Discussion of “Real-time data, professional forecasters and the output gap in an estimated New Keynesian DSGE model”

by Frank Smets, Anders Warne and Raf Wouters

Francesca Monti
Bank of England

7th Workshop on Forecasting Techniques
European Central Bank, May 2012

This Paper

Very nice paper.

Model achieves a “good” measure of the output gap
(Galí, Smets and Wouters 2011)
+
careful use of EA survey data and real-time data

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1. estimate the GSW on Euro Area data
2. assess the role of real-time data uncertainty
3. real-time forecasting horse-race with various models
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This Paper - Estimation

Key features of the GSW model

- labour supply decisions on the extensive rather than intensive margin
- preference specification à la Jaimovich and Rebelo (nests GHH and KPR preferences)
- rest of the economy as Smets and Wouters (2007)

1. Estimated for the Euro area over the sample 1985Q1-2010Q4 and compared with results for US data

a. average unemployment rate higher than in the US
b. As in the US, data seems prefer a preferences specification closer to GHH
c. Price and wages stickiness higher than in the US
d. MP puts higher weight on the output gap and lower weight on inflation
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Estimation - My Comments

- Results point to a less flexible economy with more persistent effects of shocks on key macro-variables
  $\rightarrow$ as expected
- Monetary policymaker less hawkish than in the US? Estimation sample for the US stops in 2007Q4, before the great recession. $\rightarrow$ make them comparable?
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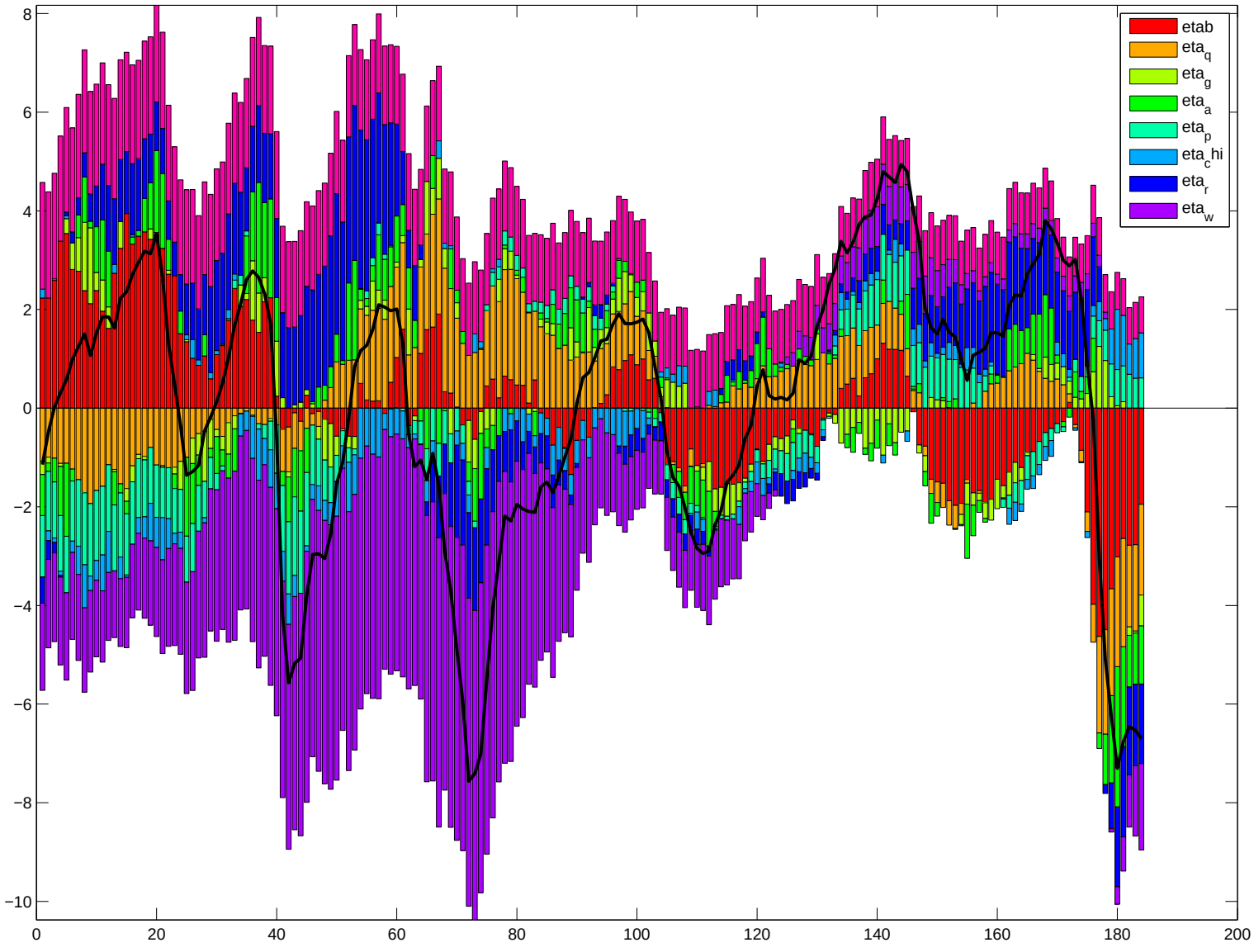

