



EUROPEAN CENTRAL BANK

Welfare-based Monetary Policy Rules in an Estimated DSGE Model of the US Economy

Discussion

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Summary

- Estimates a micro-founded DSGE model for the US economy over the period 1955-2002;
- Computes the parameters of a simple interest rate rule that maximizes the unconditional mean of utility;
- Examines counterfactual outcomes under this policy and the benefits from business cycle stabilisation

Overall comments

- I like the paper a lot;
- Is part of a burgeoning literature that examines optimal monetary policy in empirical New Keynesian DSGE models:
 - Laforte (2003) “Comparing monetary policy rules in an estimated equilibrium model of the US economy”;
 - Onatski and Williams (2004) “Empirical and policy performance of a forward-looking monetary model”;
 - Schmitt-Grohe and Uribe (2004) “Optimal operational monetary policy in the CEE model of the U.S. business cycle”;
 - Levin, Onatski, Williams and Williams (2005) “Monetary policy under uncertainty in micro-founded macroeconomic models”
 - Edge, Laubach and Williams, ...

Results

- JKLP enhance the Smets-Wouters model with:
 - Habit persistence in employment (0.7);
 - Generalized investment adjustment costs (not significant in the level of investment);
 - CES technology (Cobb Douglas);
 - Adjustment costs in labour (0.5)
- But maintain full indexation.
- Detrended data – some (?) structural shocks are correlated;
- In terms of overall fit, model does better than Smets-Wouters and BVARs

Comments

- Full indexation?
- Lagged inflation dependence and learning
- Wage versus goods price inflation

Full indexation?

- Similar degree of nominal stickiness in goods and labour markets, but full indexation in both.
- Macro-economic evidence suggests that there is only limited indexation in both goods and labour markets:
 - Smets and Wouters (JApplEcon, 2005):
 - US: wages: 0.64; prices: 0.66
 - EA: wages: 0.57; prices: 0.32
 - Gali, Gertler and Lopez-Salido (EER, 2001):
 - US: prices: 0.25-0.31
 - EA: prices: 0.03-0.28

Full indexation?

- Micro-econometric evidence suggest the bulk of prices remain unchanged most of the time:

	Euro area	United States
CPI	15%	25%
PPI	±17%	?
Surveys	Median firm less than once a year	Median firm less than once a year

Full indexation?

- Important to generalise the cost function and estimate the degree of indexation:
 - may explain why reducing the nominal stickiness improves the fit.
 - is important for the welfare analysis:
 - As shown by Woodford and others, it implies that the welfare costs of relative price variability are a function of the change in inflation, not the level of inflation.
 - How would this affect the results for the optimized Taylor rules?

