Exiting a Liquidity Trap
and
The Neo Fisher Effect

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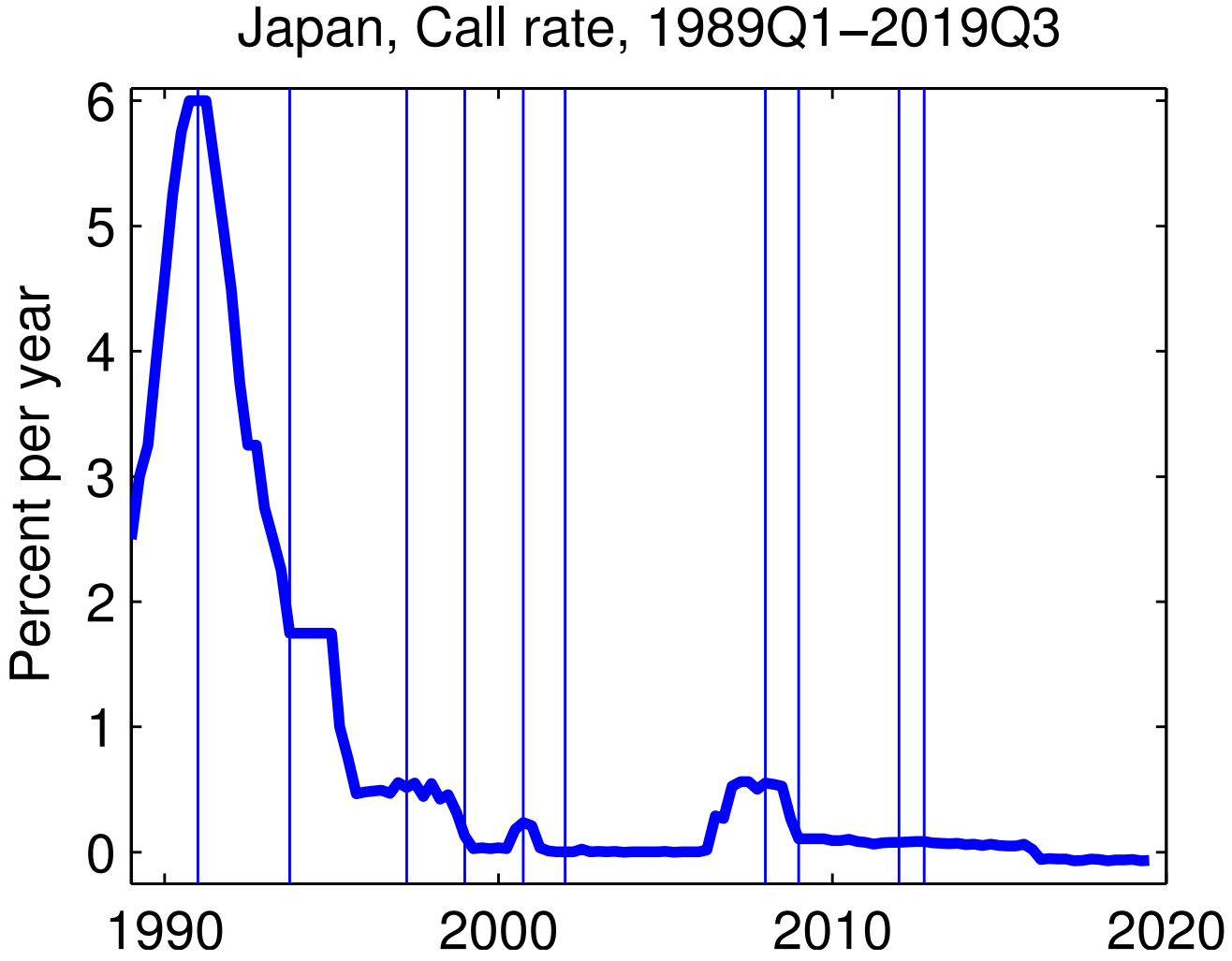
The Future of Inflation Targeting, Bank of England, London, 9 January 2020,
Challenges of a 'low-for-long' interest rate environment

Does setting nominal rates at zero for an extended period of time raise inflation?

