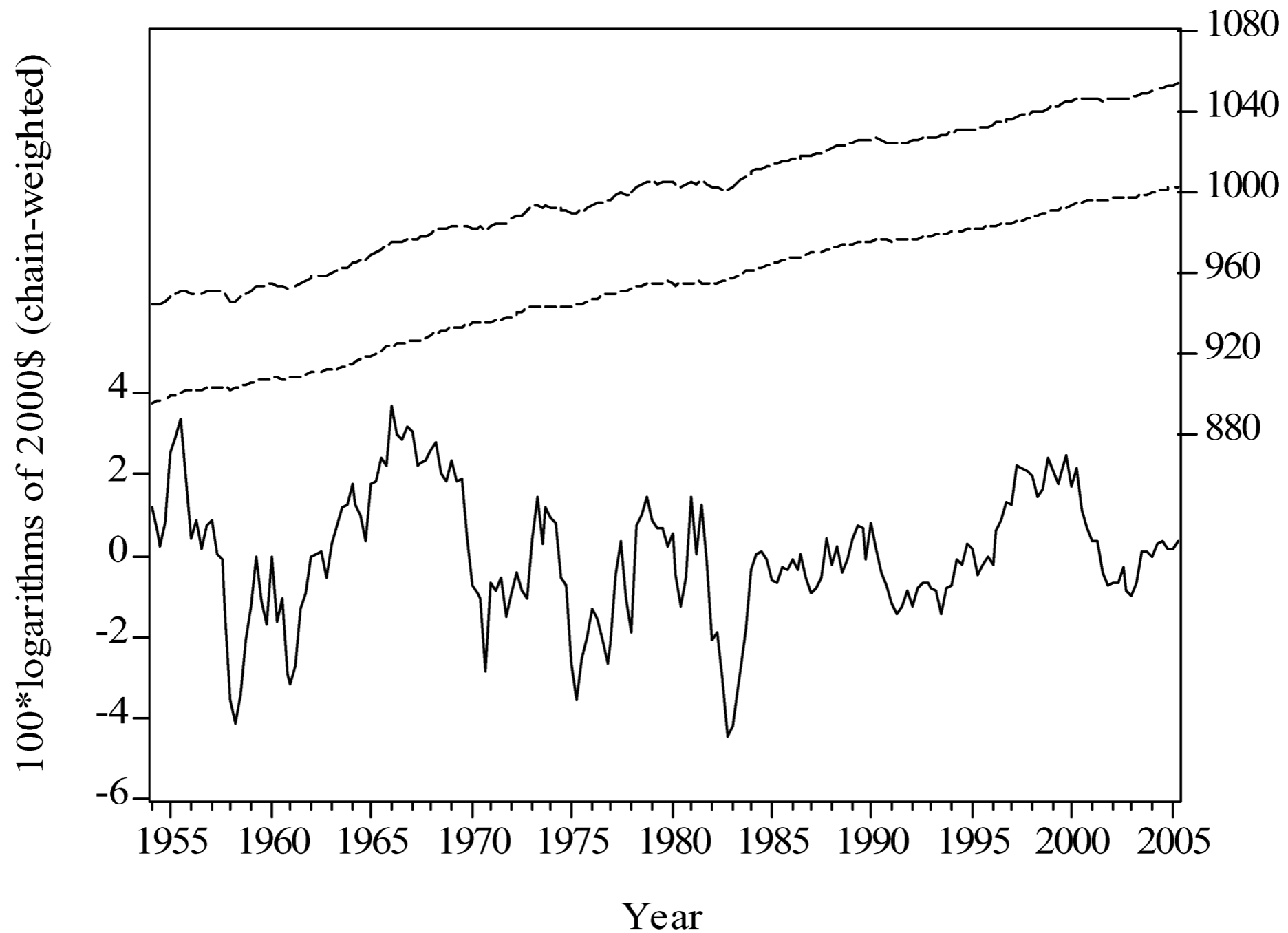# Class 24
"Last Day of Classes"

Econ 402
James Morley

Class 24 Outline

- More on Aggregate Consumption

- Real Business Cycle Theory

- Mankiw's Ten Principles of Economics

FIG. 1. U.S. per Capita Real GDP, U.S. per Capita Real Consumption of Non-Durables and Services, and Deviations from an Estimated Long-Run Equilibrium Relationship.

Aggregate Consumption

- Aggregate Consumption is smoother than Aggregate Income

- Under the random walk hypothesis (PIH + rational expectations), Y/C should reflect transitory fluctuations in output due to the business cycle

Deaton's Paradox

- Aggregate Income appears to be unpredictable, yet aggregate consumption is smooth

- It is too smooth for the PIH!

