The contemporary financial system: an introduction for financial engineers

Syllabus

Prof. Allan M. Malz

Fall 2016

Course description

The course presents an overview of the financial system, and introduces financial concepts and models in the context of contemporary issues. It provides an introduction to finance theories and models needed to understand the organization and institutions of the financial system, and the role of the public sector in it. The course will endeavor to make comprehensible the enormous changes leading up to and following the financial crisis, to provide institutional context and background for quantitative finance, and to prepare students to participate meaningfully in discussions of current issues.

Prerequisites

The course assumes basic familiarity with probability and statistics, instruments of the financial markets, and asset pricing models. It’s appropriate for graduate students as well as advanced undergraduates who meet these requirements.

Assignments and grades

There will be two assignments, giving students the opportunity to rehearse the quantitative techniques and concepts presented, and midterm and final exams. Grades will be based primarily on the assignments and exam, but weight will also be placed on class discussion.
Course outline

Lecture 1   Financial intermediation

- Functions of financial intermediation
- Introduction to intermediary and security types
- Development of the financial system over the past half-century
- Broad economic and policy developments over the past half-century
- The decline in interest rates

Lecture 2   Risk, return and asset pricing

- Introduction to financial risk
- The standard asset pricing model
- Volatility measurement and estimation
- Portfolios: risk and diversification
- The Capital Asset Pricing Model and factor models
- Alternative investments and alternative beta

Lecture 3   Measuring market risk: Value-at-Risk

- Value-at-Risk
- Evaluating the accuracy of Value-at-Risk

Lecture 4   Extreme events

- Limitations of the standard asset pricing model
- Alternatives to the standard model
- Stress testing
- Extreme value theory
- How asset prices express risk
Lecture 5  Credit and counterparty risk

- Default, migration, bankruptcy
- Counterparty risk
- Forms of debt and capital structure
- Collateral and safe assets
- Credit spreads and credit spread risk
- International lending: capital flows and currency markets
- Sovereign debt markets

Lecture 6  Securitization

- Origins of securitization
- Securitization and risk transfer
- Valuing securitization tranches
- Copula models

Lecture 7  Liquidity and liquidity risk

- Funding liquidity risk
- Collateralized securities markets
- Shortage of safe assets
- Market liquidity risk

Lecture 8  Leverage and its forms

- Basic definitions
- Functions of leverage
- Economic capital
- Carry trades
- Embedded leverage

Lecture 9  Monetary policy and financial markets

- Basics of monetary policy in advanced economies
- How central banks are organized in advanced economies
- How monetary policy works through financial markets
Lecture 10  Financial crises

- Typical features of financial crises
- Behavior of asset prices during crises
- Causes of financial crises
- Anticipating financial stress

Lecture 11  Financial regulation

- Rationale and scope of financial regulation
- Capital standards for banks
- Regulatory stress testing
- Too-big-to-fail and SIFIs
- Systemic risk and financial stability policy
- Issues in regulation before and after the crisis

Lecture 12  Role of the public sector in financial crises

- Crises and the lender of last resort function
- The economics of monetary policy in normal times
- The central bank response to the global financial crisis
- Impact of unconventional monetary policy on financial markets
- Reaching for yield
- Exiting unconventional monetary policy