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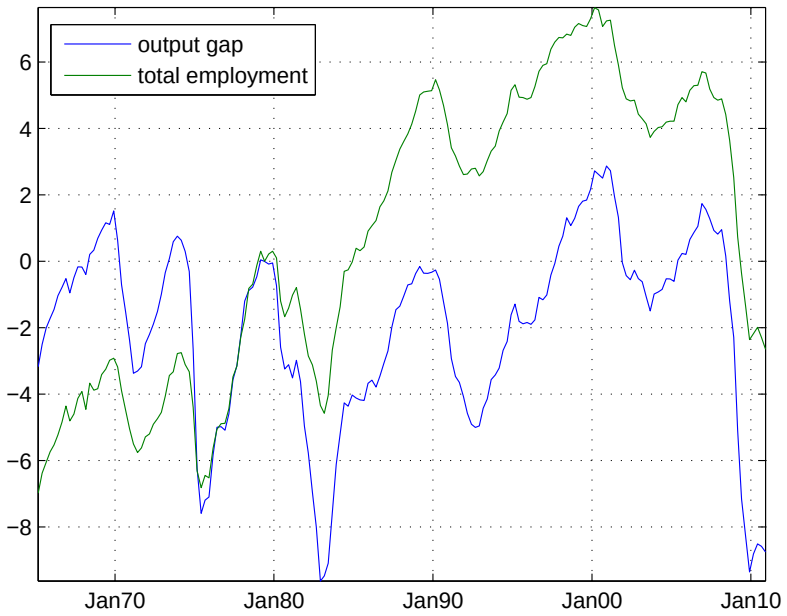

