

Information Technology and the Productivity Expansion

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3

Productivity

V O L U M E 3

*Information Technology
and the American Growth
Resurgence*

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Information Technology and the Productivity Expansion

WORLD KLEMS Project

Established at Harvard on
August 19-20, 2010

What's New?

70 NAICS Industries Covering 1960-2007

After the Crash

The IT Boom, the Dot-Com Crash, and the Recovery

WORLD KLEMS PROJECT

Established:

August 19-20, 2010

41 Economies:

U.S., Australia, Canada, Japan, and Korea

27 Economies of the EU

Argentina, Brazil, Chile, and Mexico

China, India, Indonesia, Turkey, and Taiwan

Country Data Bases:

Labor, Capital, Energy, Materials and Services

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

Farms
Forestry fishing and related activities
Oil and gas extraction
Mining except oil and gas
Support activities for mining
Utilities
Wood products
Nonmetallic mineral products
Primary metals
Fabricated metal products
Electrical equipment appliances and components
Furniture and related products
Food and beverage and tobacco products
Textile mills and textile product mills
Apparel and leather and allied products
Paper products
Petroleum and coal products

Chemical products
Plastics and rubber products
Rail transportation
Warehousing and storage
Motion picture and sound recording industries
Funds trusts and other financial vehicles
Ambulatory health care services
Amusements gambling and recreation industries
Accommodation
Food services and drinking places
Other services except government
Federal General government
Federal Government enterprises
S&L General Government
S&L Government enterprises
Real estate
Household

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

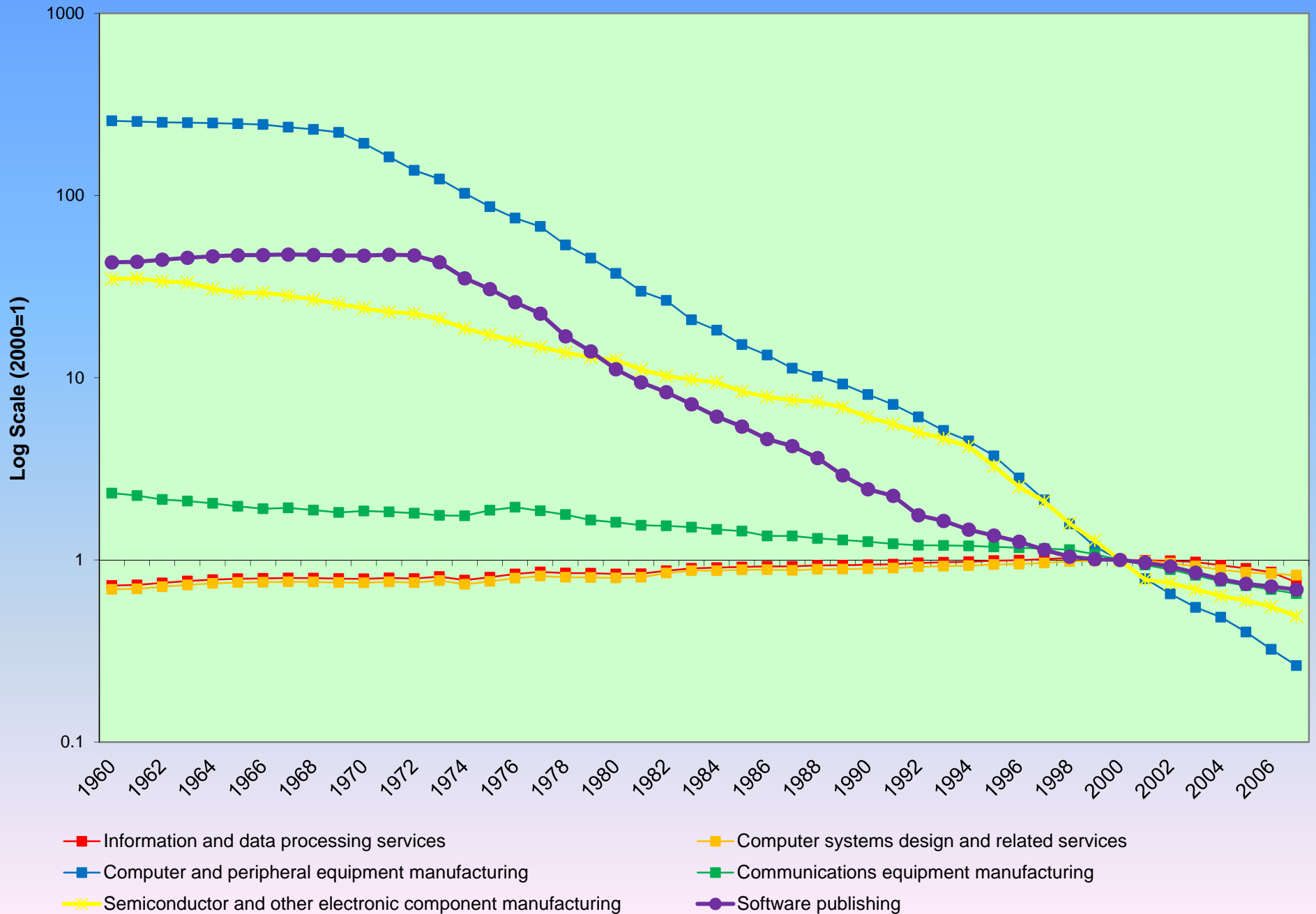
OUTPUT CONTRIBUTION BY TYPE:

