Discussion of
"A Model of Secular Stagnation"

by Eggertsson and Mehrotra

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Banco de Portugal, June 2015

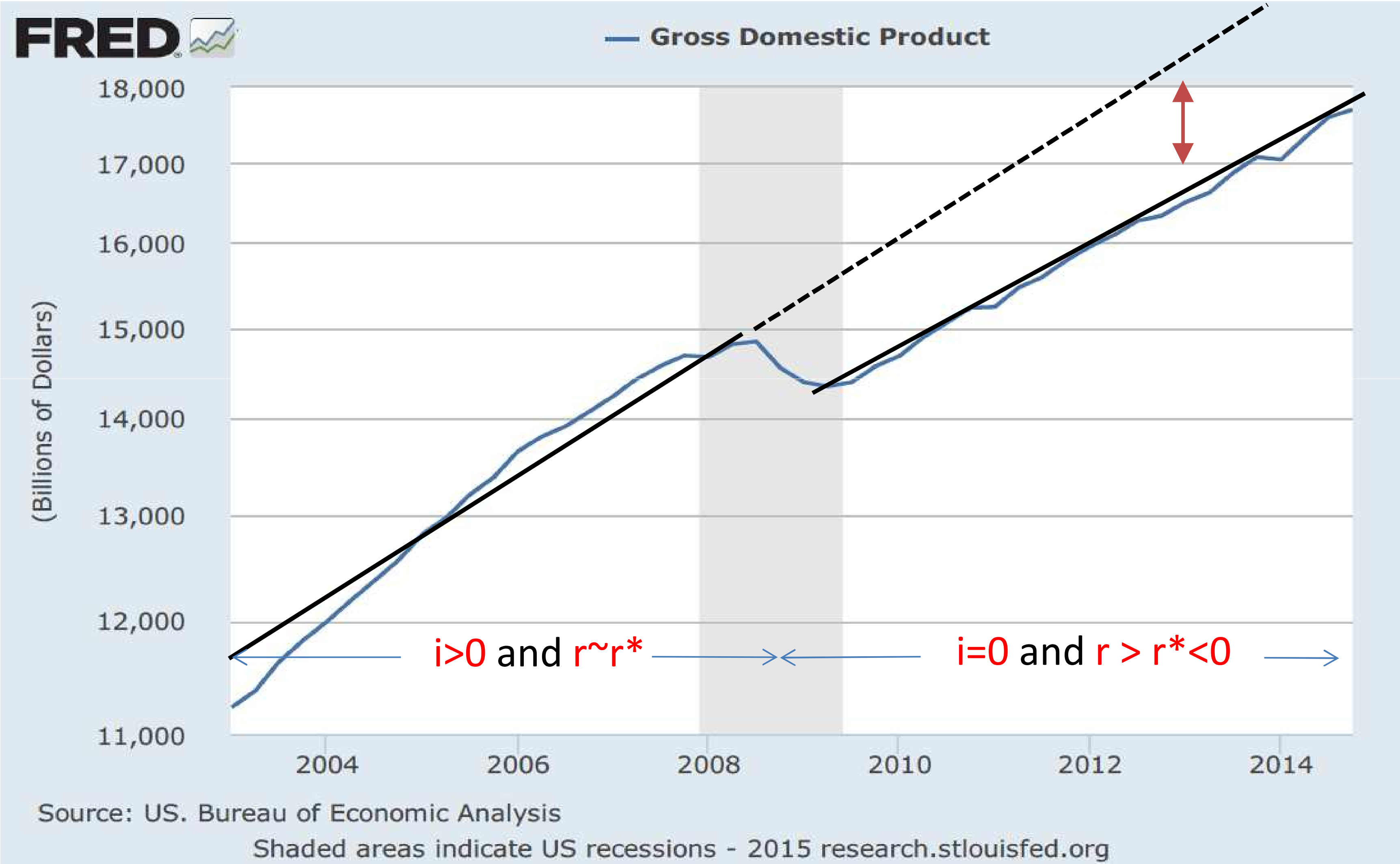