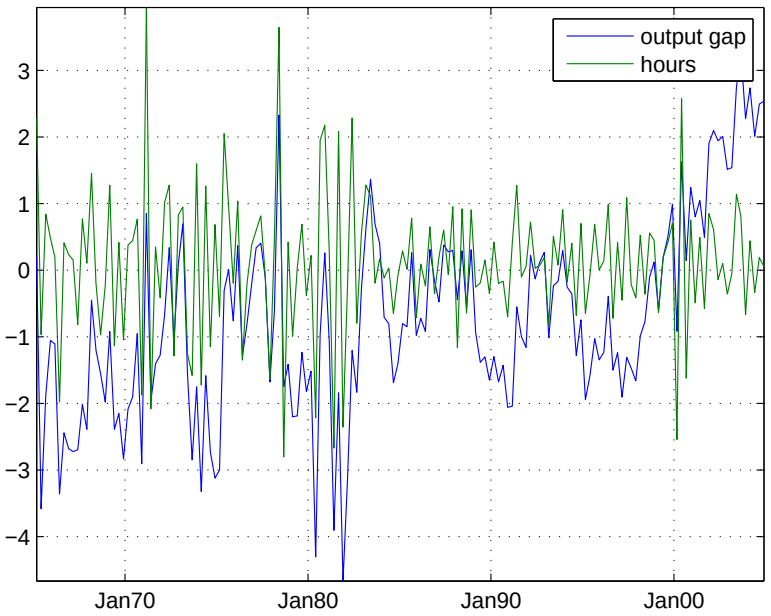

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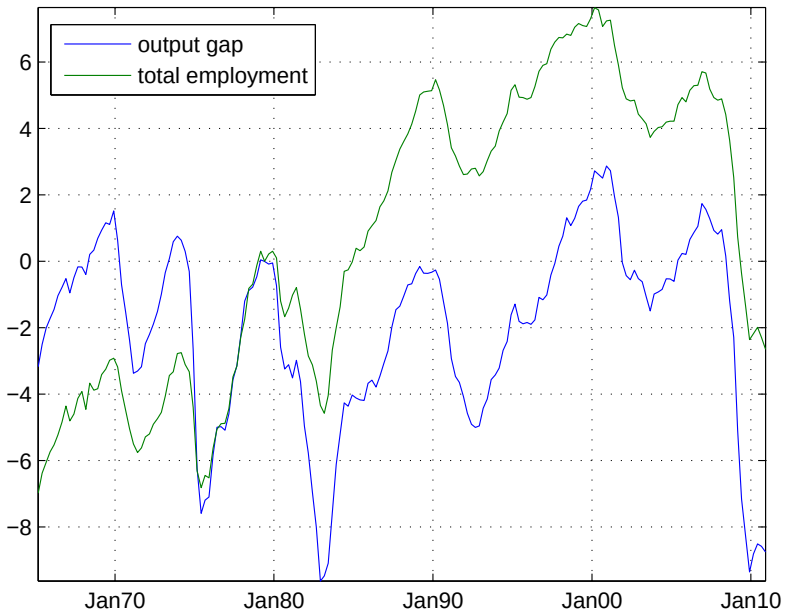

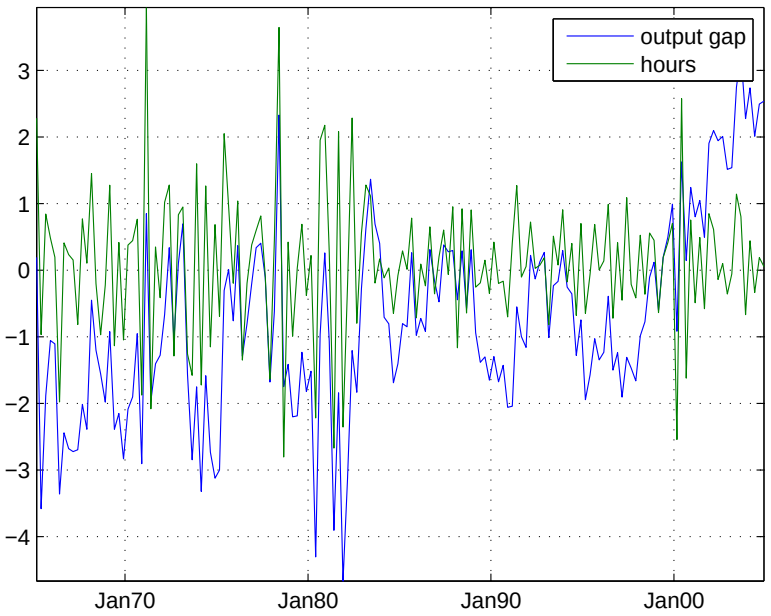

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Data Uncertainty and the Output gap

2. Calculate the output gap using successive data vintages.

- some uncertainty arising from data revisions $\rightarrow$ 1-2%
- in spite of this uncertainty sign of the output gap is know most of the time.
- also account for estimation uncertainty.

What about parameter uncertainty?

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What about parameter uncertainty?

