

BROOKINGS

QUALITY. INDEPENDENCE. IMPACT.

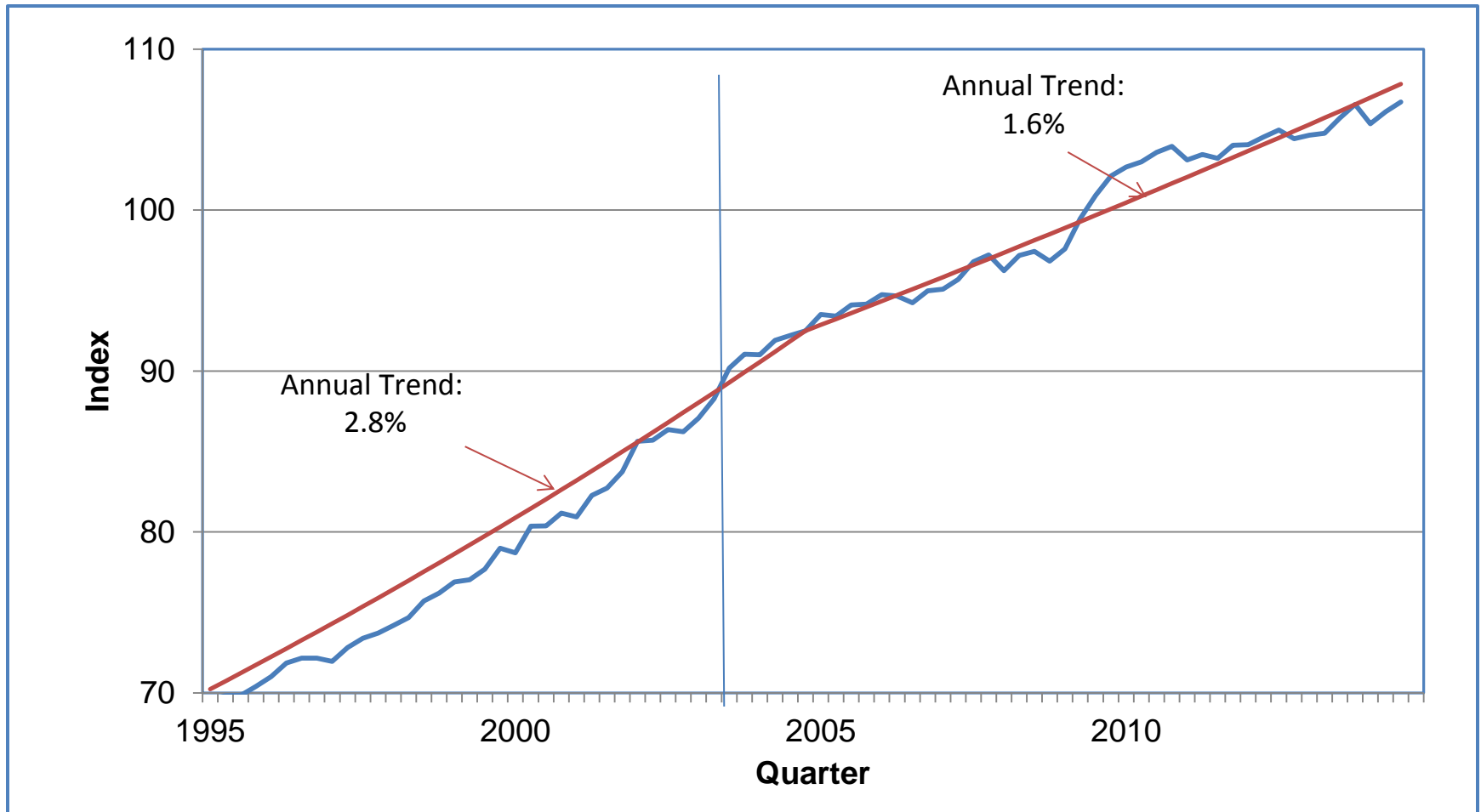
Why is Productivity Growth So Slow?