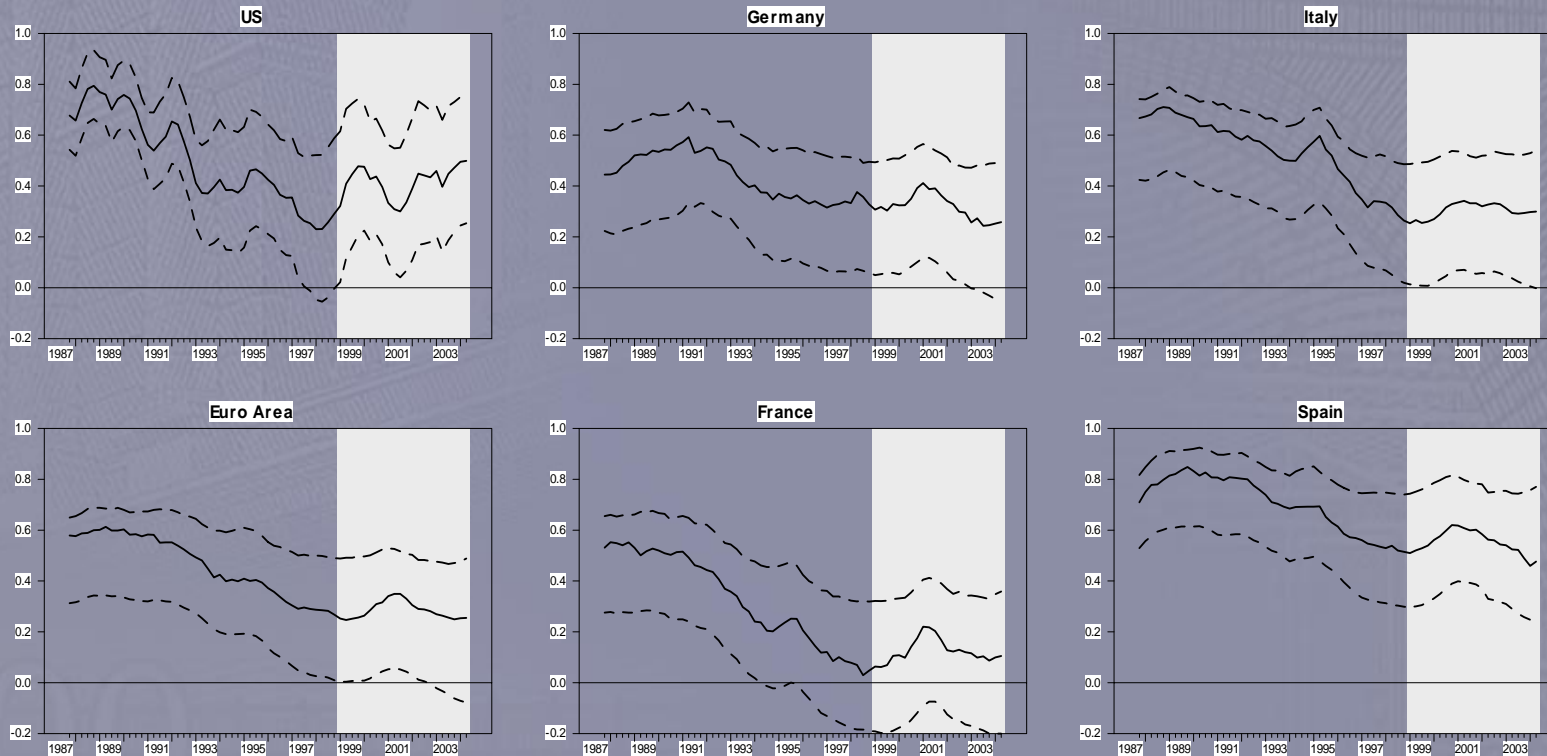
Lagged inflation dependence

- Is the remaining lagged inflation dependence structural?
- Most likely not:
 - There is quite a bit of evidence that inflation persistence has been varying over time (e.g. Cogley-Sargent, 2003; Benati, 2004; Angeloni, Aucremanne and Ciccarelli, 2005) and has