

# **Discussion of “*Evaluating a Structural Model Forecast: Decomposition Approach*”**

**by Frantisek Brazdik, Zuzana Humplova, and Frantisek Kopriva**

Douglas Laxton  
International Monetary Fund

Czech National Bank  
May 16<sup>th</sup>, 2016

# Disclaimer

The views expressed herein are those of the authors and should not be attributed to the International Monetary Fund, its Executive Board, or its management.

# Background Papers

Benes, J., K. Clinton, M. Johnson, D. Laxton and T. Matheson, “Structural Models in Real Time,” IMF Working Paper No. 10/56.

Alichi, A., J. Benes, J. Felman, I. Feng, C. Freedman, D. Laxton, E. Tanner, D. Vavra, and H. Wang, 2015, “Frontiers of Monetary Policymaking: Adding the Exchange Rate as a Tool to Combat Deflationary Risks in the Czech Republic,” IMF Working Paper No. 15/74.

Alichi, A., C. Freedman, K. Clinton, D. Laxton, M. Juilliard, J. Turunen, and H. Wang, 2015, “Avoiding Dark Corners: A Robust Monetary Policy Framework for the United States,” IMF Working Paper No. 15/134.

Alichi, A., D. Laxton, J. Turunen, and H. Wang, “U.S. Monetary Policy: Avoiding Dark Corners,” posted on June 25, 2015 by iMFdirect.

Clinton, K., C. Freedman, M. Juilliard, O. Kameník, D. Laxton, and H. Wang, “Inflation-Forecast Targeting: Applying the Principle of Transparency,” IMF Working Paper No. 15/132.

# Summary of Main Points

Develop a methodology to better understand forecast revisions. What is a result of data revisions, conditioning information and expert judgment?

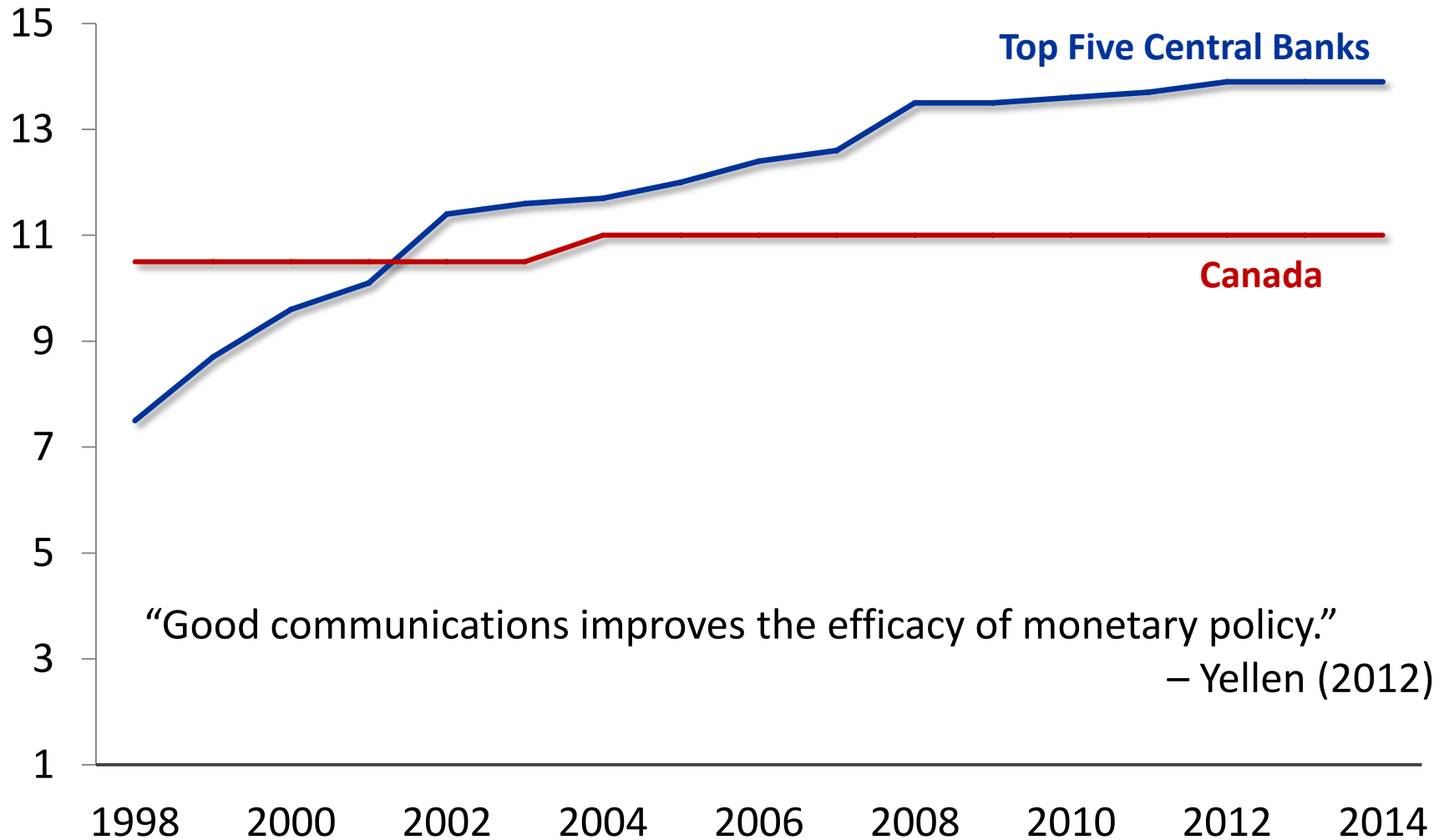
Using IRIS they apply it to some historical forecasts. Compare forecasts between IT Report III/2012 and III/2013.

Results are based on linearized versions of the model. Should look at more recent periods at the effective lower floor for the policy rate.

# The Transparency Check List

- ✓ Announced numerical long-term **inflation objective**.
- ✓ Clear about **policy tradeoffs** (use forecasts to provide information about managing the output-inflation tradeoff).
- ✓ Publish **monetary policy report**.
- ✓ **Press conferences** explaining and answering questions about monetary policy objectives, decisions, and the forecast assumptions.
- ✓ **Minutes** describing differences in views using a consistent staff baseline forecast as a reference point.
- ✓ **Endogenous policy interest rate path** that is consistent with the dual mandate.
- ✓ Publish **complete macro forecast with confidence bands** and description of the forecasting and policy analysis system.

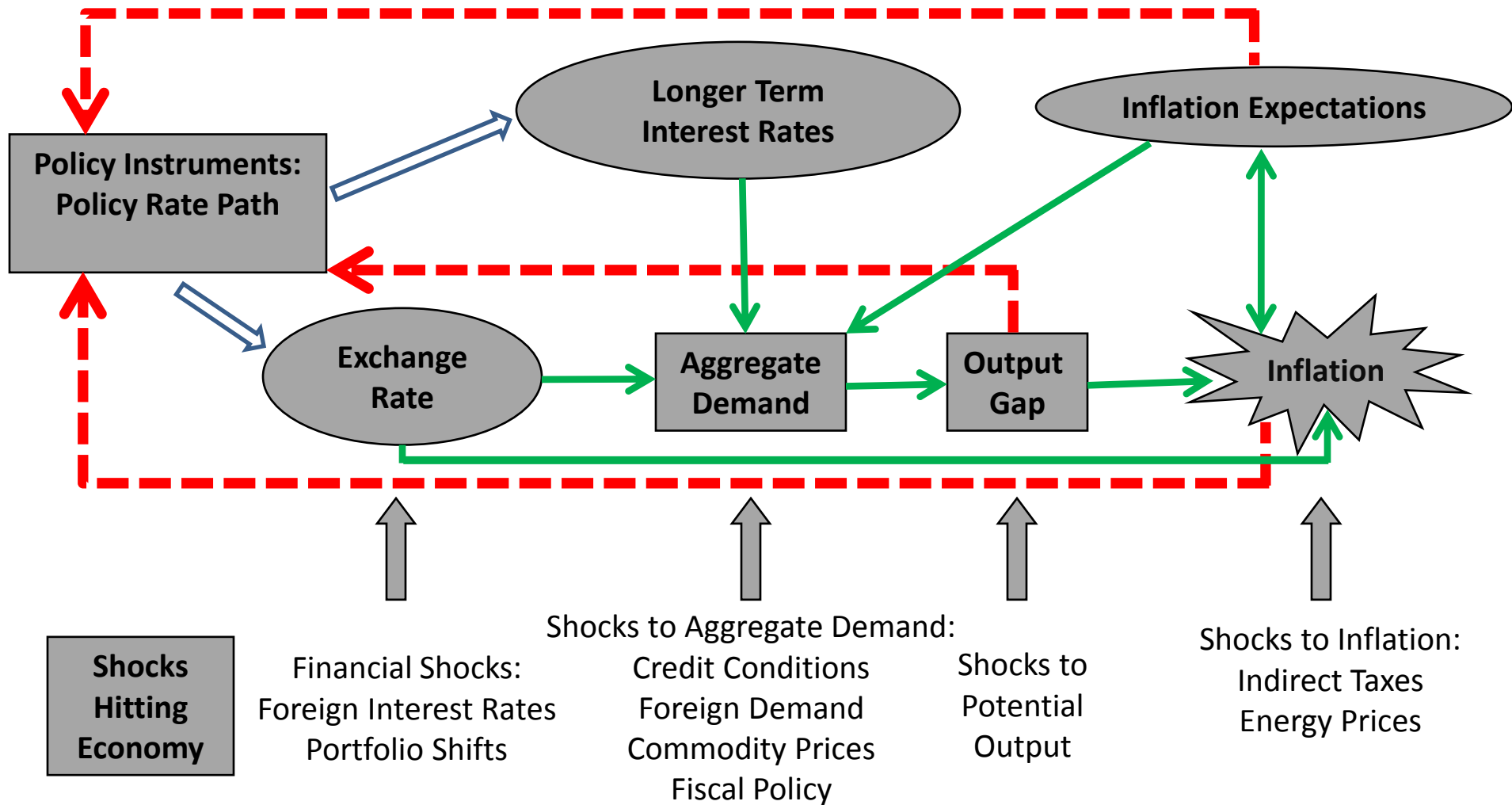
# Dincer-Eichengreen Central Bank Transparency Index



