Real Private US
Non-Residential
Investment,
Billions of 1996
US-\$



Note: Quarterly data seasonally adjusted at annual rates

Source: BEA, author's calculations

Taiwan's Economic Challenges

Three Agendas

- I. Addressing some **chronic weaknesses**
- II. Making the **transition** from an Investment-driven to a true **Innovation-driven economy**
- III. Defining Taiwan's **economic relationship to China**



- These agendas are integrally connected

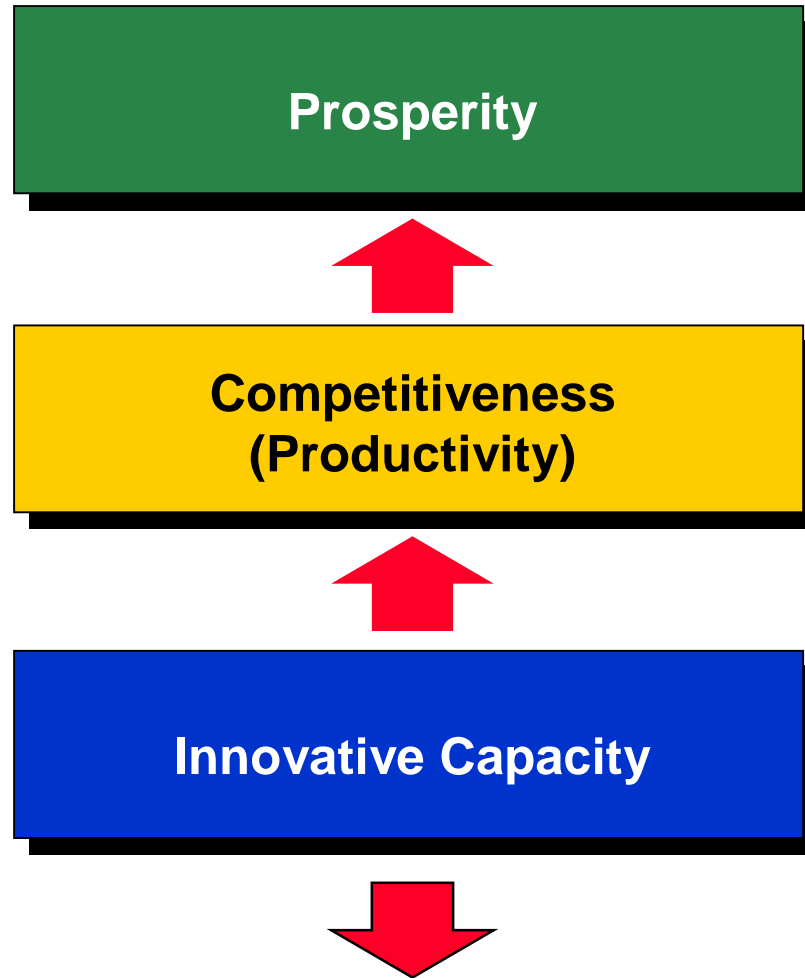
Sources of Rising Prosperity

- A nation's standard of living (wealth) is determined by the **productivity** with which it uses its human, capital, and natural resources. The appropriate definition of competitiveness is productivity.
 - 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”, rather it reveals a **lack of fundamental competitiveness**



- 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

Innovation and Prosperity



- **For advanced economies innovation has the critical role supporting high levels of prosperity**

Determinants of Productivity and Productivity Growth

Macroeconomic, Political, and Legal Context for Development

Microeconomic Foundations of Development

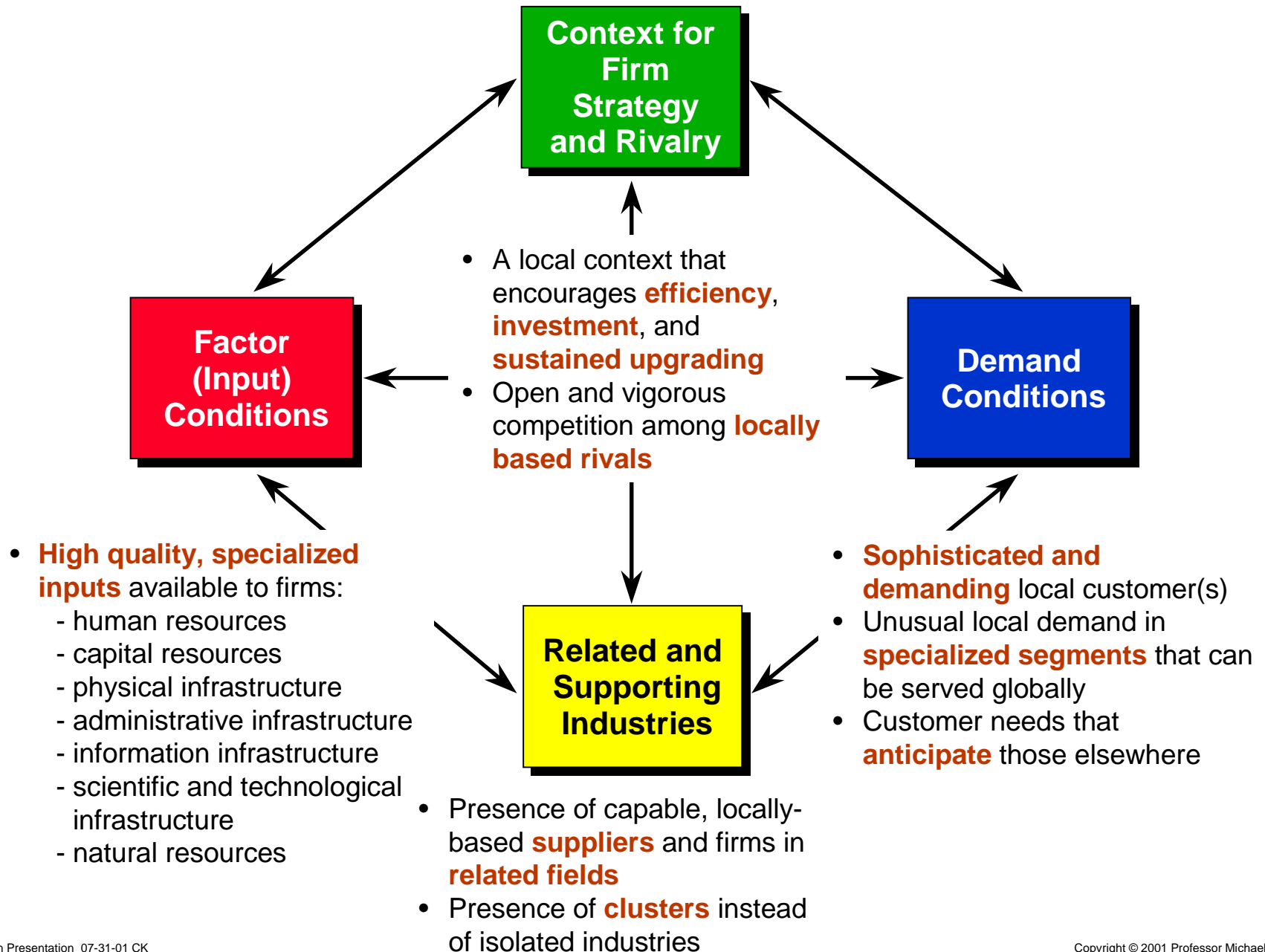
Sophistication
of Company
Operations and
Strategy



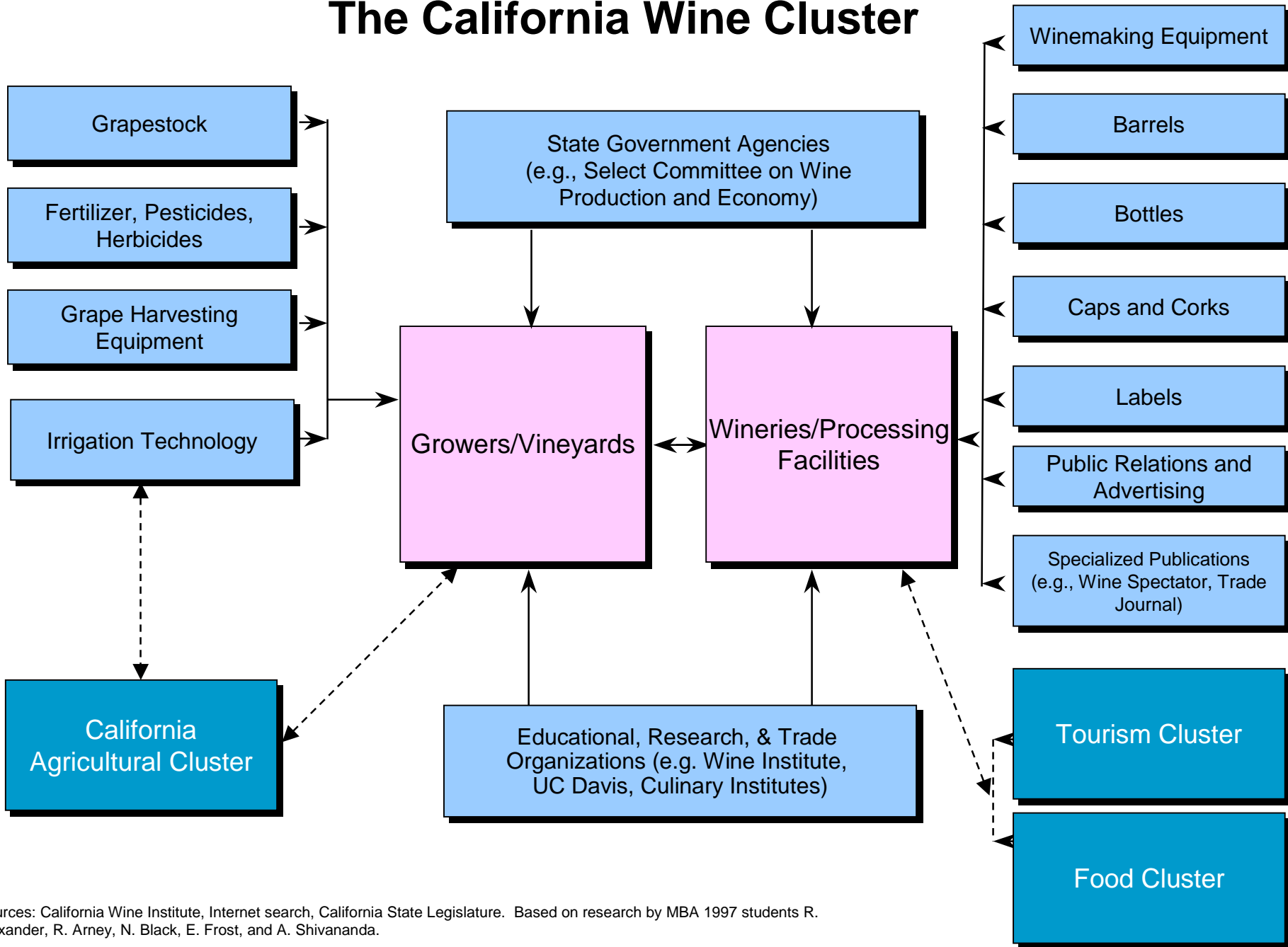
Quality of the
Microeconomic
Business
Environment

