On the Chaotic Behavior of a Two-Sector Optimal Growth Model with Durable Capital[*][†]

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Abstract: By virtue of chaos theory, strong nonlinearity has become better understood as a cause of permanent fluctuations in economic models. One of the remaining theoretical concerns is to what extent the nonlinearity can be weakened.

In the present paper, ergodic chaos in a two-sector optimal growth model with a durable good will be examined. We assume that production functions are of Leontief type and the consumer's felicity function is linear. We obtain the optimal policy function that is unimodal but not expansive, in which case the well-known sufficient condition for ergodic chaos is never met.

This difficulty will be overcome by applying a recently obtained sharper condition that allows for nonexpansive policy functions. As a result, the present paper gives an evidence that explains a weaker form of nonlinearity still explains a very complex phenomenon.

Keywords: two-sector model, nonlinear dynamics, optimal ergodic chaos, nonexpansiveness

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