

Principles of Economics
Macroeconomics

Inflation, Unemployment, Output, and Prices

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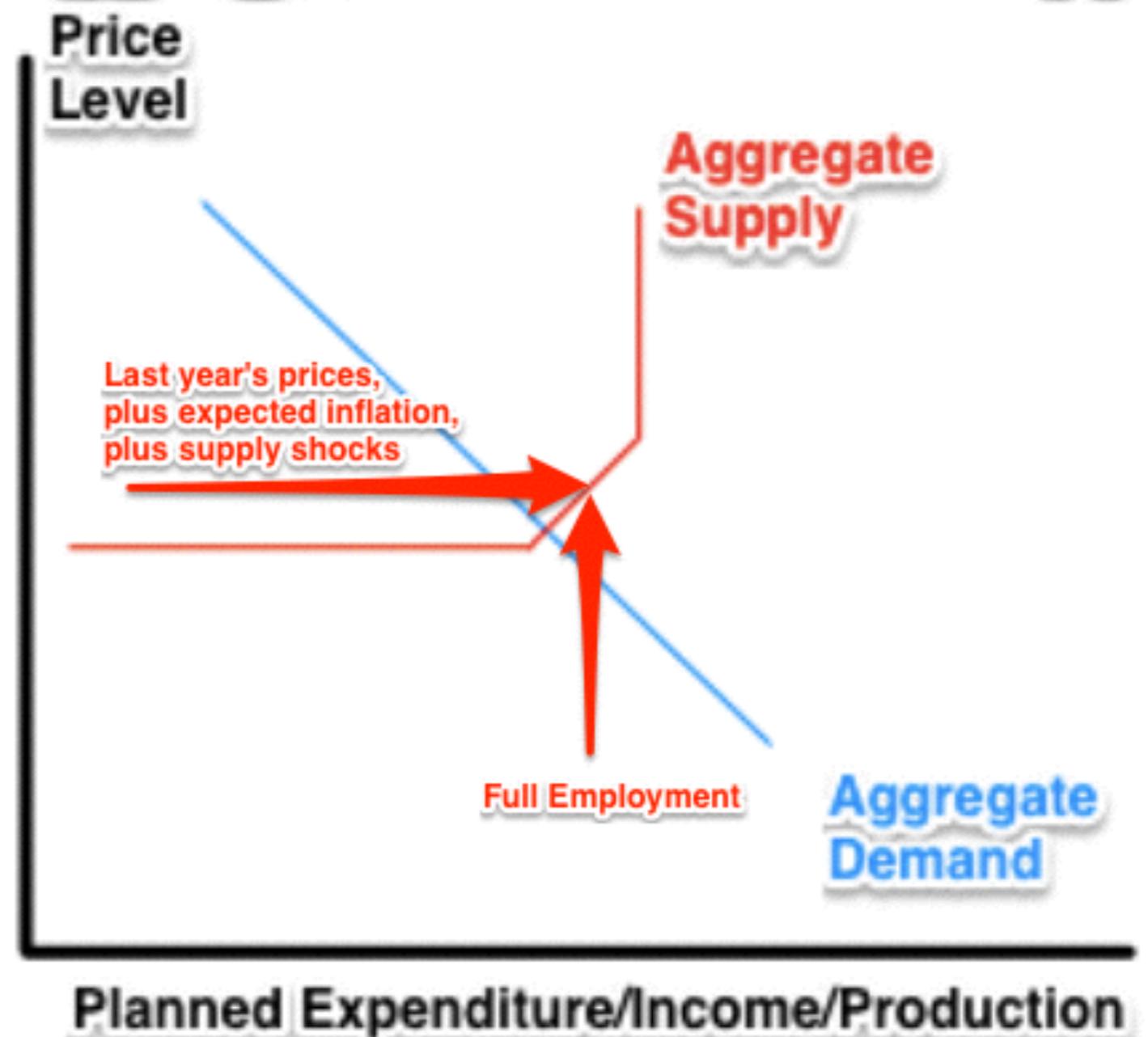
Interest Rates and Spending

- $Y = \mu[c_0 + (G - c_y T) + (c_w W + I + X)(r)]$; r : the real interest rate:
 - $r = i$ (the current interest rate) + $E(\Delta i)$ (expected change in interest rates) + ρ (the risk premium) - $E(\pi)$ (expected inflation)
- Rule of thumb: in the U.S. today, boost the (risky) real interest rate r by 1%-point: reduces exports by \$50 billion/year; reduces household consumption spending by \$50 billion/year; and reduces business investment spending by \$200 billion/year
- The “Liquidity Trap”

Aggregate Supply

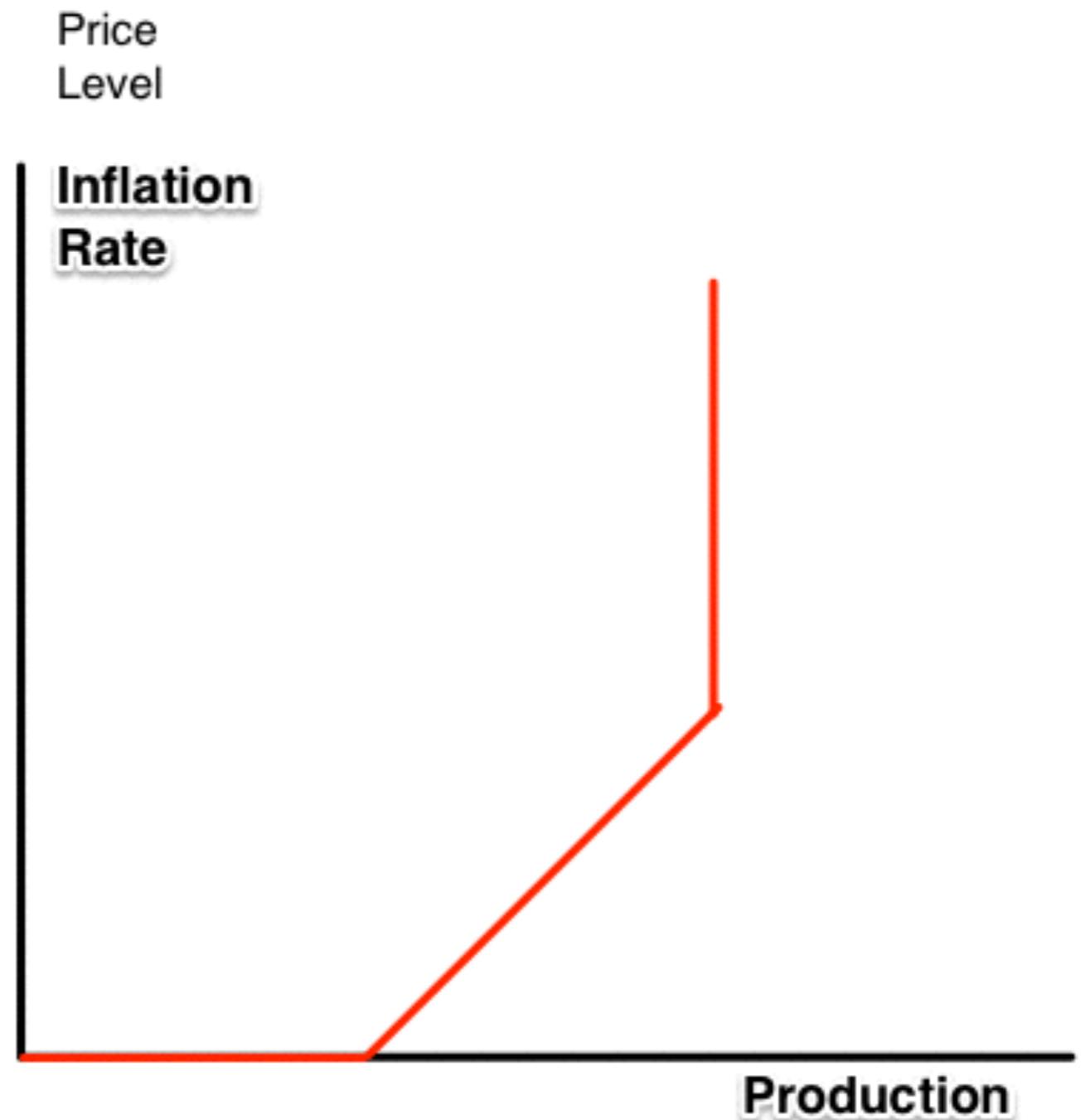
- Where is the aggregate supply curve?
- Full employment
- Last year's prices
- Expected inflation

