

**The Value Function as a Solution of Hamiltonian Systems in Linear
Optimal Control Problems with Infinite Horizon**

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The paper deals with analytical construction of the value function for a linear control problem with infinite horizon arising in problems of economic growth. The proposed algorithm is based on analysis of asymptotic properties of the Hamiltonian system in the Pontryagin maximum principle. The method of indeterminate coefficients is applied for identification of parameters of the value function. Sensitivity analysis of parametric solutions is implemented with respect to qualitative properties of steady states of the Hamiltonian system. The structure of optimal feedbacks is outlined and asymptotic behavior of optimal trajectories is analyzed. Applications to economic growth modeling are discussed.