Discussion of "Fitting (or Modeling) Observed Inflation Expectations"

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Summary of the Paper

Idea : Use survey-based inflation expectations ($\hat{\pi}_{t+k|t}$) as observable in estimating DSGE models.

Ways this can be useful:

- Comparing models (done explicitly)
- Understanding how expectations are formed (done implicitly)

Summary of the Paper

Comparing Models (Done Explicitly)

Time-varying inflation target for central bank

$$\pi_t^* = \rho_{\pi^*}\pi_{t-1}^* + \sigma_P \epsilon_{P,t} \text{ with } |\rho_{\pi^*}| < 1$$

- **Perfect information** : Agents observe π_t^*
- **Imperfect information** : Agents observe R_t and solve signal-extraction problem

Result:

- Estimation **without** $\hat{\pi}_{t+k|t}$ cannot distinguish.
- Estimation **with** $\hat{\pi}_{t+k|t}$ prefers perfect information.

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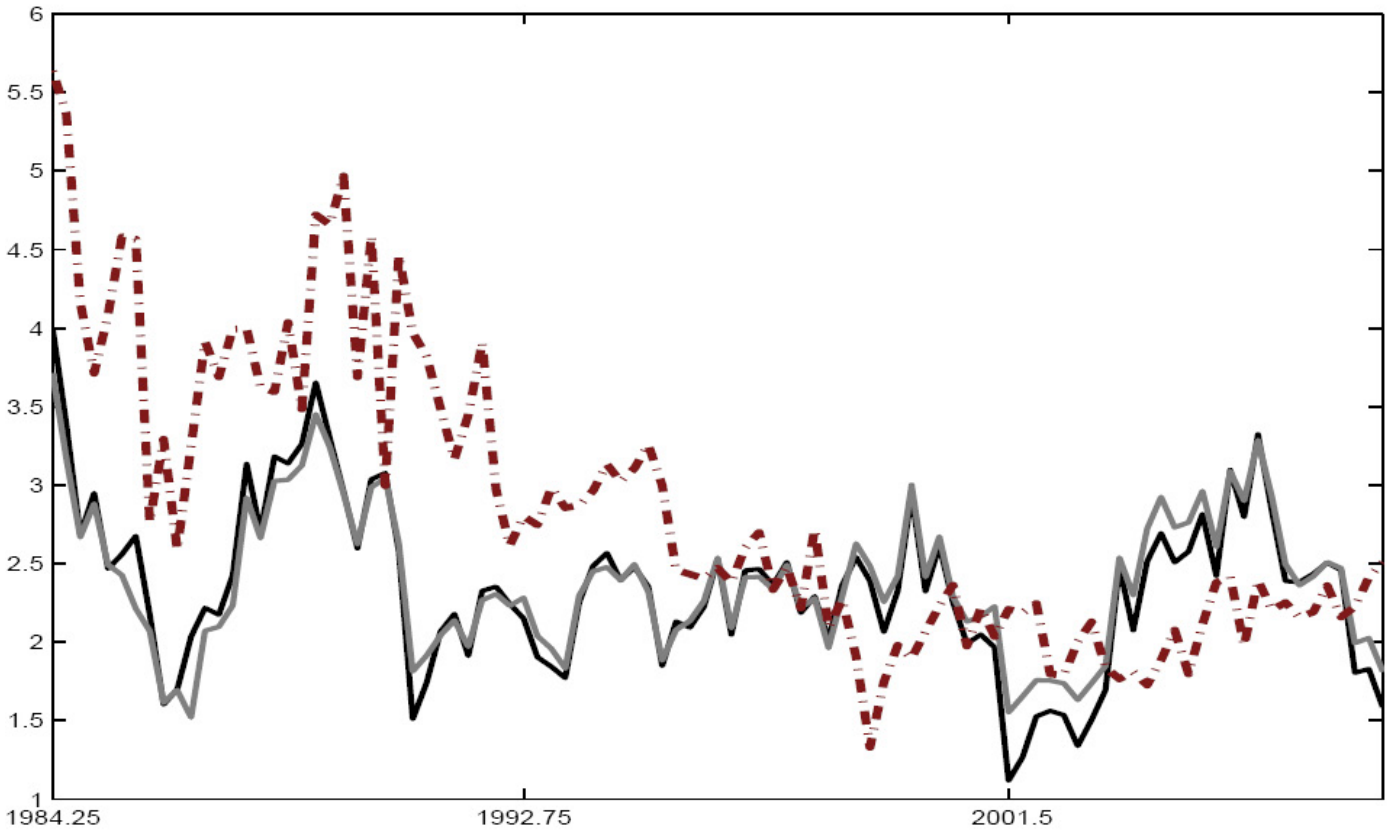
Understanding Expectation Formation (Done Implicitly)



red : SPF forecast / gray : perfect info / black : imperfect info

[Correlations : 0.34 and 0.47 / Difference in means : 0.47%]

