Central Banks, Bubbles, and Productivity

General Outline

- An overview of the difference between inflation targeting, NGDP targeting, and a Taylor Rule;
- An argument as to why NGDP targeting generally makes more sense;
- An argument to the effect that inflation targeting is particularly dangerous, because central bas that practice it can end up fueling unsustainable asset-market booms.
- Empirical evidence supporting the last argument

Conventional Assessment of Alternative Targets

- Loss Function:

$$L = \alpha(y_t - y_n)^2 + \beta(\pi_t - \pi^*)^2$$

- $\beta > \alpha$: More weight on inflation tan output
- $\beta < \alpha$: More weight on output tan inflation

Alternative Monetary Targets

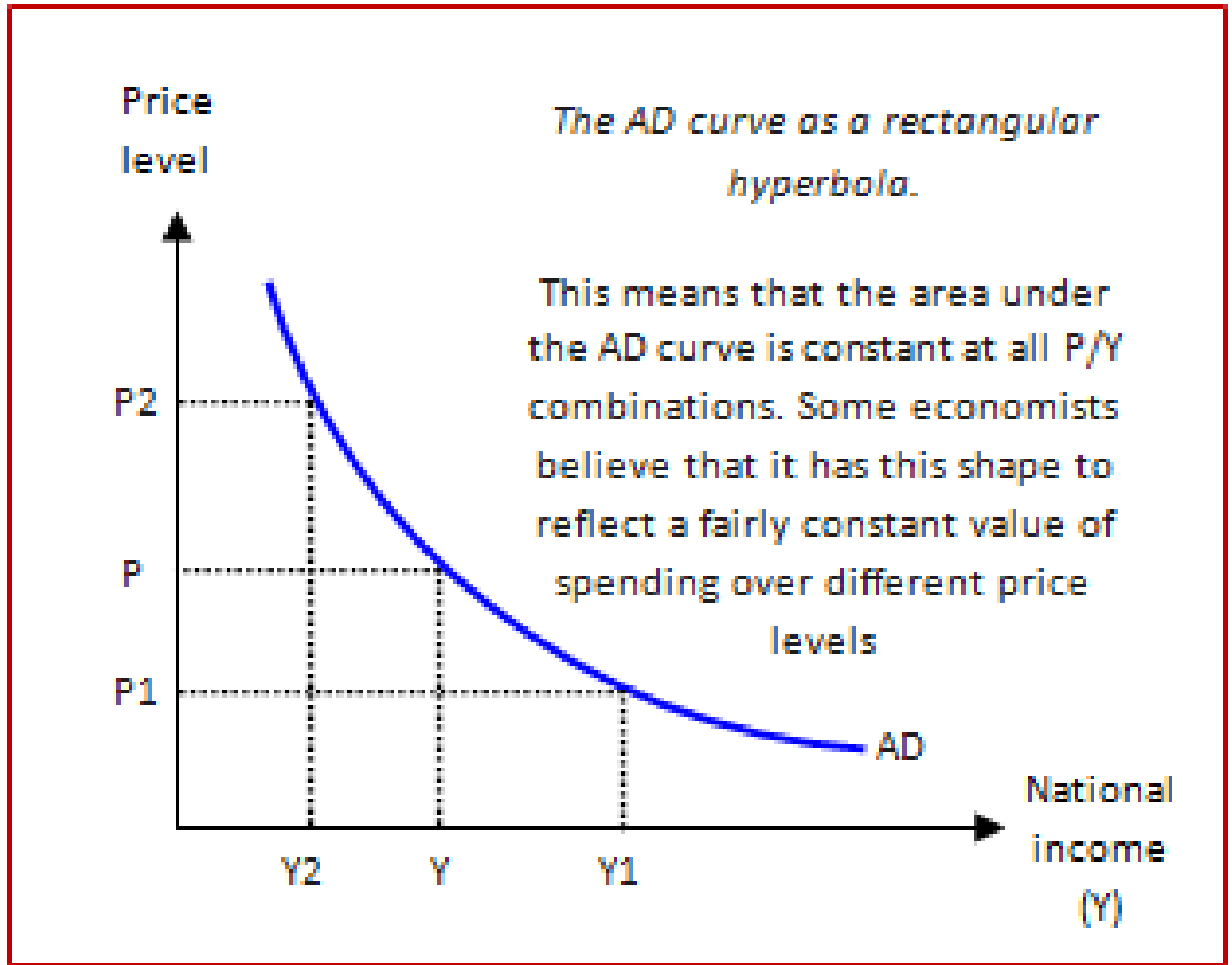
- Simple Inflation Target: $\alpha = 0$
- Taylor Rule: α and $\beta > 0$
- NGDP Growth Rate: $\beta = 0$

