

Is Inflation Still Related to Unemployment?

**Robert J. Gordon, Northwestern University and NBER
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Inflation-Linked Conference
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The WSJ Last Week Portrayed the Importance of my Two Topics

- **Tomorrow morning: the decline of growth, on the front WSJ page last Monday under the front page headline “Has All the Great Stuff Already Been Invented?” Inside . . .**
- **Tonight’s Talk: the WSJ last Wednesday had another front page story “Fed Rate Debate Focuses on Jobless”**
 - **The great debate at the Fed: which is the main driver of inflation – total unemployment or short-term unemployment? Do the long-term unemployed (> 6 months) matter at all?**
- **The debate portrayed Alan Krueger (ex-Chair of the CEA) as saying the long-term unemployed have been marginalized, vs. Fed Chair Janet Yellen saying they are not.**
- **Nothing is better than to do research that drives such an important policy debate – my NBER WP 19360 Sept 2013.**

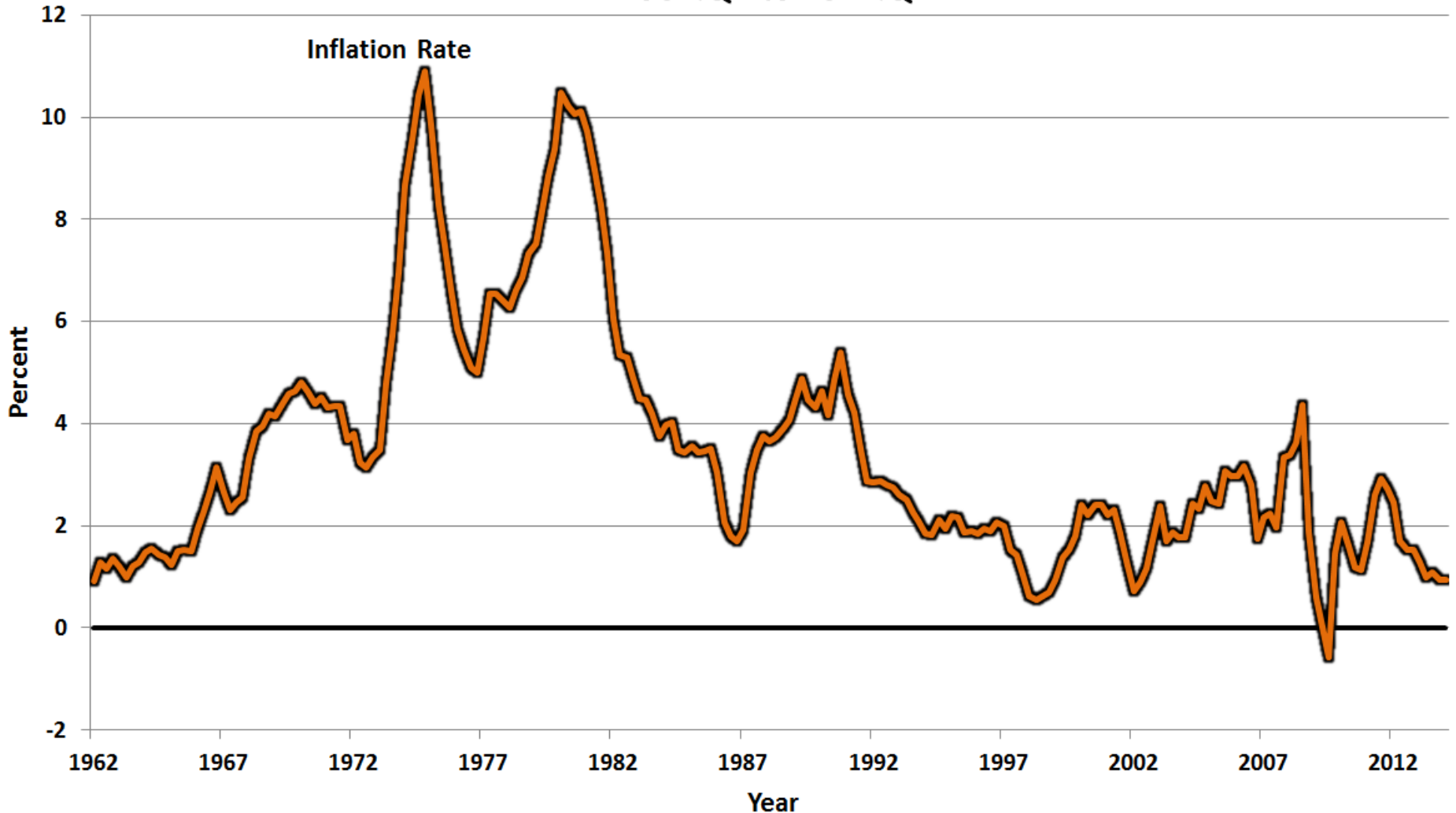
Tonight's Topic, Is Inflation Related to Unemployment at All?

- **First we'll look at the inflation behavior that must be explained, with its twin peaks and later valley**
- **We'll slay dragons, the misleading ideas that inflation is driven by changes in the money supply or by government deficits**
- **Then we'll look at a startling scatter plot of inflation vs. unemployment. Where is the relationship? There is none visible – why does it matter for the Fed to be debating long-term vs. short-term unemployment when it seems that there is no relationship there at all??**

Which Inflation Rate Is This?

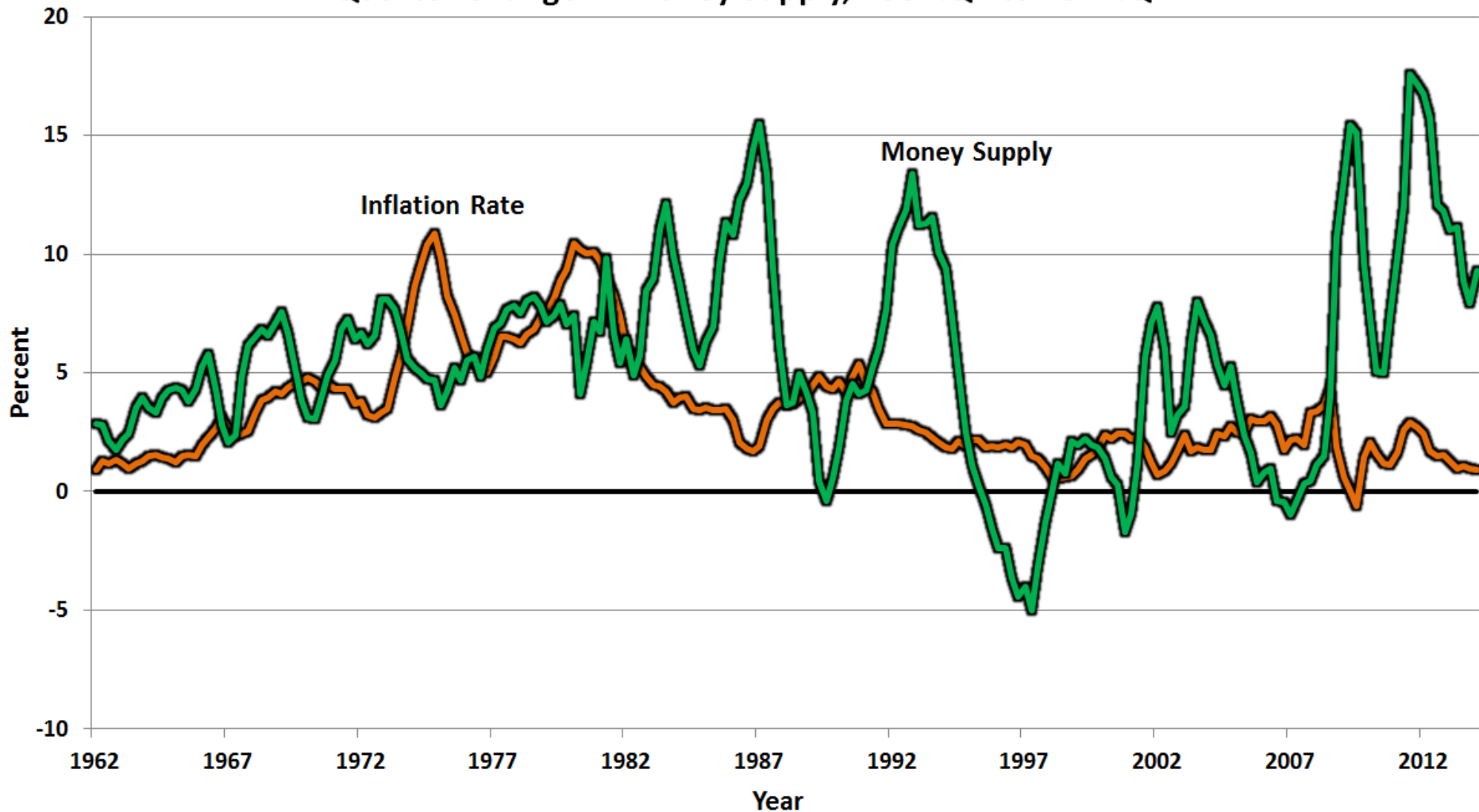
Notice the Twin Peaks and Valley

Figure A. Four Quarter Changes in Headline Inflation Rate
1962:Q1 to 2014:Q1



Does Money Growth Cause Inflation? Negative or Positive Correlation?

