



July 22, 2014

Productivity and Growth in CBO's Forecasts

NABE Foundation

11th Annual Economic Measurement Seminar

Four Seasons Hotel, Washington, D.C.

Robert Shackleton,
Macroeconomic Analysis Division

CBO's Economic Outlook

- What is CBO and why does it produce an economic forecast?
- How does CBO's role influence its forecast?
- How does CBO prepare its economic forecast?

The Purpose of CBO's Macroeconomic Forecast

- Used primarily in baseline federal budget projections and budget analysis
- Gives 10-year “current law” projection
 - *Current* law may involve major changes in *future* policy
 - Example: in past years, current law implied a major shift in fiscal policy in 2013

CBO's Approach to Forecasting

- The long-term projection of potential output is based on a neoclassical growth model along with a near-term business-cycle projection using a standard macroeconomic model.
- The long-term projection is an estimate of potential output based on estimates of the potential labor force, the flow of services from a capital stock, and potential total factor productivity.
- CBO uses data from a wide variety of sources to form its estimates.

Overview of CBO's Growth Model

$$Q_{\text{NFB}} = F [L_{\text{NFB}}, K_{\text{NFB}}, \text{TFP}_{\text{NFB}}]$$

Where

- Q_{NFB} = real gross domestic product in the nonfarm business sector
- L_{NFB} = index of hours worked
- K_{NFB} = index of real capital services from nine different types of capital assets
- TFP_{NFB} = total factor productivity (a residual)

Labor Productivity Growth Equation

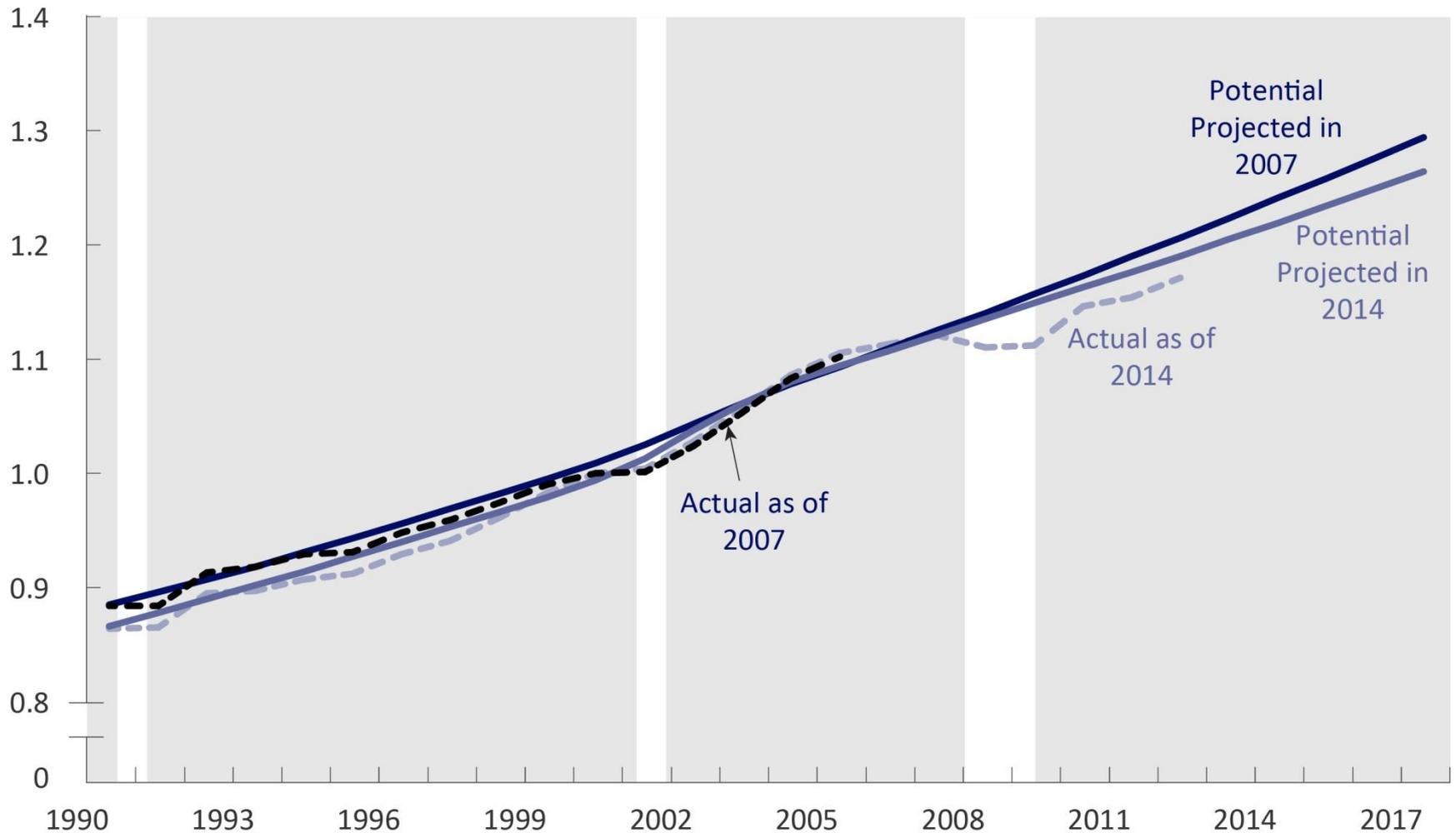
$$\% \Delta \text{ALP} = \% \Delta \text{TFP} + \alpha (\% \Delta (\text{K/L}))$$

