WHAT WILL END THE LONG SLUMP?

Lessons from an Industry-Level Production Account for the United States, 1947-2010

by

Dale W. Jorgenson, Mun S. Ho, and Jon D. Samuels

http://scholar.harvard.edu/jorgenson

Saturday, January 4, 2014

ECONOMIC GROWTH IN THE INFORMATION AGE

A Prototype Industry-Level Production Account
for the United States, 1947-2010

Annual Make and Use Tables in Current and Constant Prices, 1947-2010

65 Industry Sectors; NAICS Industrial Classifcation.

Annual Capital, Labor, Energy, Materials, and Services Data in Current and Constant Prices, 1947-2010

Capital Data Divided between IT and Non-IT; Labor Data Divided between Hours and Labor Quality.

Postwar U.S. Economic History
The Postwar Recovery, the Big Slump, and the Great Recession

Projecting Productivity and Economic Growth
Range of Labor Productivity and Output Projections

THE HISTORICAL BACKGROUND

Benchmark Input-Output Tables for the United States

1947, 1958, 1963, Five-Year Intervals Since 1967

Annual Input-Output Tables for the United States

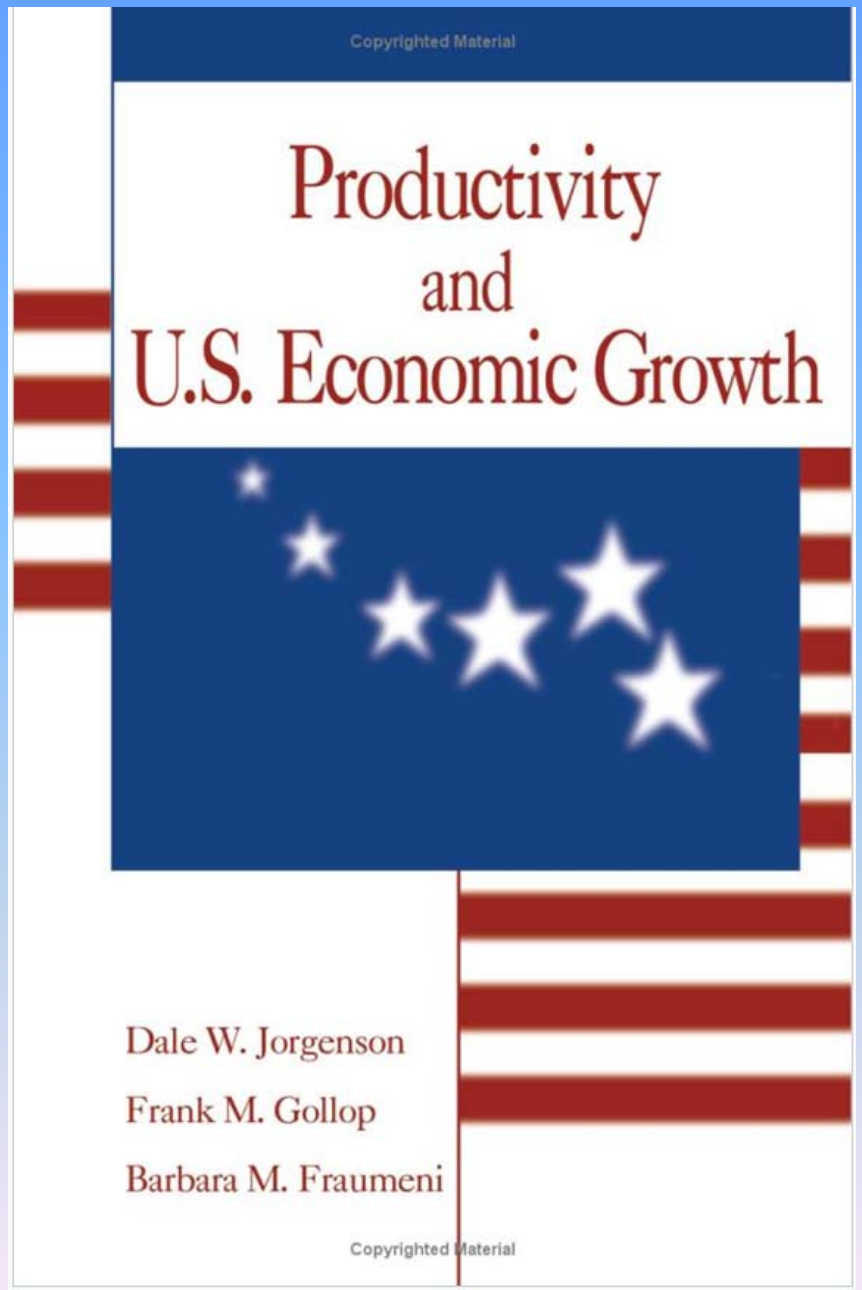
1998-2010 on a Continuously Revised Basis

Time Series of Input-Output Tables for the United States

Jorgenson, Gollop and Fraumeni (1987), 1948-1979

Jorgenson, Ho and Stiroh (2005), 1977-2000

Jorgenson, Ho and Samuels (2012), 1960-2007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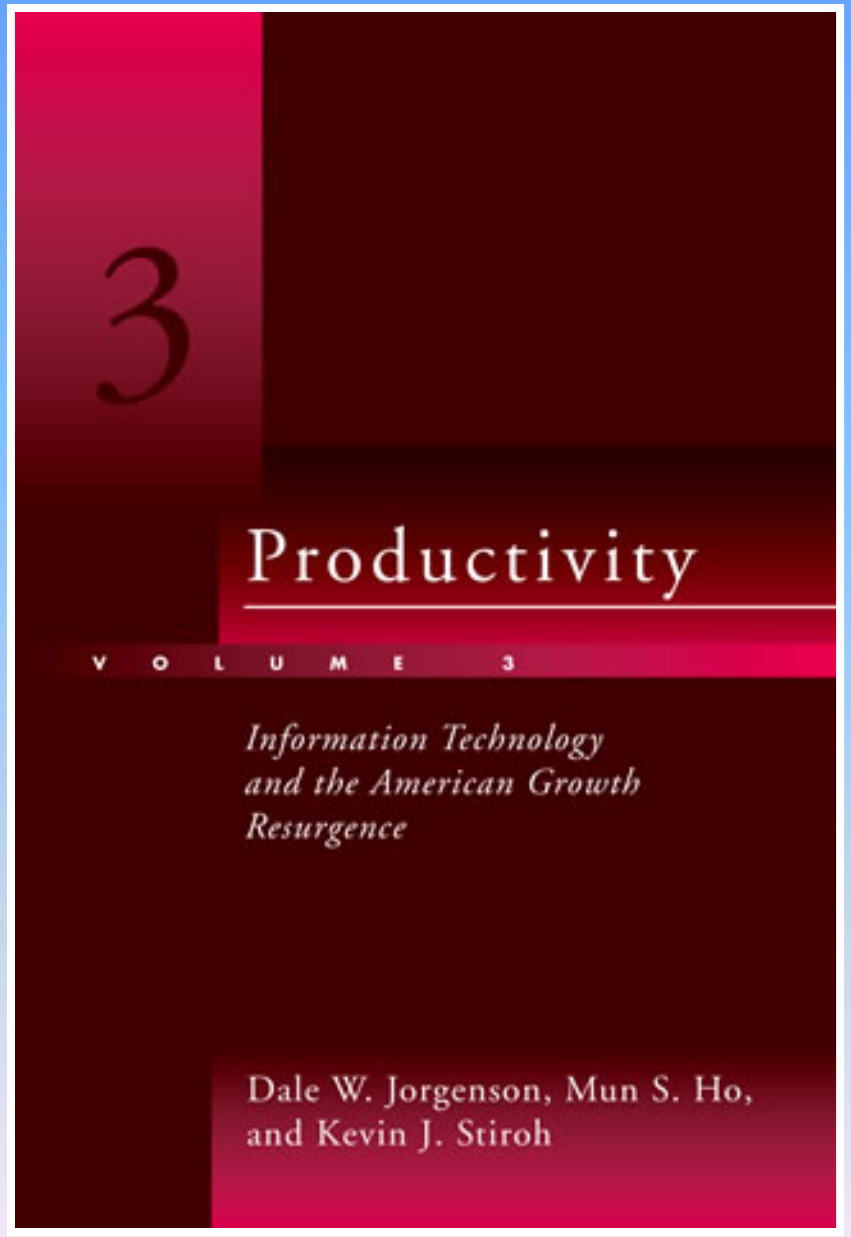
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Productivity
VOLUME 3
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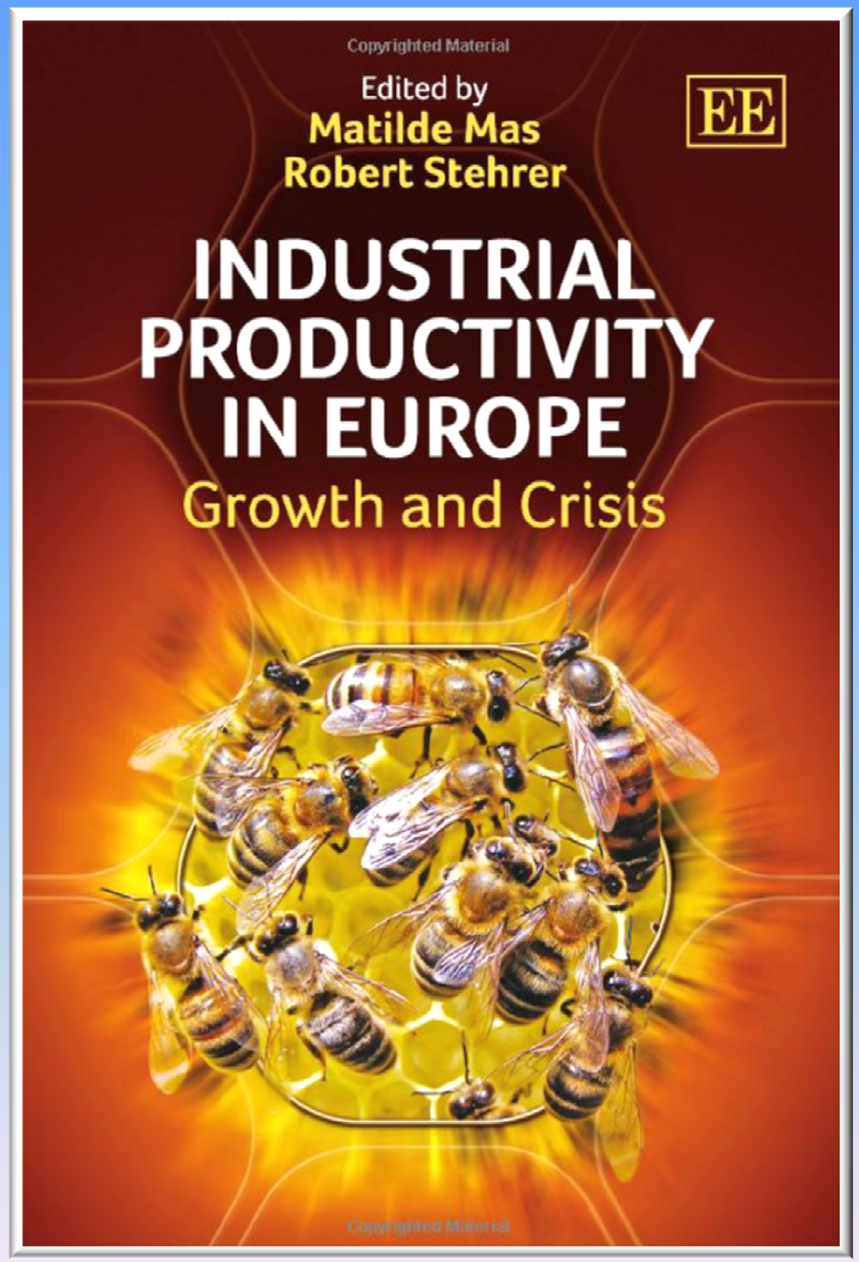
Dale W. Jorgenson, Mun S. Ho, and Kevin J. Stiroh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IT-RELATED INDUSTRIES

