



CAIDA WORKSHOP ON INTERNET ECONOMICS 2015

BROADBAND INDUSTRY OUTCOMES AND UNDERLYING MACROECONOMIC ENVIRONMENT

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Overview

Consider industry outcomes as well as industry structure:

- Use static and dynamic measures for complete picture
- Industry structure not always strict predictor of competitiveness

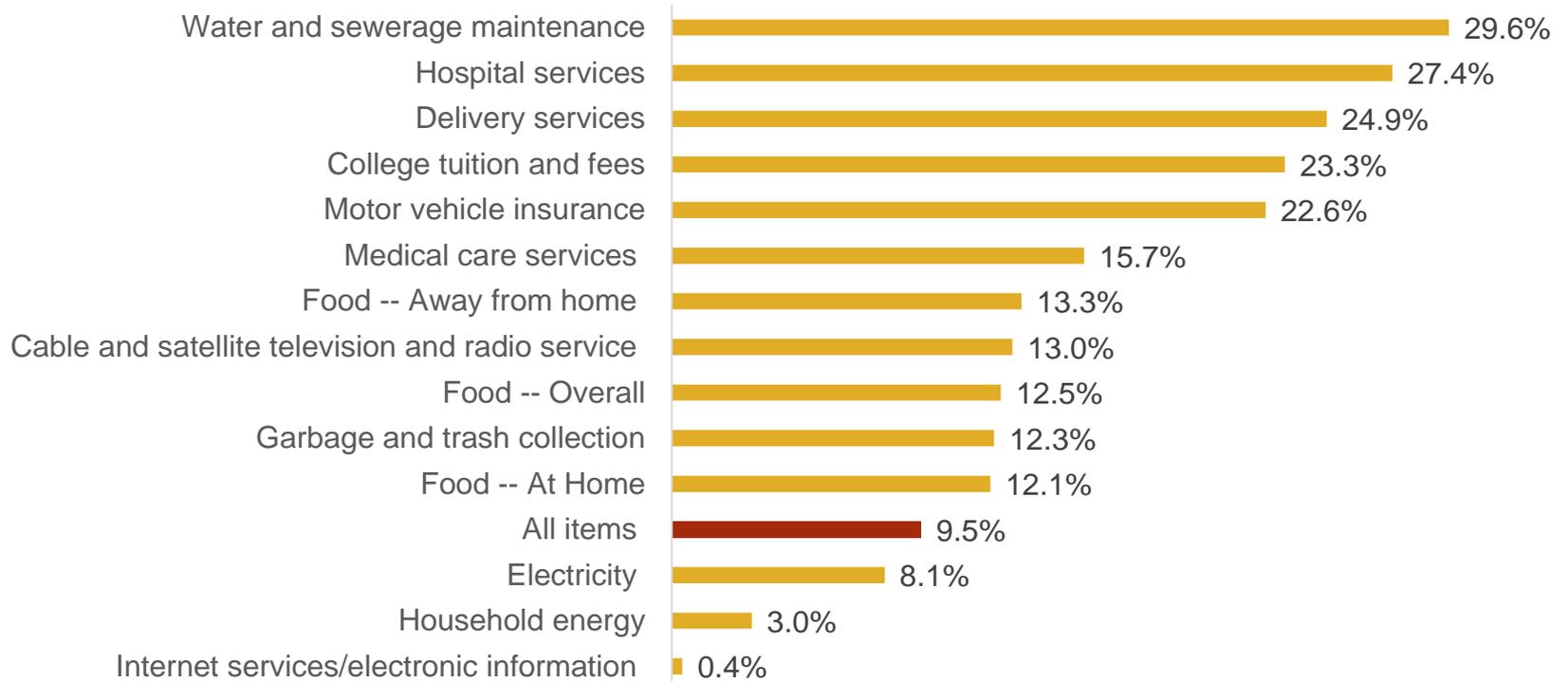
Understand underlying macroeconomic environment:

- Industry outcomes do not exist in isolation
- Income-side affects consumption, investment and innovation

Industry Outcomes: Stable Prices

Stable prices and rapid declines in quality adjusted prices

Price Change – CPI Seasonally Adjusted (2010 to 2015)



Industry Outcomes: Rising Output

Rising output and supply ahead of demand:

- Comcast doubles capacity every 18 months
- Comcast delivered 108% of advertised speeds (Sep 2013)
- No evidence of rampant congestion at interconnection points

