


FLORIDA STATE UNIVERSITY
The COLLEGE of BUSINESS

Option Pricing and Financial Risk Management

FIN 4934

Course Overview and Investment Background

Lecture 1: Introduction
1 of 30




FLORIDA STATE UNIVERSITY
The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 gamet.acns.fsu.edu/~jsdorran

Course Outlines

- This course provides exposure to derivative instruments and markets, and the practical applications of these financial assets :**
 - futures/forwards, swaps, options, exotics, and weather derivatives
 - speculation, hedging, and corporate risk management decisions
 - Monte-Carlo simulation, finite difference methodology and lattice frameworks
- Prerequisites**
 - FIN 4504
 - Accounting: QMB 3200
 - If you haven't taken these, and plan to take them at the same time this semester, let me know.
 - If I say CAPM and you say huh? This is not a good sign

Lecture 1: Introduction
2 of 30



FLORIDA STATE UNIVERSITY
The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 gamet.acns.fsu.edu/~jsdorran


Course Outline

- Course materials**
 - Textbook: Futures, Options, and other Derivatives, 6th Edition
 - Lecture notes available on BlackBoard
 - Calculator, Proficiency in Excel are critical
 - Recommend to read regularly the financial newspapers such as the
 - Wall Street Journal, Financial Times, feneews.com
- Grading**

Individual Work:	
Take Home Exam	30%
Class Participation/Attendance	10%
Group Work:	
Homework	30%
Team Project/Presentation	30%
TOTAL	100%

 - Grading will be close to curves, but may vary depending on the outcome of exam scores.

Lecture 1: Introduction
3 of 30



FLORIDA STATE UNIVERSITY

The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University

garner.acns.fsu.edu/~jsdor

• **One Exam**

▪ Will be given on 11/29/07; due in one week

▪ TAKE HOME

▪ No makeup exam except for serious cases.

• **Homeworks**

▪ I want you to work in groups (four members per group is preferred)

▪ However, I must stress that each person work diligently on the HW assignment as it is fantastic preparation for the exam.

• **Team Project**

▪ Form a group of 4~5 students

▪ You must notified me of the team members by the 3rd class..


▪ The assignment will include a report, and a Power Point presentation at the end of the semester. This is a crucial aspect of the evaluation process.

▪ This is a research assignment relating to a specific case of derivatives or risk management misuse

Course Outline

Lecture 1: Introduction

4 of 30



FLORIDA STATE UNIVERSITY


The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University

garner.acns.fsu.edu/~jsdor

Copyright 1991 by Randy Glasbergen.

www.glasbergen.com



'People are afraid of bears and bulls! From now on, our brokerage will use bunnies and kittens.'


©ASBEP/IGL

Introduction

Derivatives: It is not just math

Lecture 1: Introduction

5 of 30



FLORIDA STATE UNIVERSITY

The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University

garner.acns.fsu.edu/~jsdor


The Nature of Derivatives

A derivative is an instrument whose value depends on the values of other more basic underlying variables

Lecture 1: Introduction

6 of 30

2



FLORIDA STATE UNIVERSITY


The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán

Examples of Derivatives

- **Futures Contracts**
- **Forward Contracts**
- **Swaps**
- **Options**

Lecture 1: Introduction
 7 of 30



FLORIDA STATE UNIVERSITY


The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán

Derivatives Markets

- **Exchange traded**
 - Traditionally exchanges have used the open-outcry system, but increasingly they are switching to electronic trading
 - Contracts are standard there is virtually no credit risk
- **Over-the-counter (OTC)**
 - A computer- and telephone-linked network of dealers at financial institutions, corporations, and fund managers
 - Contracts can be non-standard and there is some small amount of credit risk

Lecture 1: Introduction
 8 of 30

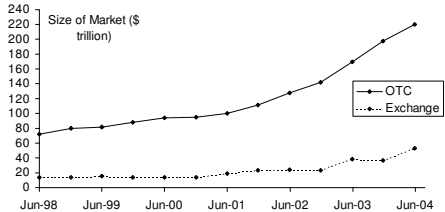


FLORIDA STATE UNIVERSITY

The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán


Size of OTC and Exchange Markets



Date	OTC Market Size (\$ trillion)	Exchange Market Size (\$ trillion)
Jun-98	80	20
Jun-99	85	20
Jun-00	90	20
Jun-01	100	20
Jun-02	130	25
Jun-03	180	40
Jun-04	220	60