Japan

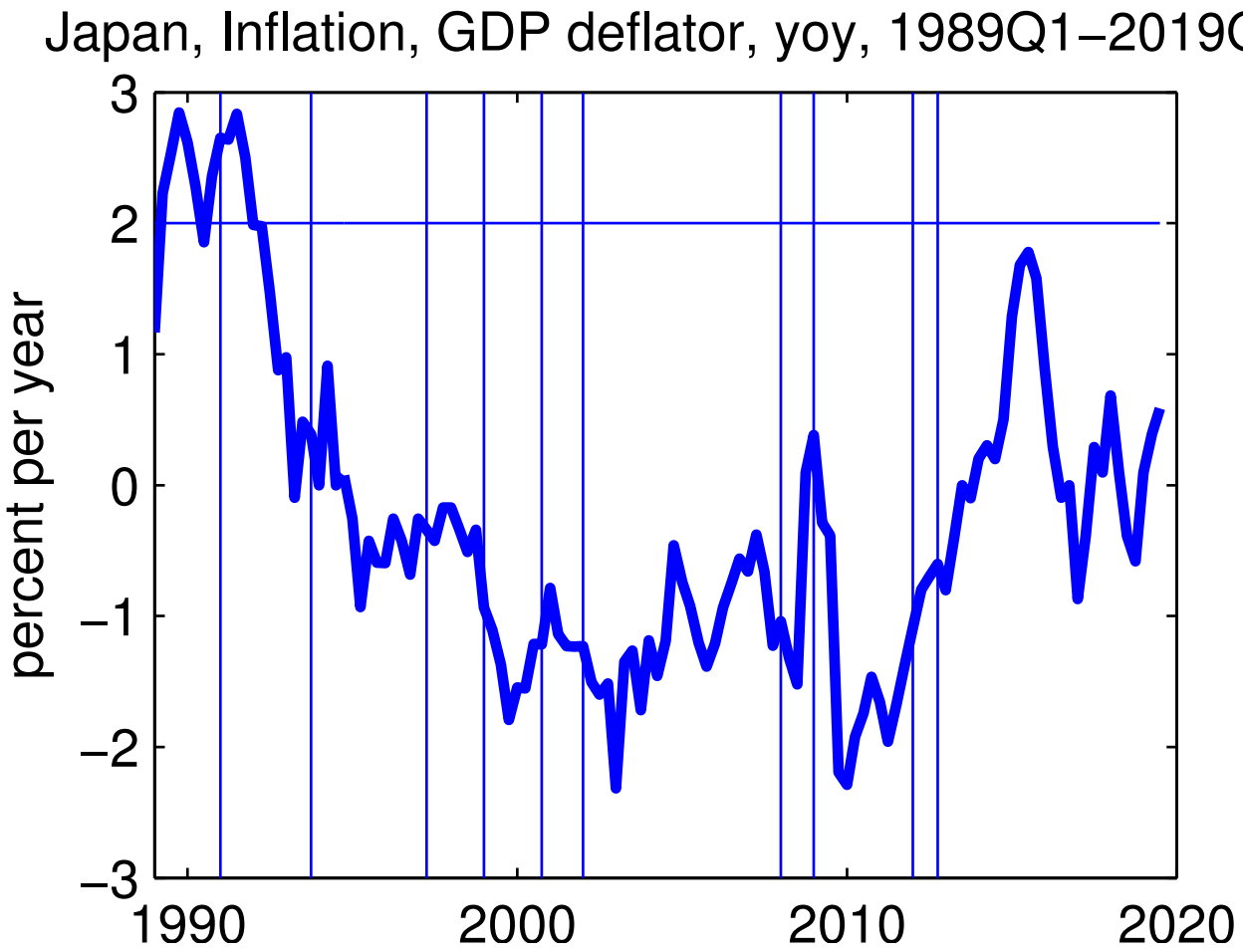
1989-2019

Japan has had near zero rates ever since 1995



Vertical lines: Cabinet office recession dates, 1991Q1, 1993Q4, 1997Q2, 1999Q1, 2000Q4, 2002Q1, 2008Q1, 2009Q1, 2012Q2, and 2012Q4.

... yet inflation has been below target throughout.