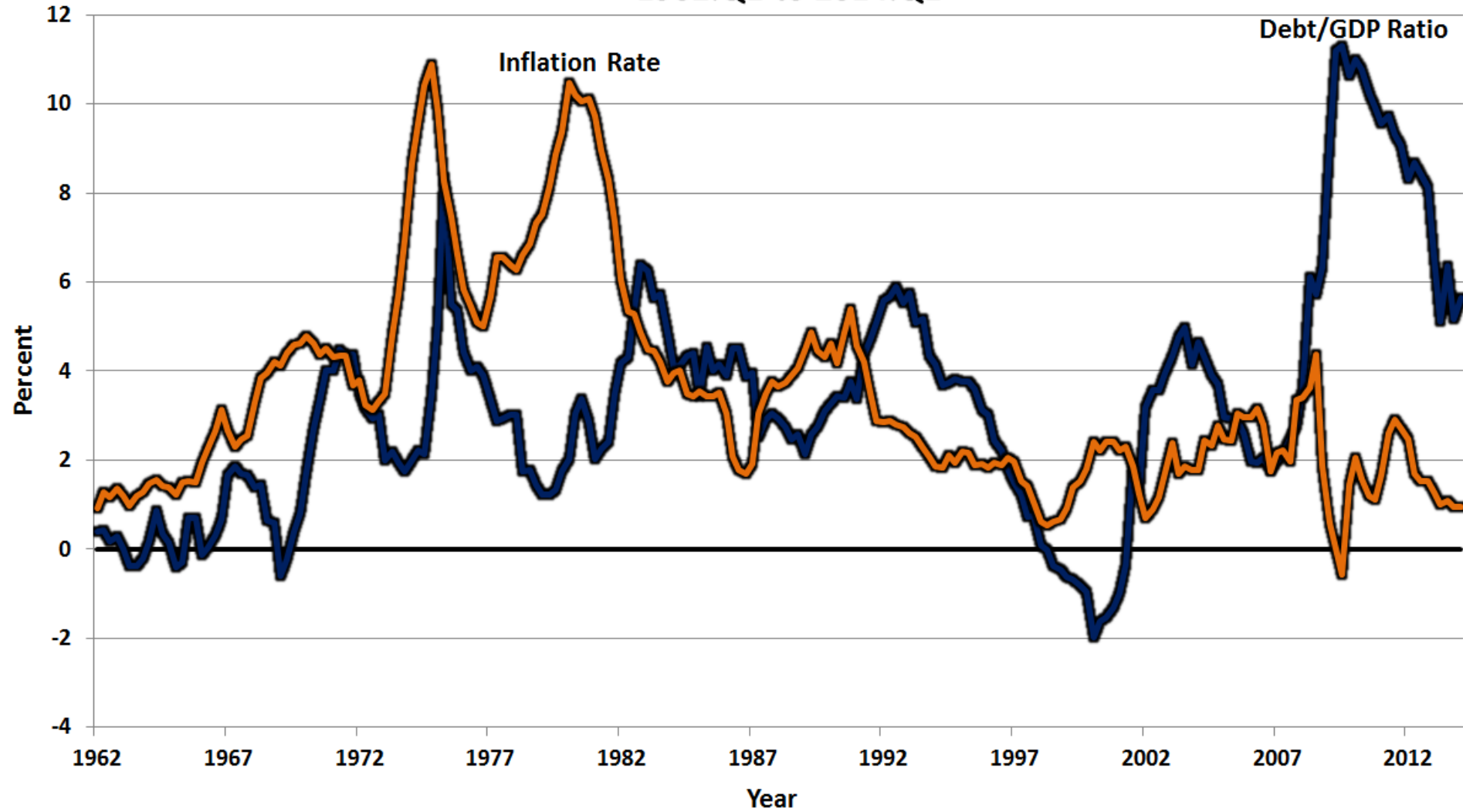
Figure B. Four Quarter Changes in Headline Inflation Rate vs Four Quarter Change in Money Supply, 1962:Q1 to 2014:Q1



Do Fiscal Deficits Create Inflation?

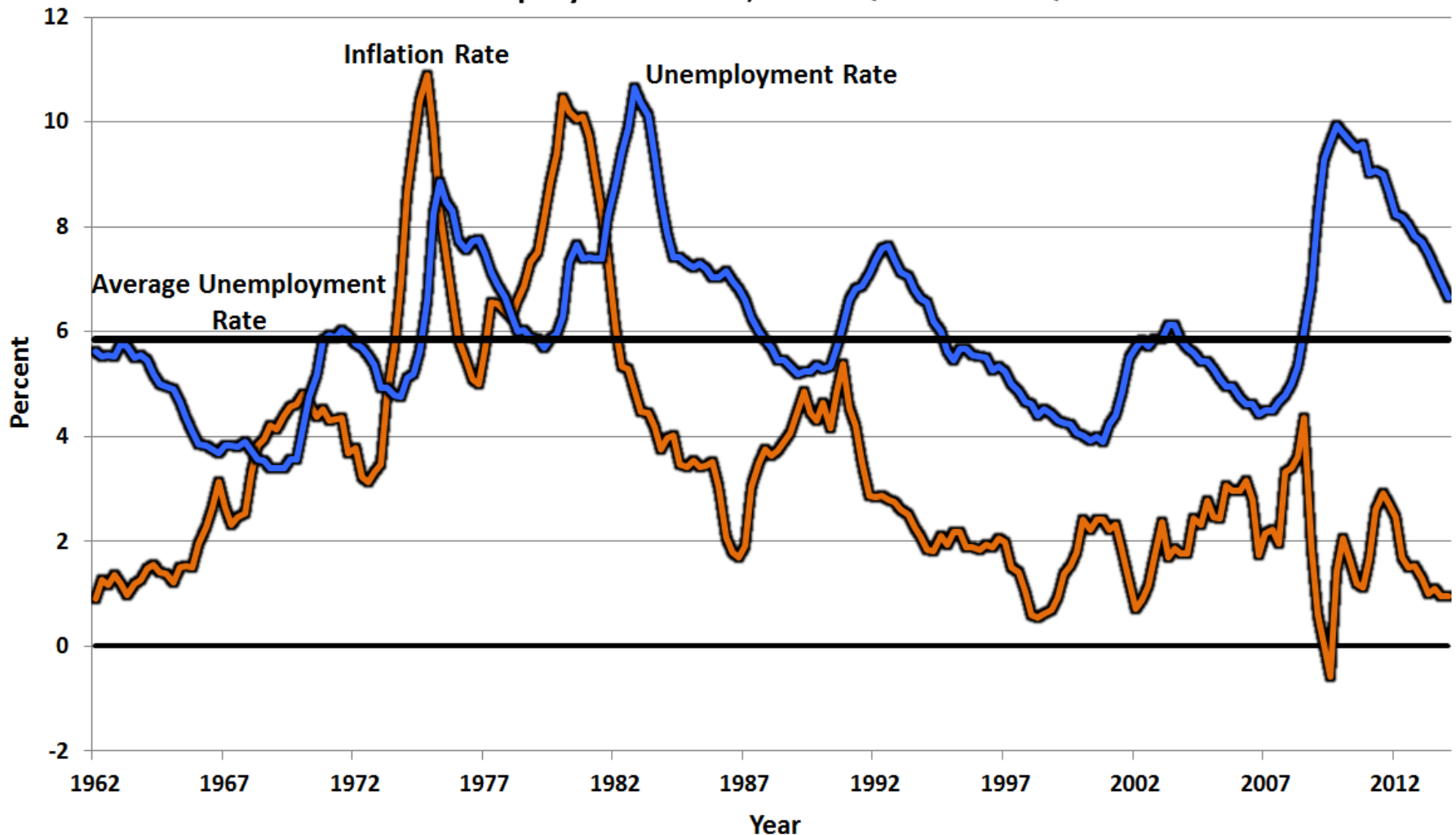
The Answer Is A Clear No

Figure C. Four Quarter Changes to Headline Inflation vs Debt/GDP Ratio, 1962:Q1 to 2014:Q1



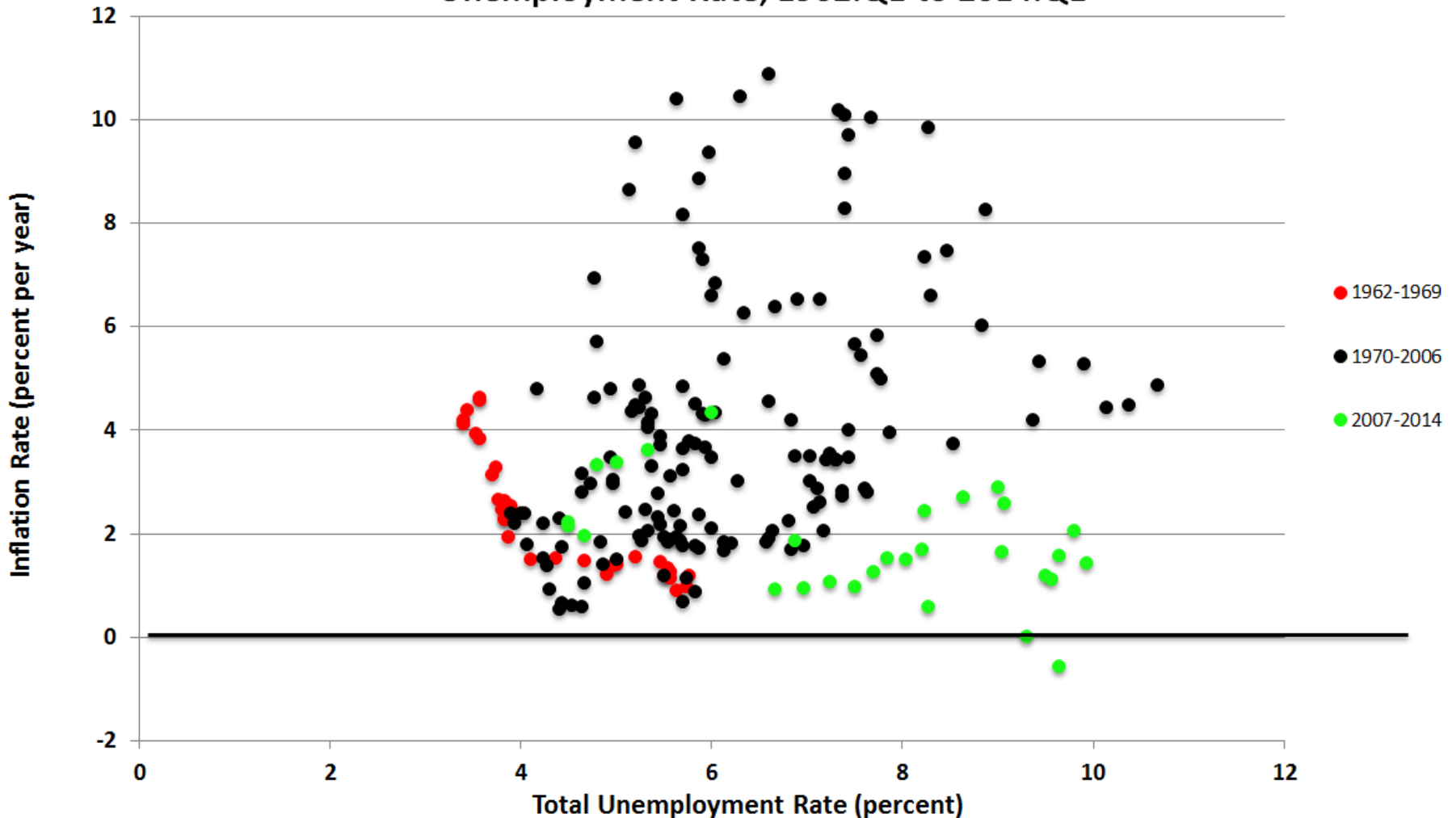
Tonight's Title: Inflation Related to the Unemployment Rate?