Source: Bank for International Settlements. Chart shows total principal amounts for OTC market and value of underlying assets for exchange market

Lecture 1: Introduction
 9 of 30



FLORIDA STATE UNIVERSITY


The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán

Ways Derivatives are Used

- To hedge risks
- To speculate (take a view on the future direction of the market)
- To lock in an arbitrage profit
- To change the nature of a liability
- To change the nature of an investment without incurring the costs of selling one portfolio and buying another

Lecture 1: Introduction
 10 of 30



FLORIDA STATE UNIVERSITY

The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán

Futures Contracts

- Agreement to buy or sell an asset for a certain price at a certain time
- Similar to forward contract
- Whereas a forward contract is traded OTC, a futures contract is traded on an exchange

Lecture 1: Introduction
 11 of 30



FLORIDA STATE UNIVERSITY


The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán

Exchanges Trading Futures

- Chicago Board of Trade
- Chicago Mercantile Exchange
- LIFFE (London)
- Eurex (Europe)
- BM&F (Sao Paulo, Brazil)
- TIFFE (Tokyo)
- and many more

Lecture 1: Introduction
 12 of 30



FLORIDA STATE UNIVERSITY

The COLLEGE of BUSINESS


Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán

Examples of Futures Contracts

Agreement to:

- buy 100 oz. of gold @ US\$400/oz. in December (NYMEX)
- sell £62,500 @ 1.5000 US\$/£ in March (CME)
- sell 1,000 bbl. of oil @ US\$20/bbl. in April (NYMEX)

Lecture 1: Introduction
 13 of 30



FLORIDA STATE UNIVERSITY


The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán

Gold: An Arbitrage Opportunity?

- Suppose that:
 - The spot price of gold is US\$300
 - The 1-year forward price of gold is US\$340
 - The 1-year US\$ interest rate is 5% per annum
- Is there an arbitrage opportunity?

Lecture 1: Introduction
 14 of 30



FLORIDA STATE UNIVERSITY


The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán

Options

- A call option is an option to buy a certain asset by a certain date for a certain price (the strike price)
- A put option is an option to sell a certain asset by a certain date for a certain price (the strike price)

Lecture 1: Introduction
 15 of 30



FLORIDA STATE UNIVERSITY

The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán

American vs European Options

- An American option can be exercised at any time during its life
- A European option can be exercised only at maturity

Lecture 1: Introduction
 16 of 30



FLORIDA STATE UNIVERSITY


The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán

Exchanges Trading Options

- Chicago Board Options Exchange
- American Stock Exchange
- Philadelphia Stock Exchange
- Pacific Exchange
- LIFFE (London)
- Eurex (Europe)
- and many more

Lecture 1: Introduction
 17 of 30



FLORIDA STATE UNIVERSITY


The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán

Options vs Futures/Forwards

- A futures/forward contract gives the holder the obligation to buy or sell at a certain price
- An option gives the holder the right to buy or sell at a certain price

Lecture 1: Introduction
 18 of 30



FLORIDA STATE UNIVERSITY

The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University

garnet.acns.fsu.edu/~jsdoran

Types of Traders

- Hedgers
- Speculators
- Arbitrageurs

Some of the largest trading losses in derivatives have occurred because individuals who had a mandate to be hedgers or arbitrageurs switched to being speculators

Lecture 1: Introduction

19 of 30



FLORIDA STATE UNIVERSITY

The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University


garnet.acns.fsu.edu/~jsdoran

Hedging Examples

- A US company will pay £10 million for imports from Britain in 3 months and decides to hedge using a long position in a forward contract
- An investor owns 1,000 Microsoft shares currently worth \$28 per share. A two-month put with a strike price of \$27.50 costs \$1. The investor decides to hedge by buying 10 contracts