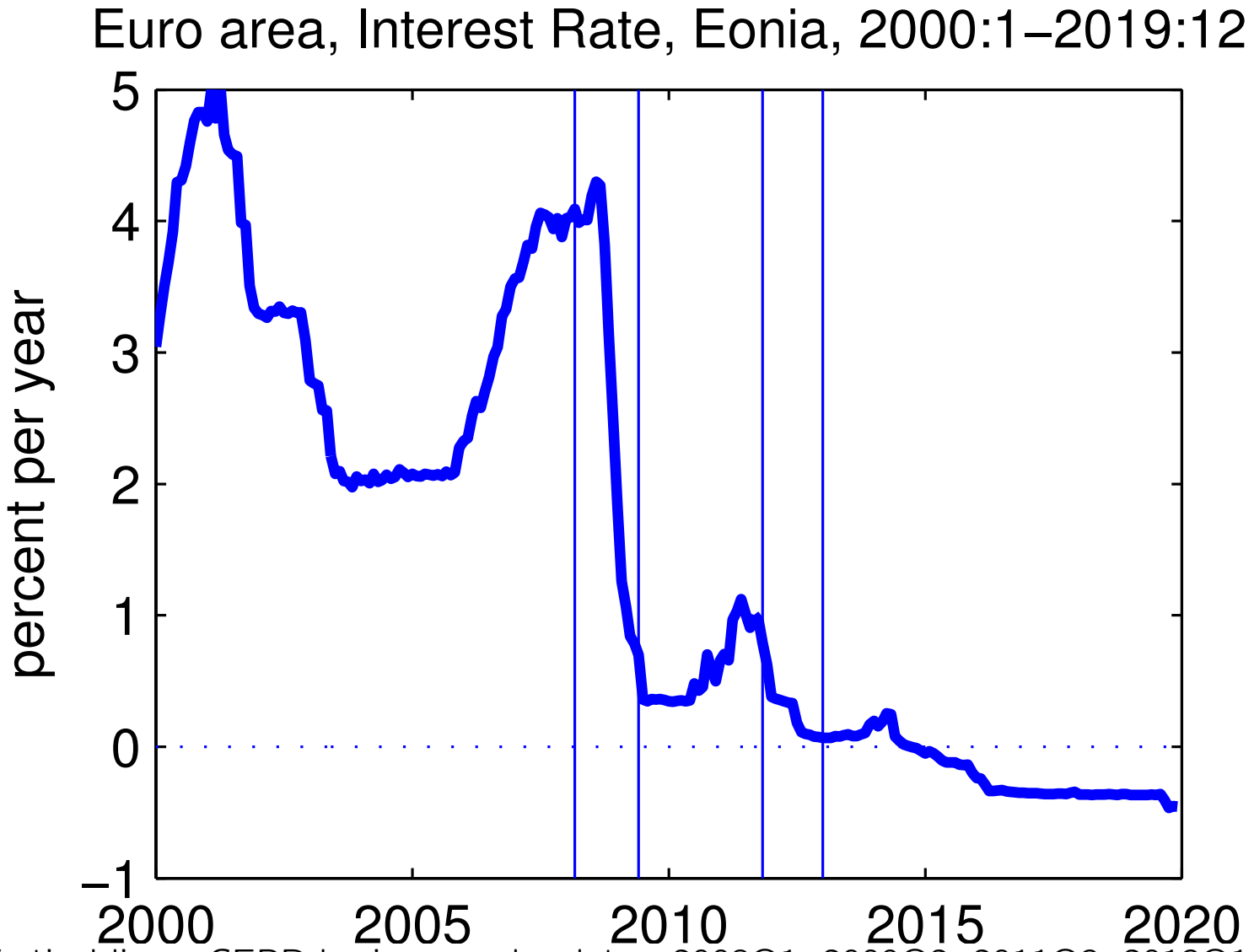


Vertical lines: Cabinet office recession dates, 1991Q1, 1993Q4, 1997Q2, 1999Q1, 2000Q4, 2002Q1, 2008Q1, 2009Q1, 2012Q2, and 2012Q4.
Horizontal line: 2% inflation target.

Euro area

2000-2019

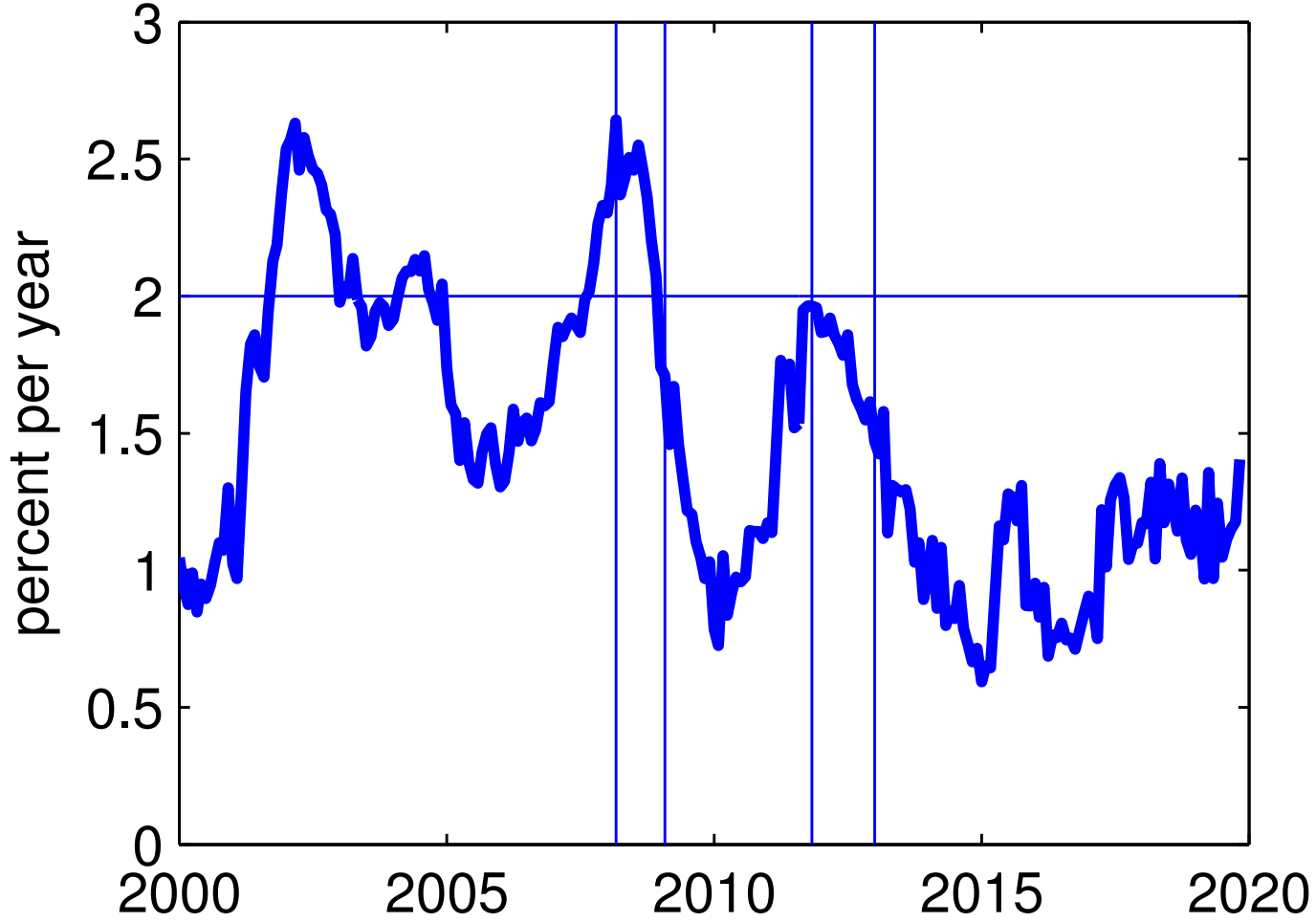
Since 2009 near zero rates in the Euro area ...