Computers, Communications Equipment, Semiconductors, Software, Information and data processing services, Computer systems design and related services

OUTPUT CONTRIBUTION OF IT:

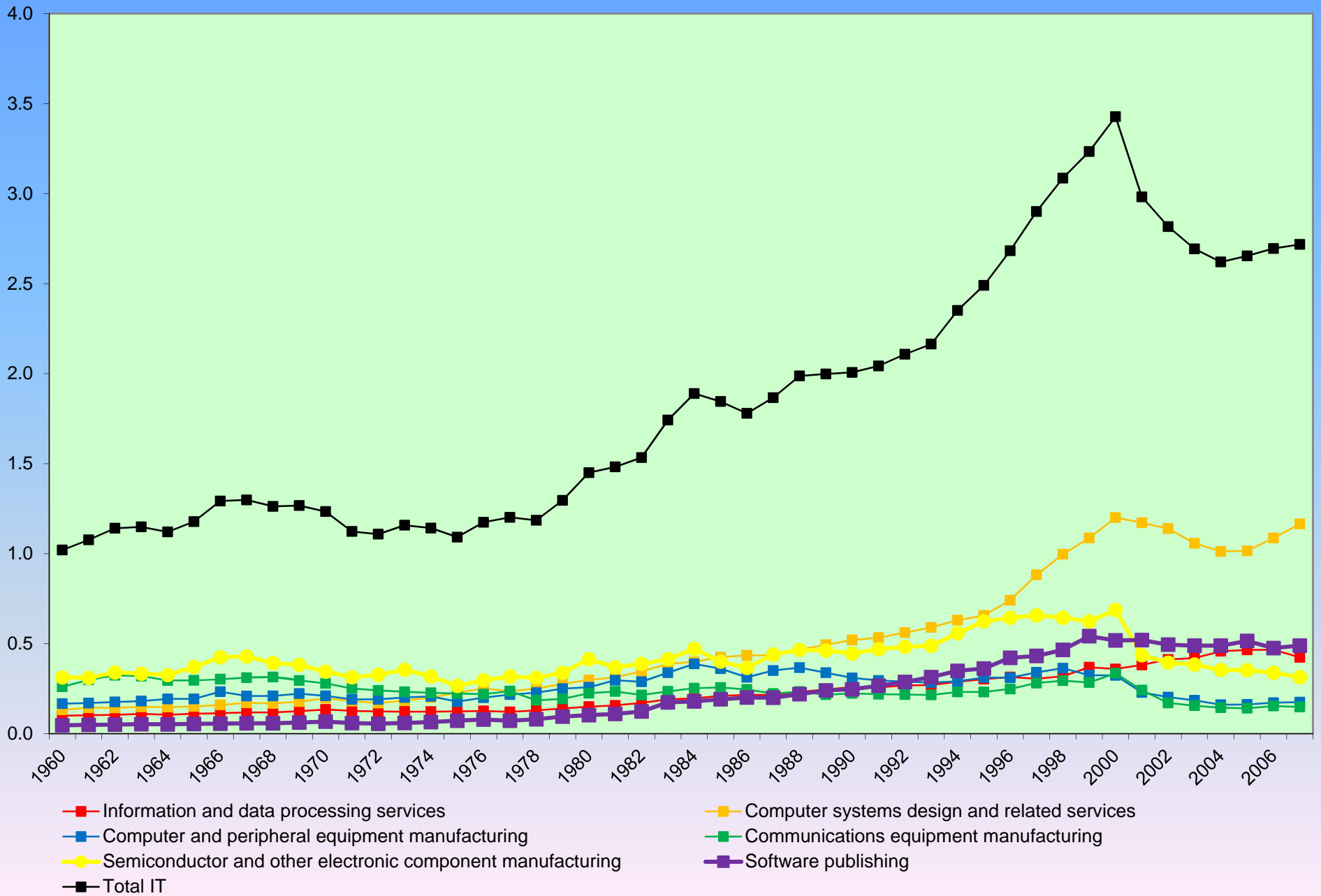
IT-Producing, IT-Using, and Non-IT Value Added

