

2017 Federico Caffè Lectures

Monetary Policy in Times of Low Inflation

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Lecture 1:

- (a) Empirical evidence on recoveries from deep recessions with liquidity traps: they are jobless, inflation is below target, rates are stuck at zero, real wages hold up well although TFP growth is weak.
- (b) One explanation, in fact the most widely embraced one, is that such dynamics are the consequence of a long string of negative natural rate surprises.

Lecture 2:

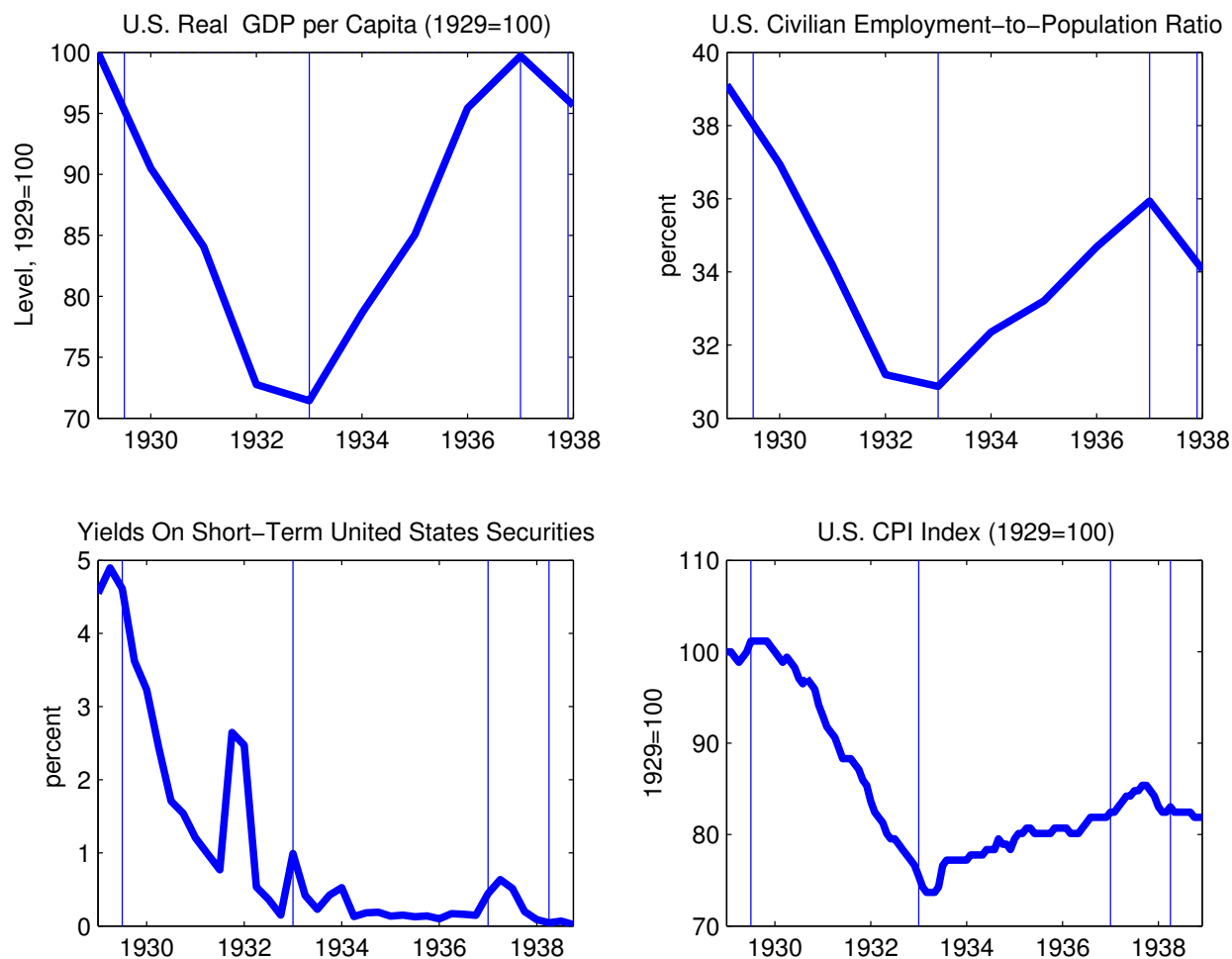
- (a) Another explanation, less widely embraced, is that such dynamics are the consequence of an un-anchoring of long-run inflation expectations.
- (b) Raising nominal interest rates as a strategy to lift an economy out of a liquidity trap — the neo-Fisher effect.
- (c) Empirical evidence on the neo-Fisher effect.

Recoveries from deep recessions with liquidity traps are jobless

Let's look at:

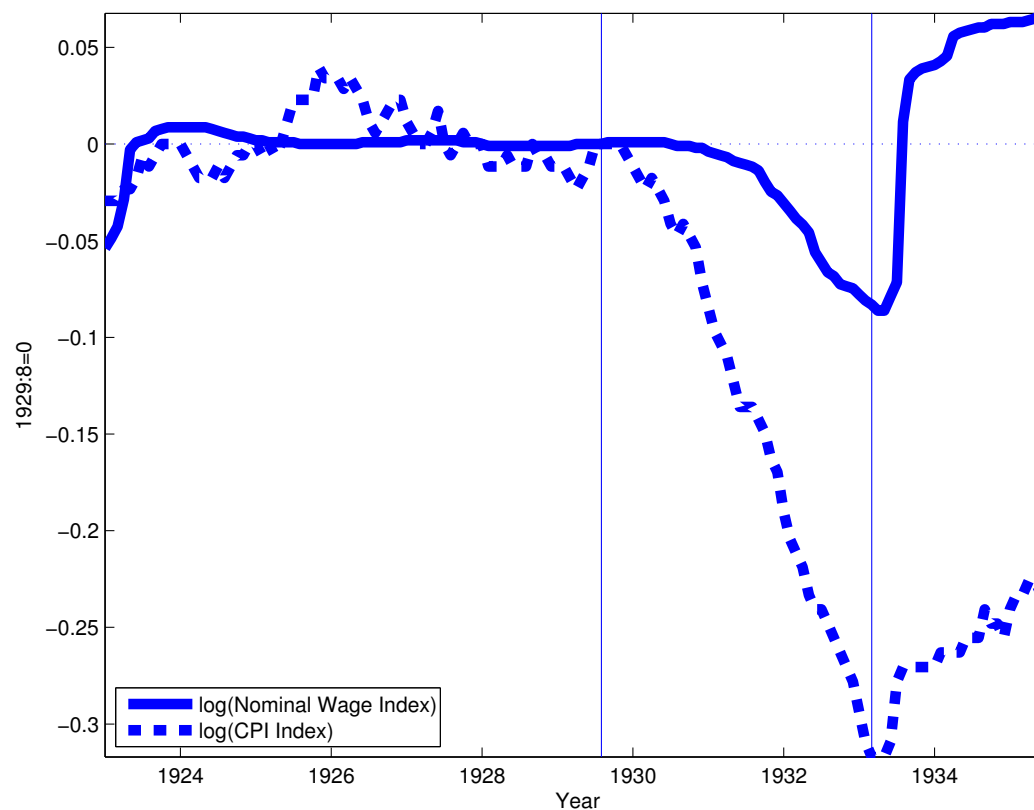
1. Great Depression of 1929: United States and Europe
2. Japan: 1991-2000.
3. United States: 2008-2017.
4. Euro Area: 2008-2017.

