Discussion of: A Reassessment of Real Business Theory
by Ellen McGrattan and Ed Prescott

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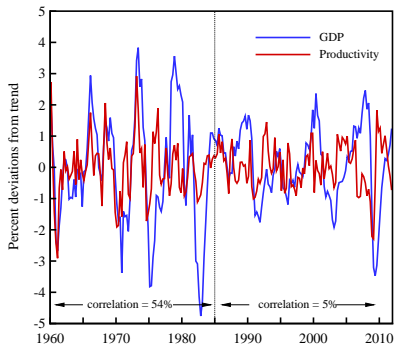
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The Issue at Hand

FIGURE 1

GDP and Aggregate Labor Productivity, 1960:1–2011:4,

Percent Deviations from HP-filtered Trend

- Labor productivity has become acyclical in last 25 years.

- This is an apparent problem for real business cycle theory.
  Especially in great recession where labor productivity rose

Potential Resolutions

- Abolish RBC theory, use alternative theories

- Augment existing RBC theory

- Better measurement of output and thus labor productivity

McGrattan and Prescott's Agenda in a Nutshell

- Augmenting existing RBC theory with intangible capital k_I (and other adjustments, such as intermediate goods and a non-business sector):

$$
\begin{aligned}
y &= A^1 \left(k_T^1\right)^\theta \left(k_I^1\right)^\phi \left(h^1\right)^{1-\theta-\phi} \\
x_I &= A^2 \left(k_T^2\right)^\theta \left(k_I^2\right)^\phi \left(h^2\right)^{1-\theta-\phi}
\end{aligned}
$$

- Appropriate measurement

  - True (as implied by augmented RBC model) GDP and labor productivity $y + qx_I$ and $\frac{y+qx_I}{h^1+h^2}$

  - Measured GDP and labor productivity y and $\frac{y}{h^1+h^2}$

  - If in recession $0 > g_y > g_{h^1+h^2} > g_{qx_I}$ and qx_I is sufficiently large, then measured labor productivity $\frac{y}{h^1+h^2}$ increases although true labor productivity $\frac{y+qx_I}{h^1+h^2}$ falls.

The Great Recession through Lens of Augmented RBC Theory

$$
\begin{aligned}
y &= A^1 \left(k_T^1\right)^\theta \left(k_I^1\right)^\phi \left(h^1\right)^{1-\theta-\phi} \\
x_I &= A^2 \left(k_T^2\right)^\theta \left(k_I^2\right)^\phi \left(h^2\right)^{1-\theta-\phi}
\end{aligned}
$$

- Exogenous driving forces are A^1, A^2 as well as changes in consumption, labor earnings taxes.

- Choose A^1, A^2 so that model reproduces measured GDP y and measured $\frac{y}{h^1+h^2}$. Measure time-varying taxes from data. Assume households were surprised by great recession.

- Need substantial fall (relative to trend) of A^1 to make measured output y fall a lot. Thus underlying reason for recessions remains same as in standard RBC theory.

- Need bigger fall in A^2 to generate even larger decline in qx_I.
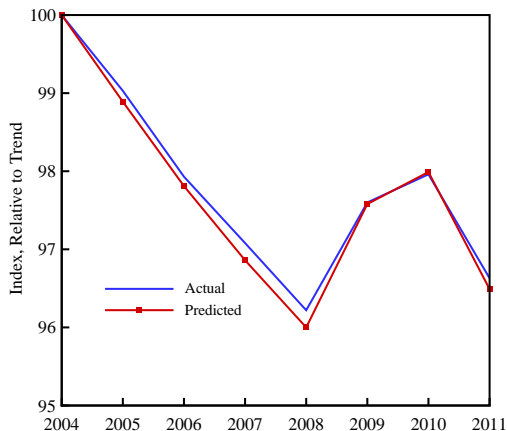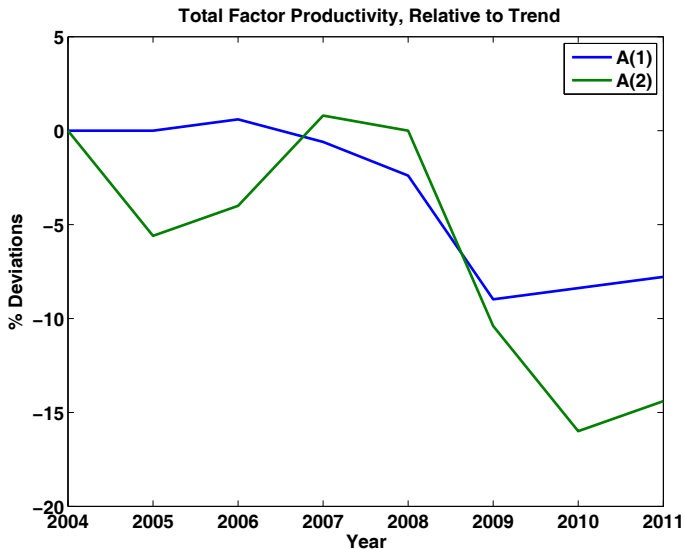
Measured Labor Productivity: Data and Model

FIGURE 5

Predicted and U.S. Aggregate Labor Productivity, 2004–2011,

Relative to a 1.9% Trend

TFP Series Inputs A(1),A(2)

Total Factor Productivity, Relative to Trend

Comments: Success?

- Depends on how success is defined!

- Paper displays coherent model to rationalize the observed facts
  - Near perfect fit of the targeted time series (GDP, Labor productivity).
  - Decent fit of the time series not targeted (hours, consumption, investment).

- Will it convince the skeptics? For that need:
  - Evidence for negative (relative to trend) shocks to A^1. As always for RBC theory.
  - Evidence for large (larger than measured GDP) collapse in intangible investment x_I. Look(ed) at firm-level data (should show up e.g. in R&D expenses).
  - If you want to push this specific model, also need direct evidence on fall in A^2.

Conclusion

- McGrattan and Prescott's research agenda (in my view) successful in arguing that rationalizing *measured* acyclical (or even countercyclical) labor productivity within the standard RBC framework is a logical possibility.

- In addition to theoretical coherence, the strength of RBC theory was always (in my view) that the driving shocks are in principle observable.

- Work needs to be done (using micro firm level data, mainly) to show large collapse in intangible investment and the decline in A^2 driving it.