# What is Inflation-Forecast Targeting?

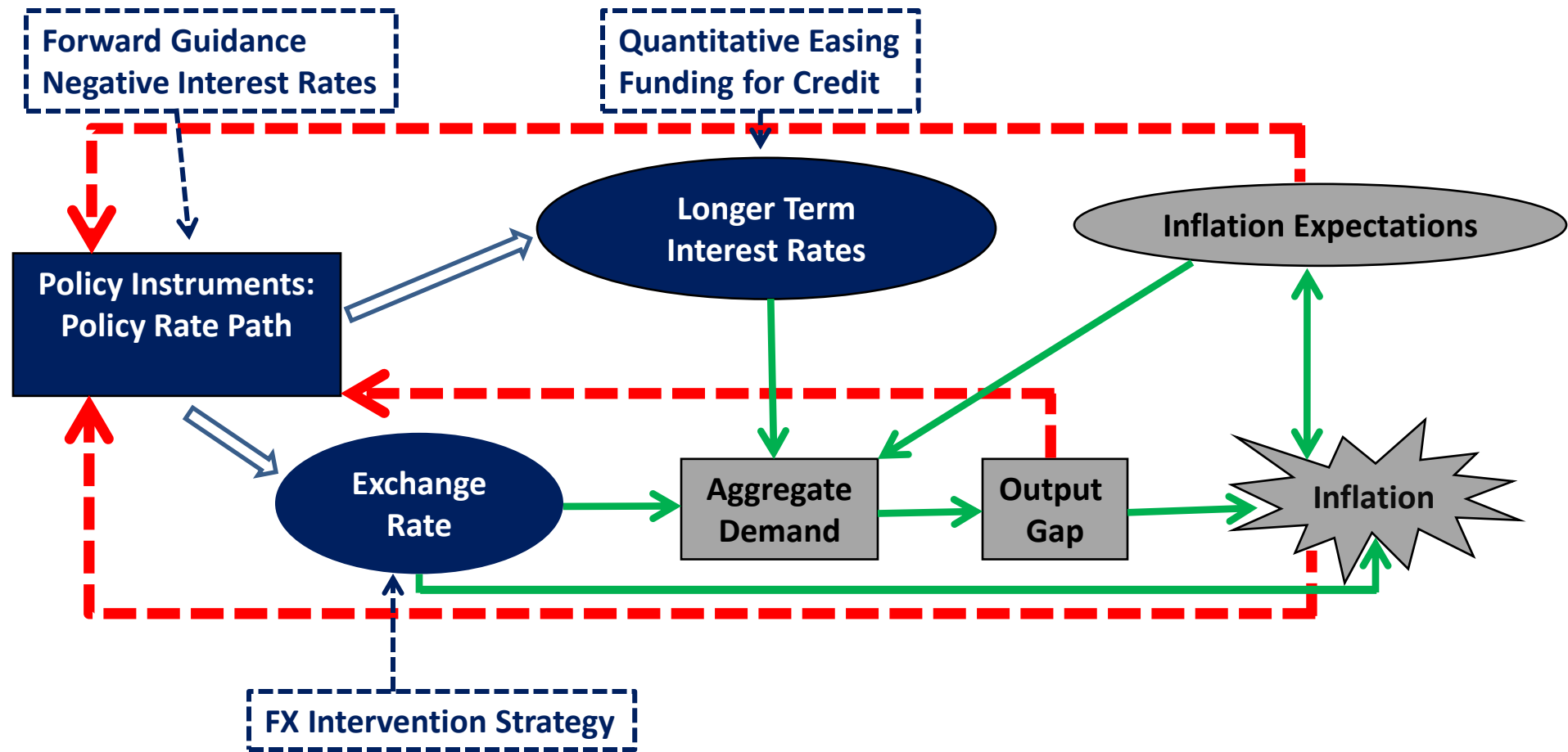
- Emphasis on uncertainty and avoiding dark corners (e.g., Czech Republic).
- CB's inflation forecast is an ideal intermediate target:
  - used to communicate how central bank is managing the short-run output-inflation tradeoff (explicit or implicit dual-mandate).
  - based on all available information and views about how the economy works.
- Explicit long-term numerical objective (say 2% inflation) to anchor long-term inflation expectations.

# Model for IFT Central Bank





# Model for IFT Central Bank under ZLB

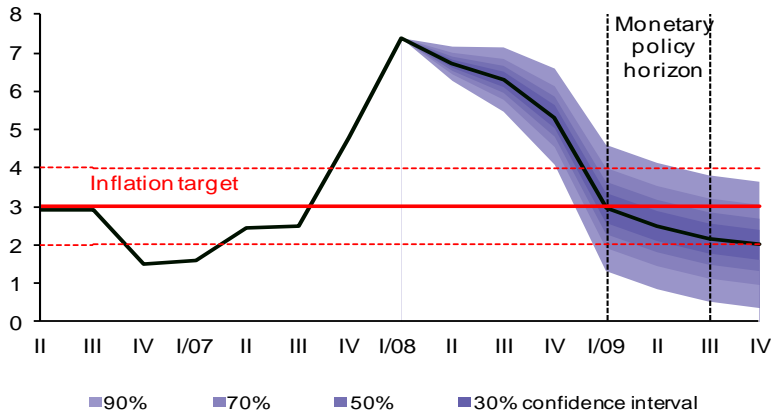


# CNB Monetary Policy, 2008-2009

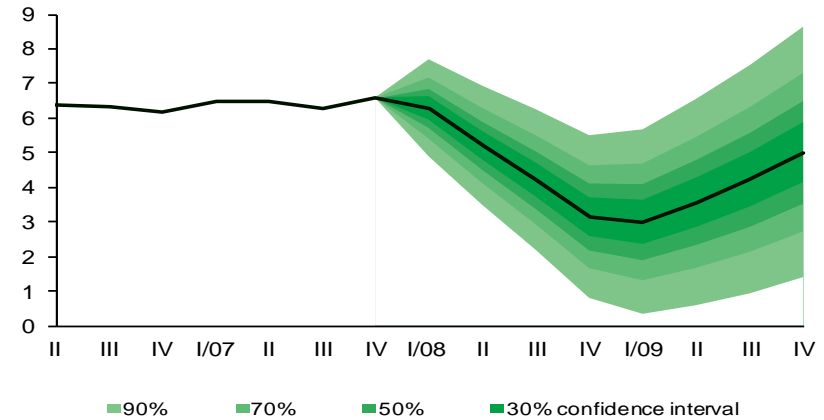
- Example of decisions/communications of CNB, and market reaction.
- Background: weakness in activity was expected as per projections of CNB in mid-2008.
- CNB published projections of growth, inflation, and interest rates (all declining through the medium term).
- Decisions: after the collapse of Bear Sterns CNB lowered policy rate in most meetings till mid-2009.
- Market interest rates shifted down accordingly.
- Next slides show projections of CNB for policy every meeting.