Rational for Inflation Targeting

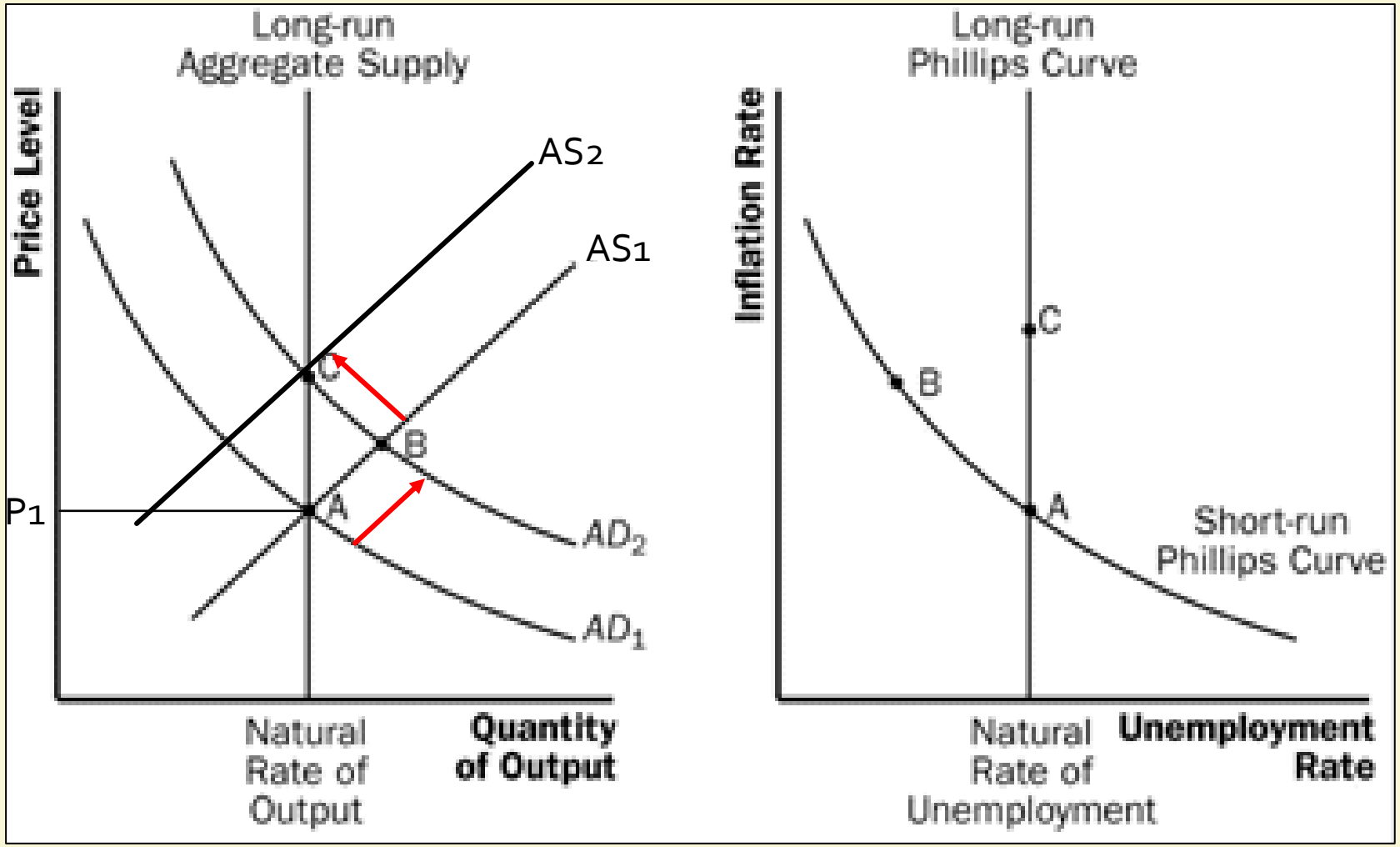
- Changes in P are ultimate cause of differences between y_t and y_n
  - Prices are Sticky (M-disequilibrium)
  - Prices are Flexible (Signal Extraction Problem)
- So, output loss automatically avoided

