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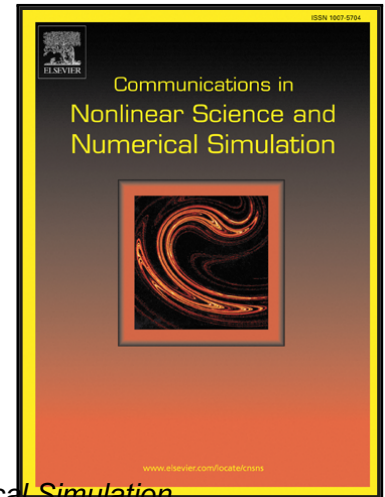
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Disequilibrium dynamics in a Keynesian model with time delays

Luca Gori* • Luca Guerrini[†] • Mauro Sodini[‡]

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Abstract

The aim of this research is to analyse a Keynesian goods market closed economy by considering a continuous-time setup with fixed delays. The work compares dynamic results based on linear and nonlinear adjustment mechanisms through which the aggregate supply (production) reacts to a disequilibrium in the goods market and consumption depends on income at a preceding date. Both analytical and geometrical (stability switching curves) techniques are used to characterise the stability properties of the stationary equilibrium.

Keywords Delay differential equations; Keynesian model; Stability crossing curves

JEL Codes C62; E12; E32; E62

AMS Codes 34K18; 34K20

1 Introduction

Macroeconomic models of Keynesian tradition have always played an influential role in the economic literature and, amongst other things, they have represented a natural starting point for the formulation of economic dynamic problems (e.g., Allen, 1959). In this respect, there are at least two distinct modelling approaches. On the one hand, there is plenty of research dealing with equilibrium dynamics, i.e. models in which the equality between aggregate demand and aggregate supply (production) in the real or goods market holds at every date. On the other hand, several works also account for disequilibrium dynamics, i.e. models in which economic dynamics is studied based on the assumption that aggregate demand can be different from aggregate production. Within this vast stream of research several issues were addressed: for instance, the study of problems related to international trade or those accounting for the non-neutrality of money (e.g., Chiarella and Flaschel, 2000). In addition, some Keynesian intuitions have also led to the building on models unusual in the tradition of economic literature due to their non-trivial mathematical properties. To this purpose, we mention here the works of 1) Asada and Yoshida (2001), the aim of which is to study the macroeconomic effects of a "policy lag" (Asada and Yoshida, 2001, p. 282) in a nonlinear dynamic version of a Keynesian model. In

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