

# Quantitative Macroeconomics

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## Overview

### **Chapter 1: Complete markets and growth.**

#### *I. Complete markets models.*

1. Deterministic models.
2. Risk, consumption insurance, and asset pricing.

#### *II. The neoclassical growth model in discrete time.*

#### *III. The neoclassical growth model in continuous time.*

### **Chapter 2: Life-cycle and overlapping generations.**

#### *I. Life-cycle models.*

#### *II. Overlapping generations models.*

1. Two-period OLG models.
2. Multi-period OLG model.

## **Chapter 3: Solution methods for macro models.**

### *I. Numerical methods.*

1. Numerical differentiation and integration.
2. Nonlinear systems.
3. Numerical optimization.
4. The functional equation problem.

### *II. Local methods.*

1. Perturbation methods.
2. Linearization.
3. Solving linear dynamic systems with aggregate risk.

### *III. Global methods.*

1. Projection methods.
2. Value function and Euler equation algorithms.
3. Error analysis.

## **Chapter 4: New Keynesian models.**

### *I. Neoclassical monetary models.*

1. Fiscal and monetary policy.
2. Local determinacy and global multiplicity.

### *II. Monopolistic competition and sticky prices.*

1. Monopolistic competition models.
2. Sticky price models.

### *III. New Keynesian models.*

1. The basic NK model.
2. Solving the model locally.
3. Monetary policy shocks.
4. A medium-scale NK model.

## **Chapter 5: Heterogeneous agents.**

### *I. Idiosyncratic risk.*

### *II. The heterogeneous agent model in discrete time.*

1. Equilibrium.
2. Numerical solution.
3. Transition dynamics and “MIT shocks”.
4. Endogenous grid method.

### *III. The heterogeneous agent model in continuous time.*

1. Equilibrium.
2. Numerical solution.

### *IV. Idiosyncratic and aggregate risk.*

1. Numerical algorithms.

### *V. OLG model with idiosyncratic risk.*