

# Issues in the Interpretation of the Productivity Boom and IT Investment Slump

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# Especially since August 7, Profound Puzzlement about Productivity Behavior

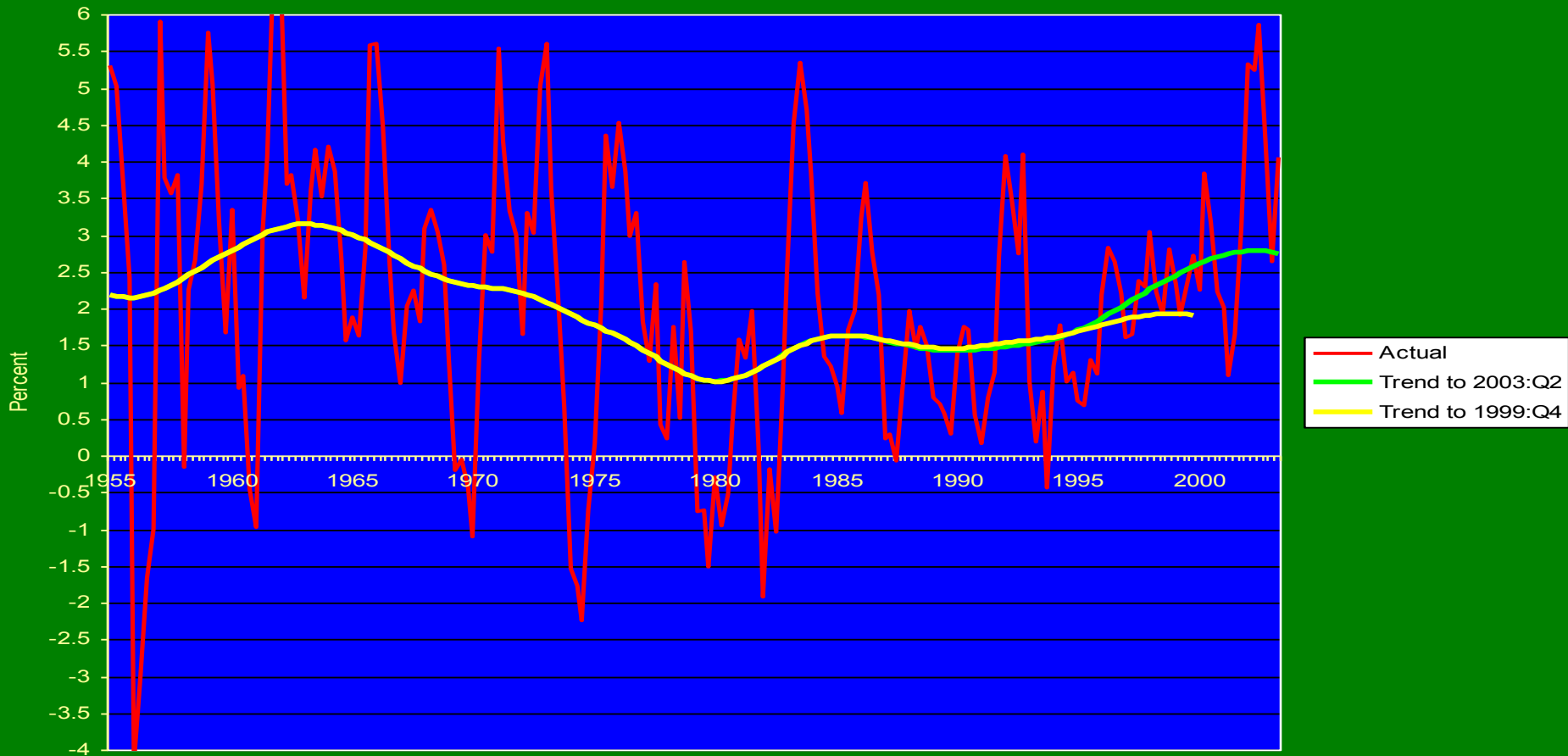
- Labor productivity growth mid-00 to mid-03 of 3.4% p.a. dwarfs the 2.56% of 1995-mid 00.
- Yet the 1995-2000 revival has been strongly linked to the ICT investment boom.
- How could productivity growth accelerate after ICT investment crashed?

# First Puzzle, What Happened to the Cyclical Effect?

- Hypothesis of a Cyclical Effect for 1995-99 Looks Justified in Retrospect with Data of That Time
- Not with Today's Data
- New Puzzle About Interpretation of 2002-2003

