THE UNIVERSITY OF CHICAGO | DEPARTMENT OF STATISTICS

MASTER'S THESIS PRESENTATION

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Solving and Estimating Structural Dynamic Equilibrium Models

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ABSTRACT

This paper focuses on using value iteration and particle filtering for the problem of solving and estimating structural parameters of dynamic equilibrium models, which typically do not admit a closed-form solution. The model applied in this paper is a basic corporate finance model. It is a partial equilibrium model cast in discrete time, with an infinite horizon. This paper uses a classic reinforcement learning method, value iteration as nonlinear function approximators for agents' optimal policies, which are solved via grid searching algorithm. Once the models are solved, the paper uses a nonlinear likelihood-based method, particle filtering to estimate the posterior distribution of their structural parameters.