Aggregate Demand and Supply



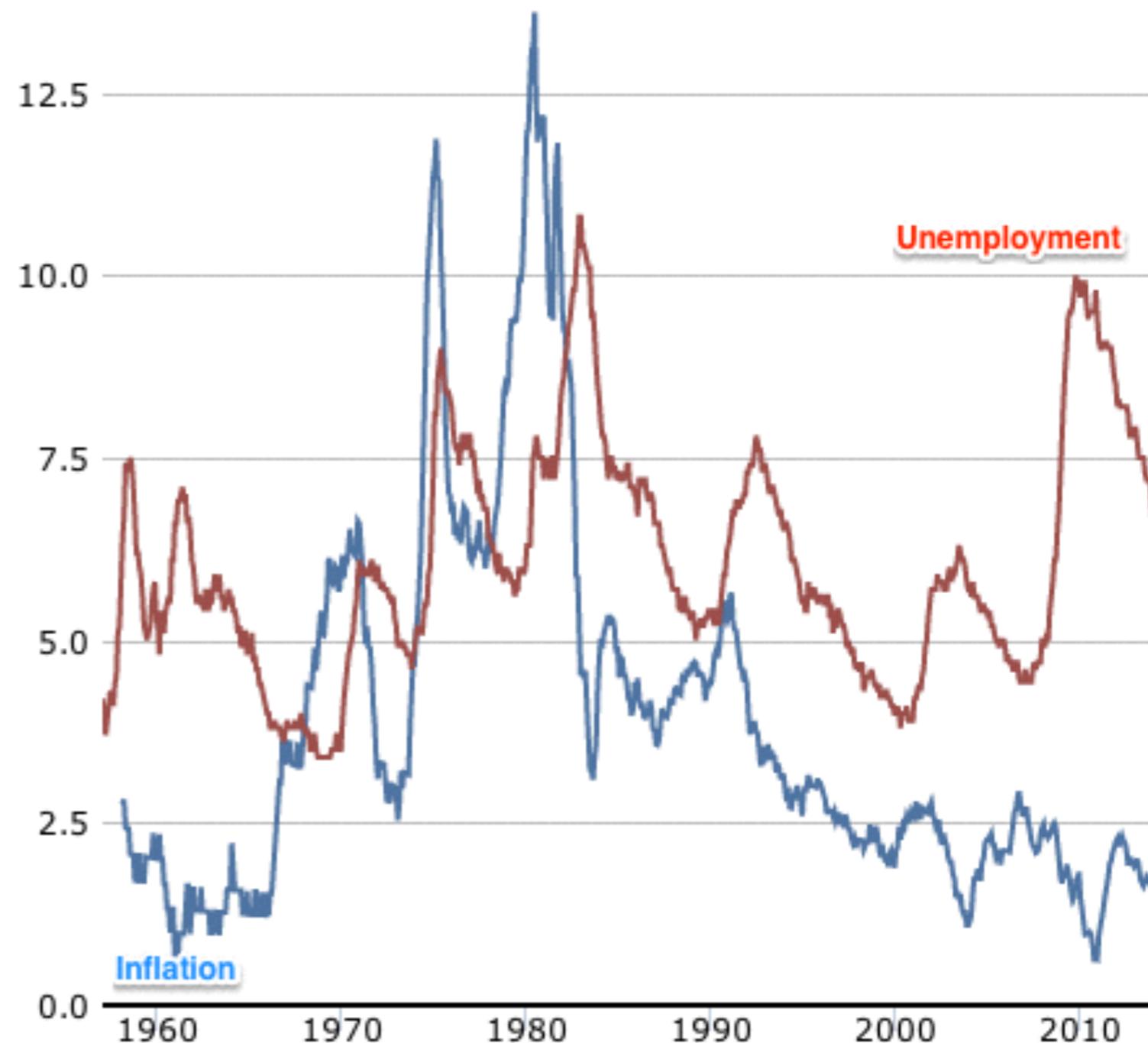
Suppose We Were to Slip a Derivative?

- In some ways a better diagram to draw—we aren't continually having to draw our curves higher and higher on the graph...