Result : SPF forecast do not seem to be optimal forecasts using this model. (under either information structure)

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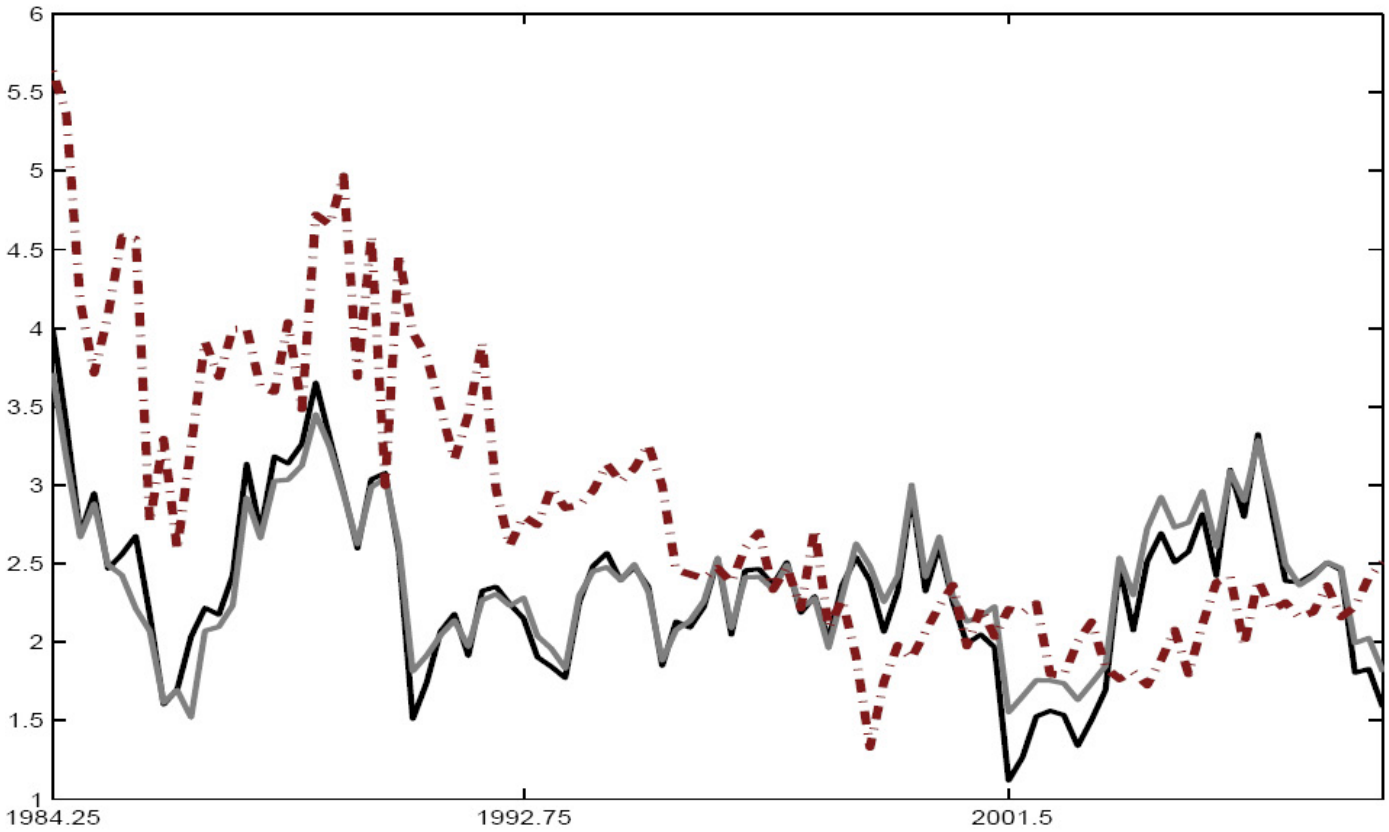