# CNB on Hold, Signals Risk of Activity Weakness: May 7, 2008

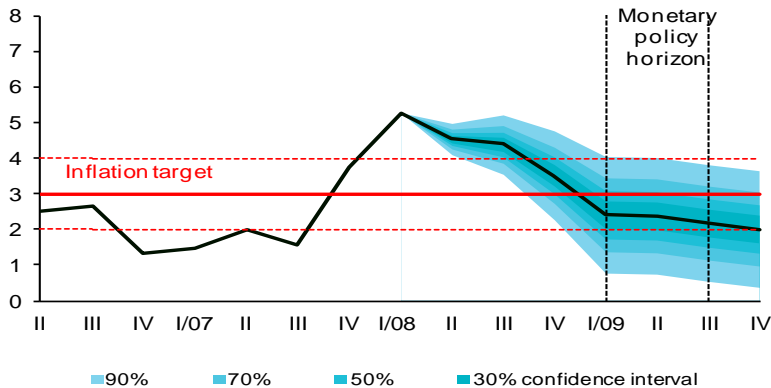
## Headline Inflation



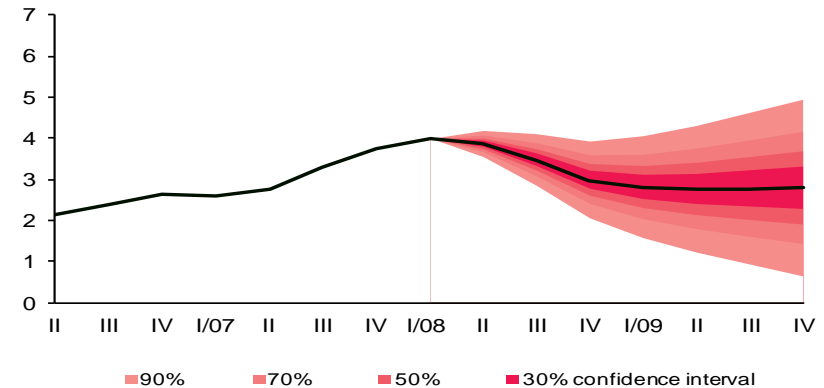
## Real GDP Growth



## MP-relevant Inflation

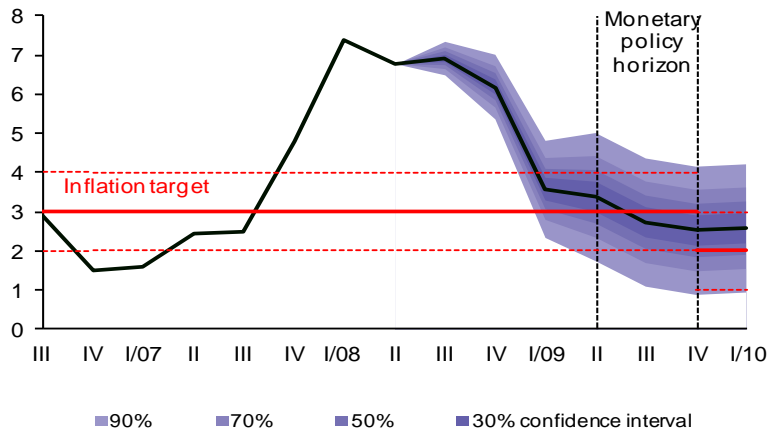


## Interest Rate (3M PRIBOR)

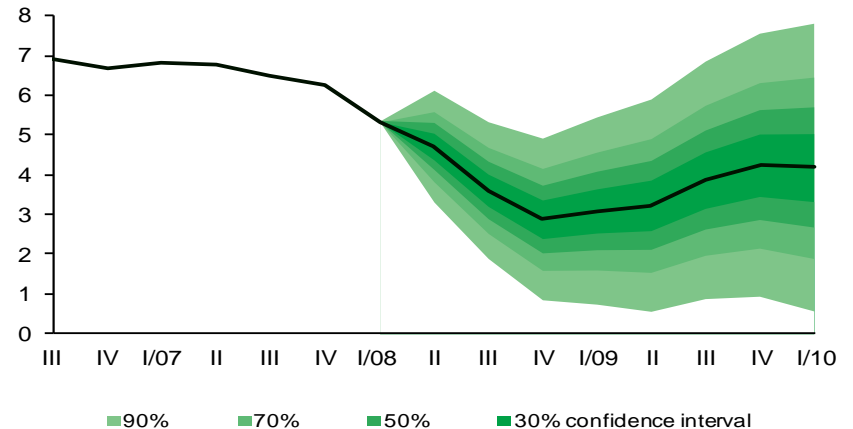


# Further Expected Activity Weakness; CNB Cuts Rate 0.25: Aug. 7, 2008

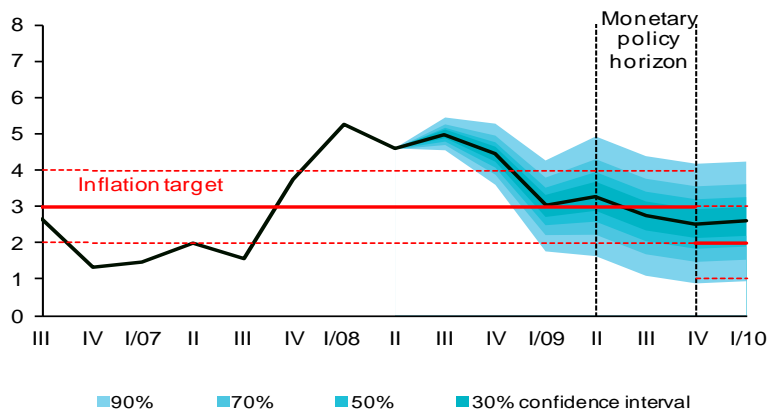
## Headline Inflation



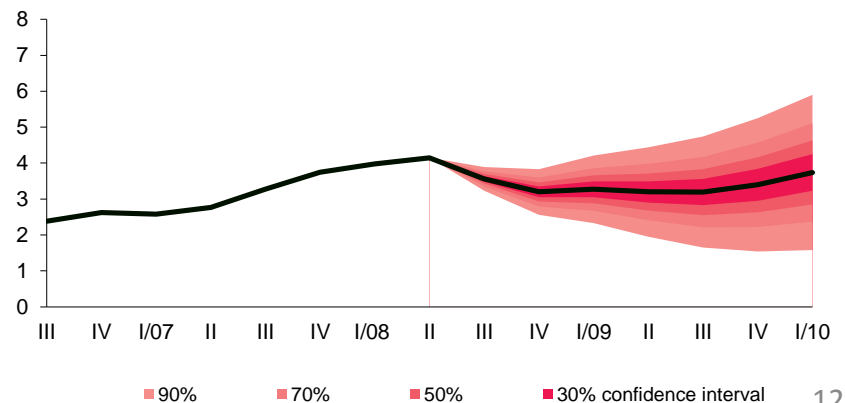
## Real GDP Growth



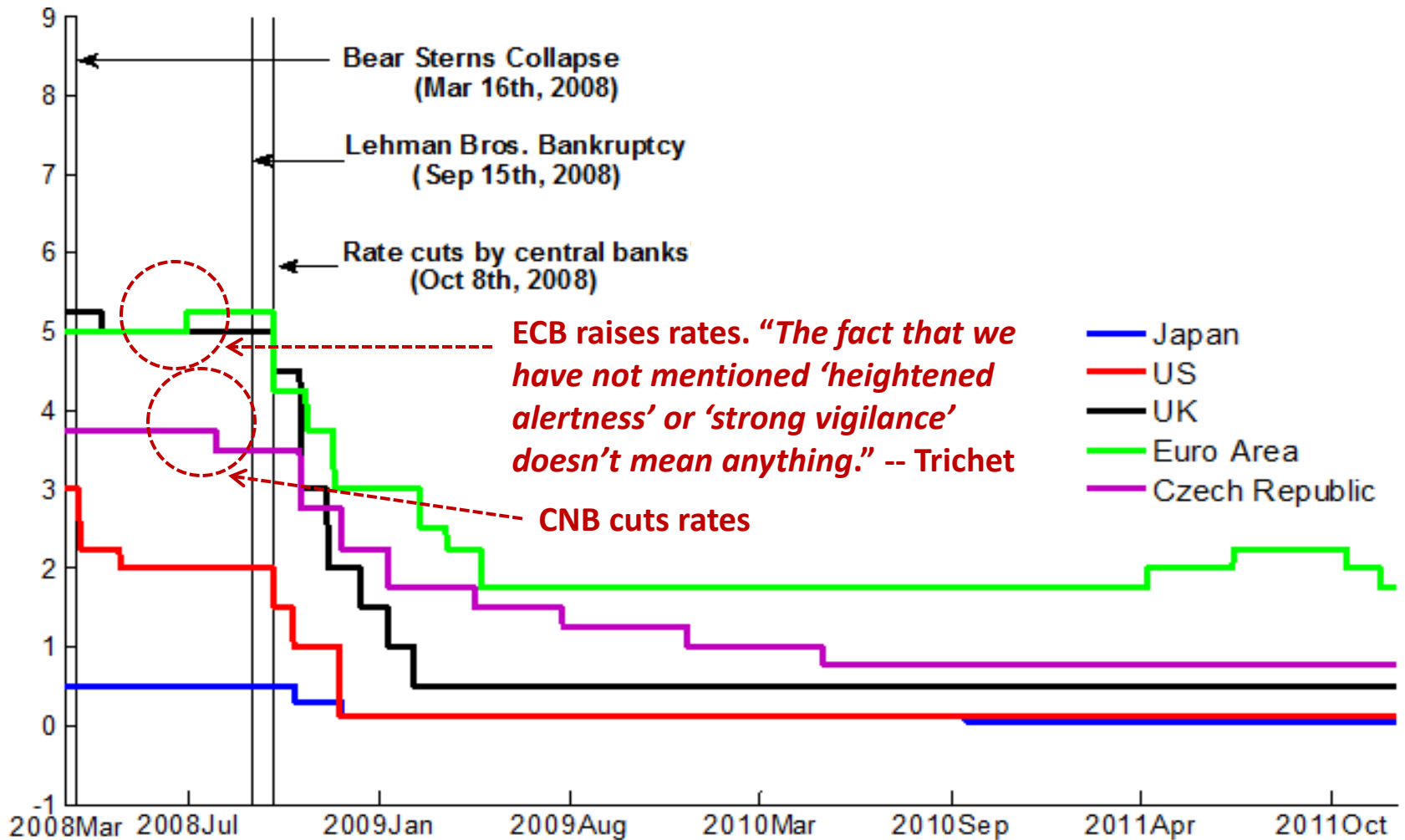
## MP-relevant Inflation



## Interest Rate (3M PRIBOR)



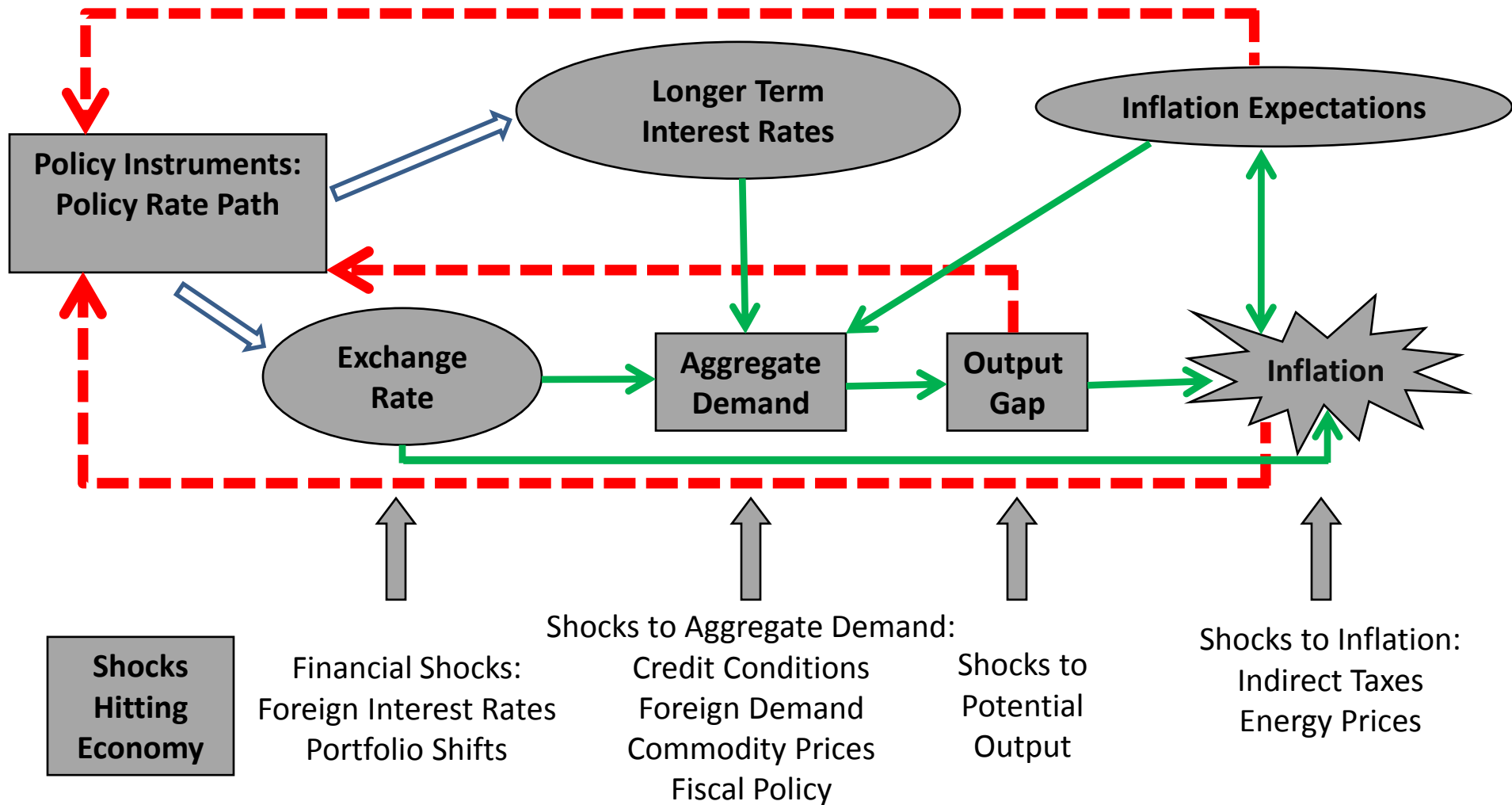
# CNB Cut Rate Before Lehman's Collapse



## Some Analytics

- How asset prices can act as shock absorbers under a credible IFT regime?