Secular Stagnation

Definition

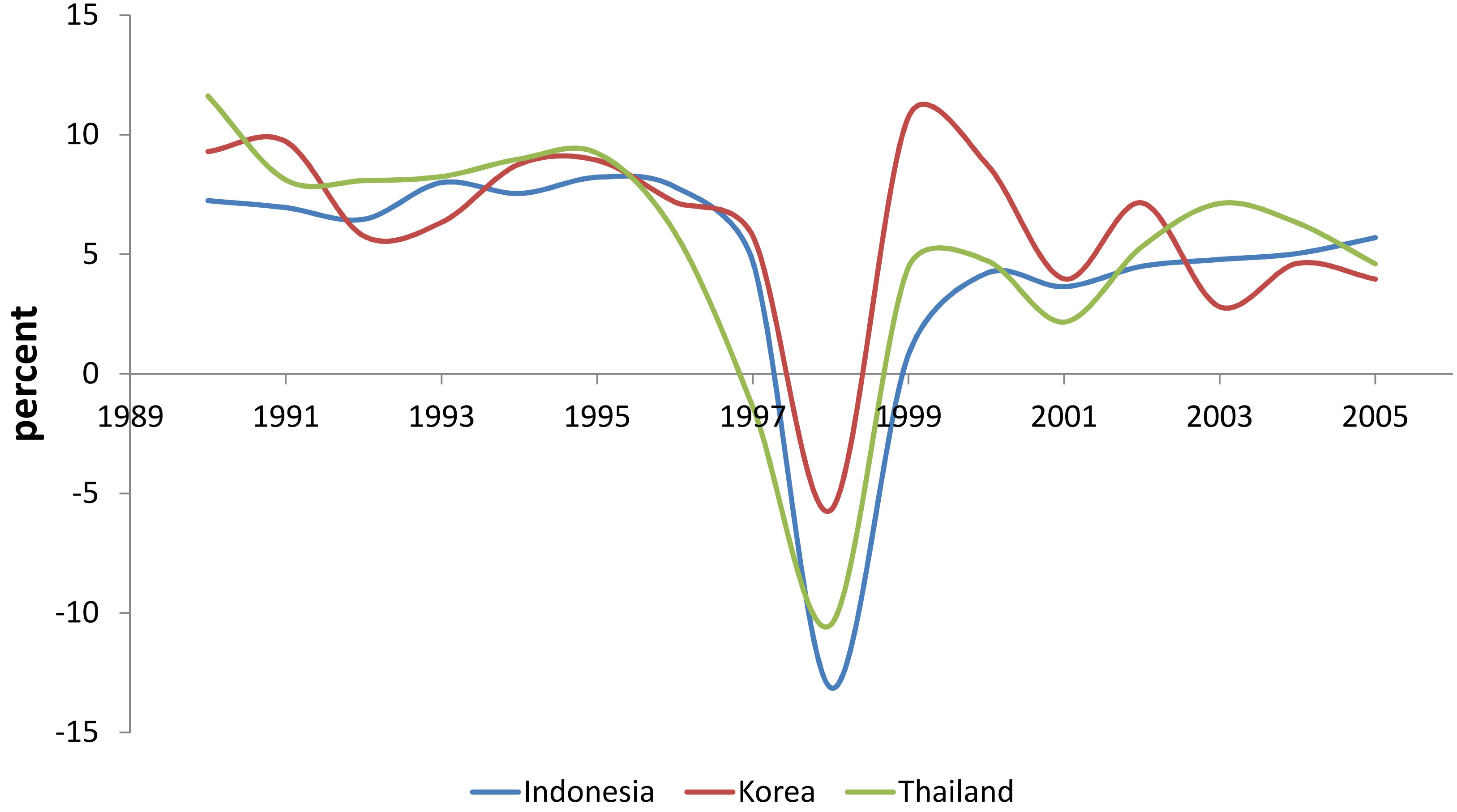
A **permanent** reduction in the level of output below its frictionless level brought about by the combination of

