

Education, Participation, and the Revival of U.S. Economic Growth

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World KLEMS Conference 2016
BBVA Foundation, Madrid,
May 23-24, 2016



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Education, Participation, and the Revival of U.S. Economic Growth

Sources of U.S. Economic Growth 1947-2014
from a Prototype Industry Account

BEA/BLS Industry Production Account 1998-2013

Education, Aging and Labor Force Participation

Future U.S. Economic Growth, 2014-2024

Fig. Annual GDP growth 1947-2015

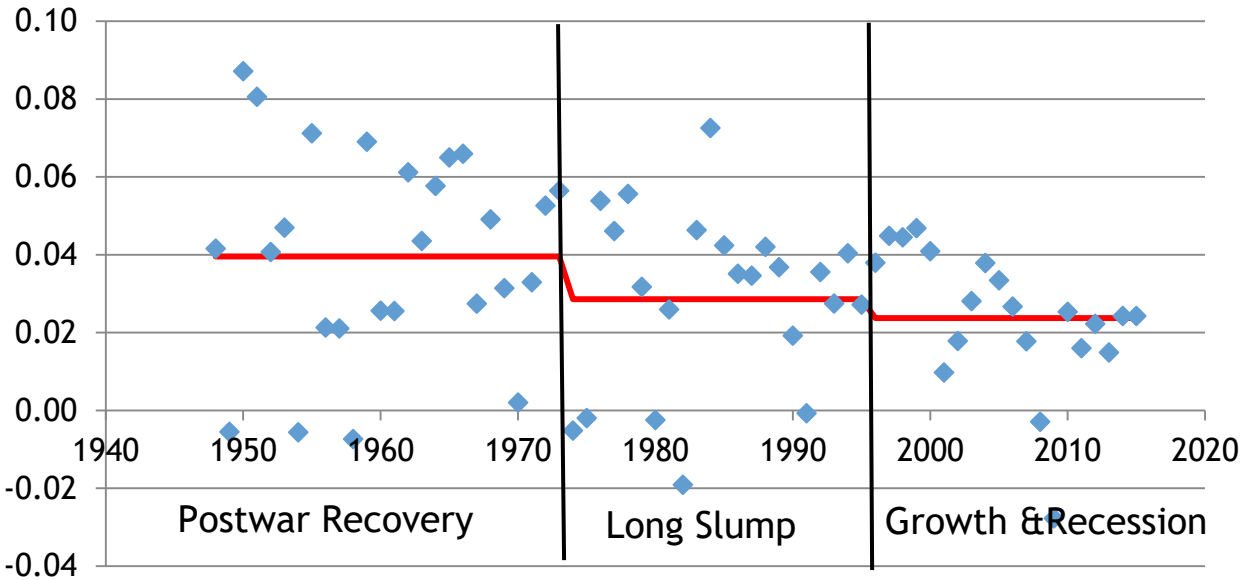
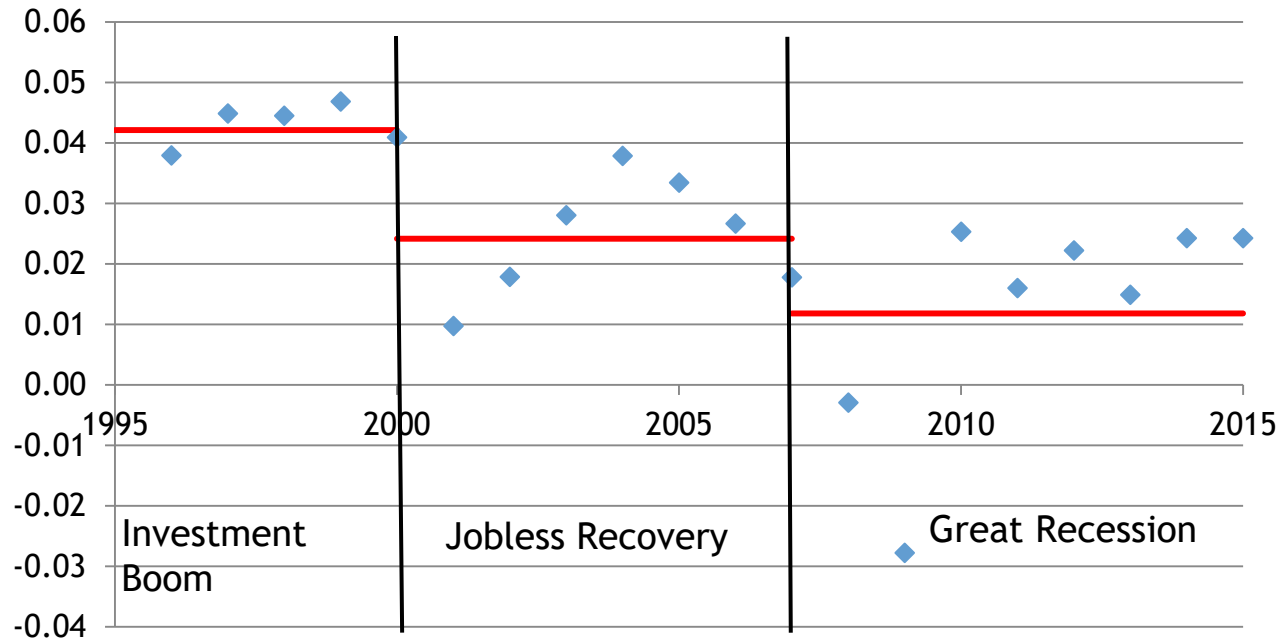