Jobless Recovery with Liquidity Trap United States, 1929-1938



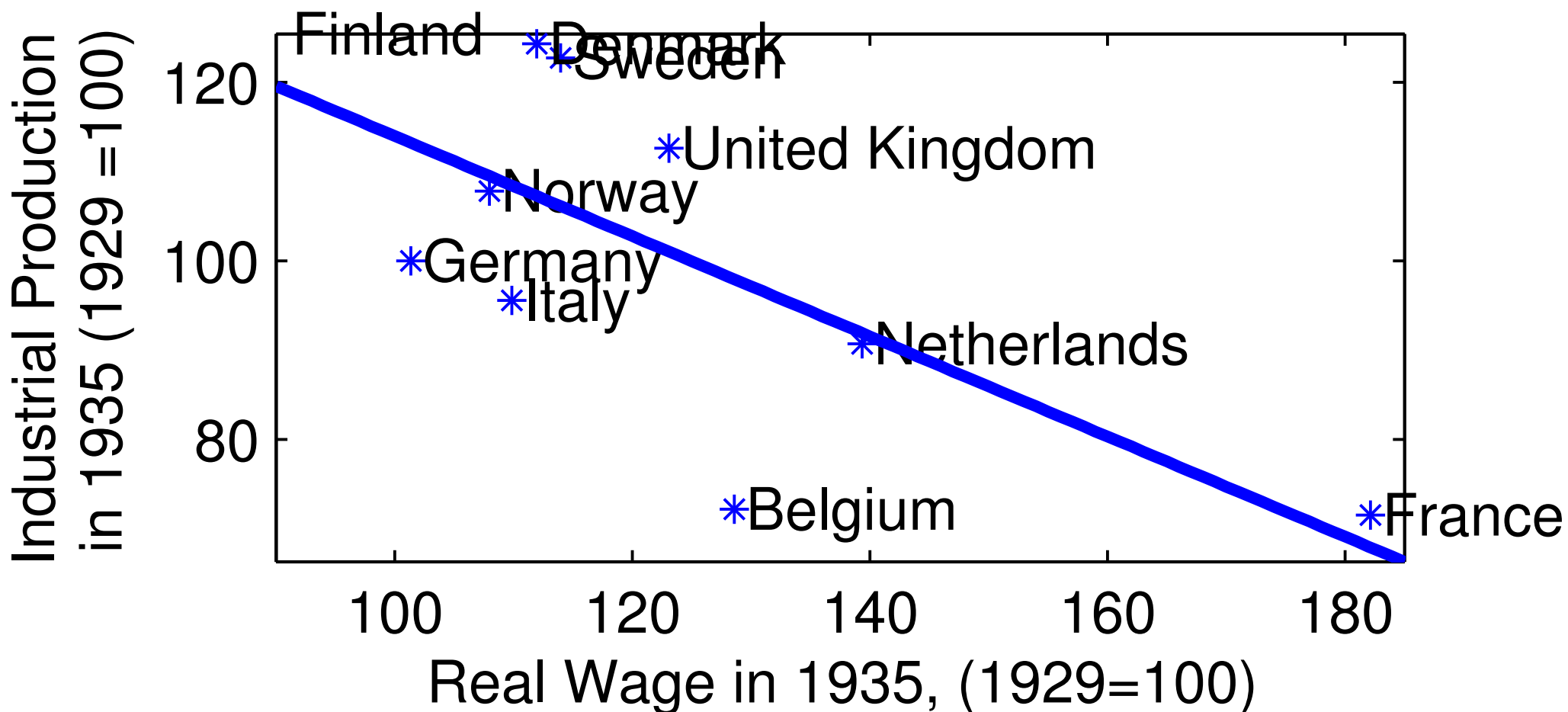
Vertical lines: NBER recession dates, 1929Q2, 1933Q1, 1937Q1, and 1938Q2.

Nominal Wage Rate and Consumer Prices, United States 1923:1-1935:7



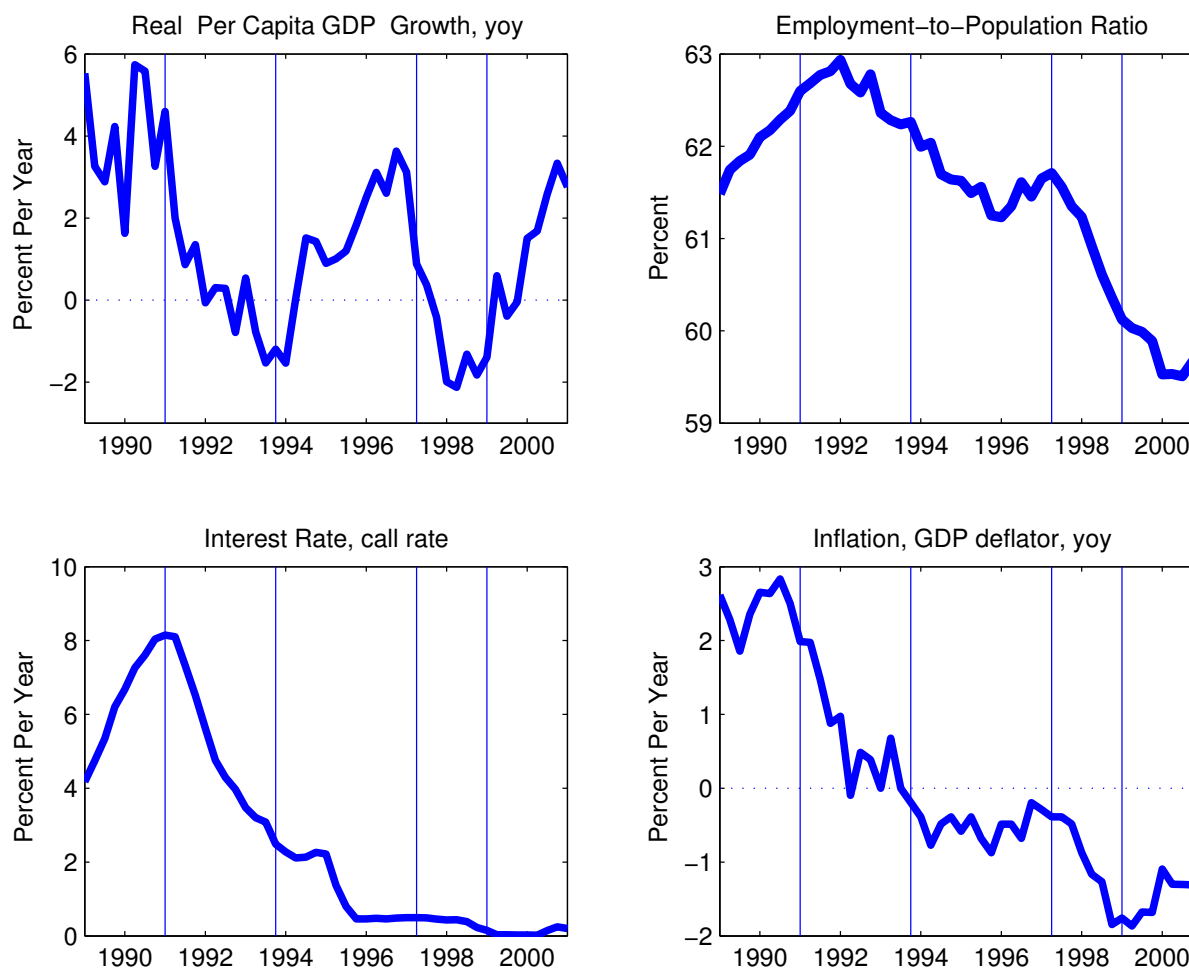
Source: Uribe and Schmitt-Grohé, 2017, Figure 9.8. Solid line: natural logarithm of an index of manufacturing money wage rates. Broken line: logarithm of the consumer price index. Vertical lines: NBER recession dates, 1929Q2 (peak) and 1933Q1 (trough).

