

“Maintaining Capital in the Presence of Obsolescence”

Naohiko Wakutsu  
(Dokkyo University)

We examine the problem facing an owner on deciding how best to maintain a capital asset that is subject to both physical wear and tear and obsolescence. The model developed is a non-linear extension of the Thompson model, an early contribution to the optimal-control literature on deterministic maintenance. The model is estimated from the U.S. data on rent and maintenance expenditures on office buildings, and is then used to carry out counterfactual simulations. It is shown that the path of an optimal maintenance expenditure is different according to the asset being a high-deterioration type or not (i.e., whether it wears out rapidly without maintenance or not). Also, it is demonstrated that a high obsolescence rate and a high deterioration rate could have different effects on an optimal maintenance policy.