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Goodwin Accelerator Model Revisited
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Abstract:
Dynamics of Goodwin's accelerator business cycle model is reconsidered. The model is characterized by a nonlinear accelerator and an investment time delay. The role of the nonlinearity for the birth of persistent oscillations is fully discussed in the existing literature. On the other hand, not much of the role of the delay has yet been revealed. The
purpose of this paper is to show that the delay really matters. In particular, two main results are obtained. In the original framework of Goodwin (1951), it is first demonstrated that limit cycles arise for smaller values of the delay and so do sawtooth oscillations for larger values and that the threshold value between these cases depends on the selection of an initial function. In the extended framework in which a consumption delay, in addition to the investment delay, is introduced, it is then demonstrated that there is an interval of delay in which the limit cycle coexists with the sawtooth oscillation. The possibility of the coexistence has an initial-point dependency.

Keywords: Investment delay, Nonlinear acceleration principle, Stability switch, Consumption delay, Limit cycle, Sawtooth oscillation

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