Industry Outcomes: Rising Investment

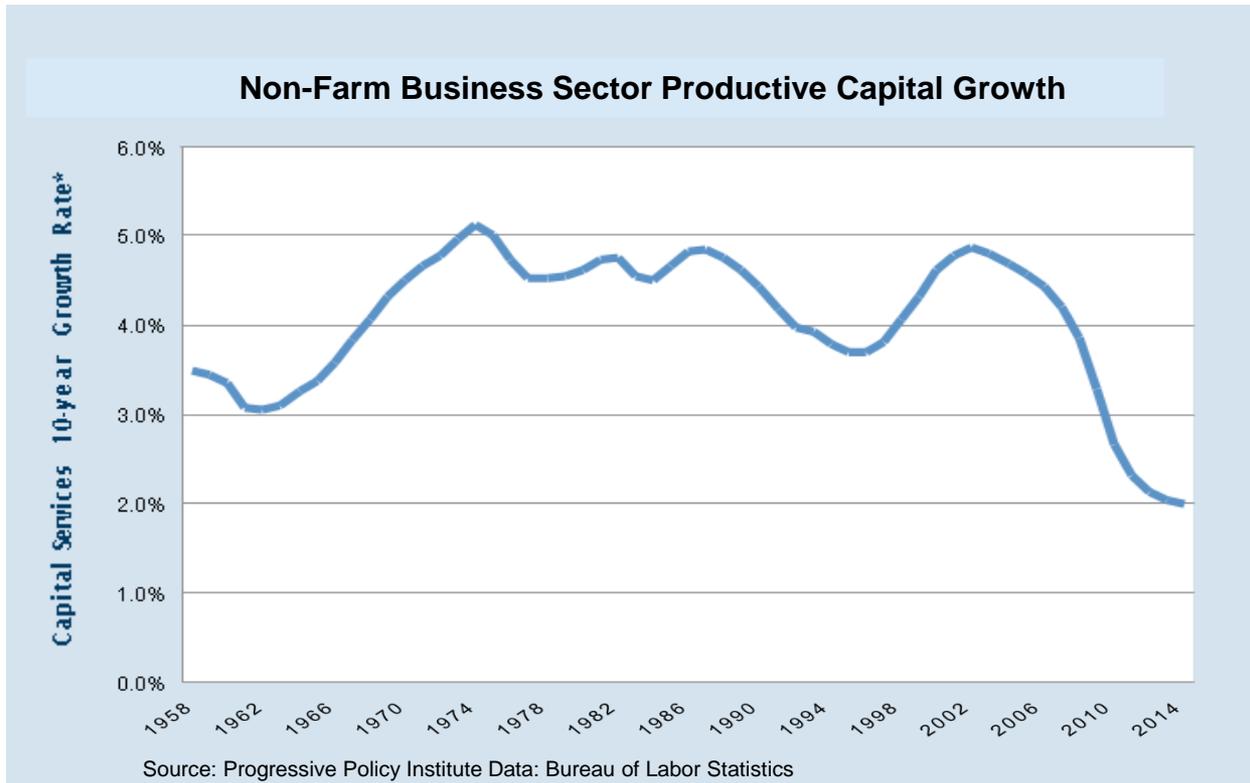
Record capital investment:

- Three of top 10 domestic investors for four years are ISPs
- Six year post-recessionary period had 7% more investment
- 9.3M to 12.1M homes had a new provider or upgrades enter