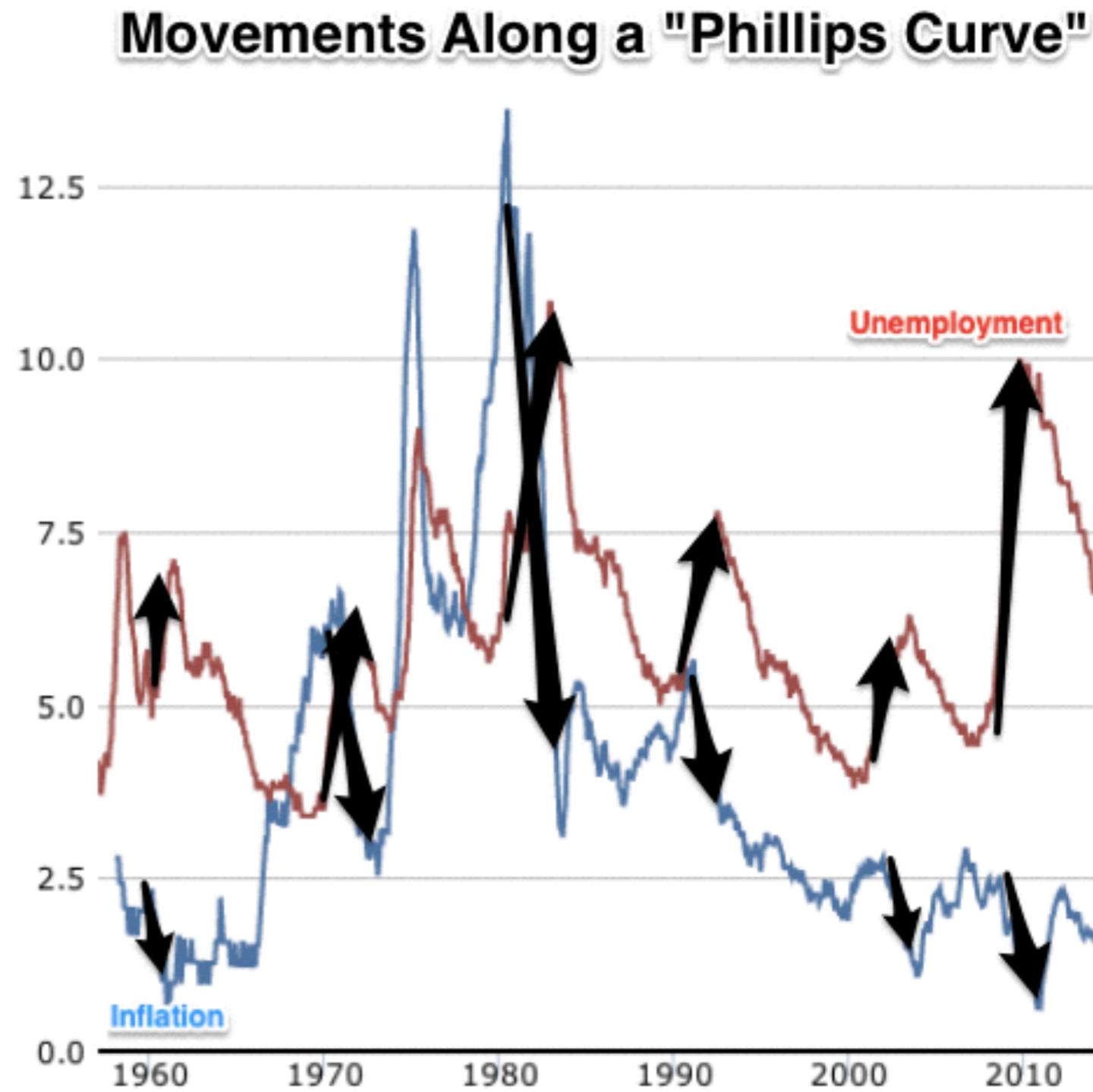
The Phillips Curve

- When unemployment is high AD is to the left—and we should see inflation less than expected inflation plus supply shocks
- When unemployment is low AD is to the right—and we should see inflation less than expected inflation plus supply shocks



The Phillips Curve II

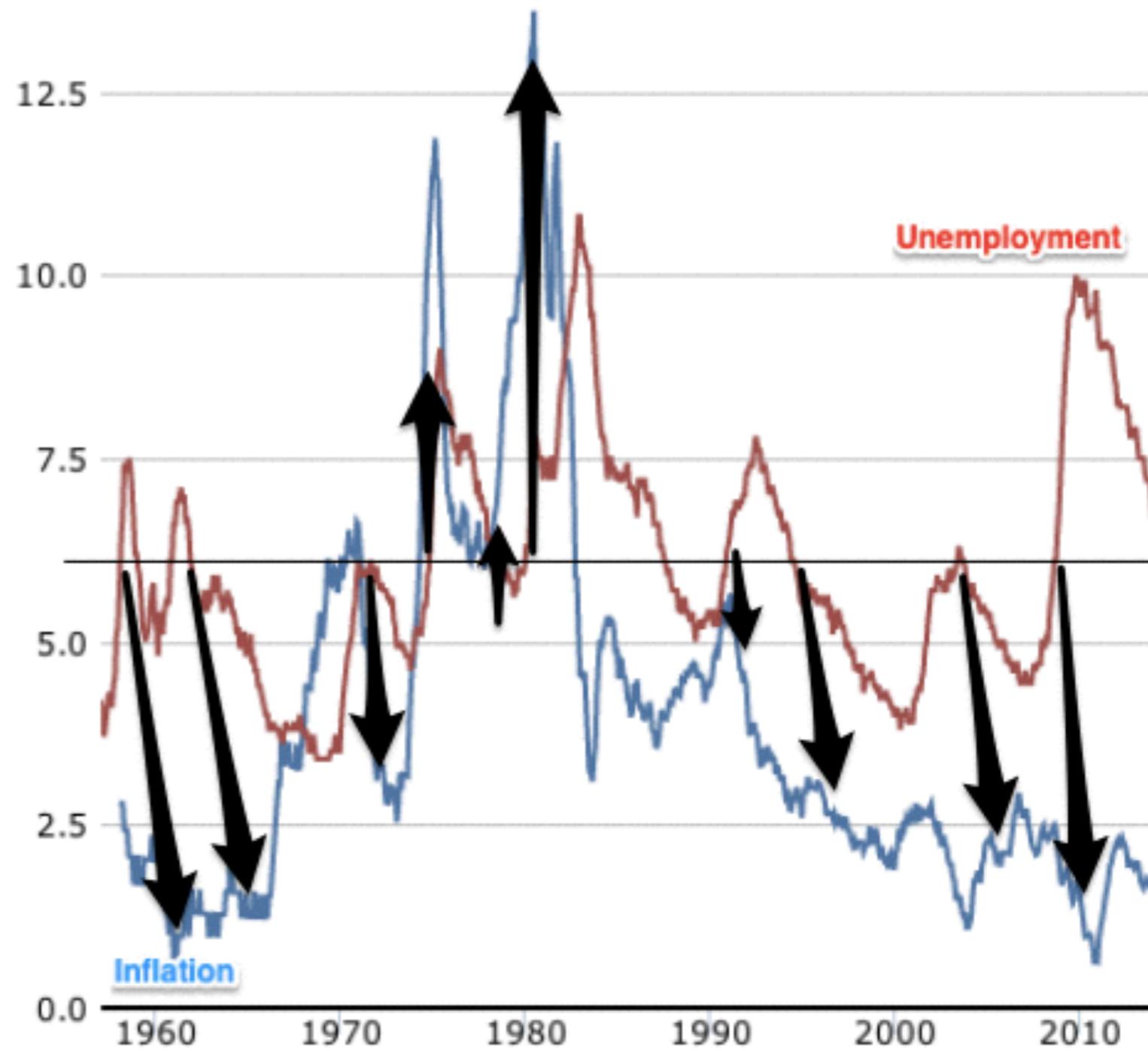
- When unemployment rises, inflation tends to fall
- A relationship called the “Phillips Curve”
- But not something you can count on...



