Chaotic Dynamics of a Piecewise Smooth Overlapping Generations Model with Multitude of Technologies

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Abstract

In this study, we develop a simple overlapping generations model that can exhibit chaotic fluctuation. The key assumption is that a firm's owner can choose from a continuum of technologies of production. As a result, the model reduces to a piecewise smooth map, which is tractable enough so its dynamics can be analytically investigated in depth. To study chaotic behaviors in the model, we adopt two approaches: *border collision bifurcation* and *Markov property*. The border collision bifurcation theory characterizes the routes from a globally attracting steady state to other non-stationary behaviors. The Markov property reveals the chaotic dynamics of the model for a much larger set of parameter values.

JEL Classification Numbers: C62; E32; O14; O41 Key Words: Technology Choice; Piecewise Smoothness; Endogenous Fluctuations; Overlapping Generations Model; Chaotic dynamics

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