Friedman and Schwartz (1963) show that countries that left gold early enjoyed more rapid recoveries. Eichengreen and Sachs (1986) show that countries that left gold early had lower real wages



Source. Redrawn from Eichengreen and Sachs (1985).

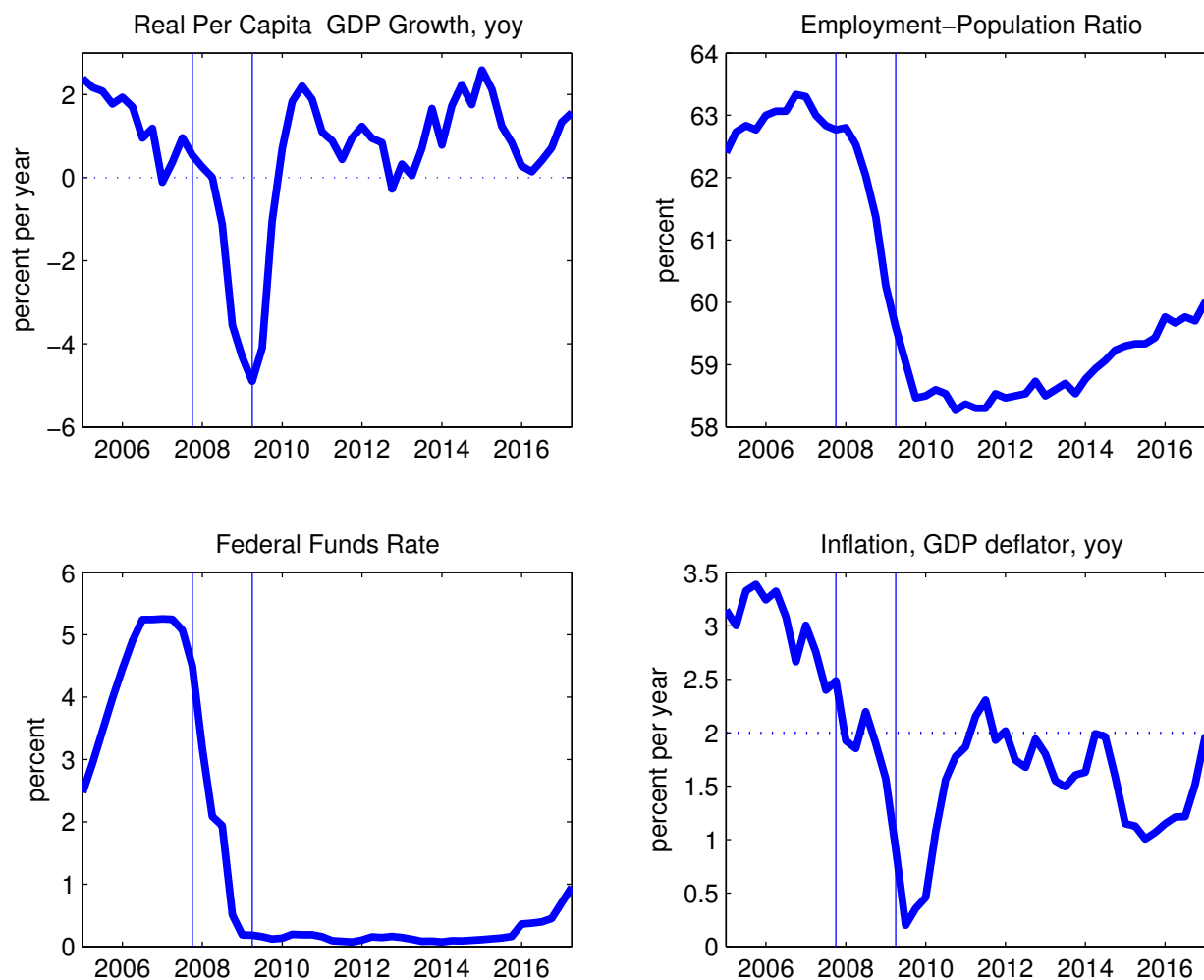
Jobless Growth Recovery with Liquidity Trap Japan, 1989-2001



Source: Schmitt-Grohé and Uribe (2017).

Vertical lines: Cabinet Office Recession dates, 1991Q1, 1993Q4, 1997Q2, 1999Q1.

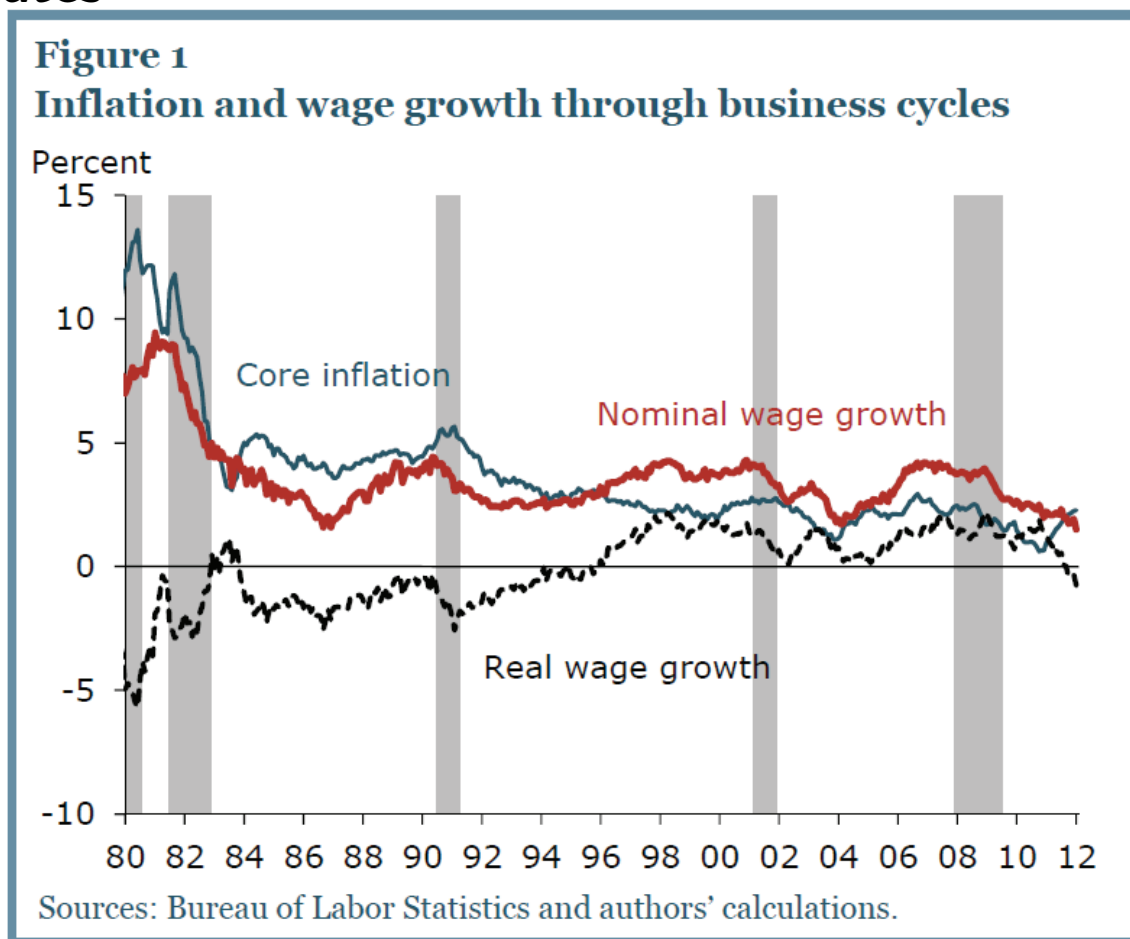
Jobless Growth Recovery with Liquidity Trap United States, 2005Q1-2017Q2