- Sound macroeconomic policies and a stable political / legal context are **necessary** to ensure a prosperous economy, **but not sufficient**
- Competitiveness ultimately depends on improving the **microeconomic foundations** of competition

Productivity and the Microeconomic Business Environment



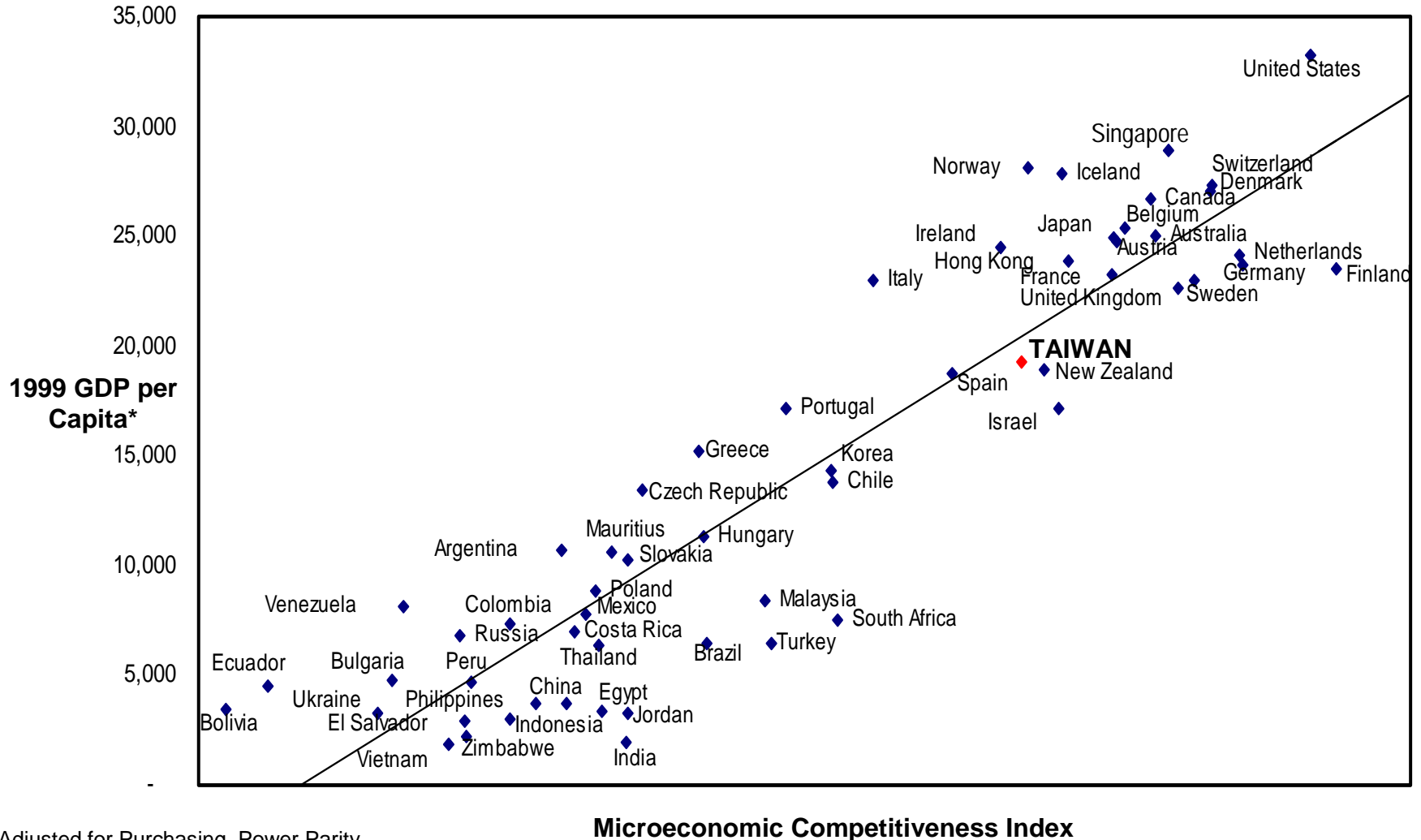
The California Wine Cluster



Sources: California Wine Institute, Internet search, California State Legislature. Based on research by MBA 1997 students R. Alexander, R. Arney, N. Black, E. Frost, and A. Shivananda.

Global Competitiveness Report 2000

The Relationship Between Microeconomic Competitiveness and GDP Per Capita, 1999 Data



* Adjusted for Purchasing Power Parity

Source: Porter, Michael E. "The Current Competitiveness Index: Measuring the Microeconomic Foundations of Prosperity." *The Global Competitiveness Report 2000*, New York: Oxford University Press, 2000

Stages Of Economic Development



- Basic factor conditions (low cost labor, natural resources, geographic location) are the dominant sources of competitive advantage
- Technology is assimilated through imports, FDI, and imitation
- Companies compete on price and lack direct access to consumers
- Companies have limited roles in the value chain, focus on assembly, labor intensive manufacturing, and resource extraction
- The economy is highly sensitive to world economic cycles, commodity prices, and exchange rates

- Efficiency in producing standard products and services is the dominant source of competitive advantage
- Technology is accessed through licensing, joint ventures, FDI, and imitation
- The nation is not only assimilating foreign technology, but has the capacity to improve on it
- The national diamond supports heavy investment in efficient infrastructure and modern production processes
- Companies serve OEM customers and extend capabilities more widely in the value chain
- The economy is concentrated on manufacturing and outsourced service exports

- Innovative products and services at the global technology frontier are the dominant sources of competitive advantage
- The national diamond is characterized by strengths in all areas together with the presence of deep clusters
- Companies compete with unique strategies that are often global in scope
- The economy has a high service share, and is resilient to external shocks

Taiwan's Current Position

- Primary focus on manufacturing
- Compete on price and efficiency
- Prevalent strategy of serving OEM customers
- High rate of investment in modern production methods and assimilating technology
- Strong capabilities to improve and enhance foreign technology
- Export-led growth
- Substantial government role in steering the economy
- Emerging innovative capacity



- Investment-driven stage

Limits Of The Current Strategy

- Labor costs are now high relative to neighboring countries
- Other domestic costs are rising
- Taiwan is facing increasing pressure in export markets



- Taiwanese companies are investing heavily in **lower wage-locations in the region** to maintain current strategies
 - The proximity of China offers an easily available alternative location with access to a huge domestic market
- Taiwanese exports are heavily dependent on a **single cluster** in which other Asian countries also compete
 - The U.S. downturn in IT investment has a large impact on Taiwan

Taiwan's Economic Agenda in 2001

I. Addressing some chronic weaknesses

II. Making the transition from an Investment-driven to a true Innovation-driven economy

III. Defining Taiwan's economic relationship to China

Global Competitiveness Report 2000

Taiwan's Ranking

Rank	Current Competitiveness Index	Company Strategy & Operations Index	National Business Environment Index
1	Finland	Germany	Finland
2	United States	United States	United States
3	Germany	Finland	Netherlands
4	Netherlands	Japan	Denmark
5	Switzerland	Switzerland	Singapore
6	Denmark	Sweden	Germany
7	Sweden	Netherlands	Australia
8	United Kingdom	Denmark	Canada
9	Singapore	France	United Kingdom
10	Australia	Belgium	Switzerland
11	Canada	United Kingdom	Sweden
12	Belgium	Austria	Austria
13	Austria	Israel	Belgium
14	Japan	Iceland	Hong Kong
15	France	Singapore	France
16	Hong Kong	Canada	Iceland
17	Iceland	Italy	New Zealand
18	Israel	Taiwan	Norway
19	New Zealand	Ireland	Japan
20	Norway	Australia	Israel
21	Taiwan	Norway	Taiwan
22	Ireland	New Zealand	Ireland
23	Spain	Hong Kong	Spain
24	Italy	Spain	Chile
25	South Africa	Korea	South Africa

Taiwan's Economic Agenda in 2001

I. Addressing some chronic weaknesses

- Improve physical infrastructure

Physical Infrastructure

Taiwan's Relative Position

Competitive Advantages Relative to GDP per Capita

	Country Ranking
General Internet Use	6
Government Infrastructure Investment	12
Railroad Infrastructure Development	14

Competitive Disadvantages Relative to GDP per Capita

	Country Ranking
Availability of Cellular Phones	33
International Direct Dial Communication Costs	30
Overall Infrastructure Quality	25
Telephone / Fax Infrastructure Quality	25
Computer Utilization	24
Air Transport Infrastructure Quality	24
Port Infrastructure Quality	22

Note: Rank by countries; overall Taiwan ranks 21 (21 on Quality of Business Environment)

Source: Global Competitiveness Report 2000

Taiwan's Economic Agenda in 2001

I. Addressing some chronic weaknesses

- Improve physical infrastructure
- **Upgrade domestic financial markets**

Financial Markets

Taiwan's Relative Position

Competitive Advantages Relative to GDP per Capita

	Country Ranking
Ability to Finance Start-ups	10
Ease of Access to Loans	14
Venture Capital Availability	18

Competitive Disadvantages Relative to GDP per Capita

	Country Ranking
Financial Market Sophistication	29
Financial Disclosure Requirements	28
Access to Local Equity Market	26

Note: Rank by countries; overall Taiwan ranks 21 (21 on Quality of Business Environment)

Source: Global Competitiveness Report 2000

Taiwan's Economic Agenda in 2001

I. Addressing some chronic weaknesses

- Improve physical infrastructure
- Upgrade domestic financial markets
- **Increase transparency, openness and legal accountability**