Relative Prices of IT Industry Output, 1960-2007



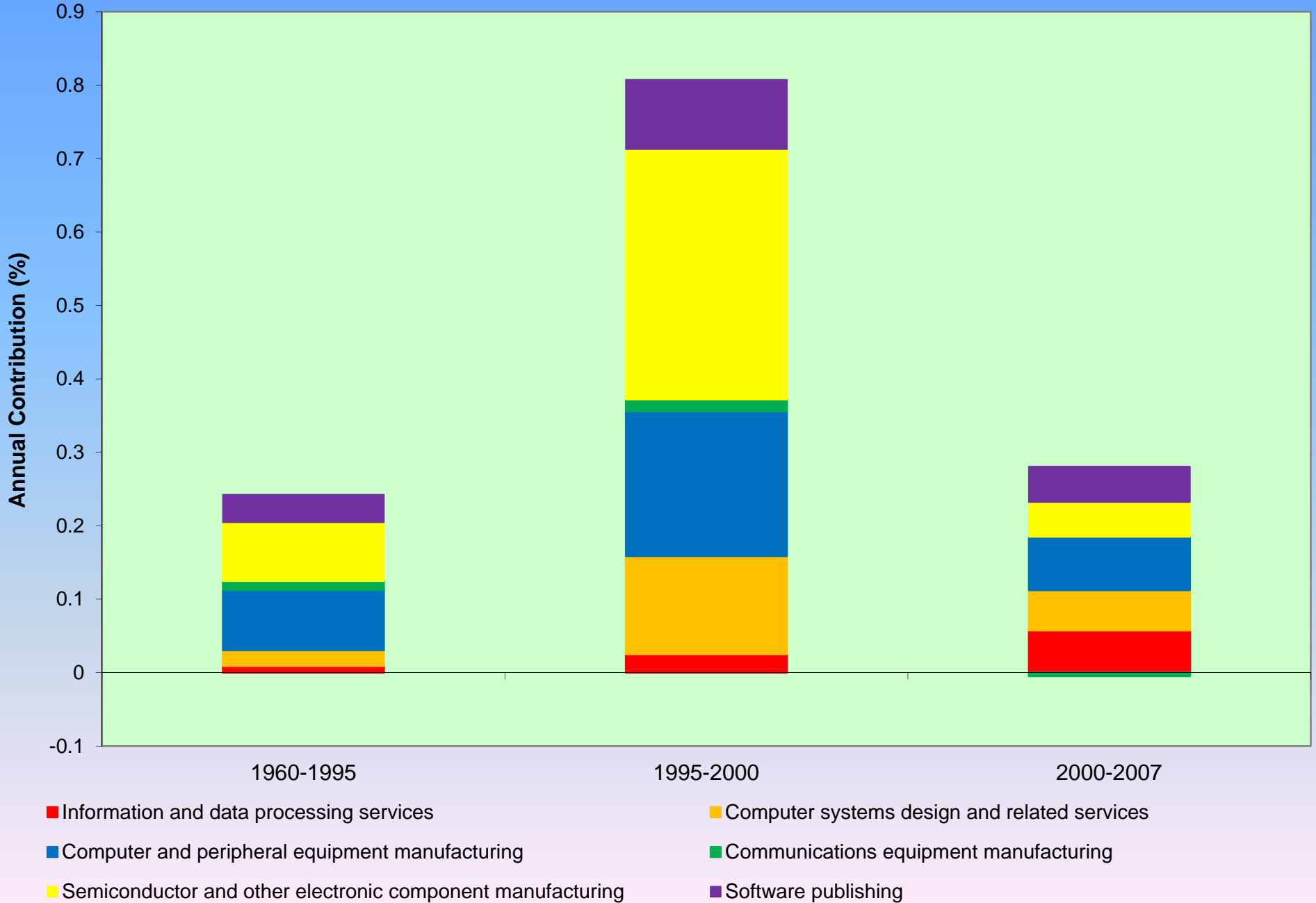
Value Added Shares of Information Technology by Type, 1960-2007

Share of Current Dollar Value Added.



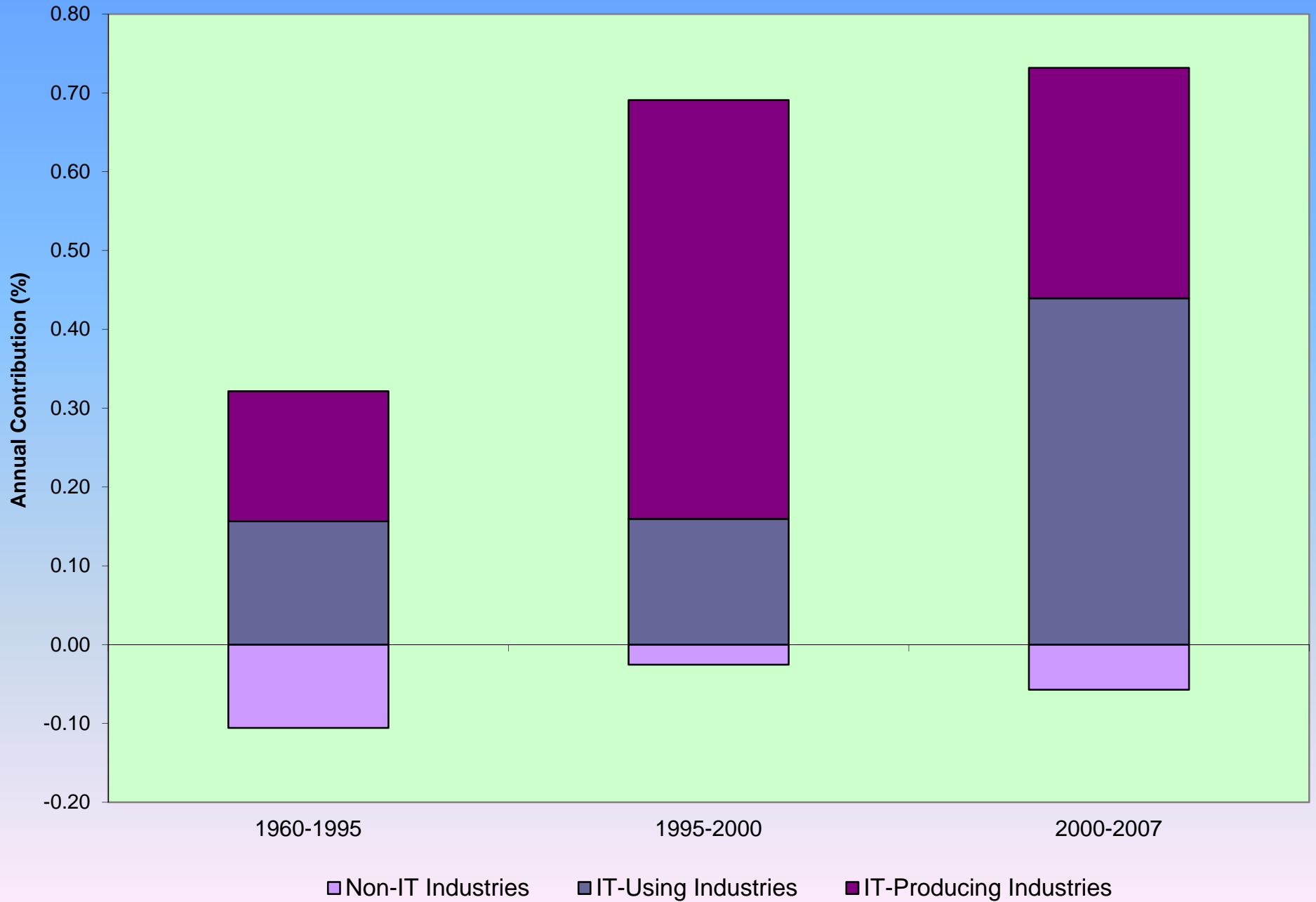
Industry Contributions to Value Added Growth