Fig. Annual GDP growth 1995-2015



LABOR INPUT

Contribution of Education, Age, and Gender to
Labor Quality Growth

Educational Attainment of the Labor Force

Labor Force Participation

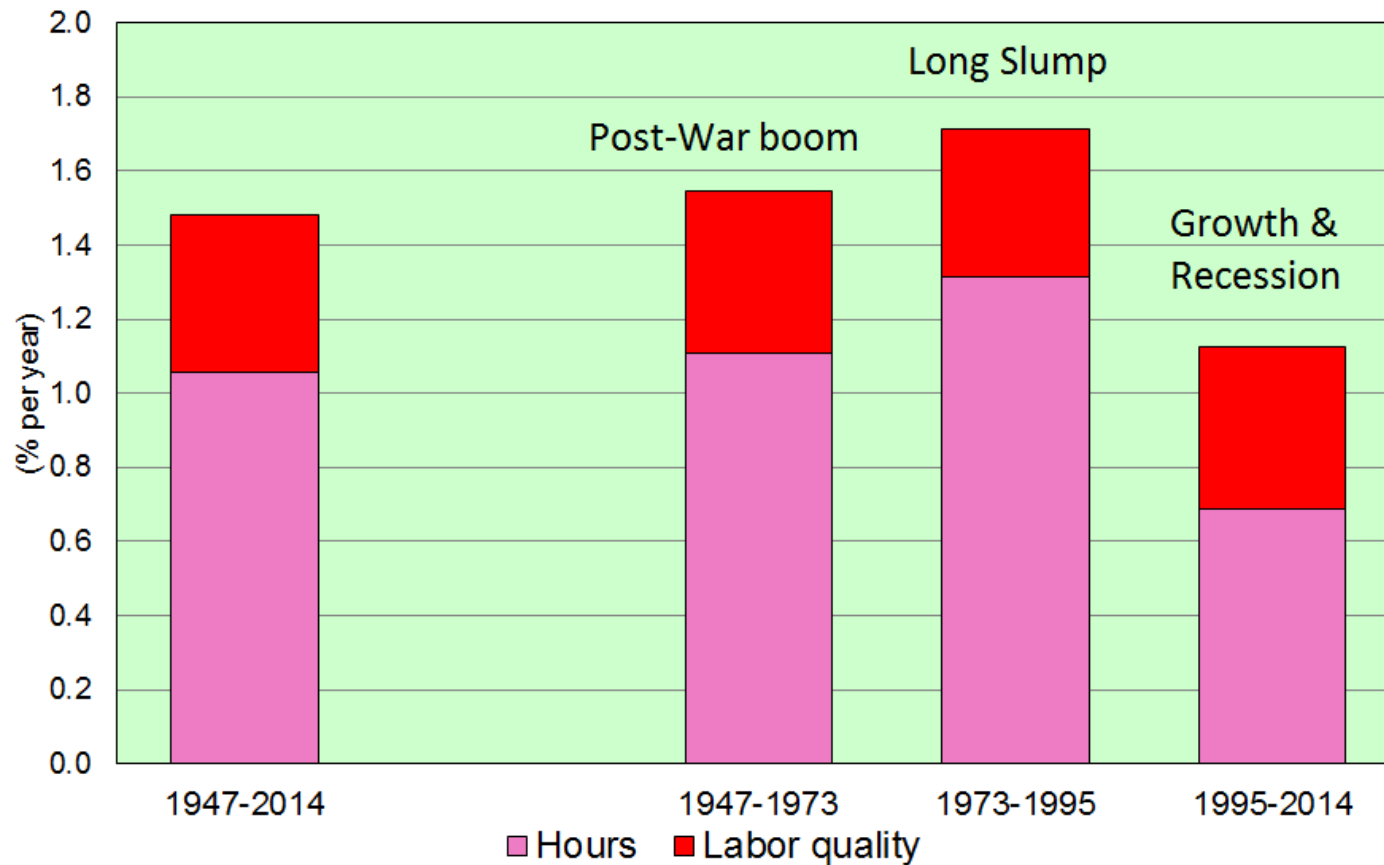
Compensation trends

LABOR INPUT

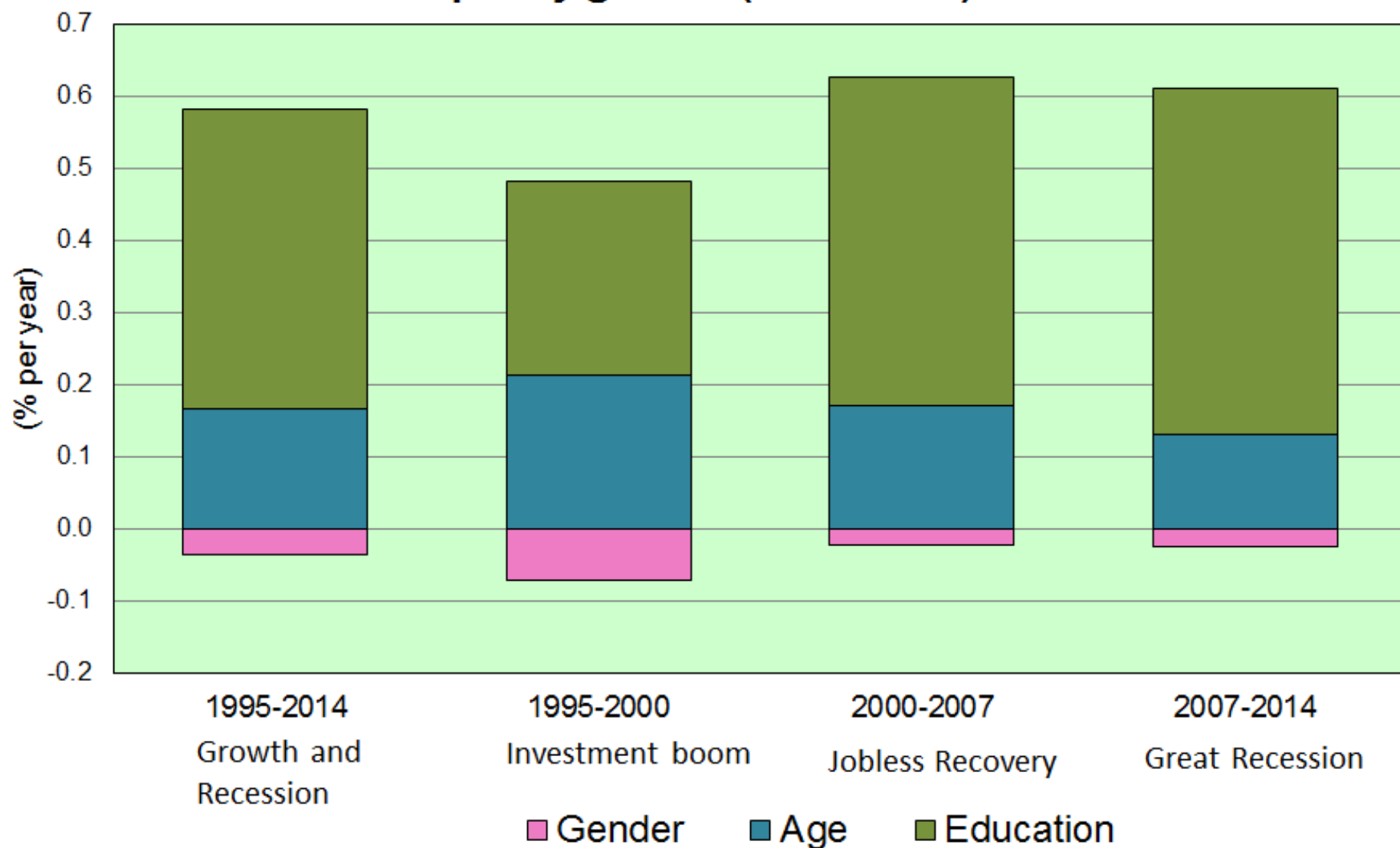
Effective labor input = Hours worked * Quality

Quality depends on age-sex-education composition of workers and their relative wages

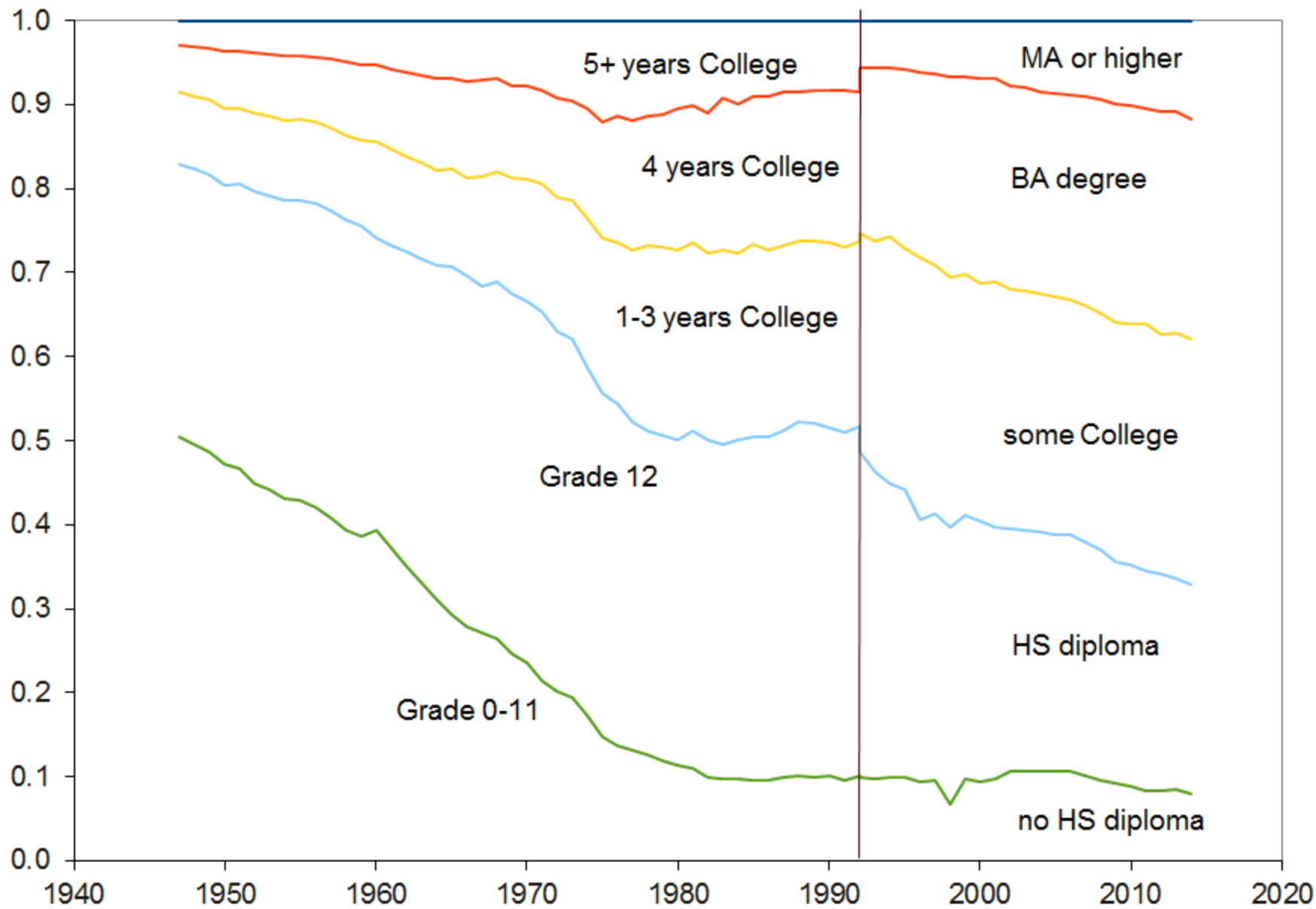
Contribution of labor quality to total labor input growth