Openness and Accountability

Taiwan's Relative Position

Competitive Advantages Relative to GDP per Capita

Country Ranking

Competitive Disadvantages Relative to GDP per Capita

Country Ranking

Judicial Independence	39
Adequacy of Private Sector Legal Recourse	37
Political Protection of Private Businesses	30
Extent of Required Financial Disclosure	28
Bureaucratic 'Red Tape'	27
Business Information Availability	24

Note: Rank by countries; overall Taiwan ranks 21 (21 on Quality of Business Environment)

Source: Global Competitiveness Report 2000

Taiwan's Economic Agenda in 2001

I. Addressing some chronic weaknesses

- Improve physical infrastructure
- Upgrade domestic financial markets
- Increase transparency, openness and legal accountability
- **Boost the efficiency of domestic industries**

Competition and Local Prices

Relative Prices for Local Goods and Services, 2000

Rank	GDP per capita (current exchange rate) Index rank	GDP per capita (PPP) Index rank
1	Luxembourg	Luxembourg
2	Japan	United States
3	United States	Norway
4	Norway	Iceland
5	Switzerland	Ireland
6	Denmark	Switzerland
7	Iceland	Canada
8	Singapore	Denmark
9	Sweden	Belgium
10	Ireland	Austria
11	United Kingdom	Japan
12	Finland	Australia
13	Hong Kong	Netherlands
14	Netherlands	Germany
15	Austria	Finland
16	Germany	Hong Kong
17	Belgium	France
18	Canada	Sweden
19	France	Italy
20	Australia	United Kingdom
21	Italy	Singapore
22	Israel	New Zealand
23	Spain	Israel
24	Taiwan	Spain
25	New Zealand	Korea
26	Portugal	Taiwan

Taiwan's Economic Agenda in 2001

I. Addressing some chronic weaknesses

- Improve physical infrastructure
- Upgrade domestic financial markets
- Increase transparency, openness and legal accountability
- Boost the efficiency of domestic industries

II. Making the transition to a true Innovation-driven economy

- Transform company strategies

Determinants of Relative Performance

Types of Competitive Advantage

**Differentiation
(Non-Price Value)**



**Competitive
Advantage**

Lower Cost



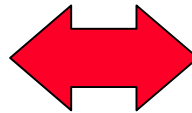
Sources of Competitive Advantage

Operational Effectiveness

- Assimilating, attaining, and extending **best practice**



Do the same thing better



Strategic Positioning

- Creating a **unique** and **sustainable** competitive position



Compete in a different way

Position: Variety/Needs/Access-Based Dell Computer

Particular Product Variety

- Large corporate and institutional customers and their employees

Particular Customer Group

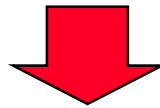
- Moderate range of standard, mid- and large capacity personal computers, PC servers, and PC workstations with low support requirements

Set of Activities

- Prices 15% below rivals
- Employees of institutional customers get same discount on personal machines
- Direct sale via sales force, telephone, and the Internet
- Models include most up to date components
- Build to order from a menu of options
- Assemble only, using just-in-time relationships with nearby suppliers
- Outsource maintenance and repair
- Limited R&D

Typical Company Strategies in Taiwan

- Concentrate on manufacturing versus services
- Rapid adoption of new technologies
- Compete on price and time-to-market
- Serve OEM customers in the US and other Asian countries
- Focus R&D on cost and process improvements
- Seek low cost inputs
- Invest modestly in human capital



Many Taiwanese companies face a strategic transition from competing on cost to competing on unique products and services

Company Operations and Strategy

Taiwan's Relative Position

Competitive Advantages Relative to GDP per Capita

	Country Ranking
Customer Orientation	3
Licensing of Foreign Technology	9

Competitive Disadvantages Relative to GDP per Capita

	Country Ranking
Capacity for Innovation	24
Senior Management Recruitment	23
Extent of Branding	22
Marketing Expertise	21
Production Processes	20
Attention to Staff Training	20
Extent of Regional Sales	19
Product Designs	19
Control of International Distribution	15
Company Spending on R&D	15
Breadth of International Markets	15

Note: Rank by countries; overall Taiwan ranks 21 (18 on Company Operations and Strategy)

Source: Global Competitiveness Report 2000

Taiwan's Economic Agenda in 2001

I. Addressing some chronic weaknesses

- Improve physical infrastructure
- Upgrade domestic financial markets
- Increase transparency, openness and legal accountability
- Boost the efficiency of domestic industries

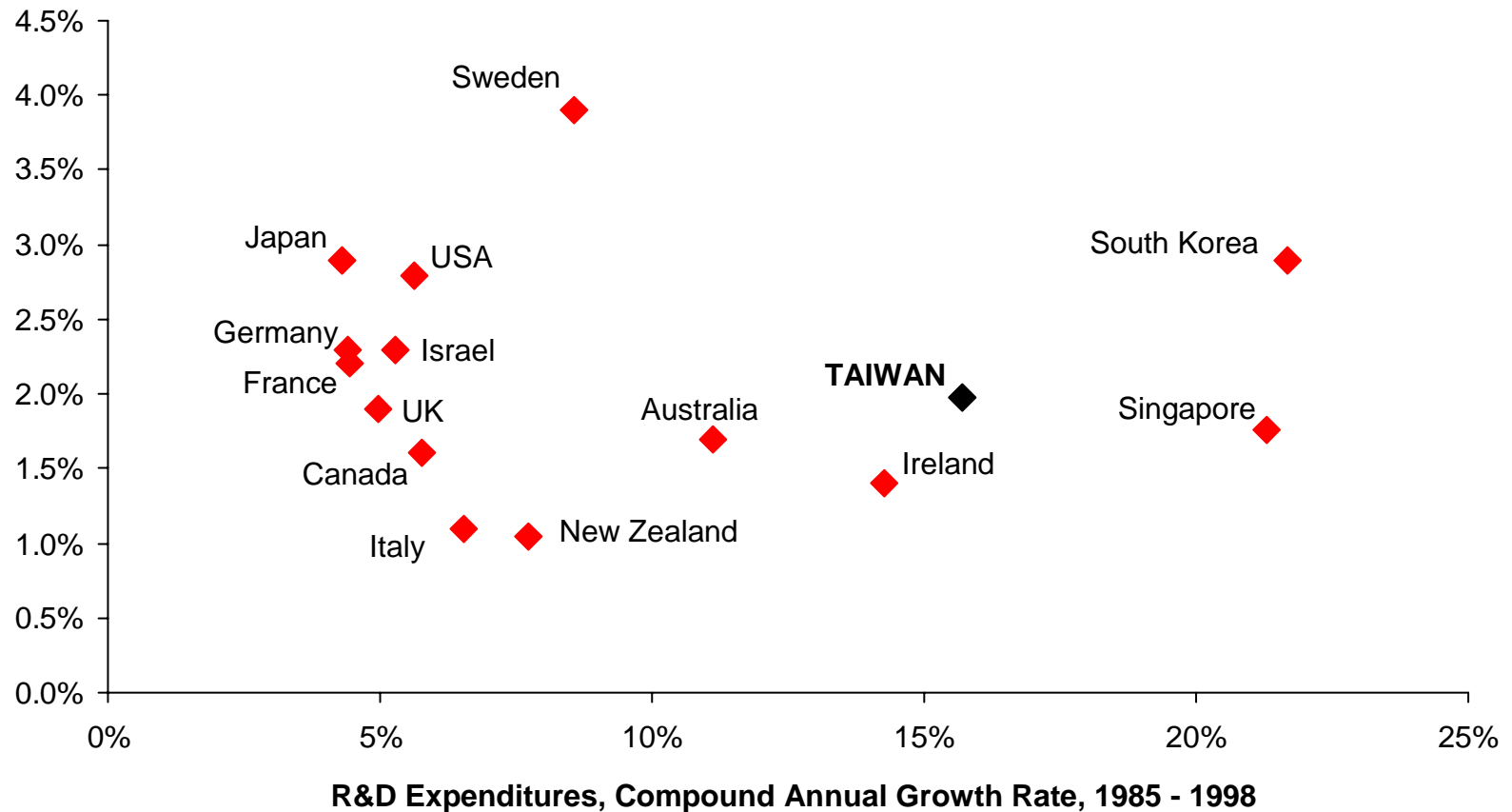
II. Making the transition to a true Innovation-driven economy

- Transform company strategies
- **Upgrade Taiwan's scientific and technological capacity**

Change in R&D Investments

Compound Annual Growth Rate in R&D Expenditures, 1985-1998

R&D Spending as
Share of GDP, 1998



Source: US Competitiveness 2001: Strengths, Vulnerabilities, and Innovation Priorities Report; Global Competitiveness Report 2000

Science and Technology Infrastructure

Taiwan's Relative Position

Competitive Advantages Relative to GDP per Capita

	Country Ranking
Patents Per Capita (2000)	4

Competitive Disadvantages Relative to GDP per Capita

	Country Ranking
Capacity for Innovation	24
Computer Utilization	24
Quality of Scientific Research Institutions	22
Intellectual Property Protection	21
Company Spending on R&D	15

Note: Rank by countries; overall Taiwan ranks 21 (21 on Quality of Business Environment)

Source: Global Competitiveness Report 2000

Composition of Taiwanese Patenting in the US

Top Patenting Industries and Companies, 1999

- Top 15 Taiwan-based companies by U.S. patents filed in 1999
 - TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD. (288 patents)
 - UNITED MICROELECTRONICS CORPORATION (285)
 - INDUSTRIAL TECHNOLOGY RESEARCH INSTITUTE, TAIWAN (203)
 - VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION (107)
 - WINBOND ELECTRONICS CORP. (102)
 - HON HAI PRECISION IND. CO., LTD.
 - NATIONAL SCIENCE COUNCIL
 - TEXAS INSTRUMENTS - ACER INCORPORATED
 - MOSEL VITELIC, INCORPORATED
 - MUSTEK SYSTEMS, INC.
 - UNITED SEMICONDUCTOR CORP.
 - MACRONIX INTERNATIONAL CO., LTD.
 - ACER PERIPHERALS, INC.
 - PRIMAX ELECTRONICS LTD.
- The top 15 Taiwan-based companies account for 23% of all patents filed by all Taiwanese entities
- Electronics cluster dominates patent filing with more than 80% of all filings

