

The Taylor Rule and the Practice of Central Banking

by

Pier Fancesco Asso, George A. Kahn,
and Robert Leeson

Comments

by

Dale Henderson

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Perspective

- Long standing debate about usefulness of simple monetary policy rules
- k per cent rule of Milton Friedman and others
- gold standard
- Taylor (1993) rule is most prominent current example

$$i_t = E_t\{(1 - \rho)(r^* + \pi_{t+k}) + \alpha(\pi_{t+k} - \pi^*) + \beta y_{t+k} + \rho_t i_{t-1}\}$$

- Asso, Kahn, and Leeson (AHL) document the use of Taylor-type rules by U.S. policymakers and make a convincing case that doing so has improved U.S. monetary policymaking.

“Descriptive” Policy Rules

Policy rules of interest in and of themselves

- Johnson and Dewald (1963), Kaufman (1964), Reuber (JPE 1964), Wood (FRB 1966), Havrilesky (JPE 1967)
- “North Carolina School”
 - Black, “The Effects of Alternative Monetary Control Procedures on Exchange Rates and Output” (JMCB1982a), (1982b), (1983)
 - Benavie and Froyen (1984)

Estimated Policy Reaction Functions at Central Banks

The first (Bank of Canada) model was a Meade-Mundell-Fleming open-economy affair with a...monetary policy reaction function for the short-term interest rate. Even George Freeman, the management enthusiast for our modelling efforts, thought that we might in this case be going too far: “How could it be possible to reduce the complex art of Bank decision-making to a simple equation?” We researchers argued that such decisions were probably systematic, in which case an equation might establish the key historical determinants. Or perhaps they were just random, in which case nothing would turn up, so why not let the chips fall where they may? We compromised by carrying on as planned, and reducing the possibility of potentially embarrassing commentary by simply including the reaction function in the model under the generic labelling of “short-term interest rate equation.” John Helliwell

Two Detours: Irrelevance and Indeterminacy?

- A rule that says, "Keep the nominal interest rate constant," is an incompletely specified policy that implies price level indeterminacy.
- Sargent and Wallace (1974) argued that logic extended to any interest rate rule in which is operational in the sense that the interest responds only to lagged variables.
- "It turns out that the probability distribution of output-dispersion as well as mean-is independent of the particular deterministic money supply rule in effect, and that under an interest rate rule the price level is indeterminate."
- Taylor was a leader in overturning both of these results.

Is the Rules vs. Discretion Debate Beside the Point?

Possible to define a “rule” as an *exact* specification of what *must* be done in a given situation, what Faust and Henderson (2004) call a “forcing rule”

- Not desirable and almost certainly not credible to commit to a rule (simple or complex) defined in this way.

Also possible to define a rule as a presumption about what should be done in a given situation with the understanding that there are some circumstances under which the presumption can be overridden. Bernanke, et al. view of inflation targeting.

- At least two difficult questions remain to be answered.
- If there is a single rule, *when* can it be overridden?
- If there are multiple rules (or more than one version of a single rule) that give different presumptions, what then?

A Convincing Argument

In his classic 1993 paper, Taylor argued that

“If the policy rule comes so close to describing actual Federal Reserve behavior in recent years and if FOMC members believe that such performance was good and should be replicated in the future even under a different set of circumstances, then a policy rule could provide some guide to future decisions ”

Good Fit + Good Results = Good Prescription

Experience U.S. and Japan

Bernanke (2010) and Kohn (2007) explain differences between version of Taylor (1993) rule with CPI replacing GNP deflator.

- Differences in measure of of inflation used, PCE deflator vs. CPI
- Difference in measures of inflation and output gap used forecasts vs. ex post values.

Ahearne et al. on Japanese experience

- Forecasts vs. ex post values

Robustness of Simple Monetary Rules

Early example of study of robustness of simple rules across models is Bryant, Hooper, and Mann (1993) 8 models, 4 rational expectations, stochastic simulations

More recent example is Levin, Wieland, and Williams (1999) used four models, Fuhrer and Moore (FM), Federal Reserve Board (FRB), Monetary Studies Research (MSR) of Orphanides and Wieland, and Taylor's multicountry model (TMCM) To stabilize inflation and output at reasonably low levels of interest rate volatility, policy rule should

- Respond to the current output gap and to a smoothed measure of inflation
- Have a coefficient near unity on the lagged funds rate

Results are essentially unchanged if react to output and inflation data from the previous quarter.

LWW Continued

Interest rate smoothing provides the largest gains from any of the permutations of simple policy rules:

- Smooth changes in the short-term interest rate provide control over long-term interest rates and thereby over aggregate demand and inflation at low cost in terms of funds rate volatility
- Constraining interest rate volatility as LWW favors interest rate smoothing
- Lagged interest rate provides a measure of the existing state of the economy
- With high degree of smoothing output tends to exhibit “overshooting,” which is preferable to returning monotonically to potential under LWW variance criterion

LWW Continued

- Simple rules derived from one model perform very well in the other three models
- For a given model, complicated rules perform only slightly better than simple ones
- Complicated rules are somewhat less robust to model uncertainty than well-chosen simple rules.
- Rules that incorporate forecasts yield at most small improvements in performance over optimal rules based on current and lagged variables.

A Very Different Simple Rule

- Levin, Onatski, Williams, and Williams estimate model with nominal wage rigidity and compare 3 simple rules to optimal policy.
- Simple interest rate rule that responds solely to nominal wage inflation and the lagged interest rate yields a welfare outcome that nearly matches the fully optimal one.
- Rule works so well because Calvo-type wage rigidity and indexation lead to high costs from wage dispersion. Results not sensitive to parameter uncertainty but very sensitive to wage adjustment specification.
- Wonder why this rule not discussed in the excellent survey “Simple and Robust Rules for Monetary Policy” by Taylor and Williams that will be presented tomorrow.