Standing on the Shoulder of a Giant

by Harald Uhlig

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A Celebration in Honor of John Taylor
Hoover, Stanford University

May 8, 2025

Two important contributions by John Taylor ...

Taylor-Uhlig, JBES 1990

 Journal of Business & Economic Statistics, January 1990

Associate Editor's Note: The following 11 articles summarize the efforts to date of a group that has been working on the new and exciting topic of solution strategies for nonlinear rational-expectations models. The members of the group wish to thank the National Bureau of Economic Research, the Institute for Empirical Macroeconomics, and the National Science Foundation for providing financial support for various aspects of the research activities. I wish to thank the many referees whose willingness to review the materials in a careful and timely manner helped improve the work substantially.

George Tauchen

Solving Nonlinear Stochastic Growth Models: A Comparison of Alternative Solution Methods

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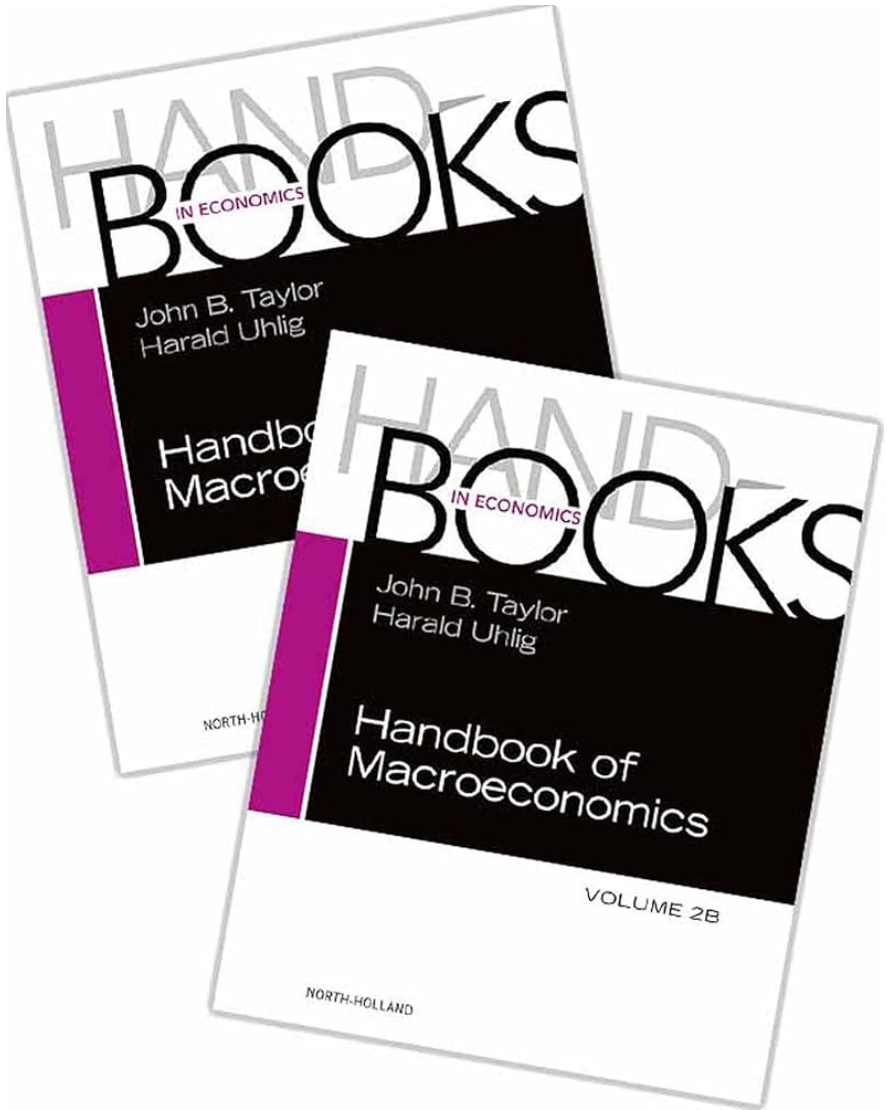
The purpose of this article is to report on a comparison of several alternative numerical solution techniques for nonlinear rational-expectations models. The comparison was made by asking individual researchers to apply their different solution techniques to a simple representative-agent, optimal, stochastic growth model. Decision rules as well as simulated time series are compared. The differences among the methods turned out to be quite substantial for certain aspects of the growth model. Therefore, researchers might want to be careful not to rely blindly on the results of any chosen numerical solution method in applied work.

KEY WORDS: Linear-quadratic approximation; Nonlinear models; Numerical solution methods; Optimal growth; Rational expectations.

Taylor-Uhlig Handbook, 2016



.... for which I will be forever grateful

Monetary Policy Ineffectiveness?