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

... yet, inflation remains below 2% target...

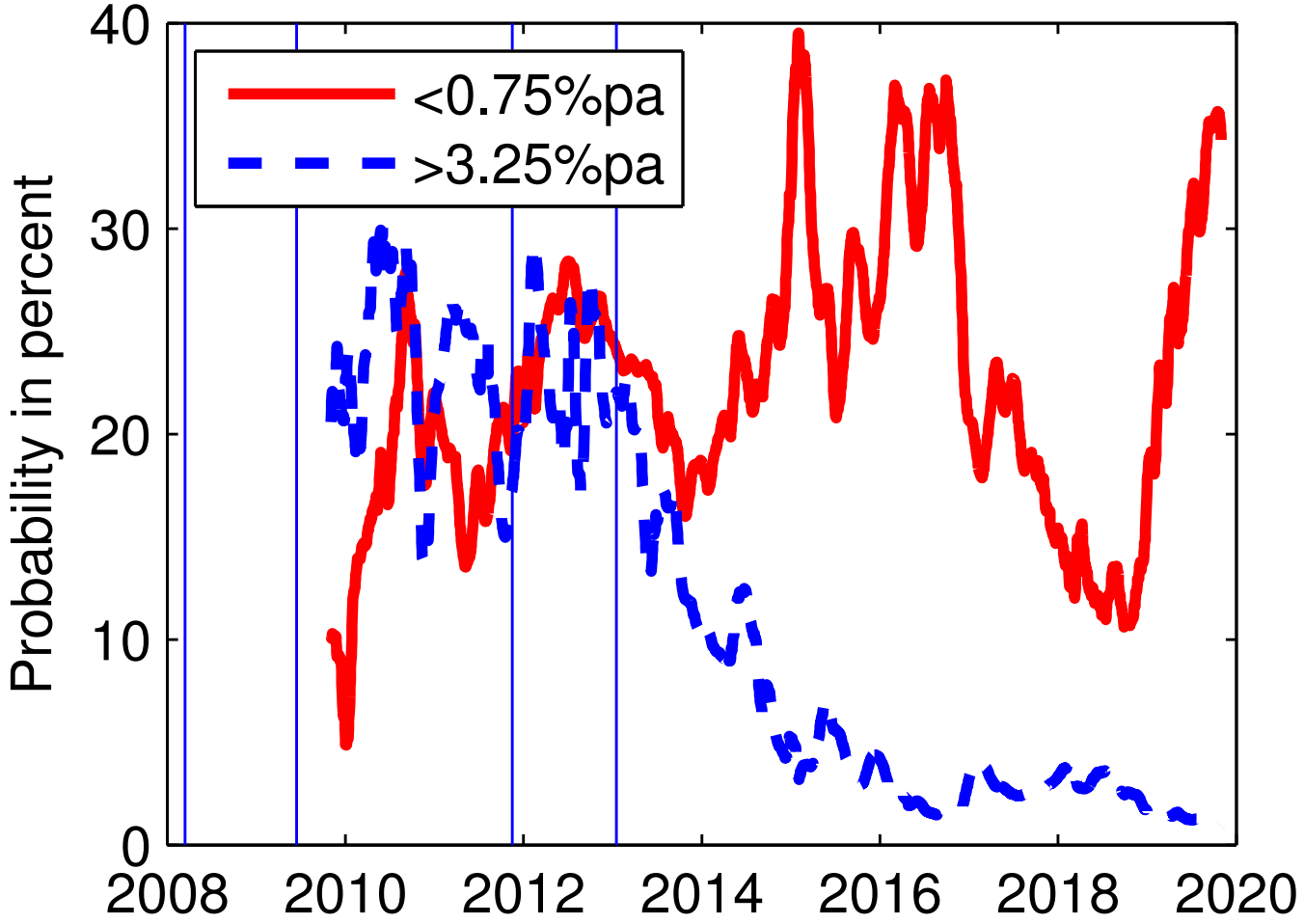
Euro area, Inflation, HICP ex energy and unp. food, yoy, 2000:1–2019:11