IT-Producing Industries

Computer and electronic products
Information and data processing services
Computer systems design and related services

IT-Using Industries

Machinery
Other transportation equipment
Furniture and related products
Miscellaneous manufacturing
Printing and related support activities
Wholesale Trade
Retail Trade
Air transportation
Water transportation
Truck transportation
Pipeline transportation
Publishing industries (includes software)
Motion picture and sound recording industries
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
Misc. professional scientific and technical services
Management of companies and enterprises
Administrative and support services
Educational services
Ambulatory health care services
Hospitals Nursing and residential care facilities
Social assistance
Performing arts spectator sports museums and related activities
Other services except government
Federal General government
S&L Government enterprises

NON-IT INDUSTRIES

Farms
Forestry fishing and related activities
Oil and gas extraction
Mining except oil and gas
Support activities for mining
Utilities
Construction
Wood products
Nonmetallic mineral products
Primary metals
Fabricated metal products
Electrical equipment appliances and components
Motor vehicles bodies and trailers and parts
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
Transit and ground passenger transportation
Other transportation and support activities
Warehousing and storage
Funds trusts and other financial vehicles
Real estate
Waste management and remediation services
Amusements gambling and recreation industries
Accommodation
Food services and drinking places
Federal Government enterprises
S&L General Government

ROLE OF INFORMATION TECHNOLOGY
Growth of Value Added and Productivity

Output Shares of IT

Computers, Information and Data Processing Services,
Computer Systems Design and Related Services

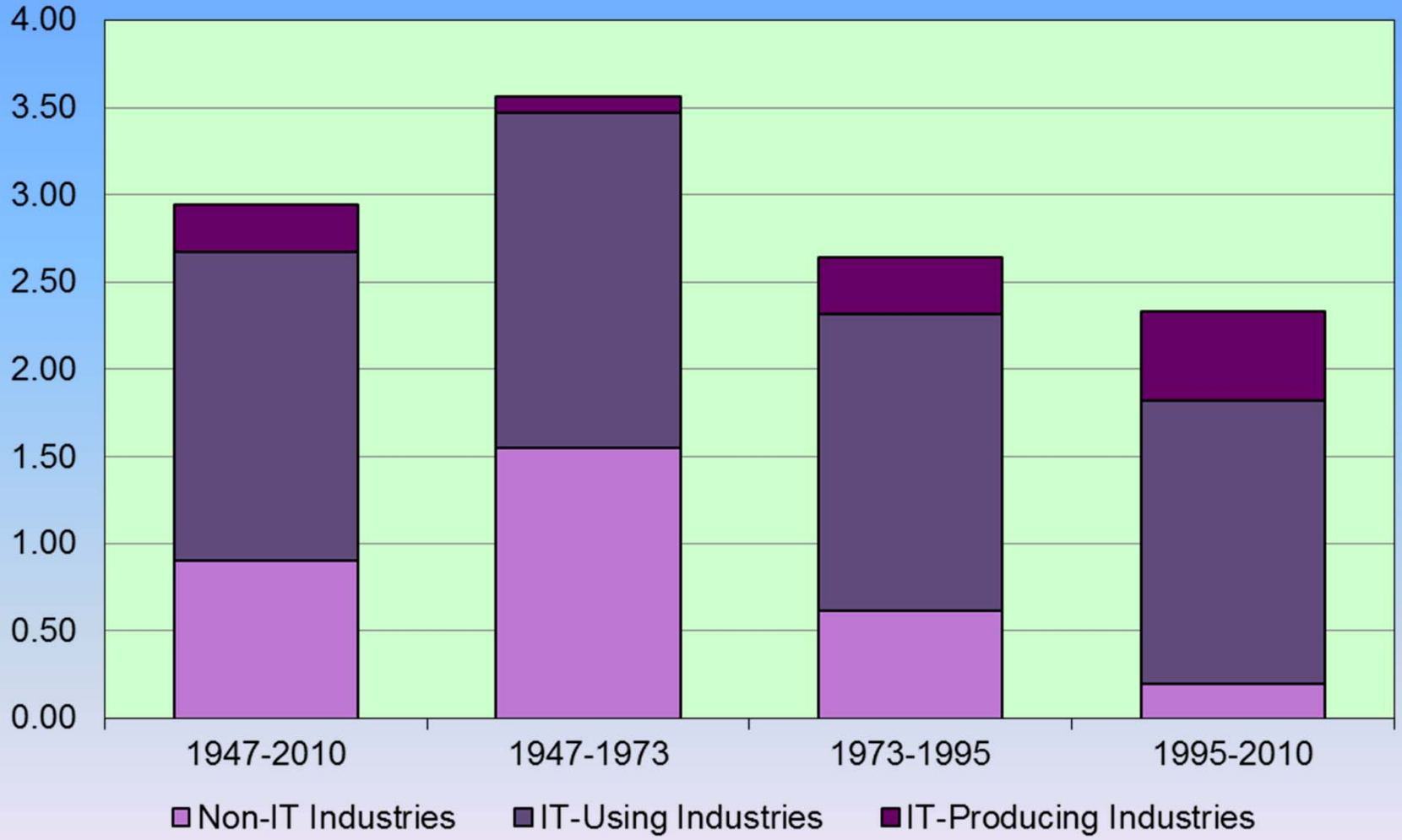
Output Contributions by Type

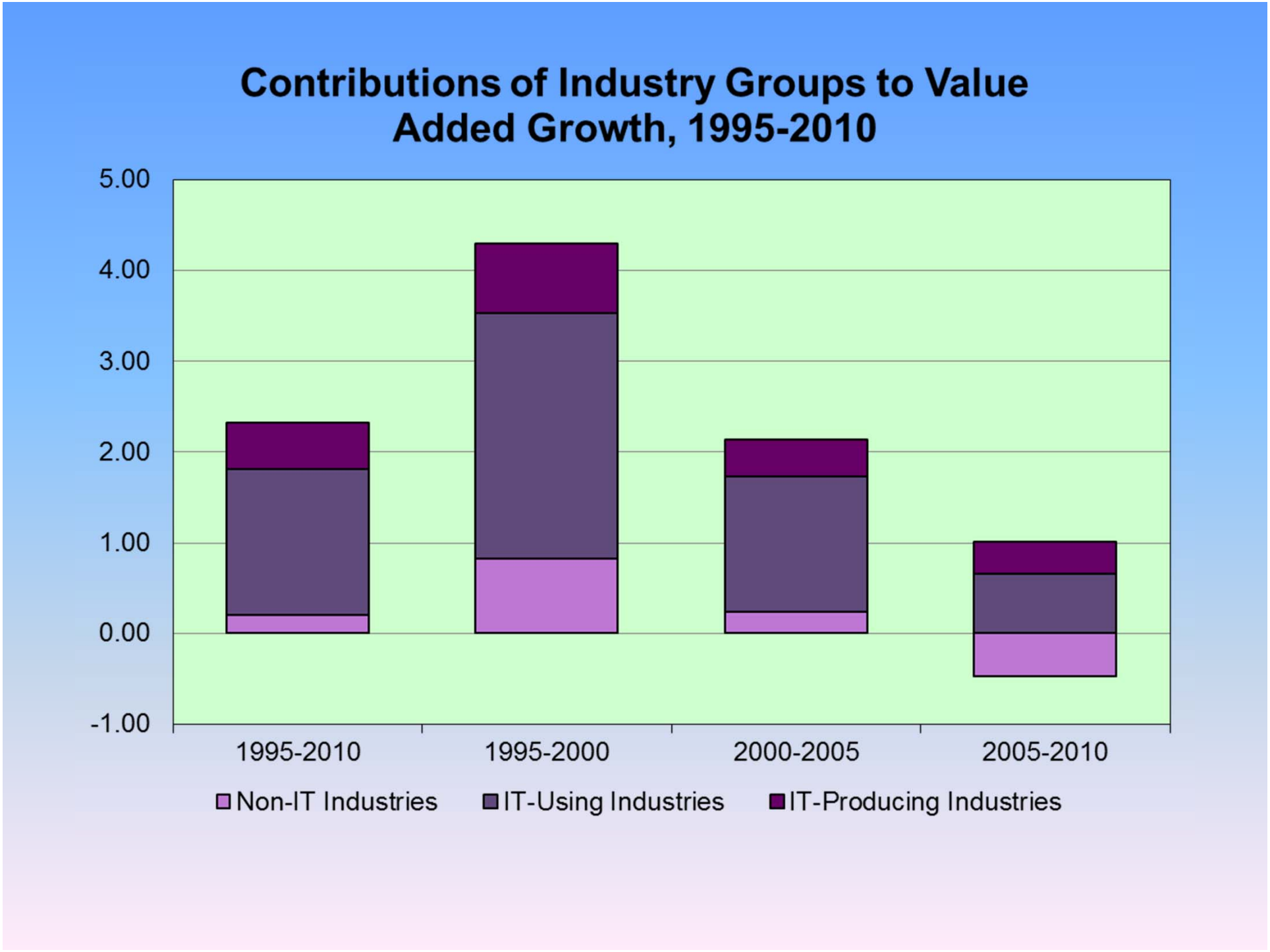
Computers, Information and Data Processing Services,
Computer Systems Design and Related Services