Figure 1a. Four Quarter Changes in Headline Inflation Rate vs Total Unemployment Rate, 1962:Q1 to 2014:Q1



Have You Ever Seen A Scatter Plot With a Lower Correlation?

Figure 1b. Four Quarter Changes in Headline Inflation Rate vs Total Unemployment Rate, 1962:Q1 to 2014:Q1



Why Should Inflation Be Related Only to Unemployment?

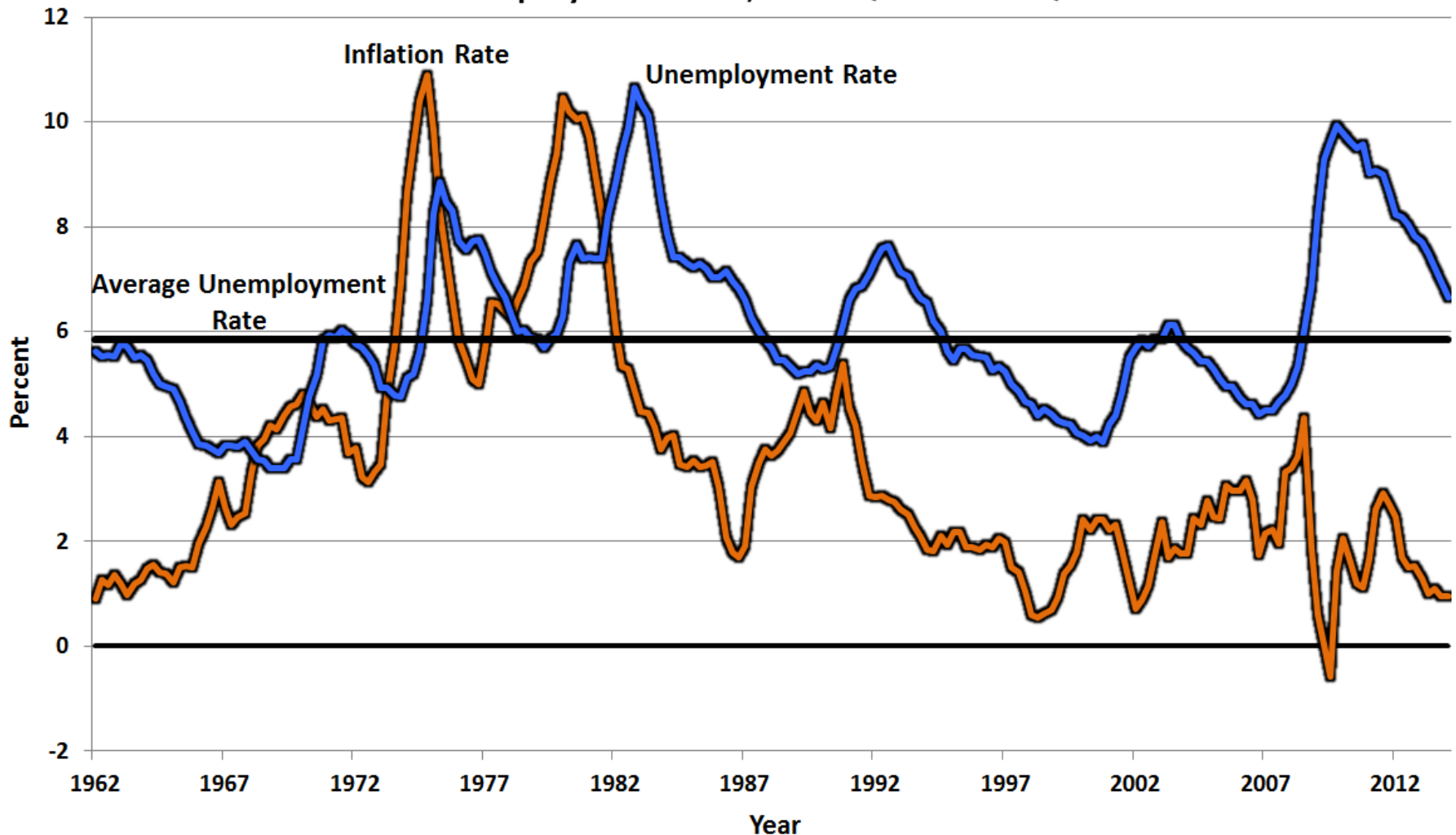
- This casts aside microeconomics as it was developed more than 100 years ago.
- Does the price of oil have one determinant, the demand for oil?
- Of course not, the closing of a refinery in Iraq can raise the price of oil
- **THE PRICE LEVEL OF ANY GOOD DEPENDS ON SUPPLY AND DEMAND**
- Why not also true of macroeconomics – unemployment represents the demand side but the supply side matters as well.

Inflation Depends on Demand and Supply

- **I introduced this theory into economics in 1975, almost 40 years ago.**
- **It has been part of macro textbooks since 1978.**
- **An adverse supply shock, e.g., a 6-fold increase of the price of oil as in 1972-74, chews up consumer expenditures and leaves less remaining to buy non-oil/energy products**
- **The rest of the economy outside the energy sector goes into recession.**

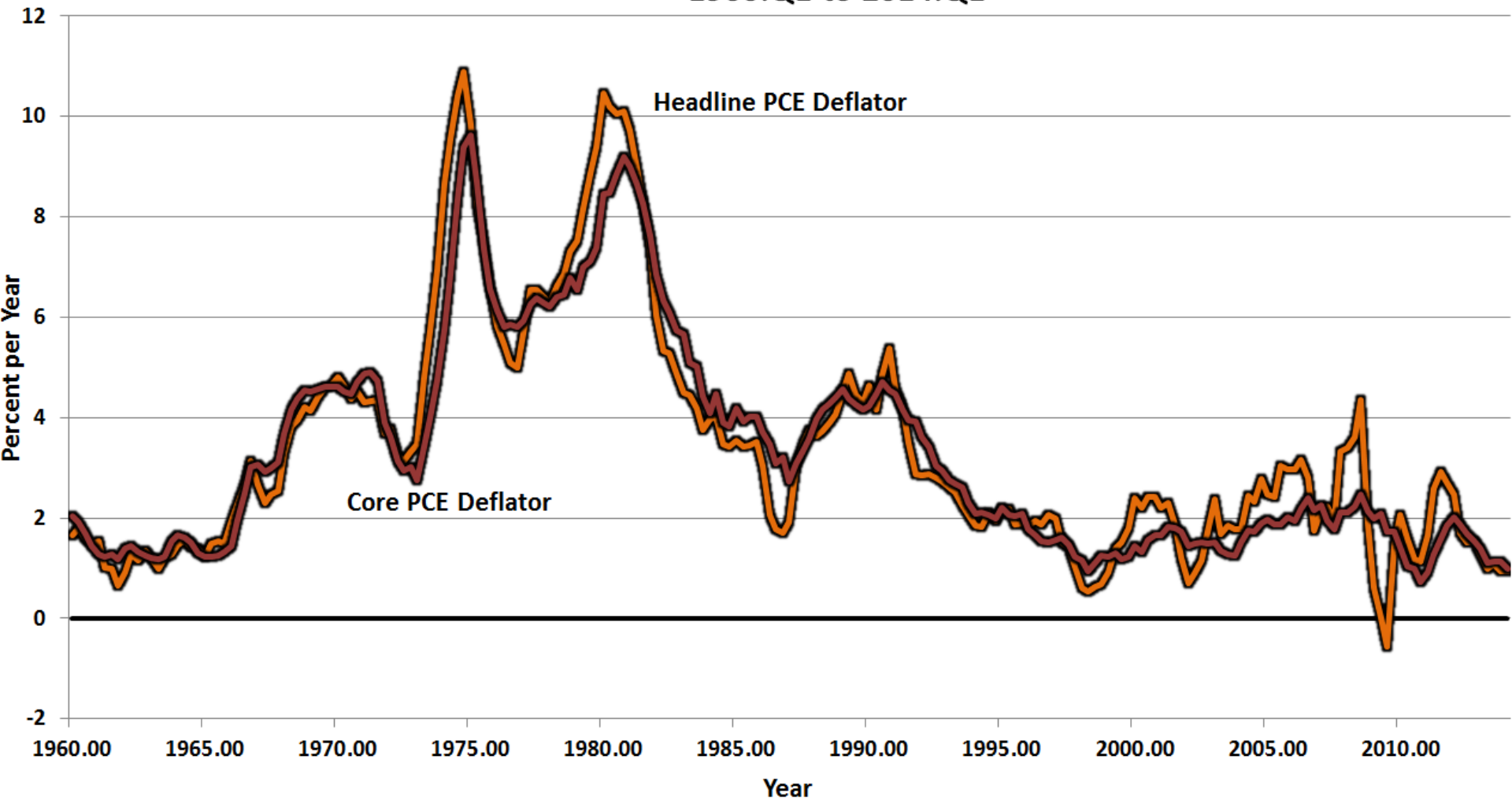
Here You See the Supply Shocks in Action: 1974, 1979-80, 1998-99

Figure 1a. Four Quarter Changes in Headline Inflation Rate vs Total Unemployment Rate, 1962:Q1 to 2014:Q1



Fed Looks at Core PCE Inflation; Tonight We'll Focus on Headline Inflation

Figure 3a. Four Quarter Changes of Headline and Core PCE Deflator,
1960:Q1 to 2014:Q1