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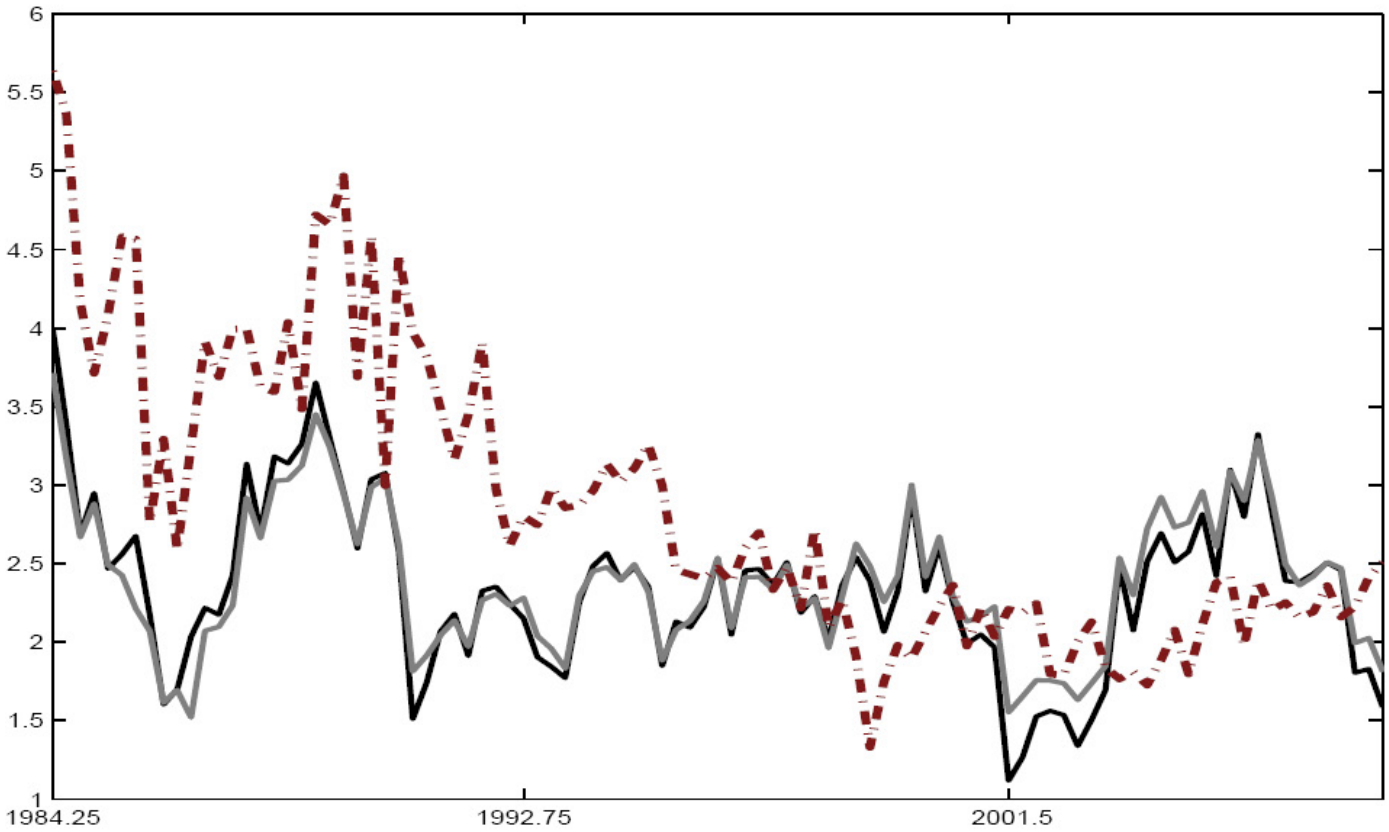

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My Take

- Interesting and important to bring in expectations in to estimation of DSGE models.
  - Aruoba and Schorfheide (2008) : time-varying inflation target, random walk, perfect information
- Not sure ready to talk about comparing models yet.
- Need to reconcile model-based and survey-based forecasts first.
- **Bottom line :** Forecasters who respond to SPF do not "live" in this model.
  - Changes in regimes
  - Real-time data

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Problem 1

Agents in Model : Think they live in a **stationary** world characterized by the **calm** Greenspan era.