Output Contribution of IT

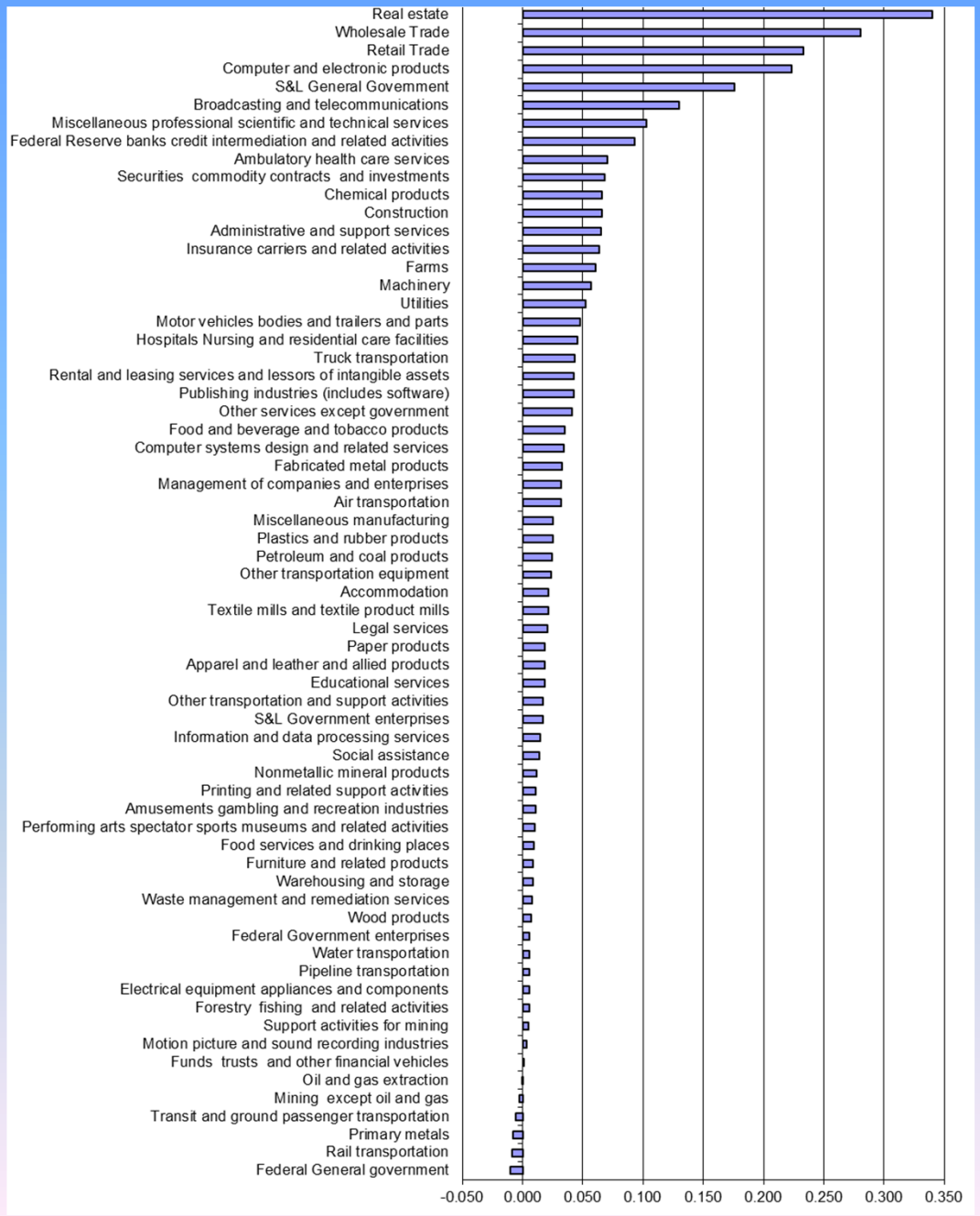
IT-Producing, IT-Using, and Non-IT

Contributions of Industry Groups to Value Added Growth, 1947-2010




Contributions of Industry Groups to Value Added Growth, 1995-2010
5.00
4.00
3.00
2.00
1.00
0.00
-1.00
1995-2010
1995-2000
2000-2005
2005-2010
Non-IT Industries
IT-Using Industries
IT-Producing Industries

Contributions of Individual Industries to Value Added Growth

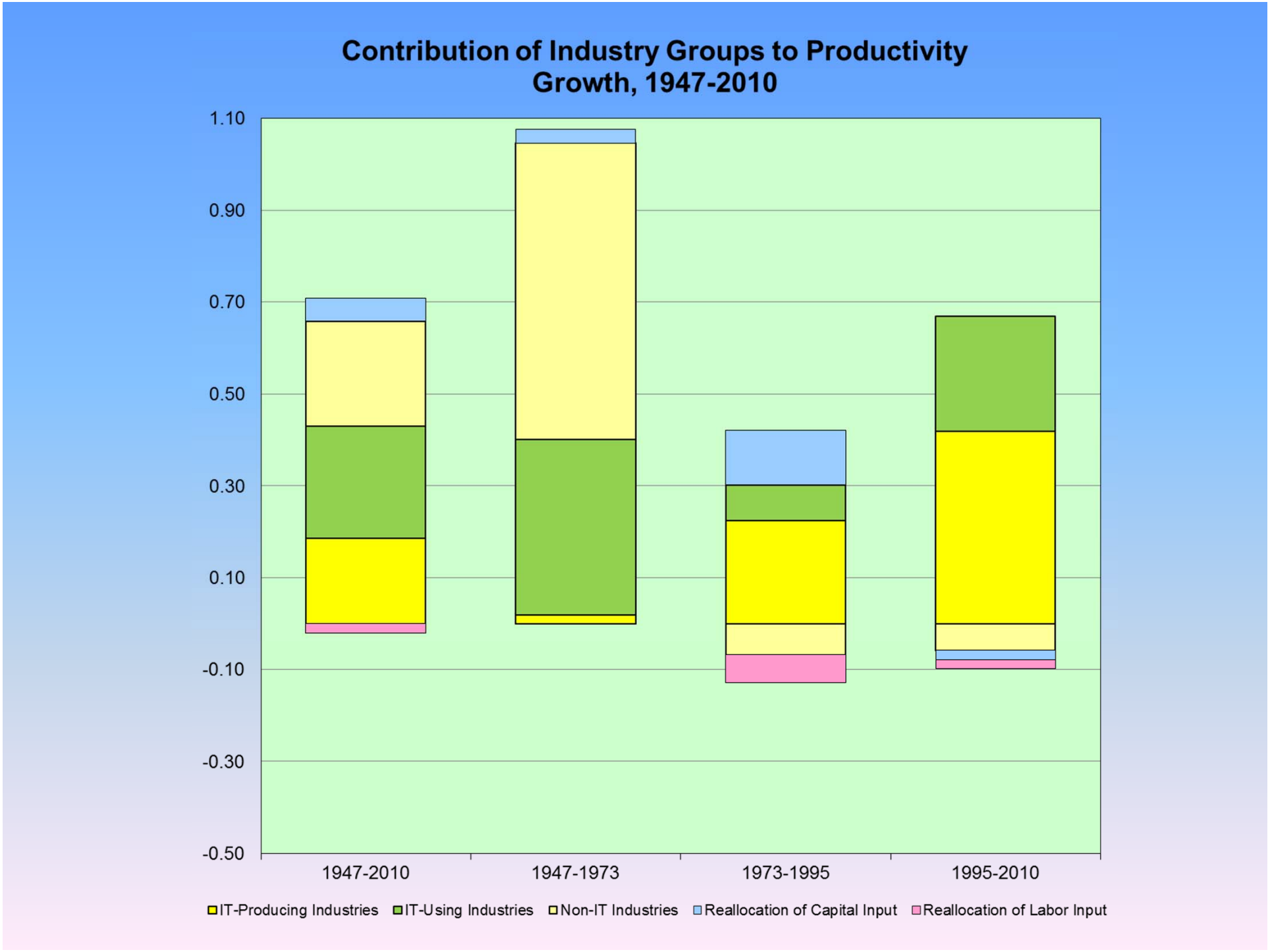


THE ROLE OF INNOVATION

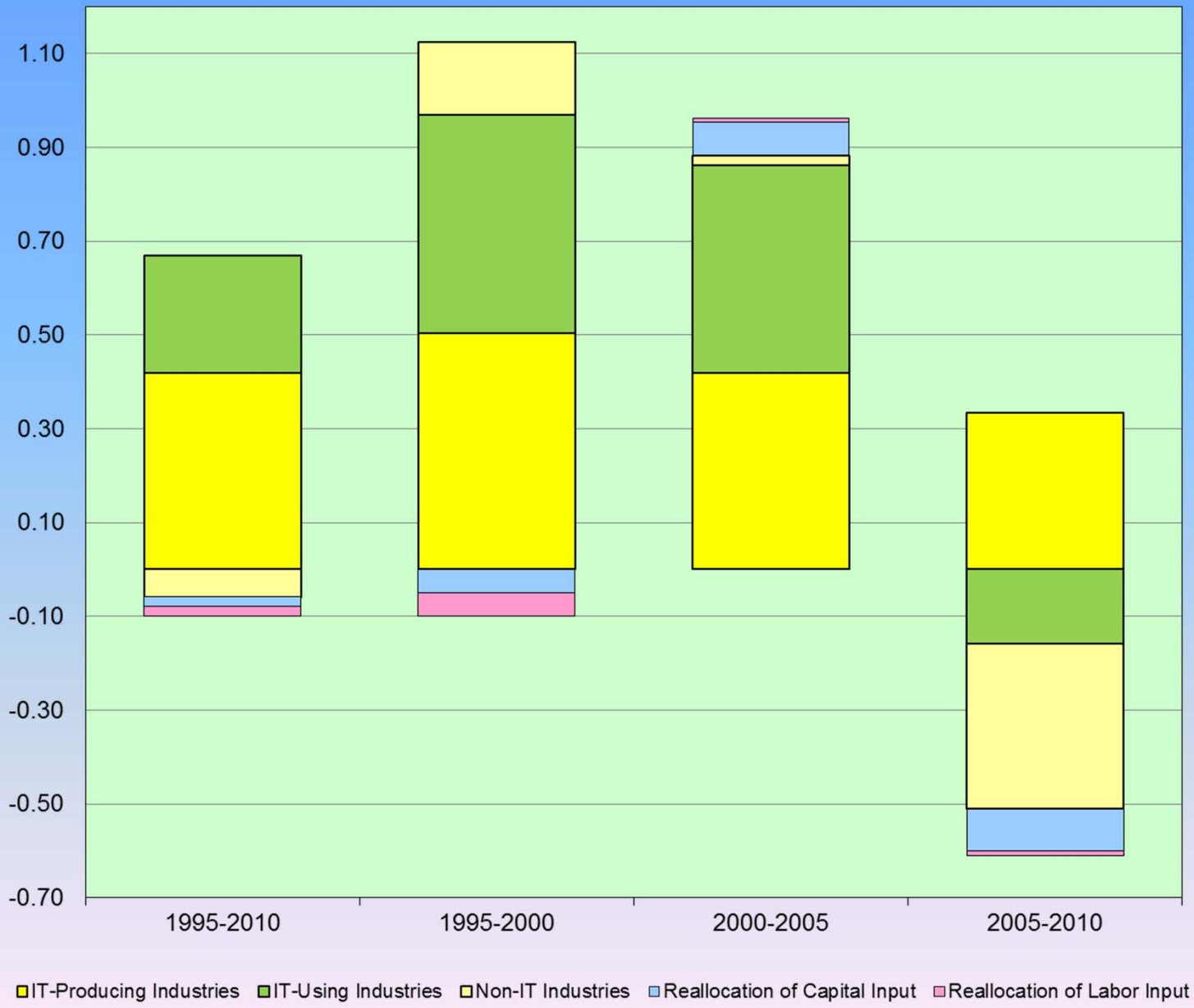
Total Factor Productivity
IT-Producing, IT-Using and Non-IT Industries