Possible explanations for "Excess" Smoothness

- Habit Formation: Consumers' utility depends on level of consumption relative to recent levels (habit stock)

- Precautionary Saving: Consumers want "buffer stock" of wealth in case movements in permanent income are reversed

Deviations from PIH

Both habit formation and precautionary saving imply partial adjustment of consumption to permanent income shocks
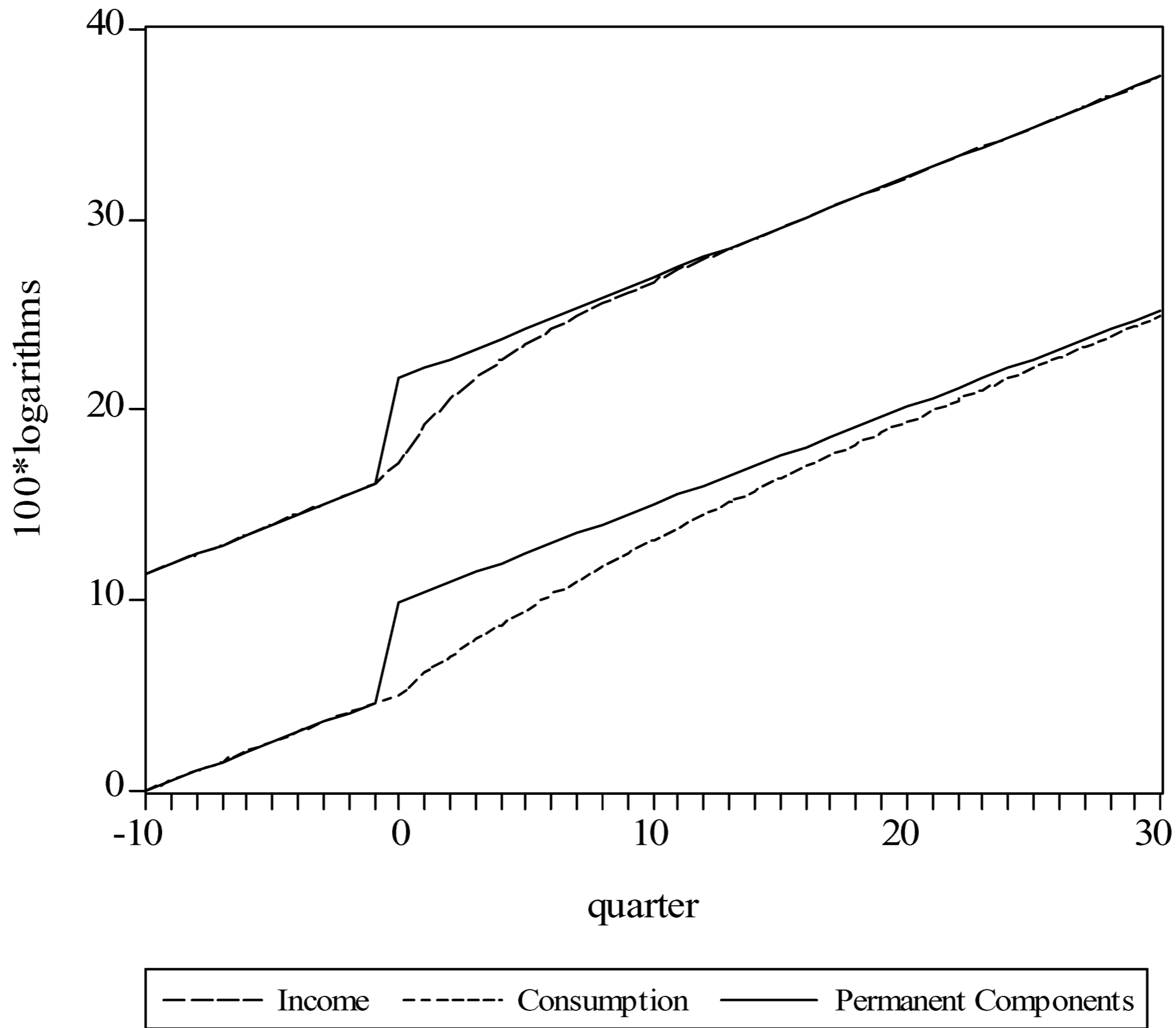
FIG. 4. The Paths of Income and Consumption Given a One-Time Shock to Permanent Income Based on the Estimated Correlated UC Model.