- And how they can act as shock amplifiers when the central bank is at the zero lower bound and there is a risk that other policies might not be sufficient to backstop conventional monetary policy?

# Model for IFT Central Bank



# Important Insights from Risk-Adjusted UIP

Expected policy rate path

Expected depreciation

Expected foreign policy rate path adjusted for country risk premium

$$\sum_{j=0}^k i_{t+j} = [s_{t+k+1} - s_t] + \sum_{j=0}^k \{i_{t+j}^f + \mu_{t+j}\}$$

Expected real policy rate path

Expected real depreciation

Expected real foreign policy rate path adjusted for country risk premium

$$\sum_{j=0}^k r_{t+j} = [z_{t+k+1} - z_t] + \sum_{j=0}^k \{r_{t+j}^f + \mu_{t+j}\}$$



# Market Interest Rates and Exchange Rates As Shock Absorbers

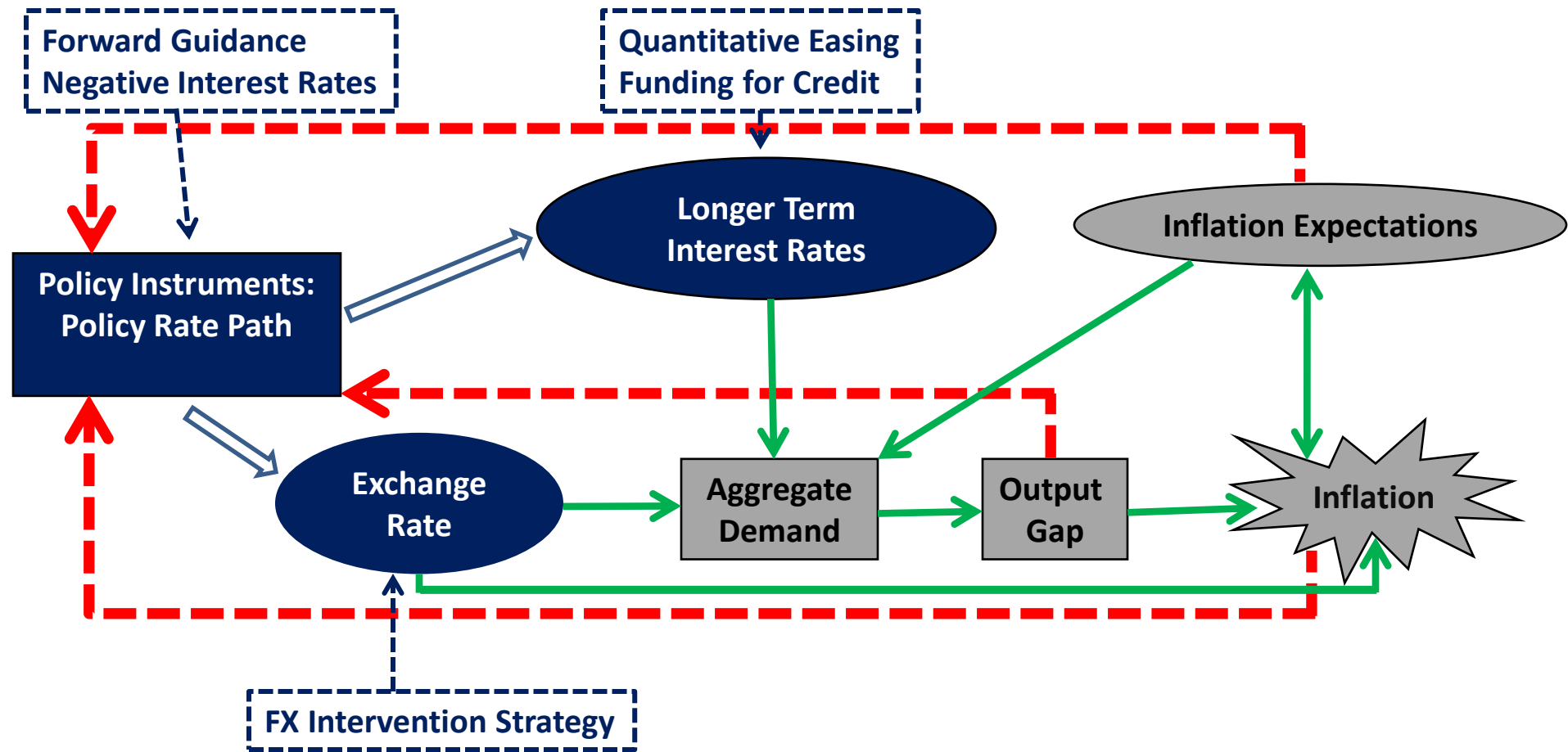
Negative demand shock reduces inflation in the short run. IFT  
CB expected to reduce the policy rate sufficiently to steer  
inflation back to target.