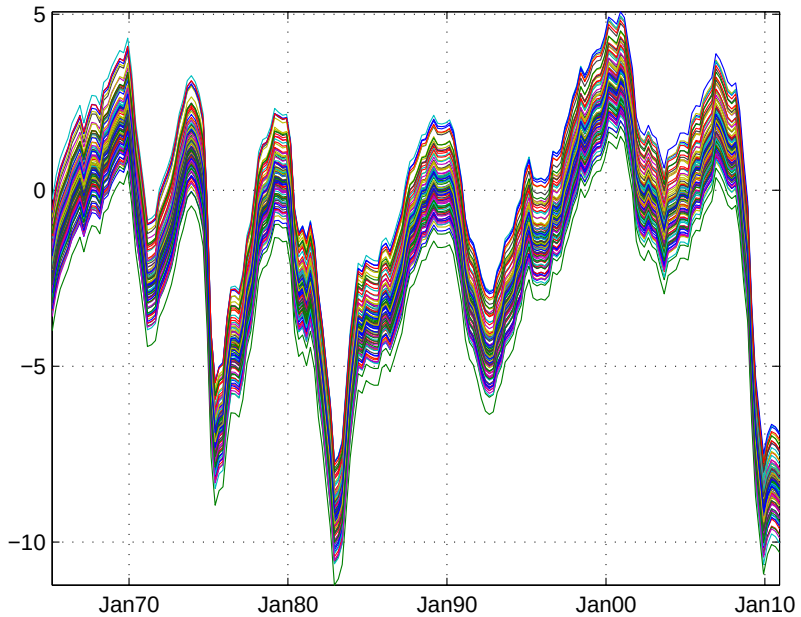
Uncertainty

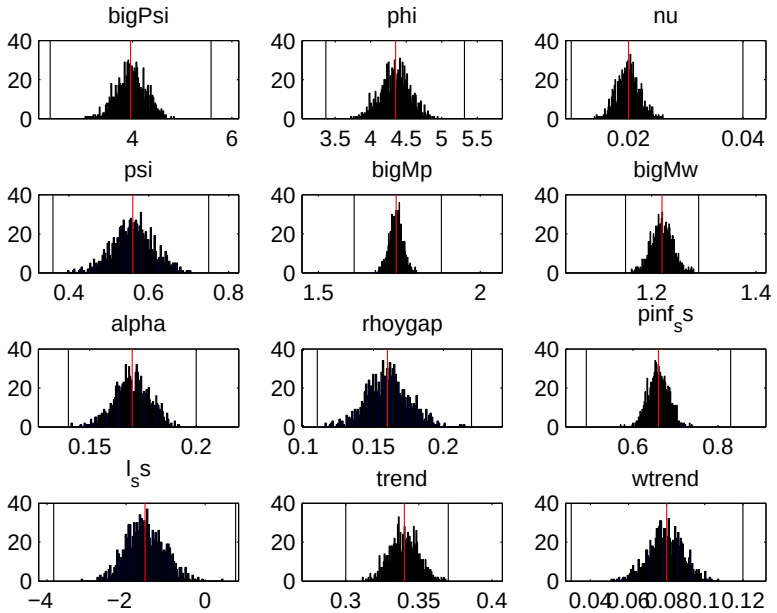
Perturbing a subset of the parameters around the posterior

		Prior		Posterior							
				United States (1966:1–2007:4)				Euro area (1985:1–2009:4)			
parameter	type	mean	st.dev	mode	mean	5%	95%	mode	mean	5%	95%
structural parameters											
Ψ	N	4.0	1.0	4.09	3.96	2.34	5.58	4.65	4.77	3.34	6.31
h	B	0.7	0.1	0.78	0.75	0.65	0.85	0.65	0.64	0.54	0.72
φ	N	2.0	1.0	3.99	4.35	3.37	5.32	5.66	5.56	4.49	6.63
υ	B	0.5	0.2	0.02	0.02	0.01	0.04	0.06	0.12	0.03	0.34
θ_p	B	0.5	0.15	0.58	0.62	0.53	0.71	0.85	0.85	0.79	0.90
θ_w	B	0.5	0.15	0.47	0.55	0.44	0.66	0.74	0.72	0.60	0.89
γ_p	B	0.5	0.15	0.26	0.49	0.20	0.78	0.22	0.27	0.11	0.49
γ_w	B	0.5	0.15	0.16	0.18	0.07	0.29	0.22	0.25	0.12	0.42
ψ	B	0.5	0.15	0.57	0.56	0.36	0.75	0.46	0.48	0.29	0.69
$\mathcal{M}_p$	N	1.25	0.12	1.74	1.74	1.61	1.88	1.48	1.48	1.31	1.65
$\mathcal{M}_w$	N	1.25	0.12	1.18	1.22	1.15	1.29	1.53	1.51	1.41	1.62
α	N	0.3	0.05	0.17	0.17	0.14	0.20	0.22	0.22	0.19	0.26
θ_e	B	0.5	0.15	–	–	–	–	0.71	0.71	0.65	0.76
ρ_R	B	0.75	0.1	0.85	0.86	0.82	0.89	0.86	0.86	0.81	0.89
r_π	N	1.5	0.25	1.91	1.89	1.62	2.16	1.25	1.27	1.02	1.57
r_y	N	0.12	0.05	0.15	0.16	0.11	0.22	0.19	0.19	0.14	0.25
$r_{\Delta y}$	N	0.12	0.05	0.24	0.25	0.20	0.30	0.02	0.02	−0.00	0.06
$\bar{\pi}$	G	0.62	0.1	0.62	0.66	0.49	0.83	0.55	0.56	0.44	0.70
$\bar{\beta}$	G	0.25	0.1	0.31	0.31	0.17	0.43	0.24	0.27	0.13	0.43
$\bar{l}$	N	0.0	2.0	−1.65	−1.52	−3.83	0.77	–	–	–	–
$\bar{e}$	N	0.2	0.5	–	–	–	–	0.22	0.22	0.20	0.25
τ	N	0.4	0.1	0.34	0.34	0.30	0.37	0.14	0.14	0.08	0.20
τ_{wE}	N	0.2	0.1	0.07	0.08	0.03	0.12	–	–	–	–