Taiwan's Economic Agenda in 2001

I. Addressing some chronic weaknesses

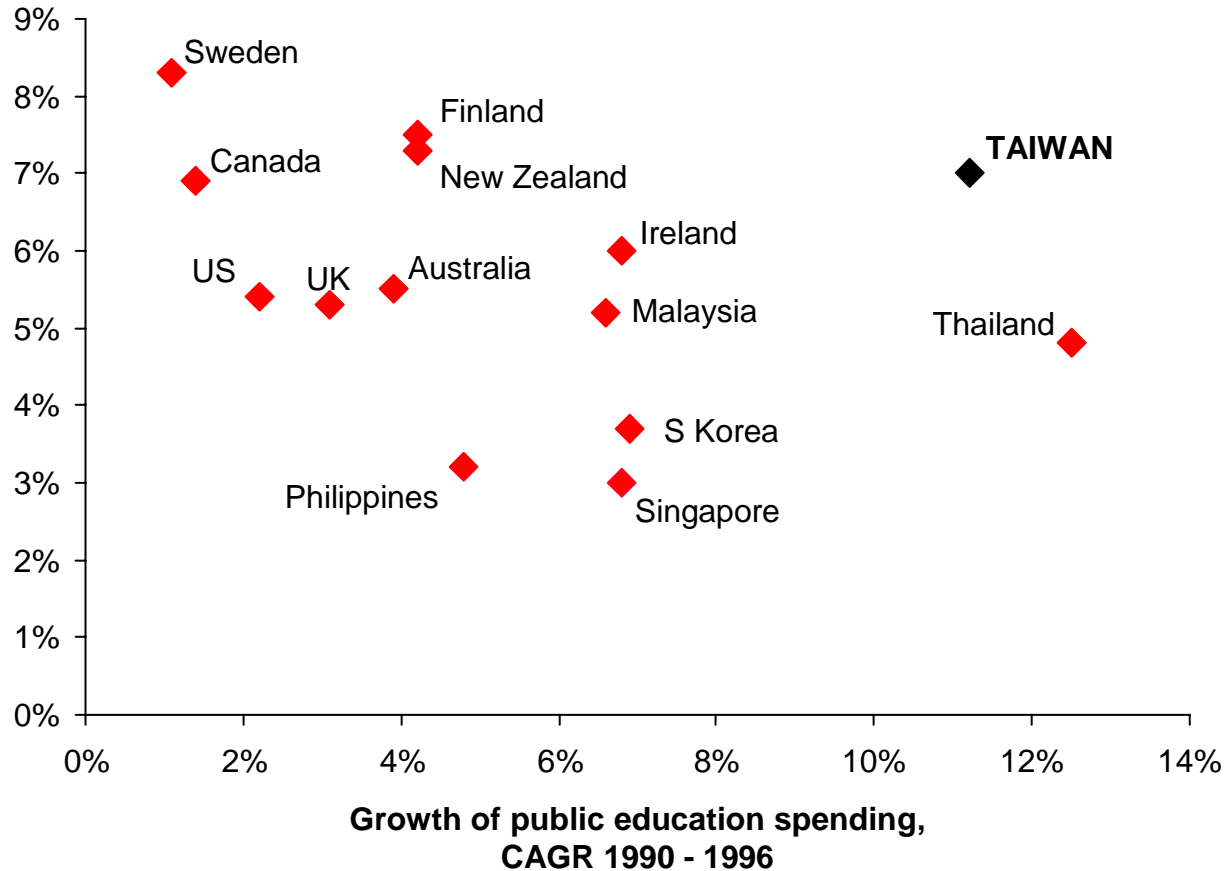
- Improve physical infrastructure
- Upgrade domestic financial markets
- Increase transparency, openness and legal accountability
- Boost the efficiency of domestic industries

II. Making the transition to a true Innovation-driven economy

- Transform company strategies
- Upgrade Taiwan's scientific and technological capacity
- **Upgrade the quality of human capital**

Comparison of Expenditure on Education Growth and Level of Spending by Country

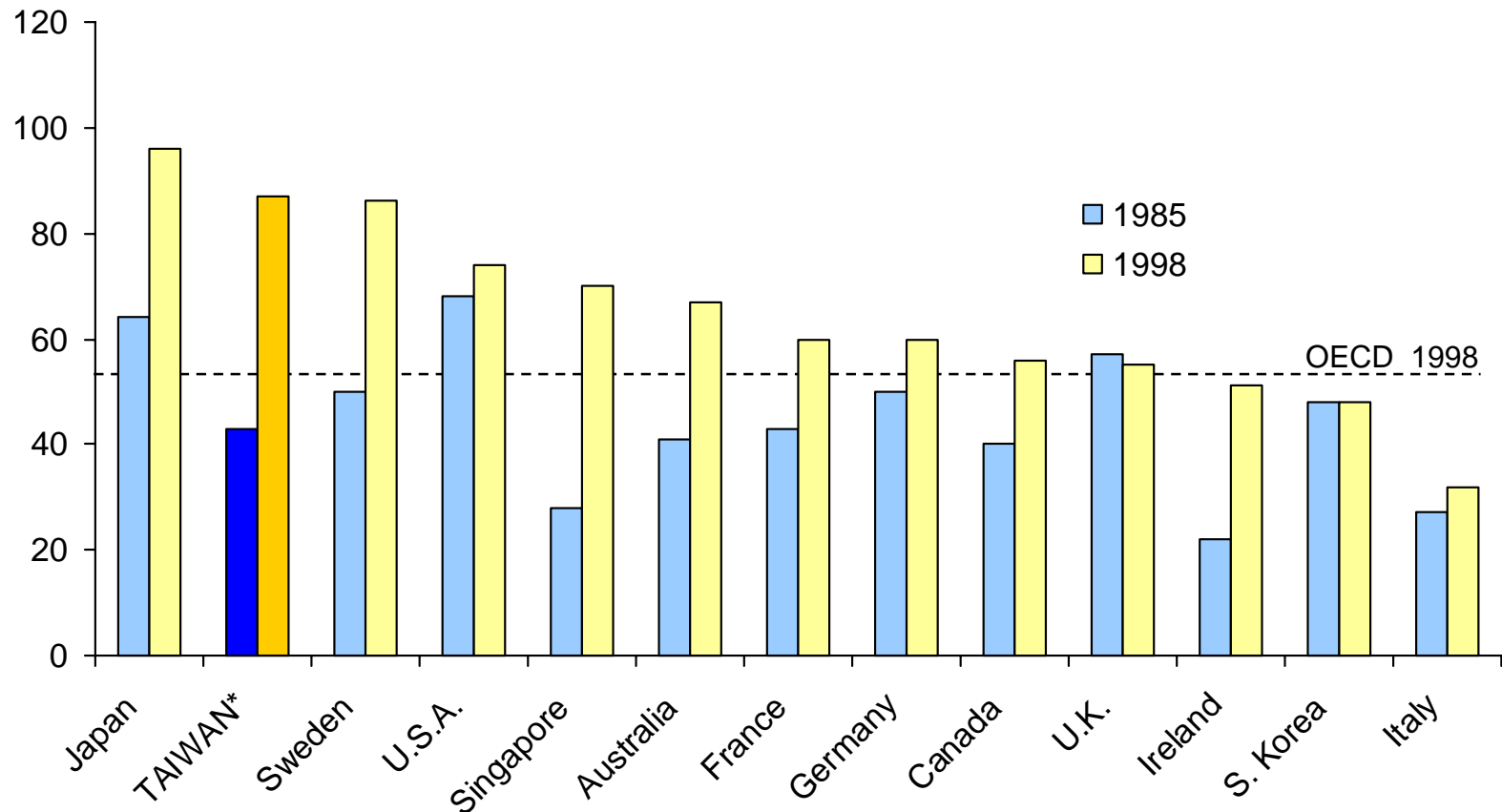
Public expenditure on
education, Share of
GDP 1996



Improvements in the Quality of the Workforce

Researchers Per Ten Thousand Workers, 1998 and 1985

Number of researchers
per 10'000 workers



Note: Taiwan data is for 1988 and 1998

Source: US Competitiveness 2001: Strengths, Vulnerabilities, and Innovation Priorities Report; Taiwan National Statistics

Education System

Taiwan's Relative Position

Competitive Advantages Relative to GDP per Capita

	Country Ranking
Quality of Public Schools	9

Competitive Disadvantages Relative to GDP per Capita

	Country Ranking
Quality of Business Schools	25

Note: Rank by countries; overall Taiwan ranks 21 (21 on Quality of Business Environment)

Source: Global Competitiveness Report 2000

Taiwan's Economic Agenda in 2001

I. Addressing some chronic weaknesses

- Improve physical infrastructure
- Upgrade domestic financial markets
- Increase transparency, openness and legal accountability
- Boost the efficiency of domestic industries

II. Making the transition to a true Innovation-driven economy

- Transform company strategies
- Upgrade Taiwan's scientific and technological capacity
- Upgrade the quality of human capital
- **Create advanced demand conditions**

Demand Conditions

Taiwan's Relative Position

Competitive Advantages Relative to GDP per Capita

Country Ranking

Consumer Adoption of Latest Products	8
Extent of Regulatory Distortion of Competition	12