The Phillips Curve III

- And what inflation rate corresponds to a given unemployment rate has varied a lot over the past half century...

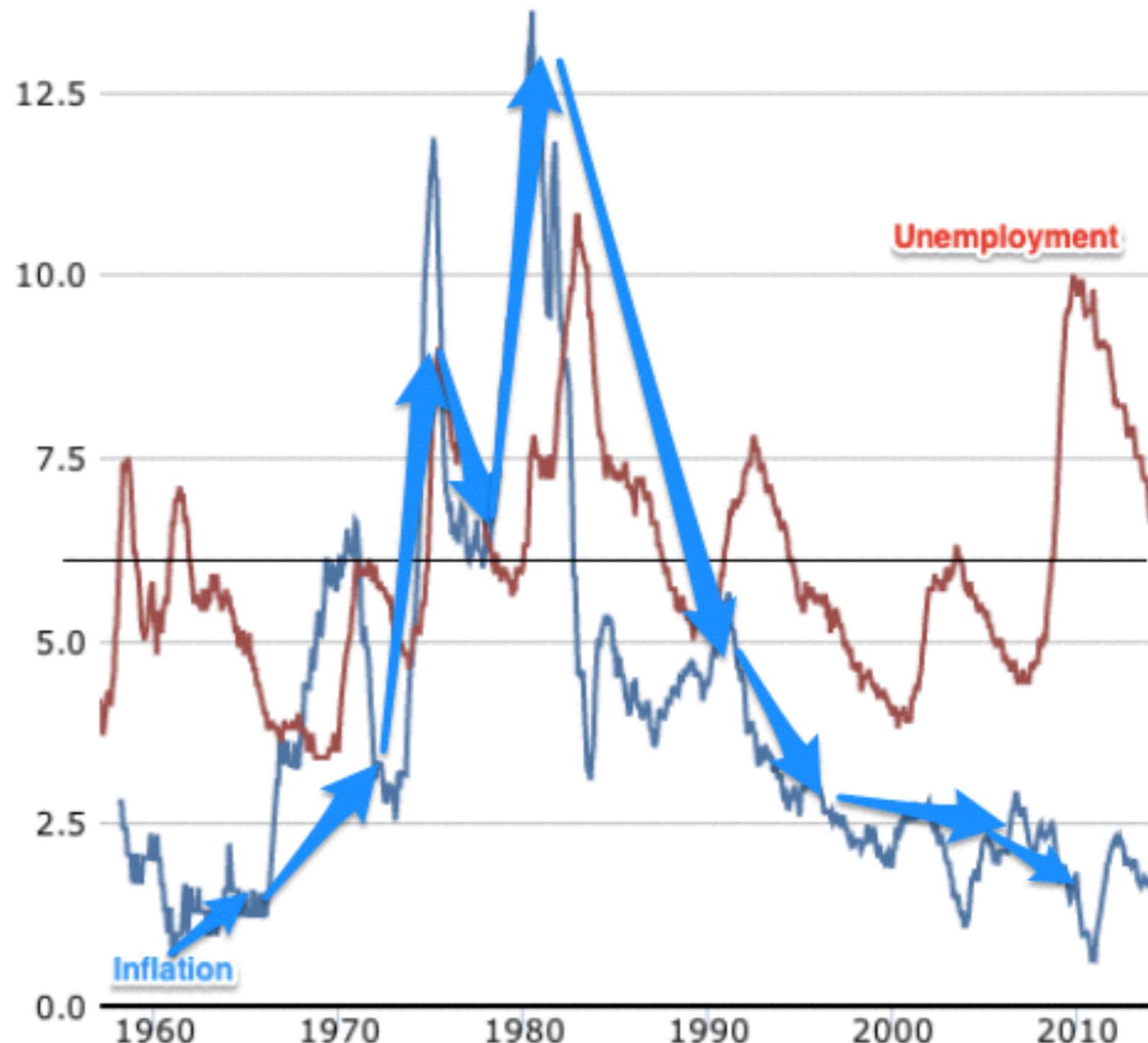
Movements of a "Phillips Curve"



The Phillips Curve IV

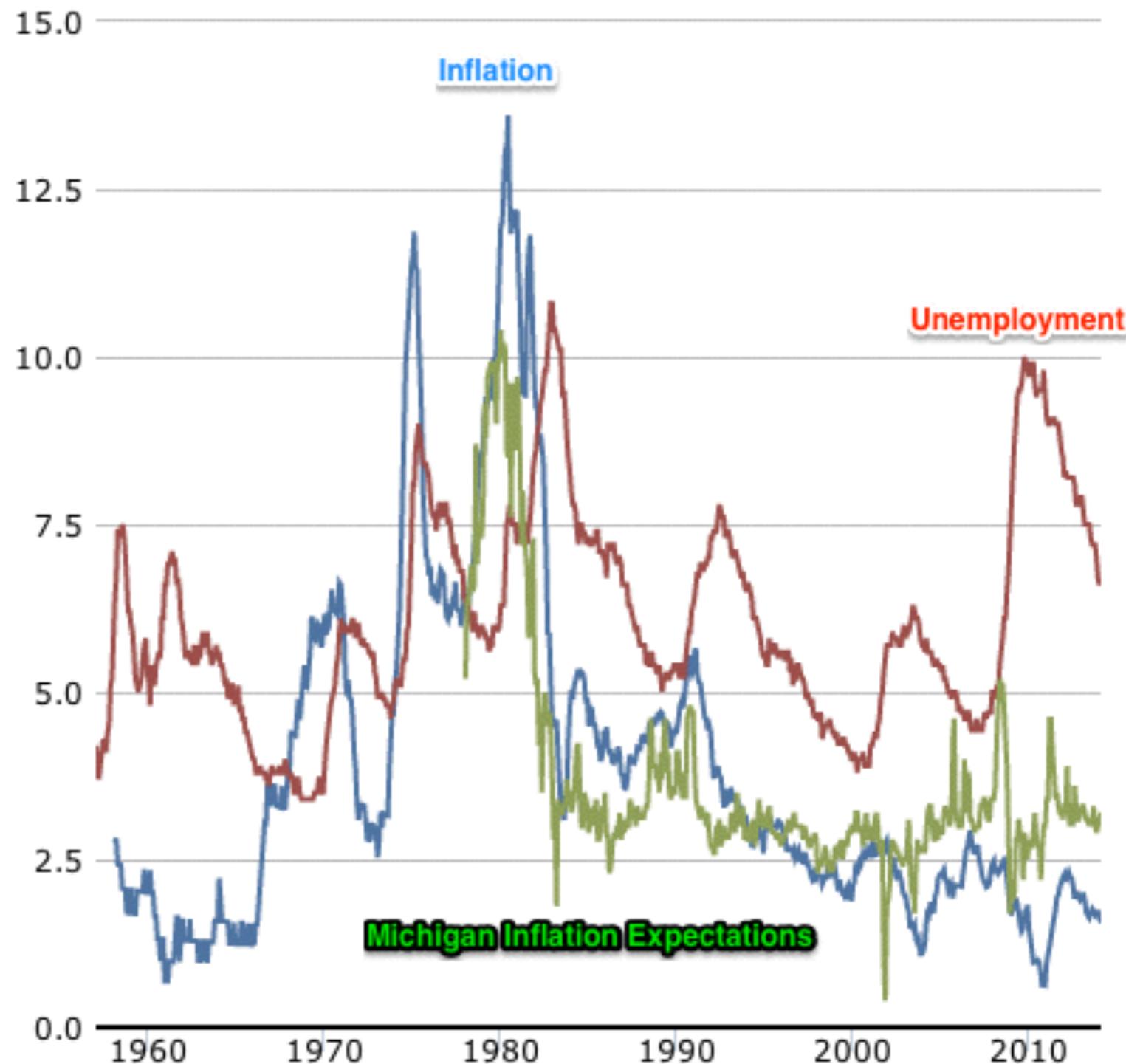
- And what inflation rate corresponds to a given unemployment rate has varied a lot over the past half century...
- The “new economy” of the 1960s...
- The 1973 oil shock...
- Whip Inflation Now!
- The Iranian Revolution
- The “Great Moderation”
 - The Volcker Disinflation
 - Opportunistic Disinflation
 - Greenspan Stability
 - Bernanke
- Inflation Expectations and supply shocks