Source: Schmitt-Grohé and Uribe (2017).

Vertical lines: NBER recession dates, 2007Q4 and 2009Q2

Real Wage Growth Held up Relatively Well During the 2008 Recession in the United States



Source: Daly, Hobijn, and Lucking, 2012.

- Real wages grew by **1.1 percent** per year on average between 2008 and 2011.

Did Real Wage Growth Exceed TFP Growth in the Recovery in the U.S.?

Daly et al. report that real wages grew by **1.1 percent** per year on average between 2008 and 2011.

Fernald, FRBSF Productivity Data Base, report that adjusted TFP grew by **0.75 percent** per year on average between 2008 and 2011.

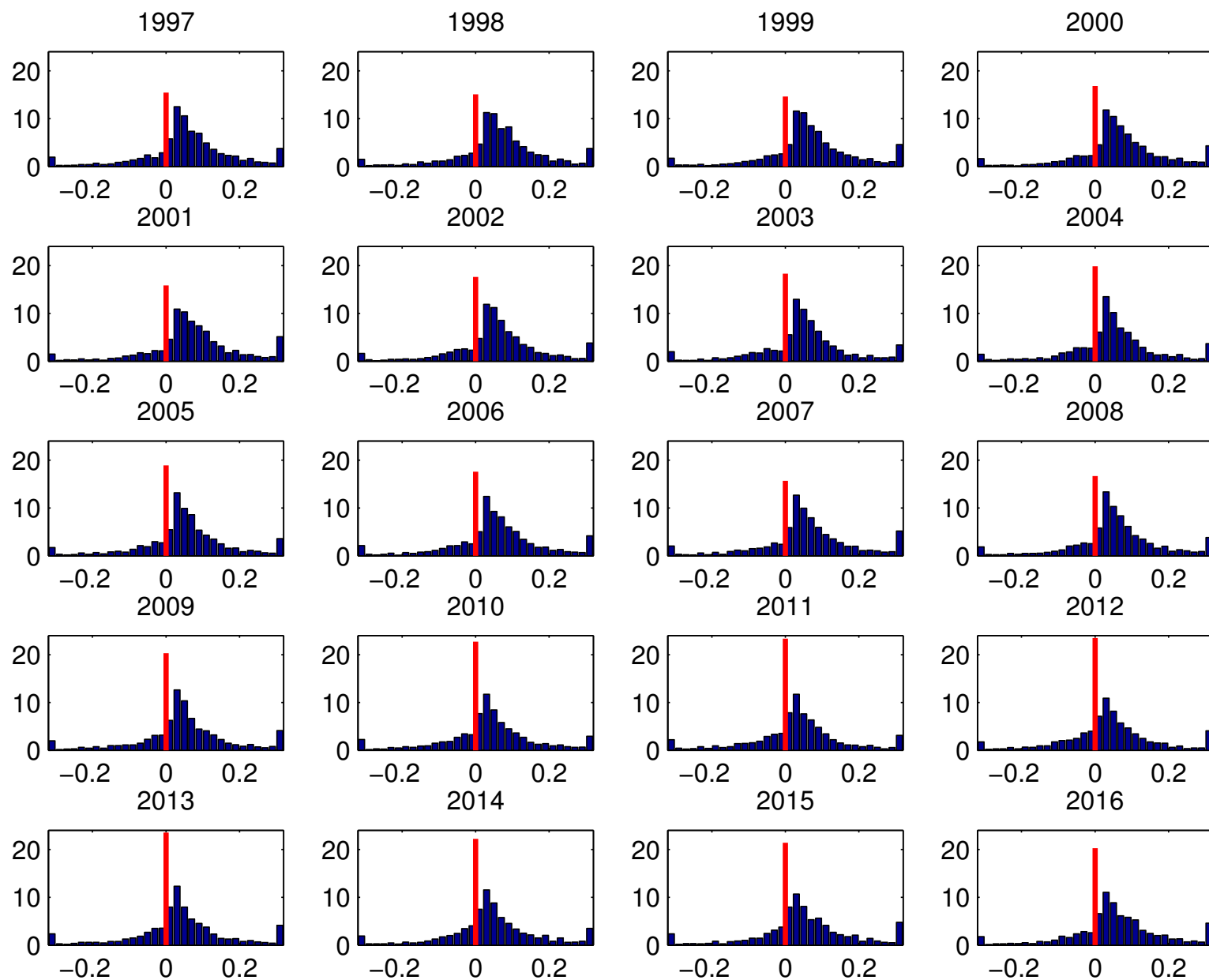
Hence real hourly wage growth **exceeded** TFP growth by 0.35 percent per year over the period 2008-2011.

⇒ A potential alternative explanation why wages held up is the combination of downward nominal wage rigidity and low inflation.

Empirical evidence on downward nominal wage rigidity for the United States, 1997-2016, CPS panel data