SPF Forecasters :

- Lived through:
  - Calm 1960s
  - Price-shocks of 1970s
  - Disinflation of early 1980s

Two issues :

- **Initially :** SPF forecasters heavily influenced by events prior to estimation sample
- **Later :** SPF forecaster gradually learn that they are in a stable era.

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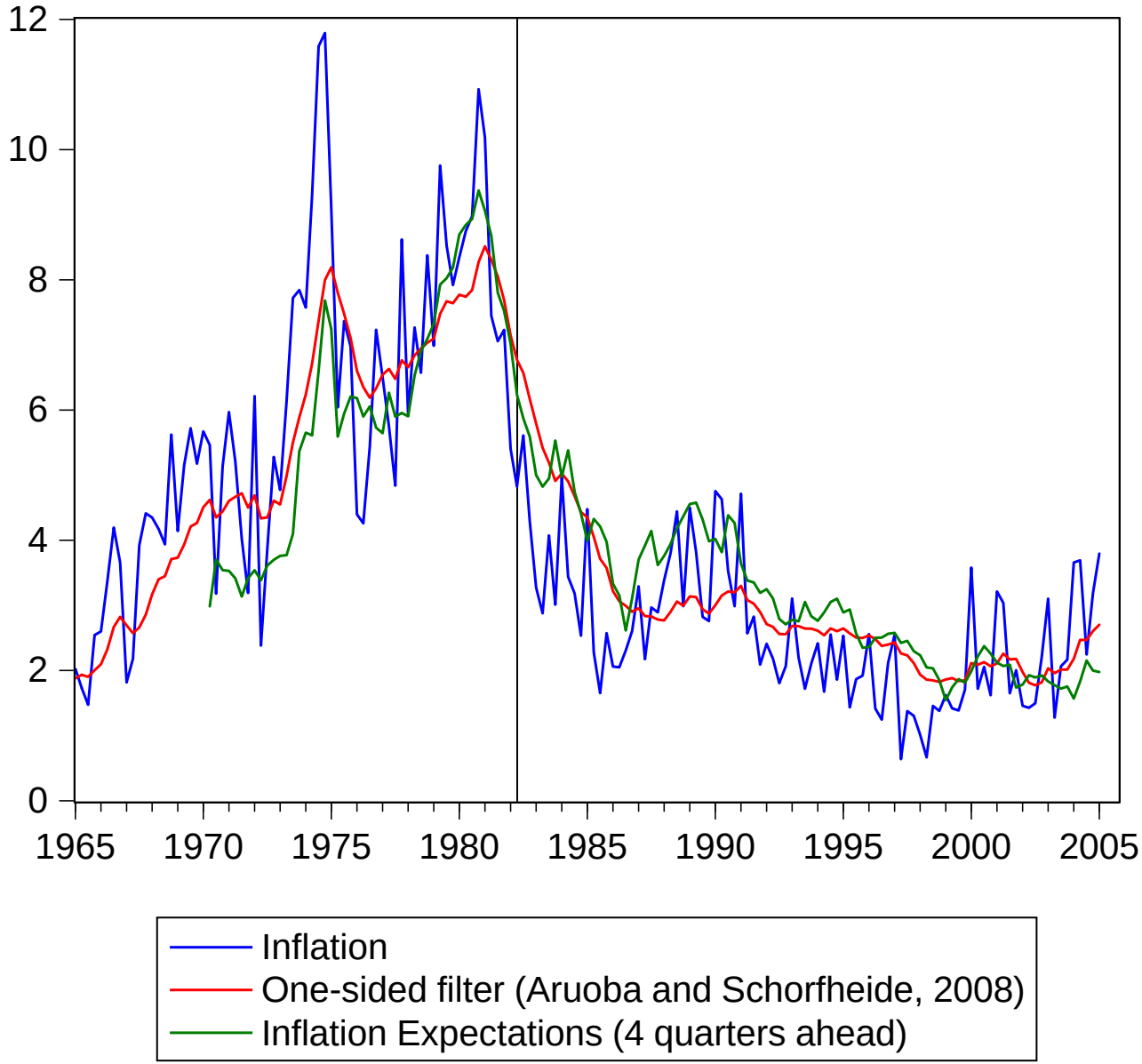
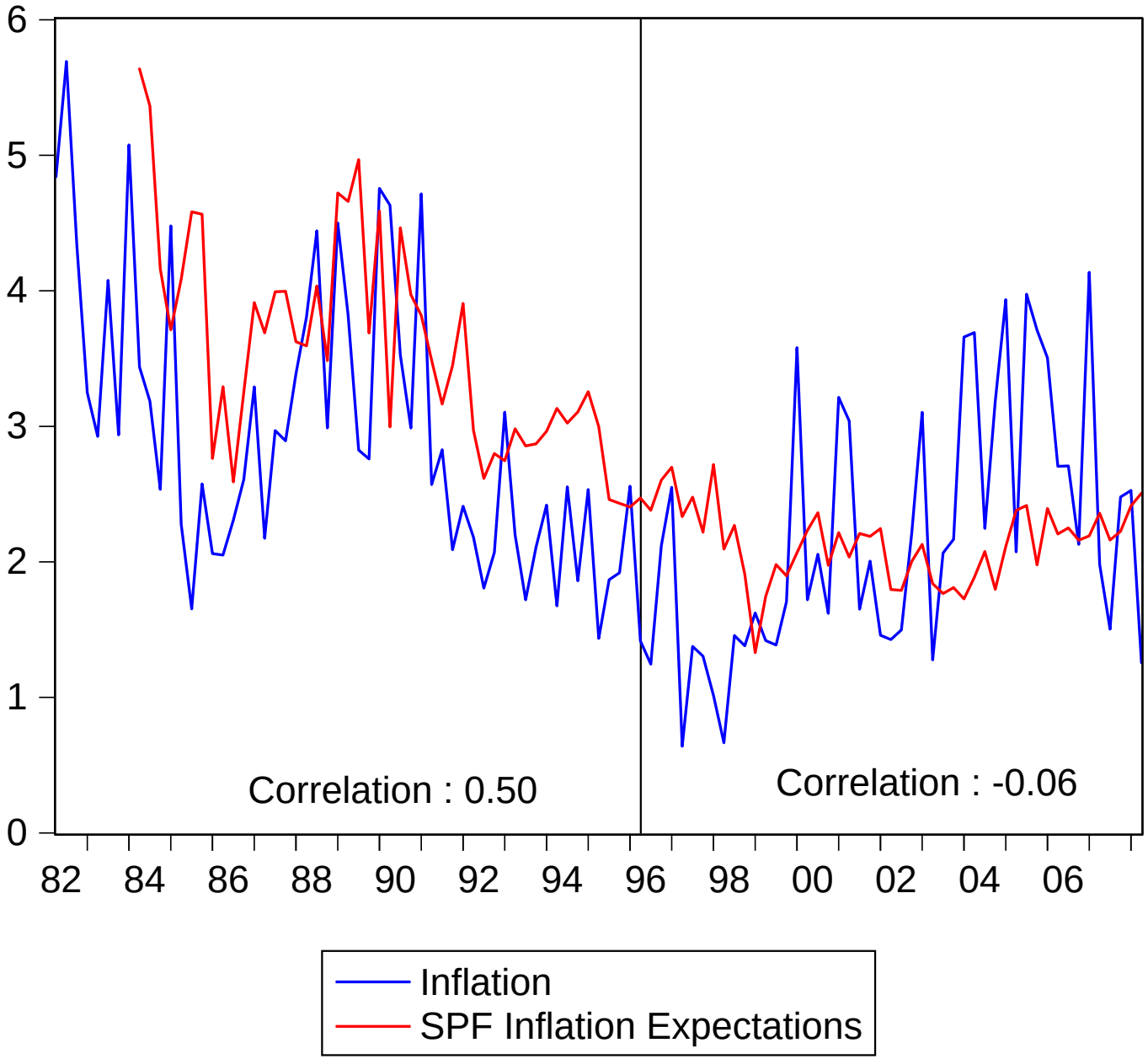
Problem 1 / Issue 1 : Pre-sample Events