Movements of a "Phillips Curve"



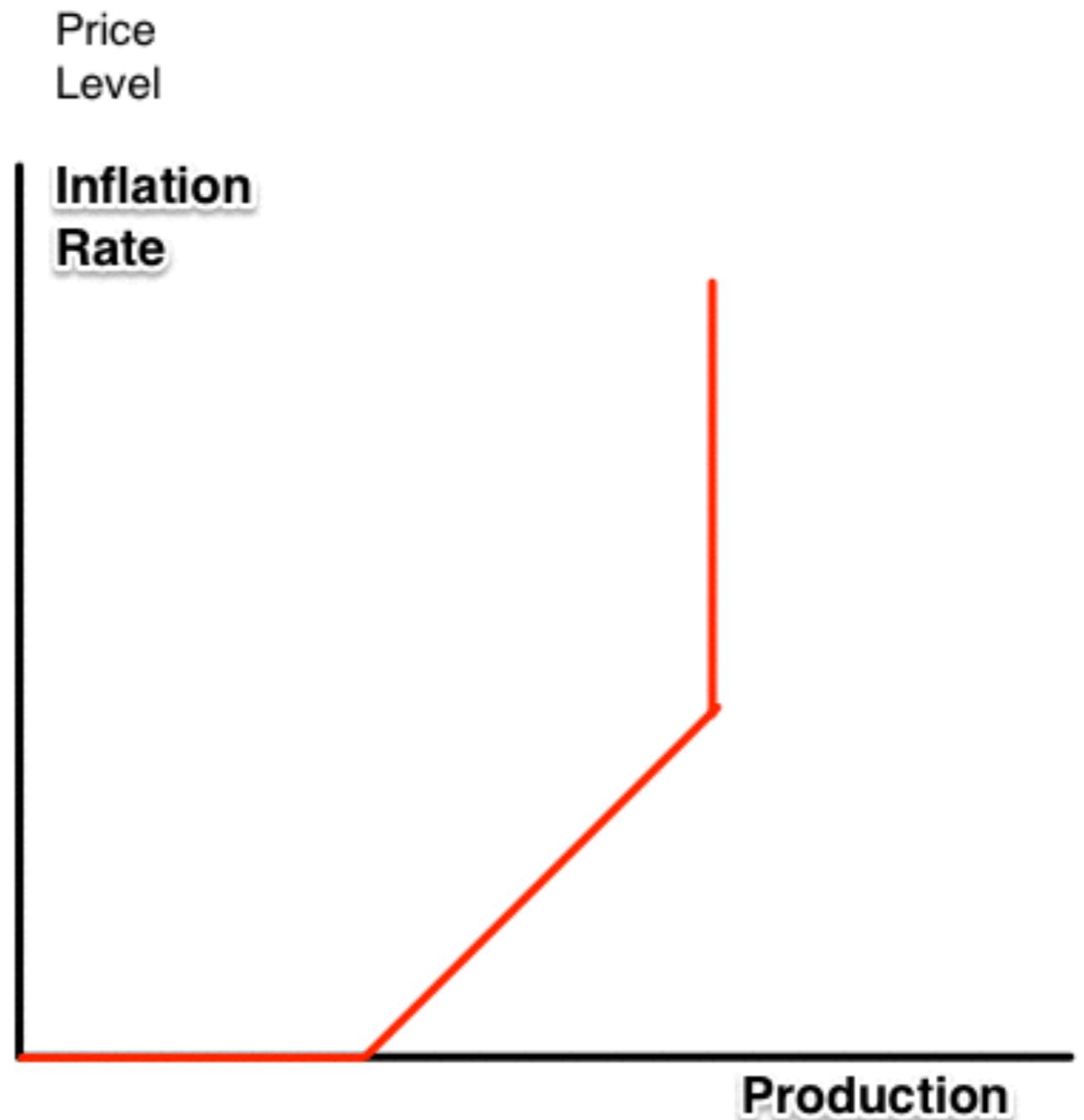
What Drives Inflation Expectations?