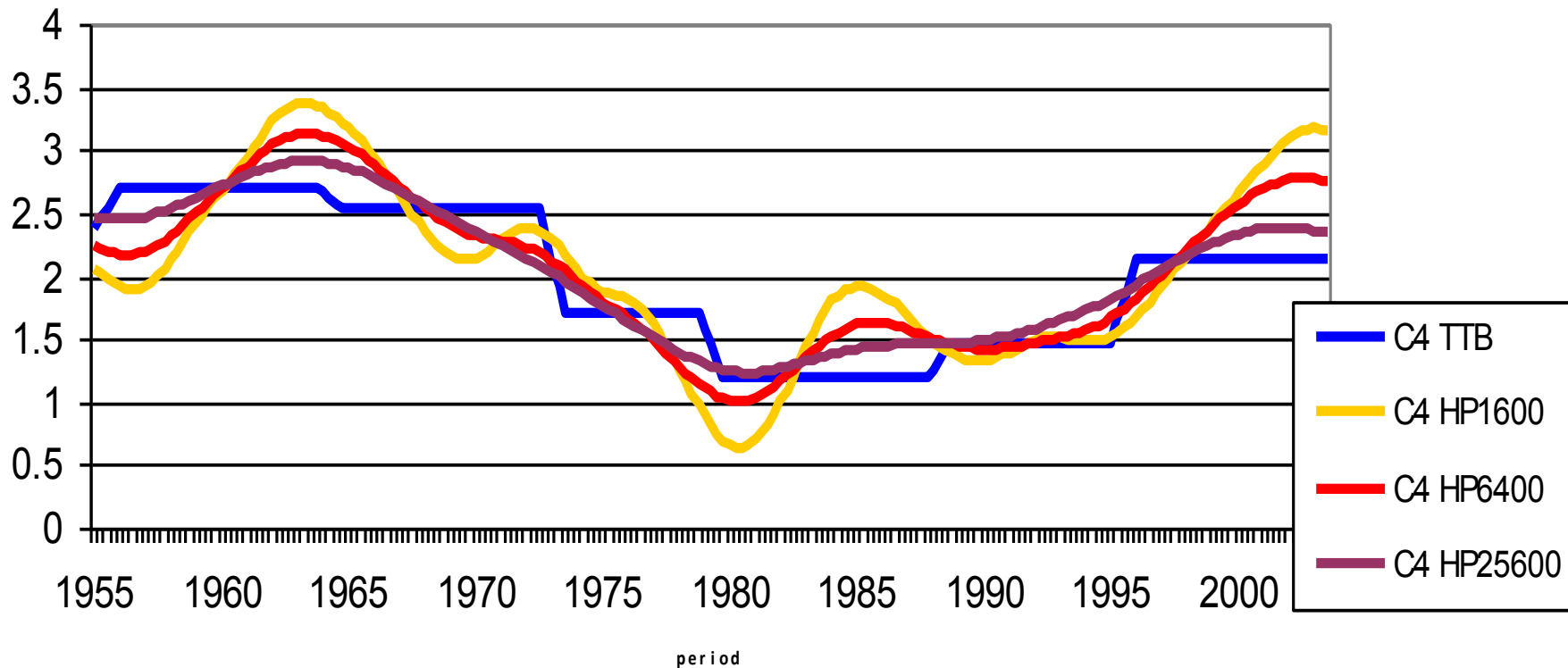
# Today's Trend Looks Very Different Than in early 2000

Figure 1. Four-Quarter Change in U. S. Productivity and Alternative Trends, 1955-2003



# Which Trend Parameter Should We Choose?

Alternative Trends for Four-Quarter Change in NFPB Output per Hours



# Why Did Productivity Growth Accelerate While ICT Investment Collapsed?

- Oliner-Sichel Update: Contribution of Production and Use of ICT to post-1995 revival
- Original Data, 1995-99, 81%
- New data:
  - 1995-99 ICT contributes 98% of revival
  - 1995-2002 ICT contributes 76% of revival
  - August revision, 1995-2002 down to 67%

# Might Oliner-Sichel Overstate the Contribution of ICT to the Revival?

- O-S instantaneous vs. David's delay
- Yang-Brynjolfsson's iceberg
  - 1995-99 production of intangible capital: omitted from output, included in hours
  - 2000-03 intangible capital enters as an input, producing output, while hours disappear
- Disequilibrium Hypothesis, implies productivity growth 2000-03 faster than steady state

# Seven Reasons Why 2000-03 Productivity Growth Should not be Extrapolated

- #1 The Kitchen Mismeasurement Hypothesis
- #2 Possible NIPA Benchmark Revisions
- #3 Yang-Brynjolfsson Hypothesis
- #4 For twenty years into the future, some weight should be given to 1972-95



# Two More Reasons

- #5 Jorgenson-Ho-Stiroh on Labor Quality
  - 1995-2001 0.38 percent contribution
  - 2001-2011 0.16
  - 2011-2021 0.02
- #6 Europe Lags Behind. Does This Tell Us Anything?

# The Seventh and Perhaps Most Important Reason

- Unusual pressure on firms to boost profits, translates to unusual pressure to cut costs
  - Comes out as reduction in payroll employment
  - Also in reduction of all investment, esp. ICT
  - Delay or abandonment of current projects with future payoff potential

# Why the Unusual Pressure?

- Change in Management Compensation, Rewards based on Stock Price
- NIPA Profits Peaked in 1997
- Pushed to Keep Earnings Growing
  - Legitimate Accounting Gimmicks
  - Illegitimate Gimmicks: the Scandals

# Exacerbated by Stock Market Crash, Recession

- Pressure to Cut Costs Intensified after Stock Market turned South
- Accounting Scandals added Pressure in 2001-2002
- Best Guess: Overshooting, now Profits are Genuinely Improving
- Latest Forecast for 2003:Q3: 6.1 percent

# Conclusion about 2002-03

- Makes us More Confident About Forecasting that we're not going back to 1972-95 Growth
- But Should We Extrapolate 3.4 (since 2000?) Extrapolate 4.0 (last 4 quarters)?
- Seven Reasons say We Should Not