Inflation Targeting and NGDP Targeting 1

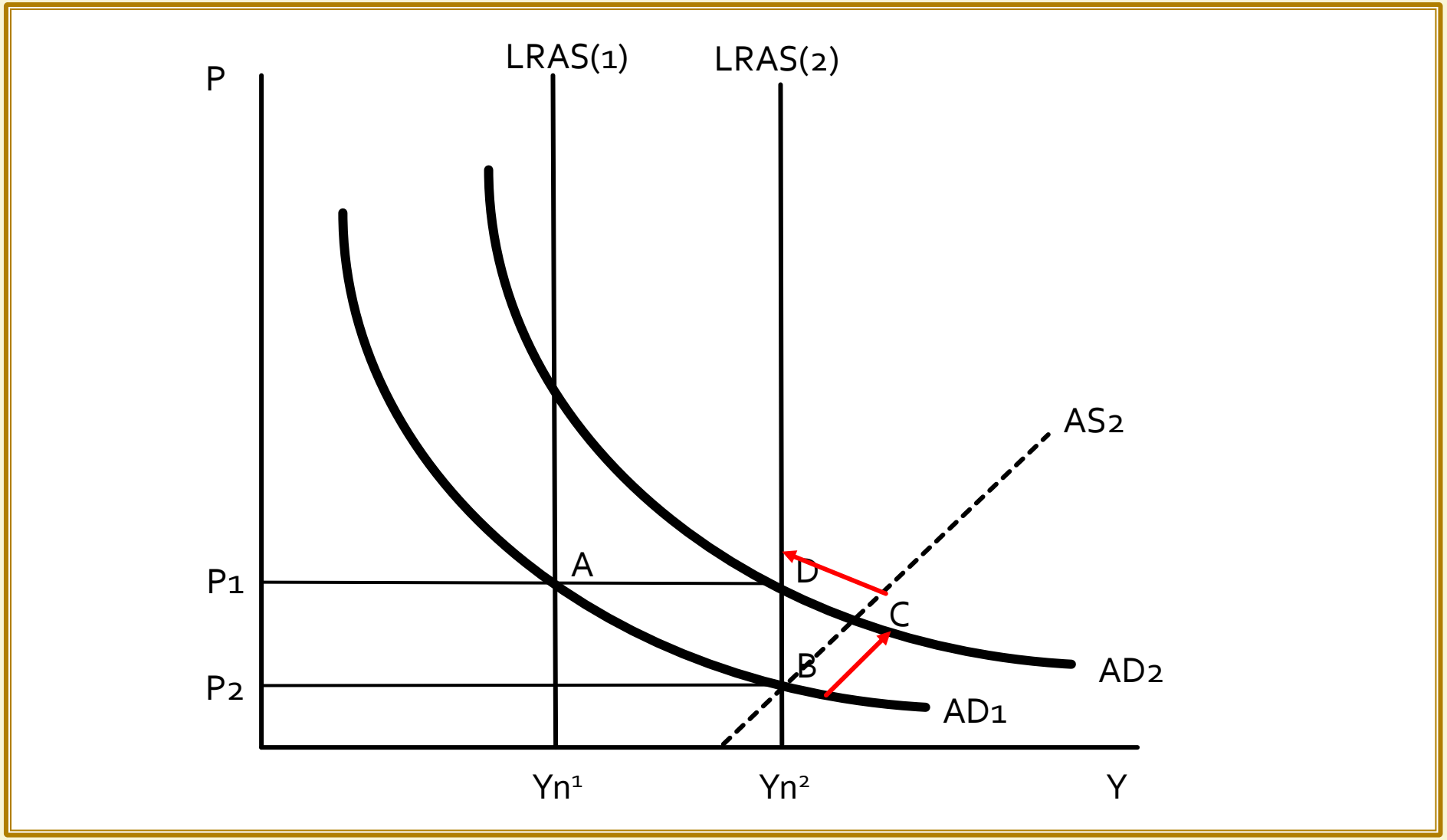
Stable NGDP is equivalent to maintaining a stable level (or growth rate) of Aggregate Demand