Contribution of education, age and gender to labor quality growth (1995-2014)

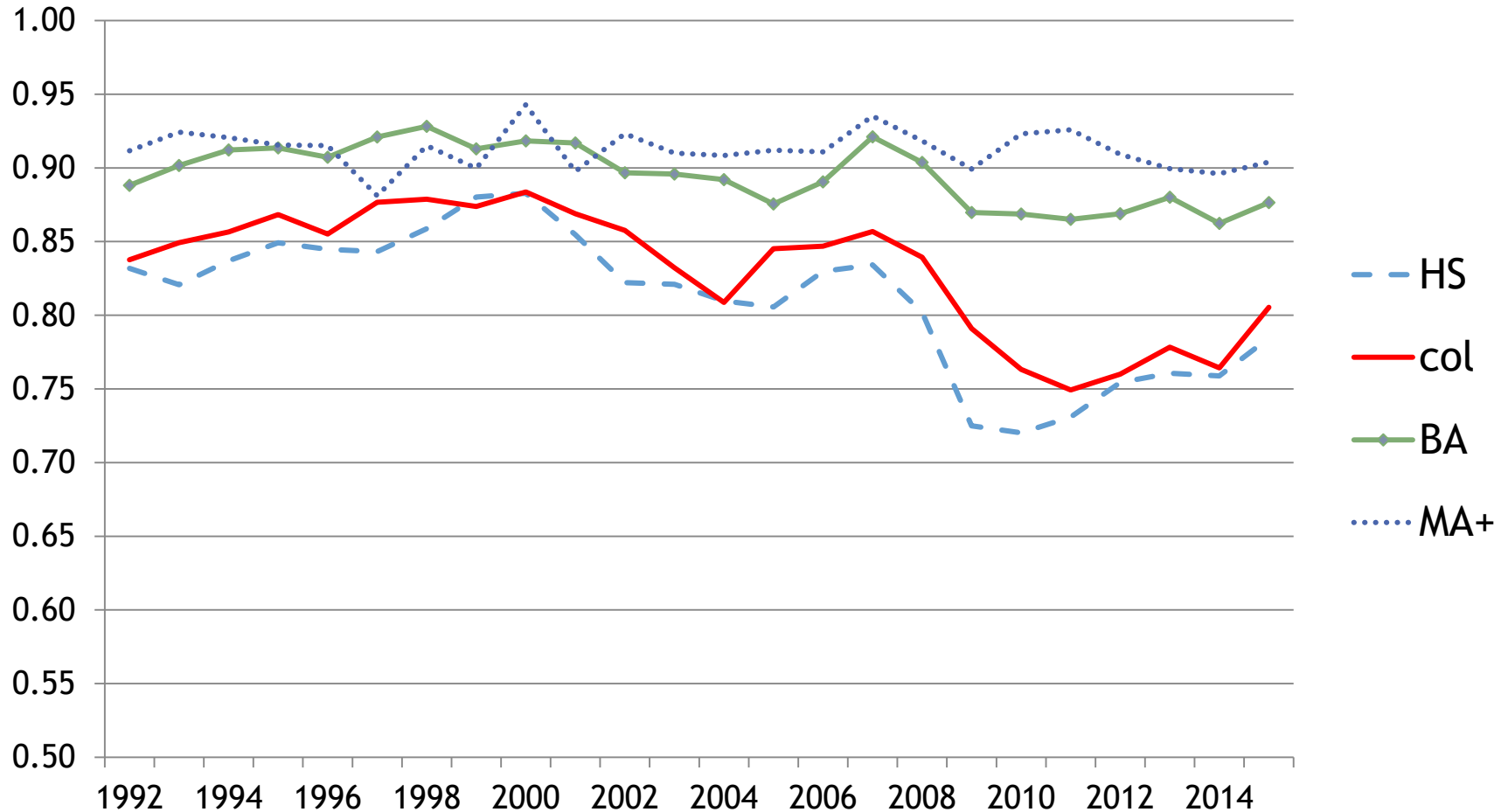


Education attainment of workers aged 25-34



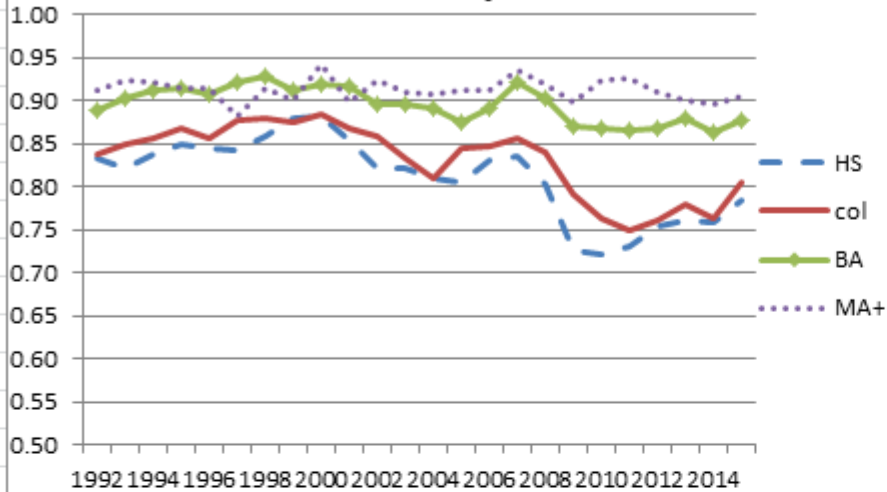
Employment participation (excluding unemp.)

