

Markov decisions chains and their applications

BCAM

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General information

- General theory + applications
- Exercises: Excel and written
- Mon-Th: question hour at ? in ?
- Background:
 - probability theory
 - preferably Markov chains
- ger.koole@vu.nl
- lecture notes (LN) + transparencies at www.gerkoole.com/BCAM

Global contents

- Mo: Poisson equation
- Tu: Backward recursion
- We: Modeling issues
- Th: Monotonicity
- Fr: Incomplete information

Introduction

- Revenue management: Littlewood's model
 - newsvendor
- But: overlapping periods, buy down
- Solution: close low-fare class at certain moment
 - time-dependent MC with rewards
- Is that optimal? Vary moments
 - stochastic dynamic programming

Introduction (continued)

- What happens in ∞ -horizon models?
 - Expected reward can be unbounded!
- What if there are multiple flights?
 - High-dimensional model, computational problem
- Does a class stay closed once closed?
 - Structural properties
- What if we're not sure about the demand?
 - Partial-information models