Reallocation of Factor Inputs
Capital Input and Labor Input

Aggregate Productivity Growth
Industry Productivity and Factor Reallocations


Contribution of Industry Groups to Productivity Growth, 1947-2010
1.10
0.90
0.70
0.50
0.30
0.10
-0.10
-0.30
-0.50
1947-2010
1947-1973
1973-1995
1995-2010
IT-Producing Industries
IT-Using Industries
Non-IT Industries
Reallocation of Capital Input
Reallocation of Labor Input

Contribution of Industry Groups to Productivity Growth, 1995-2010



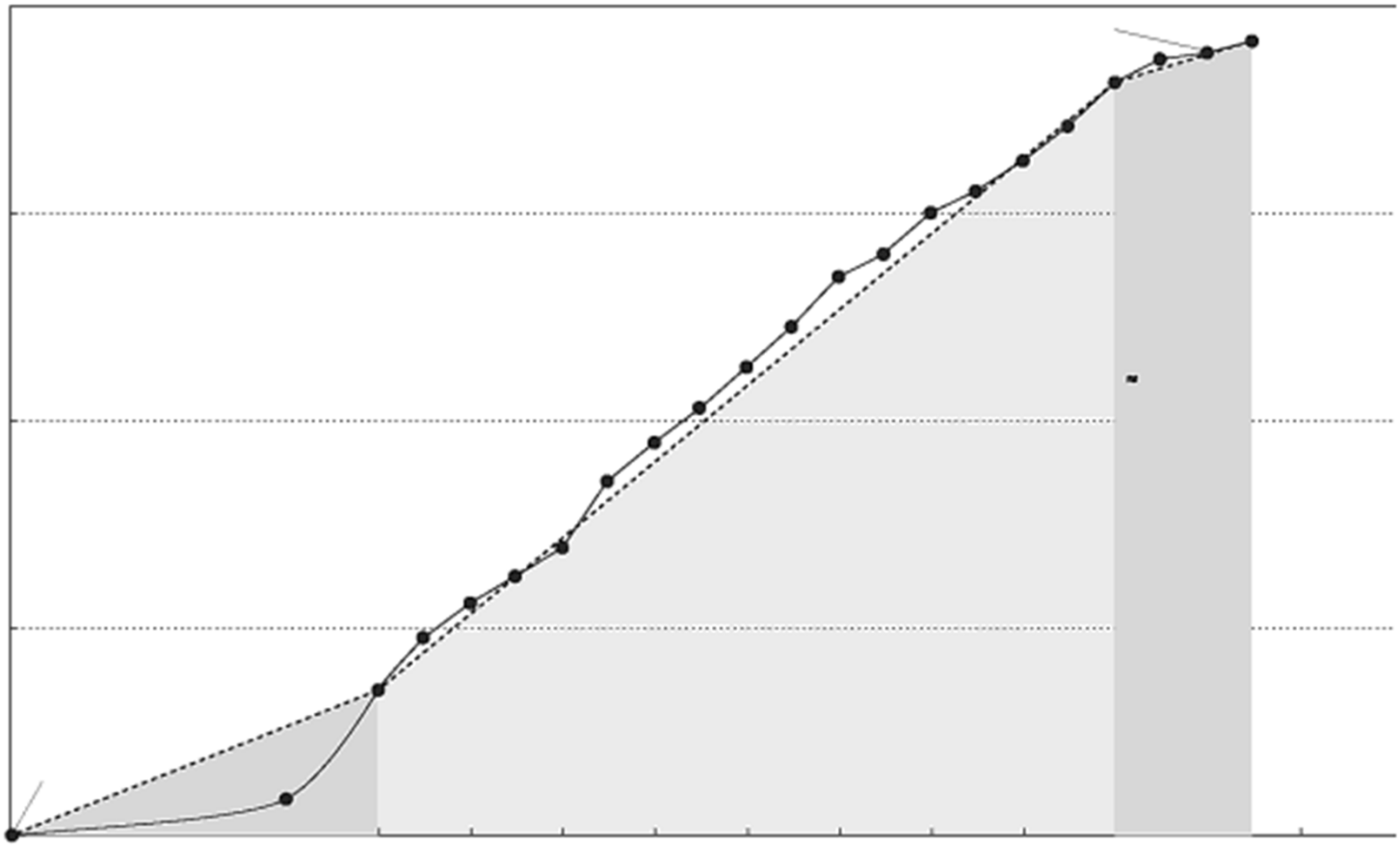
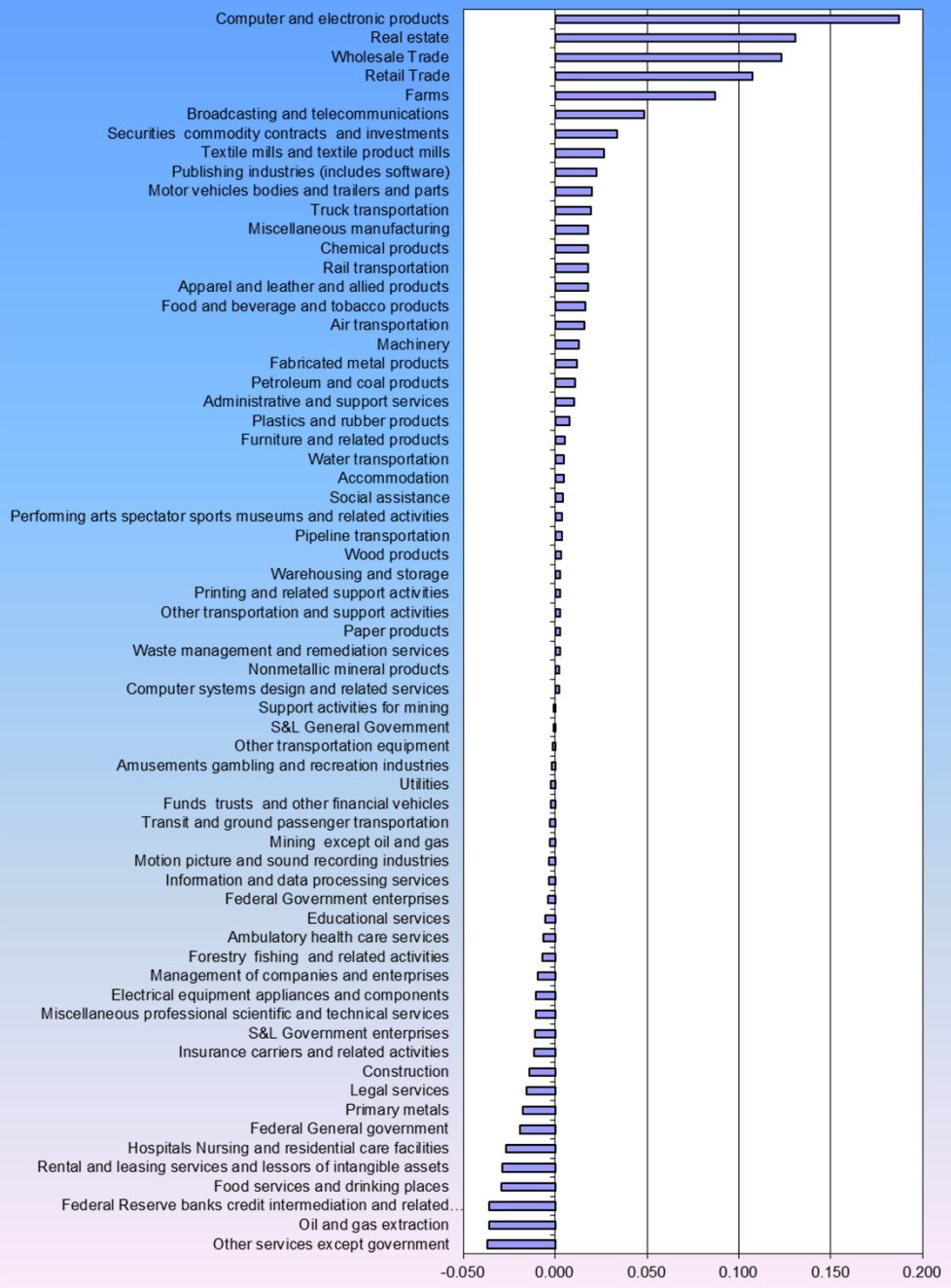


Figure 1.1 Growth in processor performance since the mid-1980s. This chart plots performance relative to the VAX 11/780 as measured by the SPECint benchmarks (see Section 1.8). Prior to the mid-1980s, processor performance growth was largely technology driven and averaged about 25% per year. The increase in growth to about 52% since then is attributable to more advanced architectural and organizational ideas. By 2002, this growth led to a difference in performance of about a factor of seven. Performance for floating-point-oriented calculations has increased even faster. Since 2002, the limits of power, available instruction-level parallelism, and long memory latency have slowed uniprocessor performance recently, to about 20% per year. Since SPEC has changed over the years, performance of newer machines is estimated by a scaling factor that relates the performance for two different versions of SPEC (e.g., SPEC92, SPEC95, and SPEC2000).

