

Productivity Growth and CBO's Projection of Potential Output

AEI Conference:

Advantages of High Productivity Growth

February 25, 2004

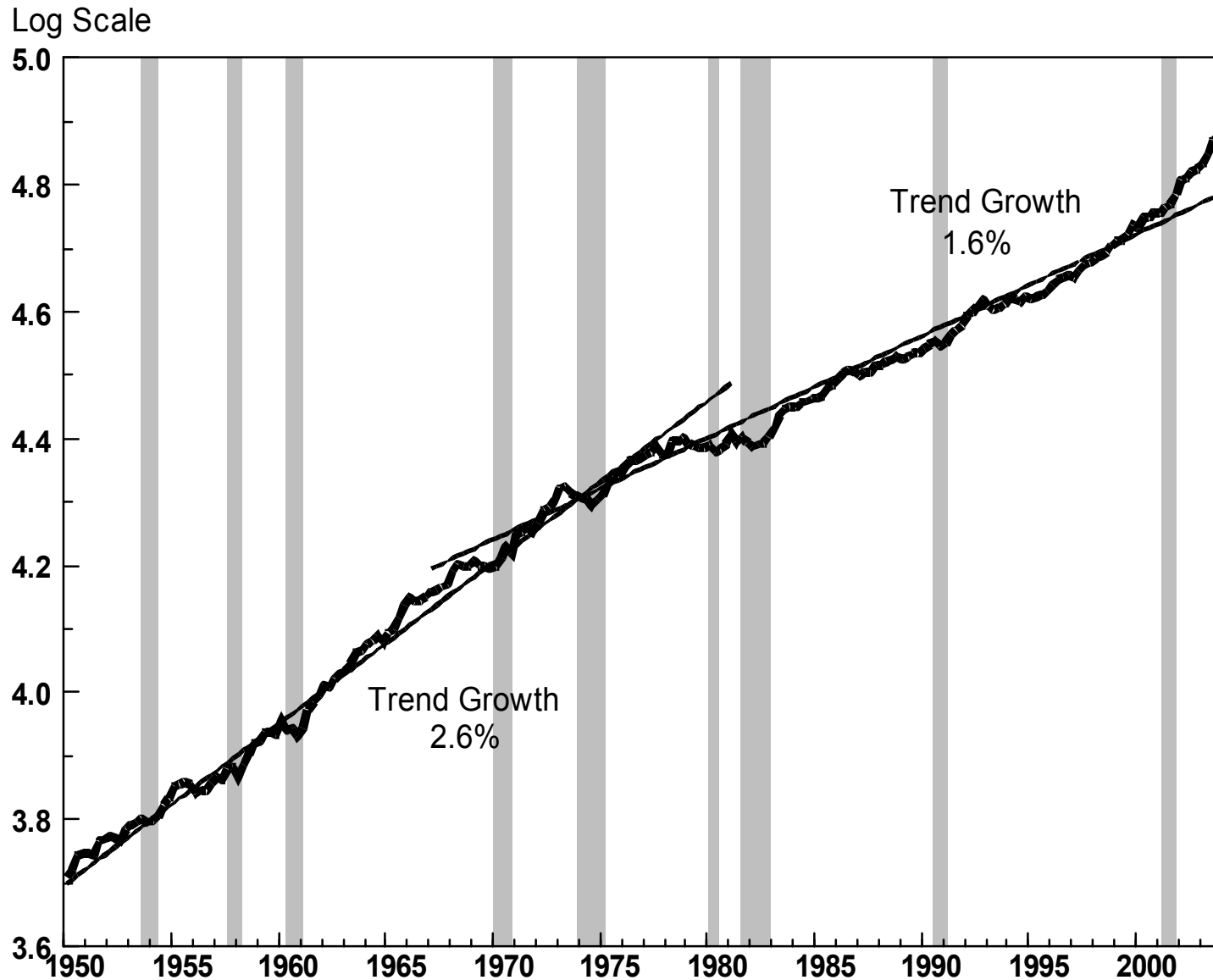
Robert Arnold

Congressional Budget Office

Why Does CBO Care About Productivity Growth?

