Networked Taiwan

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Presentation Outline

- Three levels of meanings in "Networked Taiwan“
- Importance of service industries
- Challenges
- "Networked Taiwan" as an environment for innovative networked services
- Conclusions

“Networked Taiwan”: Three Levels of Meaning

- Network connection level ("plumbing level")
  - Network access, connectivity and bandwidth, wireless access points, etc.
- Networked services level
  - Large-scale networked service infrastructure for healthcare, content, learning, etc.
- Networked society level
  - "Social capital" (or "trust") required for the society to work together and make hard decisions

Taiwan's Success at the "Network Connection Level"

- In services:
  - E.g., high DSL and cellular phone penetration rates
  - However, percentage of data services revenue is relatively low
- In manufacturing:
  - E.g.,10% and 80% of world market in handset and WLAN manufacturing, respectively
  - However, value of manufactured goods is relatively low

Improving Networked Services Could Be the Next Goal

- This means aggressively developing and deploying advanced networked services in areas of societal importance
  - E.g., health and medicare, education, entertainment, and logistics (infinite market demands!)
- This also means an increased interaction between service providers and manufacturers, to raise not only service levels but also values of manufactured goods
  - E.g., develop leadership handsets through collaboration with cellular phone operators and content providers

Necessity of Focusing on Services

- Services improve "quality of life“
  - By definition, services are work of value to clients
- Services create good jobs, as demonstrated by historic data
  - In contrast, employment in manufacturing generally declines over time in developed countries, because manufacturing productivity usually outpaces market demands. Consider, e.g., the manufacturing of razor blades and DRAMs

% of US Labor in Agriculture, Manufacturing and Services

- Agriculture:
  - 1900 38.80%
  - 1950 11.20%
  - 1980 2.60%
  - 1990 1.70%
- Manufacturing:
  - 1980 18.06%
  - 1990 13.97%
  - 2000 11.68%
- Services:
  - 1980 61.96%
  - 1990 68.15%
  - 2000 75.14%

Source:

U.S. Bureau of Labor Statistics

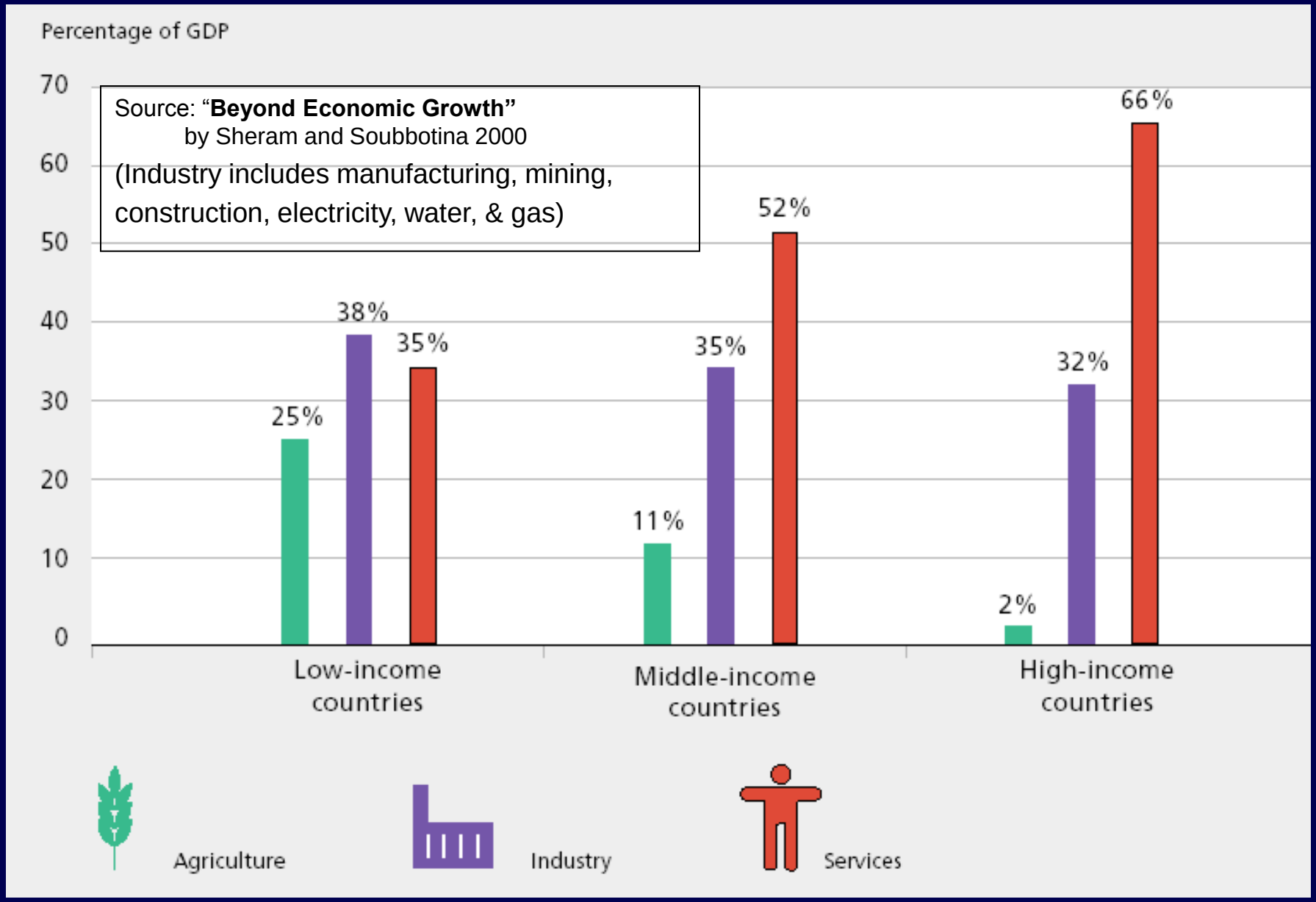
Taiwan's Labor Numbers in 2003

- Agriculture: 7.33%
- Manufacturing: 34.91%
- Services: 57.76%

Source:

http://www.dgbas.gov.tw/census~n/four/n9206.htm

Services' Share of A Country's GDP



However, Service Operators Can Be Conservative and Slow to Respond to Opportunity

Reasons include:

- Changes to take advantage of new technology or innovations can affect a large number of service subscribers (“large systems problem”)
- Infrastructure as well as regulations can limit such changes and slow down the process
- Monopoly position provides little incentive to innovate and take risks

Example Areas Affected by this "Service Bottleneck"

- Wireless Internet
- Thin clients, “XCs”, …
- Voice and video over the Internet
- Interactive TV, e.g., set-top box
- Online content
- Home healthcare systems
- e-learning
- …

A Frequent Occurring Scenario

- Consider, e.g., digital content services. Many innovative ideas, such as those associated with PDAs in recent years, have not taken off because they don't fit service operators' models or styles
- In response, operators try to provide innovative content services themselves (e.g., "WAP") but can not achieve much success either, since these businesses are beyond their areas of expertise (infinitely many “service trials”!)

A Vicious Cycle

- This cycle of failed innovations followed by service operators‘ failed own attempts must be broken, or we will not see many innovative networked services

Two Principles in Breaking the Vicious Cycle

1. Service unbundling to enhance competition
   - Open unbundled modules to multiple competing providers
   - E.g., separate facility and upper-layer services, and open facility to facility builders. Lots of gigabit Ethernet connections rather than circuits
2. Endnode services to encourage easy and rapid experiments of new technologies
   - Use end nodes, capable of performing experiments freely, to provide services
   - E.g., use customer-owned PBX rather than centralized CENTREX phone systems

Successful Applications of the Two Principles

1. Service unbundling in Japan and Korea for broadband access:

   US$ per 100Kbps:

Japan	$0.18
Korea	$0.29
Taiwan	$1.70

2. Endnode services:

   End-to-end email servers

   Web servers at end nodes

A Vision of "Networked Taiwan"

- “Networked Taiwan” is an environment that nurtures innovative networked services
- It is a superb environment not only at the network connection level but also at the network services level
- (We will leave the important question of improving the third level, "networked society level", to some SRB meetings in future years)

Some Concrete Agenda

- Proactive policies and regulations to encourage innovative services
- Aggressive facility deployment, e.g., 70% household penetration of 10mbps+ broadband connections within 3 years
- Leadership technology and service development projects, e.g., projects that couple services with Taiwan's worldclass manufacturing strengths
- Cross-agent incentive programs to encourage strategically important services, involving, e.g., MOTC, MOEA and MOF

Recap

- Three levels of meanings in "Networked Taiwan“
- Must advance in the networked service level
- Service industries are important for the society
- However, there is this "service bottleneck" problem
- Two principles, “service unbundling” and “endnode services”, to solve the problem
- The vision of "Networked Taiwan" as an environment for innovative networked services
- Four concrete agenda to consider

Conclusions

- "Networked Taiwan" is intended to lead Taiwan to a next-level of excellence. In particular, it will improve quality of living and create many good jobs
- Initiatives in services should leverage Taiwan's existing strengths in manufacturing and help raise manufacturing values
- Government leadership is critical in moving Taiwan industry to a new state where both manufacturing and services are emphasized, and their positive interplay is explored