$$\downarrow \sum_{j=0}^k i_{t+j} = [s_{t+k+1} - \uparrow s_t] + \sum_{j=0}^k \{i_{t+j}^f + \mu_{t+j}\}$$

Nominal exchange rate also depreciates today. Easier monetary  
conditions coming from both interest rates and exchange rates.

An important assumption: nominal exchange rate in the long-  
run does not change. Under what conditions will it happen?

# Model for IFT Central Bank under ZLB

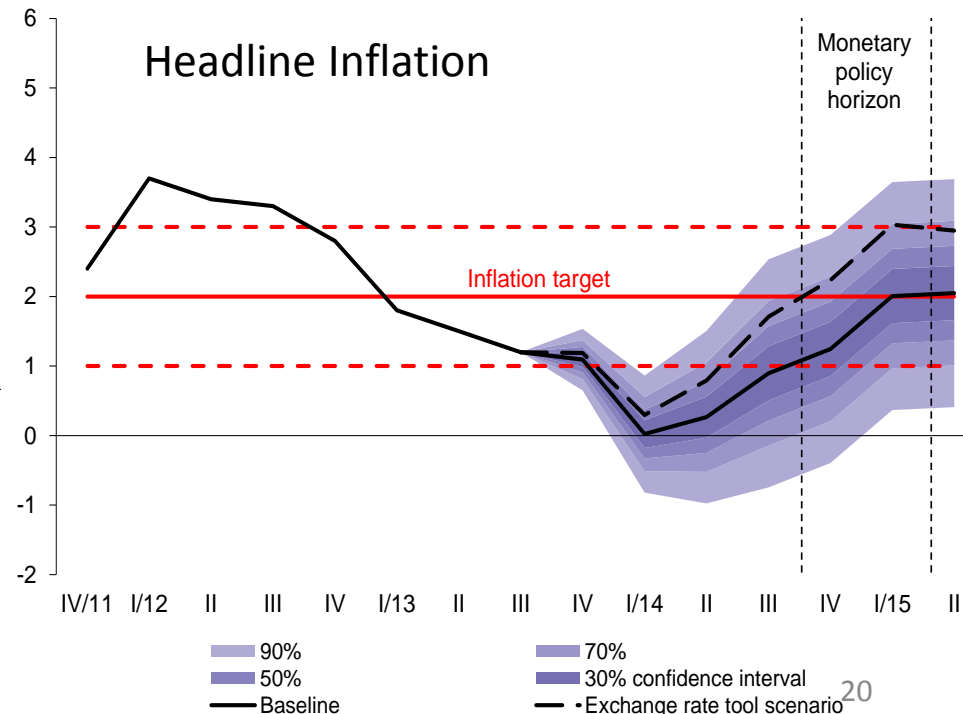
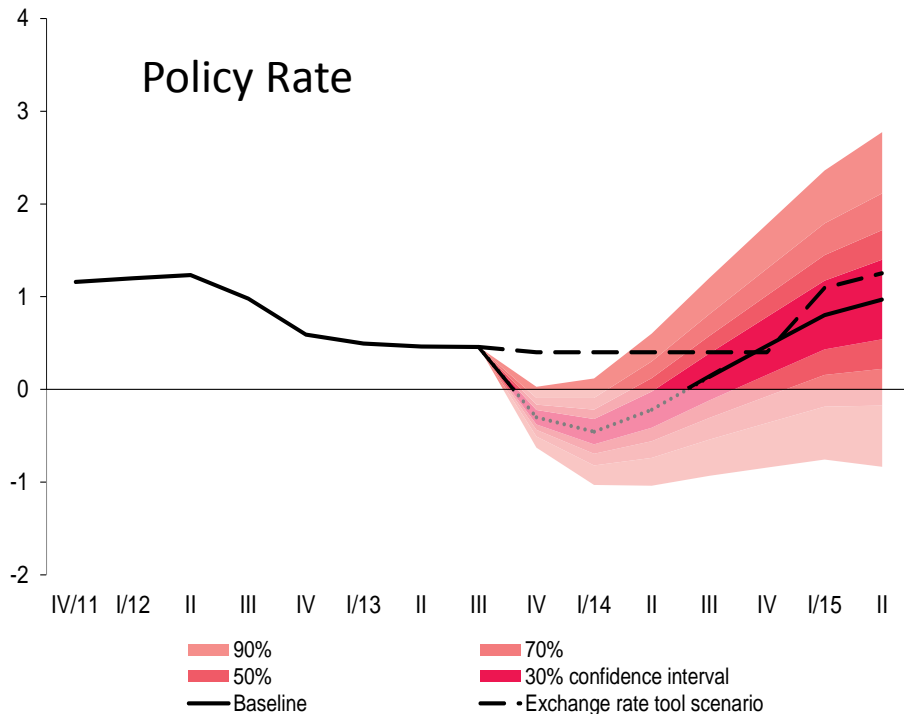


# How is the CNB Dealing with Deflation Risks at the ZLB?

- CNB had not intervened in the FX market since 2002. Hit the ZIF in 2012. Because of concerns about deflation risks and excessive unemployment decided to weaken the koruna on November 7, 2013 to support the real economy and steer inflation back to the target (with overshoot in baseline!).
- Why use FX interventions as a complementary monetary policy tool? Answer: Very credible tool in this case to deal with deflation risks. What's special about the Czech case?

