Ruling out pareto dominated monetary equilibria[☆]

Bill Dupor*

Finance Department, The Wharton School, 2322 Steinberg Hall-Dietrich Hall, University of Pennsylvania, Philadelphia, PA 19104-6367, USA

Abstract

It is well known that under nominal money supply rules accomplished through lump sum transfers, non-uniqueness and non-optimality of the resource allocation often obtains in monetary models. We show that uniqueness and optimality of the resource allocation obtains if the monetary authority conducts Friedman's rule through open market operations. Our result necessitates and we provide a clarification of existing irrelevance theorems for open market operations. Our result also provides a partial resolution of the uniqueness-efficiency conflict of nominal money supply rules raised by Woodford (Economic Theory 4 (1994) 345–380). © 2001 Elsevier Science B.V. All rights reserved.

JEL classification: E31; E52; F33

Keywords: Fiscal theory of the price level; Irrelevance theorems; Open market operations

* Corresponding author. Tel.: + 1-215-898-7634; fax: + 1-215-898-6200.

E-mail address: dupor@wharton.upenn.edu (B. Dupor).

Monetary policy determines the composition of the government's portfolio. This fact has been underemphasized in the study of nominal money supply rules. Early work on equilibrium monetary models, such as Brock (1974, 1975) and Lucas and Stokey (1983, 1987), studied monetary policies of the *k*-percent rule recommended by Milton Friedman. In these models, changes in the money stock are accomplished through nominal lump sum transfers. Subsequently, researchers, including Gray (1984), Matsuyama (1990, 1991), Obstfeld and Rogoff (1983, 1986), Obstfeld (1984), Woodford (1994), show, in both cash-in-advance and money-in-the-utility function models, that nominal money supply rules under lump sum taxes can imply multiple equilibria. Often, there are important differences in welfare across equilibria. If monetary policy determines the composition of the government's portfolio, then the emphasis given to lump sum injections may be misplaced.

This paper provides conditions under which the properties of equilibria depend upon whether nominal money supply rules are accomplished through open market operations or nominal transfers. If the monetary authority adopts Friedman's rule through open market operations, the resource allocation in every equilibrium is unique and pareto optimal. This is not true if Friedman's rule is adopted using nominal transfers. Our result necessitates a clarification of existing irrelevance theorems for open market operations, which we will provide.

Our paper also addresses whether or not there is a conflict between optimality and uniqueness of equilibrium under nominal money supply rules. Woodford (1994) presents a detailed characterization of the equilibrium properties of the Lucas-Stokey (1983,1987) model under nominal money supply rules accomplished through nominal transfers. For this rule, Woodford finds the potential for both nominal indeterminacy, where the resource allocation is uniquely pinned down, but the nominal price sequence is indeterminate, and real indeterminacy, where the resource allocation (as well as the nominal price sequence) varies across equilibria.[1] Woodford goes on to show that sufficient conditions for equilibrium uniqueness require the government to choose a high money growth rate. A high money growth rate, however, leads to an inefficient outcome since agents attempting to economize on cash balances hold a socially suboptimal amount of the cash good. Money supply rules accomplished through lump sum taxes, therefore, may lead to a conflict between attempting to create high welfare for agents, by adopting a negative growth rate of money, and guaranteeing equilibrium uniqueness, by adopting a high, positive money growth rate. Our optimality and uniqueness result offers a partial solution to this conflict.[2]

---

[1] An example of real indeterminacy is a self-fullfiling inflation where real balances approach zero asymptotically. Obstfeld and Rogoff (1983), for example, consider this type of equilibria.

[2] The nominal price level remains indeterminate under the policy developed here; therefore, ours is a partial resolution of Woodford's conflict.