Findings in Morley (2007)

- Aggregate consumption has partial adjustment dynamic consistent with habit formation and precautionary saving

- Consumption adjusts slower than income to permanent income shocks
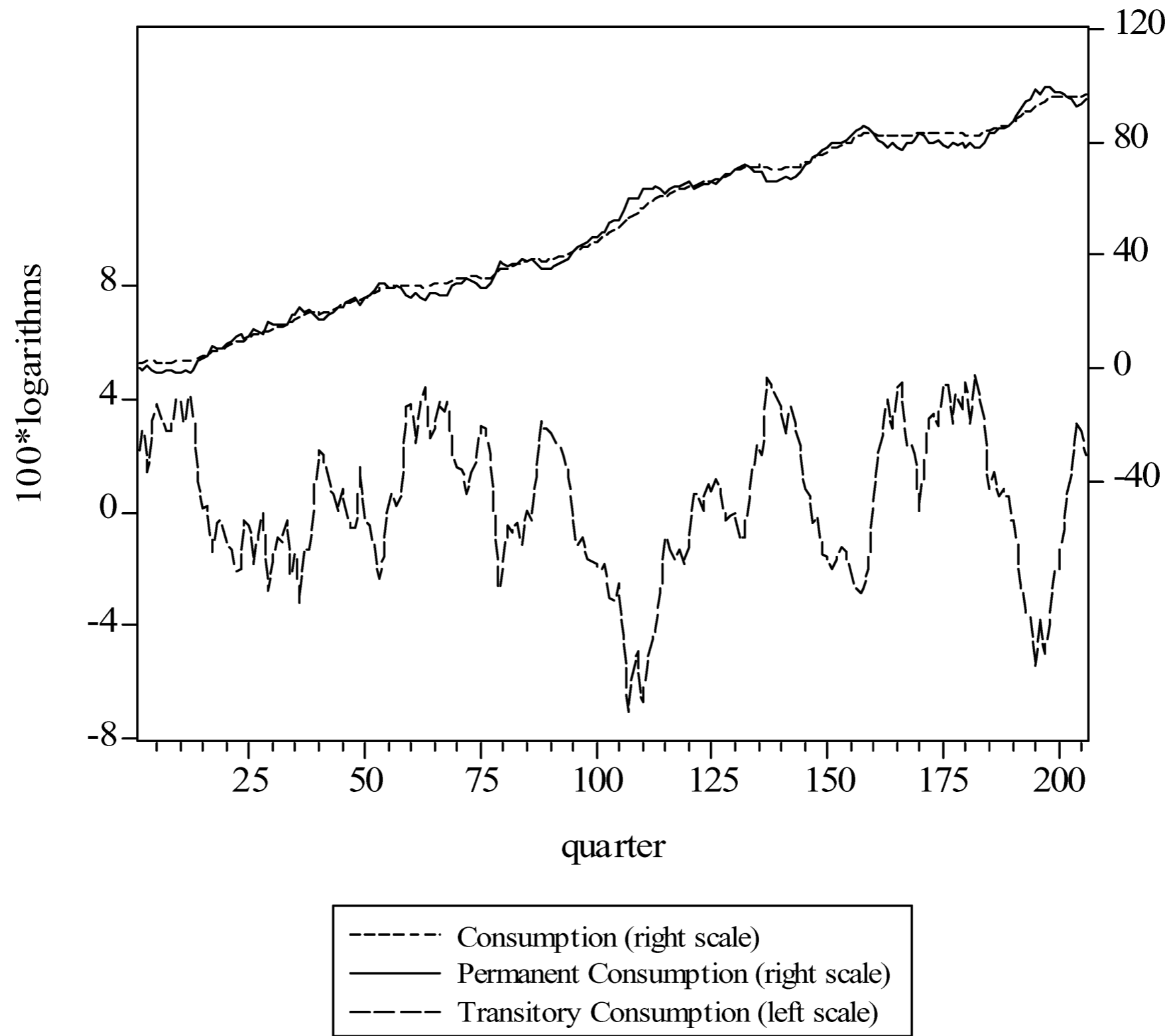
- Permanent income is highly volatile

FIG. 5. An Artificial Sample of Consumption and Its Components Based on the Estimated Correlated UC Model.

Real Business Cycle Theory

- Permanent Income is volatile because most shocks to GDP are productivity shocks (i.e., real shocks) rather than aggregate demand shocks (e.g., monetary policy or fiscal policy)

- Essentially a Solow Growth Model for the short-run, with frequent productivity shocks

Productivity Shocks

- A positive/negative productivity shock increases/decreases labour demand

- Real wage and employment rise/fall

Can productivity shocks explain fluctuations in the Unemployment Rate?