Lecture 1: Introduction

20 of 30



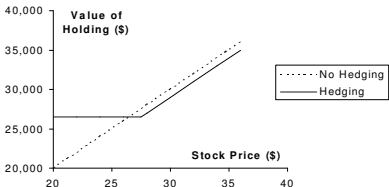
FLORIDA STATE UNIVERSITY

The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University

garnet.acns.fsu.edu/~jsdoran


Value of Microsoft Shares with and without Hedging



Stock Price (\$)	No Hedging (\$)	Hedging (\$)
20	20,000	20,000
25	25,000	26,000
27.50	27,500	26,000
30	30,000	30,000
35	35,000	35,000

Lecture 1: Introduction

21 of 30




FLORIDA STATE UNIVERSITY
The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garmet.acns.fsu.edu/~jsdorán

Speculation Example

- An investor with \$4,000 to invest feels that Amazon.com's stock price will increase over the next 2 months. The current stock price is \$40 and the price of a 2-month call option with a strike of 45 is \$2
- What are the alternative strategies?
- What are the returns to the strategies if the stock reaches \$30, \$50?

Lecture 1: Introduction
 22 of 30




FLORIDA STATE UNIVERSITY
The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garmet.acns.fsu.edu/~jsdorán

Hedge Funds

- Hedge funds are not subject to the same rules as mutual funds and cannot offer their securities publicly.
- Mutual funds must
 - disclose investment policies,
 - makes shares redeemable at any time,
 - limit use of leverage
 - take no short positions.
- Hedge funds are not subject to these constraints.
- Hedge funds use complex trading strategies are big users of derivatives for hedging, speculation and arbitrage

Lecture 1: Introduction
 23 of 30



FLORIDA STATE UNIVERSITY
The COLLEGE of BUSINESS

Derivatives Mishaps and What We Can Learn from Them
 "Never trust those that think they know"

Lecture 1: Introduction
 24 of 30



FLORIDA STATE UNIVERSITY


The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán

Big Losses by Financial Institutions

- Allied Irish Bank (\$700 million)
- Barings (\$1 billion)
- Daiwa (\$1 billion)
- Kidder Peabody (\$350 million)
- LTCM (\$4 billion)
- Midland Bank (\$500 million)
- National Westminster Bank (\$130 million)

Lecture 1: Introduction
 25 of 30



FLORIDA STATE UNIVERSITY


The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán

Big Losses by Non-Financial Corporations

- Allied Lyons (\$150 million)
- Gibsons Greetings (\$20 million)
- Hammersmith and Fulham (\$600 million)
- Metallgesellschaft (\$1.8 billion)
- Orange County (\$2 billion)
- Procter and Gamble (\$90 million)
- Shell (\$1 billion)
- Sumitomo (\$2 billion)

Lecture 1: Introduction
 26 of 30



FLORIDA STATE UNIVERSITY


The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán

Lessons for All Users of Derivatives

- Risk must be quantified and risk limits set
- Exceeding risk limits not acceptable even when profits result
- Do not assume that a trader with a good track record will always be right
- Be diversified
- Scenario analysis and stress testing is important

Lecture 1: Introduction
 27 of 30




FLORIDA STATE UNIVERSITY
The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán

Lessons for
 Financial
 Institutions

- Do not give too much independence to star traders
- Separate the front middle and back office
- Models can be wrong
- Be conservative in recognizing inception profits
- Do not sell clients inappropriate products
- Liquidity risk is important
- There are dangers when many are following the same strategy

Lecture 1: Introduction
 28 of 30




FLORIDA STATE UNIVERSITY
The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán

Lessons for Non-Financial
 Corporations

- It is important to fully understand the products you trade
- Beware of hedgers becoming speculators
- It can be dangerous to make the Treasurer's department a profit center

Lecture 1: Introduction
 29 of 30



FLORIDA STATE UNIVERSITY
The COLLEGE of BUSINESS

Dr. James S. Doran, Department of Finance, Florida State University
 garnet.acns.fsu.edu/~jsdorán

Next Lecture

- Interest Rates
- Chapter 2 in Hull
- Start of 80's Trivia

Lecture 1: Introduction
 30 of 30