Value added weighted contributions of industry value added.

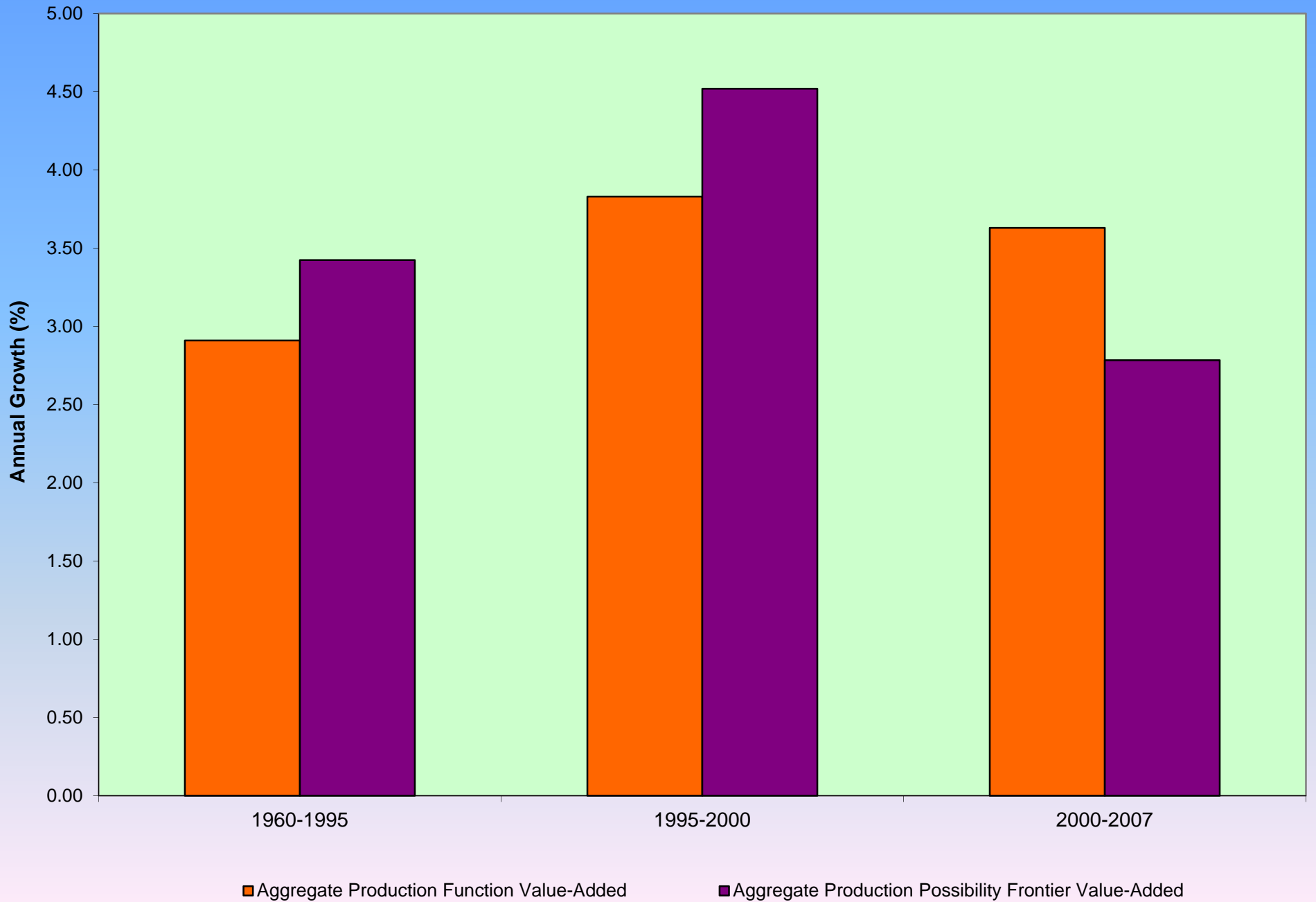


Industry Contributions to Value Added Growth

Value added weighted contributions of industry value added.