Macro Environment: Low Investment

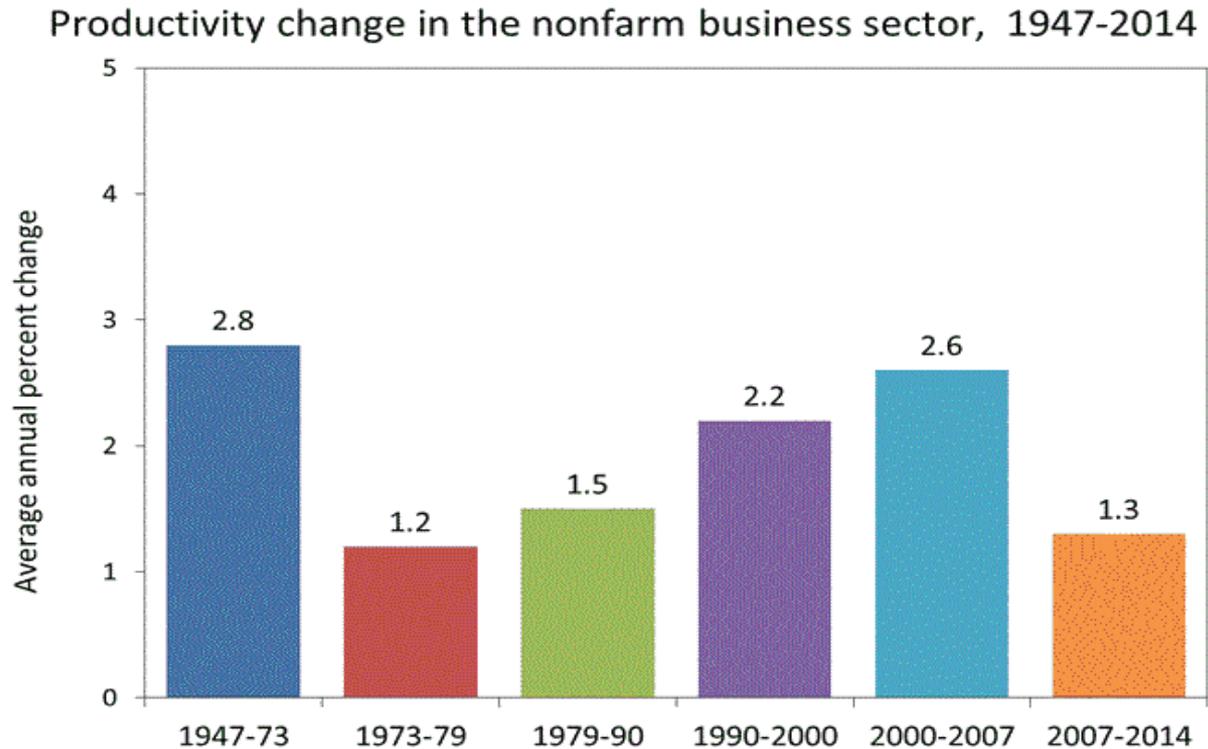
Capital per worker hour steadily declined since about 2010