Fixed LRAS: Inflation Targeting and NGDP Targeting Equivalent



Changing LRAS: Inflation Targeting and NGDP Targeting *not* Equivalent



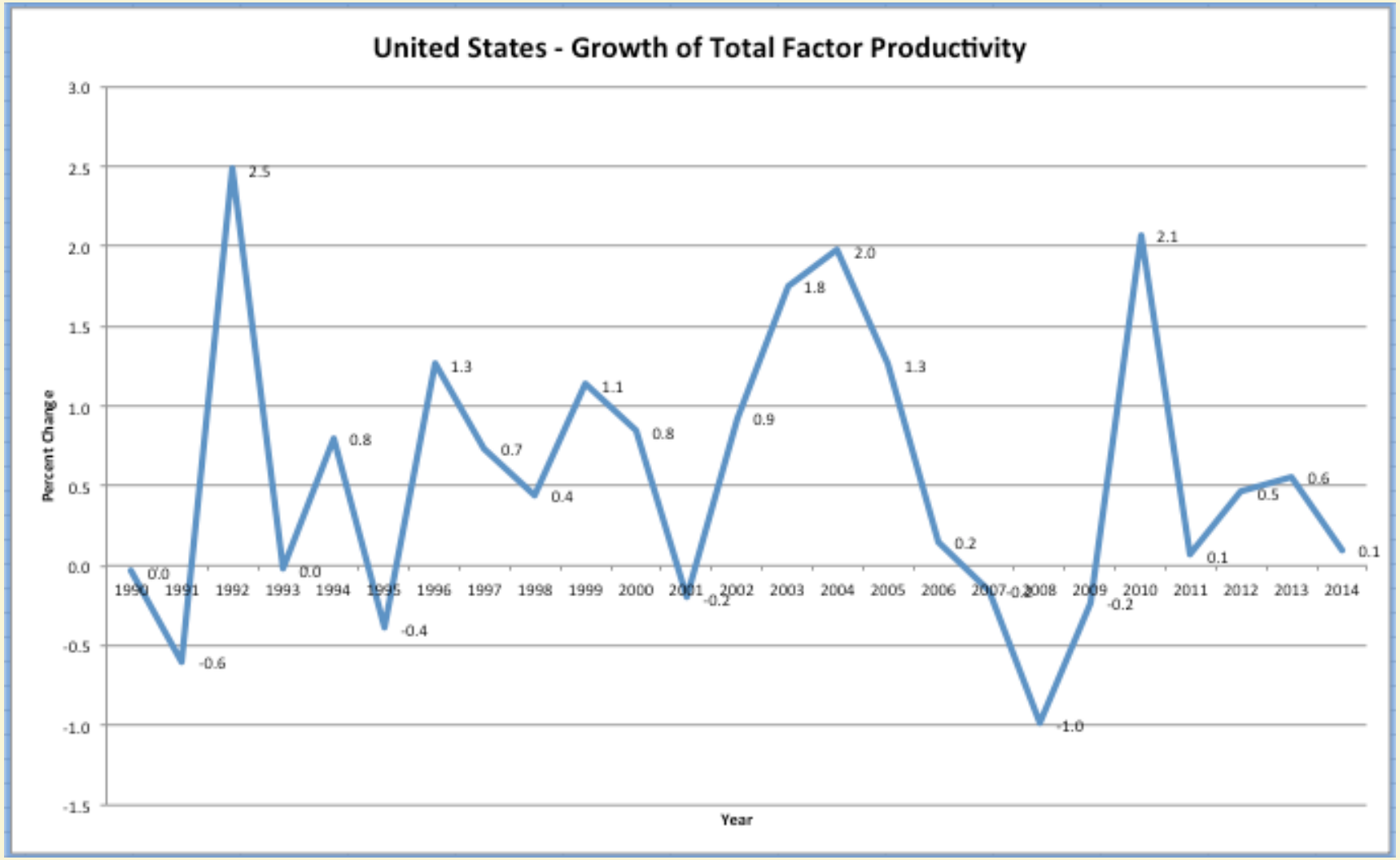
NGDP Stability Dominates Price Stability

- Signal Extraction: Since they can have only one cause, meaning of price changes is unambiguous.
- Sticky Prices:
  - Prices respond quickly to underlying changes in unit cost
  - Either output or input prices must change, depending on whether AD remains stable or not; and output prices tend to be less sticky than input prices
- P stabilization in presence of productivity innovations itself results in suboptimal output movements.

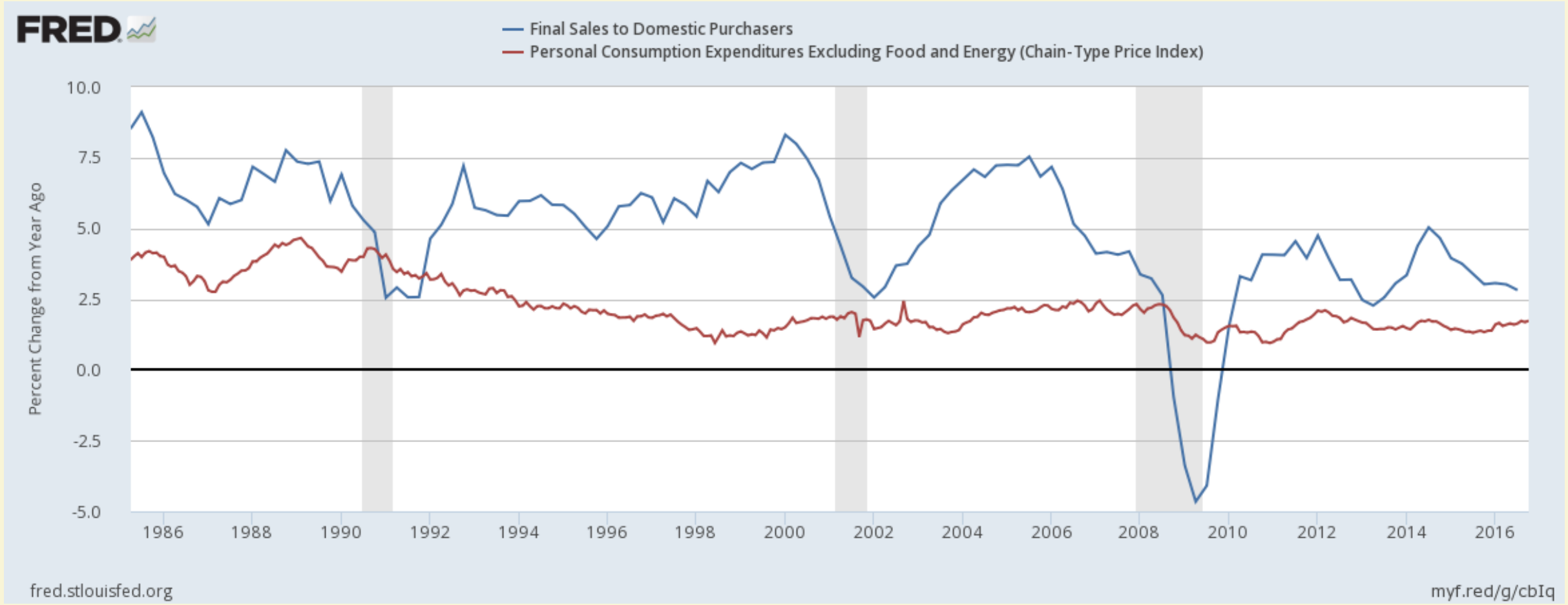
What happens if the central bank insists on targeting P (or rate of inflation) despite a surge of productivity?