Contributions of Individual Industries to Productivity Growth



SOURCES OF U.S. ECONOMIC GROWTH, 1947-2010

Contribution of Capital Input

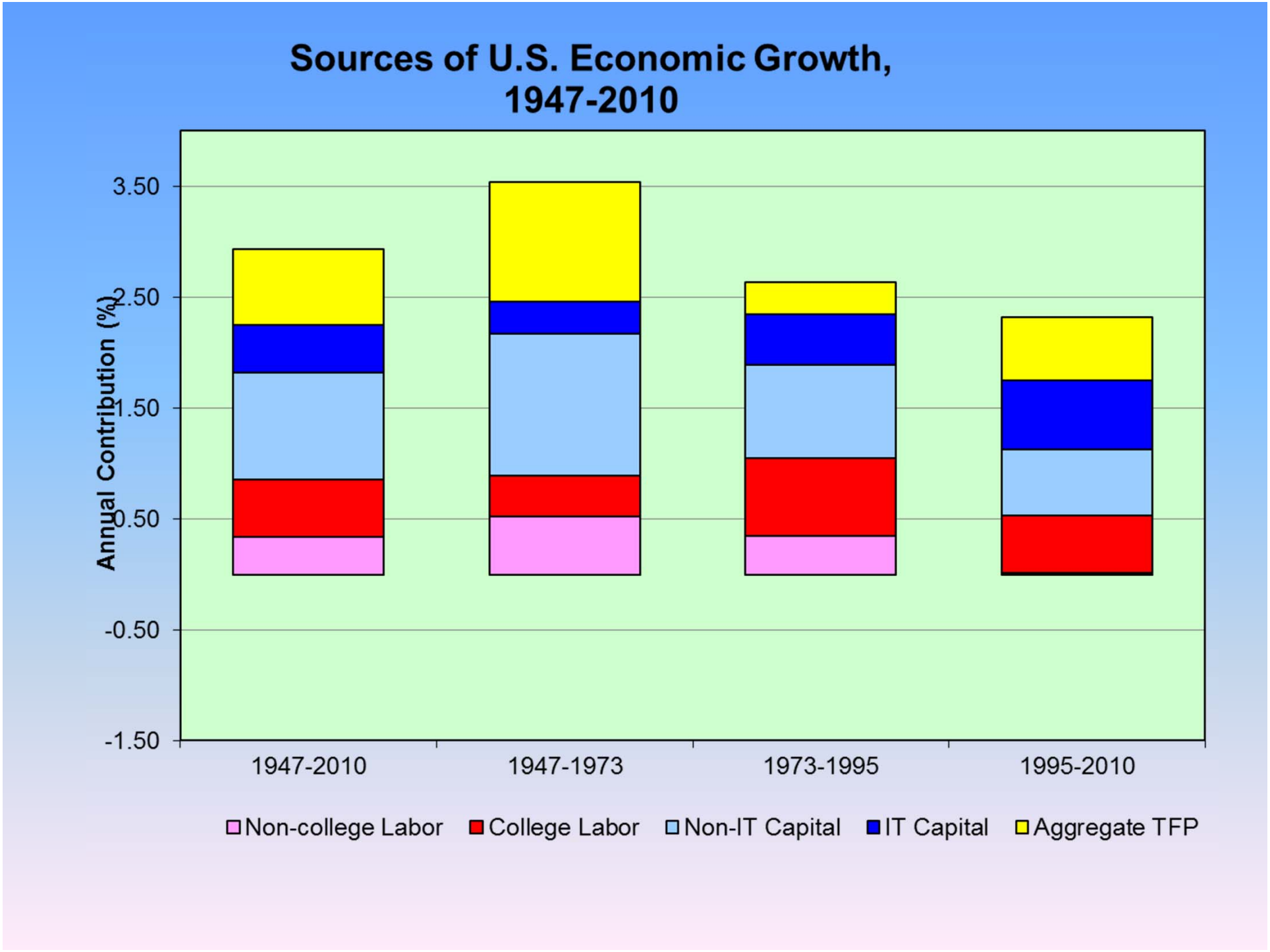
IT and Non-IT Capital

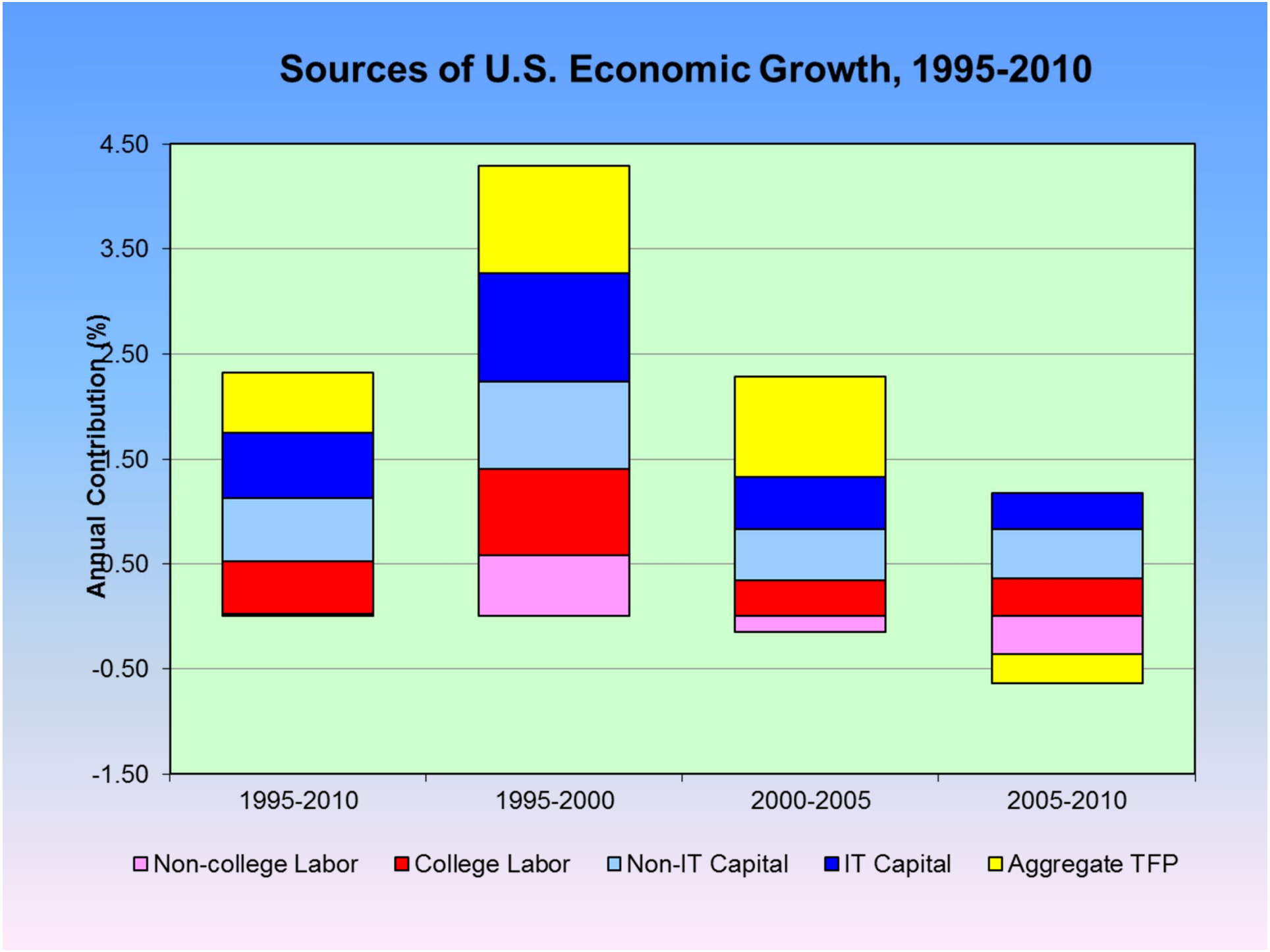
Contribution of Labor Input

Hours and Labor Quallity

Contribution of Productivity

Replication vs. Innovation


Sources of U.S. Economic Growth, 1947-2010
Annual Contribution (%)
3.50
2.50
1.50
0.50
-0.50
-1.50
1947-2010
1947-1973
1973-1995
1995-2010
Non-college Labor
College Labor
Non-IT Capital
IT Capital
Aggregate TFP