- a negative natural rate of interest
- a low inflation target
- the zero lower bound on nominal interest rates
- downward sticky wages

Secular Stagnation



Similar to Output Growth in Asian Crisis



Source: IMF

The Model: Aggregate Demand

IS curve

$$\underbrace{\frac{1+g}{1+r}D}_{\substack{loan\ demand\\ by\ young}} = \underbrace{\frac{\beta}{1+\beta}(Y-D)}_{\substack{loan\ supply\\ by\ middle\ aged}}$$

LM curve

$$1+r=\frac{1+i}{\Pi}=max\left\{\underbrace{Z(r^*,\Pi^*)\Pi^{\phi-1}}_{Taylor\ rule},\underbrace{\frac{1}{\Pi}}_{ZLB}\right\}$$

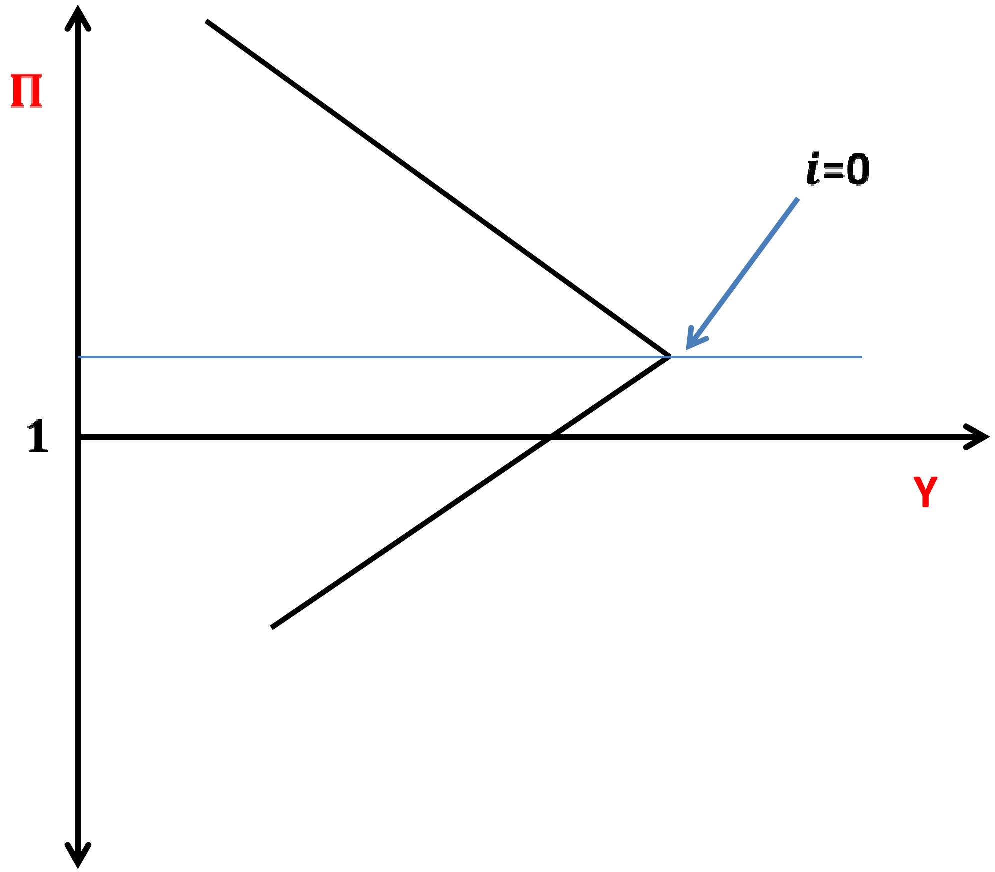
AD curve

$$max\left\{Z\Pi^{\phi-1},\frac{1}{\Pi}\right\}=(1+g)\frac{1+\beta}{\beta}\frac{D}{Y-D}$$

Two regimes:

- $i > 0$: higher inflation → higher real interest rates → less borrowing and less demand
- $i = 0$: higher inflation → lower real interest rates → more borrowing and more demand

Aggregate Demand



The Model: Aggregate Supply

- Output produce by labor: $Y = AL^{\alpha}$
- Middle aged would like to supply $\bar{L}$
- Labor demand $W/P = \alpha AL^{\alpha}$
- Downward nominal wage rigidity

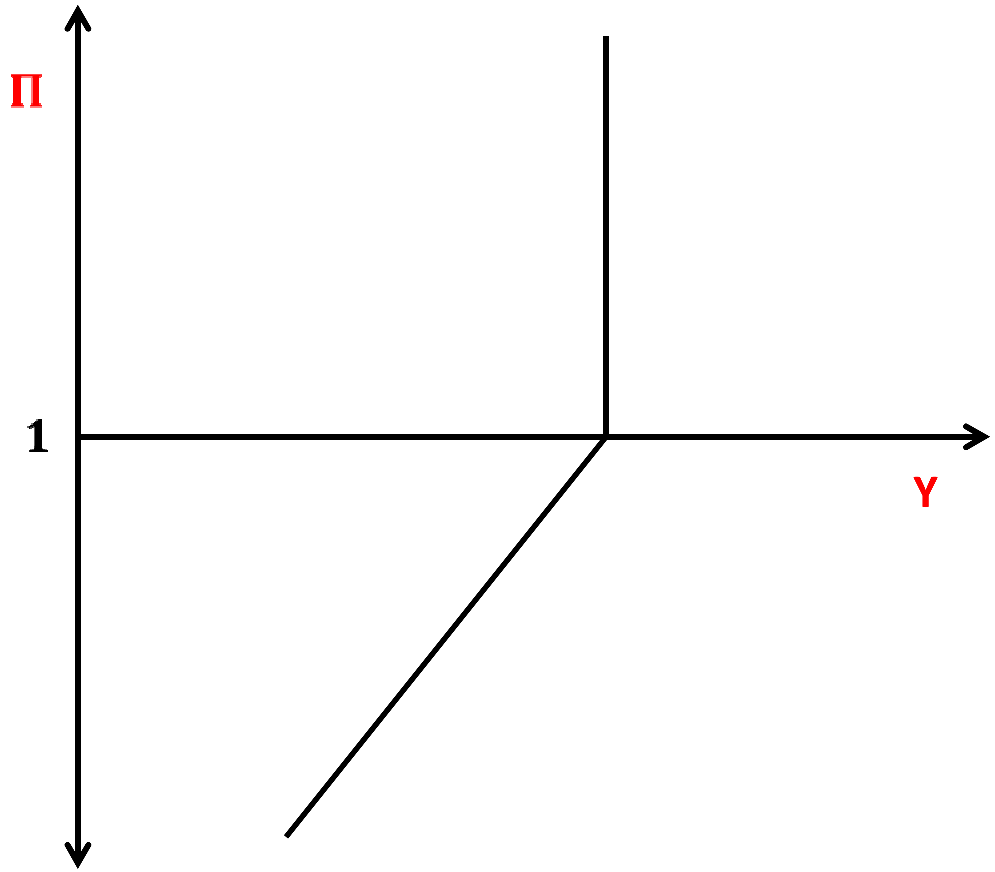
$$W_t = \max\{W^*, \gamma W_{t-1} + (1-\gamma)W^*\} \quad \text{where } W^* = P\alpha A\bar{L}^{\alpha}$$