April 8, 2015
9:15 – 10:30 am

Martin Neil Baily and Barry P. Bosworth
Brookings

Productivity Growth Slowed Sharply Around 2005

Output per hour in the Nonfarm Business Sector, 1995-2014



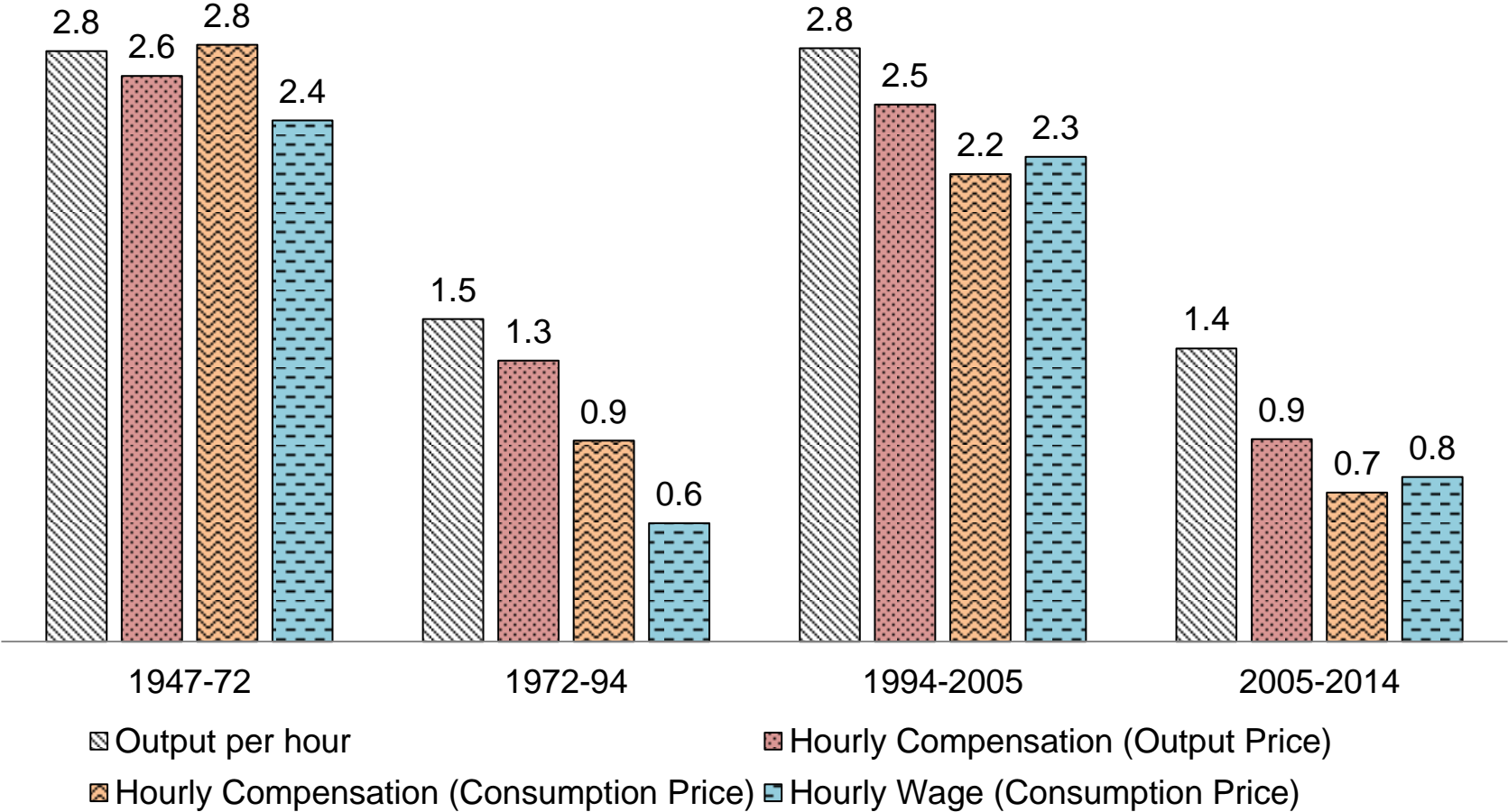
Going Back Further, There Have Been Four Productivity Waves or Episodes