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

and chances of long-run inflation below 0.75% are high.

HICP over next 10 years: Large increase and large decrease probabilities



Data source, Vogt, 2020. Twenty-day moving averages of daily options-implied inflation probabilities, Oct 6, 2009 to Nov 1, 2019. Vertical lines: CEPR business cycle dates, 2008Q1, 2009Q2, 2011Q3, 2013Q1.

Explanations for the joint occurrence of near zero rates for an extended period of time and inflation well below target:

• Economy perpetually surprised by negative shocks to the natural rate.

• Secular decline in the natural rate so that a larger number of disturbances result in long periods of time at the ZLB, at least under simple Taylor-type inflation targeting rules.

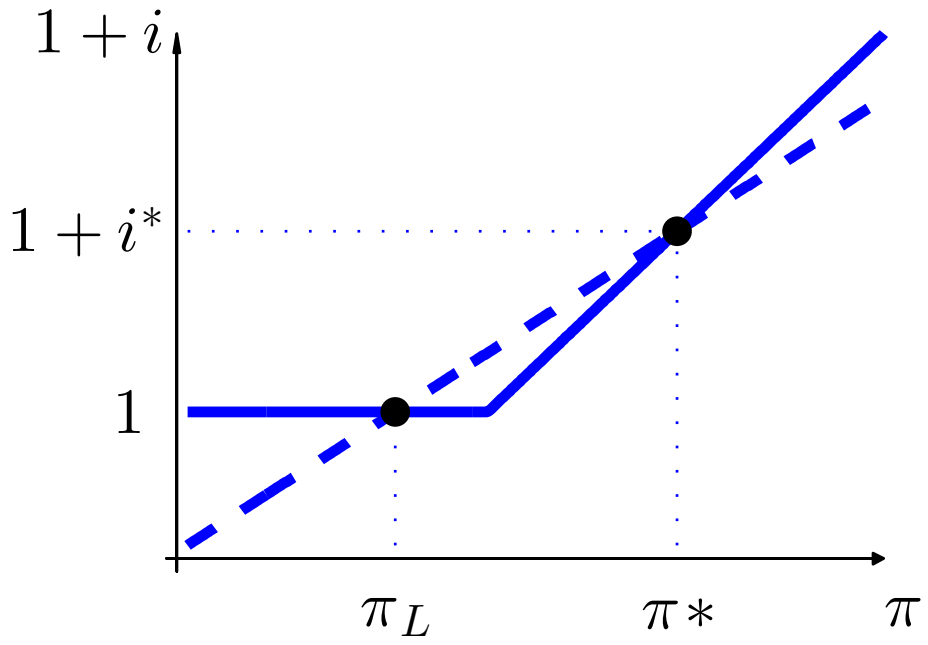
• Inflation expectations have fallen below target because of the low rate policy (Benhabib, Schmitt-Grohé, and Uribe, 2001)

> *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.

A Brief Exposition of the 'Perils of Taylor Rules', BSU 2001

The Taylor Rule: $1 + i_t = \max\{1, 1 + i^* + \alpha_\pi (\pi_t - \pi^*)\}; \alpha_\pi > \beta^{-1} > 1$