- Last year's inflation
- Economic slack
- Jawboning?
- What's just happened to gasoline prices
- Oil shocks more generally



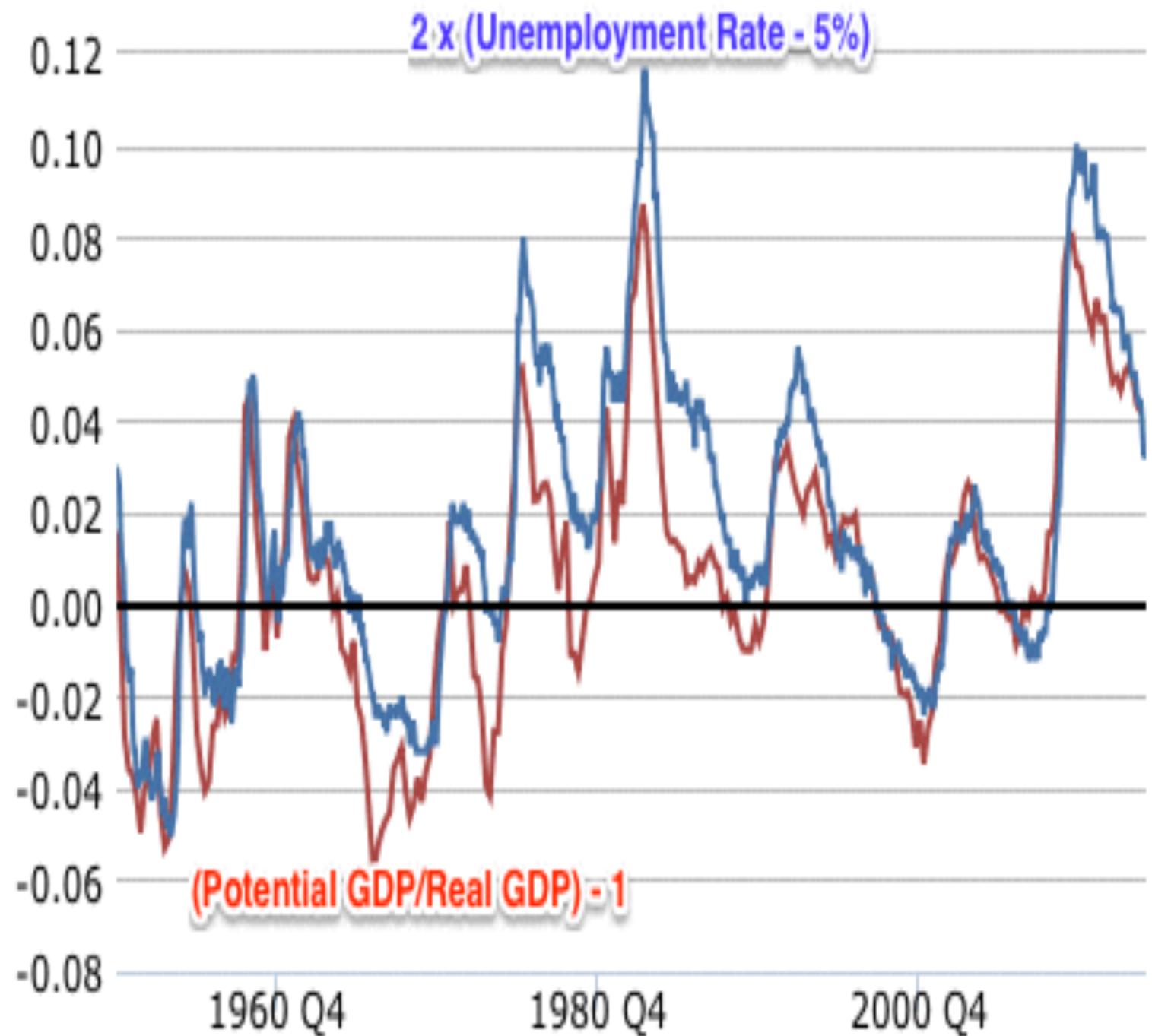
Slipping a Derivative

- In some ways a better diagram to draw—we aren't continually having to draw our curves higher and higher on the graph...



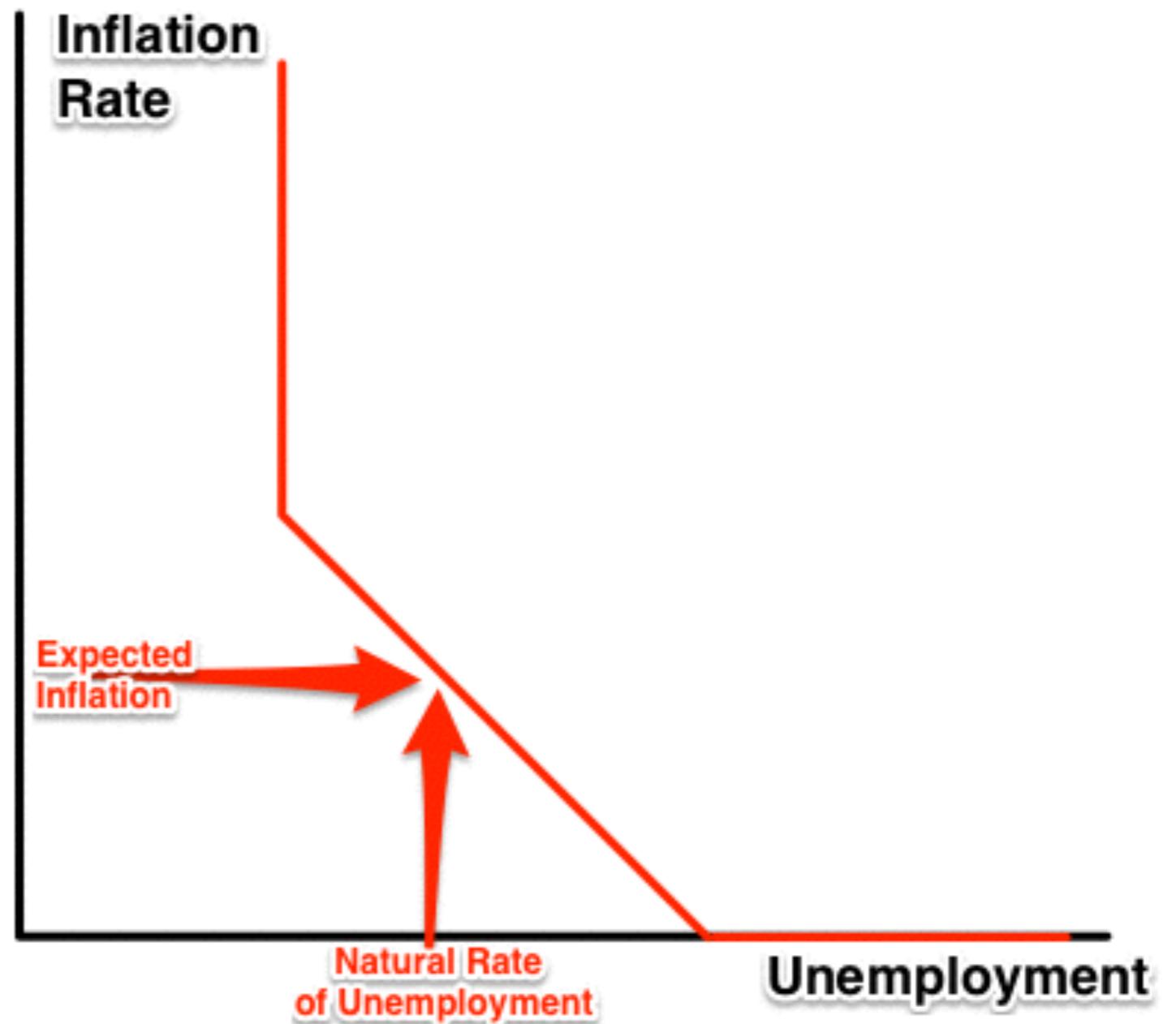
Okun's Law

- Production (relative to the full-employment “potential output” level)
- Unemployment (relative to the natural rate)
- A 2-to-1 relationship



