Global Innovation Ecosystem 2008

Workshop: Session 5-Guideline

Measuring Innovation:
What is the measure for “Outcome” of Innovation” and How to evaluate “Effect of the Policy Instruments”

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John Marburger
(U.S. Presidential Science Adviser)

"I am suggesting that the nascent field of the social science of science policy needs to grow up, and, to provide a basis for understanding the enormously complex dynamic of today's global, technology-based society." (Science, 29 April, 2005)

Definition of Innovation

" The design, invention, development and/or implementation of new or altered products, services, process systems, organizational structures, or business models for the purpose of creating new value for customers and financial returns for the firms."

by the Advisory Committee on Measuring Innovation in 21st Century Economy, U.S.

Why measuring innovation matters?

/Innovation might be one of the most important sources for global sustainable development.

/In order to create more innovative society by policy, we first focus on putting in place improvement to our measure of innovation:

1) How to measure "outcome of innovation"?

2) What are factors to promote innovation and How to measure inputs for innovation?

3) How to measure the relationship between innovation and economic growth?

4) What and How can we do to drive our economy to the continuous and sustainable growth by making our country more innovative?

How to measure “outcome” and “inputs” of innovation”?

/ Total productivity growth is one of simple measure for the “outcome” of innovation.

/ Aggregate TFP growth .vs. Industry-level and Commodity-level TFP growths

/ Measurement Problems to be solved for TFP

- **output measure: service sectors**
- **input measure: capital service, intangible assets**
- **measurement of technology linkages**

/ Measurement of outcome of innovation created by changes of systems or organizational structure in society

- **regulation-deregulation measure**
- **innovation in social system**
- **innovation in business model**

/ Innovation Index approach

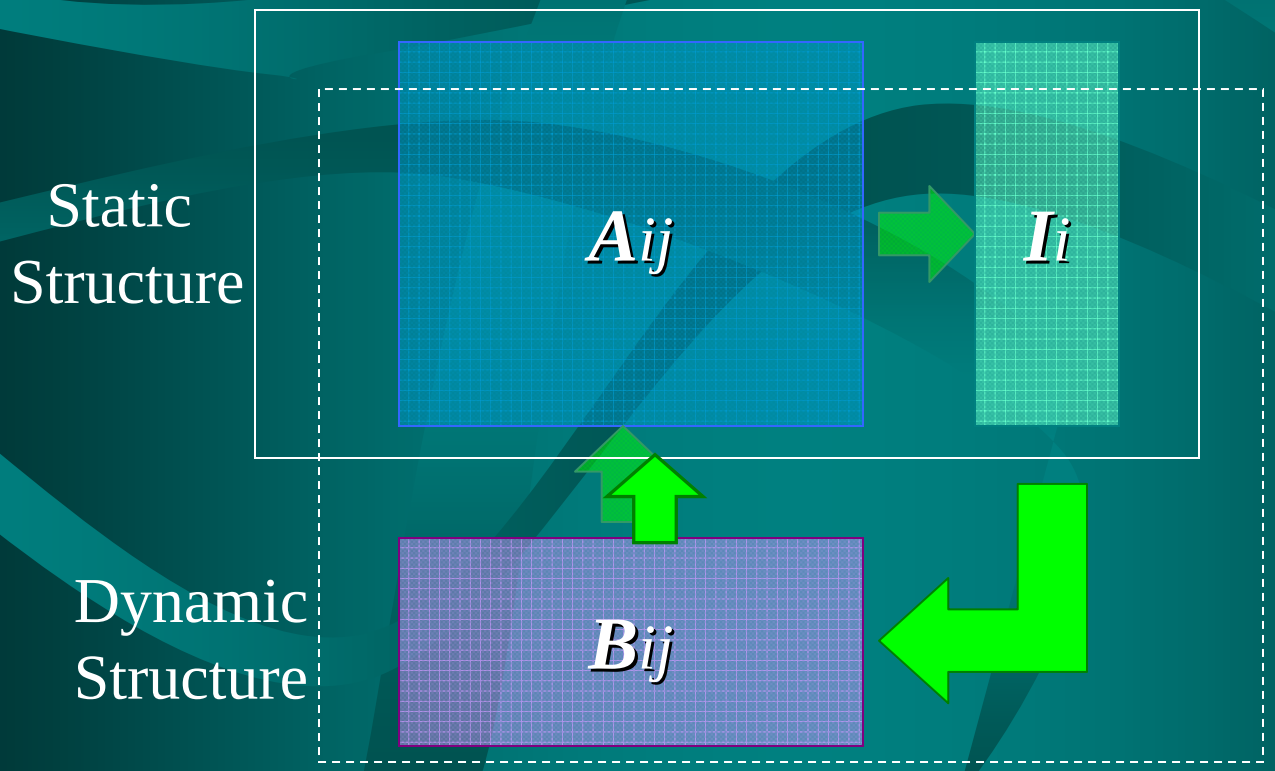
Presentation 1:
How to evaluate service output?

by Takanobu Nakajima, ESRI CAO

- What is service?
- Interpretation of price change in durable goods
- Durability in service: Examples for medical and haircut service
- Real service price change
- Problems in hedonic approach

Treatment of Activities though Intangible Assets

1. Activities though investment for intangible assets are assumed to create the knowledge stock dynamically though intangible assets as well as the static changes in flow of intermediate transaction.
2. We have to estimate the knowledge stock as intangible assets by sectors and capitalize the service input dynamically.



Classification of Intangible Assets defined by CHS

(1)Computerized information

1-1) Custom software

1-2) Packaged software

1-3) In-house software

1-4) Data base

(2)Innovative property

2-1) Science and engineering R&D

2-1) Mineral exploration

2-3) Copyright and license costs

2-4) Other product development design and research expenses

(3) Economic Competencies

3-1) Brand equity

3-2) Firm-specific human capital

3-3) Organizational structure

Note: c.corrado, C.R.Hulten and D.E.Sichel, (2006) ,"Intangible Capital and Economic Growth", Working Paper 11948, NBER

Presentation 2:
"Protection of Intellectual Property Rights and its Impact on Intra- and Inter-firm Technology Transfer"

by Banri Ito, ESRI, CAO

- Measurement of intellectual property rights as an intangible assets
- Micro data analysis by "Survey of Science and Technology Research"
- Impacts of Protection of Intellectual Property Rights on inter- and intra-firm Technology Transfer

Presentation 3:
TFP measurement by Sector & by Commodity
by Masahiro Kuroda and Satoshi Nakano

- How innovation occurs in different sectors of the economy?
- How it is diffused across the economy?
- TFP measurement by sector and by commodity.
- Technology linkage among commodities.
- Identification of bottleneck for productivity growth in recent economic structure in Japan.
- Policy implication for promoting innovation.

Discussion:

Identification of gaps in innovation data and how they might be filled.

/ TFP is one of measurement for outcome of innovation, but it is not enough.

/ How we can evaluate the creating new value for customers and financial returns for firms?

/ Where are the gaps of innovation data both in outcomes and inputs?

- **consistency among macro, sector, firm and commodity.**
- **international comparability**