Male; 25:34years old

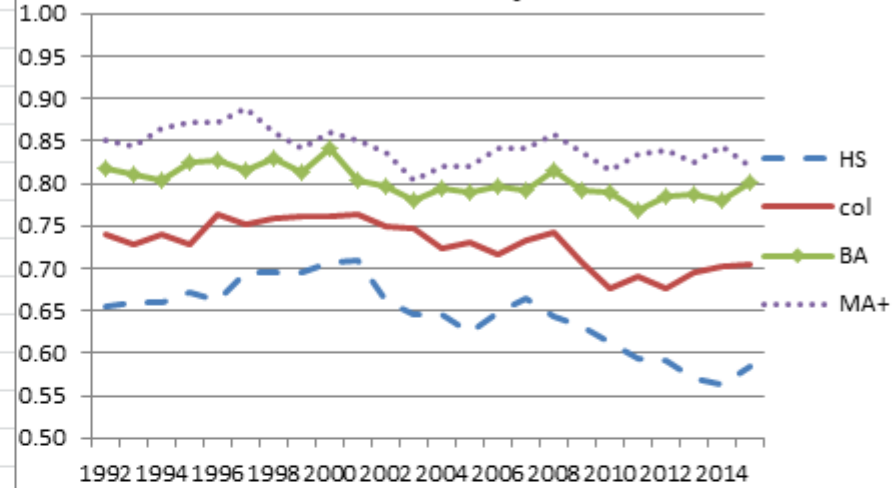


Employment Participation Rates by Gender, Age, and Education

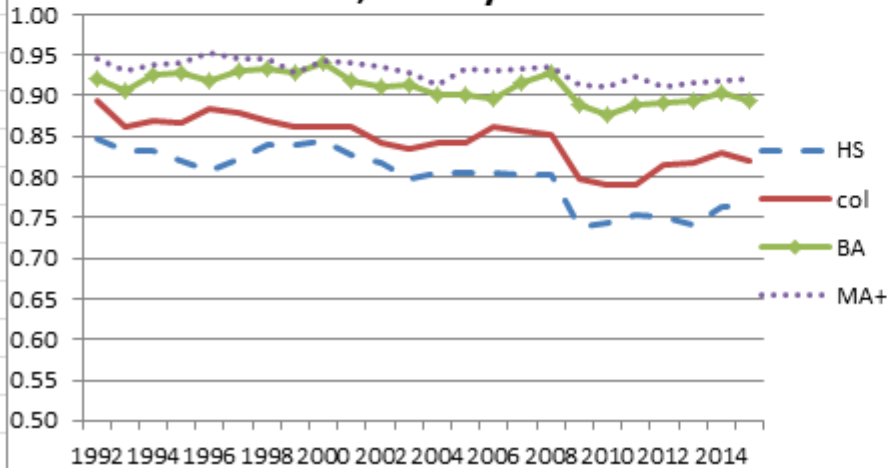
Male; 25:34years old



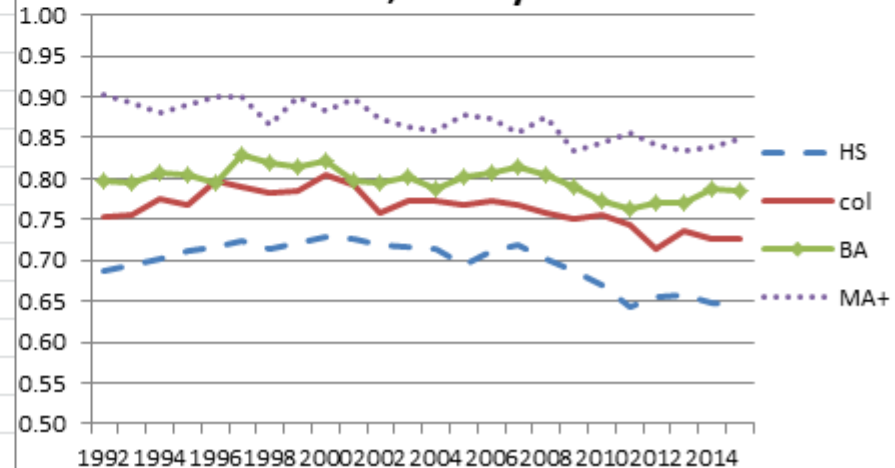
Female; 25:34years old



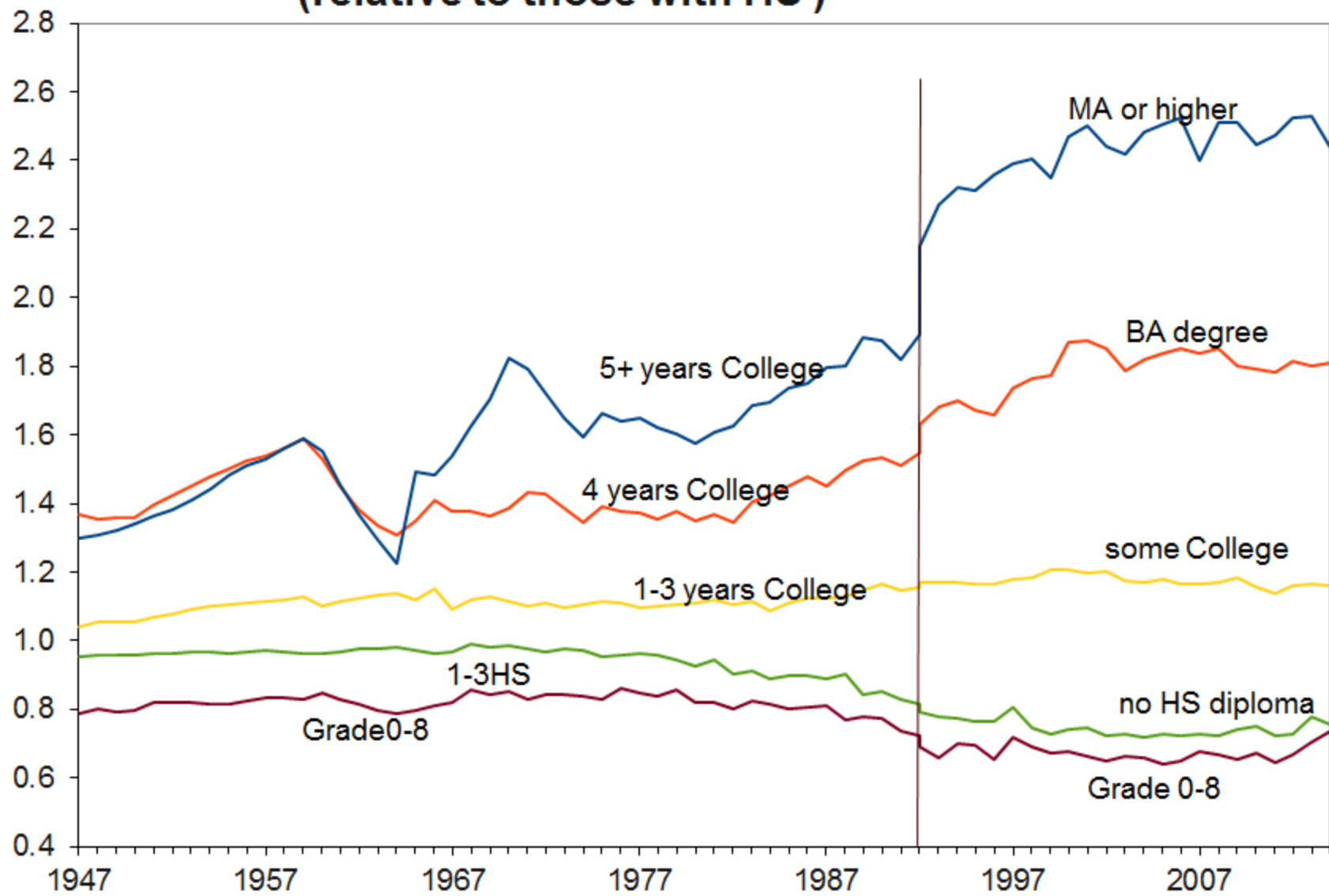
Male; 45:54years old



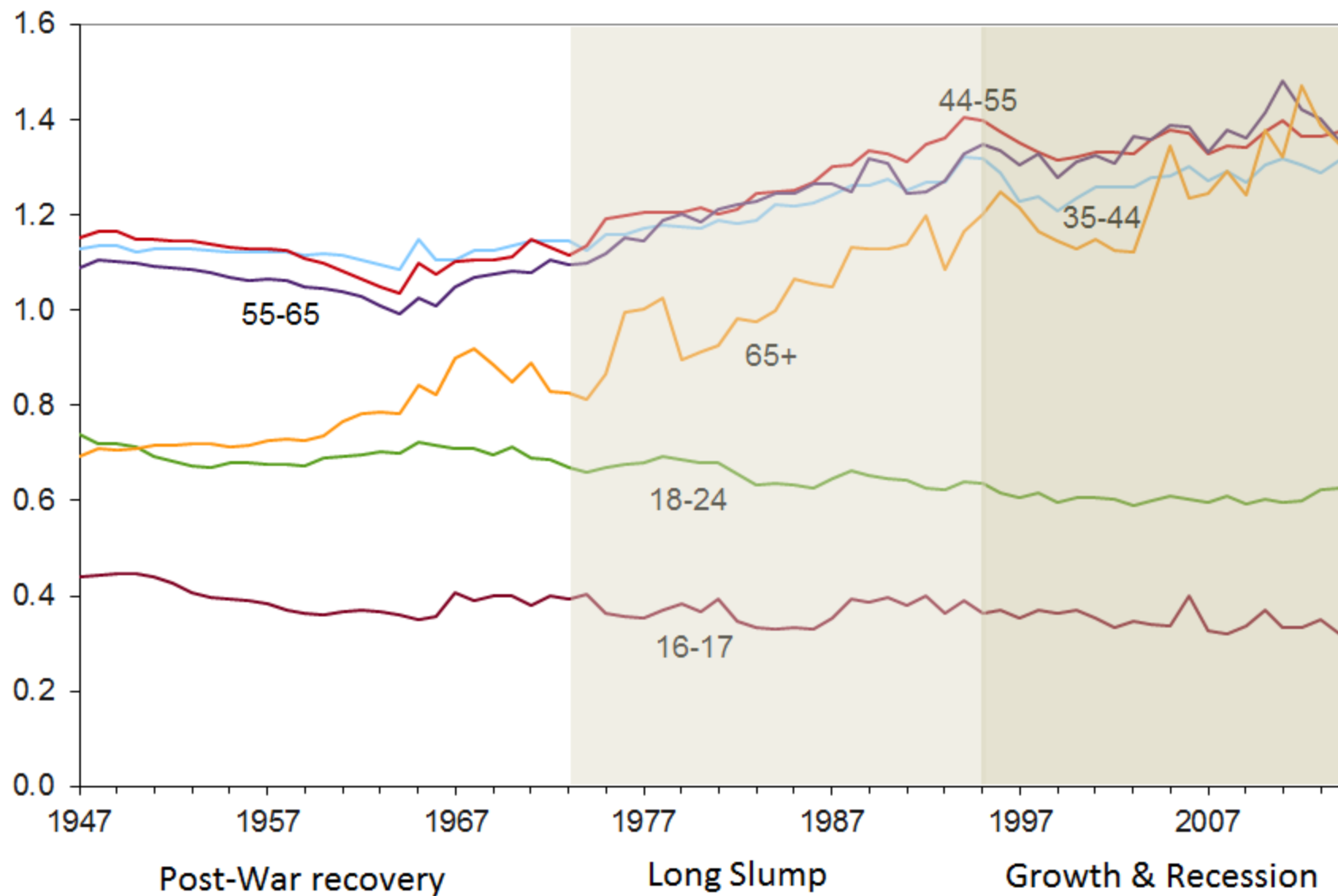
Female; 45:54years old



Compensation by education attainment (relative to those with HS)