- For simplicity, assume that labor and $y_t = A_t(N_t)$, where A is productivity. Let w = nominal wage rate. As A increases, so does equilibrium real wage, w/P.
- Price-level targeting requires higher AD and w in respone to positive A shock.
- With sticky wages, w/P doesn't adjust at once to new equilibrium. Result is short-run "profit inflation." Signal extraction problem prevents temporary nature of enhanced profits from being recognized
- Asset prices reflect discounted expected future profits.

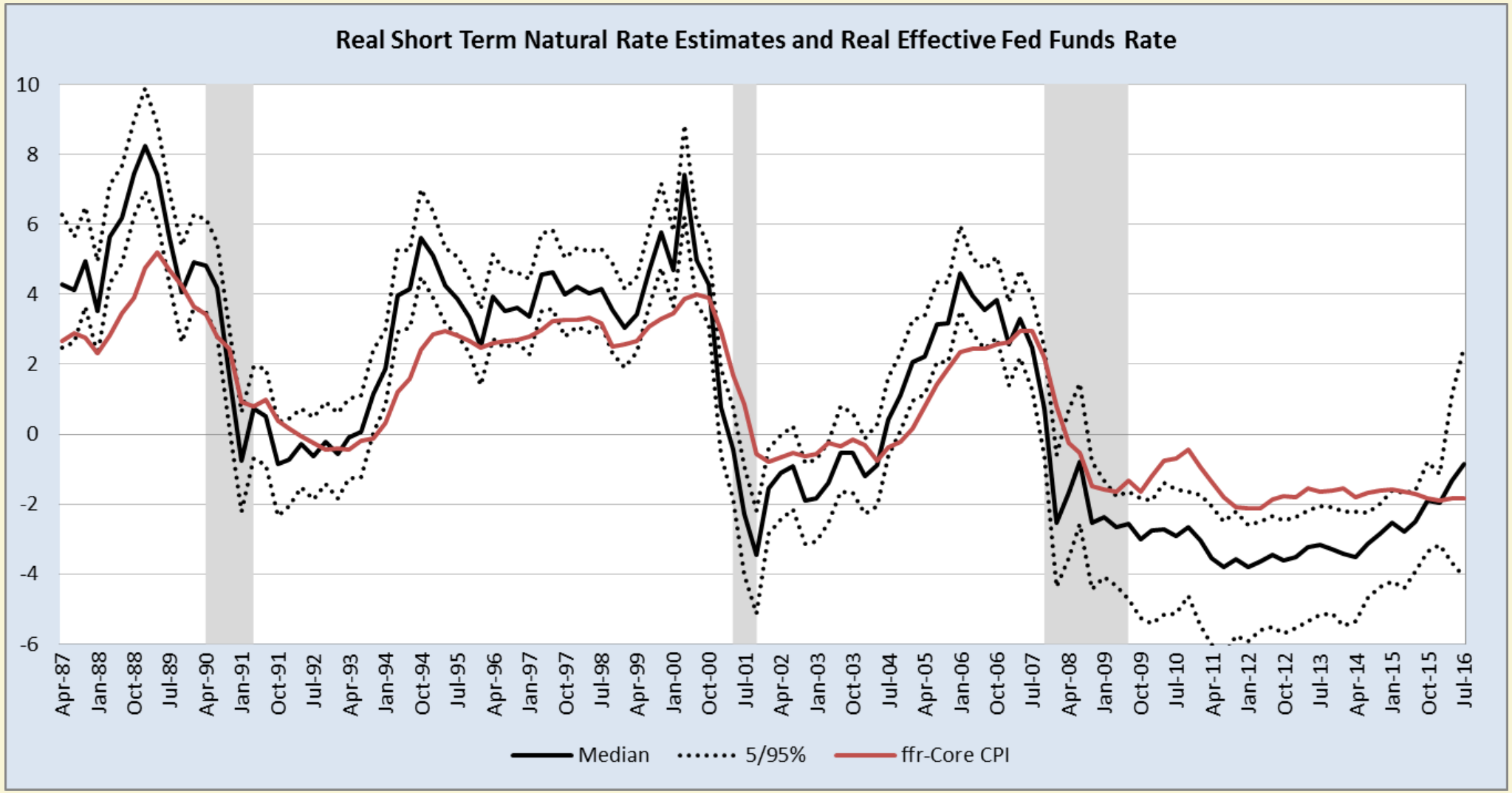
Inflation targeting, productivity, and booms 1