fallen in the most recent period of low and stable prices.

Lagged inflation dependence

Time-varying persistence measure

Countries



Angeloni, Aucremanne and Ciccarelli (2005)

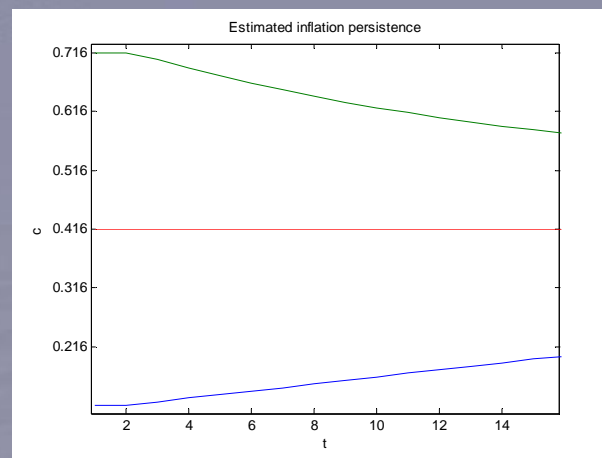
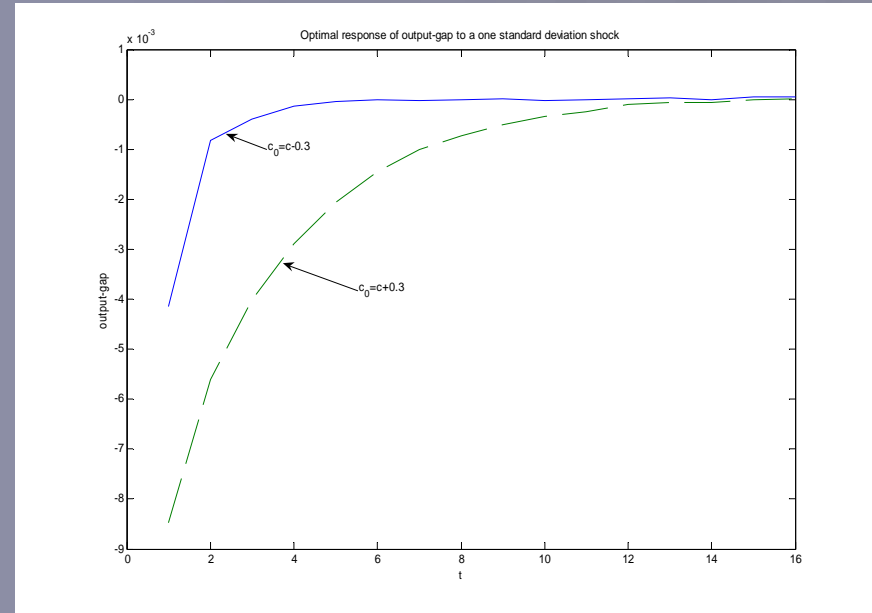
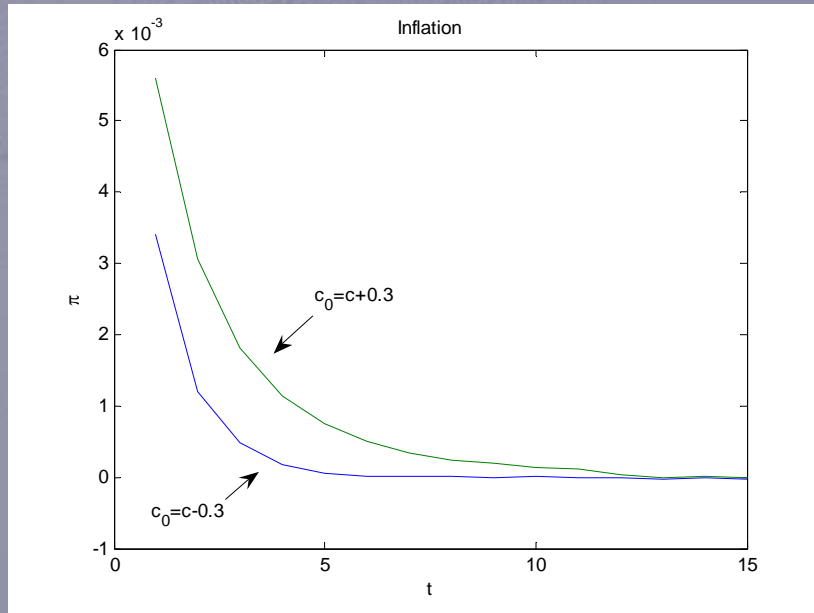
Lagged inflation dependence

