

**Hong Kong University of Science and Technology**  
**Department of Economics**  
**ECON 5700: Macroeconomic and Financial Risk Management**  
**2021-22 Spring**

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**Description**

Macroeconomic and financial risk is the likelihood that changes in macroeconomic or financial conditions like interest rates, exchange rates, sovereign credit rating, government policy or regulation, political stability, commodity prices, or equity prices will affect the economic profit or investment return of an entity. For instance, if the central bank tightens monetary policy by increasing interest rates, the cost of borrowing will rise and it will lower profit for a firm which relies on debt financing. The rising interest rates also lower the investment return for bondholders. If a country devalues its currency or defaults on its sovereign debt, creditors or investors from foreign countries will realize investment loss. This course introduces fundamental concepts of macroeconomic and financial risk management. It focuses on the identification, quantification, and management of various macroeconomic and financial risks. It evaluates and applies different tools and procedures, comprising quantitative measures and qualitative assessment, to measure and manage risk. Problems and challenges that arise in risk management process are also addressed.

**Prerequisite**

ECON 5280

**Assessments**

Class Attendance	10%	
Quiz 1*	45%	Online quiz on March 17
Quiz 2	45%	Online quiz on May 5

\*If you miss the online quiz 1 due to sickness or other unforeseeable emergencies, you must present an official document (e.g., medical proof from your doctor). The weight of quiz 1 is then added to quiz 2.

## **Course Intended Learning Outcomes (CILOs)**

Upon successful completion of this course, students will be able to:

1. Analyze qualitatively and quantitatively economic and financial risk exposures for financial institutions. (PILG 1, 4)
2. Apply risk management tools and procedures to manage economic and financial risks. (PILG 1, 4)
3. Address problems and challenges in the risk management process. (PILG 1, 4)

## **Course Outline**

### 1. Foundation of Risk Management (Weeks 1-3)

- Identification of Macroeconomic and Financial risks
- Introduction to Risk Measurement and Management tools
- Delineating Efficient Portfolios
- Capital Asset Pricing Model
- Risk-Adjusted Performance Measurement
- Multi-Factor Models of Risk and Return

### 2. Quantitative Methods for Risk Management (Weeks 3-4)

- Time Value of Money
- Probability
- Basic Statistics
- Estimating Volatilities and Correlations for Risk Management

### 3. Mechanics and Valuation of Financial Products (Weeks 5-7)

- Interest Rates and Valuation of Bonds
- Determination of Forward and Future Prices
- Mechanics and Properties of Options
- Options Pricing: Binomial Model, Black-Scholes-Merton Model, Greek Letters

### 4. Risk Management Models for Macroeconomic and Financial Risk (Weeks 8-10)

- Value-at-Risk and Stress Testing
- Hedging Strategies Using Futures Contracts
- Risk Metrics and Hedges for Fixed Income Securities
- Managing Foreign Exchange Risk
- Managing Credit Risk
- Managing Operational Risk
- Country and Sovereign Risk Measurement

## **Teaching Approach**

This course is primarily delivered through online lectures and discussion.

<b>Teaching &amp; Learning Activities</b>	<b>Roles in the Course</b>	<b>Course Learning Outcomes Addressed</b>
Lectures	Explain key concepts and models to students.	1, 2, 3
Class discussion	Learn to develop critical thinking in analyzing risk-management questions.	1, 2, 3

## **Teaching Materials**

- Lecture notes and supplementary reading materials (downloadable from the course's CANVAS)

## **Other References (available from HKUST library, either online access or hardcopy)**

- Allen, L., Boudoukh, J., Saunders, A., (2004). *Understanding Market, Credit and Operational Risk: The Value at Risk Approach*, New York: Wiley-Blackwell.
- Allen, S., (2013). *Financial Risk Management: A Practitioner's Guide to Managing Market and Credit Risk*, 2nd Edition, New York: John Wiley & Sons.
- Amenc, N., Le Sourd, V., (2003). *Portfolio Theory and Performance Analysis*, West Sussex, England: John Wiley & Sons.
- Damodaran, A. (2015). *Country Risk: Determinants, Measures and Implications - The 2015 Edition*.
- Hull, J., (2014). *Options, Futures, and Other Derivatives*, 9th Edition, New York: Pearson.
- Hull, J., (2015). *Risk Management and Financial Institutions*, 4th Edition, Hoboken, NJ: John Wiley & Sons.
- Lam, J., (2014). *Enterprise Risk Management: From Incentives to Controls*, 2nd Edition, Hoboken, NJ: John Wiley & Sons.
- Miller, M., (2013). *Mathematics and Statistics for Financial Risk Management*, 2nd Edition, Hoboken, NJ: John Wiley & Sons.
- Schroeck, G., (2002). *Risk Management and Value Creation in Financial Institutions*, New York: John Wiley & Sons.
- Tuckman, B. (2011). *Fixed Income Securities*, 3rd Edition, Hoboken, NJ: John Wiley & Sons.

## **Academic Policy**

Dishonesty or plagiarism will not be tolerated. Any student violating HKUST Academic Integrity and Honor Code (<http://www.ust.hk/vpao/integrity>) will be subjected to disciplinary procedure.