Inflation targeting, productivity, and booms 2



Inflation targeting, productivity, and booms 3



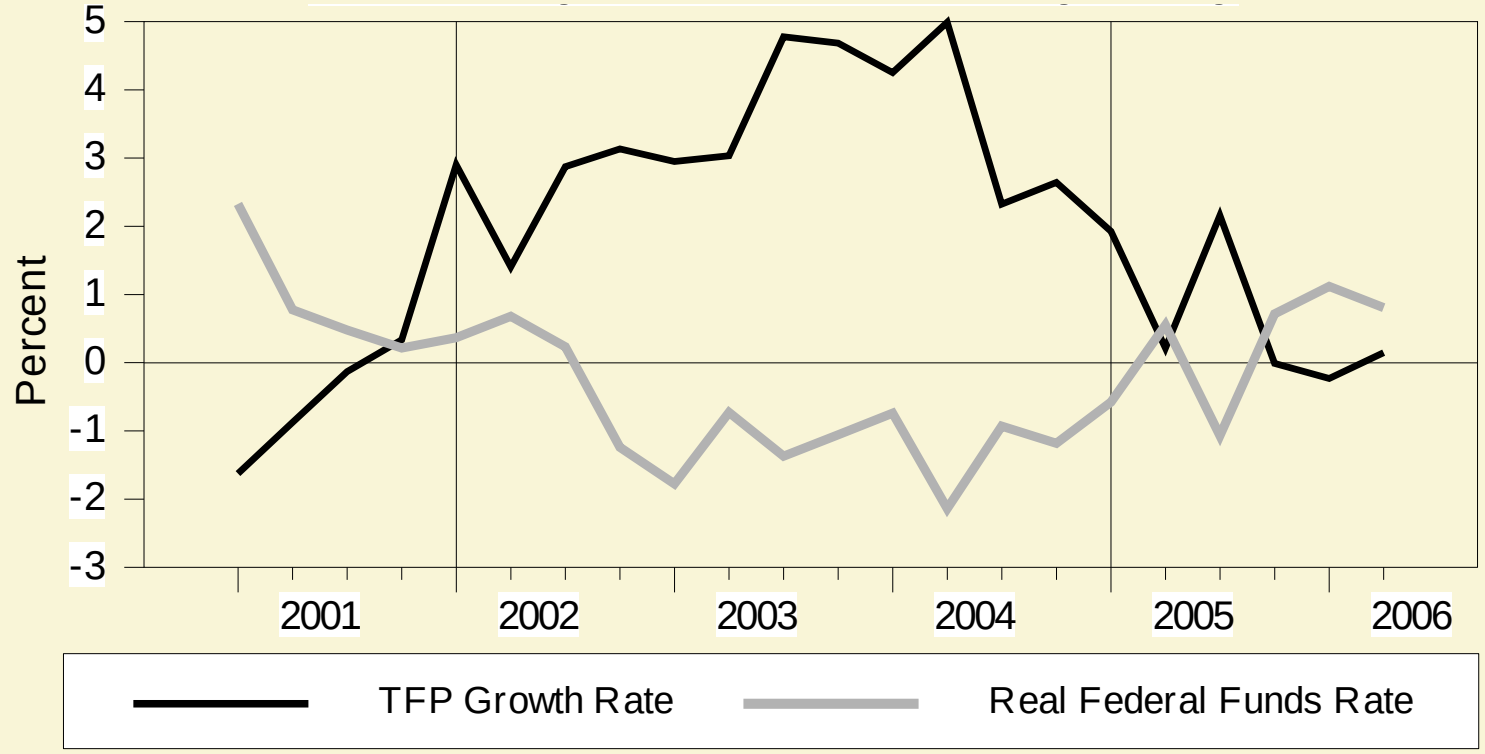
A Simple Natural Rate Model

$$r^n = -\ln(\beta) + \sigma g + n$$