Where

- ALP = average labor productivity
- α = the coefficient on the capital services index in the production function

Nonfarm Business Total Factor Productivity

(2000 = 1.000)



Contributions to the Revision of CBO's Projection of Potential Output for 2017 Between 2007 and 2014

(Percentage points)

	Recession and Weak Recovery	Reassessment of Trends	Revisions to Prerecession Data	Fiscal Policy and Other Factors	All Sources
Nonfarm Business Sector					
Potential labor hours	-0.7	-3	-0.3	1.2	-2.7
Capital services	-0.6	-0.7	0.2	-1.3	-2.4
Potential total factor productivity	-0.5	-0.7	-0.6	0.4	-1.4
Other Sectors	n.a.	-0.3	0.7	-1	-0.7
Total (Percent)	-1.8	-4.8	-0.1	-0.7	-7.3

Key Estimates in CBO's Projection of Potential GDP (February 2014)

(Percent, by calendar year)

	Historical Periods						Projection
	1950- 2013	1950- 1973	1974- 1981	1982- 1990	1991- 2001	2002- 2013	2014- 2024
Aggregate							
Potential output	3.30	3.96	3.29	3.15	3.19	2.23	2.13
Potential labor force	1.48	1.56	2.49	1.60	1.26	0.75	0.54
Potential labor productivity	1.80	2.36	0.78	1.53	1.91	1.46	1.58
Nonfarm Business Sector (NFB)							
Potential output	3.54	4.05	3.69	3.29	3.60	2.54	2.54
Potential hours worked	1.32	1.35	2.37	1.58	1.21	0.46	0.55
Capital services	3.75	3.90	4.06	4.04	4.33	2.52	3.07
Potential total factor productivity	1.46	1.90	0.80	0.96	1.44	1.45	1.23
Memorandum:							
Potential labor productivity, NFB	2.19	2.66	1.29	1.68	2.36	2.08	1.98
Capital-labor ratio, NFB	2.40	2.52	1.65	2.42	3.08	2.05	2.50
Potential output of other sectors	2.62	3.73	2.11	2.72	1.95	1.28	0.79

Other Considerations

- The measurement of productivity growth in service sectors, especially health care
- Channels of influence from public expenditures to private-sector productivity and productivity growth
- The contribution of productivity growth to incomes, income shares, and the federal budget