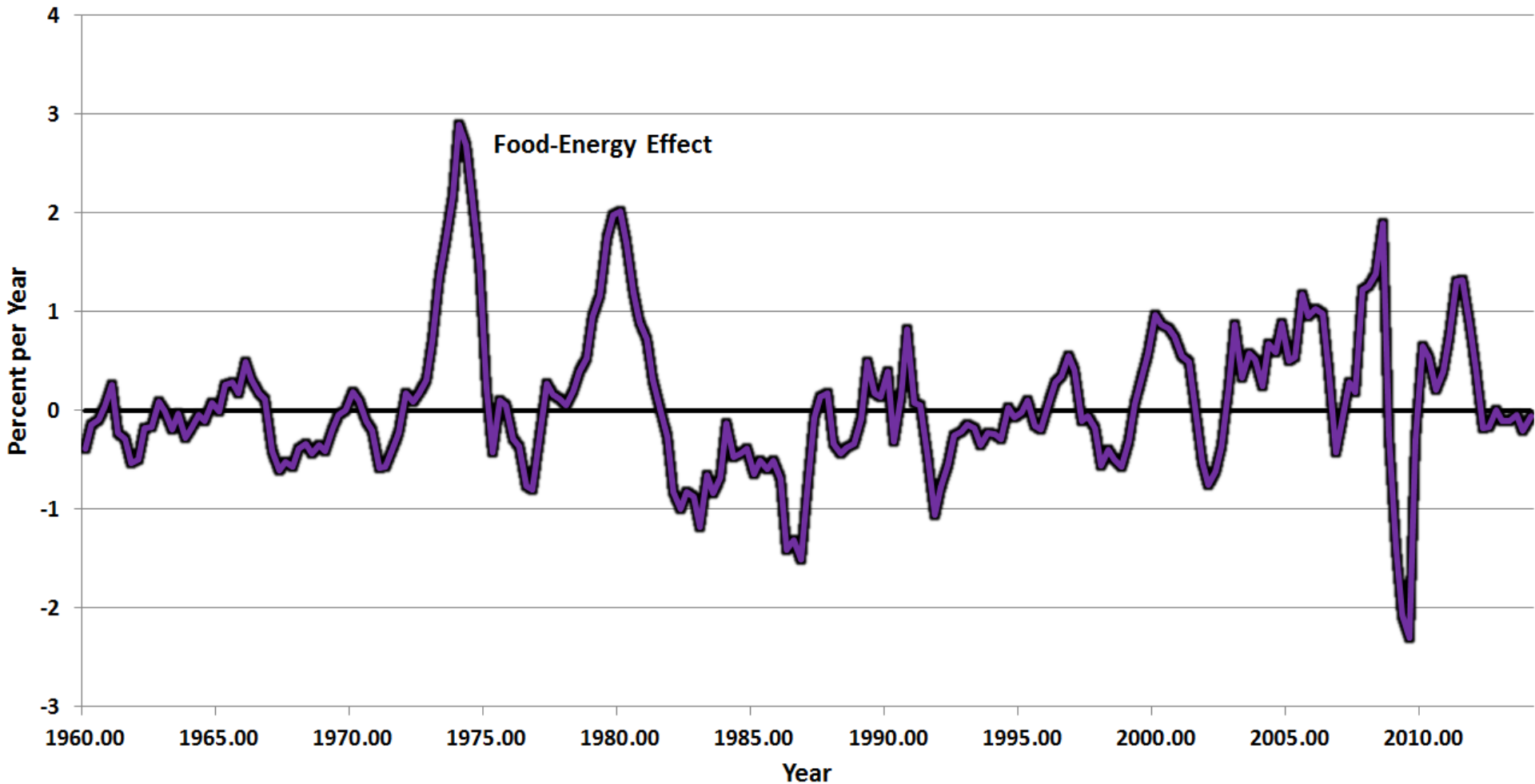


How Do I Translate the Idea of “Demand and Supply” into the “Triangle Model” of Inflation?

- **Current specification is 34 years old, introduced in 1980**
- **Inflation depends on Inertia**
 - Lagged inflation, with freely estimated weights over the past six years.
- **Inflation depends on demand**
 - Represented by the deviation of Unemployment from NAIRU
- **Inflation depends on supply**
 - The food-energy effect, difference between headline and core
 - Relative price of nonoil nonfood imports
 - Change in productivity trend
 - Nixon price controls “on” held down inflation, “off” released it

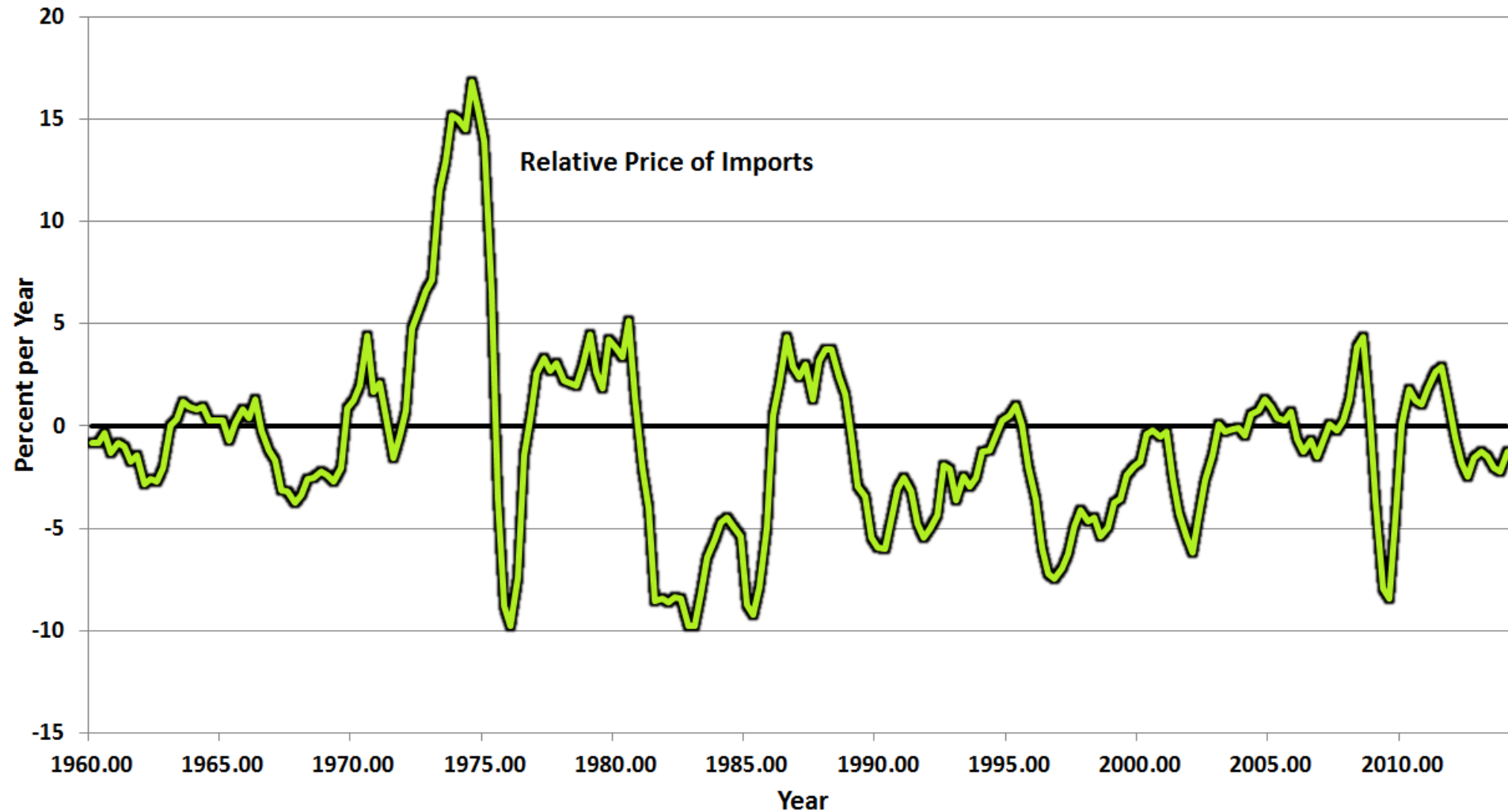
The Food-Energy Effect is the Difference Between Headline and Core Inflation