Comparison of Production Possibility Frontier and Aggregate Production Function



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

Industry Contributions to Productivity Growth

Domar weighted productivity.

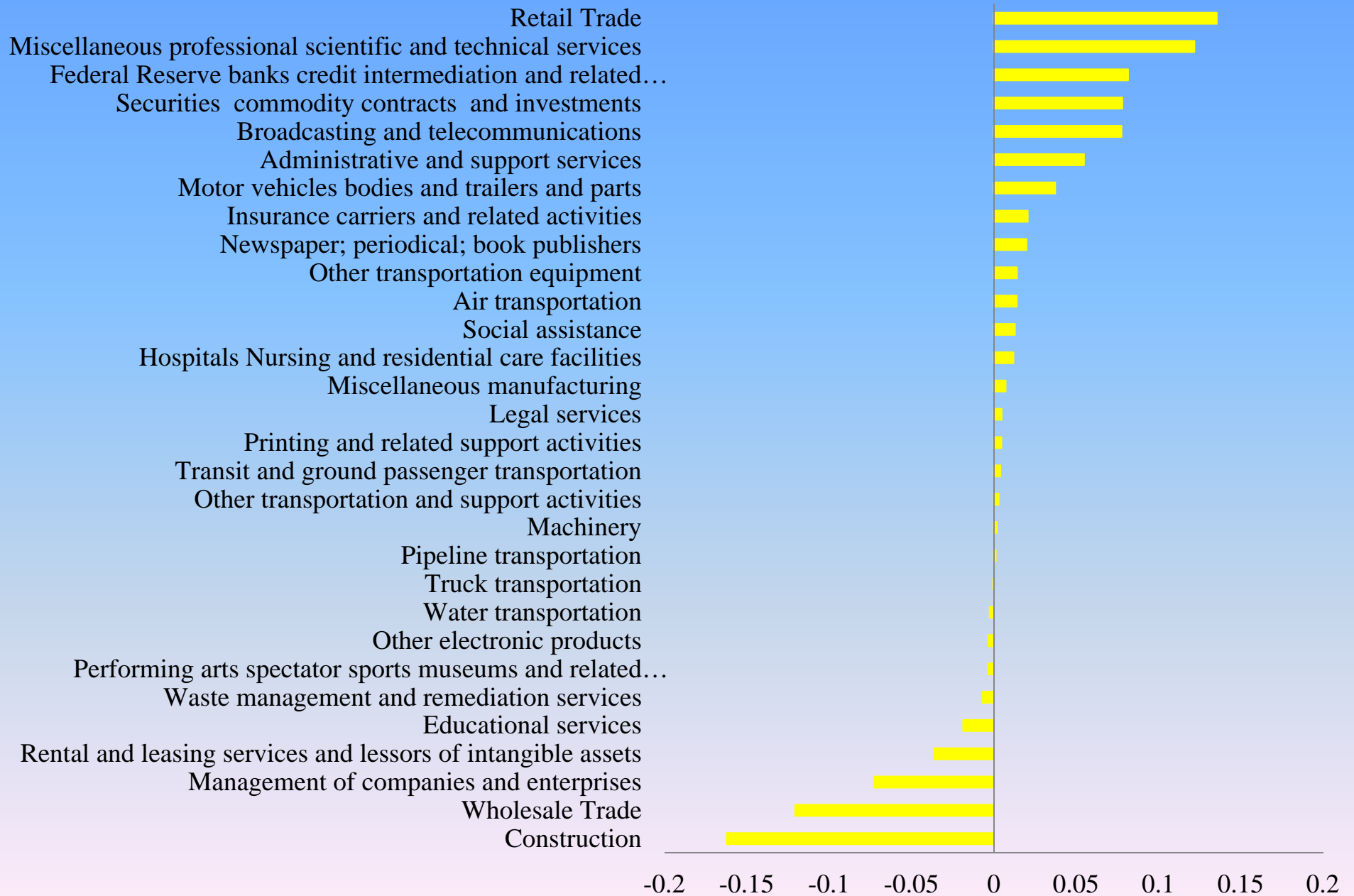


□ Non-IT Industries

■ IT-Using Industries

■ IT-Producing Industries

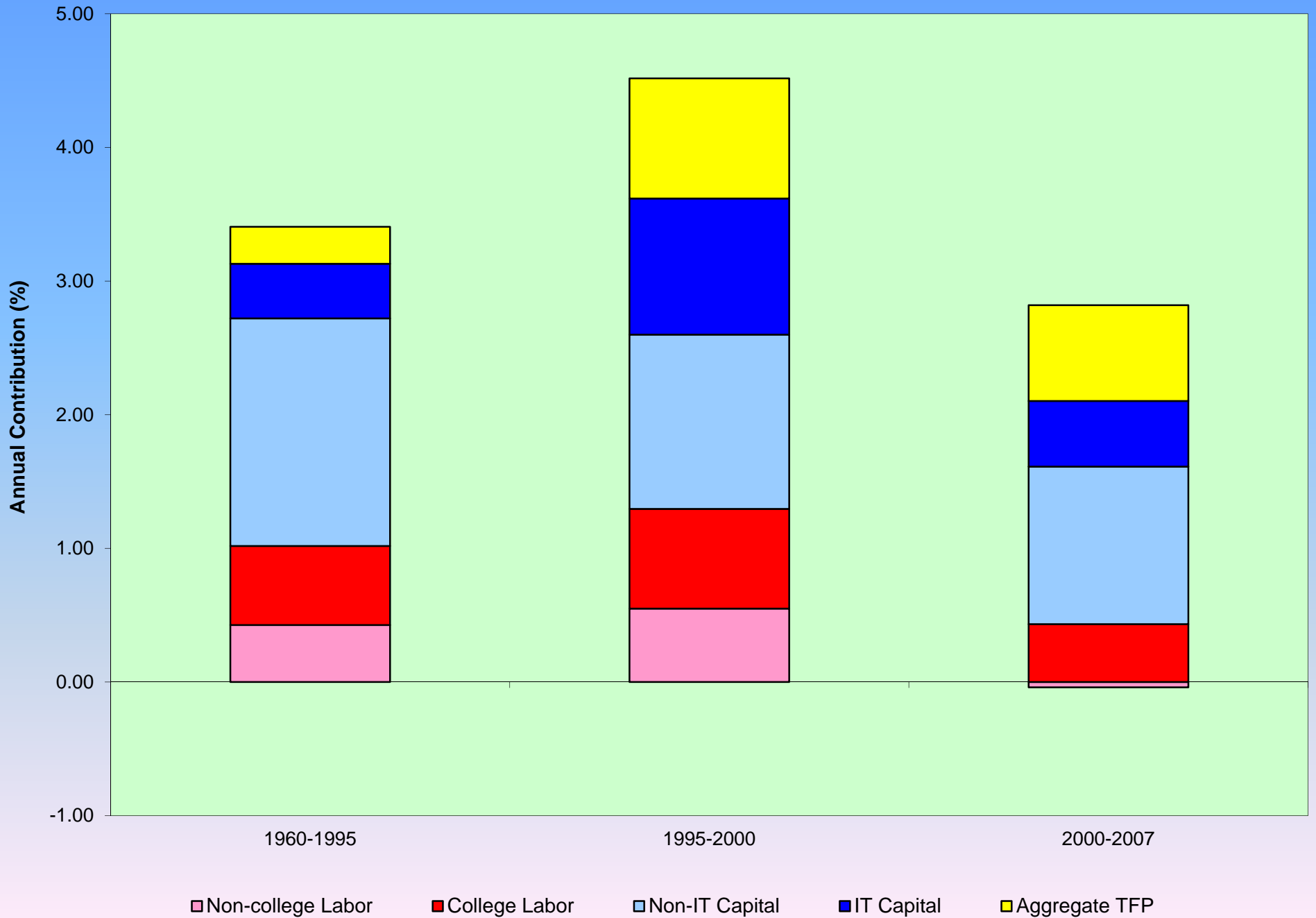
Change in Contribution to Productivity: 2000-2007 less 1960-1995: IT Users