Uncertainty

Perturbing a subset of the parameters around the posterior mean





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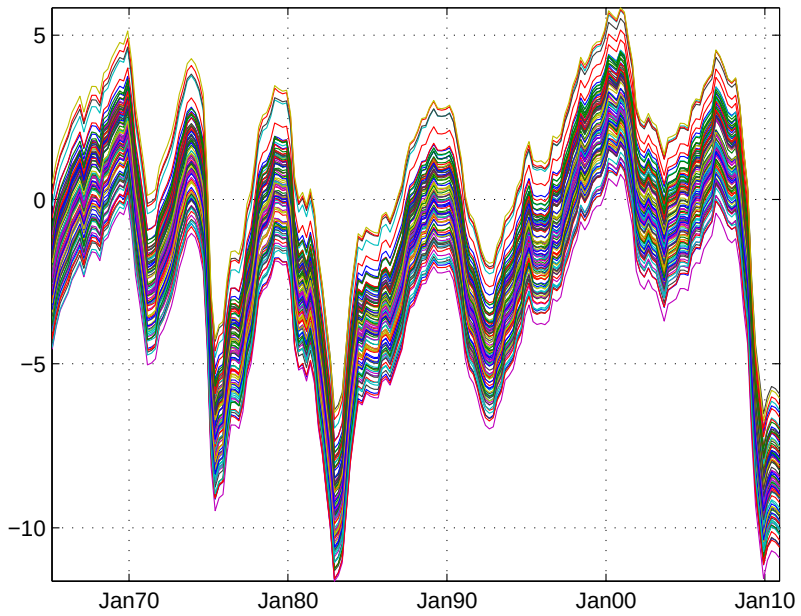