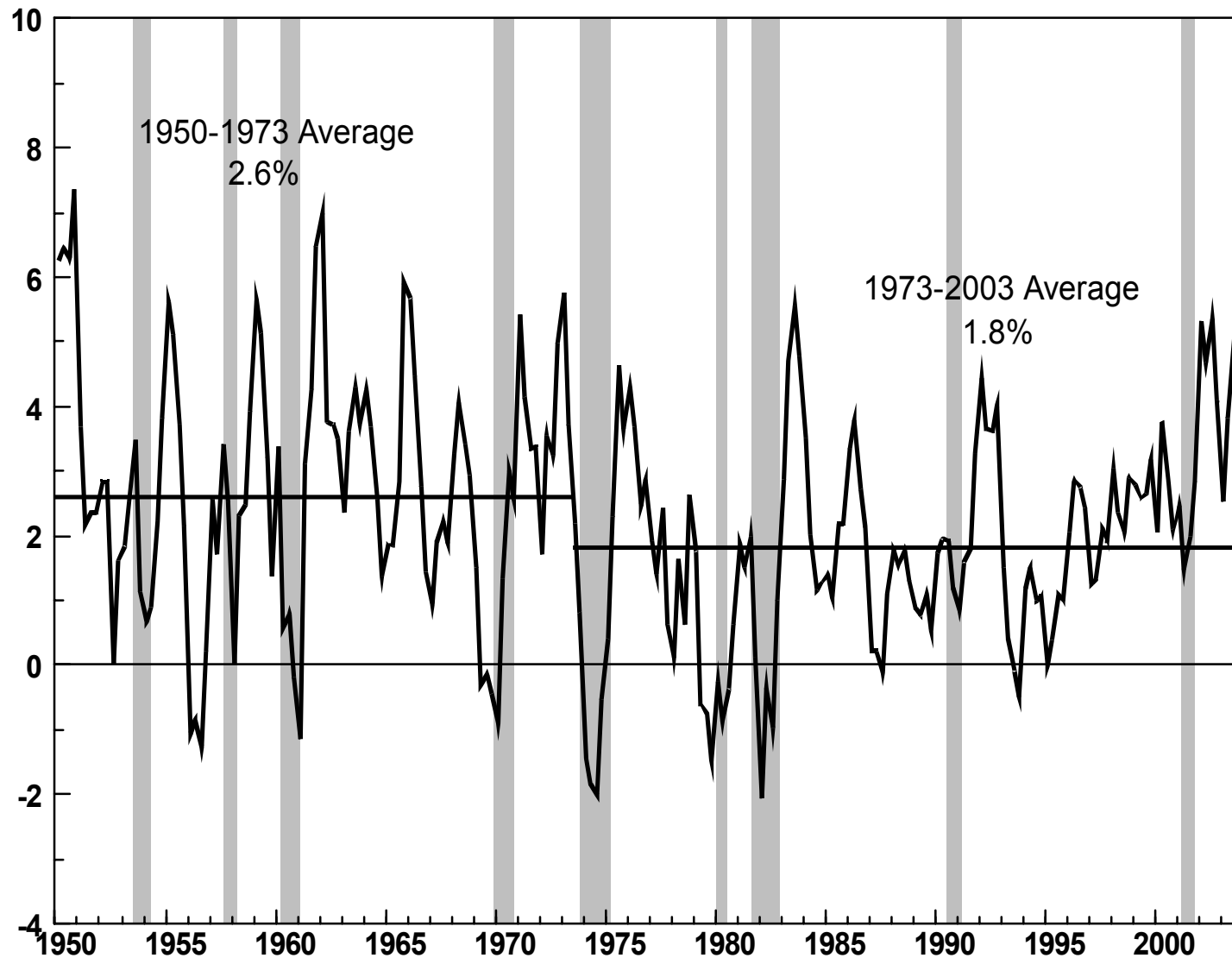
- **Budget Projections**
 - CBO produces a 10-year budget forecast
 - Relies on projections of macro variables
- **Economic Projections**
 - Productivity → Real GDP → Revenues
 - Need to understand history to forecast the future