  - When rising, wages clear the market
  - When falling, they adjust part way

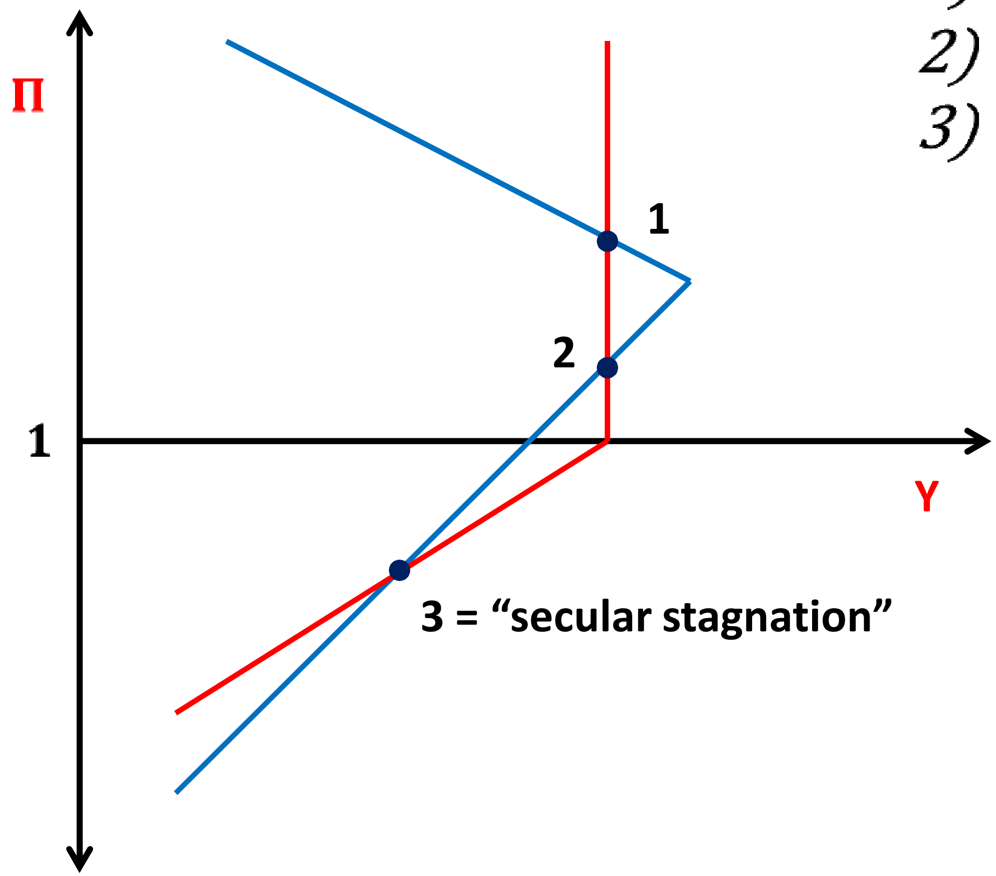
Two regimes:

- $\Pi \geq 0 \rightarrow Y = Y^* = A\bar{L}^{\alpha}$
- $\Pi < 0 \rightarrow Y < Y^*$ and $Y'(\Pi) > 0$

Aggregate Supply



Equilibrium



Three types of solution to system of equations

1) Π>1, i>0, r=r*, Y=Y*
2) Π>1, i=0, r>r*, Y=Y*
3) Π<1, i=0, r>r*, Y<Y*

Comment 1

The result that output is below its natural rate depends mainly on the supply side

- A vertical supply curve would pin down output

Requires

1) Persistent deflation (we still have inflation)
2) Wage bargaining that never adjusts to persistent deflation

Simple Policy Prescription: Positive inflation

Comment 2

The "problem" on the demand side is that the young are not borrowing enough

- Deflation leads to high real interest rates which reduce borrowers ability to borrow so that savers have no place to save
- The only way for the loanable funds market to clear is for income to fall*
- Note again need deflation so that interest rate is high and borrowing low.

Natural extensions would add more savings vehicles:
- Capital
- Land
- Money
- Government debt
- Foreign assets

Policy prescription: Create savings vehicles or transfer income to young

* One could imagine other equilibria in which savers continue to earn income but that the loanable funds market is rationed.