- Requires highly elastic labour supply

- "Intertemporal substitution of labour"
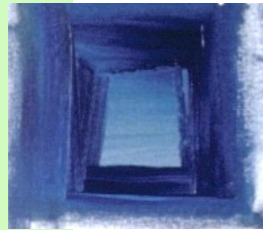
The labor market

- **Intertemporal substitution of labor**:
  In RBC theory, workers are willing to reallocate labor over time in response to changes in the reward to working now versus later.

- The intertemporal relative wage equals
  $$\frac{(1 + r)\,W_1}{W_2}$$

  where W_1 is the wage in period 1 (the present) and W_2 is the wage in period 2 (the future).

Can productivity shocks explain recessions?

- What exactly is a negative technology shock?

A Partial Resolution?

- Perhaps RBC models explain economies in expansions, while Keynesian models explain economies in recessions

- I.e., aggregate demand shocks are infrequent, large, and negative
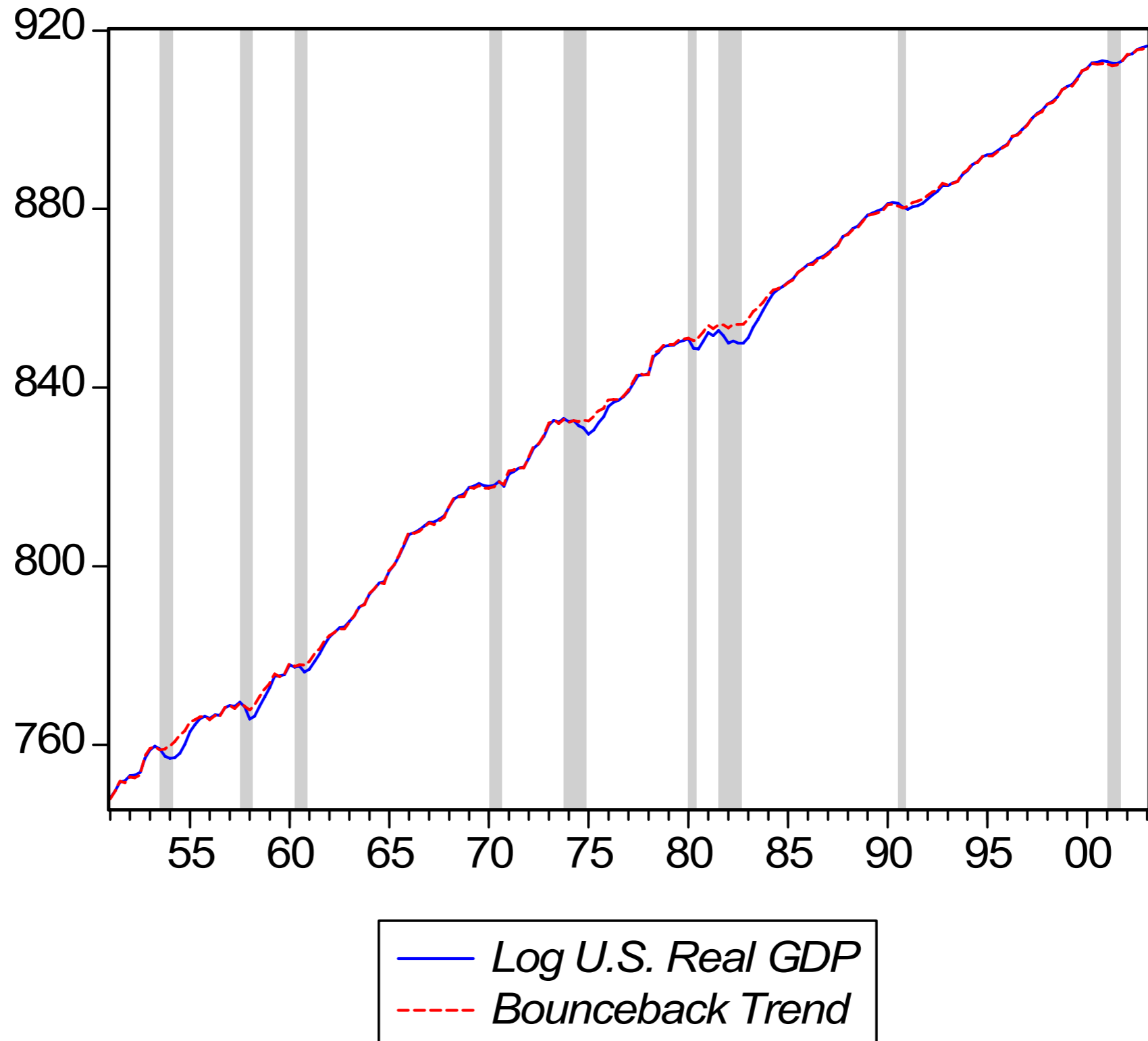
- Morley and Piger (2008)