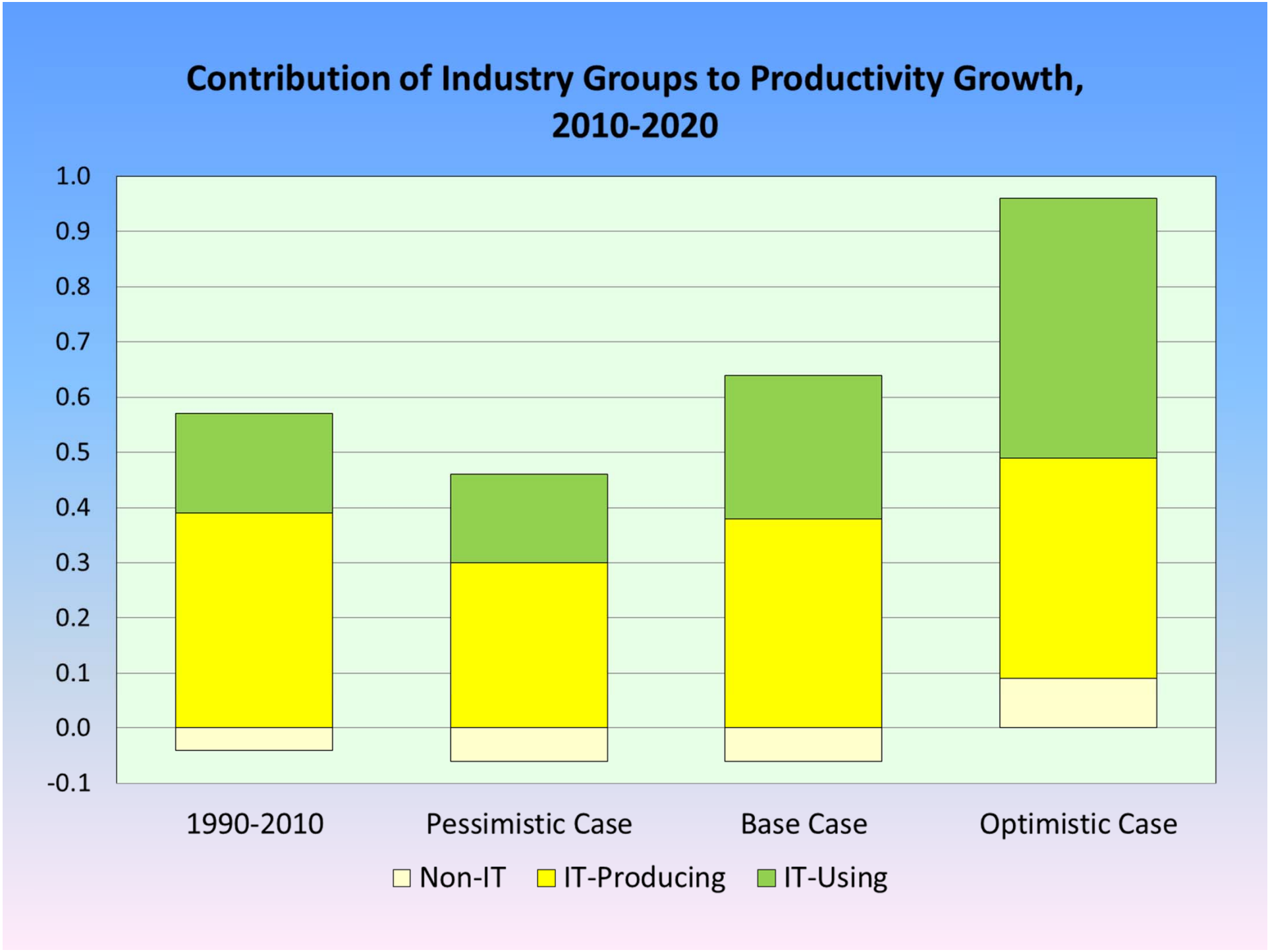

Sources of U.S. Economic Growth, 1995-2010
Annual Contribution (%)
4.50
3.50
2.50
1.50
0.50
-0.50
-1.50
1995-2010
1995-2000
2000-2005
2005-2010
Non-college Labor
College Labor
Non-IT Capital
IT Capital
Aggregate TFP

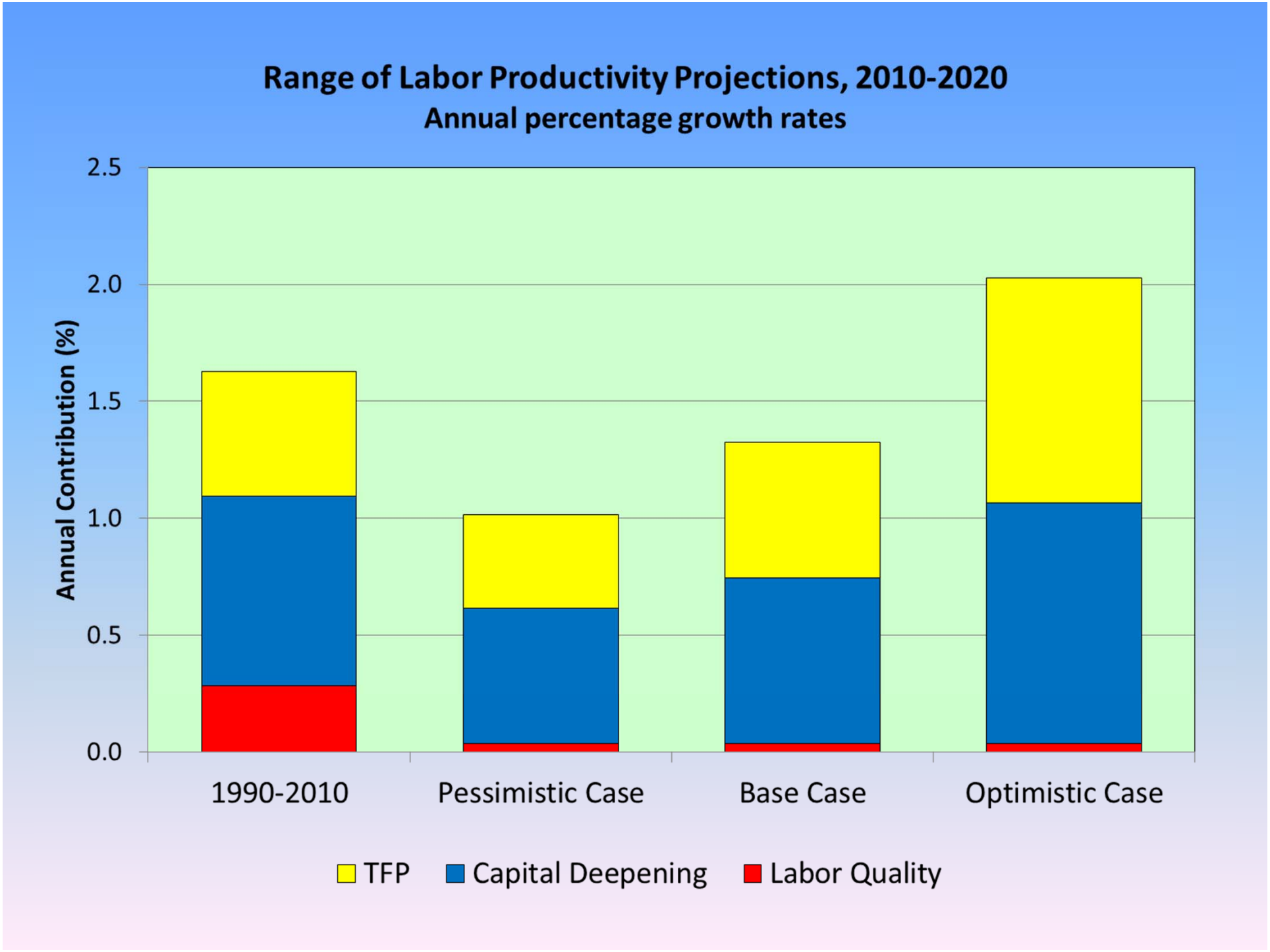
PROJECTING PRODUCTIVITY AND ECONOMIC GROWTH

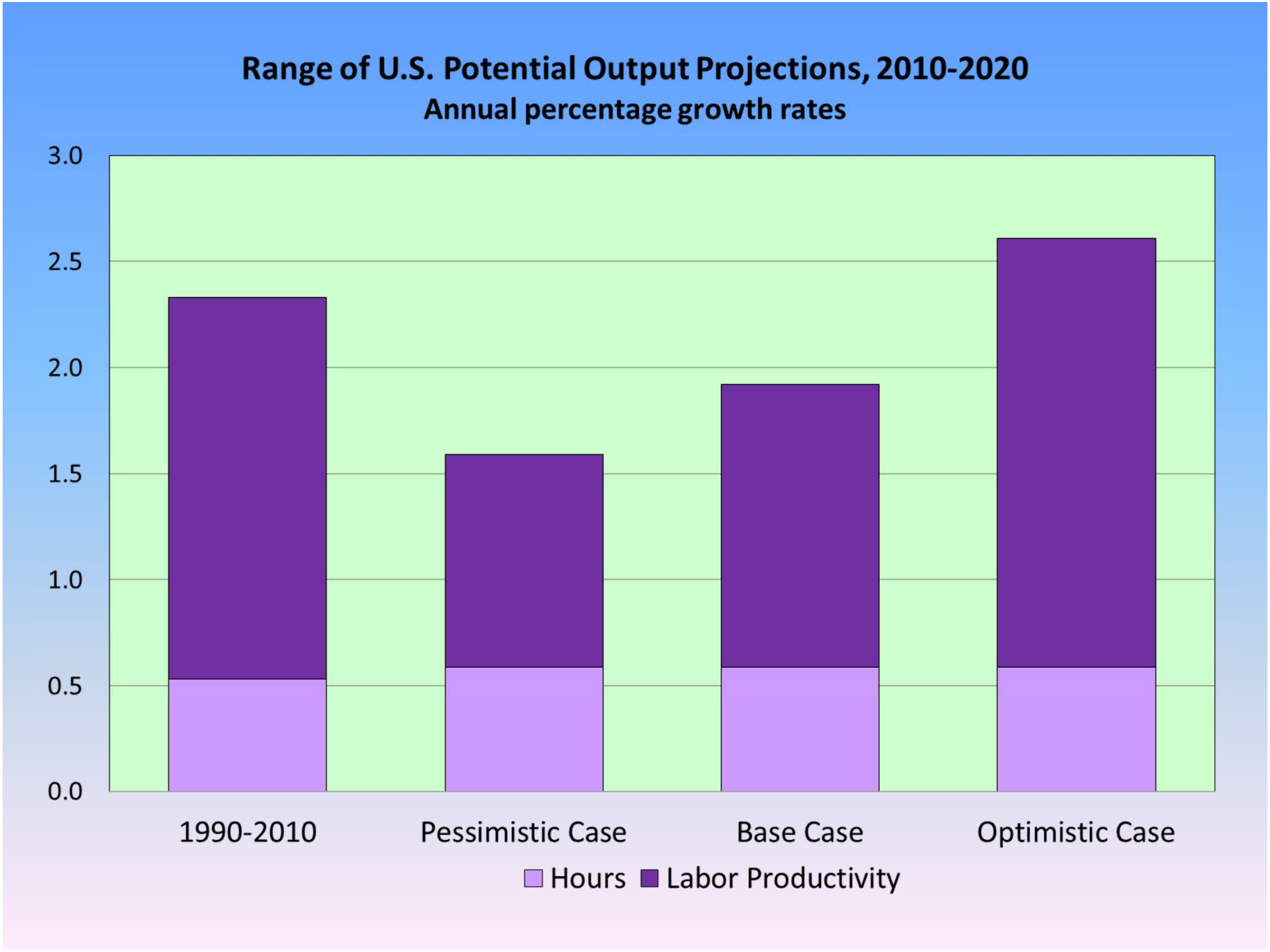
Contribution of Industry Groups to Productivity Growth

Range of Labor Productivity Growth Projections

Range of Potential Output Projections


Contribution of Industry Groups to Productivity Growth, 2010-2020
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
1990-2010
Pessimistic Case
Base Case
Optimistic Case
Non-IT
IT-Producing
IT-Using


Range of Labor Productivity Projections, 2010-2020
Annual percentage growth rates
Annual Contribution (%)
2.5
2.0
1.5
1.0
0.5
0.0
1990-2010
Pessimistic Case
Base Case
Optimistic Case
TFP
Capital Deepening
Labor Quality


Range of U.S. Potential Output Projections, 2010-2020
Annual percentage growth rates
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1990-2010
Pessimistic Case
Base Case
Optimistic Case
Hours
Labor Productivity

