

EFFECTS OF STOCHASTICITY
ON AN AGGREGATE DYNAMIC MODEL
OF COMMODITY CYCLES

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ABSTRACT

In previous papers, various approaches to studying the relationships between an aggregate dynamic model and an underlying, stochastic system have been reported. These approaches include the use of a Master Equation model to derive the aggregate model from stochastic hypotheses, and the summation over a population of dynamic sub-models to estimate the aggregate behaviour. In this paper, a commodity cycle model is re-formulated as a stochastic, discrete simulation model to study the effects of stochasticity on the aggregate behaviour of the system. Global variables provide aggregate information links to control the arrival and departure of new entities (commodity units and capacity units). A comparison of the aggregate dynamics of the stochastic and the equivalent system dynamics models is made under conditions in which the dynamic model is oscillatory and undergoing period-doubling bifurcations leading to chaos.