Compensation by age relative to 25-34 year olds



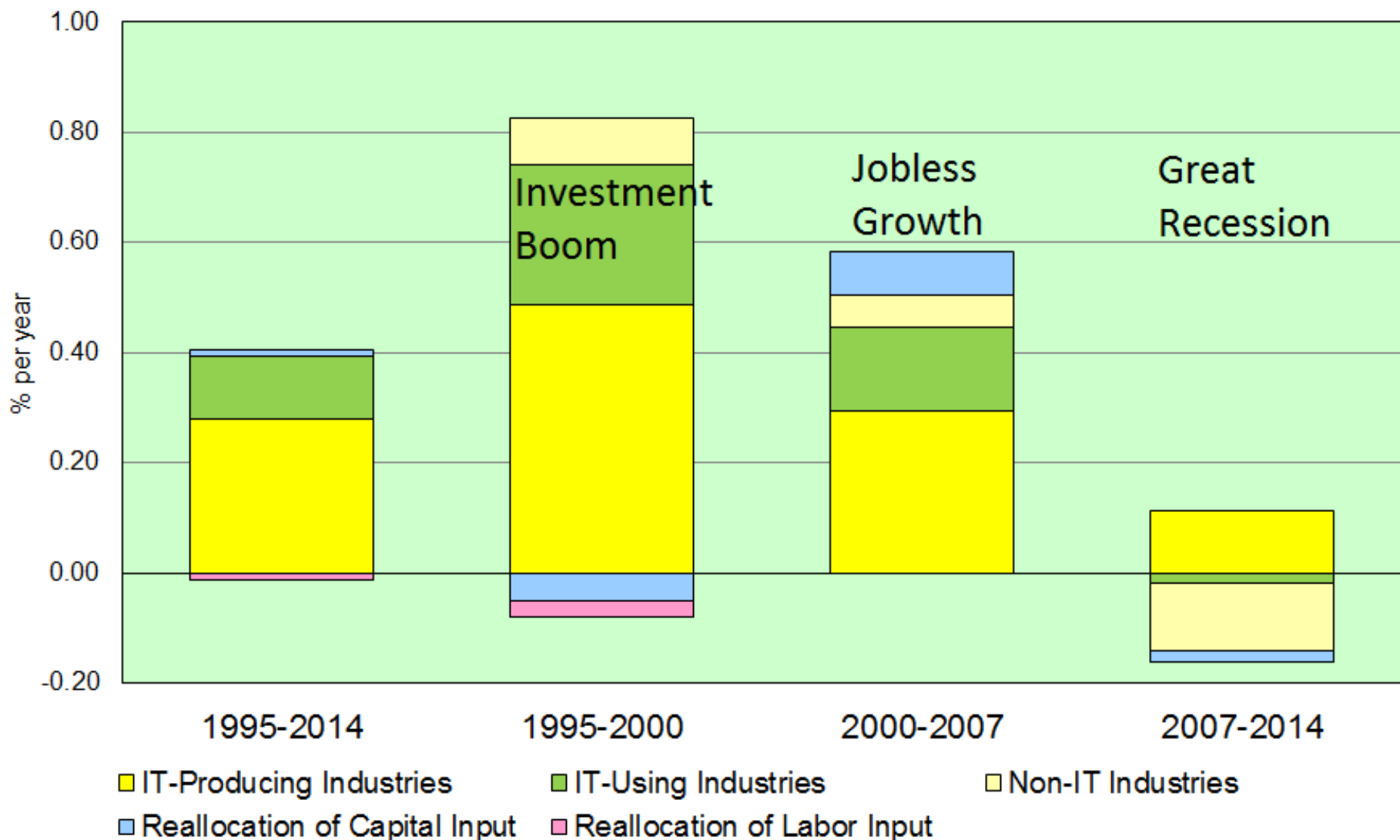
SOURCES OF U.S. ECONOMIC GROWTH

Contribution of Industry Groups to Productivity Growth

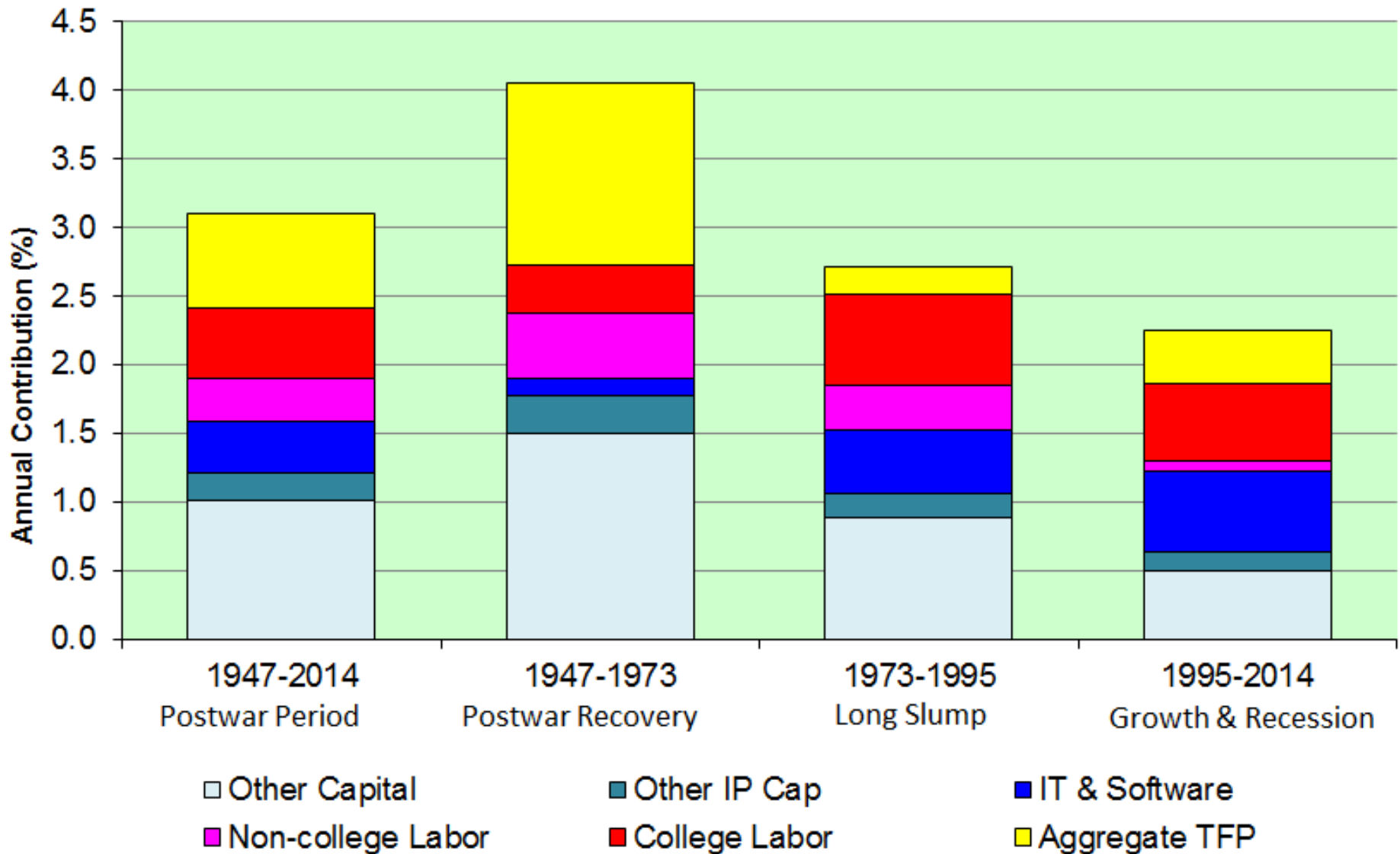
Sources of U.S. Economic Growth, 1947-2014