Competitive Disadvantages Relative to GDP per Capita

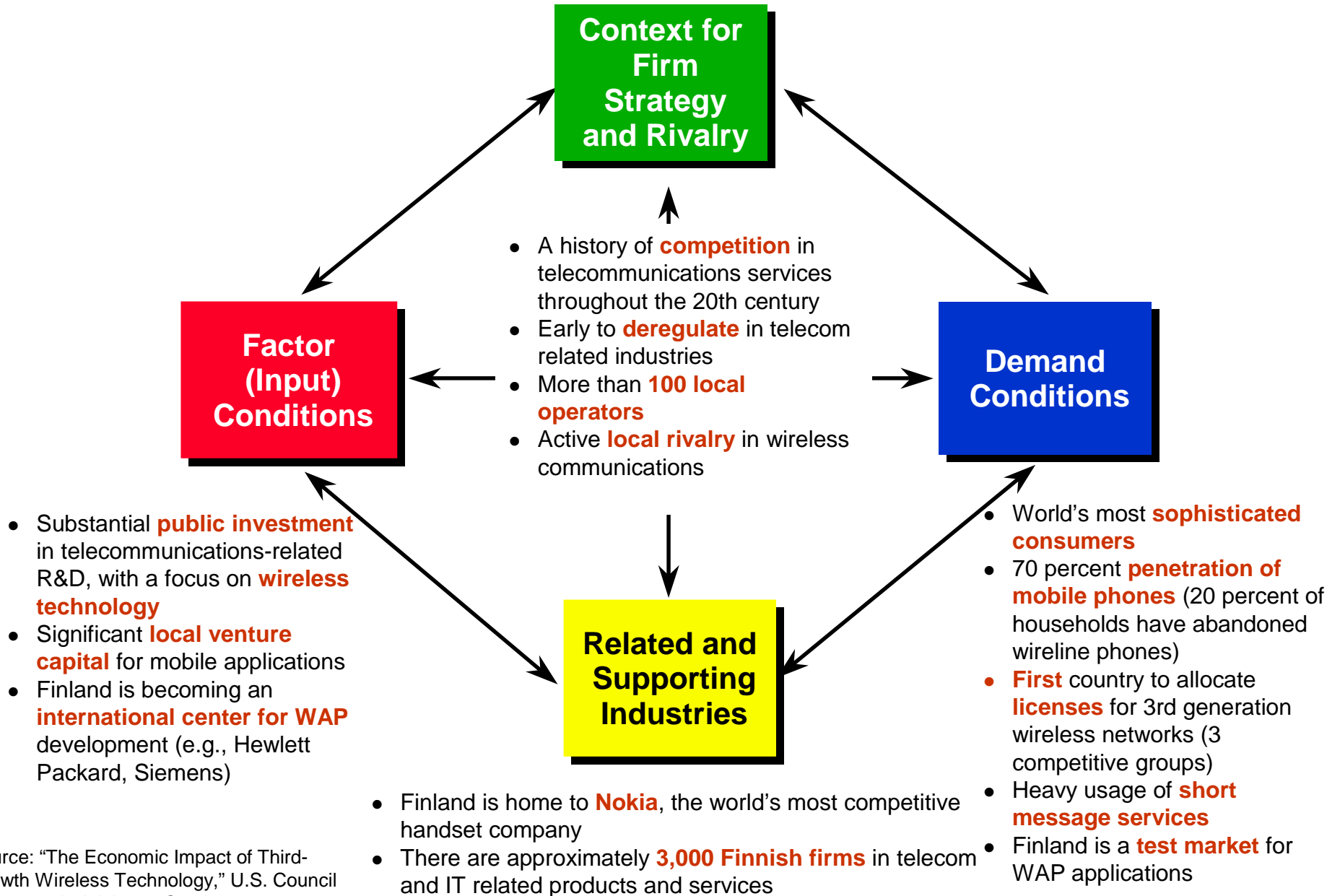
Country Ranking

Demanding Regulatory Standards	22
Stringency of Environmental Regulations	21

Note: Rank by countries; overall Taiwan ranks 21 (21 on Quality of Business Environment)

Source: Global Competitiveness Report 2000

Finnish Wireless Cluster



Source: "The Economic Impact of Third-Growth Wireless Technology," U.S. Council of Economic Advisors, October 2000
CAON Taiwan Presentation 07-31-01 CK

Environmental Regulation and Competitiveness

- Competing based on weak environmental standards **perpetuates low incomes**
- Corporate pollution is a sign of **inefficient and unproductive use** of resources

Firm

- Inefficient extraction of resources
- Incomplete material utilization
- Unnecessary waste products
- Unnecessary energy use
- Unproductive land use

Customer

- Usable materials in products that are discarded
- Products that use energy inefficiently
- Discarded or unnecessary packaging

- The need to control or treat pollution causes companies to perform activities that add cost but create **no customer value**
 - e.g., handling, storage, processing, disposal
- Pollution is a reflection of **unsophisticated technology** and **weak management**



- **Strict environmental regulation** stimulates the upgrading necessary to achieve advanced economic development

Taiwan's Economic Agenda in 2001

I. Addressing some chronic weaknesses

- Improve physical infrastructure
- Upgrade domestic financial markets
- Increase transparency, openness and legal accountability
- Boost the efficiency of domestic industries

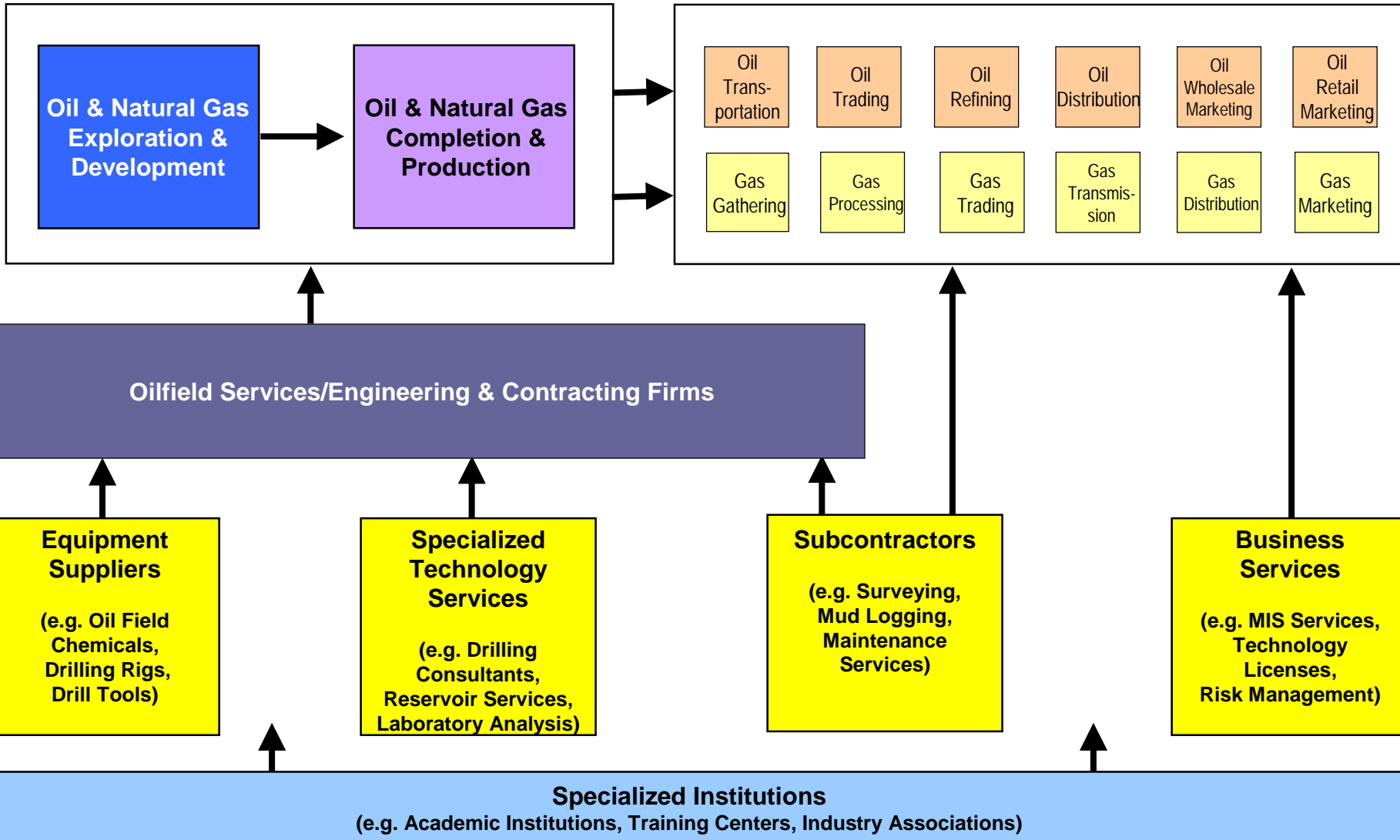
II. Making the transition to a true Innovation-driven economy

- Transform company strategies
- Upgrade Taiwan's scientific and technological capacity
- Upgrade the quality of human capital
- Create advanced demand conditions
- **Encourage private sector-led cluster development**
- **Widen the base of cluster in the economy**

Houston Oil and Gas Cluster

Upstream

Downstream



Taiwanese Clusters

Established Clusters

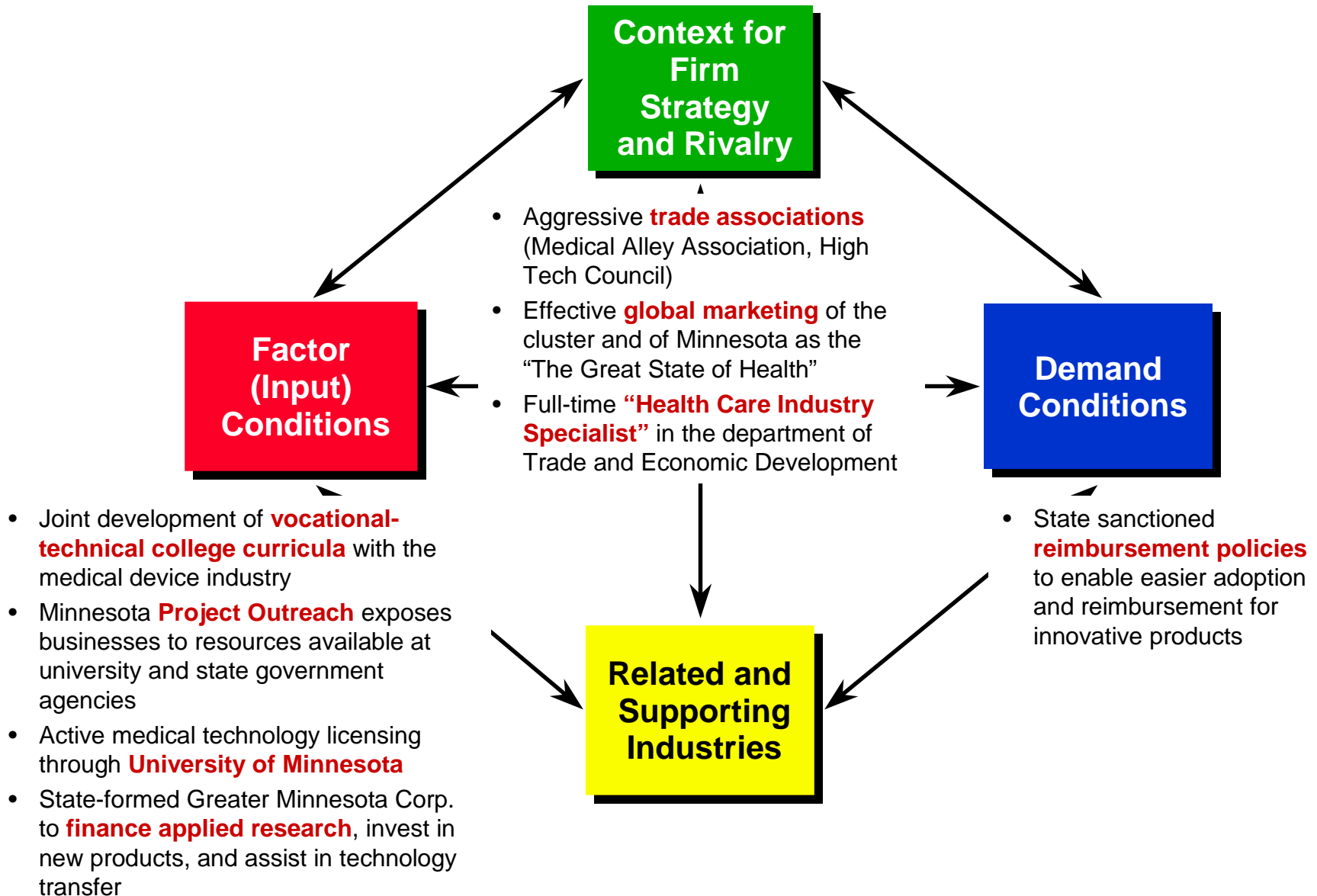
- Electronics
- Plastics
- Textiles and apparel

