A New Sufficient Condition for Ergodic Chaos with an Application to the Matsuyama–Solow Model of Cyclical Growth*

Kenji Sato†

JSPS Research Fellow

Graduate School of Economics, Kyoto University

Makoto Yano‡

Kyoto Institute of Economic Research, Kyoto University

Abstract

In economic studies, the condition of expansiveness and unimodality has been widely recognized to be useful in proving ergodic chaos, which is a complex behavior with desirable observability. In this paper, a less conservative sufficient condition is proposed. We employ the result by Lasota and Yorke that proves existence of invariant measures for a dynamical system with an expansive iterate. An application to an economic model is also examined. It will be demonstrated that ergodic chaos can take place in a much larger range of parameter values than was perceived.