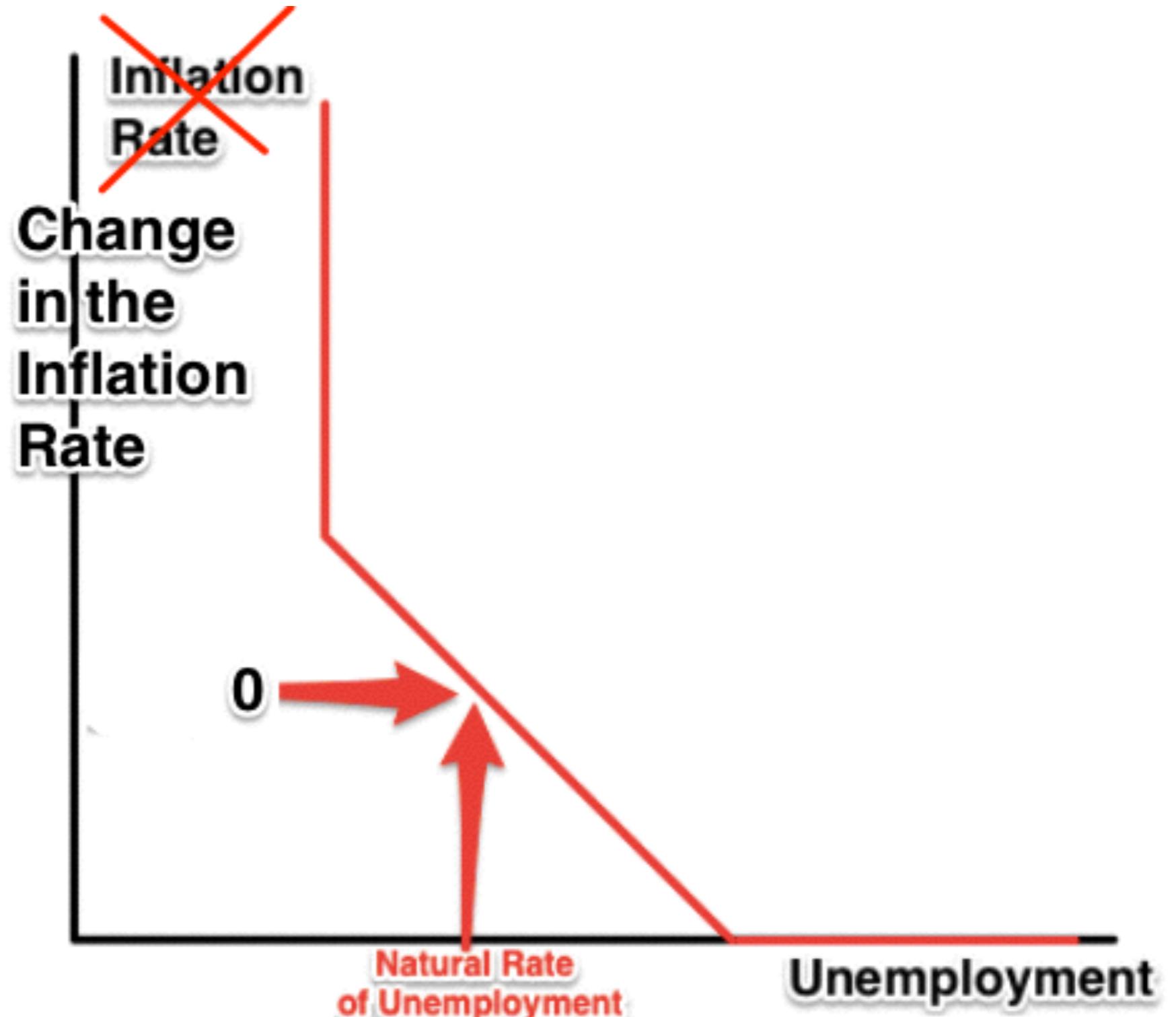
Suppose We Were to Substitute Unemployment for Production?

- This should move up or down depending on how expected inflation changes



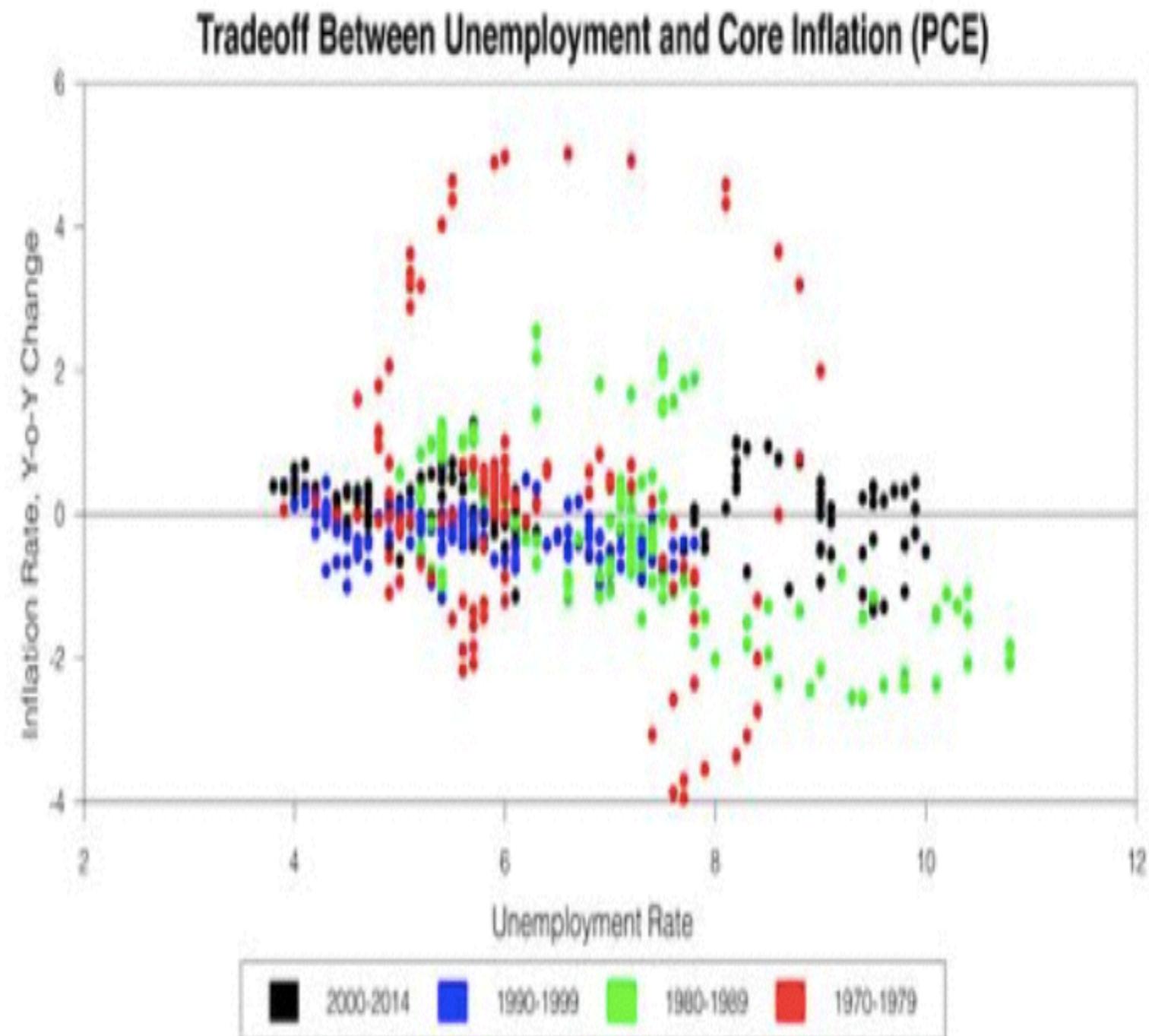
And Suppose We Were Willing to Assume That Inflation Expectations Were Adaptive?

