

Challenges to Mismeasurement Explanations for the U.S. Productivity Slowdown

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Moving at the Speed of Technology...

- “Everyone knows that the Internet is changing our lives, mostly because someone in the media has uttered that exact phrase every single day since 1993.”
— Chuck Klosterman (cultural commentator)

...Or Not

- Measured growth of labor productivity (output per worker-hour) is at historically slow levels

Period	Average annual labor productivity growth
1947-1973	2.7%
1974-1994	1.6%
1995-2004	2.8%
2005-2015	1.3%

How Much Is “Missing”?

- Had productivity growth not slowed after 2004:
 - GDP would now be (conservatively) about \$3T higher
 - \$9200 per capita
 - \$24,000 per household
- If this slowdown continues another 10 years, we will be “missing” one-third of GDP

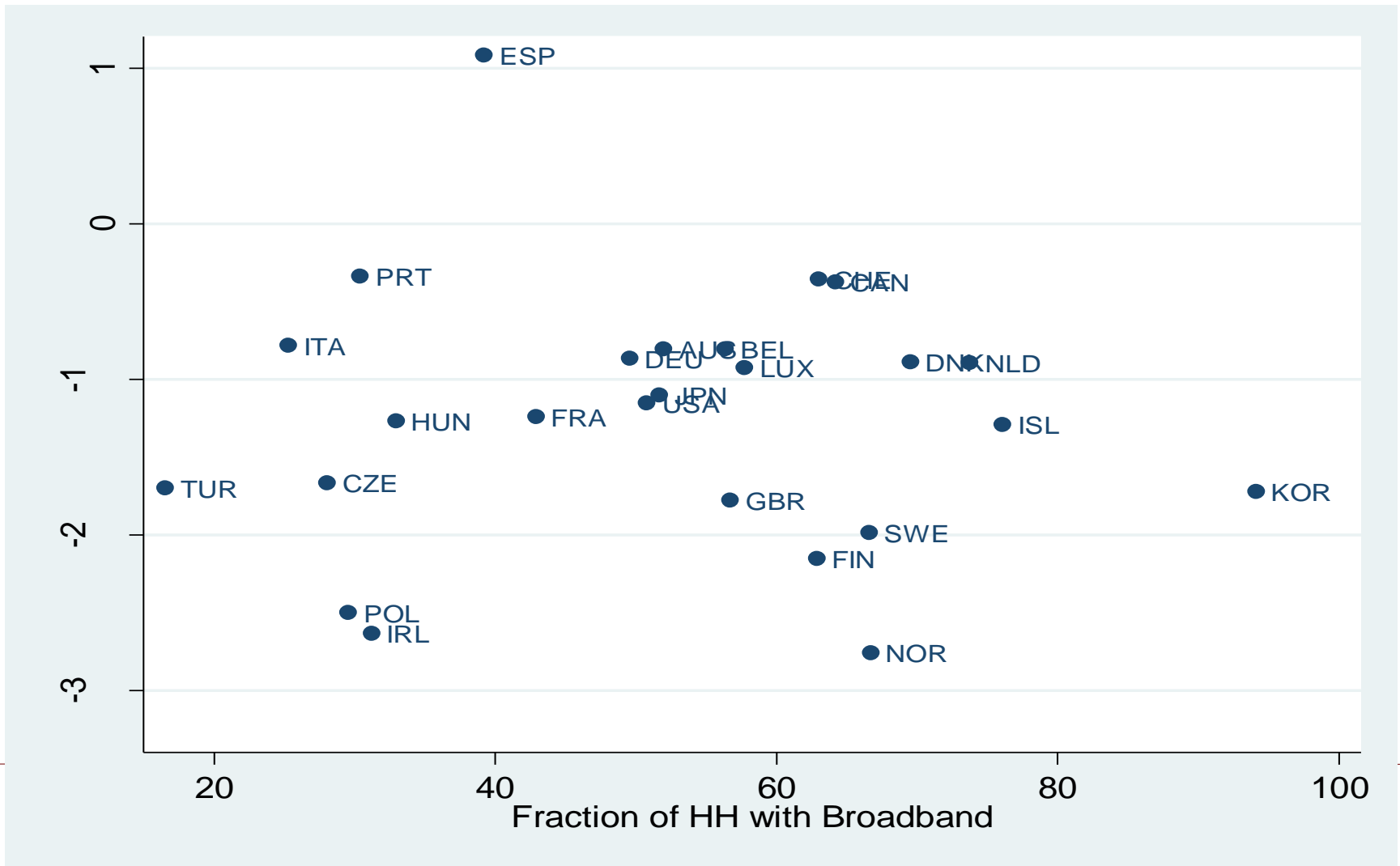
Is the Slowdown Just Mismeasurement?

- Mismeasurement Hypothesis: New products and services are not captured in our economic statistics
- E.g., Google, Facebook, GPS
 - All very highly utilized but essentially free to use
 - GDP = total spending, so “free” doesn’t register
- This is a plausible story
- But it’s a story
- What do the data say?

Taking the Mismeasurement Hypothesis to the Data

- I conduct four analyses, each coming at the hypothesis from a different angle
 1. Has the productivity slowdown also happened in other countries, and is its size related to technology intensity?
 2. Researchers have tried to measure surplus from web-related technologies. How large are their numbers?
 3. Compute how large IT-related sectors would have to be if we measured the purportedly “missing” growth
 4. See if total income is systematically higher than output
- All results are hard to reconcile with the hypothesis

1. Productivity Slowdown Is Widespread, But Not Related to IT



2. Estimates of Consumer Benefits from Web-Related Products

- Basic idea: consumers must pay for connectivity to use IT; use revealed WTP for access to infer consumer surplus from these products
- Most estimates imply surplus of around \$200B
- Largest, by some distance, is \$850B—still less than one-third of “missing” output
- And these are measures of total surplus—would have to be completely incremental consumer surplus to be “missed”

3. How Large Would IT Sector Be If “Missing” Output Were Measured?

- IT-related industries produced \$1.4T in measured value added in 2015, \$810B (inflation-adjusted) in 2004
- Measured real value added growth was then \$590B
- If “missing” \$2.9T of output were measured, implied actual value added growth is \$3.49T, six times as large
- Labor productivity growth over the period also would have been far higher, 415% instead of 80%
- Plausible?
- Bottom line: hard for 7.7% of GDP in 2004 to somehow produce an incremental 16% of “lost” GDP by 2015

4. Income vs. Output

- Observation: $GDI > GDP$ by 0.5% on average since 2004
- Hypothesis: People are being paid to make products that are sold free or otherwise heavily discounted
- BUT
 - GDI-GDP gap opened in 1998, continued through 2004
 - Thus $GDI > GDP$ for 7 years of fast productivity growth
- ALSO
 - GDI gains since 2004 are payments to capital, not labor
 - I.e., Profits, not wages have been unusually high

Also, Remember:

- Saying GDP is mismeasured is not enough to support the mismeasurement hypothesis; there must be a *systematic change* in mismeasurement around 2004
- “Free” IT products still require the purchase of complementary goods and services that are paid for
 - Thus they are in GDP and their sellers should be building value of “free” complements into their prices
- Other recent work (Byrne, Fernald, and Reinsdorf; Cardarelli and Lusinyan; Nakamura and Soloveichik) looks at hypothesis in still different ways and reaches same conclusion

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