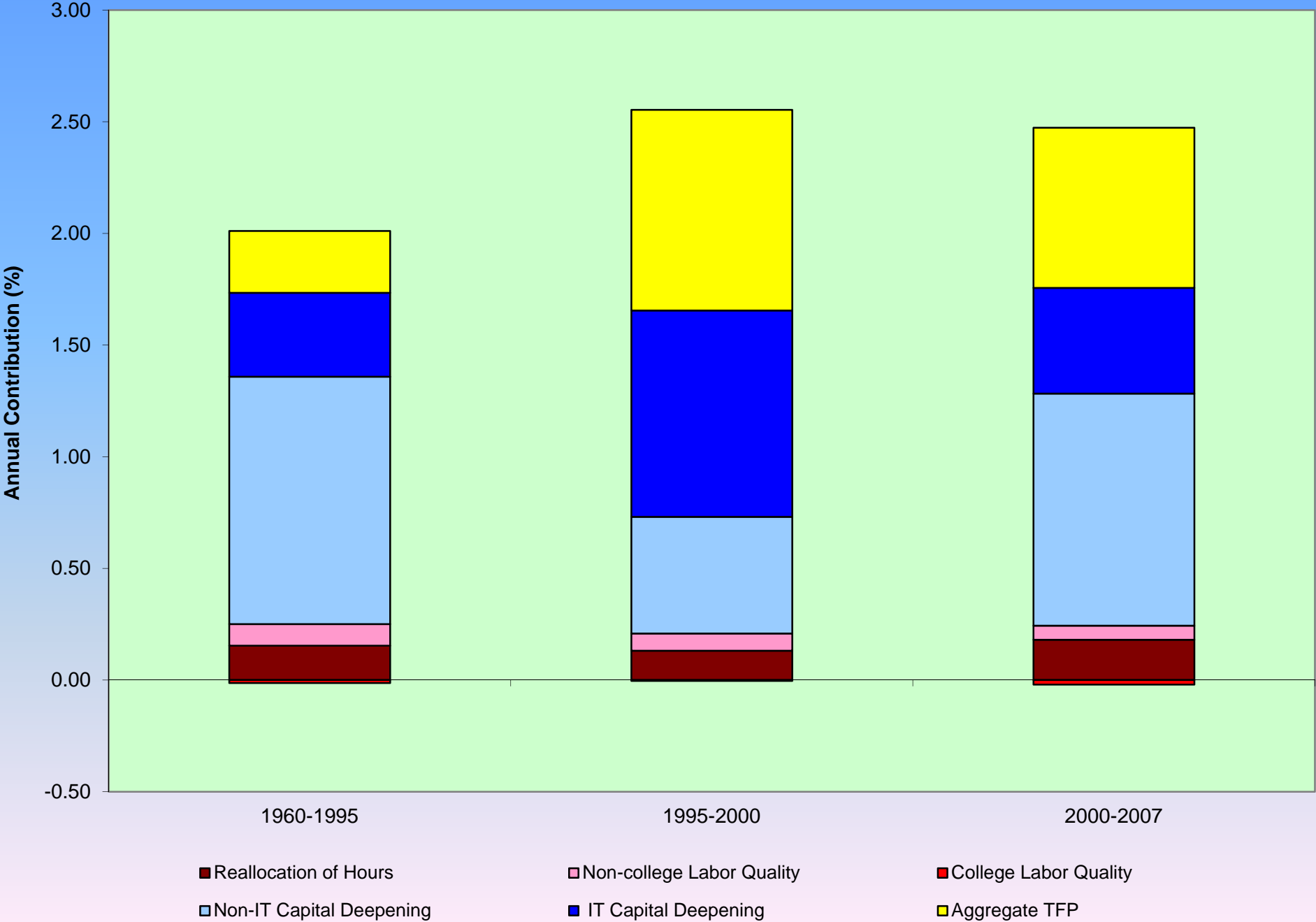
Sources of Aggregate TFP Growth



Sources of U.S. Economic Growth



Sources of U.S. Labor Productivity Growth



GROWTH AT THE INDUSTRY LEVEL: Value Added and Productivity Growth

VALUE ADDED GROWTH:

IT-Producing Industries

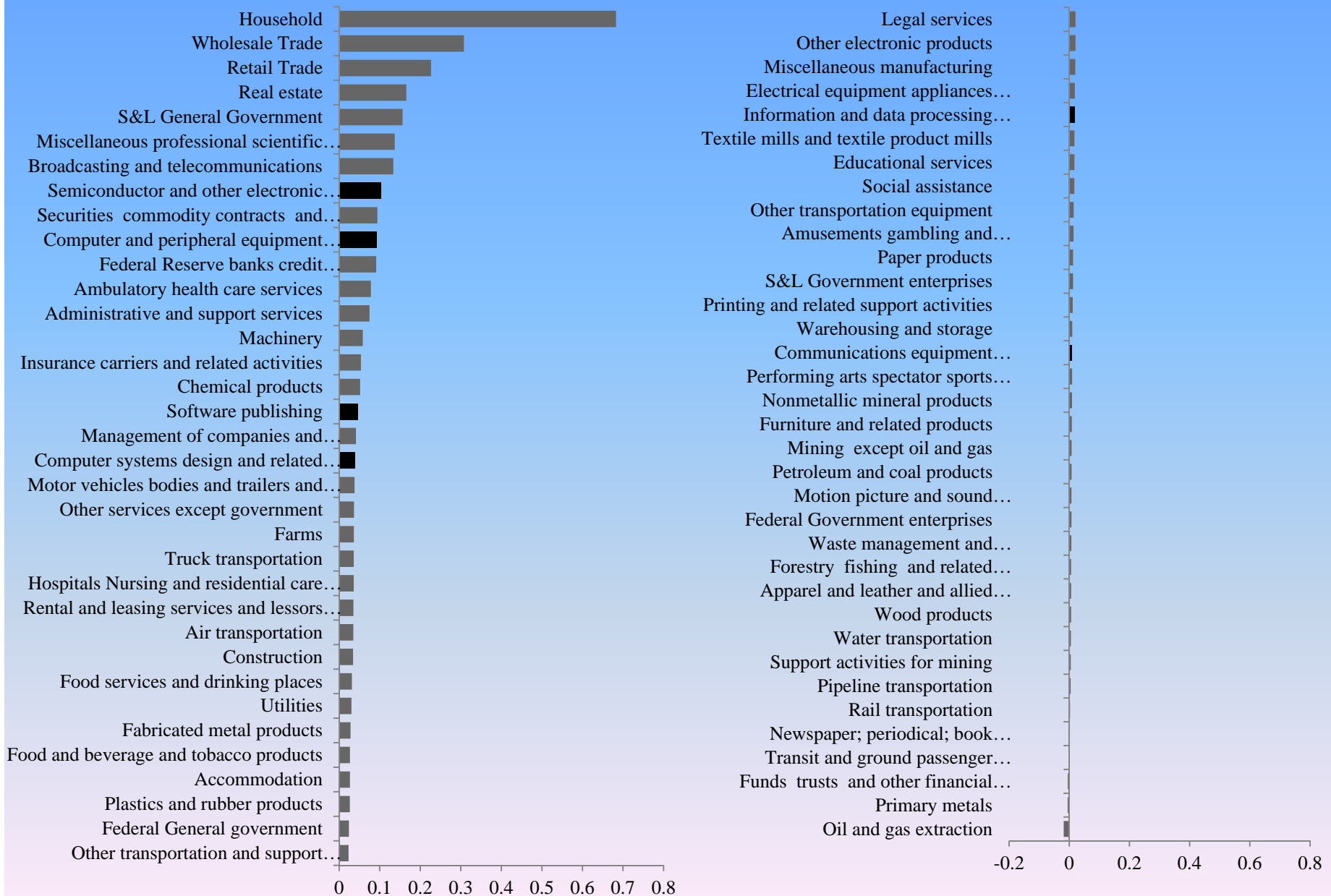
PRODUCTIVITY GROWTH:

IT-Producing Industries

CHANGE IN PRODUCTIVITY GROWTH:

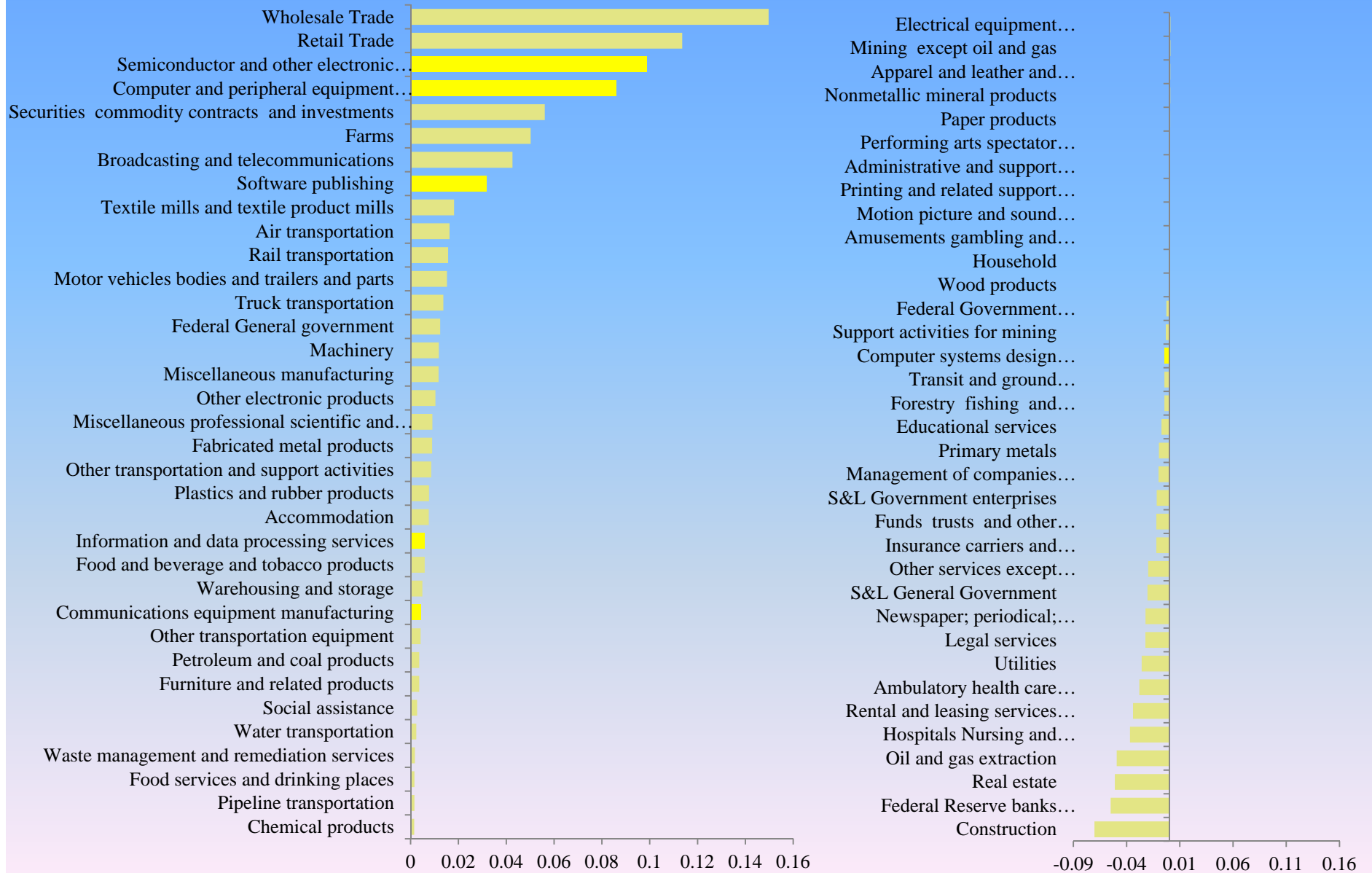
IT-Using Industries

Industry Contributions to Value Added Growth, 1960-2007



Industry Contributions to Productivity Growth, 1960-2007

Domar weighted contribution



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?