Sargent-Wallace, JPE 1975

"Rational" Expectations, the Optimal Monetary Instrument, and the Optimal Money Supply Rule

Thomas J. Sargent and Neil Wallace

University of Minnesota

Alternative monetary policies are analyzed in an ad hoc macroeconomic model in which the public's expectations about prices are rational. The ad hoc model is one in which there is long-run neutrality, since it incorporates the aggregate supply schedule proposed by Lucas. Following Poole, the paper studies whether pegging the interest rate or pegging the money supply period by period minimizes an ad hoc quadratic loss function. 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.

Phelps-Taylor, JPE 1977

Stabilizing Powers of Monetary Policy under Rational Expectations

Edmund S. Phelps and John B. Taylor

Columbia University

The potential of monetary policy to stabilize fluctuations in output and employment is demonstrated in a stochastic rational expectations model in which firms choose, considering average profitability, to set prices in advance of the period when they apply to goods sold. This lead time in pricing decisions increases the fluctuations of output about the normal employment level. But proper use of a feedback monetary policy rule can reduce these fluctuations even though expectations are rational and people know the policy rule. It is noted that use of a rule-dictated policy sometimes requires the monetary authorities to penalize the economy in the short run for the sake of beneficial system effects of the rule upon the relevant steady-state distributions.

Phelps-Taylor (and Fisher):
not if wages or prices are sticky!
Wage and price setting matters.

Staggered Contracts

Taylor, AER 1979

Staggered Wage Setting in a Macro Model

By JOHN B. TAYLOR*

Few economists now question the validity of the Friedman-Phelps accelerationist hypothesis that the Phillips curve is vertical in the long run—at least as a first-order approximation. Indeed, the once controversial hypothesis is now embodied in basic textbook macro models (see Rudiger Dornbusch and Stanley Fischer, and Robert J. Gordon, for example). This new accelerationist consensus, however, has done little to settle the ongoing debate over aggregate demand policy, where the crucial issues appear to depend on the *short-run* Phillips curve and its dynamic properties. The accelerationist theory provided an elegant and concise representation of the inflationary process for the long run. However, it has proved distressingly unspecific as a framework for the development of short-run dynamics.

Two sources of this incomplete specification have stimulated extensive research in recent years. The first—about which little will be said here—is that the accelerationist theory was not specific about the process of expectation formation. According to the theory flat. But, if this were the only source of ambiguity in the accelerationist model, then it is likely that the controversy over the short-run properties would have been settled quickly: the attractiveness of rational expectations—again as a first-order approximation—has become increasingly evident in theoretical and empirical work.

The second source of imprecision is more troublesome and is unlikely to be resolved quickly. It involves the micro-economic details of wage and price adjustment which are just as much a part of the famous macro "expectations" adjustment, as the expectation formation mechanism itself. While an extremely literal reading of the accelerationist theories would interpret π^* as a pure forecast of inflation independent of the dynamics of wage and price contracts, a more practical reading would suggest that π^* represents the persistence of inflation due to the gradual adjustments of outstanding wage and price contracts to new economic information. Some modelling of this phenomenon can be found in Edmund Phelps (1970), especially

Taylor, JPE 1980

Aggregate Dynamics and Staggered Contracts

John B. Taylor

Columbia University

Staggered wage contracts as short as 1 year are shown to be capable of generating the type of unemployment persistence which has been observed during postwar business cycles in the United States. A contract multiplier causes business cycles to persist beyond the length of the longest contract, and a diffusion of shocks across contracts causes the persistence to increase for several periods before diminishing. A persistence of inflation is also generated by the contracts. This persistence is represented as a reduced-form distributed-lag wage equation in which the lag coefficients have a pure-expectations component and an inertia component due to the overhang of outstanding contracts. Using rational expectations to separate these components suggests that aggregate demand may have a greater impact on inflation than the simple reduced-form estimates would indicate.

Staggered wage contracts create persistence beyond length of contracts

Estimated Models for Policy Analysis

Taylor, Econometrica 1979

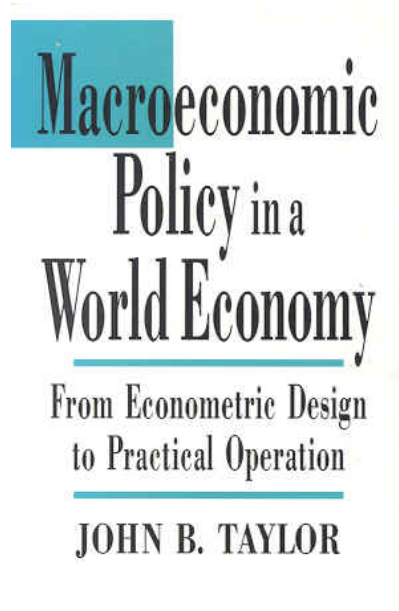
Econometrica, Vol. 47, No. 5 (September, 1979)

ESTIMATION AND CONTROL OF A MACROECONOMIC MODEL WITH RATIONAL EXPECTATIONS

BY JOHN B. TAYLOR[1]

The paper investigates an econometric method for selecting macroeconomic policy rules when expectations are formed rationally. A simple econometric model of the U.S. is estimated subject to a set of rational expectations restrictions using a minimum distance estimation technique. The estimated model is then used to calculate optimal monetary policy rules to stabilize fluctuations in output and inflation, and to derive a long run tradeoff between price stability and output stability which incorporates the rationally formed expectations. The optimal tradeoff curve is compared with actual U.S. price and output stability and with the results of a monetary policy rule with a constant growth rate of the money supply.