Figure 3b. Four Quarter Changes of Food-Energy Effect, 1960:Q1 to 2014:Q1



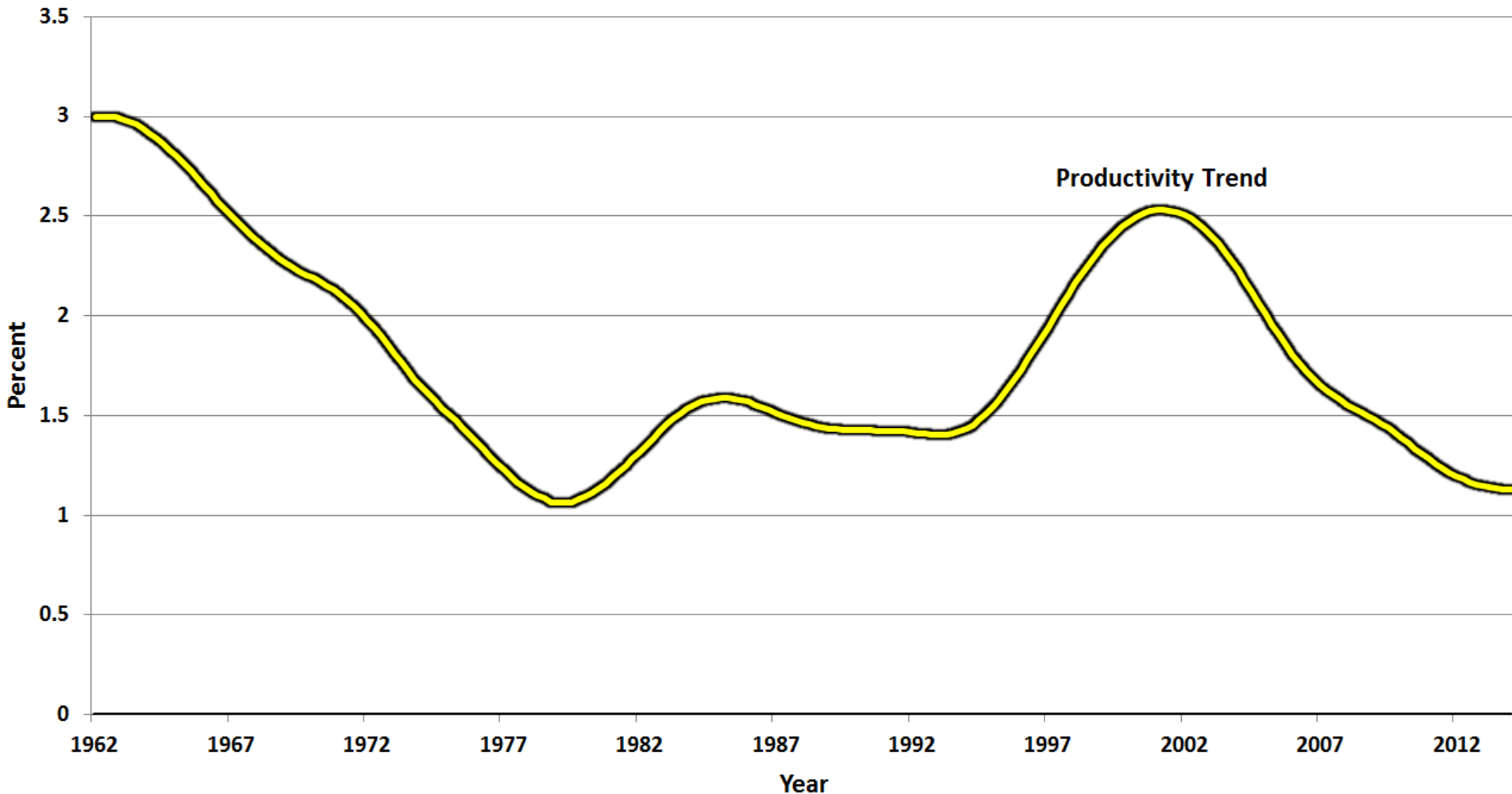
The Relative Price of Nonoil, nonfood Imports Also Matters (Change of scale)

Figure 4a. Four Quarter Changes of Relative Price of Imports, Non-Food Non-Oil, 1960:Q1 to 2014:Q1



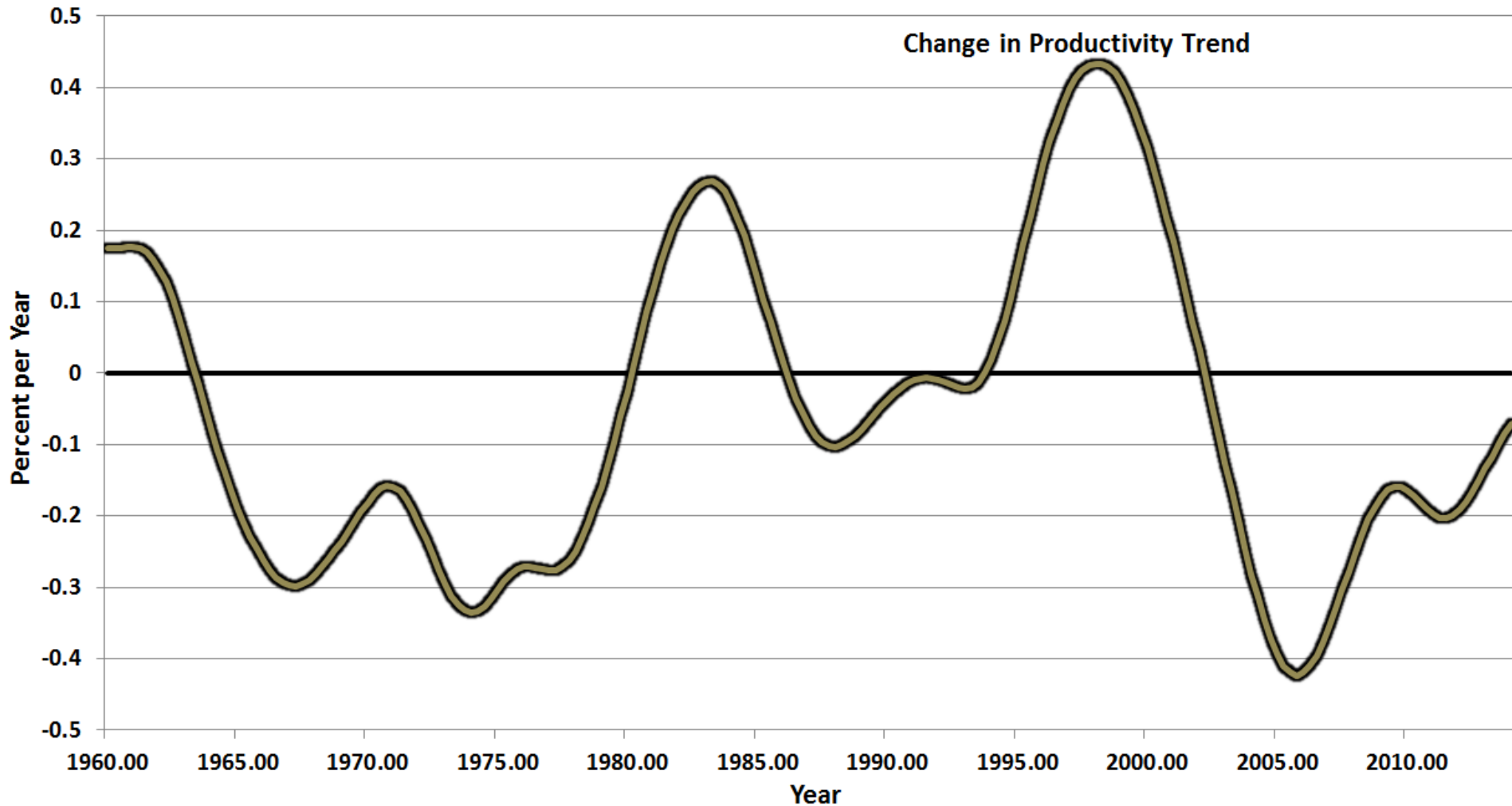
Productivity Growth Matters a Lot: Here is the Productivity Growth Trend

Figure F. Change in Productivity Trend, 1962:Q1 to 2014:Q1



Change in Productivity Trend Helps to Explain Inflation Behavior

Figure 4b. Eight Quarter Changes of Productivity Trend, 1960:Q1 to 2014:Q1

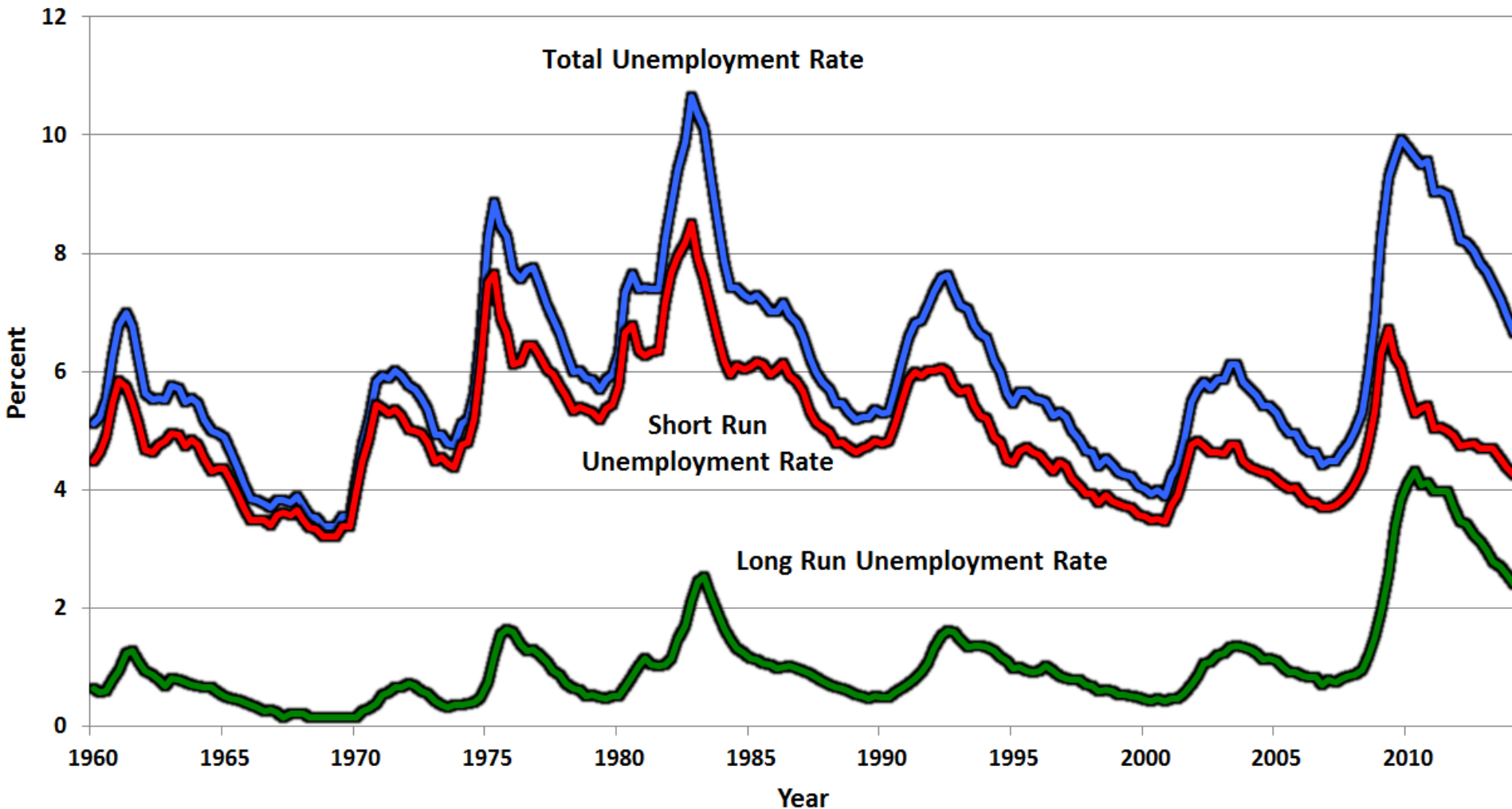


Which Unemployment Rate to Drive the Inflation Process?