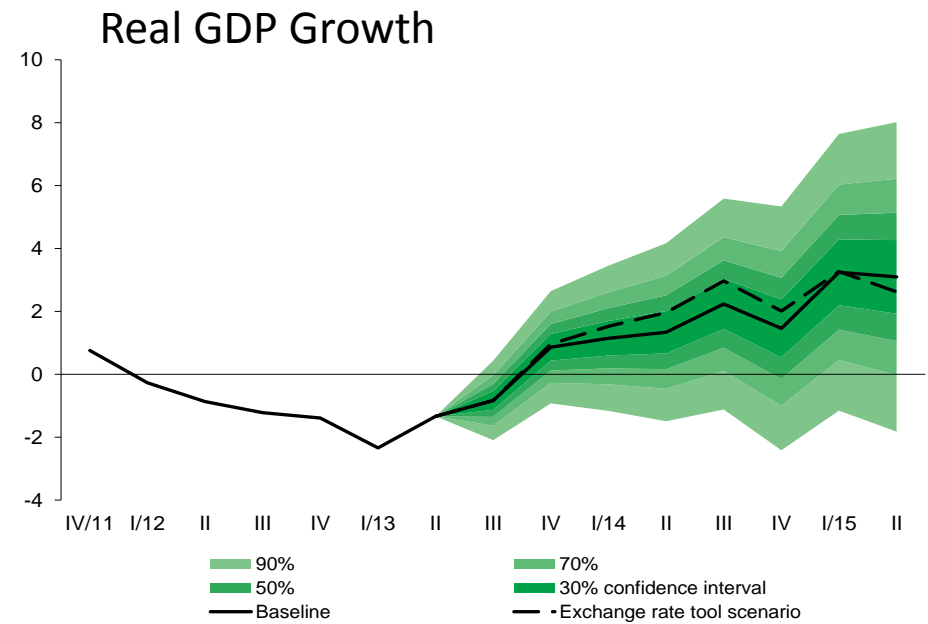
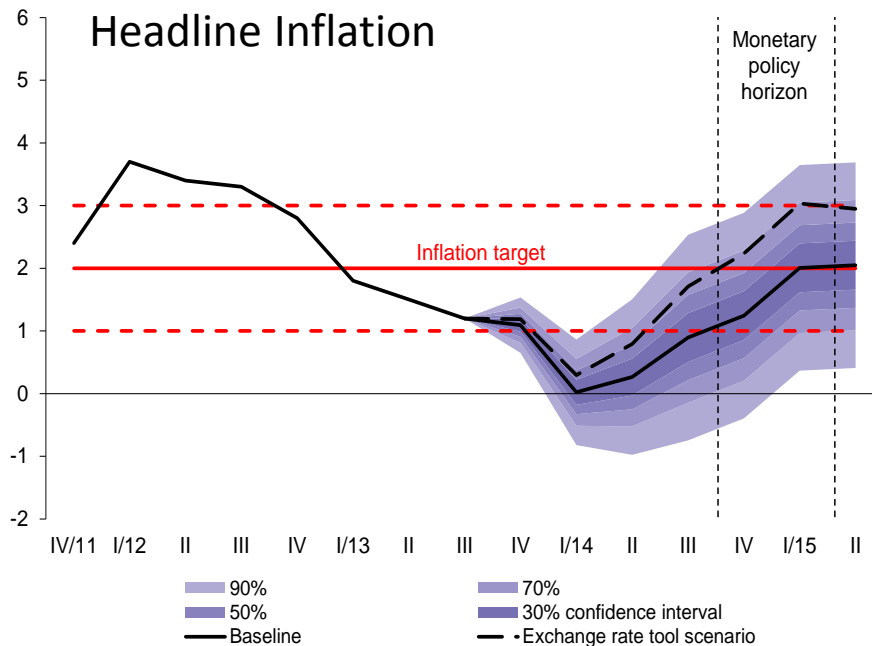
# CNB Scenarios: Nov. 7, 2013

- Consistent with an “artificial” baseline forecast was a significant decline in policy rate below the effective floor.
- An alternative scenario with the exchange rate tool confirmed that a sustained weakening of the exchange rate might be effective for accelerating the return of inflation towards the target (with an overshoot).



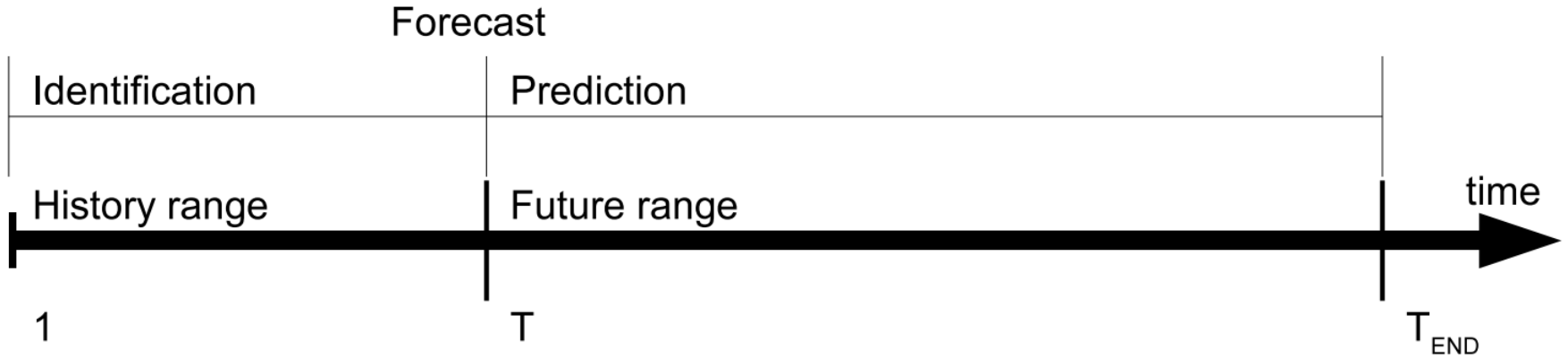
# CNB Scenarios: Nov. 7, 2013

Why overshoot on the inflation forecast? To support the real economy and eliminate the slack faster, and to reduce the risks of a bad deflation scenario.



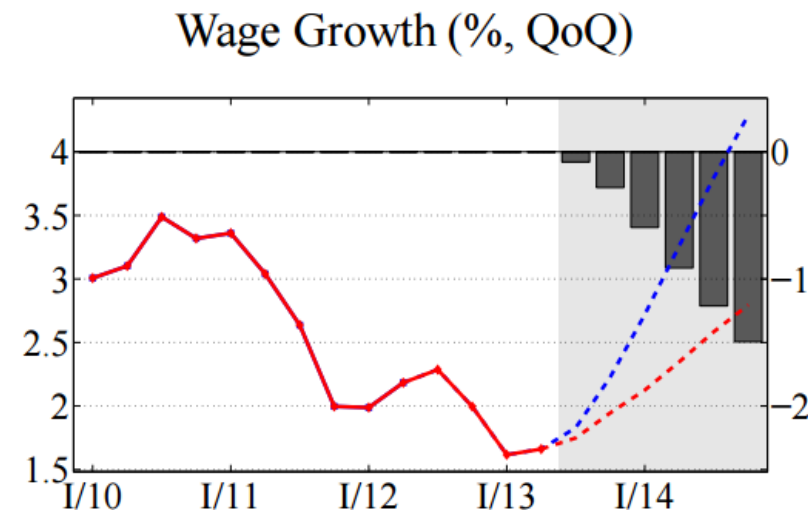
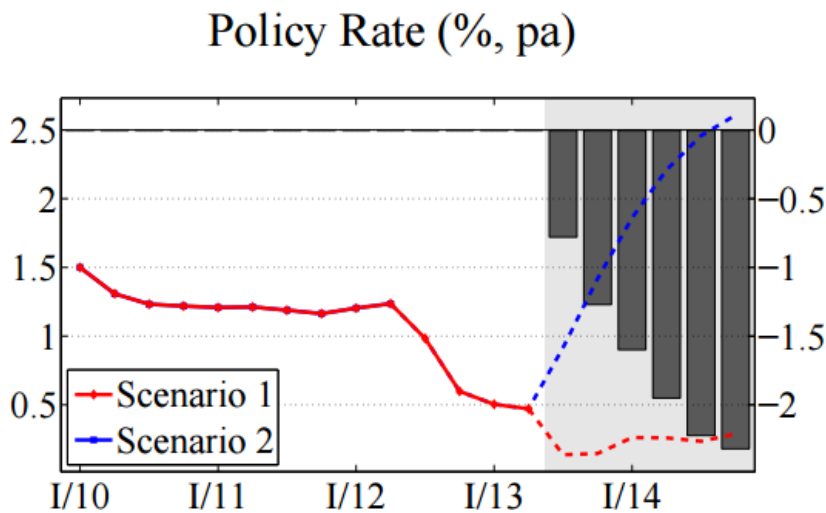
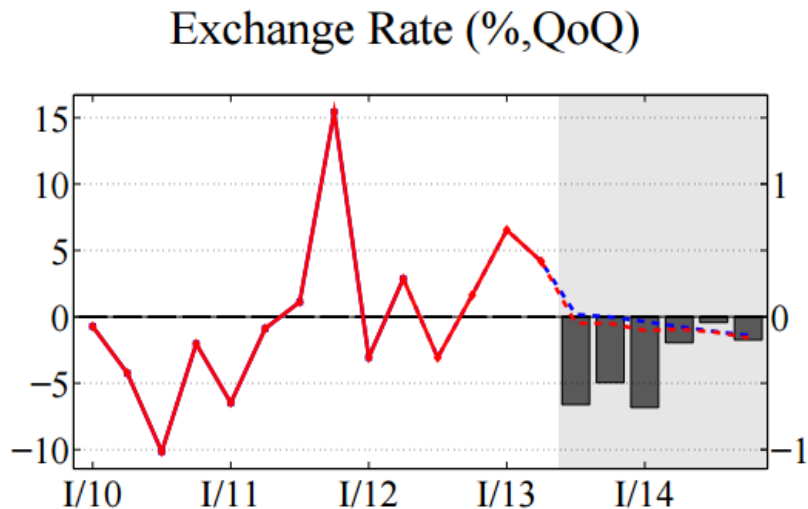
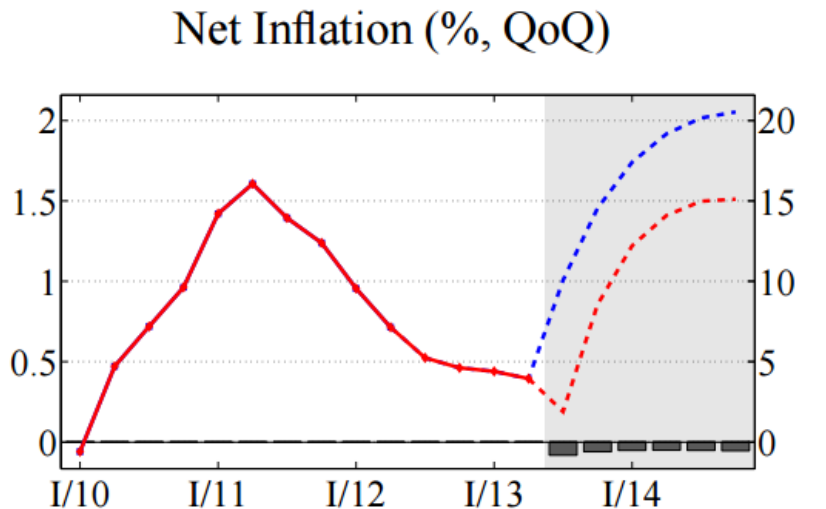
**The End**