WHAT WILL END THE LONG SLUMP?
Summary and Conclusions

Innovation and Total Factor Productivity
IT-Using, IT-Producing and Non-IT Industries

Postwar U.S. Economic History
The Postwar Recovery, the Big Slump, the IT Boom and the Great Recession

Projecting Productivity and Economic Growth
Demography and Technology

Appendix Table 1: Growth in Aggregate Value-Added and the Sources of Growth
Aggregate Production Possibility Frontier

	1947-2010	1947-1973	1973-1995	1995-2010	1995-2000	2000-2005	2005-2010
			Contributions				
Value-Added	2.95	3.56	2.64	2.32	4.30	2.14	0.54
IT-Producing Industries	0.27	0.09	0.33	0.51	0.76	0.40	0.36
IT-Using Industries	1.77	1.92	1.71	1.62	2.71	1.50	0.65
Non-IT Industries	0.90	1.55	0.61	0.20	0.83	0.24	-0.47
Capital Input	1.39	1.57	1.30	1.22	1.86	0.98	0.82
IT Capital	0.43	0.29	0.46	0.62	1.03	0.49	0.35
Non-IT Capital	0.96	1.28	0.84	0.60	0.84	0.49	0.47
Labor Input	0.87	0.91	1.06	0.53	1.40	0.19	0.00
College Labor	0.52	0.37	0.70	0.51	0.82	0.35	0.37
Non-college Labor	0.34	0.52	0.35	0.02	0.58	-0.15	-0.37
Aggregate TFP	0.68	1.08	0.29	0.57	1.03	0.96	-0.27
			Quality and Stock Contributions				
Contribution of Capital Quality	0.38	0.46	0.30	0.36	0.75	0.19	0.14
Contribution of Capital Stock	1.01	1.11	1.00	0.86	1.11	0.79	0.67
Contribution of Labor Quality	0.26	0.26	0.24	0.28	0.22	0.25	0.36
Contribution of Labor Hours	0.61	0.66	0.81	0.25	1.18	-0.06	-0.36

Notes: All figures are average annual percentages. The contribution of an output or input is the growth rate multiplied by the average value share. The IT-producing, IT-using, and non-IT industries are defined in Table 2.10. IT capital input includes computer hardware, computer software, and telecommunications equipment.

Appendix Table 2: Growth and Shares of Aggregate Variables
Aggregate Production Possibility Frontier

	1947-2010	1947-1973	1973-1995	1995-2010	1995-2000	2000-2005	2005-2010
			Growth Rates				
Value-Added	2.95	3.56	2.64	2.32	4.30	2.14	0.54
IT-Producing Industries	10.76	5.05	13.83	16.14	24.28	13.34	10.80
IT-Using Industries	3.24	3.80	2.98	2.64	4.45	2.43	1.04
Non-IT Industries	2.00	3.21	1.57	0.54	2.31	0.68	-1.36
Capital Input	3.58	3.94	3.42	3.17	4.88	2.58	2.04
IT Capital	15.07	17.56	14.80	11.17	18.95	8.45	6.11
Non-IT Capital	2.64	3.33	2.40	1.81	2.56	1.52	1.35
Labor Input	1.44	1.55	1.71	0.87	2.27	0.32	0.02
College Labor	3.37	3.94	3.73	1.87	3.15	1.21	1.26
Non-college Labor	0.74	1.07	0.86	-0.01	1.62	-0.44	-1.21
			Shares				
Value-Added	100.0	100.0	100.0	100	100.0	100.0	100.0
IT-Producing Industries	2.3	1.7	2.4	3.14	3.1	3.0	3.3
IT-Using Industries	55.4	50.1	57.4	61.66	60.9	61.8	62.3
Non-IT Industries	42.3	48.2	40.2	35.20	36.0	35.2	34.4
Capital Input	39.0	40.2	37.9	38.66	38.1	38.2	39.7
IT Capital	3.0	1.4	3.1	5.66	5.4	5.9	5.7
Non-IT Capital	36.0	38.7	34.8	33.00	32.8	32.3	34.0
Labor Input	61.0	59.8	62.1	61.34	61.9	61.8	60.3
College Labor	17.6	9.8	19.6	28.16	26.0	28.5	29.9
Non-college Labor	43.4	50.0	42.5	33.18	35.8	33.3	30.4

Notes: Growth rates are average annual percentages. Shares are the mean two-period average for each period in percentages.

Appendix Table 3: Decomposition of Aggregate Labor Productivity
Aggregate Production Possibility Frontier

	1947-2010	1947-1973	1973-1995	1995-2010	1995-2000	2000-2005	2005-2010
Contributions							
Average Labor Productivity	1.93	2.45	1.33	1.91	2.39	2.22	1.12
Capital Deepening	0.99	1.12	0.80	1.06	1.13	1.01	1.03
IT Capital	0.40	0.27	0.41	0.60	0.92	0.50	0.38
Non-IT Capital	0.59	0.84	0.38	0.46	0.21	0.51	0.65
Labor Quality	0.26	0.26	0.24	0.28	0.22	0.25	0.36
College Labor Quality	-0.01	0.00	0.00	-0.02	0.00	-0.01	-0.04
Non-college Labor Quality	0.12	0.16	0.09	0.09	0.08	0.08	0.11
Reallocation of Hours	0.15	0.10	0.16	0.21	0.15	0.18	0.30
Aggregate TFP	0.68	1.08	0.29	0.57	1.03	0.96	-0.27
Growth Rates							
Aggregate Value-Added	2.95	3.56	2.64	2.32	4.30	2.14	0.54
Average Labor Productivity	1.93	2.45	1.33	1.91	2.39	2.22	1.12
Hours	1.01	1.11	1.31	0.41	1.91	-0.08	-0.58

Notes: Notes: All figures are average annual percentages. The contribution of an output or input is the growth rate multiplied by the average value share. IT capital includes computer hardware, computer software, and telecommunications equipment.

Appendix Table 4: Aggregate Reallocation Effects

	1947-2010	1947-1973	1973-1995	1995-2010	1995-2000	2000-2005	2005-2010
Aggregate Production Possibility Frontier vs. Aggregate Production Function							
Aggregate Production Function Value-Added	2.41	3.06	1.95	1.95	3.11	2.00	0.73
Aggregate Production Possibility Frontier Value-Added	2.95	3.56	2.64	2.32	4.30	2.14	0.54
Reallocation of Value-Added	-0.54	-0.50	-0.69	-0.37	-1.19	-0.14	0.19
Aggregate Production Possibility Frontier vs. Direct Aggregation Across Industries							
Aggregate TFP	0.68	1.08	0.29	0.57	1.03	0.96	-0.27
Domar-Weighted Productivity	0.66	1.05	0.23	0.61	1.12	0.88	-0.18
IT-Producing Industries	0.19	0.02	0.22	0.42	0.50	0.42	0.33
IT-Using Industries	0.24	0.38	0.08	0.25	0.47	0.44	-0.16
Non-IT Industries	0.23	0.64	-0.07	-0.06	0.15	0.02	-0.35
Reallocation of Capital Input	0.05	0.03	0.12	-0.02	-0.05	0.07	-0.09
Reallocation of Labor Input	-0.02	0.00	-0.06	-0.02	-0.05	0.01	-0.01

Notes: Notes: All figures are average annual percentages. The contribution of an output or input is the growth rate multiplied by the average value share.

Appendix Table 5: Industry Decomposition of Labor Productivity Growth

	1947-2010	1947-1973	1973-1995	1995-2010	1995-2000	2000-2005	2005-2010
Average Labor Productivity	1.93	2.45	1.33	1.910	2.39	2.22	1.12
Decomposition using Industry Gross Output Productivity							
Weighted dlny	1.98	2.23	1.64	2.040	3.23	2.32	0.58
IT-Producing Industries	0.15	0.06	0.16	0.270	0.40	0.18	0.23
IT-Using Industries	1.10	0.98	1.09	1.310	1.89	1.45	0.59
Other Industries	0.73	1.19	0.38	0.460	0.93	0.68	-0.24
Material Reallocation, $-R^M$	-0.17	-0.20	-0.26	0.01	-0.44	-0.02	0.48
Hours Reallocation, R^H	0.12	0.42	-0.05	-0.140	-0.40	-0.08	0.06
Decomposition using Industry Value-Added Productivity							
Weighted dlnv	1.81	2.04	1.38	2.050	2.79	2.30	1.06
IT-Producing Industries	0.23	0.04	0.27	0.510	0.61	0.53	0.40
IT-Using Industries	0.92	0.83	0.83	1.230	1.60	1.37	0.71
Other Industries	0.66	1.17	0.29	0.310	0.58	0.40	-0.05
Hours Reallocation, R^H	0.12	0.42	-0.05	-0.140	-0.40	-0.08	0.06

Note: Decomposition framework is defined in Equations (6.26) and (6.27).

Table 6: Industry Contributions to Aggregate Value-Added and TFP Growth, 1947-2010

