Poverty Traps, Indeterminacy, and the Wealth Distribution[1]

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We consider a one-sector growth model in continuous time with a production externality and endogenous labor supply. There is a continuum of households who have identical preferences but differ with respect to their initial wealth. We show that there exist economies such that an indeterminate steady state exists for some wealth distribution but not for others. A second result is that a redistribution of wealth may drive the economy from a steady state with strictly positive output to a poverty trap in which output converges asymptotically to zero. These results indicate that differences in the wealth distribution may be responsible for drastic differences in the long-run standard of living. *Journal of Economic Literature* Classification Numbers: D31, D50, O41.   © 2002 Elsevier Science (USA)

Key Words: wealth distribution; endogenous labor supply; production externalities; indeterminacy; poverty traps.

1. INTRODUCTION

The aim of the present paper is to analyze the effect of the initial wealth distribution on the dynamics and the determinacy of equilibria in a continuous-time model with heterogeneous and infinitely lived households, endogenous labor supply, and production externalities. To our knowledge, this is the first paper that discusses the issue of indeterminacy in a dynamic model with heterogeneous agents and endogenous labor supply.[2] Due to the particular form of preferences and technology that we choose, we are able to obtain an extended characterization of the dynamics produced by the model. We can show that there exist economies for which an

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[2] Some preliminary results for a similar model can be found in Ghiglino and Olszak-Duquenne [6]. Nishimura and Shimomura [12] apply a similar approach in a multicountry growth model with heterogeneous countries.

indeterminate steady state exists for some initial distributions of wealth but not for others. Another result is that a redistribution of wealth may drive the economy from a steady state with strictly positive production either into a poverty trap, in which output converges asymptotically to zero, or into a situation in which no equilibrium exists at all. We provide an example in which this effect occurs for a redistribution that consists simply in equalizing wealth levels across all individuals. These results show that the initial wealth distribution has several channels through which it can affect the long-run behavior of the economy.

To put our results into proper perspective, it is useful to relate them to some recent contributions to the literature. Early neoclassical models have the property that for any given specification of the production technology and the households' preferences (satisfying standard convexity assumptions), the long-run behavior of all equilibria is the same. This is the case because these models have a unique and globally attractive stationary equilibrium. There are several ways in which these simple models can be extended to produce multiple equilibria or multiple balanced growth paths. The inclusion of leisure in the households' preferences is one of them. Models in which the assumption of endogenous labor supply generates multiple equilibria have been explored within the neoclassical framework (see, e.g., de Hek [4] and Sorger [13]) and within the framework of endogenous growth theories (see, e.g., Ladron-de-Guevara *et al.* [10], de Hek [5], and Sorger [14]). As multiplicity of stationary equilibria or balanced growth paths typically implies that the initial conditions have an effect on the eventual fate of the economy, it follows that differences in the long-run performance of economies are due to historical reasons. Empirical studies, however, do not single out any aggregate macroeconomic variable (such as, for example, average income) as an obvious candidate that determines the long-run behavior. It is therefore sensible to consider a disaggregated variable as the determining factor. In the present paper we focus on the initial distribution of wealth, that is, on the individual income levels of all households.

A second possible explanation of nonconvergence, i.e., of different long-run performances of similar economies, is based on the existence of multiple equilibrium paths (quite often even infinitely many of them) that start at the same initial condition. Such indeterminacy has been shown in a variety of models with externalities and an endogenous labor supply, as in Benhabib and Perli [2] and Benhabib and Farmer [1]. These economies are difficult to analyze, because there are different possible (rational) beliefs about the future evolution of the economy and the actual evolution of the economy depends on how these beliefs are coordinated. It follows that these economies are very sensitive to social and political choices, whereby this is perhaps even more relevant when the choice between leisure and