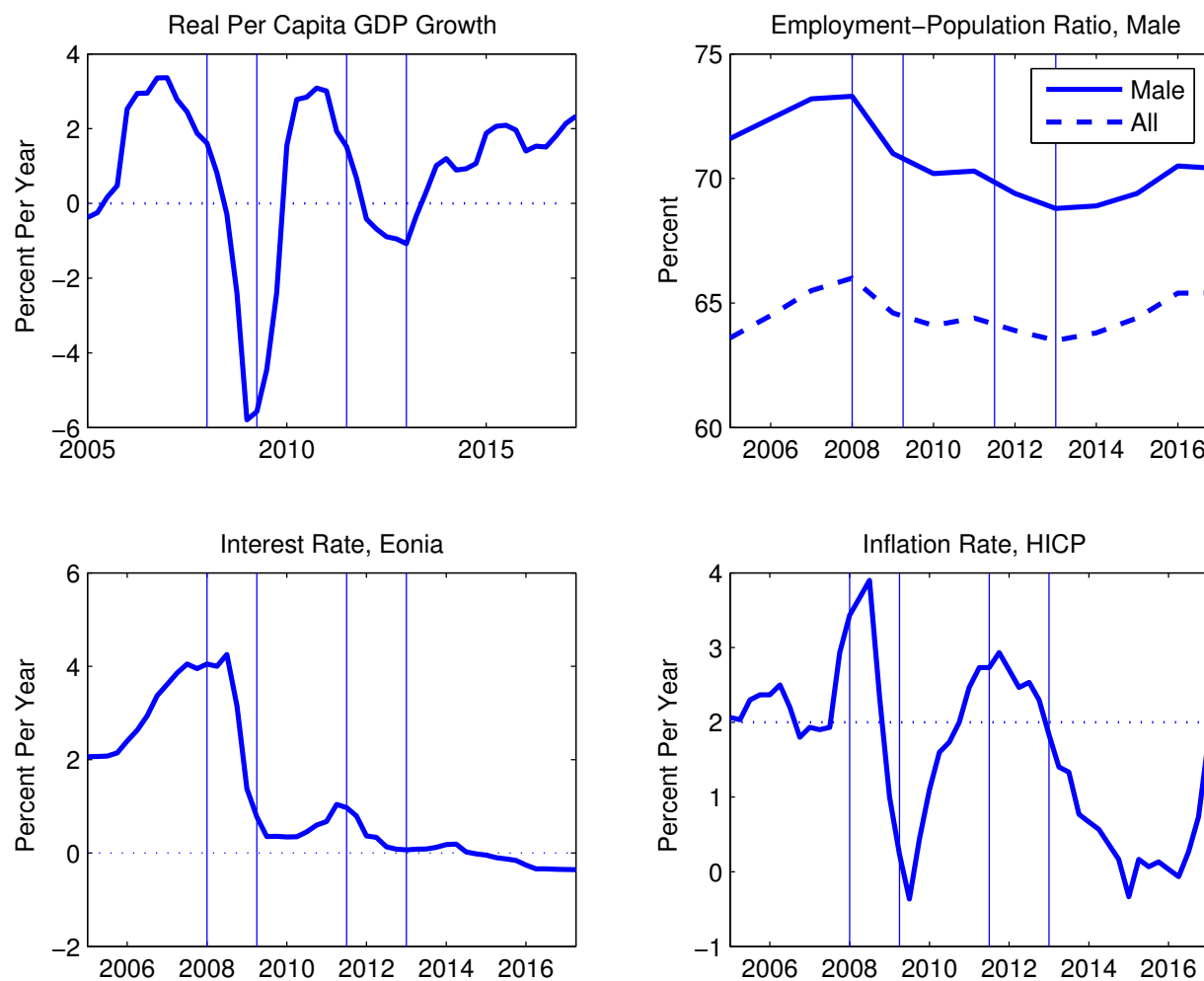
Year-over-year log changes in nominal hourly wages of hourly-paid job stayers

The next graph shows wage change distributions for each year since 1997. The horizontal axis measures the year-over-year percent change in the nominal hourly wage of an hourly-paid jobstayer. The vertical axis measures the share of workers in each bin. The bin size is two percent, with the exception of a wage freeze, which is defined as an exact zero change. Each wage change distribution is based on about 5,000 job stayers.



Source: Jo, Schmitt-Grohé, and Uribe (2017).

Jobless Growth Recovery with Liquidity Trap Euro Area, 2005-2017



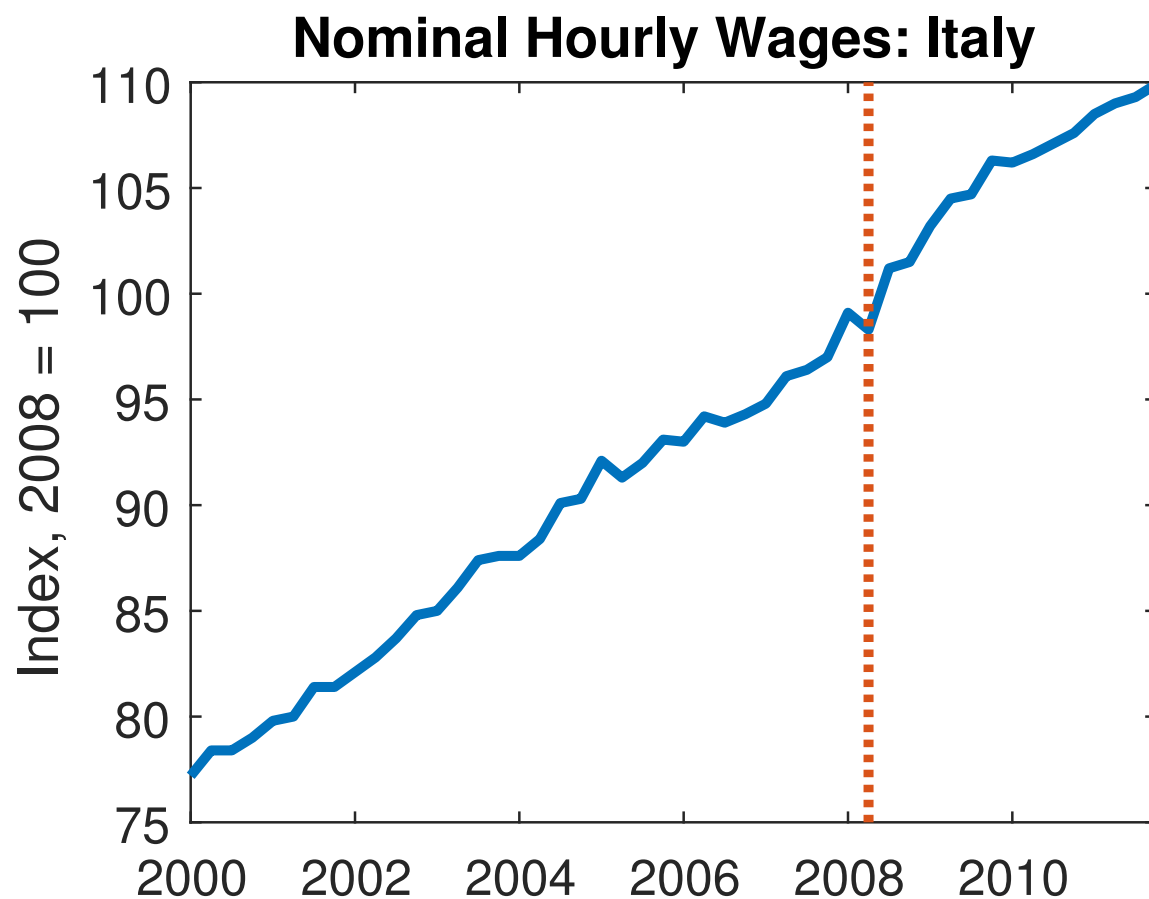
Vertical lines: CEPR business cycle dates, 2008Q1, 2009Q2, 2011Q3, 2013Q1.

Unemployment and Growth in Nominal Hourly Wages Evidence from the Eurozone

Country	Unemployment Rate		Wage Growth
	2008Q1 (in percent)	2011Q2 (in percent)	$\frac{W_{2011Q2}}{W_{2008Q1}}$ (in percent)
Bulgaria	6.1	11.3	43.3
Cyprus	3.8	6.9	10.7
Estonia	4.1	12.8	2.5
Greece	7.8	16.7	-2.3
Ireland	4.9	14.3	0.5
Italy	6.4	8.2	10.0
Lithuania	4.1	15.6	-5.1
Latvia	6.1	16.2	-0.6
Portugal	8.3	12.5	1.91
Spain	9.2	20.8	8.0
Slovenia	4.7	7.9	12.5
Slovakia	10.2	13.3	13.4

Source: Schmitt-Grohé and Uribe (2017).