Taylor book, 1993



Staggered price and wage contracts, rat. expectations, estimation, policy

Recent Reception

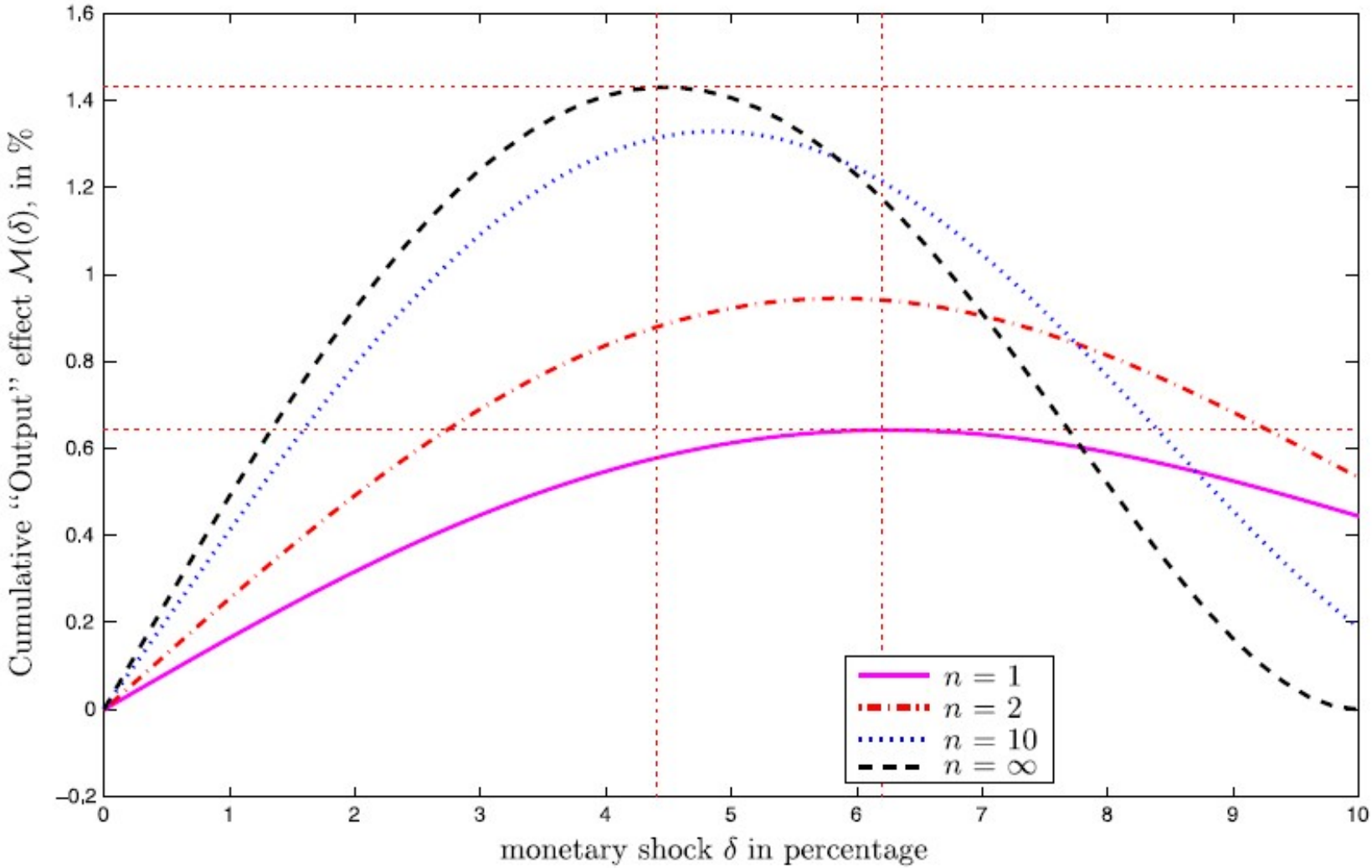


FIGURE 6.—Cumulative output effect $\mathcal{M}(\delta)$. Parameters are $N_a = 1$ and $\text{Std}(\Delta p_i) = 0.10$.

Alvarez-Lippi, Econometrica, 2014: $n = \infty$ is Taylor

Standing on the shoulder of a giant

Standing **behind** the shoulder of a giant

Thank you, John!