# Title



# Title

**Figure 3: Scenario Comparison – Data**

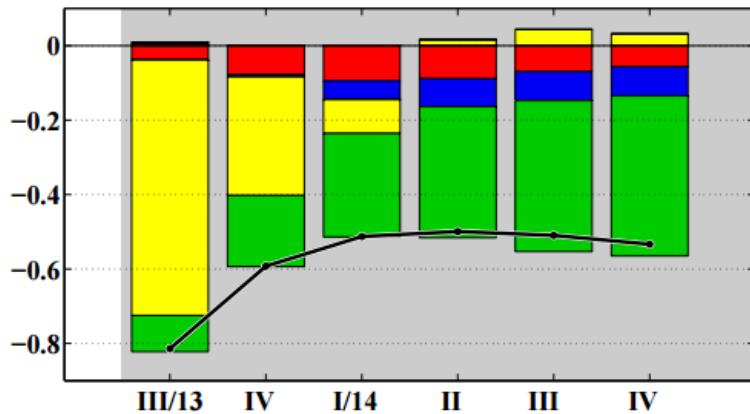




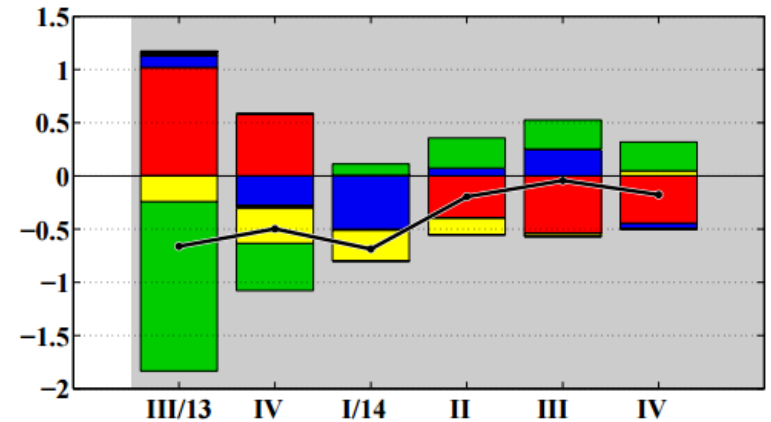
# Title

Figure 5: Scenario Comparison – Contributions

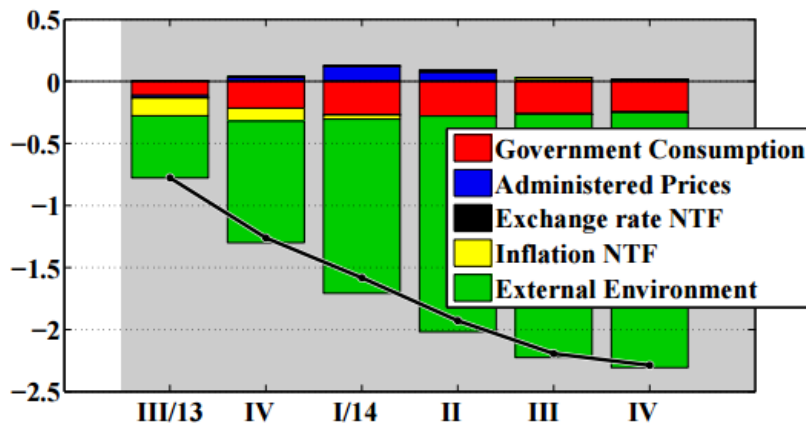
Net Inflation (% , QoQ)



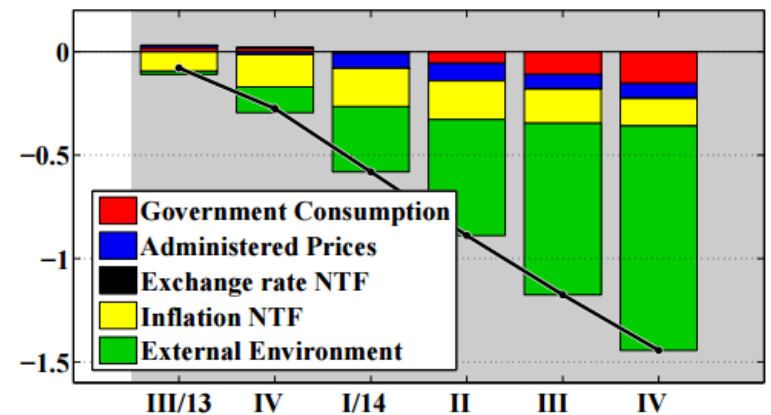
Exchange Rate (% , QoQ)



Policy Rate (% , pa)