Other Clusters

?

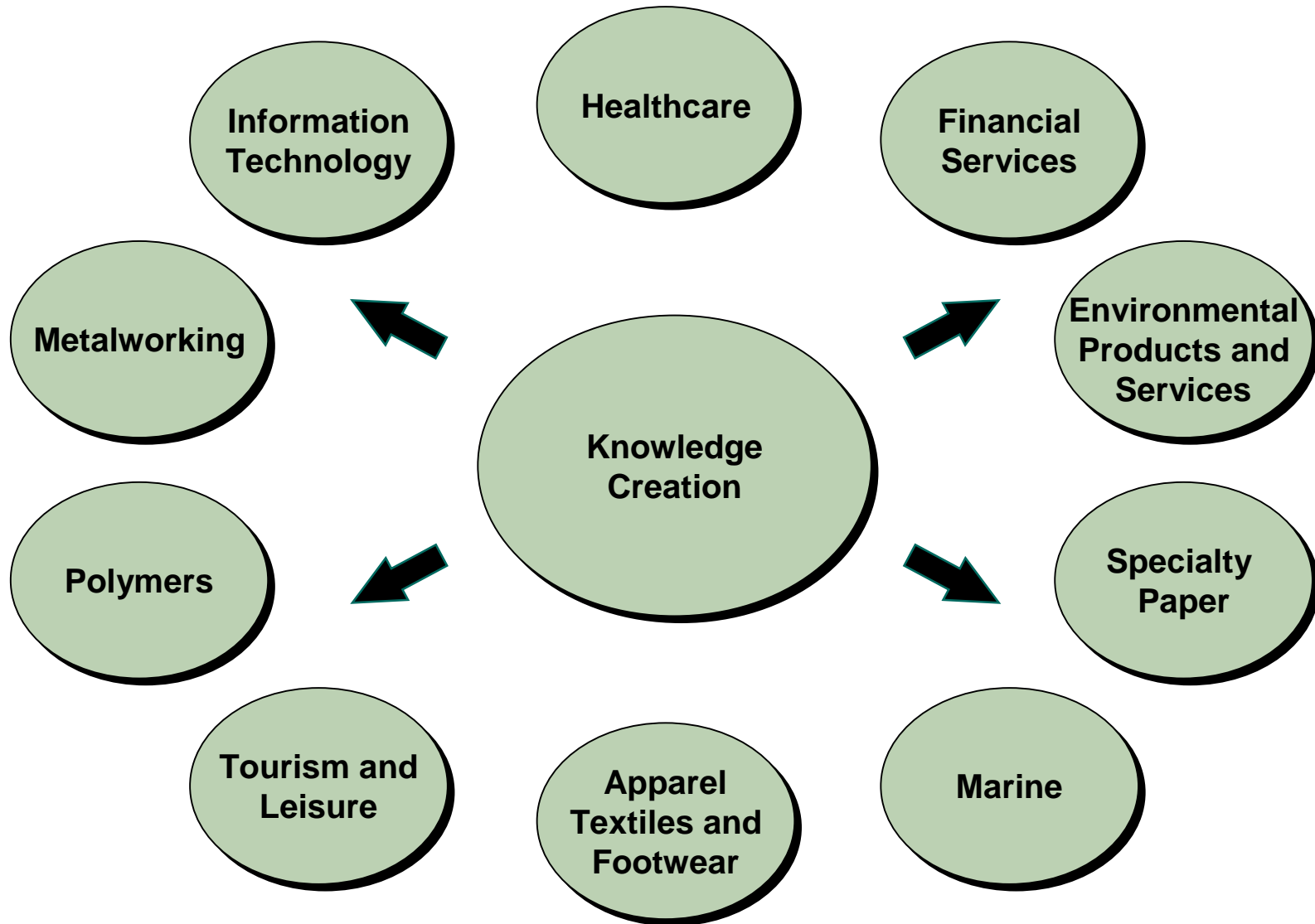
Public / Private Cooperation in Cluster Upgrading

Minnesota's Medical Device Cluster



Massachusetts Clusters

Widening the Cluster Base



Organizing for Competitiveness

Commonwealth of Massachusetts

Governor's Council on Economic Growth and Technology

Functional Task Forces

- International Trade
- Marketing Massachusetts
- Tax Policy and Capital Formation
- Technology Policy and Defense Conversion

Issue Groups

- Cost of Doing Business
- Financing of Emerging Companies
- Health Care Restructuring
- Revitalizing Western Massachusetts

Industry Cluster Working Groups

- Advanced Materials
- Biotechnology and Pharmaceuticals
- Defense
- Marine Science and Technology
- Medical Devices
- Software
- Telecommunications
- Textiles

Taiwan's Economic Agenda in 2001

I. Addressing some chronic weaknesses

- Improve physical infrastructure
- Upgrade domestic financial markets
- Increase transparency, openness and legal accountability
- Boost the efficiency of domestic industries

II. Making the transition to a true Innovation-driven economy

- Transform company strategies
- Upgrade Taiwan's scientific and technological capacity
- Upgrade the quality of human capital
- Create advanced demand conditions
- Encourage private sector-led cluster development
- Widen the base of cluster in the economy
- **Shift the role of government**

Appropriate Roles of Government in Economic Development

1. Establish a **stable and predictable** macroeconomic, political, and legal environment
2. Improve the availability, quality, and efficiency of **general purpose inputs, infrastructure, and institutions**
3. Set overall **rules and incentives** governing competition that encourage productivity growth
4. Facilitate **cluster development and upgrading**
5. Create an explicit, ongoing **process of economic change** and competitive upgrading which informs citizens and mobilizes the private sector, government at all levels, educational and other institutions, and civil society.

Recent Taiwanese Economic Policies

- Public sector investment to stimulate the economy
- Direct loans, tax relief, and export processing zones
- “Job creation program” to attempt to create 44,000 new regional jobs
- ‘Special’ measures of the Cabinet’s Financial and Economic Task Force:
 - Guarantee to keep tax rates stable for 4 years
 - Rescind the 2% business tax on banks
 - Enlarge SME Credit Guarantee Fund and provide preferential loans
 - Encourage the entry of international asset management companies to help speed up financial sector modernization
 - Assure reliable supplies of power and water
 - Allocate funds to ensure availability of land in industrial zones
 - Assist traditional industries and SMEs with upgrading and restructuring
 - Enhance local workforce skills and import foreign labor

Government Policy Towards Employment

Job Creation strategy

- Subsidies to create jobs
 - Wage subsidies
 - Foreign Direct Investment subsidies



- Jobs are costly and often unsustainable



Competitiveness strategy

- Creating the conditions for productivity and cluster development
 - Improving the efficiency of infrastructure
 - Cluster-based training
 - Improving the flexibility of labor markets

