Keith Küster and Volker Wieland's

Insurance Policies for Monetary Policy in the Euro Area

discussion by:

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Related Literature

Levin-Wieland-Williams (Taylor 1999)

Levin-Wieland-Williams (AER 2003)

Levin-Williams (JME 2003)

This paper:

Applies LWW (1999) to the Euro Area incorporating Bayesian and Minimax analysis from LW (2003)

Four Models for Policy Analysis

1. AW: “Area-Wide” model
2. CW-T: Coenen-Wieland (2003) with Taylor contracts
3. CW-F: Coenen-Wieland (2003) with Fuhrer-Moore (1995) contracts
4. SW: Smets-Wouters (2004) model

Models closed with Taylor-type monetary policy rule:

$$r_t = \rho\, r_{t-1} + \alpha\, \pi_t + \beta\, y_t$$

Rules evaluated using Loss function:

$$Var(\pi) + \lambda_y Var(y) + \lambda_{\Delta r} Var(\Delta r)$$

Results

Table 4: Robustness of Model-Specific Rules: Implied Inflation Premia

λ_y	CW-F rule evaluated in			CW-T rule evaluated in		
	CW-T	SW	AWM	CW-F	SW	AW
0.0	.15	.16	.56	1.13	.03	∞
0.5	.10	.11	.79	1.03	.09	.34
1.0	.13	.19	.93	1.57	.13	.55

λ_y	SW rule evaluated in			AW rule evaluated in		
	CW-F	CW-T	AW	CW-F	CW-T	SW
0.0	2.06	.04	∞	.63	.12	.23
0.5	.72	.16	2.06	1.50	.12	.28
1.0	1.18	.27	2.01	ME	ME	.36

Implied Inflation (Variability) Premium relative to first-best simple rule for each model (in percentage points). The notation "∞" indicates that the implemented rule results in instability; the notation "ME" indicates that the implemented rule results in multiple equilibria. Shown is the case $\lambda_{\Delta r} = 0.5$ for loss function (2).

Note: rules compared using "implied inflation premia" (= Δ s.s. π) units

Results

The preceding is a Levin-Williams-Wieland type of result:

Result #1: "Optimized model-specific rules are not robust"

Obvious question: What is the optimal policy taking into account uncertainty across models?

Küster-Wieland (also Levin-Williams (2003)):

1a) Bayesian: specify flat priors across four models

or

1b) Minimax: minimize worst-case loss across models

and

2) commit forever to α, β, ρ no matter what you might learn in the future

Results

Obviously, first-best policy is to optimally filter every period and update policy every period.

This is hard, but not totally intractable:

Bayesian:

- Cogley, Colacito, Sargent (2005)
- Svensson-Williams (2005)
- Swanson (2005)

Minimax:

- Hansen-Sargent (2005)

Results

Levin-Williams (2003) and Küster-Wieland is second-best (?) approximation

— can you tell a story that would help to rationalize the method?

Results:

Table 5: Flat Bayesian Priors versus Model-Specific Simple Rules

	Inflation (Variability) Premium			
λ_y	CW-F	CW-T	SW	AW
0.0	.07	.10	.16	.12
0.5	.09	.08	.14	.26
1.0	.11	.12	.21	.32

This yields a "super"-Levin-Williams (2003) type of result:

Result #2: "Optimized Bayesian rules perform very well"

Results

What is optimal policy rule with Minimax loss across models?

Note: Minimax is only *across* models, loss *within* each model is Bayesian:

$$\min_{\alpha,\beta,\rho}\max_{m\in M}\left\{Var(\pi|m)+\lambda_y Var(y|m)+\lambda_{\Delta r}Var(\Delta r|m)\right\}$$

This “hybrid Minimax” loss unsatisfying in many ways:

1) policymakers have priors on parameters of any given model, but not across models—is there a story that would rationalize this?

2) can “back out” priors across models that would yield Minimax policy (because # models > # of first-order conditions) (only locally true, and not unique) (?)

3) ignoring policymaker learning seems particularly problematic here

Much better approach would be full Minimax (Hansen-Sargent) generalized to multiple reference models

Results

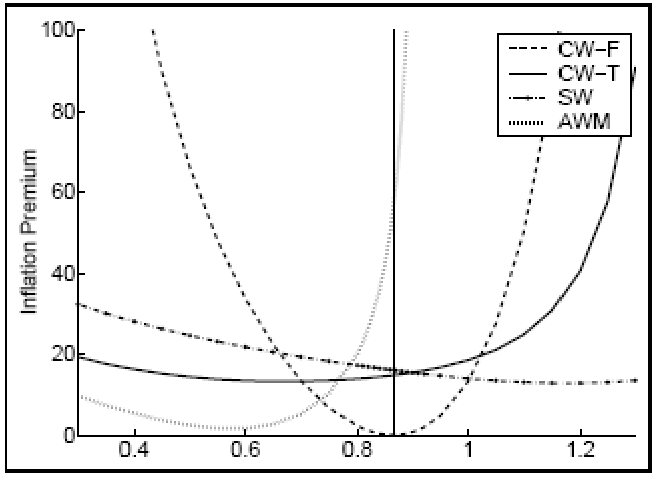
Table 6: Minimax Policy Relative to Model-Specific Rules