10-year productive capital growth rate lowest since WW II



Macro Environment: Low Productivity

Just about the lowest productivity growth rate since WW II



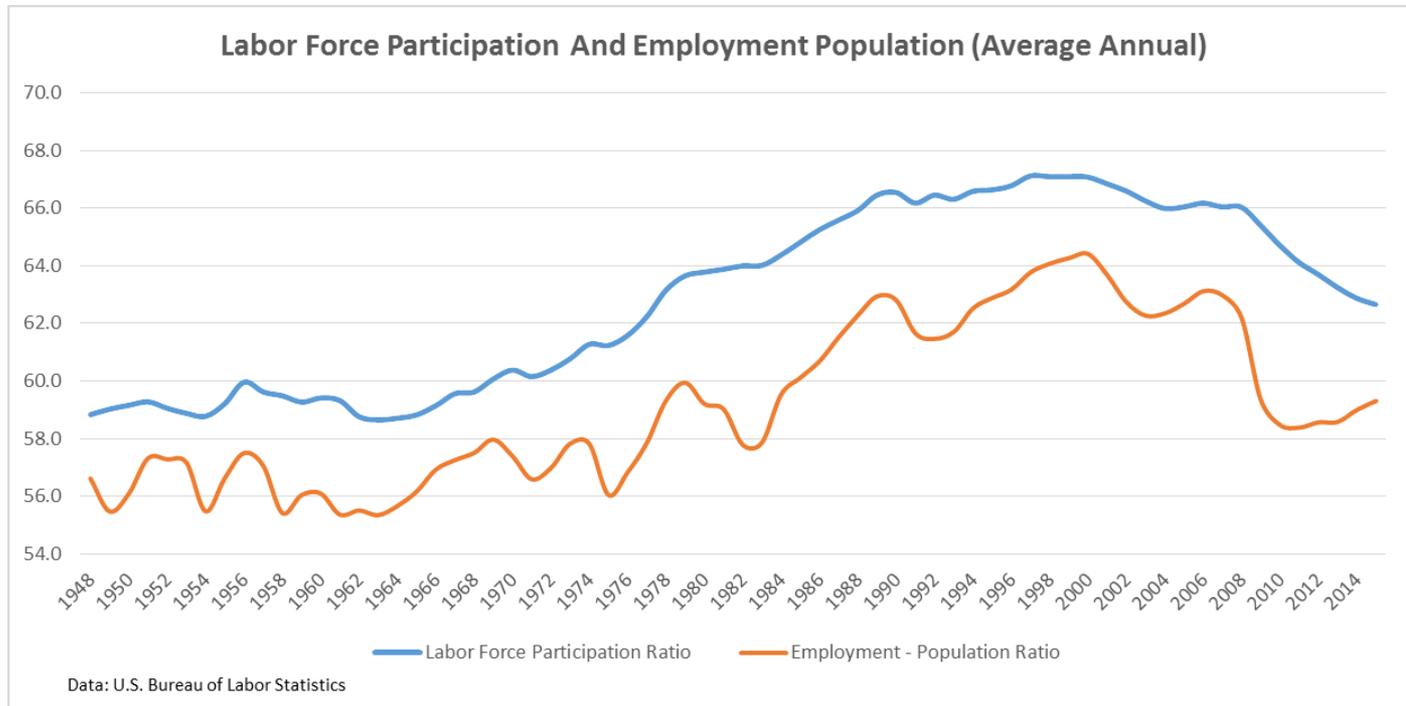
Source: U.S. Bureau of Labor Statistics

Macro Environment: Low LFPR/EPR

LFPR at 1977 levels – decrease from 66.2% (1/08) to 62.5% (11/15)

EPR at 1984 levels – decrease from 62.9% (1/08) to 59.3% (11/15)

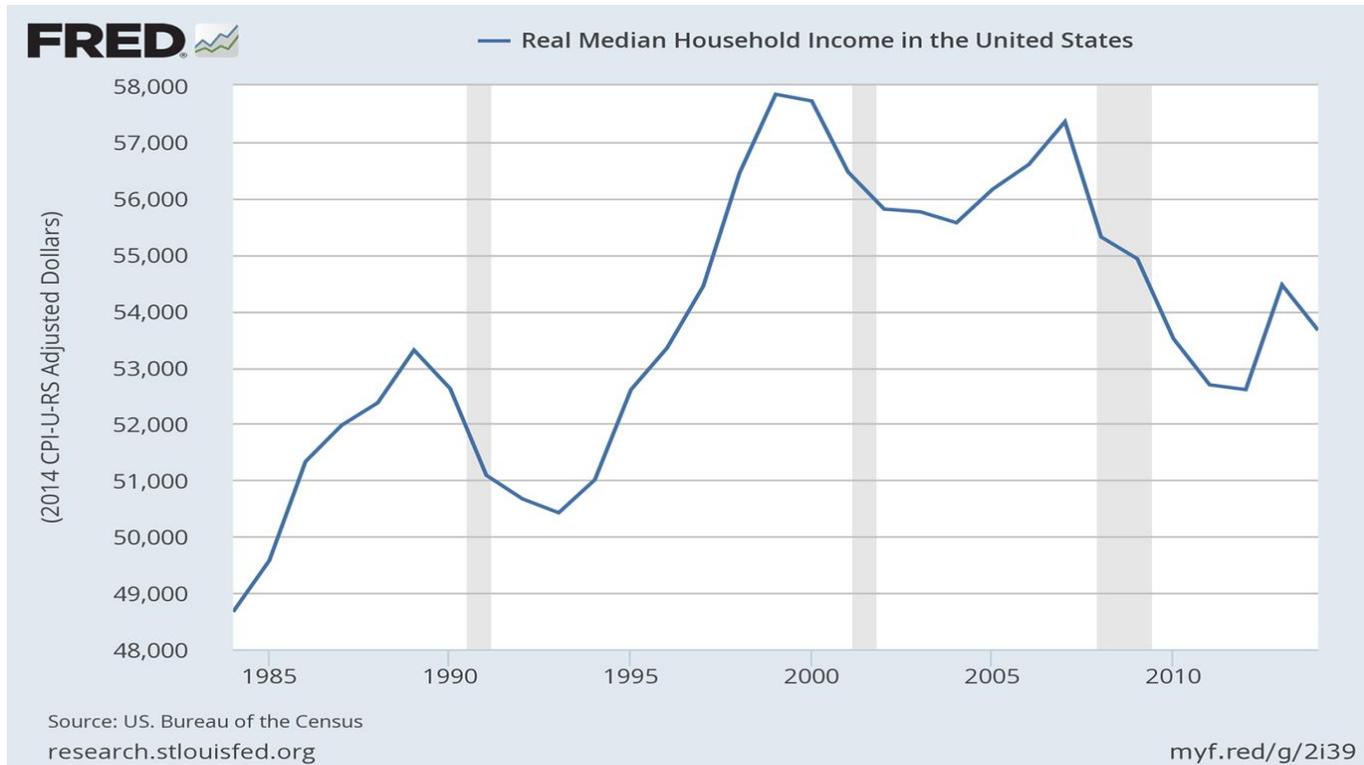
LFPR rose sharply in Germany and slightly in France and Spain