- All the literature before my 2013 WP used the total unemployment rate
- But the big debate in last Wednesday WSJ front page article is about whether short-term unemployment (< 6 months) matters more for wages and inflation than long-term unemployment (> 6 months).
- The two measures behave identically until 2009, then very different

Which Unemployment Rate Drives Inflation?

Figure 6. Total, Short Run, and Long Run Unemployment Rate, 1960:Q1 to 2014:Q1

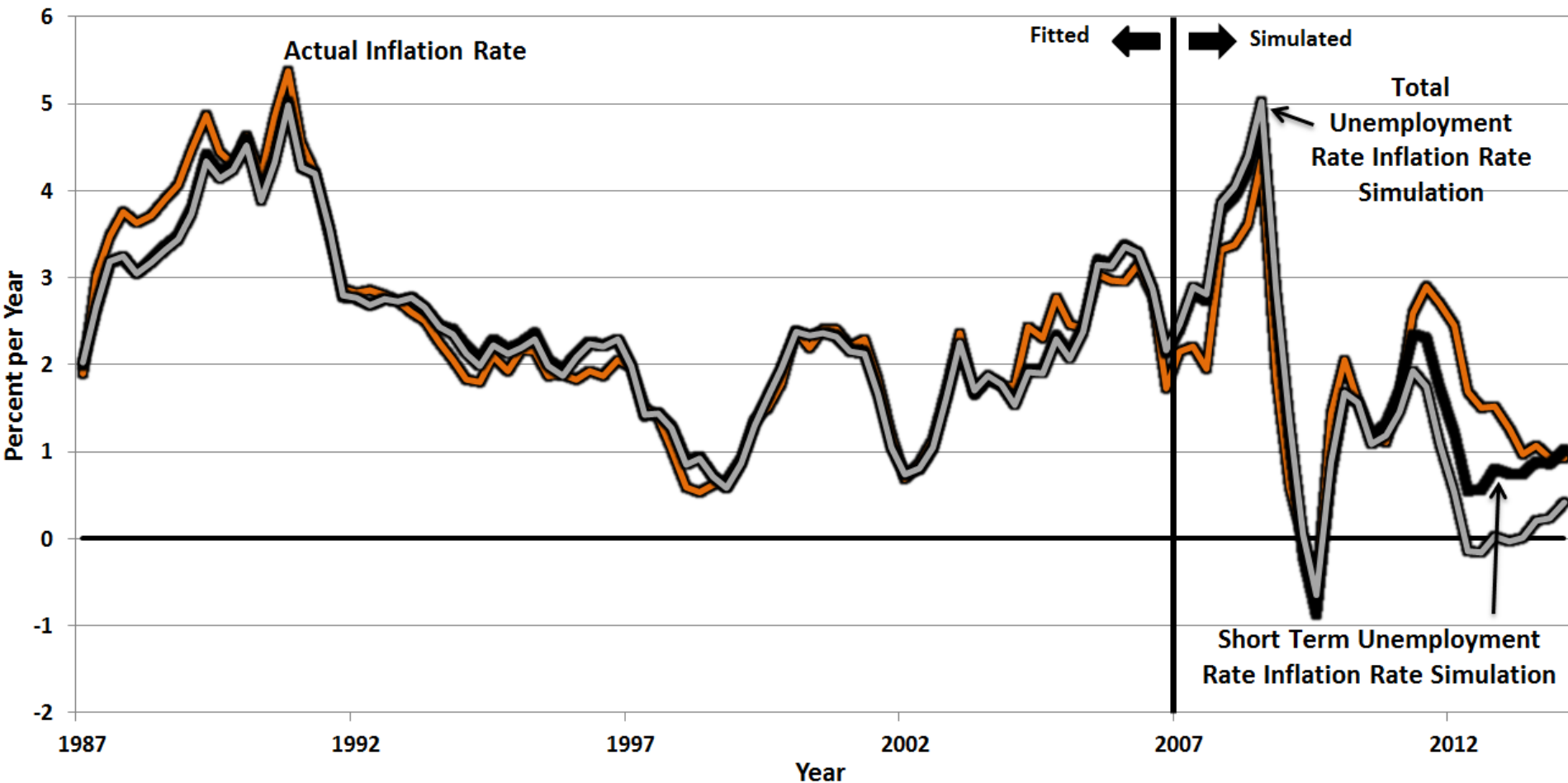


The WSJ and the Academic Literature Debate Whether the LTU Are Disconnected from the Labor Market

- **Part of this is real: skills atrophy when workers are out of work for 6 months, 1 year, even 5 years**
- **All the decline in LTU over the past year is more than accounted for by labor-force dropping out. The average long-term unemployed person leaves the labor force rather than taking a job.**
- **Employers are described as rejecting applications from LTU, looking for gaps of 6 months or more in their employment experience. Employers use the lack of employment as a “signal” that something else is wrong with the applicant.**

Here's the Key Piece of Evidence, Dynamic Simulation 2007-2014

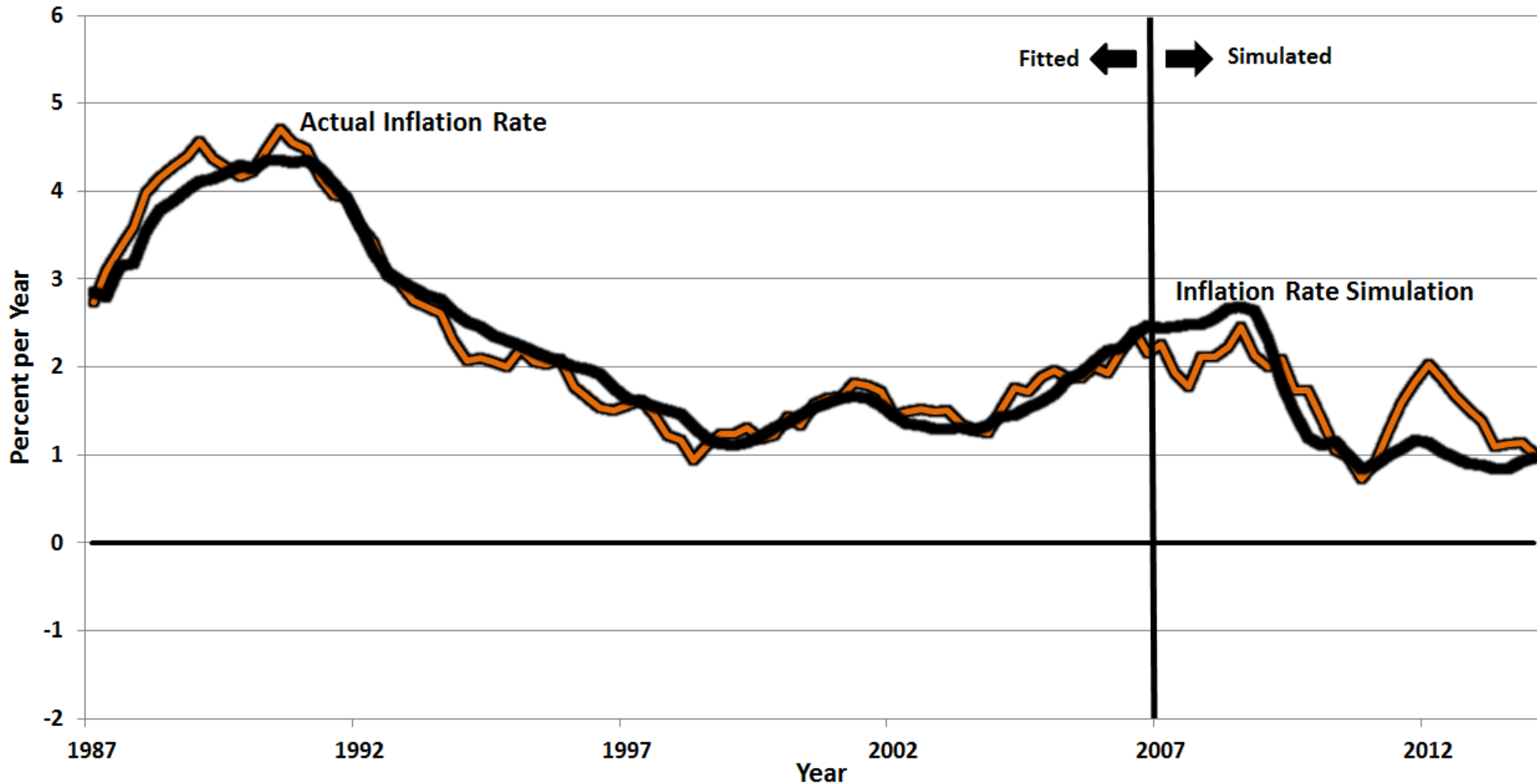
Figure 7b. Actual vs Simulated Headline Inflation Rate, 2006:Q4 Sample End, Total vs Short Term Unemployment, 1987:Q1 to 2014:Q1



What About Core Inflation?