$\hat{\pi}_{t+4|t}$ consistent with **no-change** forecast using a one-sided filter.

Problem 1 / Issue 2 : Learning During Sample



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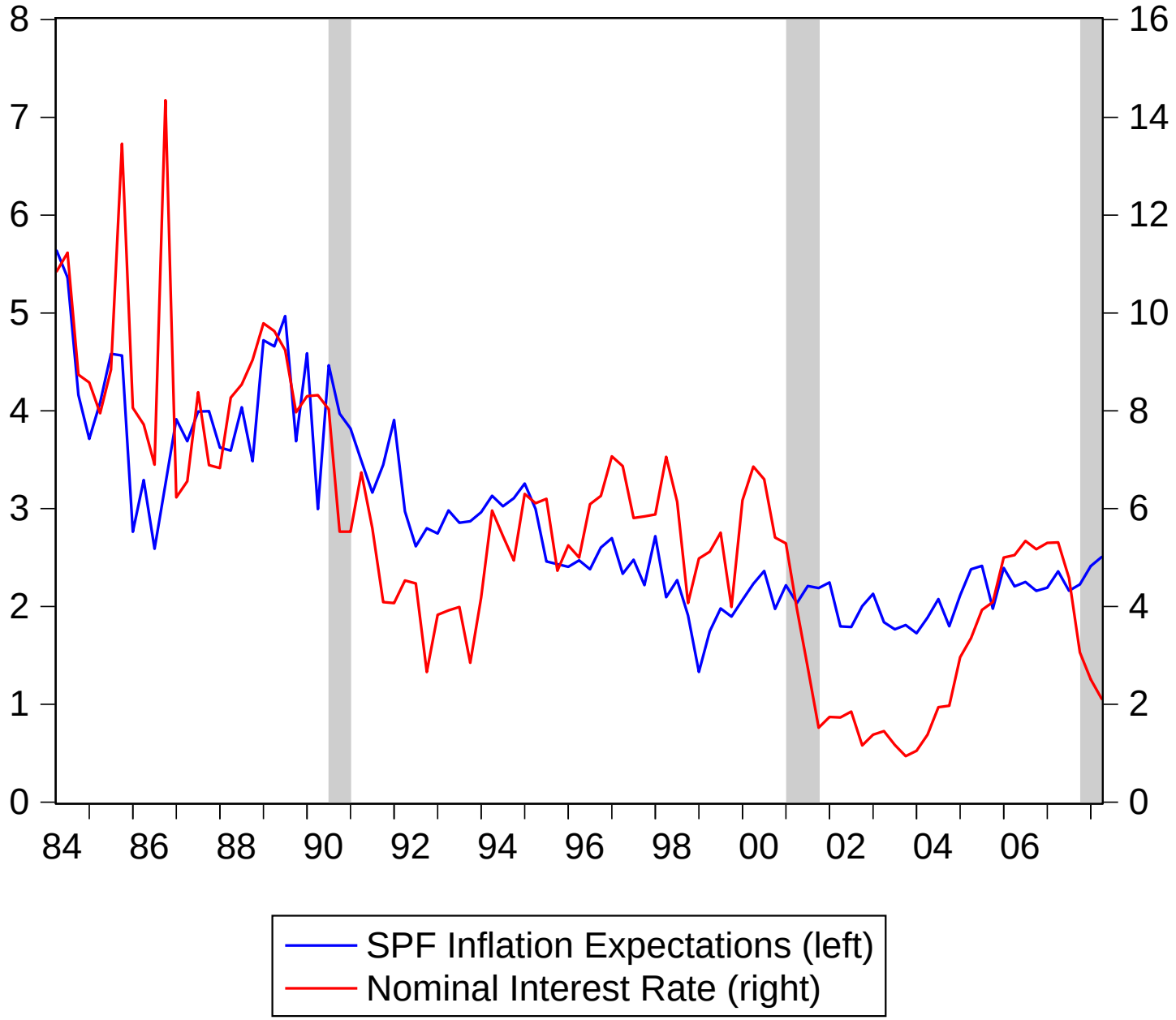

Problem 2

Agents in Model : Make their forecast based on final-revised ("true") data.

SPF Forecasters : Make their forecast based on available data at the time.

- Remember the accuracy of one-sided filter.

Two issues :

- "Data Revisions are not Well-Behaved" (Aruoba, 2008)
- Agents need to be endowed with the "right" information set.

Information set of SPF Forecasters

- Possible to construct using FRB Philadelphia RTDS.
- Here : The initial announcement.

