

Why rules? Time inconsistency and the case for commitment

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Abstract

Why a central bank that is free to do the best thing each period can end up with higher inflation and nothing to show for it.

A monetary policy *rule* is a systematic description of how the policy instrument, usually a short-term interest rate, responds to the state of the economy. The alternative is *discretion*: the central bank re-optimises every period, unconstrained by what it said before. Intuition suggests discretion must be at least as good, because a discretionary policymaker can always choose to follow the rule. The point of this lesson is that this intuition is wrong.

The time-inconsistency problem

Kydland and Prescott showed that when private agents are forward-looking, the plan that is optimal today is in general not the plan the policymaker will want to carry out tomorrow (Kydland & Prescott, 1977). Their examples came from patent policy and flood insurance as much as from money, but monetary policy is where the idea took hold.

Barro and Gordon built the canonical monetary version (Barro & Gordon, 1983). Strip it to the essentials. The economy has a natural rate of output, y^n , and the central bank would like output to be higher than that, say because taxes or market power keep it inefficiently low. Output responds to *surprise* inflation:

$$y_t = y^n + a(\pi_t - \pi_t^e), \quad a > 0. \quad (1)$$

The central bank dislikes inflation and likes output above the natural rate:

$$L_t = \frac{1}{2}\pi_t^2 - b(y_t - y^n), \quad b > 0. \quad (2)$$

Definition 1 (Discretionary equilibrium). Under discretion the central bank chooses π_t *after* expectations π_t^e have been formed, taking them as given. Substituting (1) into (2) and minimising over π_t gives $\pi_t = ab$. Private agents know this, so in equilibrium $\pi_t^e = ab$, the surprise is zero, and output stays at y^n .

The outcome is the worst of both worlds: inflation is positive ($ab > 0$) and output is exactly where it would have been with zero inflation. The bank's willingness to exploit surprises is fully anticipated, and the anticipation removes the benefit while leaving the cost. This is the *inflation bias* of discretion.

Theorem 1 (Commitment beats discretion). *If the central bank can commit to $\pi_t = 0$ before expectations are formed, the loss is $L = 0$, which is strictly below the discretionary loss $\frac{1}{2}(ab)^2$. Commitment is valuable even though the committed policymaker has fewer options.*

Proof. Under commitment agents set $\pi^e = 0$, output is y^n by (1), and (2) equals zero. Under discretion output is also y^n but $\pi = ab$, so the loss is $\frac{1}{2}(ab)^2 > 0$. $\square$

What the argument does and does not say

The model does not say that discretionary central bankers are careless. The bias arises precisely because the policymaker is doing the best thing each period. It says that a *mechanism* that ties the bank's hands, a rule, a reputation, an independent conservative central banker, or an explicit target, can raise welfare.

Three caveats matter for the rest of this course.

- The bias depends on the bank wanting output above its natural rate ($b > 0$). Central banks that aim at the natural rate itself have no inflation bias in this model, but they may still have a *stabilisation bias*: under discretion they respond to shocks less efficiently than under commitment, a point developed in the New Keynesian literature (Clarida et al., 1999).
- “Rule” does not have to mean a fixed formula. Taylor's rule, the subject of the next lesson, is a *guideline* with judgment around it; an inflation-forecast target is a rule about the objective rather than the instrument (Svensson, 1997).
- Reputation can substitute for a formal rule when the game is repeated, which is why the credibility of a central bank is discussed as if it were an asset.

Continue with The Taylor rule.

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