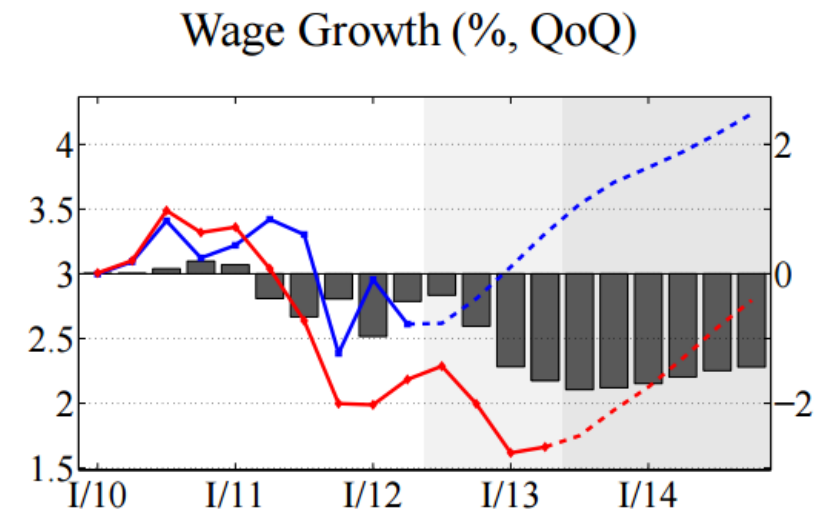
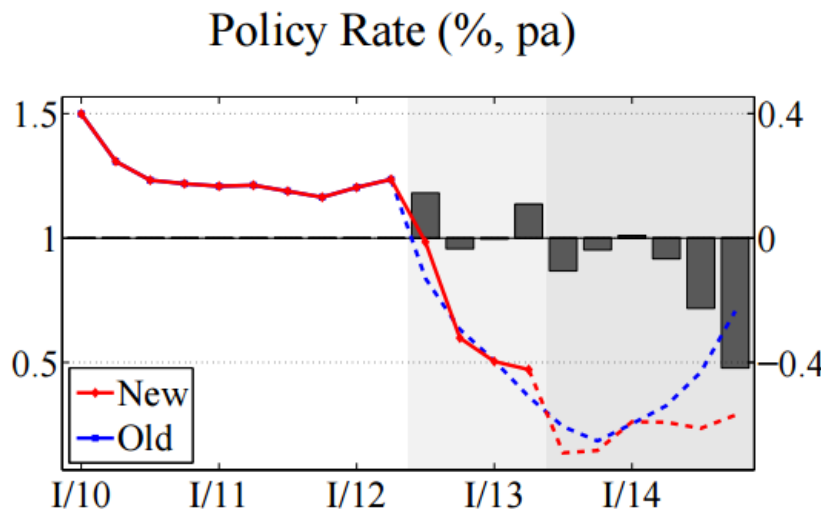
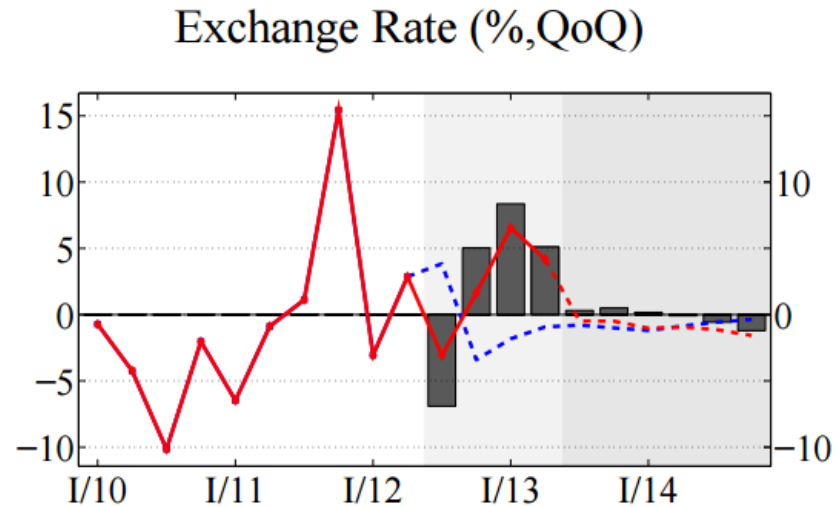
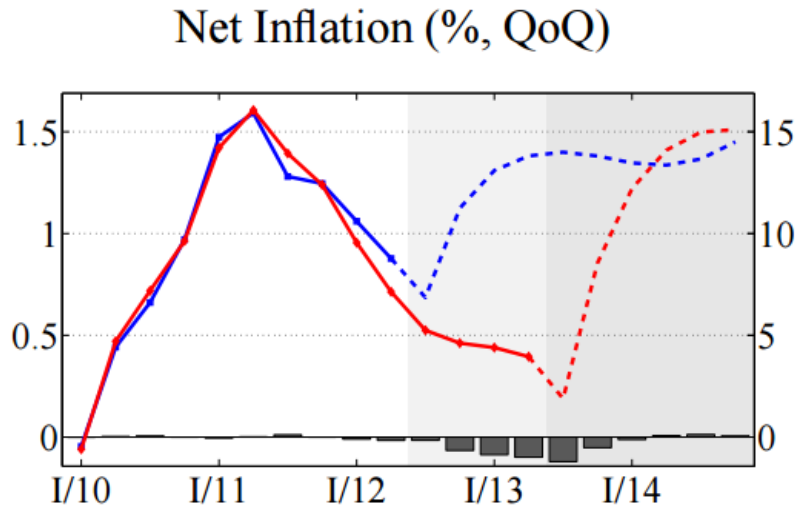


Wage Growth (% , QoQ)



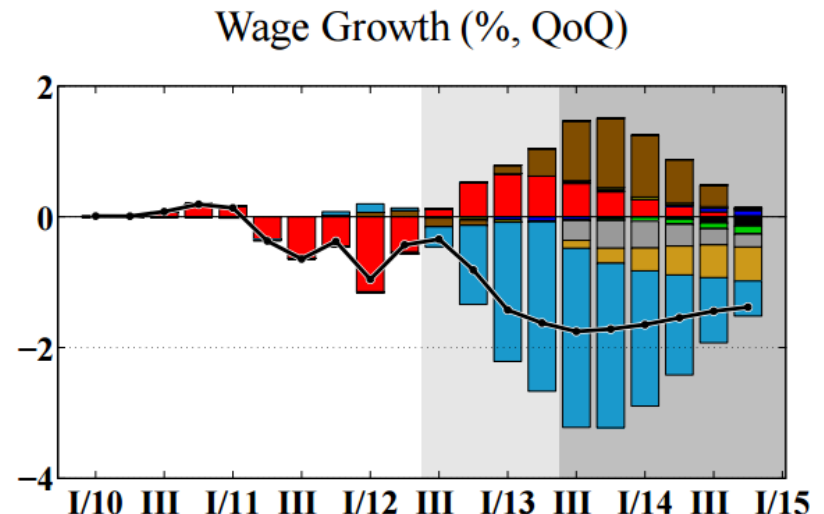
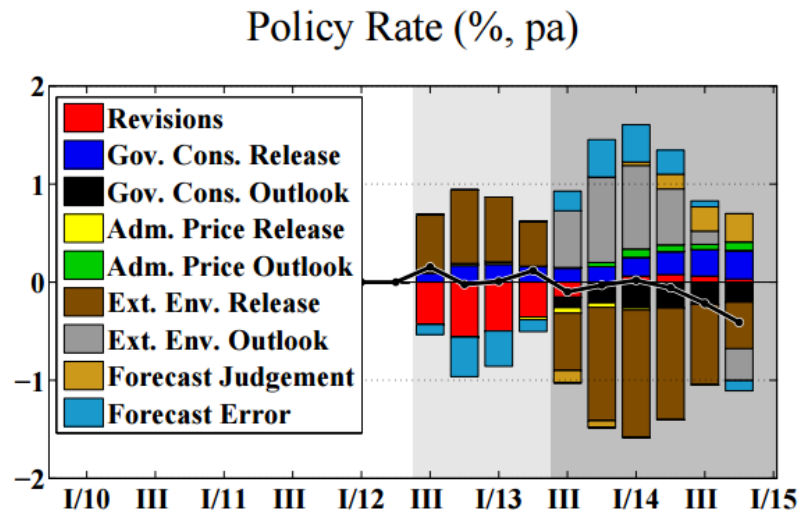
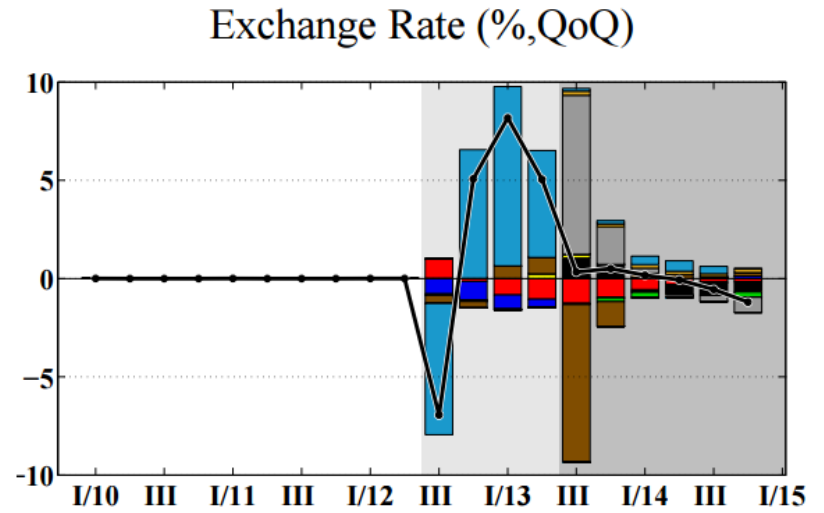
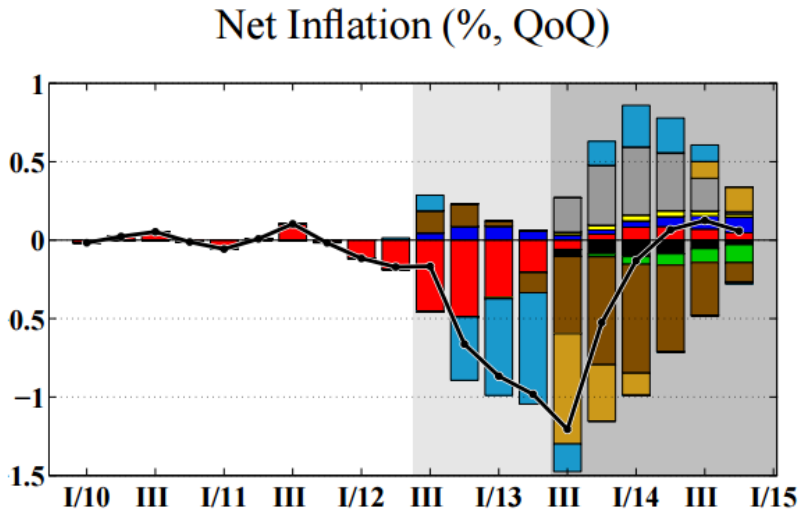
# Title

Figure 6: Forecast Evaluation – Trajectories



# Title

Figure 7: Forecast Evaluation – Contributions



# Title

Figure 8: Missing Structural Shocks