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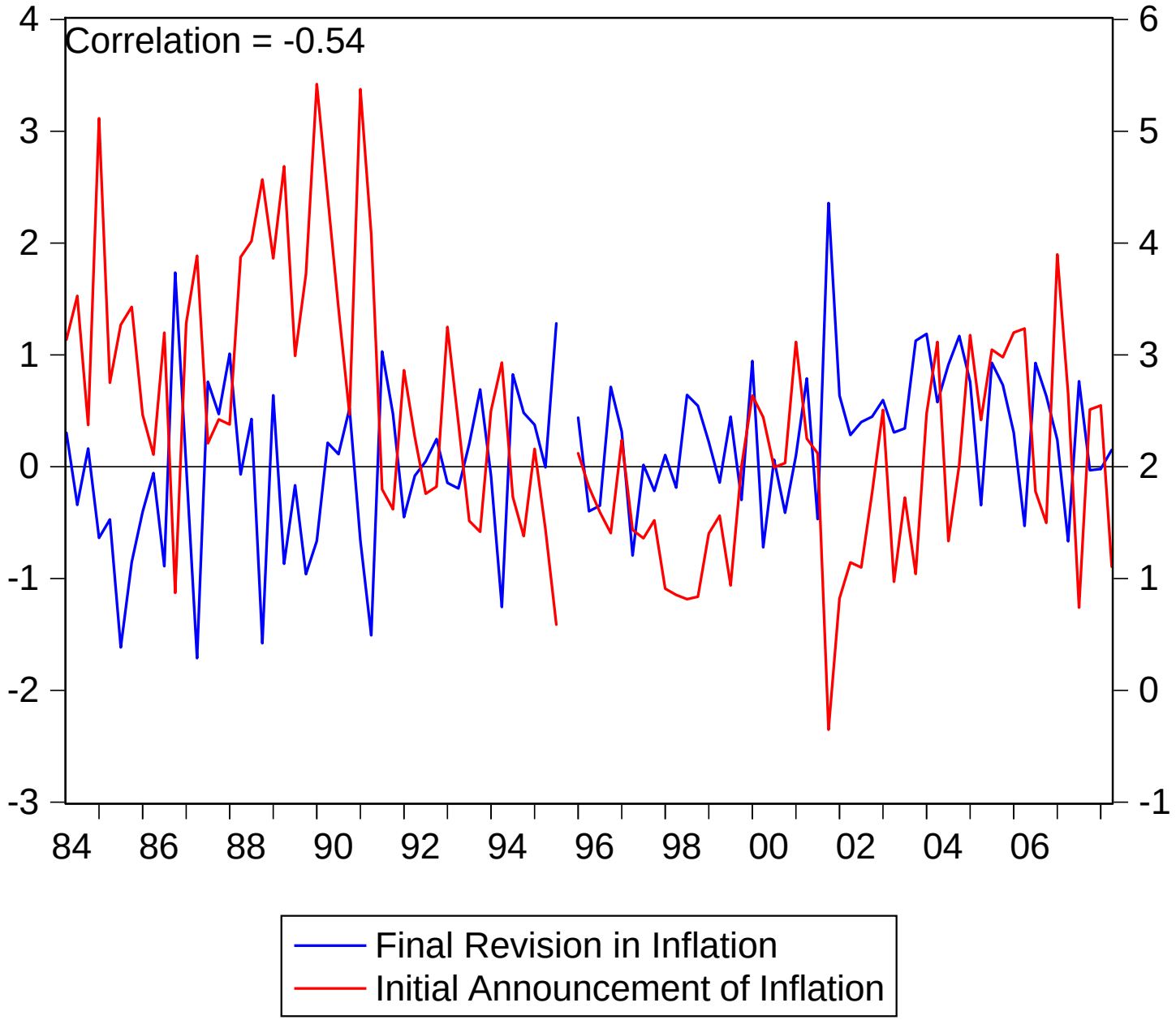
Problem 2 / Issue 1 : "... Not Well-Behaved"



Problem 2 / Issue 2 : Correct Information Set

Dependent variable : $\hat{\pi}_{t+4|t}$

	Coefficient	p-value
cons	0.80	0.00
π_t	0.03	0.80
π_{t-1}	0.15	0.12
π_{t-2}	0.26	0.01
π_{t-3}	0.19	0.06
π_{t-4}	0.18	0.07
R^2	0.43	
SIC	2.46	

	Coefficient	p-value
cons	0.82	0.00
π^I_{t-1}	0.15	0.03
π^I_{t-2}	0.16	0.03
π^I_{t-3}	0.26	0.00
π^I_{t-4}	0.08	0.27
π^I_{t-5}	0.17	0.02
R^2	0.63	
SIC	2.04	

π_t : final-revised inflation / π^I_t : initial announcement of inflation

What next?

Few things that can / need to be changed :

- Longer sample
- Learning / ability to adapt
- Model inflation target as random walk? (as in Aruoba and Schorfheide, 2008)

A lot to do but the prospects are exciting!

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