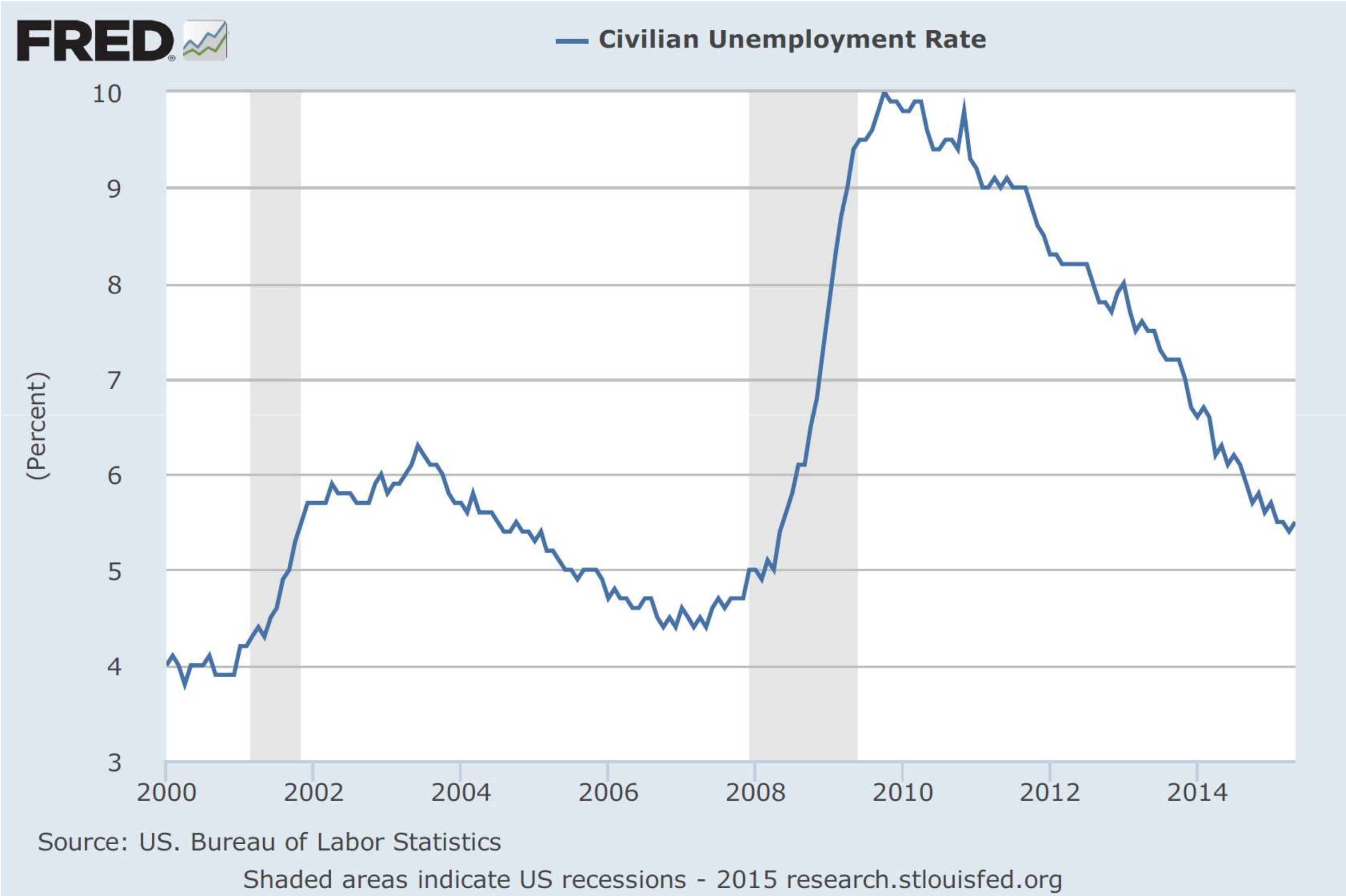
Comment 3

I had a flashback to the debate between Keynes and Pigou

This debate was never going to be answered solely by abstract theory

- Need for quantitative models that fit data

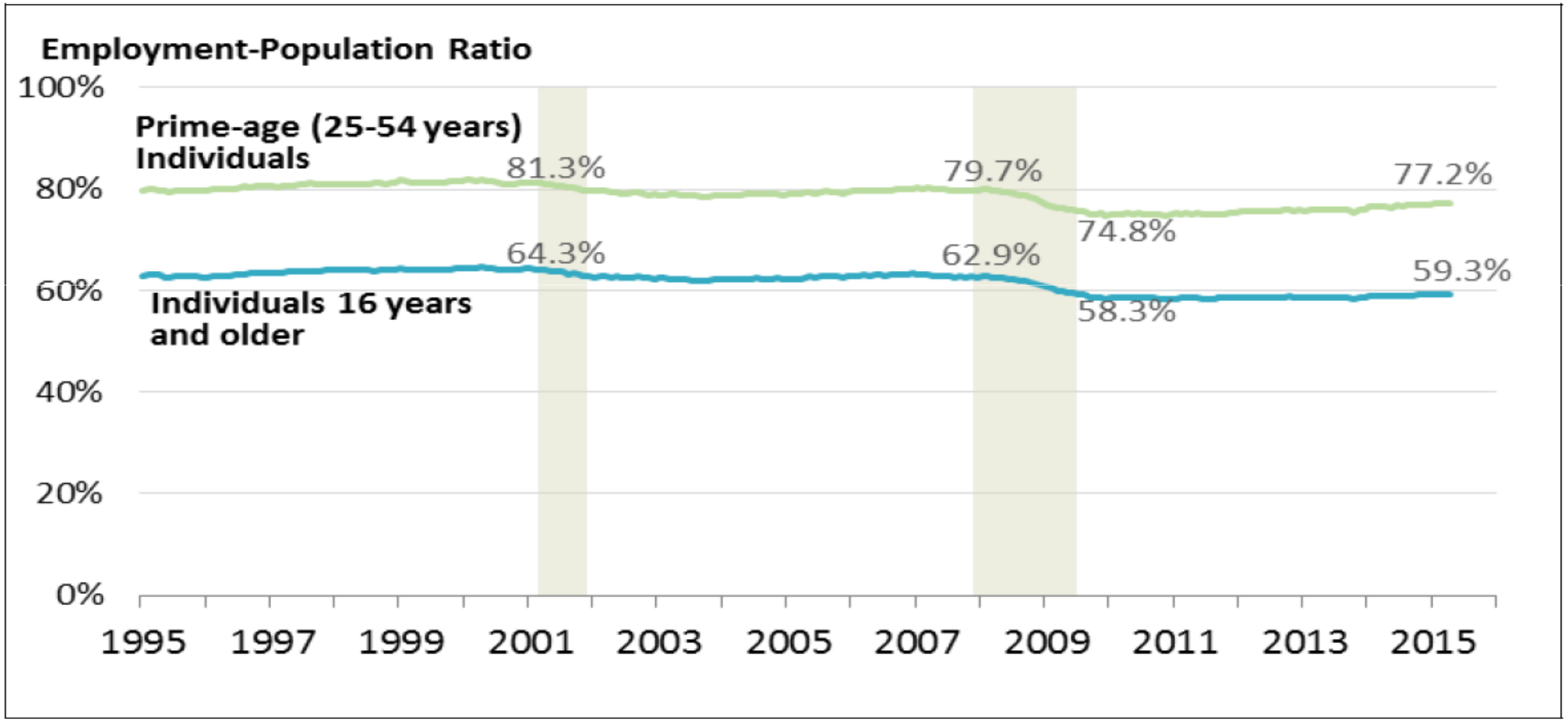
Permanent Slump or Slow Convergence



Permanent Slump or Slow Convergence

Figure 3. Employment-Population Ratios for Prime-Age and Adult Populations

January 1995-April 2015



Source: Figure created by CRS using data from BLS, CPS Program, available at http://www.bls.gov/cps/. Recession data are from NBER, http://www.nber.org/cycles.html.

Notes: Periods of recession are shaded in gray. Data are seasonally adjusted.

Permanent Slump or Slow Convergence