Labor Productivity and Trend

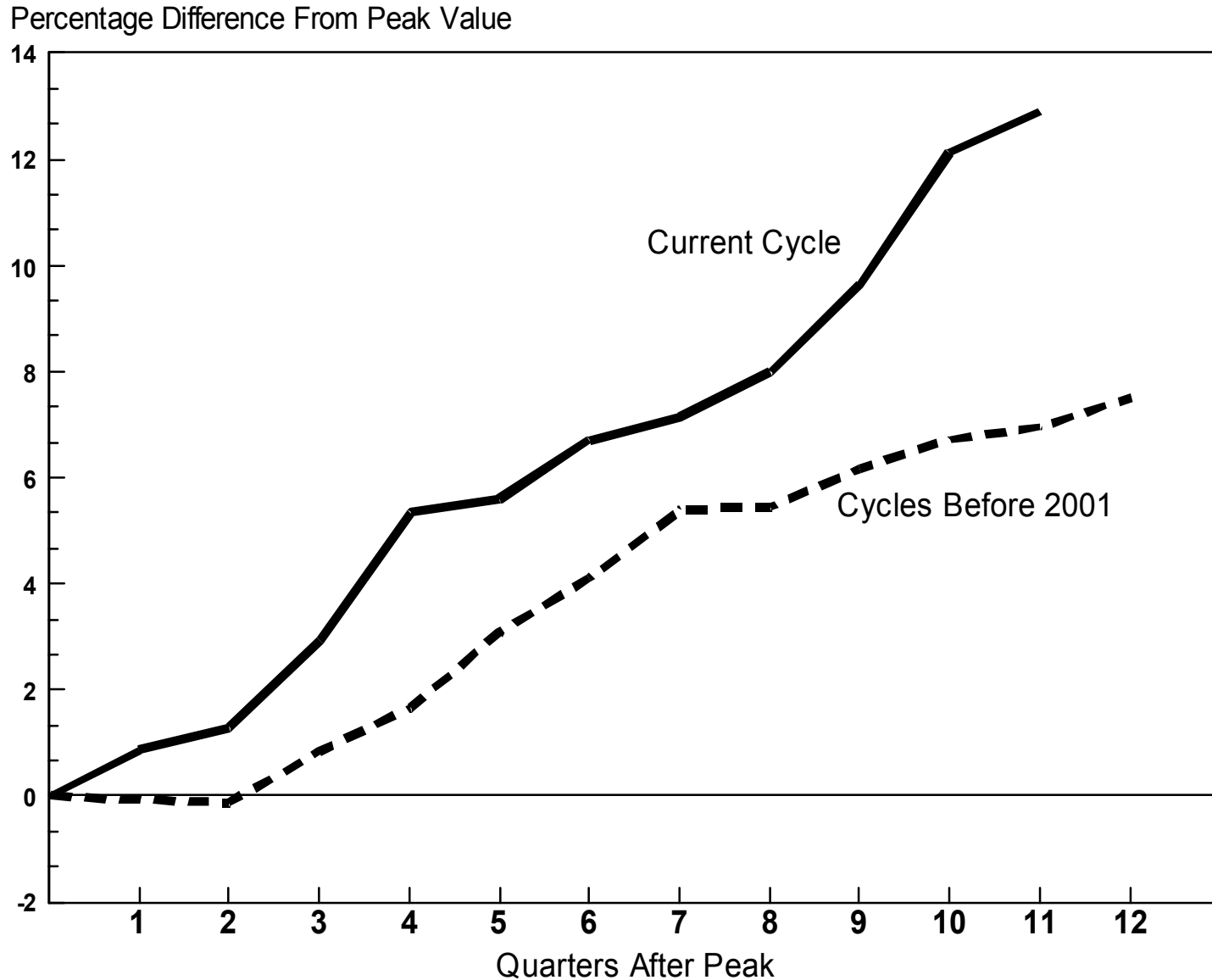


Labor Productivity Growth

Percent Change Year Ago



Cyclic Comparison: Labor Productivity



Overview of CBO's Model

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

Where

Q_{nfb} = real GDP in the NFB sector,

L_{nfb} = hours worked,

K_{nfb} = index of capital services (combines 7 types of capital assets, lagged one year),

TFP_{nfb} = total factor productivity (a residual).