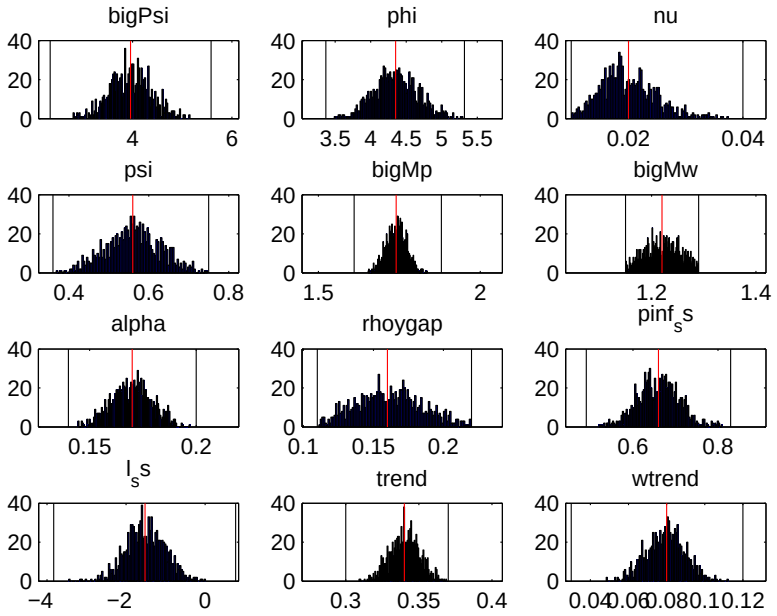

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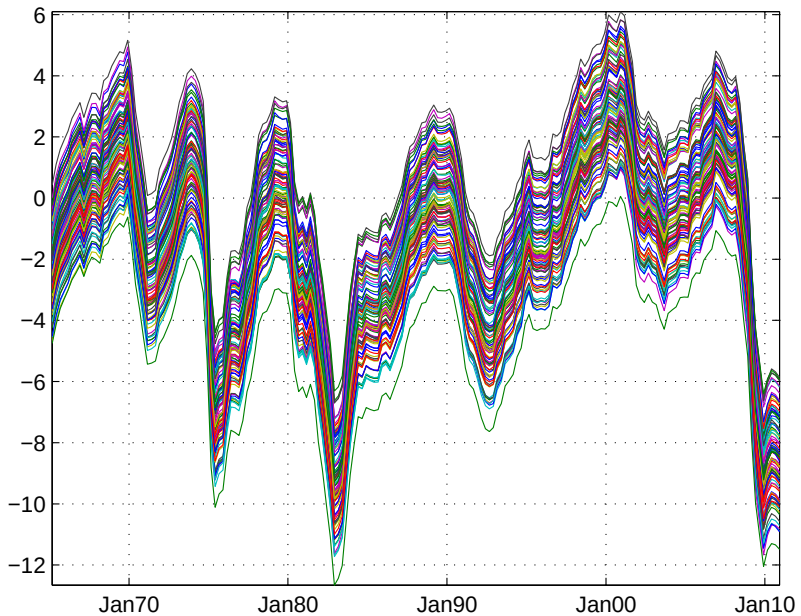

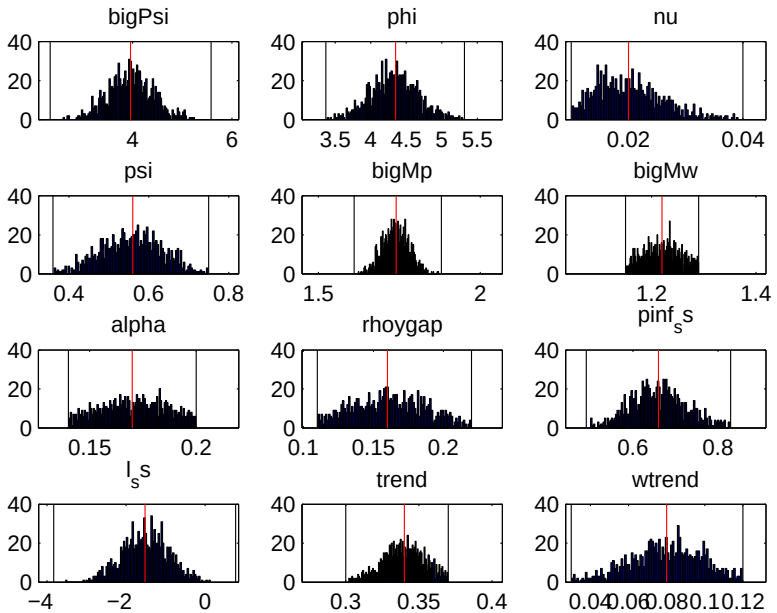

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3. Real-time forecasting

- use last available *quarterly* data $\rightarrow$ unbalanced panel but not mixed frequency
- Unbalancedness dealt with Waggoner and Zha (1999) conditioning methodology

and compares it with

- RW model
- BVAR
- GSW including SPF forecasts
  - News interpretation: fix DSGE forecast to the SPF
  - Noise interpretation: SPF are noisy indicators of RE forecasts implied by the model

$\rightarrow$ Forecasting performance of the DSGE similar to the BVAR (no model dominates) BUT adding SPF has only limited effect on the performance

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  $\rightarrow$ Banbura, Giannone and Lenza (2010) technique is more general as it applies to all state space models and handles easily large dimensional systems.
- You choose to ignore higher frequency data. There is some research focussing on incorporating higher frequency data in structural models
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I believe that this is an artifact of the fact that the forecasting exercise is run at the end of the quarter while the SPF are performed at the beginning when last quarter’s national account data is not available

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