



Department of
Mathematical Sciences

Master's Thesis Defense

Mr. Lars Moestue

MS Graduate Student

Under the Supervision of Dr. Stockbridge

**Friday,
Apr 10, 2020
at 10:00 am**

*Online via
Blackboard
Collaborate*



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Analysis of Inventory Models with Random Supply Using a Long-Term Average Criterion

We will use different numerical algorithms for inventory models, where the inventory level is described by a stochastic differential equation and therefore random. Furthermore we assume that order supply is randomly distributed. The goal is to find the optimal order strategy to minimize the long-term average costs. This stochastic problem can be reformulated as non-linear optimization problem. However the problems are too complex to solve by hand, so we need to use numerical optimization algorithms and for some of the models even numerical integration methods. These algorithms then can be used to analyze some properties and make sensitivity analyses of different model parameters for inventory models based on a Brownian motion with different distributions for the supply. In this thesis we will see that this method works for a wide range of supply distributions. Some of them are relatively easy like the uniform distributions. Others are discrete like the binomial distribution. But there are also more complex distributions like the beta distribution and the truncated normal distribution, where this approach works as well.

Committee Members:

Prof. Richard Stockbridge (Advisor); David Spade & Chao Zhu



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