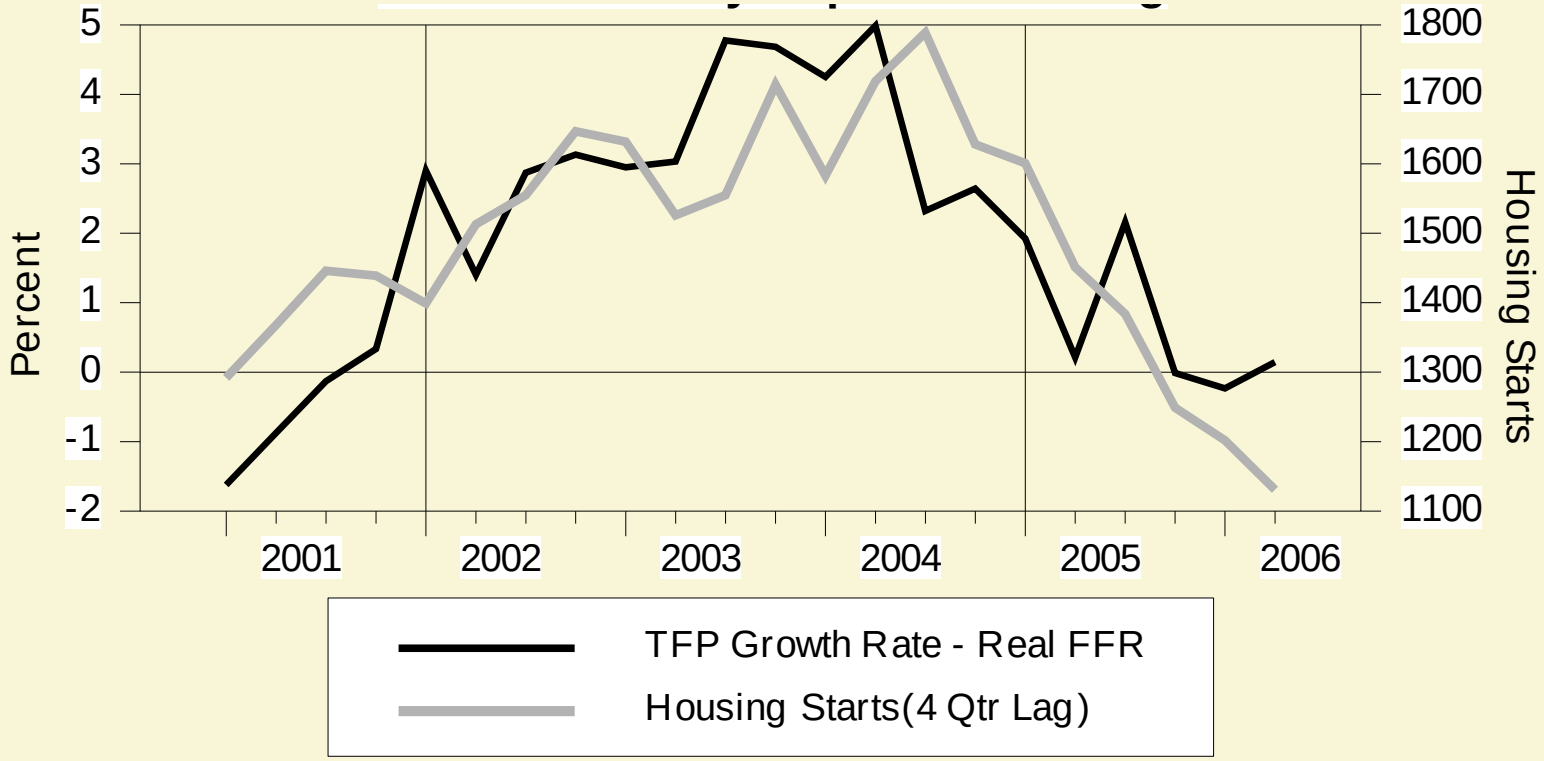
where

- r^n is the "natural" rate of interest;
- β is the time discount factor;
- G is the total-factor productivity growth rate; and
- n is the growth rate of the labor force.

