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Dynamic Models and Economic Growth*

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Summary. – Standard theory of economic growth has followed the usual approaches–the mathematico-imaginative and the mechanico-descriptive. Money fetishism made it so that it is dominated by the formula 'save-invest-grow'. The fact that economic growth involves not only quantitative changes but also qualitative transformations is generally ignored. The understanding of growth calls for a new approach, the analytico-physiological. The inadequacy of standard theory is admirably illustrated by the proof that the Leontief dynamic model, even if considered only as a purely quantitative expansion model, rests on utterly unrealistic assumptions.

If I am to know an object, though I need not know its external properties, I must know all its internal properties. Ludwig Wittgenstein, *Tractatus Logico-Philosophicus* (2.01231)

I. INTRODUCTION

In this paper I propose to examine critically the validity of standard dynamic models as adequate representations of actual processes and hence as safe instruments of economic planning. Specifically, I will deal with the question of whether these models cover all the important factors involved in the process of reiterative equilibria, as each situation emerges from past decisions and activities. My answer to this new question–as I believe the question to be–is in the negative. But the paper presents a second, yet not subsidiary, interest in that the method by which the question was conceived and treated also is off the beaten path.

Let me begin by observing that the manners in which economic problems have been treated may be divided into three distinct, but not discretely distinct, categories. There are, first, the studies erected on one or several assumptions having no operational value whatsoever outside the paper-and-pencil concatenation. This category, to which I propose to refer as *mathematico-imaginative,* is illustrated by the mathematical exercises which assume that future demand is known to the end of Time, or presuppose that the discount factor of all future degrees of utility (disutility) is also known, or assert that technological progress measured by some aggregate economic coordinate always proceeds at a known exponential rate. How far such flights of fancy may depart from actuality is revealed by some studies which assume that there are as many traders as the real numbers (Aumann [1966]); others assume even that there are more traders than that (Brown and Robinson [1972]). Being skilled mathematicians, the authors of these studies must have known however that even an infinite universe cannot accommodate a continuum of three-dimensional objects. It is because of the fact that most of the mathematico-imaginative studies deal with such unreal structures that these studies have been repeatedly denounced as revealing a mathematical interest–often, not even of a high level of difficulty–rather than an interest in the economic aspect of the problem (cf. Georgescu-Roegen [1966, pp. 114–24; 1970a, pp. 117–27; 1971, pp. 300–40]). On the other hand, we would be mistaken to overlook their purely didactic service or to deny that mathematical economics of a sober drive is an indispensable tool of the economic discipline.

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