Sources of U.S. Economic Growth, 1995-2014

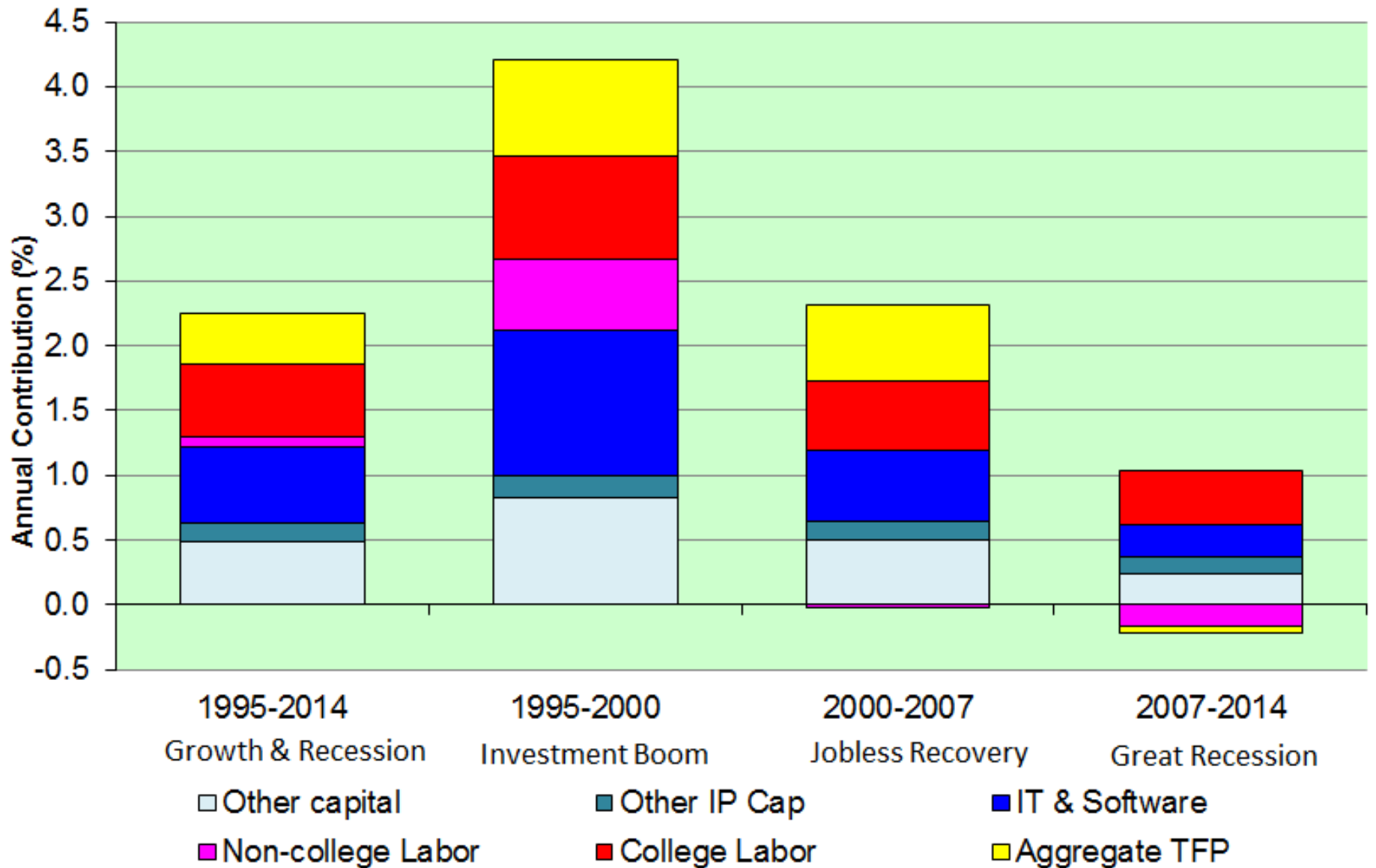
Contribution of Industries to Aggregate Productivity Growth, 1995-2014



Sources of U.S. Economic Growth, 1947-2014



Sources of U.S. Economic Growth, 1995-2014



PROJECTIONS OF FUTURE U.S. ECONOMIC GROWTH

Contribution of Industry Groups to Productivity
Growth

Labor Productivity Projections: Low Growth, Base
Case, High Growth

Potential Growth Projections: Low Growth, Base
Case, High Growth

Projection method and assumptions

Long run condition: Output growth = K^R growth

$$\Delta \ln y^P = \frac{1}{1 - \bar{v}_K \bar{\mu}_R} \times$$
$$[\bar{v}_K \Delta \ln KQ - \bar{v}_K (1 - \bar{\mu}_R) \Delta \ln H + \bar{v}_L \Delta \ln LQ + \bar{u}_{ITP} \Delta \ln A_{ITP} + \bar{u}_{ITU} \Delta \ln A_{ITU} + \bar{u}_{NIT} \Delta \ln A_{NIT}]$$

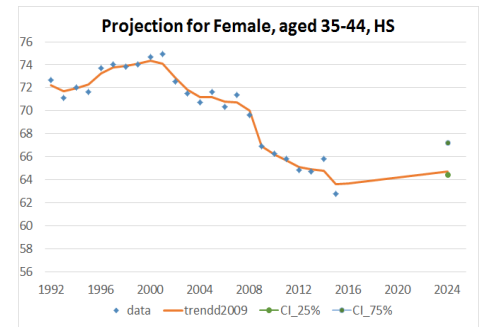
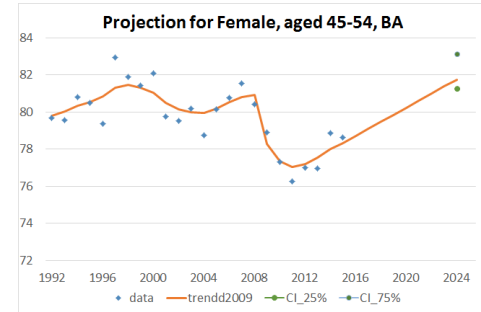
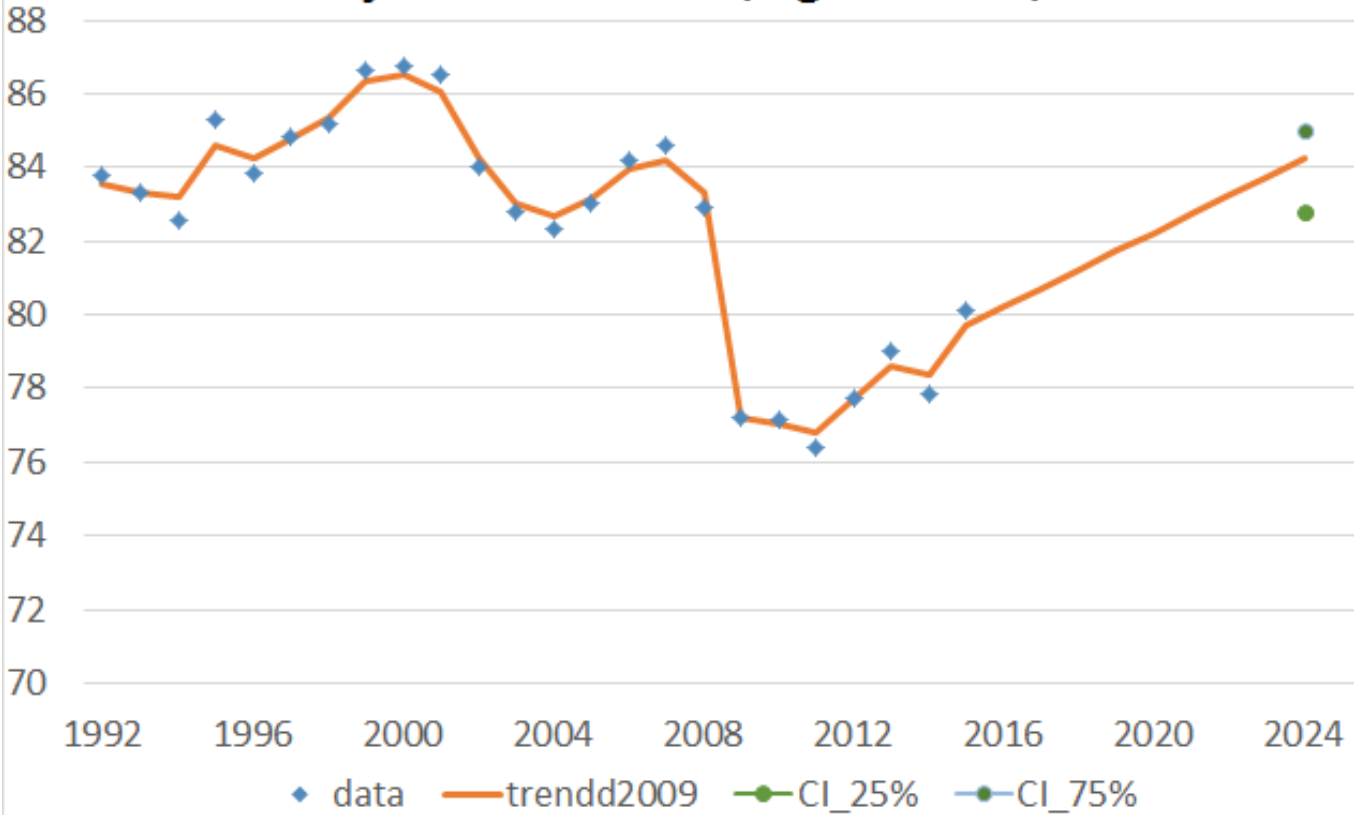
Labor Productivity = Capital quality
+ (land share)*Hours
+ Labor quality
+ TFP (IT producers)
+ TFP (IT users)
+ TFP (non-IT)