The Euler Equation: $U'(C_t) = \beta(1 + i_t) E_t \frac{U'(C_{t+1})}{\pi_{t+1}}$



Steady State

Solid Line: Taylor rule

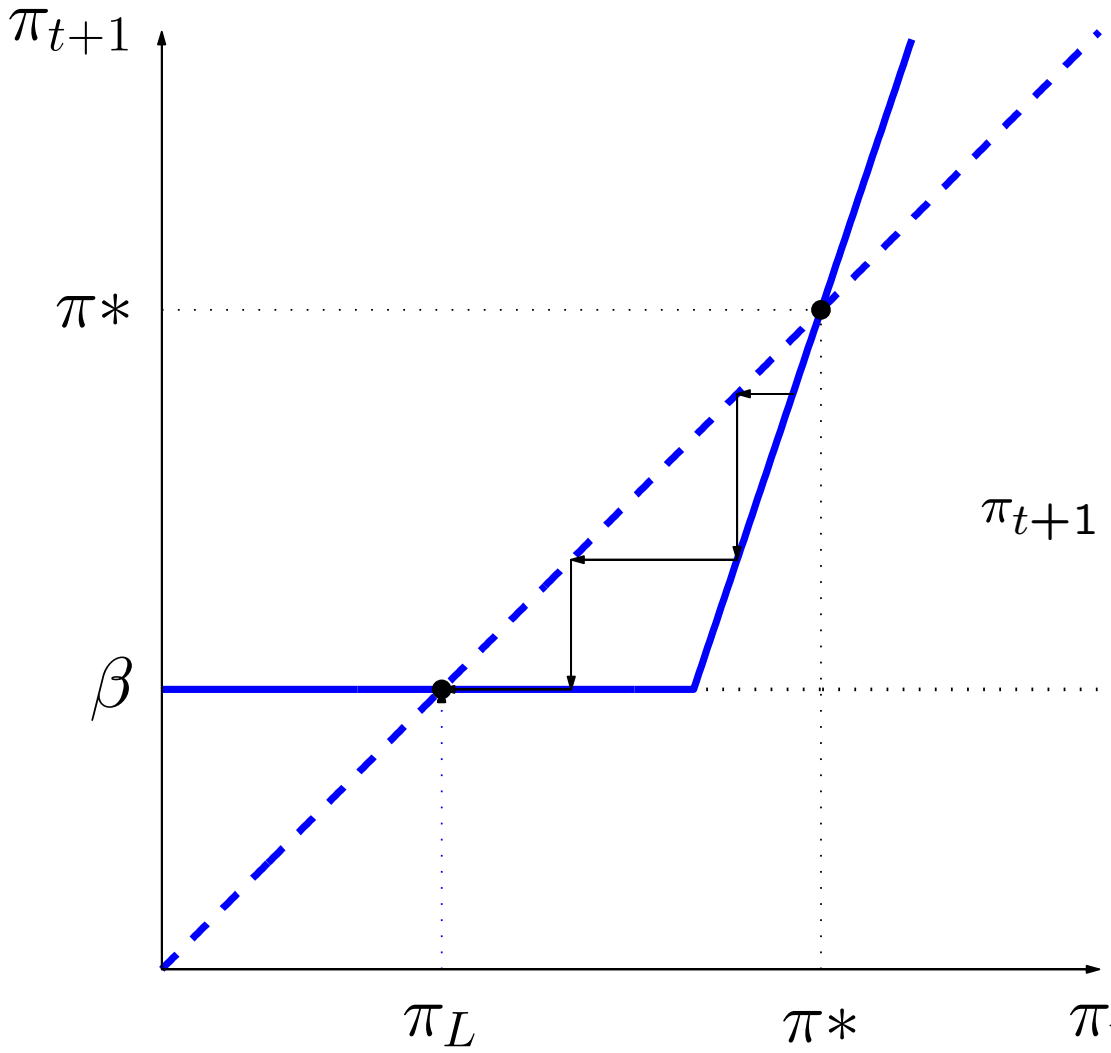
$1+i = \max\{1, 1 + i^* + \alpha_\pi (\pi - \pi^*)\}$

Broken Line: Euler equation

$$1 + i = \beta^{-1}\pi$$

$\Rightarrow$ Two inflation steady states: The intended steady state (π^*) and the liquidity trap steady state (π_L)

Dynamics in a Flexible-Price Endowment Economy



Solid line:

$$\pi_{t+1} = \max\{\beta, \pi^* + \beta\alpha_\pi(\pi_t - \pi^*)\}$$

Broken line: 45-degree line

Comment: Similar results obtain in sticky-price/wage economies (BSU 2001, SGU 2017) and also under time-consistent policy (Nakata & Schmidt, 2017; Mertens and Williams, 2018).

How to exit a persistent liquidity trap that is caused by lowered inflation expectations?

• Discussions of how monetary policy can lift an economy out of chronic below-target inflation are almost always based on the logic of how transitory interest-rate shocks affect real and nominal variables.

• Within this logic, a central bank trying to reflate a low-inflation economy will tend to set interest rates as low as possible.

• As just demonstrated, economies following such strategy can find themselves with zero nominal rates and with the low-inflation problem not going away.

So, what to do?

• Will raising the inflation target help? No, not in these circumstances, because self-fulfilling liquidity traps will continue to exist even for a higher inflation target, π^*.

• Would limiting the time spend at the ZLB help? In Schmitt-Grohé and Uribe (2014, 2017) we argue YES. In particular, to exit a persistent liquidity trap the central bank should raise nominal interest rates even if inflation is below target. Doing so will increase inflation not only in the long run but also in the short run **(the neo Fisher effect)**. Why? Because doing so eliminates the self-fulfilling liquidity trap.