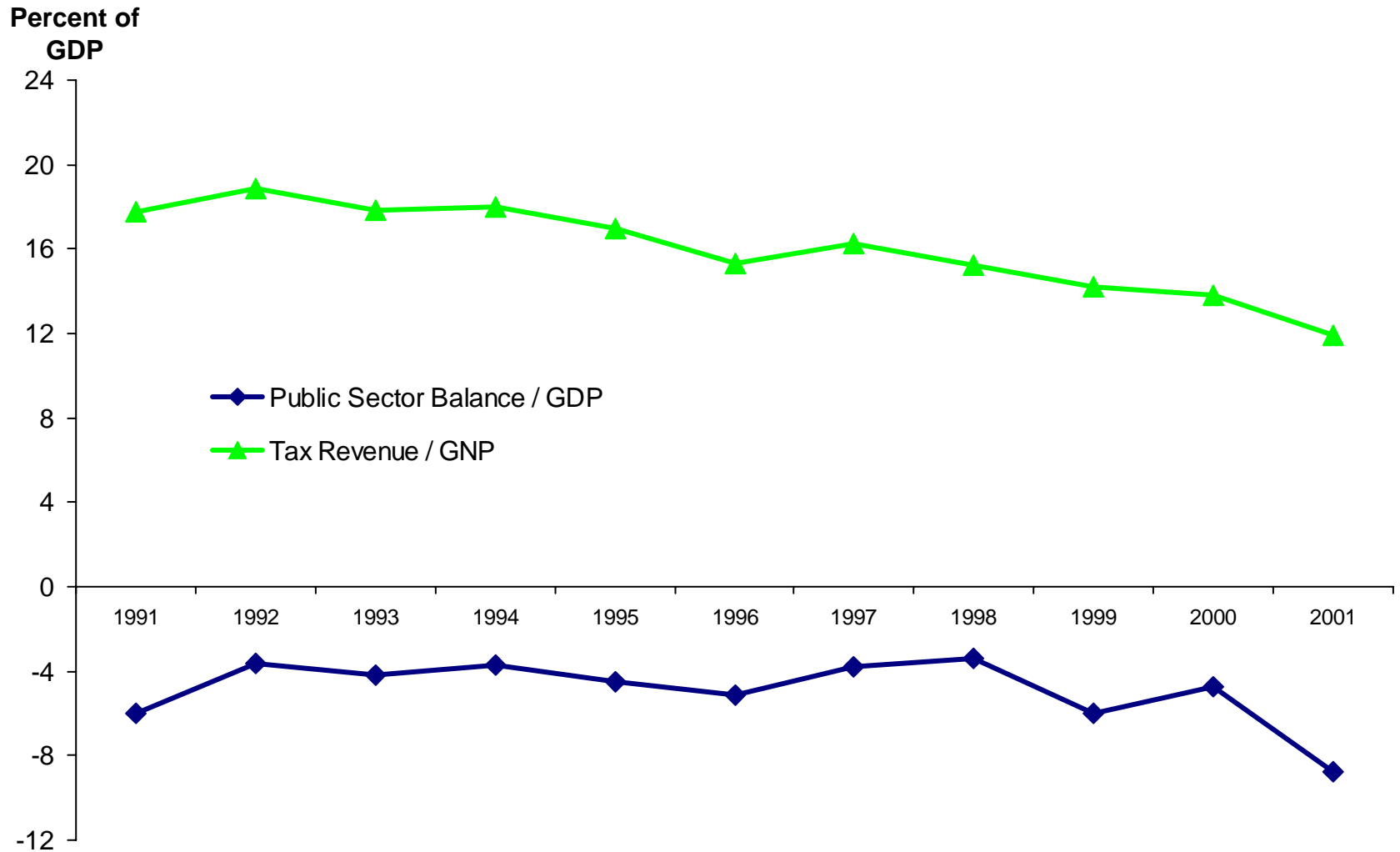


- Healthy clusters generate competitive jobs that are sustainable



- There is no direct and easy answer to job creation; short-term solutions are costly and do not often succeed in the long run

Taiwan's Tax Revenues

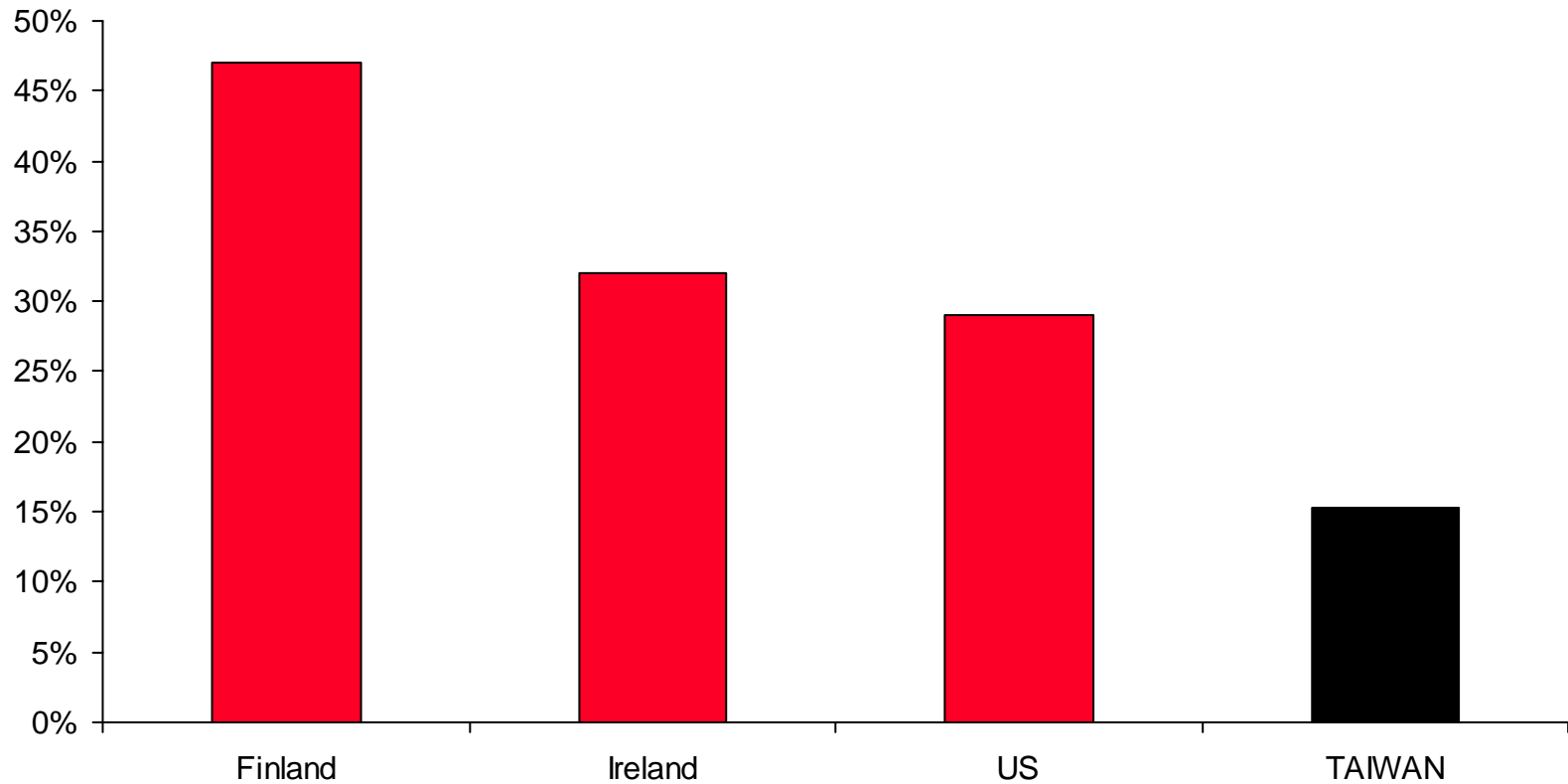


◆ Public Sector Balance / GDP
▲ Tax Revenue / GNP

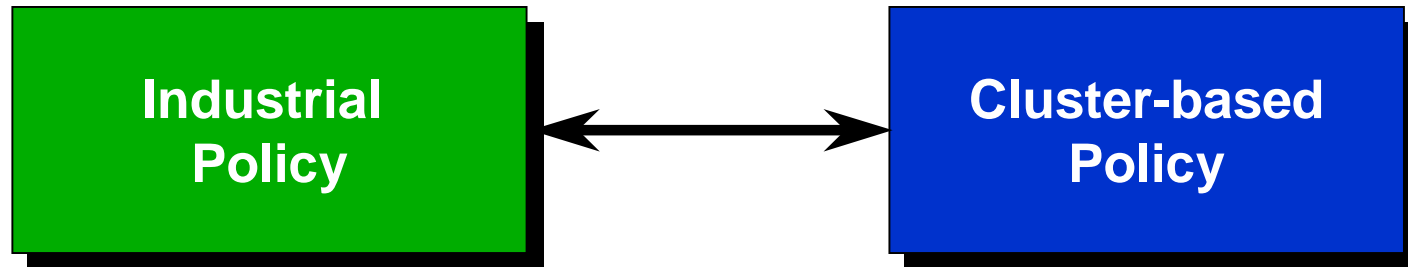
Tax Revenues As Percentage Of GDP

Selected Countries, 1998

Tax revenues
share of GDP



Cluster Policy versus Industrial Policy



- **Target** desirable industries / sectors
- Focus on domestic companies
- Intervene in competition (e.g., protection, industry promotion, subsidies)
- Centralizes 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-industry linkages / complementarities
- Encourage initiative at the state and local level



Enhance competition

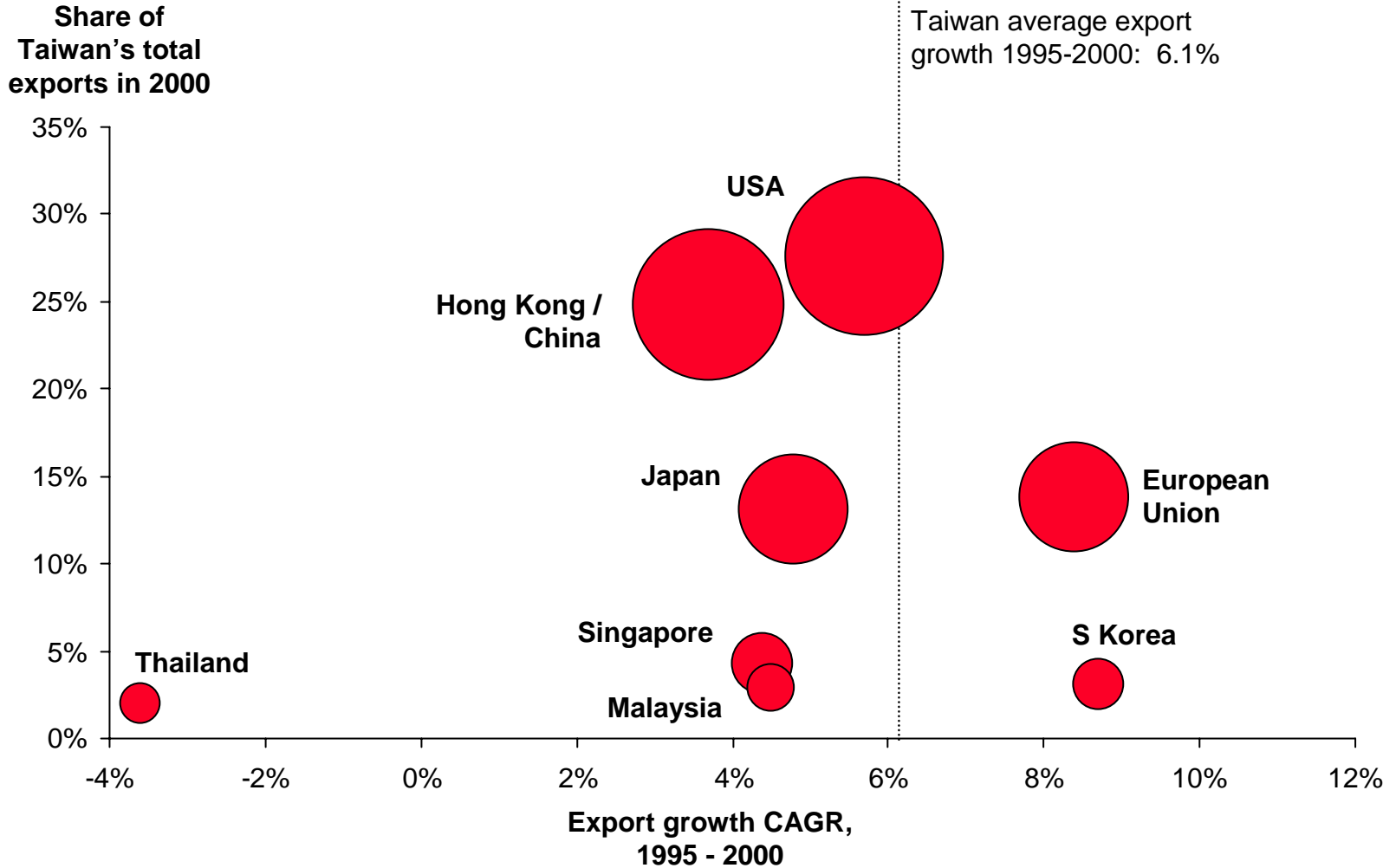
Taiwan's Economic Agenda in 2001

- I. Addressing some chronic weaknesses
 - Improve physical infrastructure
 - Upgrade domestic financial markets
 - Increase transparency, openness and legal accountability
 - Boost the efficiency of domestic industries