- Fast growth 1947-1972 (2.8 % per annum)
 - Gordon extends data back to 1891 (2.4% per annum)
 - Slow growth 1972-94 (1.5%)
 - Broad slowdown, somewhat worse in services
 - Fast growth 1994-2005 (2.8%)
 - Information technology, internet-led productivity revival
 - Slow growth 2005-present (1.4%)
 - Slowdown seems to predate the crisis and recession
- Output per hour non farm business

Labor Productivity and Real Wages

- Increases in productivity are the dominant source of improvements in living standards and real wages—with some qualifications:
 - The price of business output grows more slowly than the price of workers' consumption
 - Recently there has been a decline in labor's share of total GDP, an additional factor affecting wages.
 - Overall productivity gains do not directly influence the wage distribution, but technical change has displaced unskilled workers and driven down their relative wages

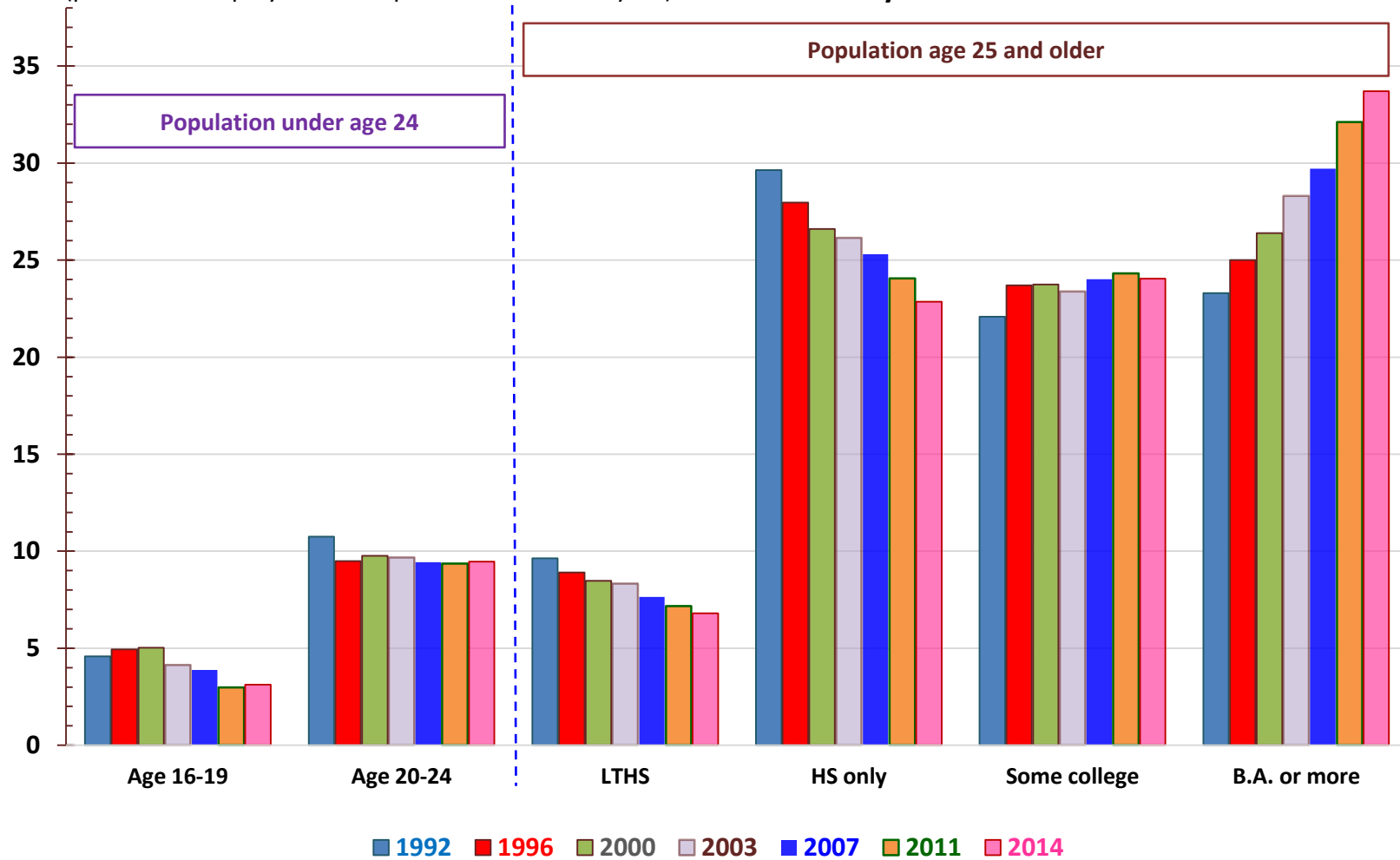
When Productivity Growth is Rapid, Wages Grow Rapidly



The US Workforce is Still Increasing its Educational Attainment.