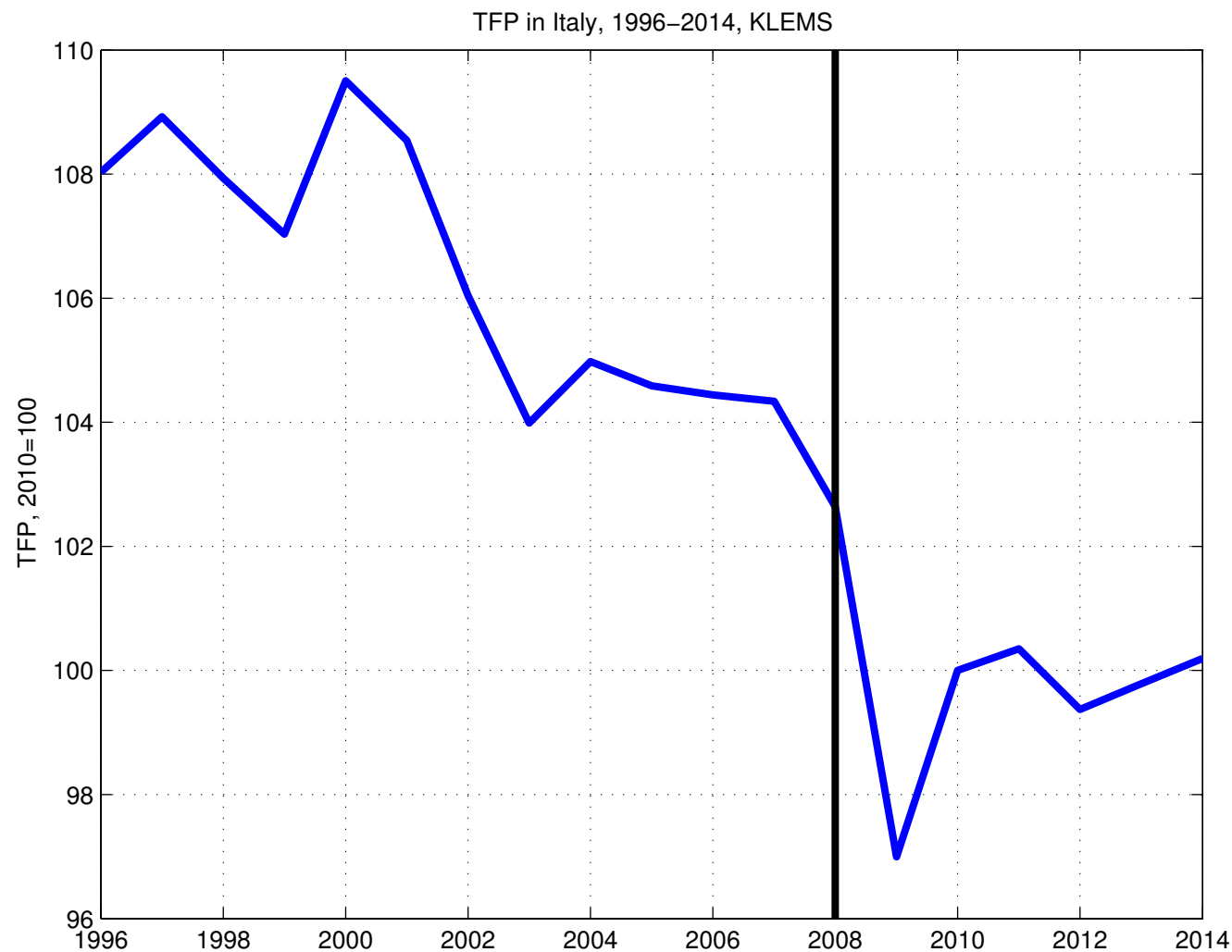
No slowdown in nominal hourly wage growth in many Euro



- Nominal wage growth exceeds price growth so that real wages rise

...

... despite no growth in total factor productivity



Let's now move from data to models.

Q: How can we explain the observed dynamics?

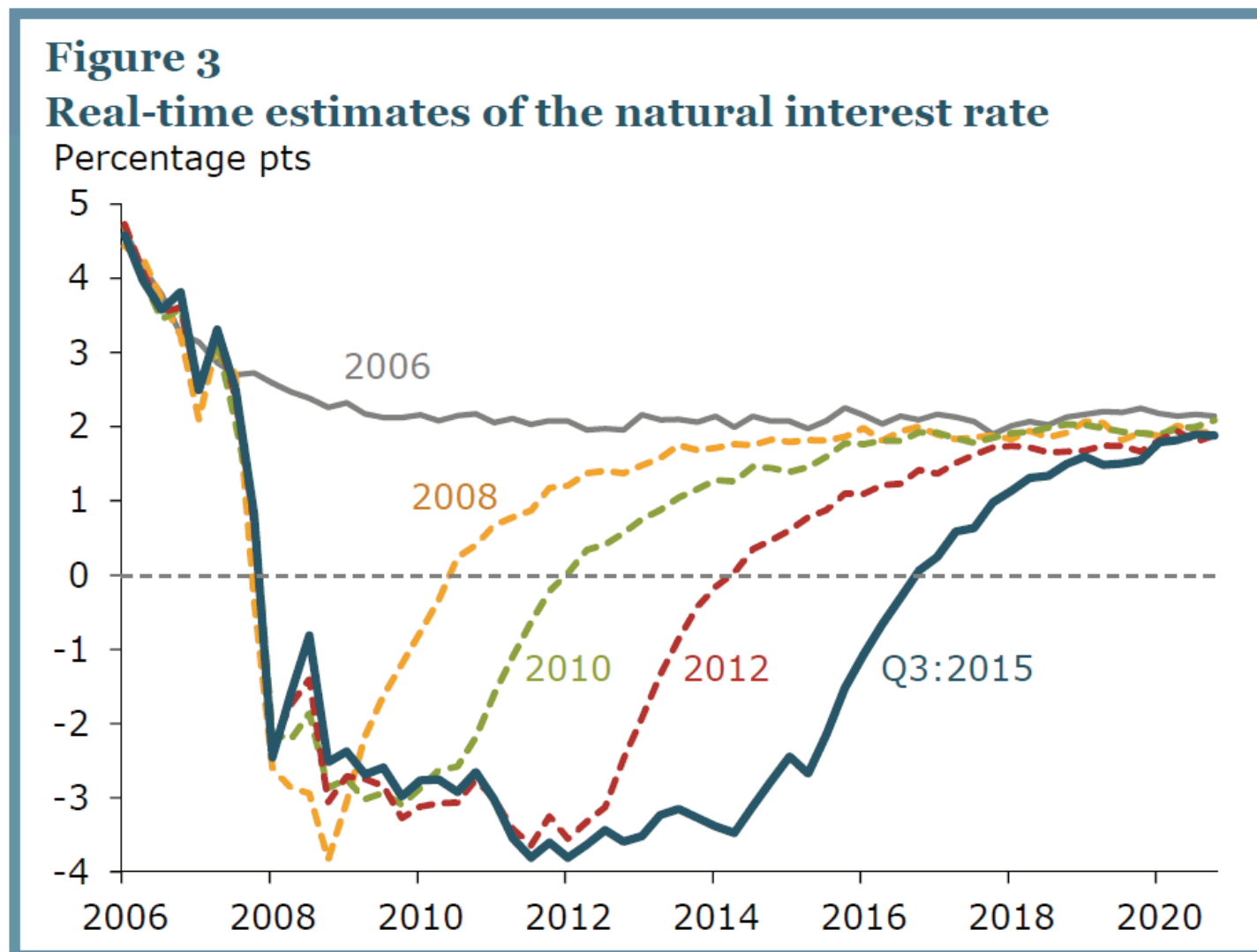
A: Either with negative natural rate shocks (the conventional explanation) or with a downward revision in expected inflation.

