Frank Smets and Rafael Wouters
“Monetary Policy in an Estimated SDGE Model of the Euro Area”
Discussion by Lars E.O. Svensson

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- The Eurosystem’s 1st pillar (page 6)
  Additively separable utility
  \[ U_t^r = u(C_t^r - H_t) - v(l_t^r) + h(Q_t^r / P_t) \]  (2)

  Demand for real balances
  \[ \frac{h'(Q_t^r)}{u'(C_t^r - H_t)} = \frac{i_t}{1 + i_t} \]  (8)

  No role for money in the transmission mechanism of monetary policy/predicting inflation (\(Q\) reused for real value of capital)

  Even without additive separability, insignificant effect (McCallum, Nelson, Woodford,...)

- Indexation and the natural-rate hypothesis
  Non-adjusted wages: Partial indexation to lagged inflation, \(\gamma^w\)
  \[ \hat{W}_t^r - \hat{W}_{t-1}^r = \gamma^w \hat{\pi}_{t-1} \]  (9)

  Better: Partial indexation relative to deviation of lagged inflation from average inflation
  \[ \hat{W}_t^r - \hat{W}_{t-1}^r = \gamma^w (\hat{\pi}_{t-1} - E[\hat{\pi}_t]) \]

  Real-wage equation
  \[
  \hat{w}_t = \frac{\beta}{1 + \beta} \hat{w}_{t+1|t} + \frac{1}{1 + \beta} \hat{w}_{t-1|t} + \frac{\beta}{1 + \beta} (\hat{\pi}_{t+1|t} - E[\pi_t]) \\
  - \frac{1 + \beta \gamma^w}{1 + \beta} (\hat{\pi}_t - E[\pi_t]) + \frac{\gamma^w}{1 + \beta} (\hat{\pi}_{t-1} - E[\pi_t]) \\
  - \ldots \]  (36)

  \(E[\hat{w}_t]\) independent of \(E[\pi_t]\)
Non-adjusted prices: Partial indexation to lagged inflation, $\gamma^p$
Better: Partial indexation to deviation of lagged inflation from average inflation
$$\hat{\pi}_t - E[\pi_t] = \frac{\beta}{1 + \beta \gamma^p}(\hat{\pi}_{t+1}|t - E[\pi_t]) + \frac{\gamma^p}{1 + \beta \gamma^p}(\hat{\pi}_{t-1} - E[\pi_t]) + ...$$

Fulfill natural-rate hypothesis: $E[\hat{Y}_t]$ independent of $E[\pi_t]$
Important for welfare

$$\hat{R}_t = \ln(1 + i_t) \approx i_t$$
$$\hat{R}_t = \rho \hat{R}_{t-1} + (1 - \rho) \left[ \tilde{\pi}_t + r_\pi(\tilde{\pi}_{t-1} - \tilde{\pi}_t) + r_\pi e(\tilde{\pi}_{t+1}|t - \tilde{\pi}_t) + r_\pi g(\tilde{Y}_t - \tilde{Y}_{t-1}) \right] + \epsilon_t^R$$  (39)

- Mechanical, arbitrary, depend on other variables?
- Simultaneity, $\tilde{\pi}_t, \tilde{\pi}_{t+1}|t, \tilde{Y}_t$ jump variables, not operational
- Instrument depend on predetermined variables
- More realistic: $\tilde{\pi}_t, \tilde{Y}_t$ predetermined
- Microfoundations!

* Optimizing welfare not operational
  - Simple loss function: For example, flexible inflation targeting
  $$E_t \sum_{s=t}^{\infty} \delta^{s-t} L_s$$
  $$L_s = \frac{1}{2}[(\hat{\pi}_t - \bar{\pi}_t)^2 + \lambda x^2_t]$$
  $$x_t \equiv \hat{Y}_t - \hat{Y}_t^n$$ output gap
  - Compare with welfare
  - Find optimal $\lambda$ and definition of potential output, $\hat{Y}_t^n$

* Exploit linear-quadratic setup
  - Equilibrium under discretion, commitment,
  - Compare commitment, /discretion, welfare/simple loss function, welfare loss
  - Optimal simple loss function under discretion and commitment $(\lambda, \hat{Y}_t^n)$