Hours = Population * Participation * weekly hours

GDP = Labor Productivity + Hours

Projections of participation rates

Projection for Male, aged 35-44, HS



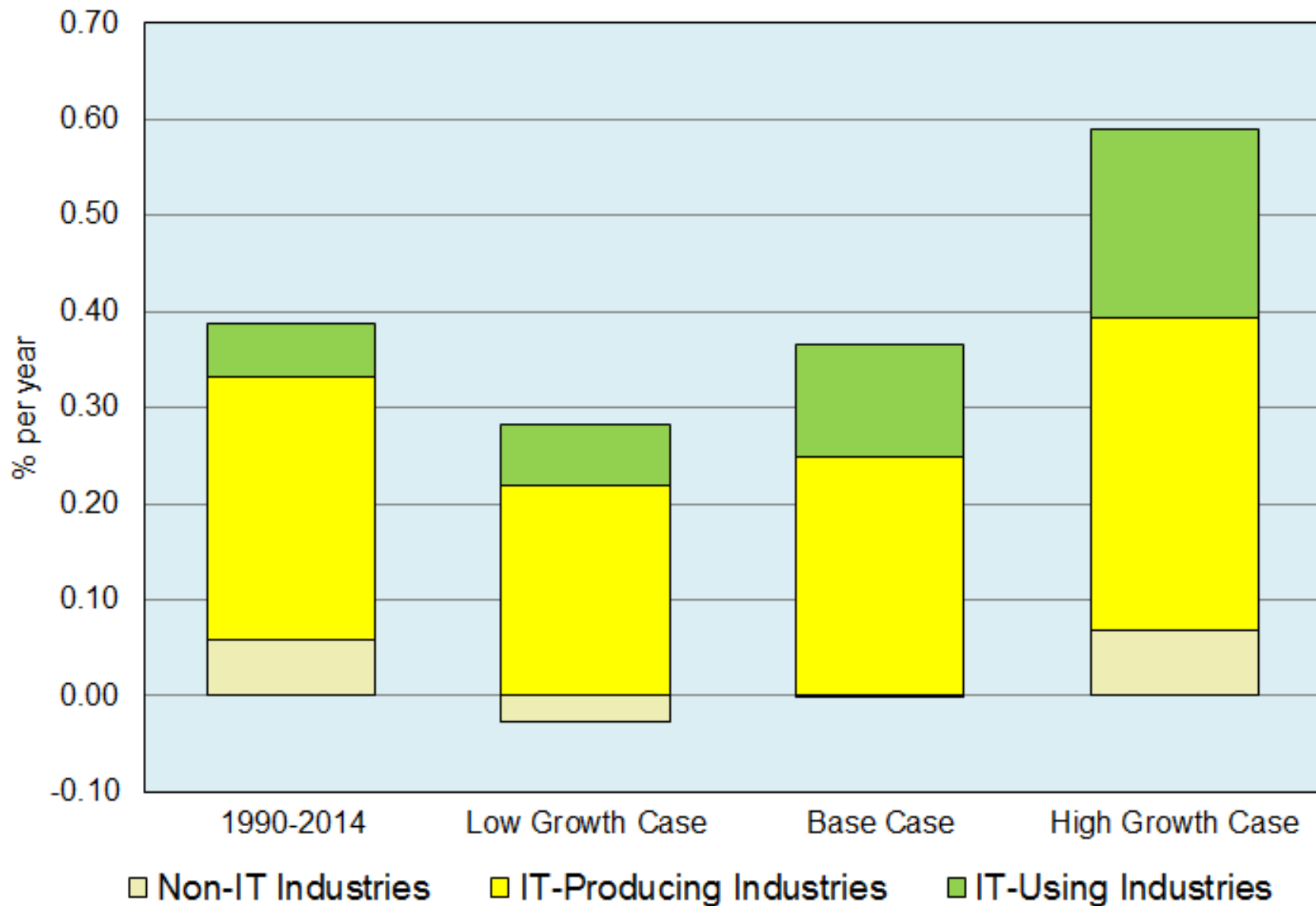
3 projection scenarios: Base, Low, High

Assumptions common to all 3 scenarios:

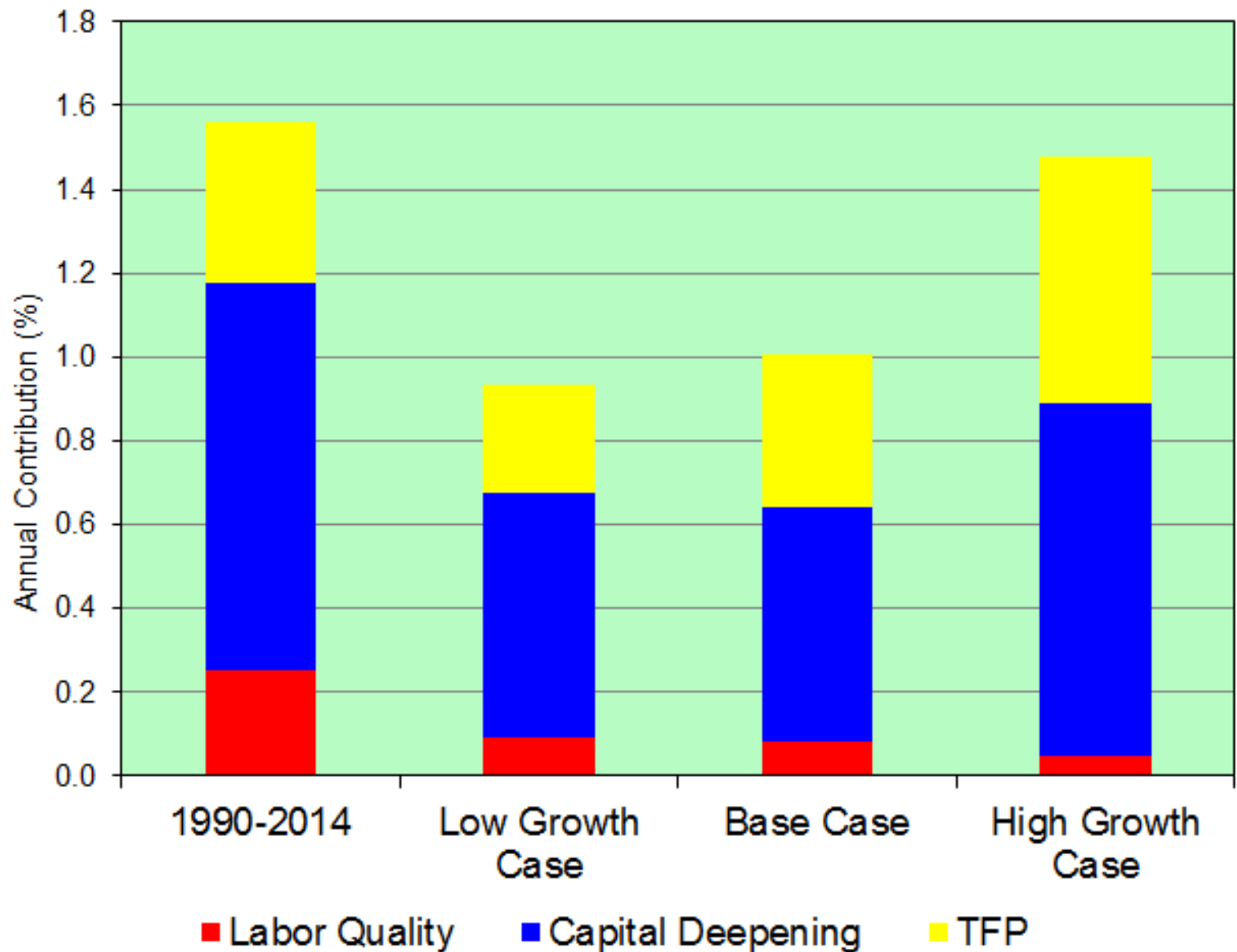
capital/GDP, IT-Prod VA/GDP, IT-using VA/GDP, hours/week

	Low	Base case	High
Work Participation	25% CI	Trend proj.	75% CI
Resulting Labor quality growth	0.16% p.a.	0.15%	0.09%
Capital quality growth	1973-2014 mean	1995-2014	1995-2007
TFP growth	1973-2014 mean	1995-2014	1995-2007
Implied capital deepening	0.59% p.a.	0.56%	0.84%

