WORLD KLEMS AND ASIA KLEMS

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http://economics.harvard.edu/faculty/jorgenson/
Productivity

Information Technology and the American Growth Resurgence

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INTRODUCTION TO THE WORLD KLEMS CONFERENCE

World KLEMS Consortium
Formed August 19-20, 2010

What’s New?
70 NAICS Industries Covering 1960-2007

Before the Crisis
The IT Boom, the Dot-Com Crash, and the Jobless Recovery

The New Agenda
Retire The Aggregate Production Function?
EU KLEMS PROJECT

Initial Release:
March 15, 2007

25 EU Economies:
U.S., Canada, Japan, and Korea

U.S. Data Sources:
Labor, Capital, and Intermediate Input

Completion Date:
June 30, 2008
IT-RELATED INDUSTRIES

IT-Producing Industries

Computer and peripheral equipment manufacturing
Communications equipment manufacturing
Semiconductor and other electronic component manufacturing
Software publishing
Information and data processing services
Computer systems design and related services

IT-Using Industries

Construction
Machinery
Motor vehicles bodies and trailers and parts
Other transportation equipment
Miscellaneous manufacturing
Printing and related support activities
Wholesale Trade
Retail Trade
Air transportation
Water transportation
Truck transportation
Transit and ground passenger transportation
Pipeline transportation
Other transportation and support activities
Broadcasting and telecommunications

Federal Reserve banks credit intermediation and related activities
Securities, commodity contracts, and investments
Insurance carriers and related activities
Rental and leasing services and lessors of intangible assets
Legal services
Miscellaneous professional scientific and technical services
Management of companies and enterprises
Administrative and support services
Waste management and remediation services
Educational services
Hospitals
Nursing and residential care facilities
Social assistance
Performing arts, spectator sports, museums, and related activities
Other electronic products
Newspaper; periodical; book publishers
## NON-IT INDUSTRIES

<table>
<thead>
<tr>
<th>Category</th>
<th>Subcategory</th>
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<tbody>
<tr>
<td>Farms</td>
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<tr>
<td>Forestry, fishing, and related activities</td>
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<tr>
<td>Oil and gas extraction</td>
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<tr>
<td>Mining, except oil and gas</td>
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<tr>
<td>Support activities for mining</td>
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<tr>
<td>Utilities</td>
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<td>Wood products</td>
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<td>Nonmetallic mineral products</td>
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<td>Primary metals</td>
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<td>Fabricated metal products</td>
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<td>Electrical equipment appliances and components</td>
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<td>Furniture and related products</td>
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<td>Food and beverage and tobacco products</td>
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<td>Textile mills and textile product mills</td>
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<td>Apparel and leather and allied products</td>
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<td>Paper products</td>
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<td>Petroleum and coal products</td>
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<td>Chemical products</td>
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<td>Plastics and rubber products</td>
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<td>Rail transportation</td>
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<td>Warehousing and storage</td>
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<td>Motion picture and sound recording industries</td>
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<td>Funds, trusts, and other financial vehicles</td>
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<td>Ambulatory health care services</td>
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<td>Amusements, gambling, and recreation industries</td>
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<tr>
<td>Accommodation</td>
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<td>Food services and drinking places</td>
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<td>Other services, except government</td>
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<td>Federal General government</td>
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<td>Federal Government enterprises</td>
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<td>S&amp;L General Government</td>
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<tr>
<td>S&amp;L Government enterprises</td>
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<tr>
<td>Real estate</td>
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<tr>
<td>Household</td>
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</table>
ROLE OF INFORMATION TECHNOLOGY: Growth of Output

OUTPUT SHARES OF IT:
Computers, Communications Equipment, Semiconductors, Software, Information and data processing services, Computer systems design and related services

OUTPUT CONTRIBUTION BY TYPE:
Computers, Communications Equipment, Semiconductors, Software, Information and data processing services, Computer systems design and related services

OUTPUT CONTRIBUTION OF IT:
IT-Producing, IT-Using, and Non-IT Value Added
Value Added Shares of Information Technology by Type, 1960-2007

Share of Current Dollar Value Added.

- Information and data processing services
- Computer systems design and related services
- Computer and peripheral equipment manufacturing
- Communications equipment manufacturing
- Semiconductor and other electronic component manufacturing
- Software publishing
- Total IT
GROWTH IN THE NEW MILLENNIUM: IT Investment and Productivity Growth

TOTAL FACTOR PRODUCTIVITY:
IT-Producing, IT-Using, and Non-IT Production

SOURCES OF U.S. ECONOMIC GROWTH:
Capital Input, Labor Input, and TFP

AVERAGE LABOR PRODUCTIVITY GROWTH:
Capital Deepening, Labor Quality, TFP
GROWTH AT THE INDUSTRY LEVEL:
Value Added and Productivity Growth

VALUE ADDED GROWTH:
IT-Producing Industries

PRODUCTIVITY GROWTH:
IT-Producing Industries

CHANGE IN PRODUCTIVITY GROWTH:
IT-Using Industries
THE NEW RESEARCH AGENDA: Economics on Internet Time

IT PRODUCTION:
Permanent vs. Transitory Changes

IT UTILIZATION:
Trade and Services to the Forefront

TANGIBLE AND INTANGIBLE ASSETS:
Beyond Software and R&D

IMPLICATIONS FOR MACROECONOMICS:
Retire the Aggregate Production Function?