- Then we slip another
- derivative



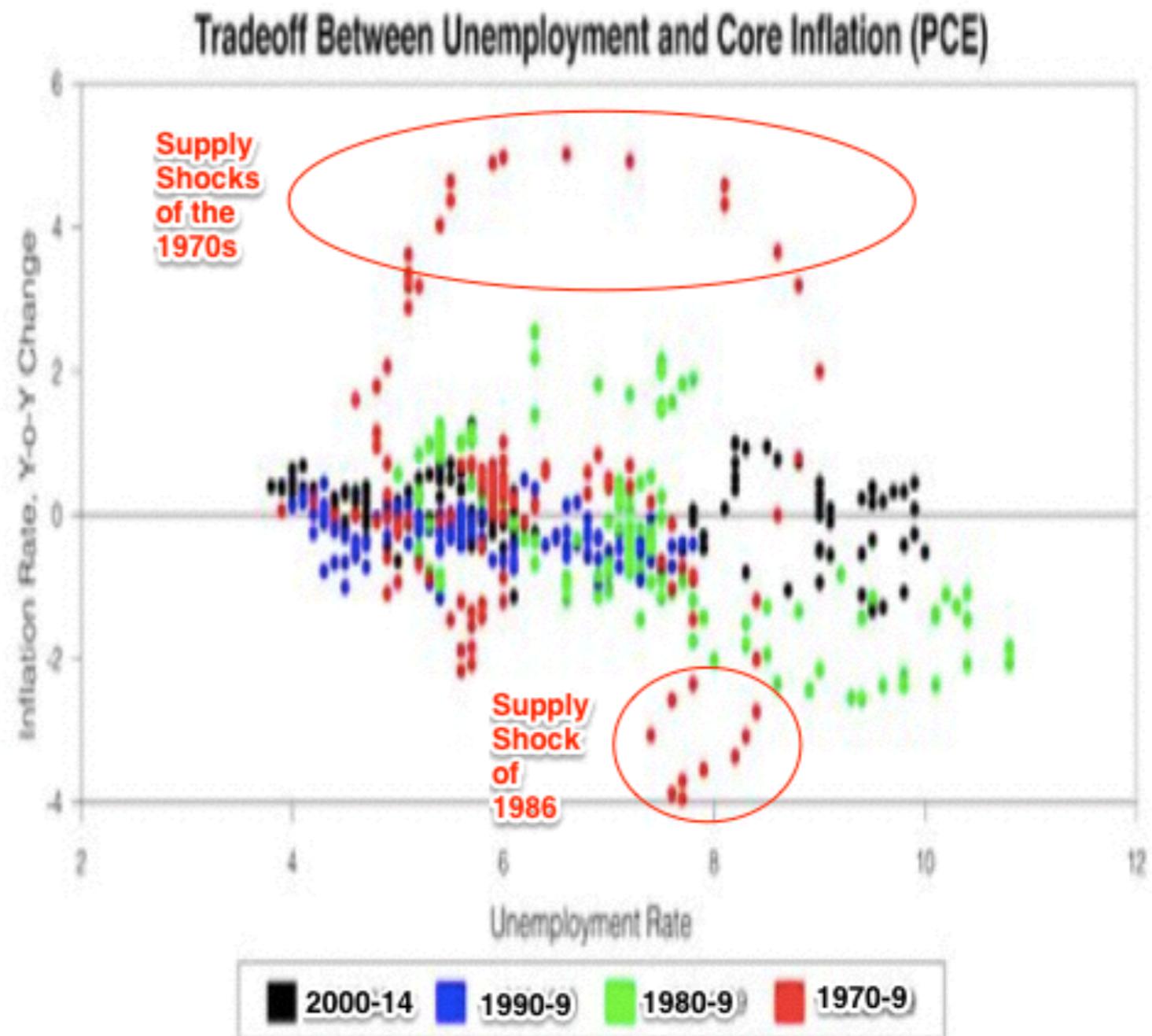
How Well Does This Do?

- Since 2000 (black) there has been very little change in inflation
- In the 1990s periods of unemployment < 5% see inflation creep up; periods of unemployment > 7% see inflation ebb
- In the 1980s (green) we see substantial deceleration of inflation when unemployment > 7%
- The 1970s (red) are all over the place



Breaks Down in the 1970s and Post-2009

- In the 1970s big supply shocks shift expected inflation and disrupt the “adaptive” Phillips Curve
- After 2009 inflation does not fall (much) even when unemployment is very high
- In between we have:
 - $\pi = -\beta(u-u^*) + E(\pi)$
 - $\pi = -\beta(u-u^*) + \pi_{-1}$



Will the “Adaptive” Phillips Curve Come Back?

- Who knows?
 - Supply shocks
 - Adaptive expectations
 - Static expectations (expectations “well anchored”)
 - Inflation lower bound
 - “Rational” expectations