- Milani (2004) tests the hypothesis of inflation indexation against the hypothesis that lagged inflation dependence comes from constant gain least squares learning. He finds that estimated inflation indexation drops to zero (as well as habit formation) when allowing for learning.
- Orphanides and Williams (2002,...) have shown that changes in the weight on output gap stabilisation may affect the degree of inflation persistence in models of constant-gain least squares learning;

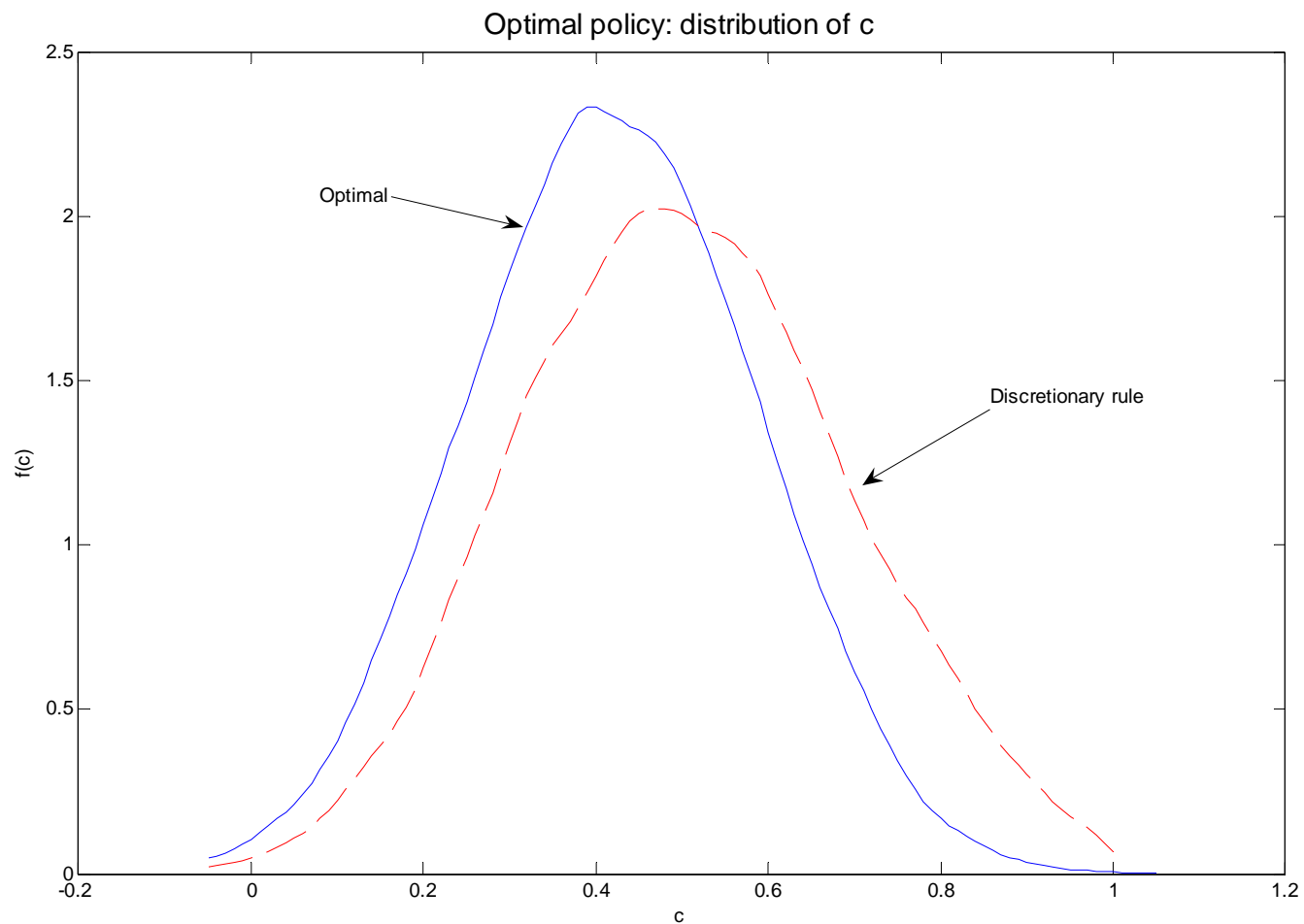
Implications from learning

- Gaspar, Smets and Vestin (2005) examine the implications of constant gain least squares learning for optimal monetary policy responses (See also Ferrero, 2004)
- Learning induces a non-linear policy response to cost-push shocks, which will depend on the perceived degree of inflation persistence by the private sector:
 - In particular, the central bank responds aggressively and persistently to cost-push shocks if the perceived degree inflation persistence is high, but much less so if it is low

Implications from learning



Implications from learning



Wage versus goods price inflation?

- Note bound on interest rate variability
- JKLP consider only first difference Taylor rules:
- Weight of 0.25 on inflation and 0.50 on output growth
- Welfare is 2.94% lower than in the hypothetical case without shocks;
- Why not compare with the Ramsey solution? Is now feasible to implement, as we saw in the Schmitt-Grohe and Uribe and Edge, Laubach and Williams papers

Wage versus goods price inflation?

- Erceg, Henderson and Levin (2000):
 - Depends on degree of stickiness

$$\begin{aligned} \frac{\mathcal{E}[W - W^*]}{U_c(\bar{C}, \bar{Q})\bar{C}} = & -\frac{1}{2}(\lambda_{mrs} + \lambda_{mpl})\mathcal{V}ar(g_t) \\ & - \frac{1}{2}\left(\frac{1 + \theta_p}{\theta_p}\right)\left(\frac{1 - \beta\xi_p}{1 - \xi_p}\right)\frac{1}{\kappa_p}\mathcal{V}ar(\pi_t) \\ & - \frac{1}{2}\left(\frac{1 + \theta_w}{\theta_w}\right)\left(\frac{1 - \beta\xi_w}{1 - \xi_w}\right)\frac{1 - \alpha}{\kappa_w}\mathcal{V}ar(\omega_t) \end{aligned} \quad (27)$$

Wage versus goods price inflation?

- Both Laforte and LOWW find that it is beneficial to respond to wage inflation
- LOWW: welfare is close to Ramsey with first-difference rule in wage inflation (reaction coefficient of 3.8).
- Question: Difference with first-difference Taylor rule?

Euro area versus United States

- IPN micro results suggest:
 - Greater price stickiness in the euro area than in the US;
 - Is consistent with the Gali, Gertler and Lopez-Salido (2001) macro results
- IWFP micro results suggest:
 - Real wages rigidities are higher in the euro area, but nominal wages are somewhat less sticky

Wage rigidities: EA versus US

Table 1: Average Rigidity Measures.

Country	Real	Nominal
AT	0.22	0.67
BE	0.12	0.48
DE	0.25	0.60
GR	0.21	0.57
FR	0.21	0.57
FI	0.20	0.54
IT	0.13	0.45
IR	0.28	0.29
NL	0.21	0.49
PT	0.31	0.67
US	0.08	0.64

Results from the International Wage Flexibility Project

Source : Groshen, Messina, Turunen and Ward-Warmedinger (2004)

Wage versus goods price inflation?

- Relatively more weight on price stability in the euro area versus the US?

Some miscellaneous issues

- Data are detrended!
- No confidence intervals around impulse response parameters

The role of the labour market

- This may not matter when the Phillips curve is written in terms of marginal cost;
- It does matter, however, when the Phillips curve is written in terms of output, as the relationship between marginal cost and output/employment will be different
- See Blanchard and Gali, 2005.