Labor Productivity Growth Equation

$$\% \Delta ALP_{nfb} = \% \Delta TFP_{nfb} + \alpha [\% \Delta (K/L)_{nfb}]$$

Where

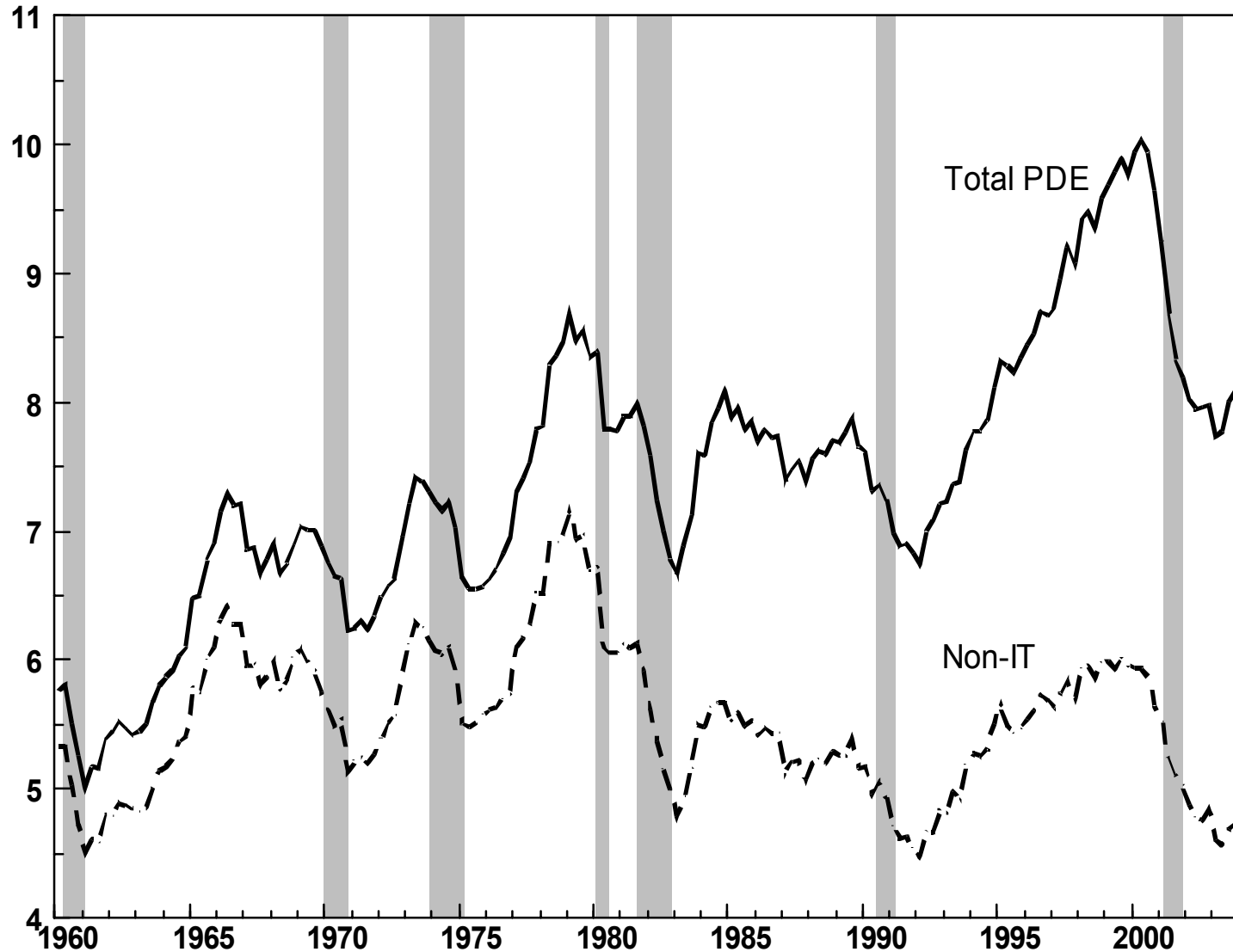
ALP_{nfb} = average labor productivity,

α = the coefficient on capital services index in the production function.