Fig. 6
U.S. real GDP and steady-state estimates of trend (NBER recessions shaded)
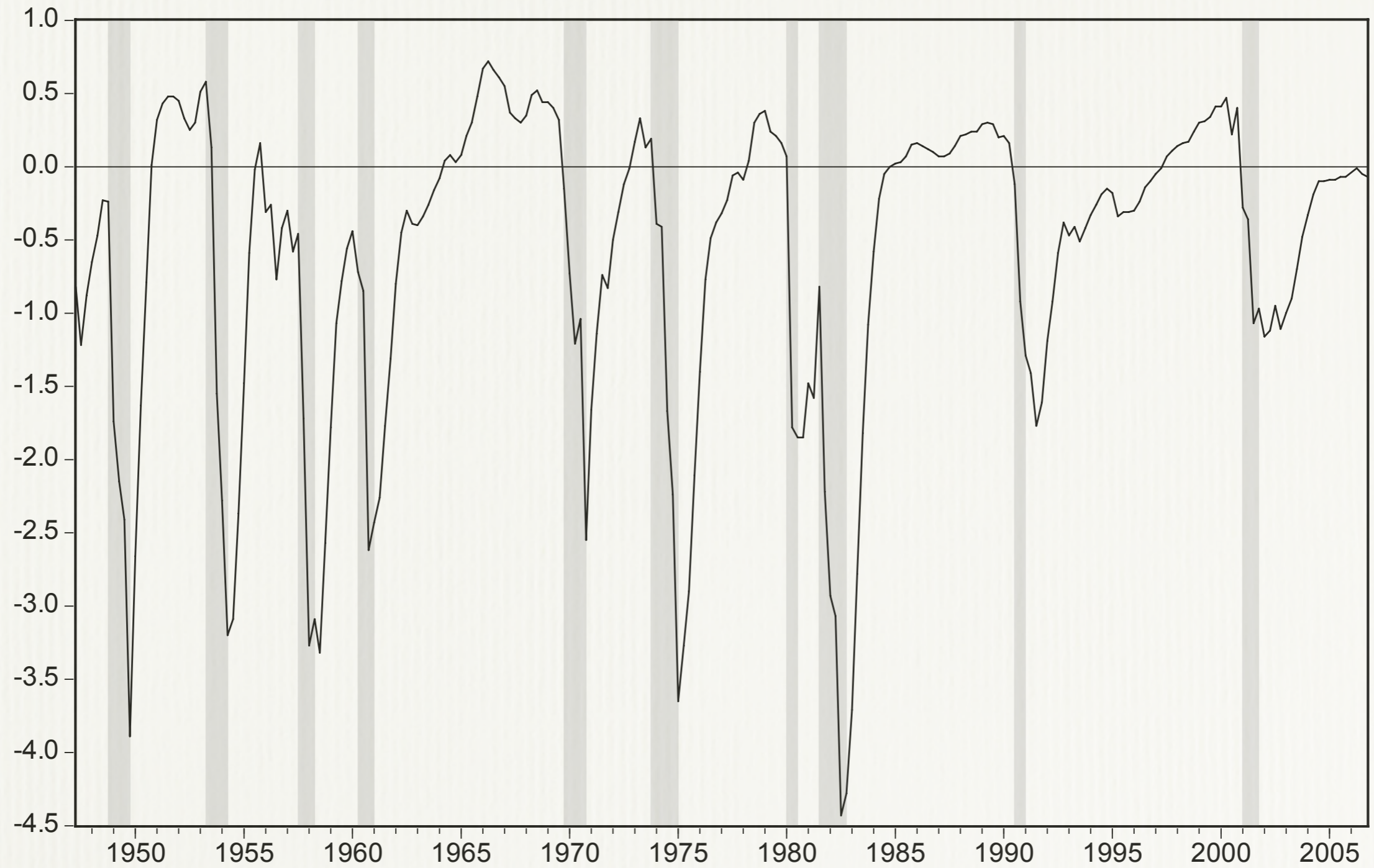
Fig. 4
Model-Free Measure of the U.S. Business Cycle (NBER recessions shaded)

- Material also covered in Chapter 4 of Romer in the reading package

- Solutions to HW#3 posted

- Practice Questions posted

- Final exam is Tuesday, May 6 from 6:00pm to 8:00pm

Mankiw's Ten Principles of Economics

- ... according to Yoram Bauman