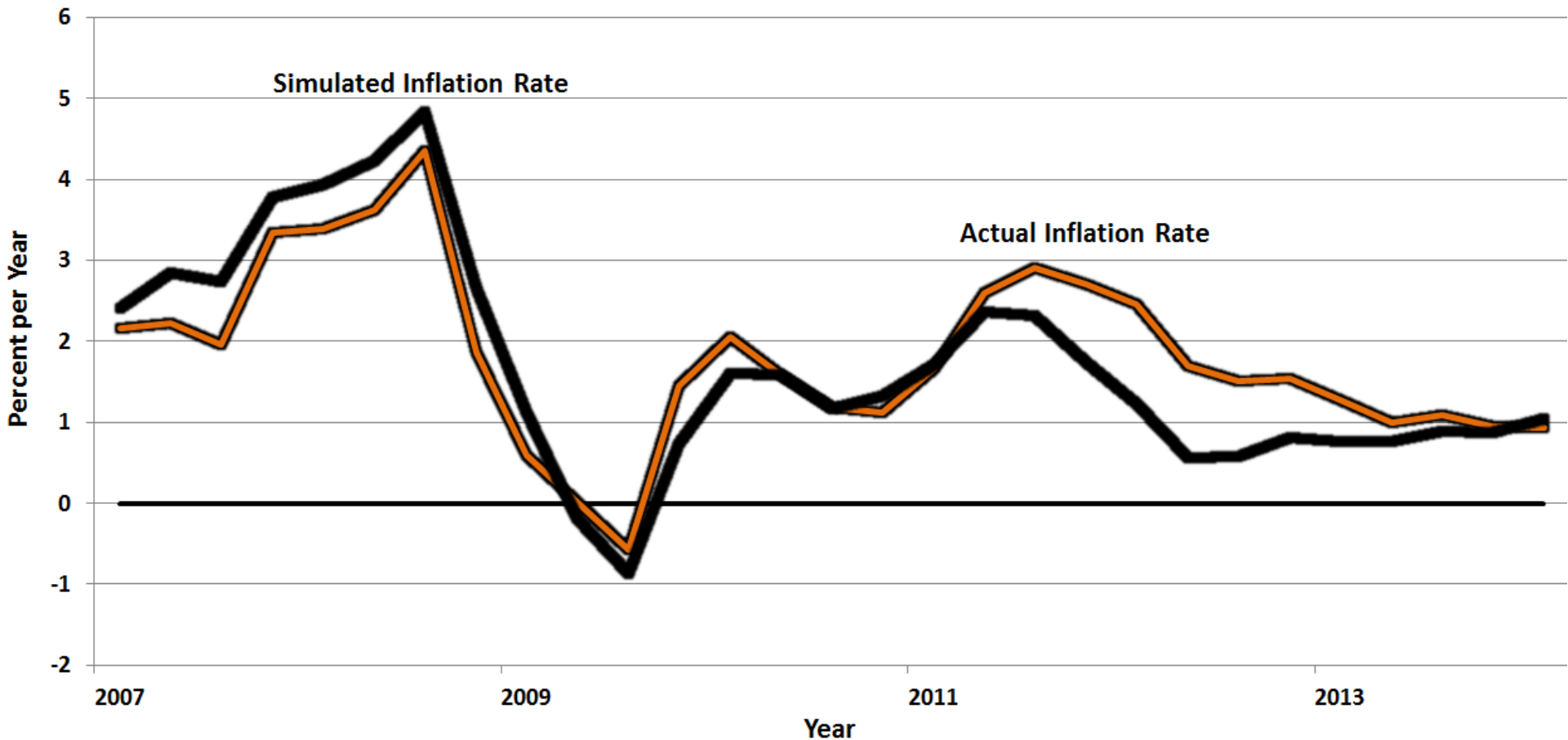
Same Results

Figure 11b. Actual vs Simulated Core Inflation Rate, 2006:Q4 Sample End, Triangle Model, Short Term Unemployment Rate, 1987:Q1 to 2014:Q1



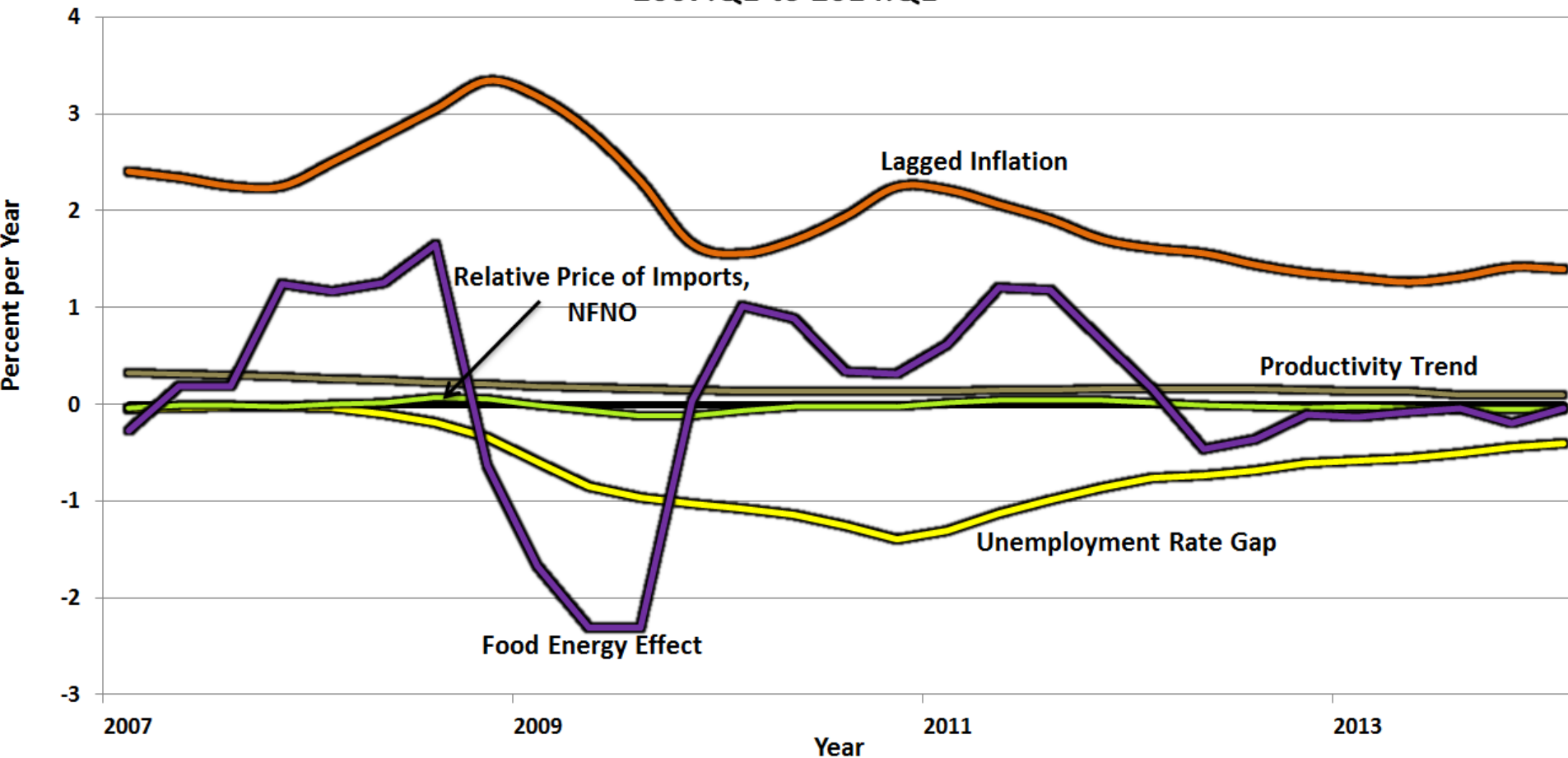
A Closer View, 2007-2014

Figure 8a. Simulation of Headline Inflation Rate vs. Actual Inflation Rate, Sample End 2006:Q4, Short Term Unemployment Rate, 2007:Q1 to 2014:Q1



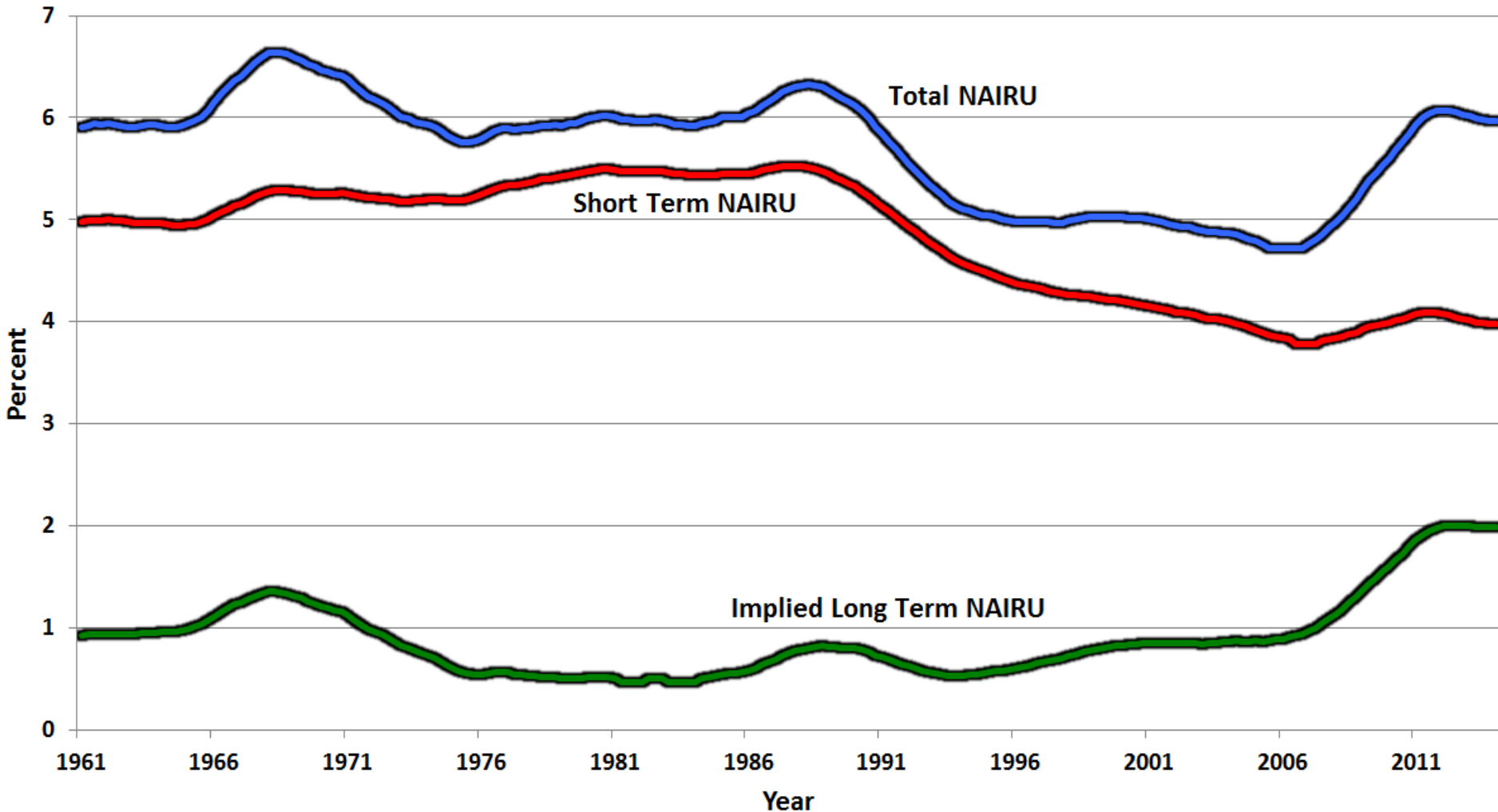
Why Didn't Inflation Turn Negative When the Unemployment Gap Was High?