Contribution of Industry Groups to Aggregate Productivity, 2014-2024



Range of Labor Productivity Projections, 2014-2024



Range of U.S. Potential Output Projections, 2014-2024

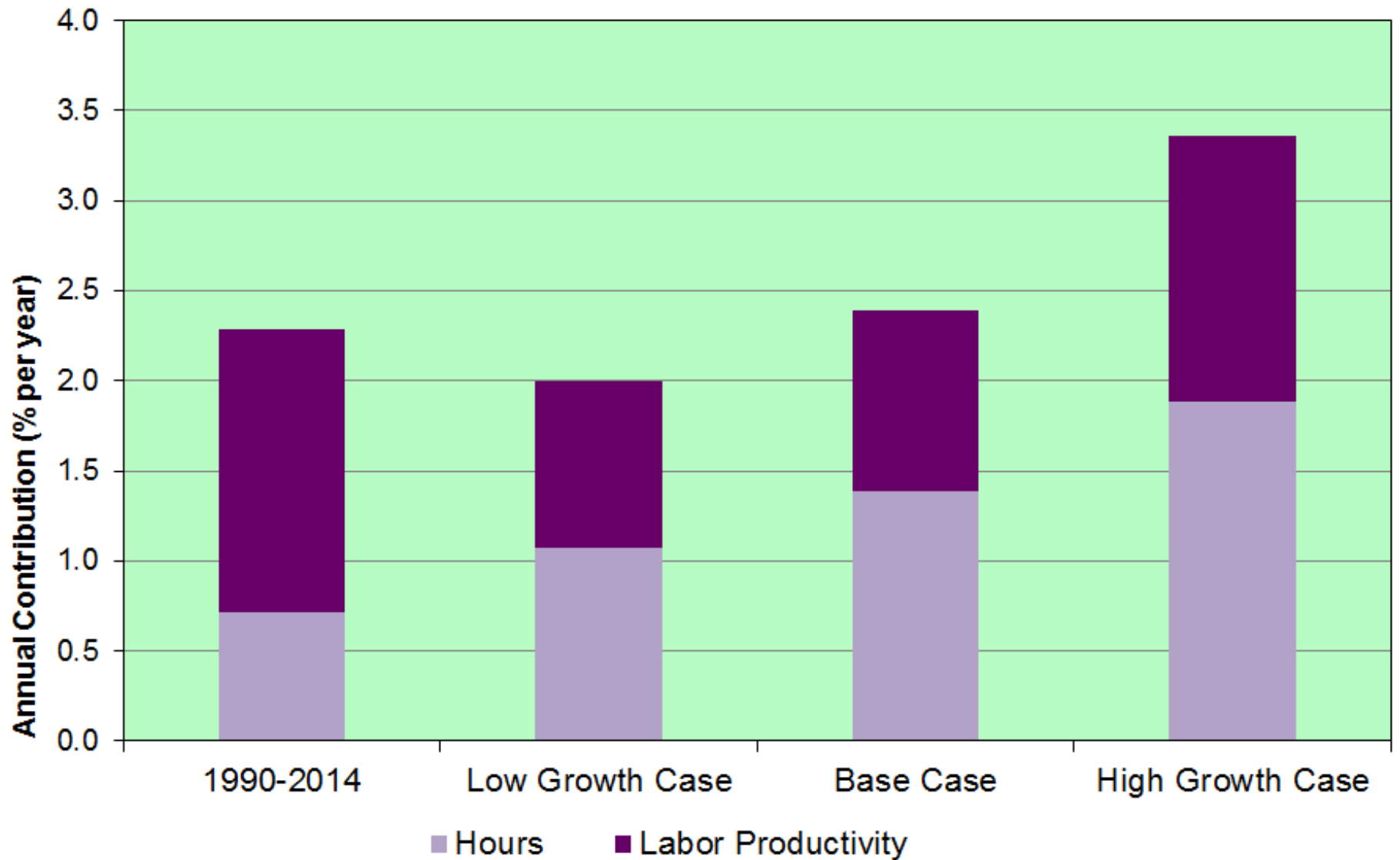


Table 9. Comparison of growth projections (% per year)

Source	Projection period	ALP	Hours	GDP	TFP	Capital Deepng	Labor quality
CBO(2015)	2015-25	1.6	0.5	2.1	1.4(NFB)		
Fernald (2014)	long run	1.8			0.85	0.95	0
Gordon(2014)	25-40 years	1.3					
JHS(2016)	base case	1.0	1.4	2.4	0.36	0.56	0.15

CONCLUSIONS

Productivity Accounts for Twenty Percent of U.S.
Economic Growth

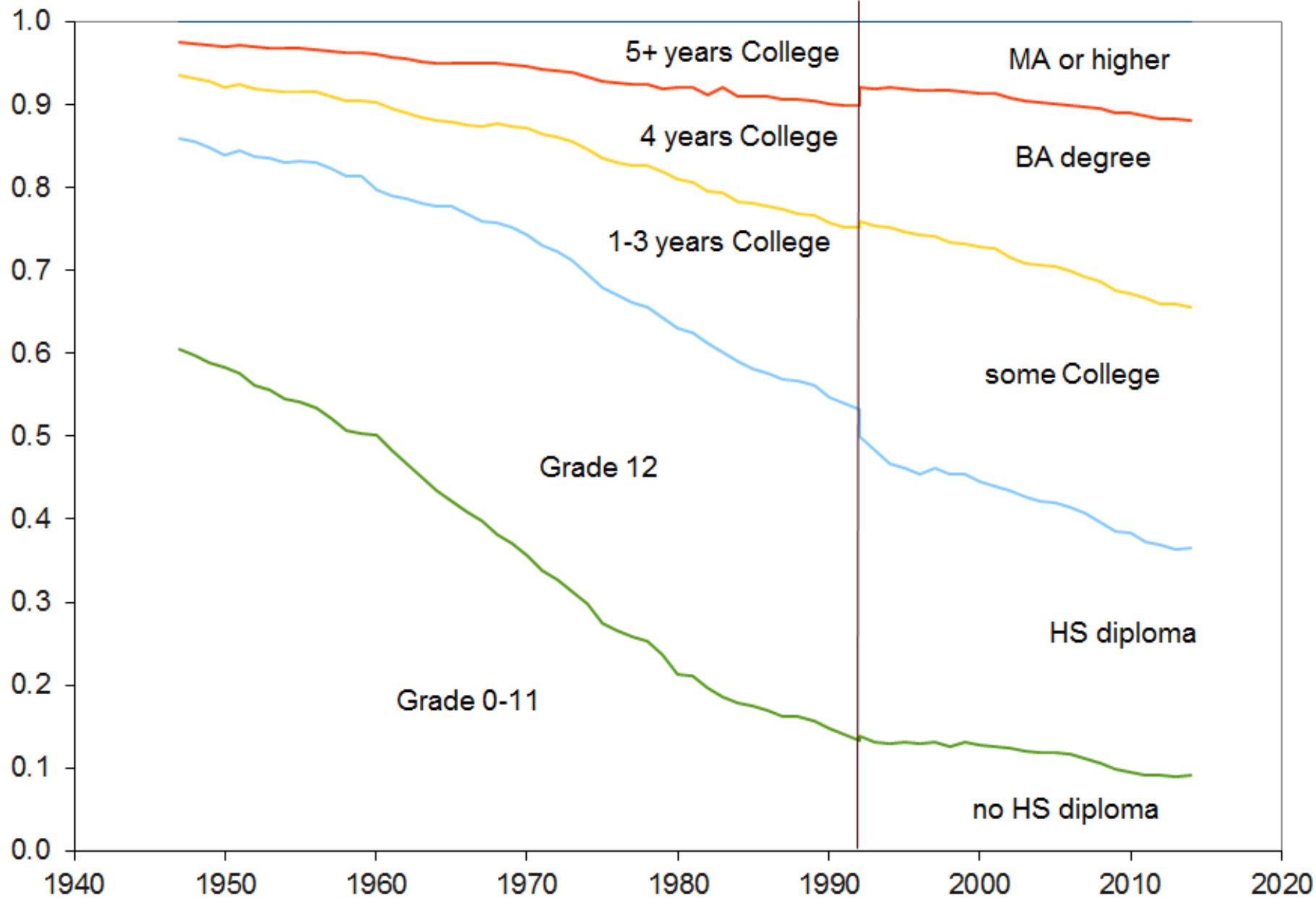
IT Accounts for Almost All Productivity Growth During
the Great Recession

Restoration of U.S. Economic Growth Will Require a
Revival of Investment

Raising Participation Rates of Young, Less-Educated
Workers Will Also Be Essential

Extra slides

Education attainment of work force



Share of male population with BA degrees by age; 2000, 2010 Censuses and projected