Producers Durable Equipment

Total PDE and Non-IT PDE

Percent of Potential GDP



Computer Prices

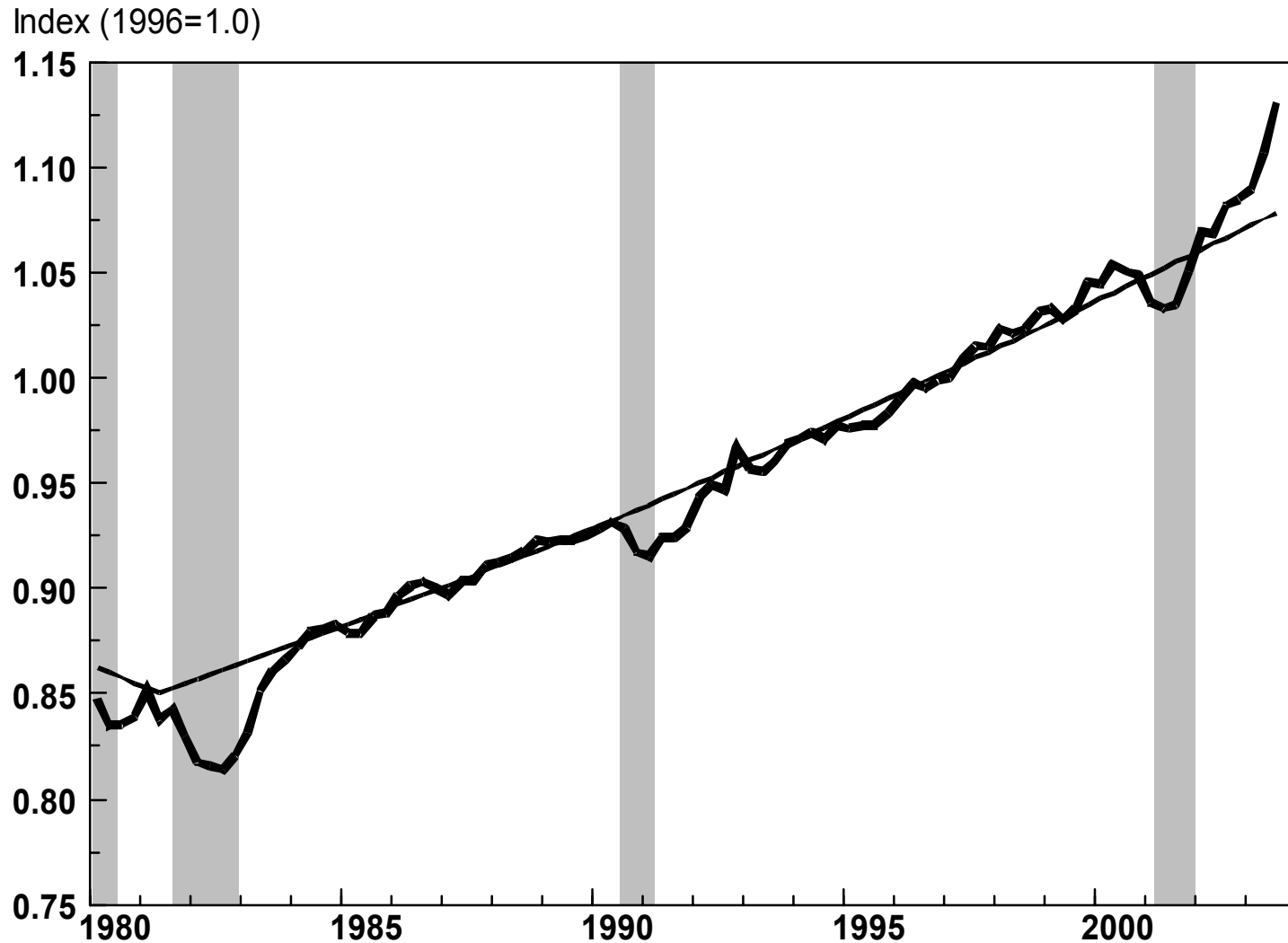
Percent Change Year Ago



Sources of Acceleration in Potential Labor Productivity

	Average Annual Growth		
	1973-1995	1995-2001	Difference
Potential Labor Productivity	1.49	2.50	1.01
Capital Deepening			
IT Capital	0.61	1.09	0.48
Non-IT Capital	0.34	0.72	0.38
Non-IT Capital	0.32	0.40	0.08
Potential TFP			
Trend TFP	0.93	1.43	0.50
Computer Quality	0.91	1.11	0.20
Price Measurement	0.00	0.13	0.13
Price Measurement	0.01	0.10	0.09
Note: Totals may not add up due to rounding			

Total Factor Productivity and Trend TFP



Note: Data adjusted to exclude effects of changes in price measurement and contribution of TFP growth in computer manufacturing

CBO's Medium-Term Projections

	Historical Periods				Projection
	1950-2003	1950-1973	1973-1995	1995-2003	2004-2014
Overall Economy					
Potential Output	3.43	3.86	2.99	3.40	2.82
Nonfarm Business Sector					
Potential Output	3.70	4.02	3.27	3.94	3.15
Potential Hours Worked	1.51	1.30	1.76	1.45	0.94
Capital Services	3.80	3.70	3.65	4.51	3.99
Potential TFP	1.47	1.98	0.93	1.53	1.29
Memo:					
Potential Labor Productivity	2.15	2.69	1.49	2.45	2.18

Summary and Implications for Projection

- **Benefits of faster productivity growth**
 - Raises living standards
 - Holds down inflation
- **Difficulty in identifying trend**
 - Very hard to extract trend near end of sample
 - Data revisions could reduce productivity growth
- **CBO's projection is cautiously optimistic**
 - Take some, but not all of the faster productivity growth into our projections
 - Meant to reflect the consensus