

Hong Kong University of Science and Technology

FINA 690N Risk Management of Financial Institutions

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Office Hours: by appointment. Students are welcome to ask questions after class hours.

Lecture Dates: 3/2, 10/2, 24/2, 3/3, 10/3, 17/3, 24/3, 31/3 (no class on 17/2 due to CNY holidays)

Course Objectives:

There are several main topics we would focus on:

- i. Tools for interest rate risk management. Participants in the course would be familiarized with the measures of interest rate risk for a financial institution, and learn how to manage interest rate risk using futures, options and swaps.
- ii. Students would be exposed to credit risk models presently used in practice, and learn how to manage off-balance sheet risk, liquidity risk and bank capital adequacy.

Syllabus

Lecture notes will be given for all these chapters. Students are expected to be very familiar with the contents in the lecture notes. The core of this course will be on items 3 – 10.

1. Overview of financial services industry

Lecture notes will be given for the overview (only a 1 – hour overview will be done in class).

Students may, if they so wish, refer to [1] Chs. 1-6. Students are not expected to know all the materials in these chapters; the core of the course is not on these chapters. Lecture notes would be sufficient for Overview.

2. Introductory Derivatives and Bond Valuation, Term Structure of Interest Rates. An extra class which is not part of regular class schedule would be offered to those who have not been exposed to these topics (to be arranged on a Sunday afternoon, if requested by any student).

3. Measures of Interest Rate Risk: Duration Gap and Periodic Gap

- Periodic (Repricing) Gap and Duration Gap for a Financial Institution
- Changes in market values of equity and interest income given different interest rate scenarios.

[1] Ch. 8, 9

[21] level 1 Ch. 7

4. Management of Interest rate risk

- Choice of maturities and durations of loans and loan portfolios
- Liability management
- Portfolio rebalancing
- Futures, Options and Swaps: characteristics and pricing of futures, options and swaps; using futures, options and swaps to manage interest rate risk.

[1] Ch. 24, 25, 26

[23] Ch. 1, 2, 3, 4.

5. Bank Performance and Evaluation

- Ratio Analysis
- Bank Accounting: Interpreting Bank's Financial Statements

Lecture notes

6. Credit Risk

- Loan Pricing and Return on a Loan
- Factors in arriving at credit decisions:
 - Borrower-specific factors
 - Market-specific factors
 - Borrower-specific factors
 - Reputation
 - Leverage
 - Volatility of Earnings
 - Collateral
 - Market-specific factors
 - The Business Cycle
 - Availability of credits during Booms and recessions as well as industry characteristics.
 - Level of interest rates
 - High interest rates increase borrowing costs as well as tempt borrowers to take more risks.
- Measuring Risk of Default of Loans

Quantitative models

- Credit Scoring Models
- Linear Probability Models
- Logit Models
- Linear Discriminant Analysis
- Recent Credit Risk Models
 - Mortality rate approach
 - RAROC models (Risk adjusted Return on capital)
 - Option Models

- Credit Risk: Loan Portfolio and Concentration Risk
- Loan (or bond) Ratings and Sovereign Risk Evaluation
- Sovereign Risk and Debt Evaluation

[1] Chs. 11, 12

7. Off-balance sheet risk management

- Funds gap problem
- Solutions to the funds gap problem
- Securitization of assets
 - Risk in securitization of assets
 - Impact of securitization of assets on banks
 - Sales of Loans to raise funds
- Sales of Loans to Raise funds
 - Types of loan sales
 - Reasons behind loan sales
 - Risk in Loan sales
- Standby Letters of Credit
 - Benefits
 - Structure of SLCs
 - Risks associated with SLCs
 - Concerns of the regulators
- Management of other Off-Balance Sheet Transactions
 - Loan commitments
 - Forward exchange contracts
 - Interest-rate and currency swaps

[1] Ch. 13

8. Liquidity Risk Management

- Meaning of Liquidity
- Liquidity Gap Liquidity Risk
- Liquidity Risk versus Profitability
- Development of Liquidity Strategies
- Why liquidity management is important
- Practice of Liquidity Management Today
- A Problem Bank with Liquidity Problems
- Factors affecting liquidity needs
- Measures of Liquidity
- Competing for deposits
- Liquidity Planning
- Supervision of Liquidity internationally

[1] Ch. 17, 18
HKMA Publications

9. Capital Management

- Functions of bank capital
- Risks faced by bank's shareholders
- Types of Bank Capital
- Measuring Bank Capital
- Book Value vs. Market Value of Capital
- Capital Adequacy Requirements
- Basel I and II

[1] Ch. 20

<http://www.bis.org/publ/bcbsca.htm> (selected pages only)

10. Overall Risk Management

- Type of risks related to treasury activities and definition
- Operational risk
- Legal and regulatory risk
- Liquidity risk
- Market risk
- Country risk
- Concentration risk
- Measurement and quantification of risks
 - Brief introduction of Measurement tools
 - EVA model
 - VAR (Value At Risk) Model
- Standard treasury controls
 - Management controls
 - Treasury control environment
 - Front office controls
 - Middle office/risk management
 - Accounting
 - ALCO (asset and liability committee)

[1] Chs. 7, 10

11. Deposit Insurance

Lecture Notes

Textbook:

1. Saunders, Anthony, and Marcia Millon Cornett, Financial Institutions Management, Irwin, 5th ed., 2006

Assessment:

Problem sets and Case : 50%

Final Exam : 50% (on Sat, 31 March 2007 at 2:30 pm)

There would be three multiple-choice problem sets, and 1 case analysis. The problem set is individual work. The case analysis would be done in groups. For group work, the number of students may not be greater than five. It is alright for students to do the project and the case by himself/herself. However, please note that in the past, students who do the cases and projects in groups usually perform better than those who do the case individually. I encourage group work, but I understand some of you may be travelling.

I would have liked to allocate marks for class discussions and participation. However, I understand that some of you may be travelling and may have to work on Saturdays. Hence, there are no marks for class participation for this course. However, students who could not come are advised to check with their classmates on what has been covered. Topics discussed in class but not in lecture notes are included in the examination, unless otherwise stated.

Please feel free to ask me any questions during class. Also, please contribute your comments on any issues that I raise in class. We all learn from one another. Many of you are experienced in your respective fields. So, I look forward to learning from you during class sessions.

The final exam is 35% closed-book, and 65% open-book.

The closed-book section comprises 25 multiple-choice questions and lasts for 60 mins. The closed-book section covers materials that are taught during the first four lectures.

The open-book section consists of both multiple-choice questions and questions that require written-type responses. The open-book section would last for 2 hours. The open-book session covers all materials taught.