Conventional View of Liquidity Trap:

Inflationary expectations are well anchored (i.e., inflation is expected to return to some target, say 2%) and liquidity trap is the consequence of negative shocks to the natural rate of interest.

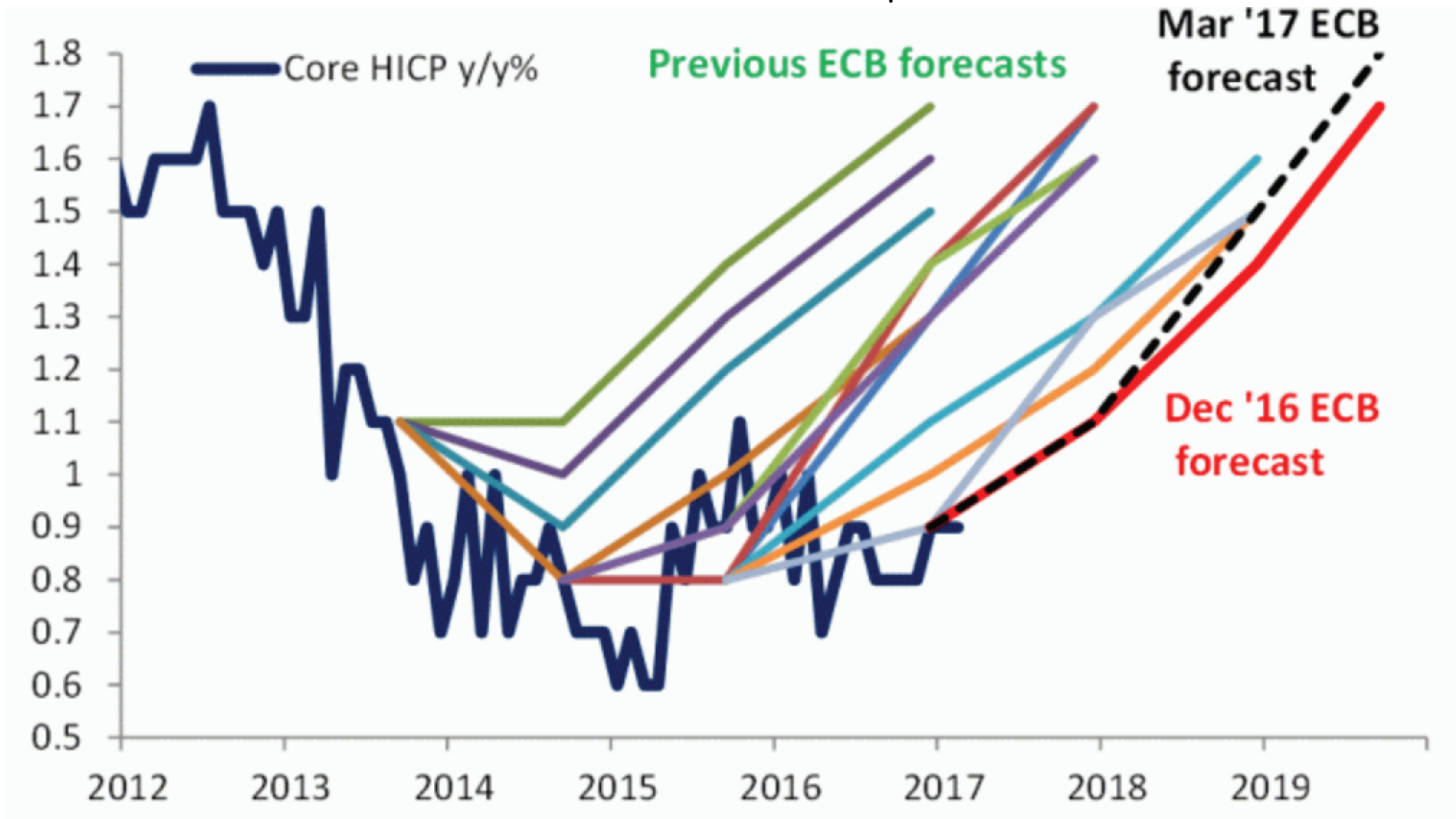
Theoretical models with nominal rigidities: predict that in response to such shock the recovery is job creating, inflation is monotonically increasing during the recovery, and output growth is above average during the recovery. (See for example Schmitt-Grohé and Uribe, 2017; Del Negro et al., 2015; or Curdia et al., 2015). To be able to explain a long lasting liquidity trap, the conventional view requires that the economy is continuously surprised by yet another negative natural rate shock.

Curdia (2015) shows that conventional view requires that economy is continuously surprised by yet another negative natural rate shock:



Source: Curdia, FRBSF EL 2015.

ECB revisions to the core HICP inflation path:



Mr. Micawber in Charles Dickens 'David Copperfield' principle is **'something will turn up'**

Alternative View: A Downward Revision in Inflation Expectations.

Agents stop believing that the central bank will be able to bring the economy back to the inflation target, say 2%. Instead agents assign positive probability to the event that inflation will settle at some $\pi_L < 2\%$.

“Mr. Draghi and his peers are afraid that consumers and investors will increasingly see low inflation as the new normal, creating a self-fulfilling prophecy.” NYT, page B7, November 22, 2014.

