

Epilogue

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The last two papers by Thomas Sargent and Neil Wallace build a persuasive case for adopting a natural rate-rational expectations economic model as a basis for policy decisions. The case is built around four distinguishable, but not necessarily independent, arguments. First, models incorporating the rational expectations and natural rate hypotheses are in accord with the core of economic theory: optimizing agents in a general equilibrium framework. Second, these models seem capable, at least potentially, of explaining most interesting cyclical phenomena. Third, the rational expectations and natural rate hypotheses cannot easily be refuted by the data. And finally, this type of model is really the only game in town.

The contest for determining which economic model to use for policy deliberations would seem to be won by the natural rate-rational expectations model on grounds of default. There are currently no serious rivals. Estimated econometric models fail empirical tests for structural change over time and cannot be expected on theoretical grounds to remain invariant over different policy regimes. A coherent theory implying a role for stabilization policy never has been fully articulated. It is not enough to argue, for example, that wages are “sticky”; an explanation for stickiness must also be provided. Wages are sticky as well in the natural rate-rational expectations models, and that is what allows them to generate unemployment. But as we have seen, that in itself is not an argument for stabilization policy. Nor do adaptive expectations constitute a theory. Not only is adaptive expectation formation inconsistent with the usual assumptions of individual optimizing behavior, it does not restrict data. Additional *ad hoc* assumptions must be imposed in order to have a testable theory.

Others in the profession are not going to agree that the contest is over. And although it is not possible to respond now to criticism which we hope this publication will evoke, it does seem appropriate to

respond to the criticisms of the previously published *Studies in Monetary Economics 2*, "Rational Expectations and the Theory of Economic Policy," by Sargent and Wallace. It is partly in response to these criticisms that the policy position advocated in this volume was developed.

In that publication, policy implications were derived from a very simple macroeconomic model incorporating the natural rate and rational expectations hypotheses. Although this model might be criticized as being another unrewarding effort in macroeconomic theorizing, its crucial relationships seem consistent with a general equilibrium model of Robert Lucas [3].[†] In Lucas's model there are assumed standard utility-maximizing individuals who face uncertainty due to real disturbances and due to an aggregate noise. That noise is taken to be under the control of the monetary authority. Prices are assumed free to move, and it is supposed that there are neither costs to acquiring information nor relative advantages among agents in accessing it. No useful exchange role is given to money in this model. The policy implication of this model is that one deterministic feedback rule for the money supply is as good as any other. Since real effects of monetary policy derive only from effects on aggregate noise, all deterministic feedback rules are equally successful in minimizing that noise.

Criticism of the Sargent-Wallace model has generally taken the direction of showing that under more "realistic" assumptions monetary policy *can* have systematic effects on real output. The assumptions of the model which are most often attacked are rational expectations, costless information, no information access advantages for the monetary authority, and perfect price flexibility. The critics' procedure is generally to start with the basic structure of the Sargent-Wallace model and then graft on to that model an *ad hoc* constraint which represents such things as costs to changing prices or informational advantages of the monetary authority, etc. It is then straightforward to show that the Sargent-Wallace neutrality conclusion no longer holds.[‡]

It would seem that those efforts are heading down a dead-end road. First of all, the question economists should be exploring is whether monetary stabilization policy can increase social welfare — not whether it can have a systematic effect on real output. Second, it seems very unsatisfying to search for monetary policy rules to maximize social welfare in models of what are essentially nonmonetary economies. A variant of Hahn's proposition would seem to apply.[§] If we start with a model where money is not useful in exchange, one deterministic policy rule is as good as any other. If we then graft onto the model an *ad hoc*

[†] Note that numbers in brackets | | correspond to the reference list on page 103.

[‡] Money is inessential in an economy when no monetary variable need enter into the description, or determination, of the economy's equilibria. See Hahn [2].

[§] See, for example, Fischer [1], Phelps-Taylor [4], and Taylor [5].

constraint, the optimal policy rule will be the one that comes closest to neutralizing the constraint.

If agents make biased forecasts from given information sets (a very dubious proposition in itself and one that is in contradiction to the assumption of optimizing agents), then the monetary authority should publish unbiased forecasts. If the monetary authority has an informational advantage over individual agents, it should reveal that information rather than trying to exploit the advantage. If there are fixed costs to information gathering, then perhaps a central agency should gather information and make it available. If there is a cost to changing prices, then the monetary authority should follow a feedback rule which minimizes changes in money prices in order to maximize welfare.

As Frank Hahn's proposition suggests, however, there is a criticism of the Sargent-Wallace model which is valid: there is no exchange role for money in their model. When this fact is recognized, it is not altogether surprising that they find no constructive role for monetary policy. This also suggests that a way to proceed in research is to attempt to build macro-models by aggregating behavioral relations of optimizing agents in economies where money is useful as a medium of exchange (in Hahn's terms, where money is essential).

Although many have taken this route, unfortunately none has yet succeeded. This forces us into the uncomfortable position of stating what we believe to be optimal policy based on a model which has not yet been explicitly formulated. There are some features of a monetary economy, however, which are fairly well understood and which lead us to espouse a policy of stabilizing an aggregate price around a preannounced path.

A model which attempts to capture the medium of exchange function of money will almost certainly include costs to transacting or contracting, uncertainty with respect to future prices, and absence or nonfunctioning of certain markets. This last feature requires that a complete theory of money take the existence of markets as endogenous, and it is this requirement which makes the theory of money so difficult to formalize. Nevertheless, since agents accept money in exchange with the intention of purchasing goods at a future date, it seems reasonable to expect the usefulness of money as a medium of exchange to increase as the uncertainty about future money prices is diminished.

In an economy where money is not useful as a medium of exchange, we have argued one deterministic feedback rule for the money supply is as good as any other. In a monetary exchange economy we now argue that the optimal rule is one which maximizes the usefulness of money as a medium of exchange. We believe a policy of stabilizing an aggregate price around a preannounced path is such a rule.

Advocacy of such a rule would appear to put us in the camp of the hard-hearted who worry about inflation but have no sympathy for the unemployed. This, however, is not the case. We believe our rule can be derived from an ordinary policy maker utility function, which depends

on paths for both inflation and unemployment, and from our yet to be fully worked out model of the economy. In other words we argue that the rule we advocate will minimize unemployment over time.