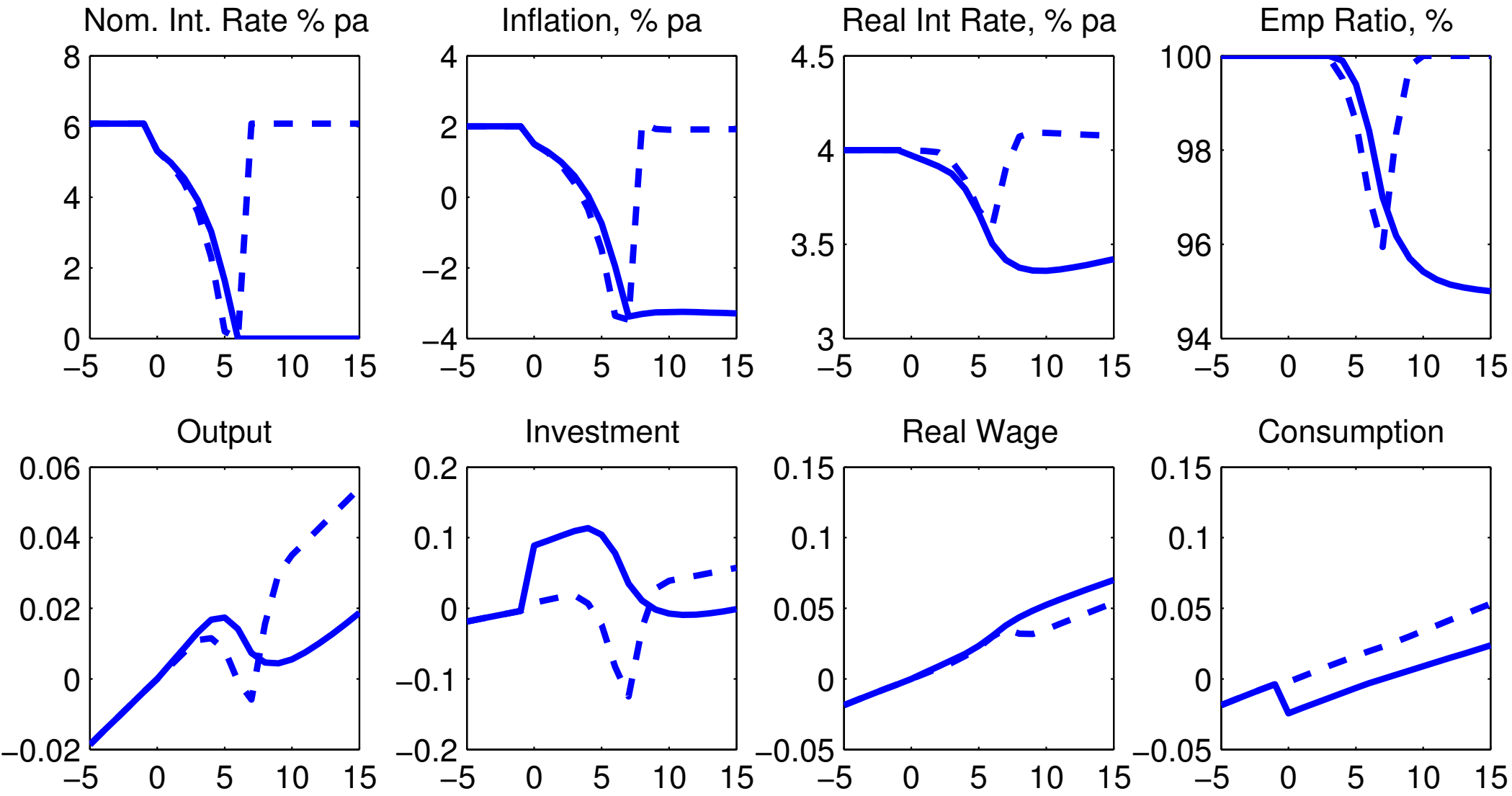
The proposed exit strategy: Limit the time of zero rates

After an economy has been at the zero lower bound for some time, the central bank gradually raises the policy rate to the target level in steps of 25 basis points per quarter. Once rates are back to normal levels, the central bank follows again a Taylor rule.

If the prolonged liquidity trap is of the self-fulfilling type, such a strategy raises long-run inflation expectations.

The next slide illustrates how this exist strategy plays out in the SGU (2017) sticky wage model with capital. Similar results obtain in a standard NK model (see, for example, Uribe 2018).

Exiting a Chronic Liquidity Trap: Tightening is Easing



Let's turn to data now, and ask whether the prediction of the model, namely, that a permanent increase in the nominal rate, raises inflation already in the short run, **(the Neo Fisher effect)**, is consistent with empirical evidence.