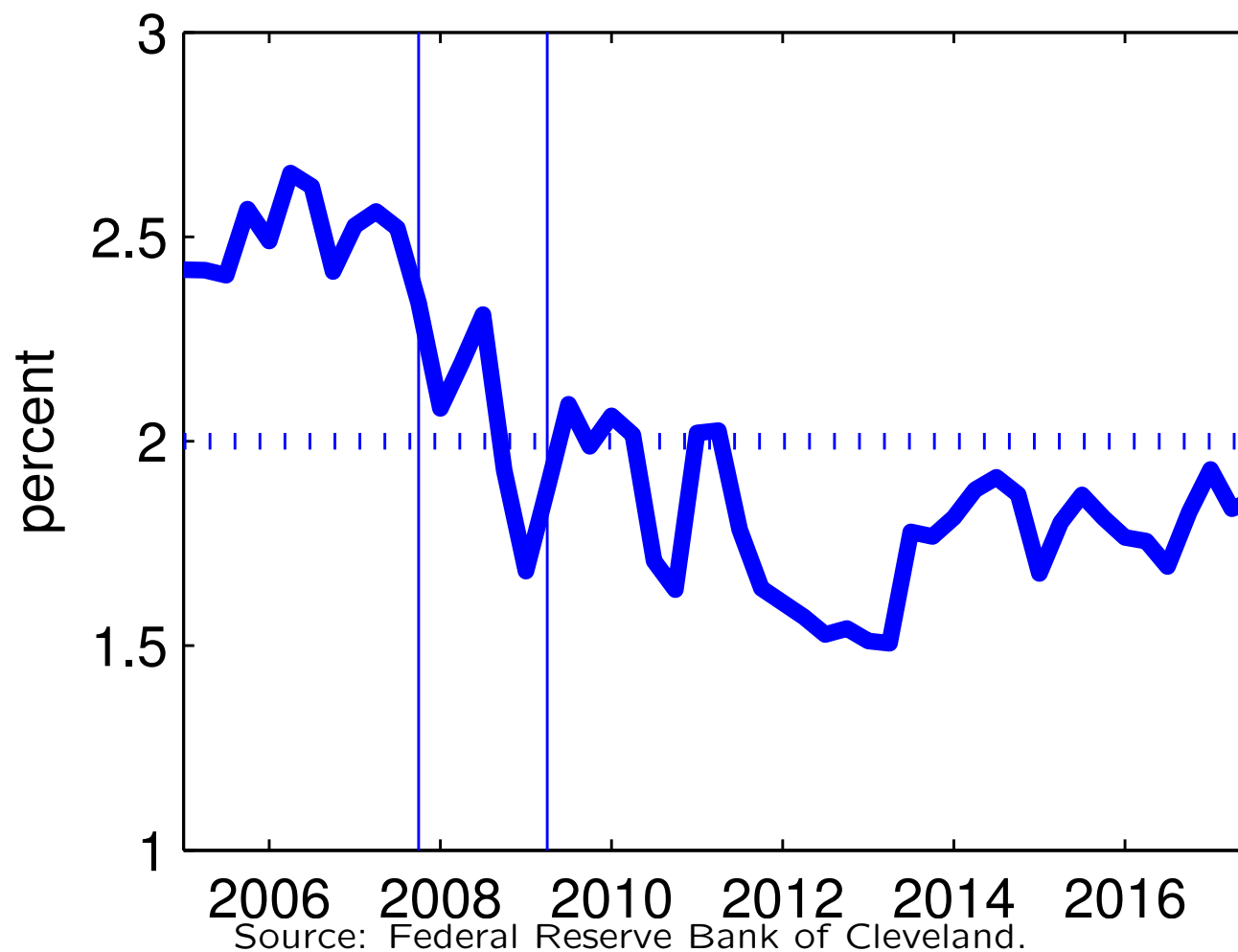
Thought Experiment: Assume that in period 0 agents start believing that in the long run inflation is below target with probability one.

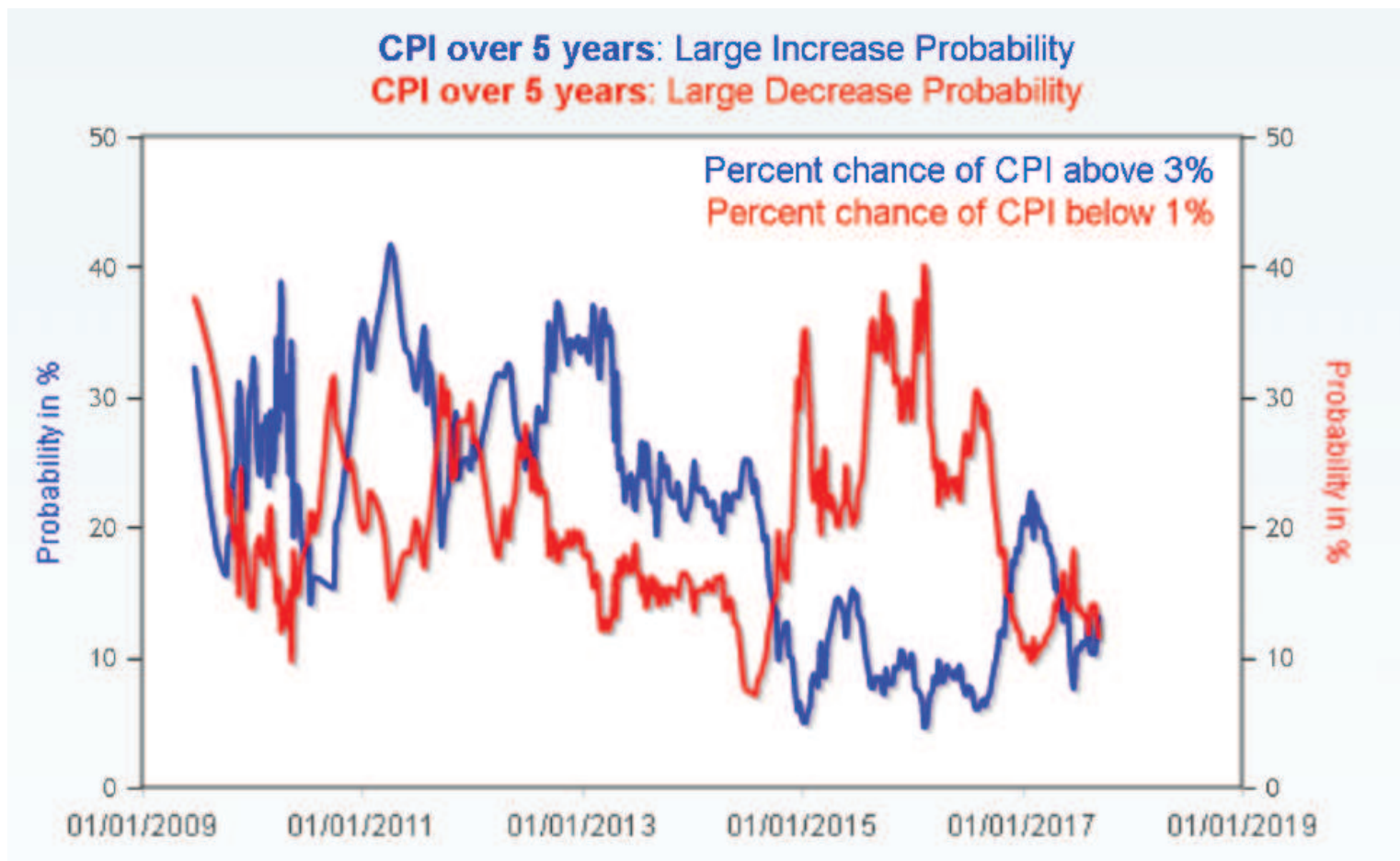
Preview of Predictions: Inflation is monotonically declining during the recovery, and if nominal wages are downwardly rigid, then recovery is jobless and output growth is below average during the recovery.

We will consider this case in more detail in lecture 2.

Any evidence in support of downward revisions of long-run inflation expectations in the United States?

U.S. 10-Year Expected Inflation: 2005Q1-2017Q3





Source: FRB Minneapolis, <https://www.minneapolisfed.org/banking/mpd>

Summary of Lecture 1

- Past recoveries from low-inflation, deep recessions have been jobless, real wages stayed strong despite high unemployment and low TFP growth.
- In all cases a policy of zero nominal rates failed to bring inflation back up to target.
- Standard theoretical models assume that the cause of the liquidity trap is a perpetual string of negative natural rate shock surprises.
- An alternative (potentially complementary) view is that the long duration of the liquidity trap and the jobless recovery is the consequence of a downward revision to long-run inflation expectations—more on this in lecture 2.