	Value-Added			Productivity		
	V-A Weight	V-A Growth	Contribution to Aggregate V-A	Domar Weight	TFP Growth	Contribution to Aggregate TFP
Farms	0.027	2.55	0.061	0.054	1.54	0.087
Forestry fishing and related activities	0.003	1.46	0.005	0.007	-0.96	-0.007
Oil and gas extraction	0.011	-0.52	-0.001	0.018	-1.76	-0.036
Mining except oil and gas	0.006	0.50	-0.003	0.012	0.23	-0.003
Support activities for mining	0.002	2.58	0.005	0.006	0.22	-0.001
Utilities	0.021	2.71	0.053	0.036	0.14	-0.002
Construction	0.046	1.49	0.066	0.106	-0.16	-0.014
Wood products	0.004	1.46	0.007	0.014	0.35	0.004
Nonmetallic mineral products	0.007	1.04	0.012	0.014	0.16	0.002
Primary metals	0.014	-1.36	-0.008	0.040	-0.34	-0.018
Fabricated metal products	0.017	1.58	0.033	0.040	0.29	0.012
Machinery	0.019	2.58	0.057	0.038	0.40	0.013
Computer and electronic products	0.015	13.71	0.223	0.037	4.37	0.187
Electrical equipment appliances and compo	0.008	0.30	0.005	0.017	-0.52	-0.010
Motor vehicles bodies and trailers and parts	0.016	1.80	0.048	0.059	0.30	0.020
Other transportation equipment	0.012	1.44	0.024	0.028	-0.03	-0.001
Furniture and related products	0.004	1.81	0.009	0.009	0.61	0.005
Miscellaneous manufacturing	0.006	4.27	0.026	0.015	1.21	0.018
Food and beverage and tobacco products	0.022	1.10	0.035	0.096	0.07	0.017
Textile mills and textile product mills	0.007	2.14	0.022	0.022	1.10	0.027
Apparel and leather and allied products	0.008	0.45	0.019	0.024	0.66	0.018
Paper products	0.009	1.57	0.019	0.024	0.12	0.003
Printing and related support activities	0.005	1.83	0.011	0.013	0.24	0.003
Petroleum and coal products	0.006	6.83	0.024	0.034	0.47	0.011
Chemical products	0.019	3.36	0.066	0.049	0.44	0.018
Plastics and rubber products	0.007	3.39	0.025	0.016	0.48	0.008
Wholesale Trade	0.051	5.46	0.280	0.073	1.68	0.123
Retail Trade	0.068	3.39	0.233	0.109	0.98	0.108
Air transportation	0.004	9.32	0.032	0.010	2.10	0.016
Rail transportation	0.010	-0.55	-0.009	0.015	1.11	0.018
Water transportation	0.001	4.73	0.006	0.005	1.32	0.005
Truck transportation	0.010	4.47	0.044	0.019	1.04	0.020
Transit and ground passenger transportatior	0.003	-0.49	-0.006	0.005	-0.24	-0.003
Pipeline transportation	0.001	4.50	0.005	0.003	1.40	0.004
Other transportation and support activities	0.007	2.23	0.017	0.011	0.22	0.003
Warehousing and storage	0.002	3.57	0.009	0.003	1.07	0.003
Publishing industries (includes software)	0.009	4.73	0.042	0.019	1.17	0.022
Motion picture and sound recording industr	0.004	1.51	0.003	0.006	-0.21	-0.003
Broadcasting and telecommunications	0.022	6.00	0.130	0.035	1.37	0.048
Information and data processing services	0.003	4.67	0.015	0.005	-1.59	-0.003
Federal Reserve banks credit intermediatior	0.026	3.83	0.093	0.042	-0.80	-0.036

Table 6: Industry Contributions to Aggregate Value-Added and TFP Growth, 1947-2010

	Value-Added			Productivity		
	V-A Weight	V-A Growth	Contribution to Aggregate V-A	Domar Weight	TFP Growth	Contribution to Aggregate TFP
Securities commodity contracts and invest	0.006	8.56	0.068	0.013	1.14	0.034
Insurance carriers and related activities	0.019	3.66	0.064	0.036	-0.34	-0.011
Funds trusts and other financial vehicles	0.001	1.16	0.001	0.005	-0.52	-0.003
Real estate	0.105	3.32	0.340	0.137	0.99	0.131
Rental and leasing services and lessors of ir	0.010	4.45	0.042	0.014	-2.03	-0.029
Legal services	0.010	2.72	0.021	0.014	-0.94	-0.015
Computer systems design and related servic	0.005	6.57	0.035	0.007	-0.55	0.002
Miscellaneous professional scientific and te	0.025	4.66	0.103	0.038	-0.26	-0.011
Management of companies and enterprises	0.014	2.35	0.032	0.022	-0.32	-0.009
Administrative and support services	0.014	5.17	0.065	0.021	0.58	0.010
Waste management and remediation service	0.002	3.91	0.008	0.005	0.59	0.003
Educational services	0.007	3.04	0.019	0.012	-0.25	-0.005
Ambulatory health care services	0.021	3.58	0.071	0.032	-0.05	-0.006
Hospitals Nursing and residential care facili	0.019	2.92	0.046	0.031	-0.73	-0.027
Social assistance	0.003	5.84	0.014	0.005	1.67	0.004
Performing arts spectator sports museums a	0.003	3.39	0.011	0.006	0.75	0.004
Amusements gambling and recreation indu	0.004	2.90	0.011	0.006	-0.20	-0.002
Accommodation	0.007	3.32	0.022	0.011	0.44	0.005
Food services and drinking places	0.017	0.59	0.009	0.037	-0.73	-0.029
Other services except government	0.027	1.48	0.041	0.043	-0.87	-0.037
Federal General government	0.053	-0.05	-0.010	0.086	-0.21	-0.019
Federal Government enterprises	0.007	0.73	0.006	0.009	-0.46	-0.004
S&L Government enterprises	0.008	1.99	0.017	0.014	-0.72	-0.011
S&L General Government	0.073	2.67	0.176	0.102	0.08	-0.001
Sum	1.000		2.947	1.887		0.658

Notes: All figures are annual averages. Value-added weights are industry value-added as a share of aggregate value-added. Domar weights are industry output as a share of aggregate value-added. A contribution is a share-weighted growth rate.

Table 7: Industry Contributions to Aggregate Capital and Labor Input Growth, 1947-2010

	Capital			Labor		
	Total	IT	Non-IT	Total	College	Non-College
Farms	0.015	0.000	0.014	-0.041	0.001	-0.042
Forestry fishing and related activities	0.008	0.001	0.007	0.004	0.001	0.003
Oil and gas extraction	0.032	0.002	0.030	0.003	0.002	0.001
Mining except oil and gas	0.005	0.000	0.004	-0.005	0.000	-0.005
Support activities for mining	0.004	0.001	0.004	0.001	0.001	0.000
Utilities	0.049	0.006	0.044	0.006	0.003	0.002
Construction	0.018	0.004	0.014	0.062	0.016	0.045
Wood products	0.003	0.001	0.003	0.000	0.001	-0.001
Nonmetallic mineral products	0.008	0.002	0.005	0.002	0.001	0.000
Primary metals	0.016	0.004	0.013	-0.006	0.002	-0.008
Fabricated metal products	0.011	0.004	0.007	0.010	0.004	0.006
Machinery	0.039	0.013	0.026	0.005	0.004	0.001
Computer and electronic products	0.020	0.011	0.009	0.017	0.013	0.004
Electrical equipment appliances and compo	0.014	0.002	0.012	0.002	0.002	0.000
Motor vehicles bodies and trailers and parts	0.022	0.007	0.016	0.006	0.005	0.001
Other transportation equipment	0.015	0.003	0.011	0.011	0.007	0.004
Furniture and related products	0.002	0.000	0.001	0.002	0.001	0.001
Miscellaneous manufacturing	0.005	0.002	0.003	0.002	0.003	-0.001
Food and beverage and tobacco products	0.018	0.004	0.013	0.001	0.004	-0.003
Textile mills and textile product mills	0.002	0.001	0.002	-0.007	0.001	-0.008
Apparel and leather and allied products	0.005	0.001	0.004	-0.004	0.001	-0.005
Paper products	0.011	0.002	0.010	0.005	0.002	0.003
Printing and related support activities	0.003	0.001	0.002	0.005	0.003	0.003
Petroleum and coal products	0.014	0.003	0.011	0.000	0.001	-0.001
Chemical products	0.038	0.009	0.030	0.010	0.009	0.001
Plastics and rubber products	0.010	0.001	0.009	0.008	0.002	0.006
Wholesale Trade	0.100	0.026	0.075	0.057	0.031	0.027
Retail Trade	0.064	0.017	0.047	0.062	0.027	0.035
Air transportation	0.009	0.005	0.004	0.007	0.003	0.004
Rail transportation	-0.002	0.001	-0.003	-0.024	0.000	-0.024
Water transportation	0.000	0.001	0.000	0.000	0.001	0.000
Truck transportation	0.009	0.001	0.008	0.015	0.002	0.012
Transit and ground passenger transportatior	-0.002	0.001	-0.003	-0.001	0.001	-0.001
Pipeline transportation	0.002	0.001	0.001	-0.001	0.000	-0.001
Other transportation and support activities	0.003	0.002	0.001	0.011	0.004	0.007
Warehousing and storage	0.001	0.000	0.001	0.005	0.001	0.004
Publishing industries (includes software)	0.012	0.009	0.003	0.008	0.009	-0.001
Motion picture and sound recording industr	0.006	0.002	0.004	0.001	0.002	-0.001
Broadcasting and telecommunications	0.071	0.048	0.023	0.011	0.007	0.004
Information and data processing services	0.013	0.009	0.004	0.005	0.003	0.002
Federal Reserve banks credit intermediatior	0.099	0.040	0.059	0.030	0.018	0.012

Table 7: Industry Contributions to Aggregate Capital and Labor Input Growth, 1947-2010

	Capital			Labor		
	Total	IT	Non-IT	Total	College	Non-College
Securities commodity contracts and invest	0.013	0.012	0.002	0.021	0.018	0.003
Insurance carriers and related activities	0.051	0.026	0.025	0.025	0.017	0.008
Funds trusts and other financial vehicles	0.004	0.001	0.002	0.000	0.001	0.000
Real estate	0.193	0.005	0.233	0.016	0.009	0.007
Rental and leasing services and lessors of ir	0.066	0.025	0.041	0.005	0.002	0.003
Legal services	0.025	0.010	0.015	0.011	0.010	0.001
Computer systems design and related servic	0.013	0.009	0.004	0.020	0.015	0.005
Miscellaneous professional scientific and te	0.058	0.032	0.026	0.056	0.040	0.016
Management of companies and enterprises	0.028	0.019	0.009	0.013	0.018	-0.005
Administrative and support services	0.017	0.010	0.007	0.038	0.012	0.026
Waste management and remediation service	0.003	0.000	0.002	0.003	0.001	0.002
Educational services	0.007	0.003	0.004	0.017	0.014	0.003
Ambulatory health care services	0.018	0.004	0.015	0.059	0.035	0.024
Hospitals Nursing and residential care facili	0.027	0.005	0.022	0.046	0.022	0.023
Social assistance	0.002	0.000	0.001	0.008	0.003	0.005
Performing arts spectator sports museums a	0.002	0.001	0.001	0.005	0.004	0.001
Amusements gambling and recreation indus	0.005	0.001	0.005	0.007	0.002	0.005
Accommodation	0.008	0.001	0.007	0.010	0.003	0.007
Food services and drinking places	0.008	0.001	0.006	0.031	0.007	0.024
Other services except government	0.020	0.004	0.016	0.059	0.017	0.042
Federal General government	0.002	0.005	-0.003	0.007	0.013	-0.006
Federal Government enterprises	0.009	0.001	0.008	0.001	0.001	0.000
S&L Government enterprises	0.017	0.002	0.015	0.010	0.003	0.008
S&L General Government	0.079	0.010	0.070	0.098	0.074	0.024
Sum	1.441	0.429	1.057	0.848	0.536	0.311

Notes: All figures are annual averages. Value-added weights are industry value-added as a share of aggregate value-added. Domar weights are industry output as a share of aggregate value-added. A contribution is a share-weighted growth rate.