Figure 8b. Decomposition of Explanatory Variable Contributions to Simulated Headline Inflation Rate, Sample End 2006:Q4, Short Term Unemployment Rate, 2007:Q1 to 2014:Q1



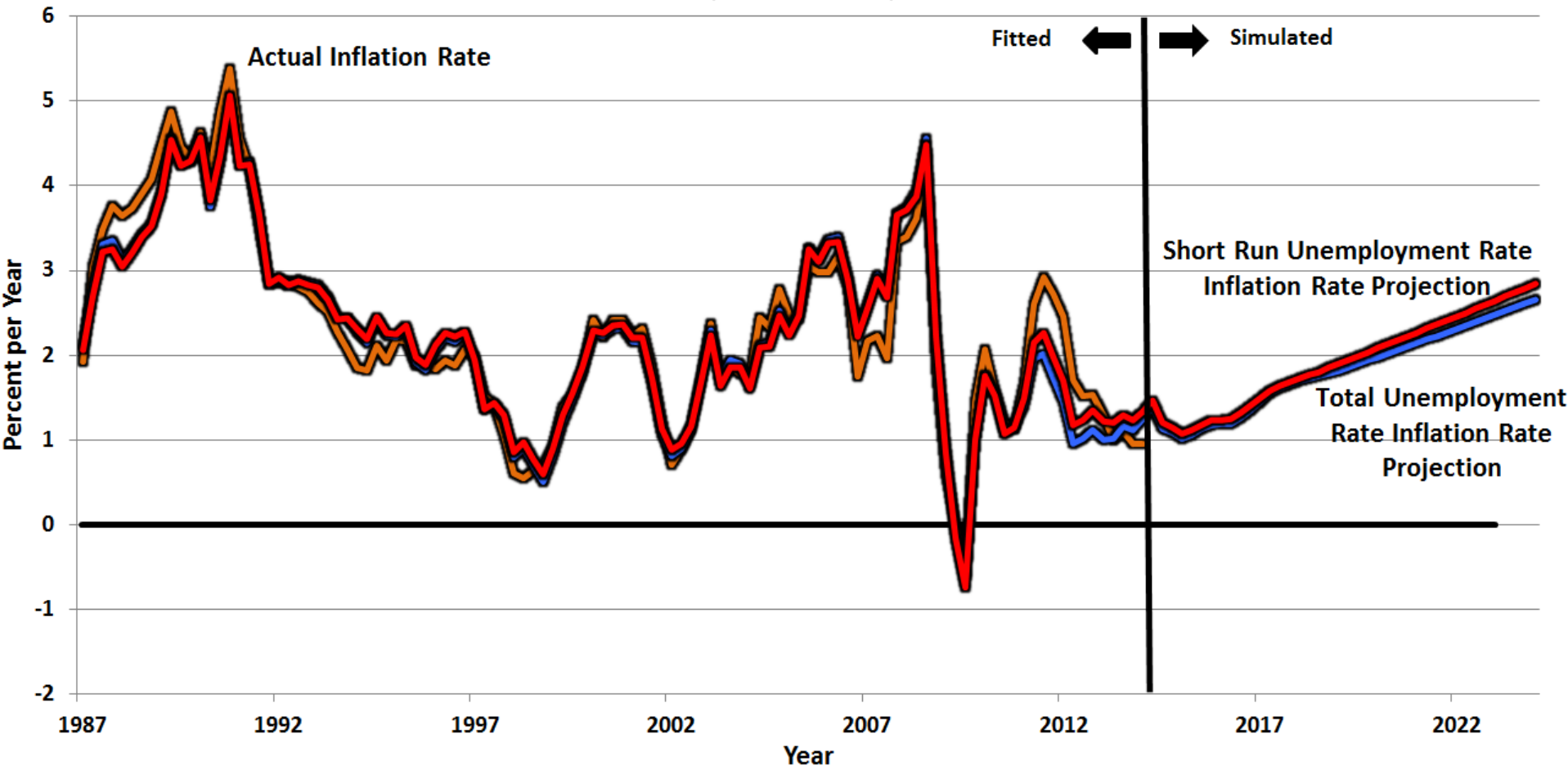
Implication for the Fed's Unemployment Target

Figure 9. Total, Short Term, and Implied Long Term NAIRU, 1961:Q1 to 2014:Q1



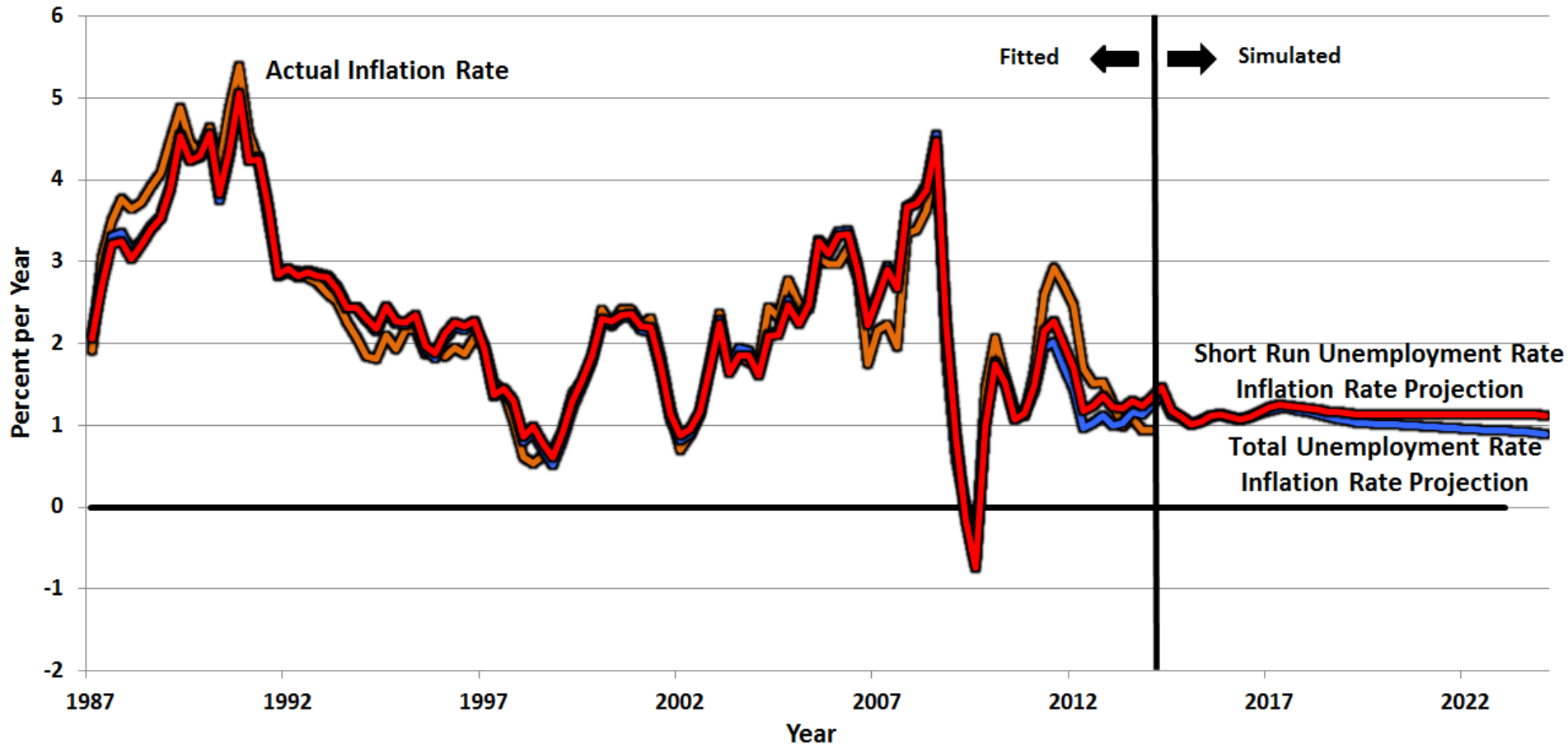
Future Inflation: What If the Fed Goes for 5% Total Unemployment?

Figure 10a. Triangle Model Headline Inflation Rate Projections, 2014:Q1 Sample End, Total vs Short Run Unemployment Rate, 1987:Q1 to 2024:Q1



What If the Fed Starts Raising Rates to Slow the Economy Down, Hitting the 6% U Target?

Figure 10b. Triangle Model Headline Inflation Rate Projections without Projected Decline in Unemployment Rate, 2014:Q1 Sample End, Total vs Short Run Unemployment Rate, 1987:Q1 to 2024:Q1



Conclusion: The Phillips Curve and Future Policy

- The NAIRU for total U is estimated to be 6.0. What if the Fed ignores the evidence presented here about long-term employment and tries to push the total U rate down to 5.0?
- The simulations on the first chart shows what happens to inflation. The danger is that the effects are so far in the future, and the Fed would not notice anything wrong until late 2017, too late to change its policy.
- The alternative policy of letting total U settle in at the NAIRU of 6.0 percent avoids any acceleration of inflation in the future.

Broader Conclusions: Is Inflation Still Related to Unemployment?

- **In 1975 we translated the microeconomic theory of the price of wheat to the macro economy. The inflation rate depends on demand *and supply*.**
- **Any approach to inflation that neglects supply shocks is bound to fail, and to distort the effect of unemployment on inflation**
- **Inflation is a very slow-moving process, so that Fed can't react to the latest news. It needs a model.**
- **My good old 1980 model matters. The Fed should pay attention, and it is paying attention.**