Employed Population by Age and Educational Attainment, 1992-2014

(percent of employed in 4th quarter of indicated year) **Chart from Gary Burtless**



Source: BLS estimates based on monthly Current Population Survey data.

Two Productivity Concepts

- Labor Productivity
 - Output per unit of labor
 - Strong determinant of Living Standards
 - Reflects technology and efficiency **plus** the impact of increased capital per worker
- Total Factor Productivity (TFP)
 - Output per combined unit of capital and labor
 - Excludes the impact of rising capital intensity. More reflective of changes in technology and efficiency

The Surge in Productivity Growth 1994-2005 Reflected Both Faster TFP Growth and Stronger Capital Accumulation Nonfarm Business Sector

Item	1987-1994	1994-2005	2005-2013
Output	3.0	3.9	1.5
Labor Hours	2.0	1.3	0.4
Capital services	3.4	4.6	1.9
Combined Inputs	2.5	2.4	0.9
Output per Labor Hour	1.7	2.8	1.6
TFP	0.5	1.5	0.5

Source: BLS

Productivity is also very Important to Potential GDP

- CBO has revised down its projections of Potential GDP since the crisis. Bad news for the budget.
- This revision is mostly the result of a lower estimate of growth in labor productivity
 - Sharply lower capital services growth reduce growth in labor productivity, but should be temporary
 - Reduced estimate of growth in TFP
 - CBO also estimates slightly smaller growth in labor supply
- CBO Projects some recovery of Potential GDP growth with a return to stronger investment

CBO Revisions to Potential GDP Growth

	2007 projections		2014 projections	
	2007-2017	2013-2017	2014-2017	2018-2024
	Total Economy			
Potential Output	2.6	2.5	1.9	2.2
Potential Labor Force	0.7	0.5	0.5	0.6
Potential Productivity	2.0	2.0	1.4	1.6
	Nonfarm Business Sector:			
Contribution from:				
Potential Hours	0.6	0.4	0.3	0.5
Capital Services	1.1	1.1	0.8	1.0
Potential TFP	<u>1.4</u>	<u>1.4</u>	<u>1.2</u>	<u>1.2</u>
Total	3.1	2.9	2.3	2.6

Source: CBO, An Update to the Budget and Economic Outlook: 2014 to 2024.

Explanations for Slower Productivity Growth I

- **We are running out of innovations** (Gordon, Cowan)
 - Growth slowed in the early 1970s and has been slow ever since, except for the short information technology bubble 1994-2005
 - Investment responds to opportunities. Lack of innovation will be compounded by weak capital accumulation
- **Innovation is rapid, but it takes time to show up in productivity** (Brynjolfsson and McAfee)
 - Silicon Valley and other tech centers seem to be humming.
 - Research shows that productivity may lag innovation
- **Innovation is rapid but we are not measuring its output/productivity effects**
 - Google and Facebook are funded by advertising and are not considered part of final output
 - Apple and Microsoft book much of their profit in low-tax locations.
 - Has measurement really become worse?

Explanations for Slower Productivity Growth II

- **The Great Recession Clobbered the Economy**
 - Recession was a factor in weak investment
 - But the slowdown predates the recession. Past recessions do not show long run productivity impacts
- **Few startup companies and “gazelles”**
 - Lack of financing or collateral for startups
 - Regulation is often blamed, federal or state and local.
 - Critics need to identify what regulations are really to blame.
- **Innovation may be rapid, but lack of worker skills limits the productivity benefits.**
 - Those with high skills can take advantage of the new technologies but less skilled/educated workers are confined to lousy jobs, pulling down the average.
 - Even though the workforce is more educated, new technologies demand employees with even more skills, and the right skills.