Comments on “Technology Optimism” by Baily and Manyika

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Ambiguity: Technology Optimism but Uncertainty About E and Y Growth

• There has been a lot of attention to my “End of Growth” pessimism about the U. S.
• Yet the authors’ conclusion is not far from mine.
• The problem is: it is possible to be very optimistic about the future of manufacturing productivity growth while very pessimistic about growth of income per capita and especially consumption per capita in the bottom 99% of the income distribution.
Optimism About Productivity Growth in Manufacturing


- To understand the optimism about manufacturing, we compare total economy productivity (Y/H) with that in manufacturing and nonmanufacturing.

- Subsequently we compare Y/H and Y/N going back to 1891 for the total economy, but with the same postwar break points
Y/H Growth: Total Economy, Manufacturing, Nonmanufacturing

Figure 1: Annualized Growth Rates of Output per Hour; Total Economy and Selected Sectors, BLS Data

<table>
<thead>
<tr>
<th>Years</th>
<th>Total Economy</th>
<th>Manufacturing</th>
<th>Non-Manufacturing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1948-1972</td>
<td>2.82</td>
<td>2.46</td>
<td>2.95</td>
</tr>
<tr>
<td>1972-1996</td>
<td>1.55</td>
<td>1.29</td>
<td>2.69</td>
</tr>
<tr>
<td>1996-2004</td>
<td>2.90</td>
<td>2.63</td>
<td>4.60</td>
</tr>
<tr>
<td>2004-2011</td>
<td>1.59</td>
<td>1.47</td>
<td>2.52</td>
</tr>
</tbody>
</table>
Same with BEA Data on Real Value Added and Hours, Same Scale

Figure 2: Annualized Growth Rates of Output per Hour; Total Economy and Selected Sectors, BEA Data
**Interpretation**

- **BEA and BLS Agree:**
  - 1996-2004 was a historical aberration
  - 2004-2012 looks just like 1972-96, which we often call the “dismal” slowdown period
  - Manufacturing productivity growth 2004-2012 was as rapid as in 1948-72

- This nation has many problems, but manufacturing productivity growth is not one of them

- Bring on your army of small robots; but remember Krugman. What matters is who owns the robots.
Why Manufacturing Won’t Save Us: It is Gradually Disappearing

- In our national accounts, the impact of growth rates in a given sector depend on its share in nominal value added.
- As a creator of jobs, the role of manufacturing is expressed by its share of total employment.
- Both the nominal VA share and employment share of the manufacturing sector have been falling fast and are now respectively 12 and 8 percent.
Summary of Uncertainty About Nonmanufacturing

• BLS says 2004-12 = 1.47, up from 1.29 in 1972-96 but half of 2.95 in 1948-72

• BEA says 2004-12 = 0.86, down from 1.02 in 1972-96 but less than half of 2.03 in 1948-72

• Our productivity problem is in nonmanufacturing and evokes Zvi Griliches’ “hard to measure” 1994 AEA Presidential Address
The Total Economy, 1891-2012, for both Y/H and Y/N

• Central Identity: \( Y/N \equiv Y/H \times H/N \)

• Throughout most of history, H/N declined as economic agents chose to enjoy higher Y/N in part as leisure, shorter hours, longer vacations.

• The big exception was 1972-96, dominated by female entry into the labor force, which raised H/N and partially buffered Y/N from the Y/H slowdown

• Relative optimism about productivity (Y/H) in the last decade is tempered by the dismal performance of H/N.
2.0 Anchors Our Thinking

• Real GDP per capita grew at 2.02 percent between 1891 and 2007.
  – 2.20 for Y/H, -0.18 for H/N.

• In my interpretation the 2.0 was propelled by the 2\textsuperscript{nd} industrial revolution and all its spinoffs, 1891-1972

• Then the early decades of the computer revolution (IR #3), replaced many dreary clerical tasks by computer-related machines

• My prediction is that over the next few decades that 2.0 number falls to 1.0, and to 0.5 for the bottom 99%
Figure 16: Annualized Growth Rates of Output per Hour, Output per Capita, and Hours per Capita, 1891-2012
The Authors Agree: Growth in Output per Capita is Grinding to a Halt

• The paper’s initial slide shows projected 40-year increases in real per-capita GDP (Y/N)
• Birth year 1960: 2.33 percent per year
• Birth year 2000: 1.22 percent per year
• This is close enough to my pessimistic view that I can adopt Baily and Manyika as teammates.
There are Many Reasons to be Pessimistic About Future Y/N Growth

• There are at least 7, but here I’ll focus on only three
• Demography, Education, and Inequality
• Why have hours per capita grown so slowly?
  – Decline of 7% 2000-2004, no recovery, further decline of 8% 2004-2012
  – Baby-boom retirement
  – “The Missing Fifth”; Charles Murray’s “Fishtown”
  – Youth entering higher education but then dropping out, especially at community colleges
Figure 20: Employment per Capita and Labor Force Participation Rate, Males Ages 25-54, 1960:Q1-2012:Q3
The Dismal State of American Education

• Tertiary education completion among 25-34 year olds: U.S. 41%, Canada 56%
• $1 trillion in student debt
• U.S. ranked #21 of #26 OECD countries in high school graduation rates
• 85% of foreign exchange students say that their American high school classes are much easier than in their native countries
• The black-white gap has not narrowed since the 1960s and the social negatives of the bottom 30% of the white income distribution (Murray’s Fishtown) are at levels chronicled in the 1965 Moynihan report.
The Stark Saez Statistics on Inequality

• 1993-2008: *AVERAGE* real income growth = 1.3 percent per year.
• Same period: same concept for the bottom 99% grew at 0.75 percent a year.
• There is no reason why this increase in inequality will not continue for the same reasons as before
• This is why I mark down my forecast of 1.0 percent future Y/N growth to 0.5 percent for the bottom 99%
Conclusions

• All this talk about small robots and “big data” is not going to save us.
• Productivity growth in manufacturing can continue to chug along at 3% (BEA) or 2.5% (BLS)
• But transition to the total economy for Y/H
• Then transition from Y/H to Y/N
• Run it through the six headwinds
• And we’ll be lucky to achieve growth in income per capita of the bottom 99% of 0.5% for decades into the future