	Inflation (Variability) Premium			
λ_y	CW-F	CW-T	SW	AW
0.0	0	.15	.16	.57
0.5	0	.10	.11	.73
1.0	0	.13	.20	.77

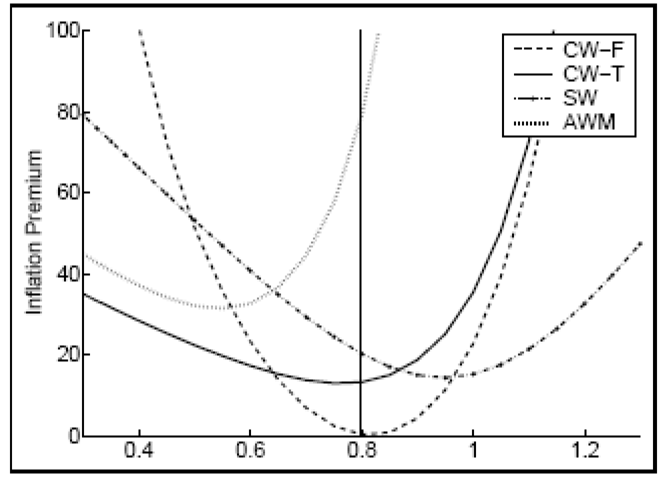
A Caveat: “Trembling Hand” Fault Tolerance

Minimax:

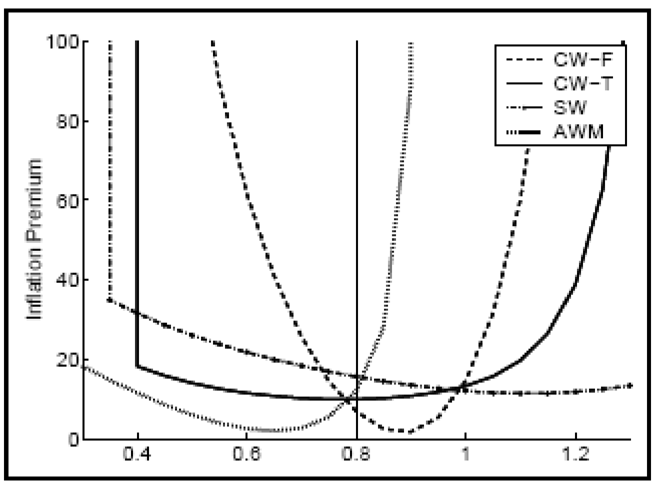
Response to r_{t-1} (ρ)

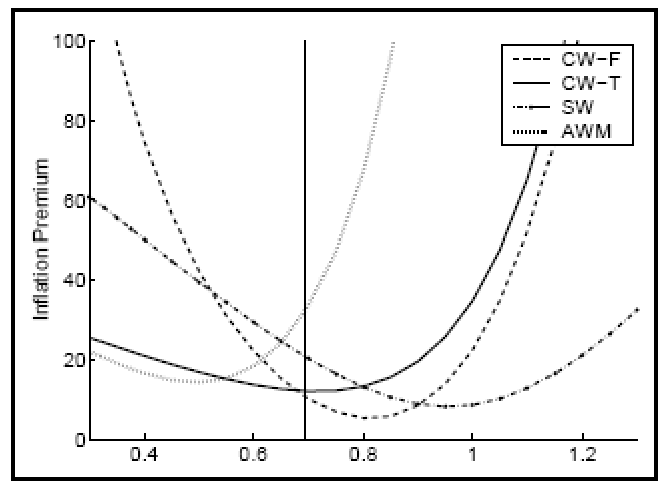


Response to r_{t-1} (ρ)



Bayesian:





Results

The above yields a new result:

Result #3: “Optimal Minimax rules may not be trembling-hand-robust”

Additional extensions:

Ambiguity-averse policy:

$$\min\left\{(1-e)\sum_{m\in M} p_m L_m + e\max_{m\in M} L_m\right\}$$

Non-quadratic loss functions:

$$E|\pi|^{\xi} + \lambda_y E|y|^{\xi} + \lambda_{\Delta r} E|\Delta r|^{\xi}$$

Conclusions

- More attention should be directed toward computing *first-best* policy in the face of model uncertainty (e.g., Wieland (1995, JME 2000, JEDC 2000))

- Results in the paper are for policies that are very far from first-best
  Not clear how seriously we should take those results, given that:
  - policymakers will learn about the model over time
  - policymakers will revise their policies as new information comes in
  - true model may change over time (e.g., regime change)

- Implied Inflation Premium

- Trembling-Hand Fault Tolerance