

Finance 746 – Risk Management
Spring 2001 – Professor Niehaus

Course Information

Course Objectives:

The purpose of this course is to introduce students to important and interesting aspects of corporate risk management.

In the first part of the course, we will focus on risk measurement. This will include the following topics: a brief review of relevant probability and statistics, value at risk (VAR), and the use of a Monte Carlo simulation package called Crystal Ball. You will be required to analyze a case on value at risk and you will be required to use Crystal Ball in several assignments.

In the second part of the course, we will analyze risk management decisions from a corporate finance perspective. In particular, we will review basic valuation models and then examine how risk management can increase value for a firm with well-diversified shareholders.

The middle part of the course applies the tools and concepts from the beginning sections to examples and cases. Relevant material for analyzing these examples and cases will be provided through lectures. Specific topics include:

- determinants of futures prices
- a case on hedging aluminum price risk with futures contracts
- P&G's speculation on interest rate movements
- credit risk and bond prices
- credit derivatives
- a case on pricing catastrophe bonds
- how taxes and regulation influence risk management decisions
- weather derivatives

The course will end with the coverage of a relatively new approach to corporate risk management, called enterprise risk management, which tries to identify, measure, and manage all of a firm's risk exposures using a common framework and common tools. Enterprise risk management differs from conventional corporate risk management, which is commonly described as a silo approach. The final case will consider how a specific company used the enterprise risk management approach.

The course has been designed to minimize overlap with other finance courses. Thus, we will not examine option pricing, and there will be minimal coverage of currency risk and interest rate risk.

The perspective taken throughout the course is that risk management is an integral part of corporate financial management. Thus, risk management decisions should be analyzed using the same corporate finance principles that are used for making capital budgeting and financing decisions. Conversely, capital budgeting and financing decisions should incorporate risk analysis.

Method of Teaching

Class meetings will consist of lectures combined with discussions of cases and examples. You are encouraged to ask questions and raise issues during class.

Office Hours (room 474):

I will almost always be in my office willing to talk to you at the following times:

Monday	1:00 - 2:30
Wednesday	1:00 - 2:30

You may also stop by other times.

Phone number: 777-7254

e-mail: gregn@darla.badm.sc.edu

Textbook:

Harrington, Scott and Greg Niehaus, Risk Management and Insurance, Irwin/McGraw-Will, 1999.

Of the 654 pages in the book, approximately 250 pages are assigned.

Course Packet:

A course packet containing readings and cases can be purchased at Adams Bookstore.

Transparencies:

Copies of transparencies used in class are available on the class web site (<http://www.business.sc.edu/Spring01/course.htm>)

Readings on Reserve:

Articles on selected topics are on reserve in the library on the second floor. A list of articles on reserve will be updated periodically during the semester.

Grades

Final grades will be calculated using the following weights:

<u>Description</u>	<u>Type</u>	<u>Due Date</u>	<u>Number of Points</u>
Crystal Ball Project	Individual	Jan 29	12
Ontario TPP Case	Group	Feb 7	12
Graphite Mining	Group	Feb 21	12
ABR Case	Group	Mar 7	12
Delta Beverage Case	Group	Mar 28	12
USAA Case	Group	Apr 11	12
UGG Case	Group	Apr 30	12
Exam	Individual	May	12
Contribution to class	Individual		4

Contribution to class:

Everyone starts the semester with 2 of the 4 possible points for contribution to class. People who make significant contributions to class will increase their grade. Individuals who hinder other people from learning will decrease their grade. For example, consistently coming in late for class and getting a drink during the middle of class hinders learning.

Assignments

Six of the assignments are to be done in groups of three or four, which will be randomly assigned. The groups will change after the first three cases. Everyone is expected to be able to contribute to the class discussion on the case. You will be given the opportunity to assess anonymously the contribution of your group members and this information will be used to adjust grades on the cases.

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Tentative Outline

1. Introduction (1 day)

- What is risk?
- Risk management objectives

Ch. 1, 2

2. Basic Concepts in Probability Theory (1 day)

- Crystal Ball Demonstration
- Probability Distributions
- Diversification of Risk

Ch. 3

Crystal Ball manual, ch. 1, 2 on reserve

3. Tools for Assessing Risk (2 days)

- Using normal distributions
- Value at Risk (VAR)
- Monte Carlo Simulation
- Merck Example

Ch. 12.4

Ontario Teachers Pension Plan Case in course packet

Merck article on reserve

ASSIGNMENT 1 (Crystal Ball) - due Jan. 29

4. Contracts & Markets for Shifting Risk (2 days)

- Insurance contracts
- Options contract
- Forward & futures contracts
- Swap contracts

Ch. 4.1, 6, 8.1-8.2, 11.1, 13.1 - 13.4, 13.6

Hull, ch. 1 on reserve

5. **ONTARIO TEACHERS PENSION PLAN CASE** (VAR) – due Feb 7

6. **Convergence of Financial & Insurance Markets (1 day)**

- Moral hazard
- Basis risk
- Catastrophe options

Ch. 13.5

7. **Review of Basic Valuation Theory (1 day)**

- WACC
- APV
- Effect of risk on value

Ch. 9.1-9.2

Ross, Westerfield, Jaffe, ch.17 on reserve

8. **GRAPHITE MINING** (Valuation) – due Feb 21

9. **Incorporating other Factors into the Valuation Model (3 days)**

- Bundling services - British Petroleum Example
- Costs of external capital
- Contracting with other parties
- Enron example

Ch. 7.2, 9.3

British Petroleum article in course packet

Enron case in course packet

Harvard Business Review article on reserve

10. **ABR CASE** (should gold price risk be hedged) - due March 7

11. **Speculation at Proctor & Gamble (1 day)**

- Plain vanilla interest rate swaps
- Levered swaps
- P&G example

12. *Determinants of Futures Prices (2 days)*

- Cost of carry model
- Equilibrium models for non-tradable assets

13. *Credit Risk & Credit Derivatives (2 days)*

- Credit risk and bond pricing
- Credit derivatives

14. *DELTA BEVERAGE CASE* (should aluminum price risk be hedged)– due March 28

15. *Tax & Regulatory Effects on Risk Management Decisions (2 days)*

- Progressive tax rates
- Interest tax shields
- Insurer vs. non-insurer treatment of losses
- Regulatory factors

Ch. 10

16. *Loss Sensitive Contracts (1 day)*

- Finite risk plans
- Captives

Ch. 11.2-11.4

17. *USAA CASE* (pricing catastrophe bonds)– due April 11

Ch. 4, 22.3 – 22.4

18. *Weather Derivatives (1 day)*

19. *Enterprise Risk Management (1 day)*

- Chief risk officer

- Advantages of bundling
20. *UGG CASE* (enterprise risk management) – due April 30
 21. *Overview of the Course (1 day)*