The Productivity Gap



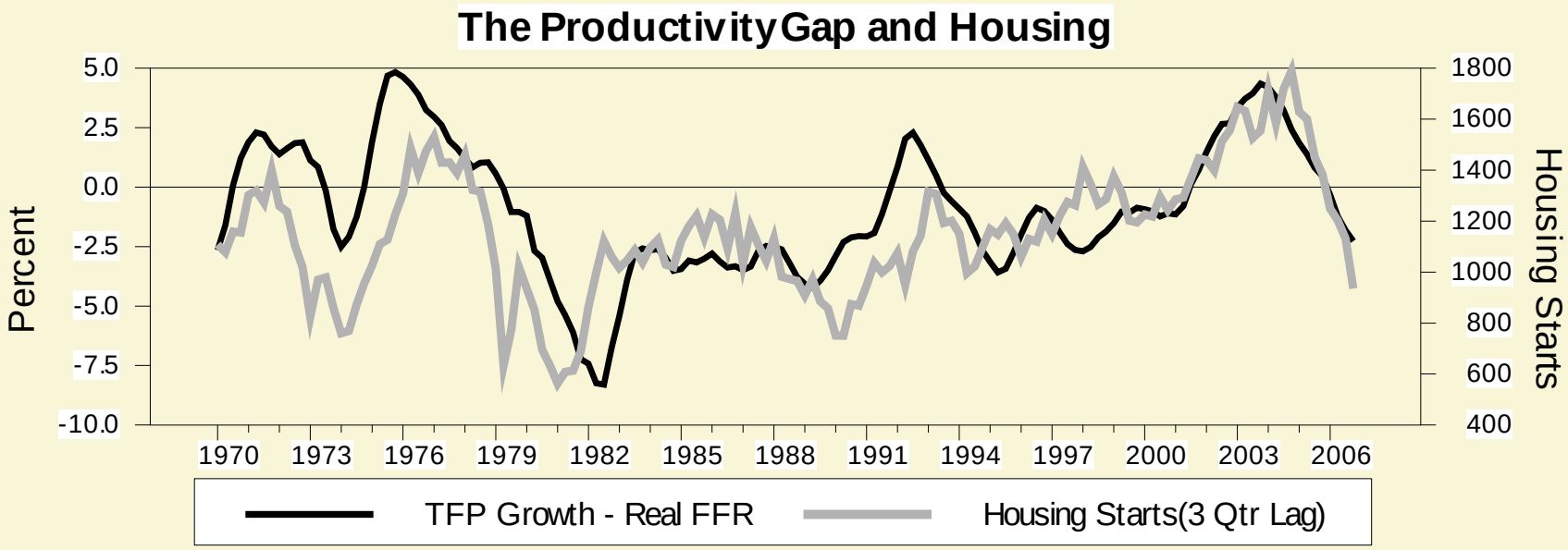
The Productivity Gap and Housing Starts



Representative Quotes from the December 2003 FOMC Transcript

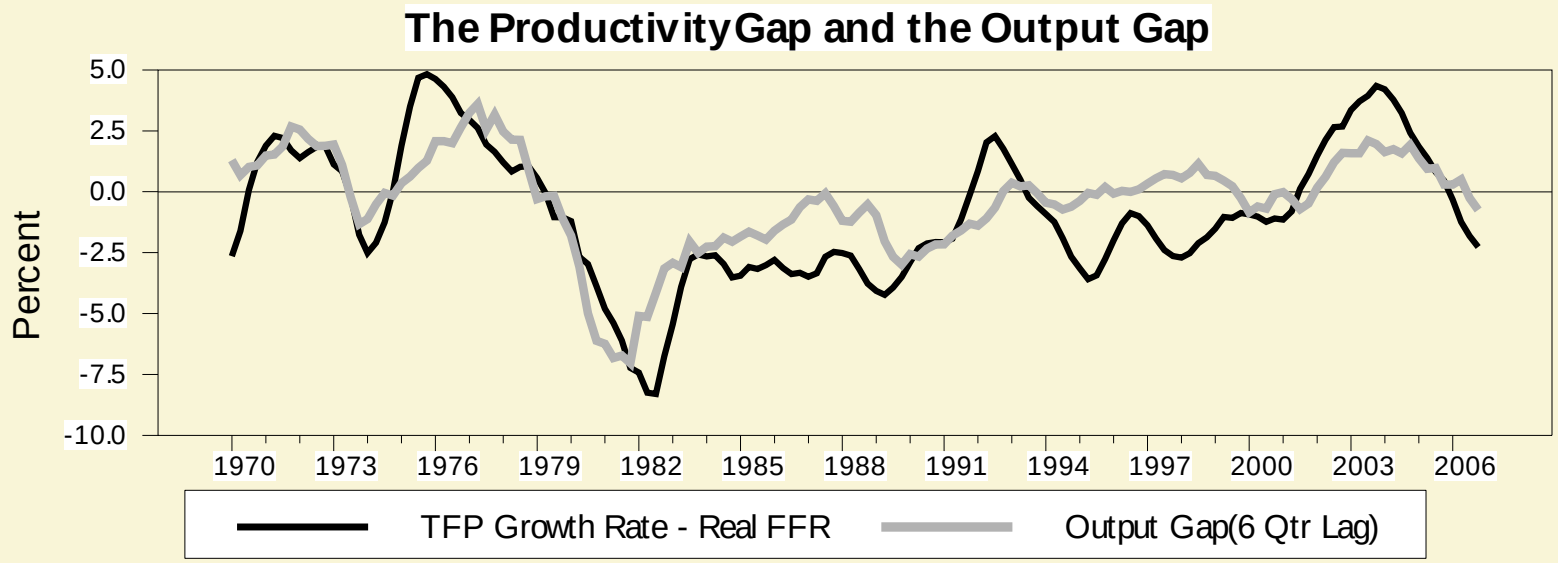
- “We believe we can enter [2006] with a below-equilibrium funds rate and still not generate any acceleration of inflation until later”
- “Faster productivity growth…could put further downward pressure on prices…Partly for this reason, the shift in the balance of risks…does not call for a change in policy any time soon…we should continue to take our risks on the easy side of policy.”

A Longer View



The Productivity Gap and the Output Gap

$$\widehat{y}_t = -\frac{1}{\sigma}\sum_{i=0}^{\infty}\left(r^A_{t+i} - \overline{r}^n - \sigma\widehat{g}_{t+i}\right).$$



NGDP Targeting and Taylor Rule

- Taylor Rule a compromise between inflation and NGDP targeting. Attaches some weight to departures of y from y_n, and some to departures of P from P*.
- But precisely because it still treats P movements as inherently "bad," it is in fact inferior to NGDP targeting, which seeks to prevent AD from influencing P, without interfering with P movements based on supply (and especially productivity) innovations.

The Productivity Gap and the Taylor Rule