The Fisher equation:

$$i = r + \pi$$

where

i = nominal interest rate

r = real interest rate

π = inflation rate

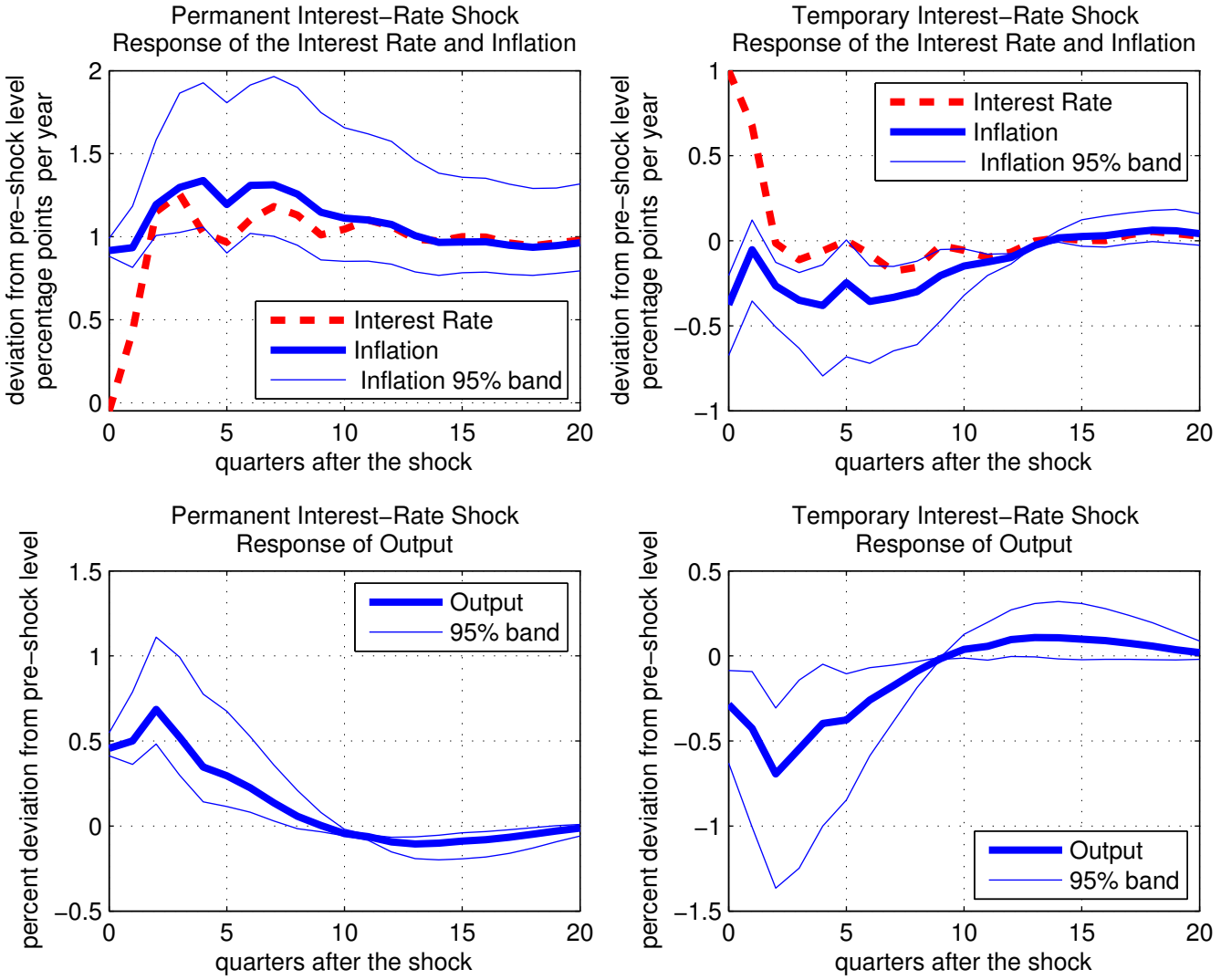
Effect of an increase in the nominal interest rate (i) on inflation (π)

	Effect on π in the	
	long-run	**short-run**
Transitory increase in i	0	$\downarrow$
Permanent increase in i	$\uparrow$	$\uparrow$

Entry (2,1): The Fisher Effect

Entry (2,2): The Neo-Fisher Effect

Estimated Impulse Responses to a 1-percent Nominal Rate Increase: United States, 1954Q4-2018Q2



Source: Uribe, 2018. Similar results hold for Japan (Uribe, 2018); France, UK, Germany, and Euro area (Azevedo, Ritto, and Teles, 2019).

Summary

• Due to the zero lower bound, inflation targeters may experience self-perpetuating liquidity traps. This holds for Taylor rules as well as for optimal policy under discretion.

• In such circumstances, conventional models (including the canonical NK model) predict that a permanent increase in nominal interest rates can raise inflation already in the short run (**Neo Fisher Effect**) and thereby stimulate employment.

• This **neo-Fisherian** prediction of the model is consistent with empirical evidence on the short-run effects of permanent interest rate shocks from Uribe (2018).