Macro Environment: Incomes Declined

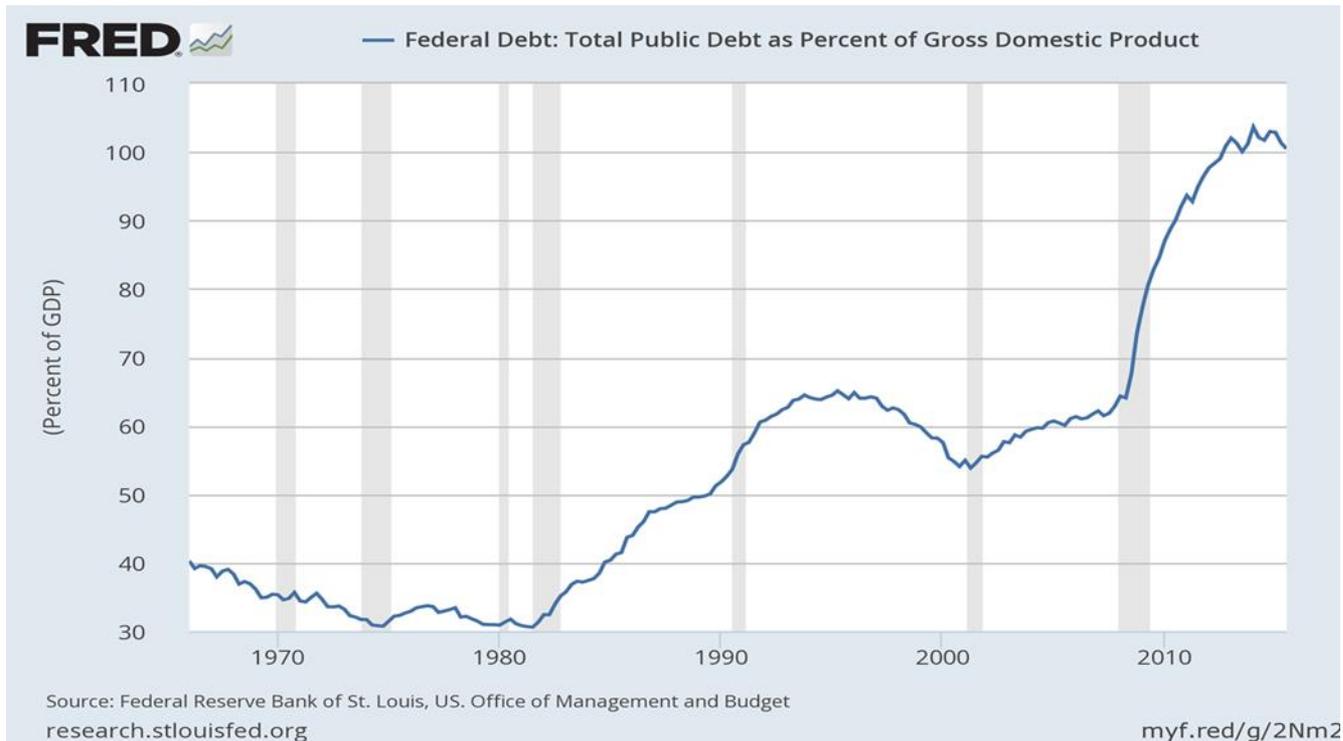
Real median household incomes at 1996-levels (2014 dollars)

African American real median household incomes a third of overall



Macro Environment: High Federal Debt

Highest debt-to-GDP ratio since WW II – 64% (Q1 08') to 100% (Q3 15')



Ideas

Don't look at industries in isolation

Understand the macroeconomic challenges

Fed Chair Yellen's solutions are helpful (July 2015):

- Strengthen education and training
- Encourage entrepreneurship and innovation
- Promote capital investment, both public and private