- II. Making the transition to a true Innovation-driven economy
 - Transform company strategies
 - Upgrade Taiwan's scientific and technological capacity
 - Upgrade the quality of human capital
 - Create advanced demand conditions
 - Encourage private sector-led cluster development
 - Widen the base of cluster in the economy
 - Shift the role of government

III. Defining Taiwan's economic relationship with China

Taiwan's Export Destinations 1995 to 2000

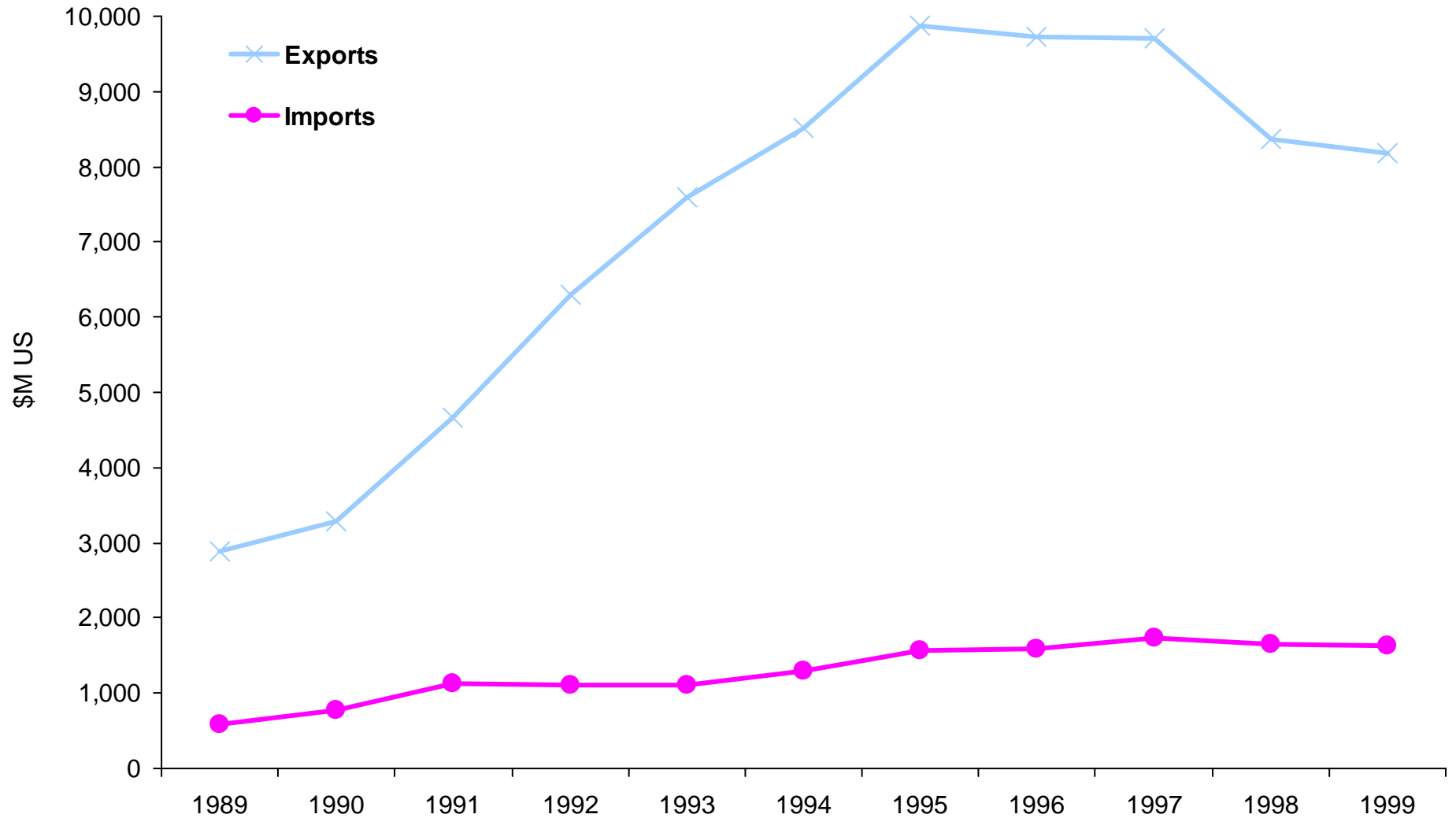


Note: Size of bubble is \$ volume of exports to destination country

Source: Taiwan National Statistics

CAON Taiwan Presentation 07-31-01 CK

Taiwan's Trade With China



Taiwan's Economic Relationship To China

- The economic relationship with China **will inevitably be important**
 - Common language
 - Strong historical ties
 - Strong personal ties through family relationships and migration
 - Substantial economic presence of Taiwanese companies in China
- The key question is **what kind of relationship** it will be



- Taiwan's goal should be to create a **mutually beneficial** relationship that supports Taiwan's higher standard of living
- Taiwan needs to define a **unique role** vis-à-vis China that
 - Builds on its distinctive strengths
 - Offsets China's weaknesses and rigidities

Economic Relationship To China

Criteria for Mutually Beneficial Roles for Taiwan

- A unique position builds on **specialization** in areas where Taiwan can give China access to its competitive advantages
 - In **clusters** where Taiwan will for the foreseeable future provide a more conducive environment than China
 - In parts of the **value chain** where Taiwan has developed unique advantages that China will have difficulty replicating

Economic Relationship To China

Illustrative Roles for Taiwan

Role in the Value Chain

- R&D and Design
 - For the foreseeable future, Taiwan should offer a better **R&D infrastructure and more conducive environment for innovation** than China
 - Taiwan can play this role combined **with manufacturing activities located on the mainland** and provide a competitive advantage to the region
- Sophisticated Services
 - Taiwan can develop its **professional services** for China's export industries

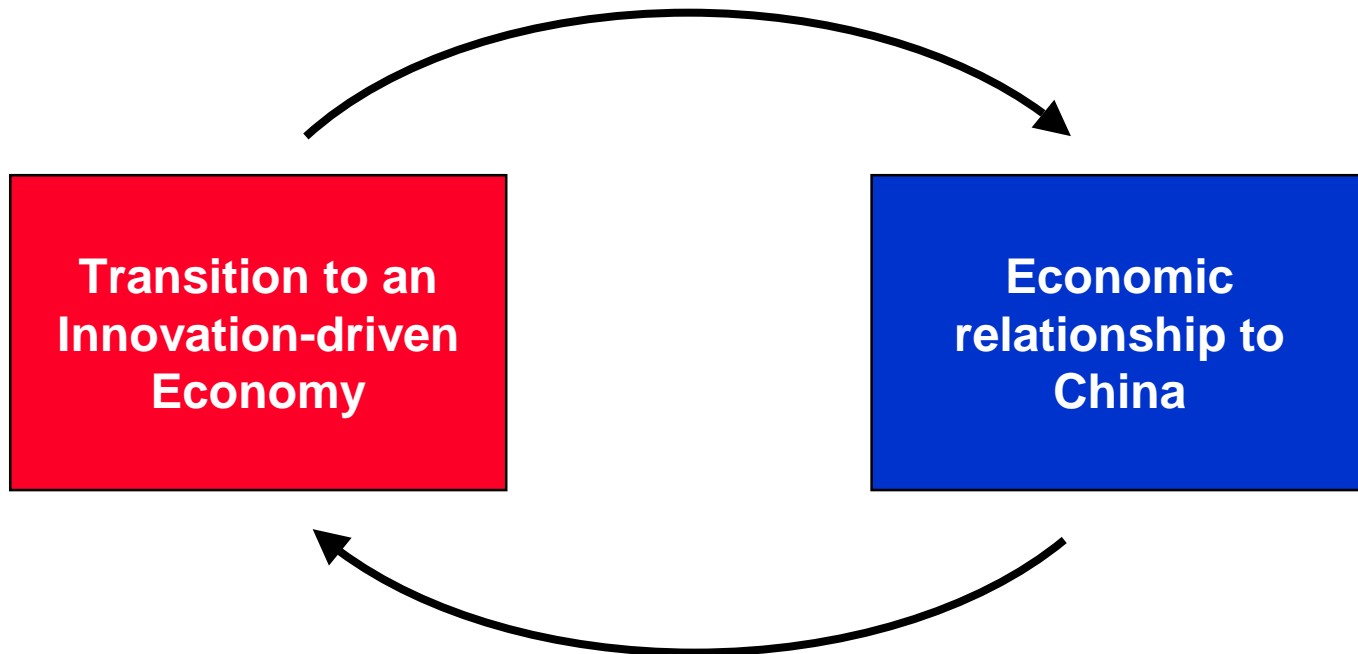
Complementary Fields of Specialization

- Education and Training
 - Taiwan can improve its **management education** capabilities to educate the business leaders of the region
 - Taiwan can build on its science and technology base to become the center of **science education** in the region
- Media/Entertainment
 - Taiwan's more liberal media environment gives it the potential to become a **media/entertainment/publishing**-hub for the region

Economic Transition And Relationship To China

Reinforcing Agendas

Successful transition to the Innovation-driven stage makes a mutually beneficial relationship to China more likely



Proximity to China increases the pressure on Taiwan to move from the Investment-driven to the Innovation-driven stage