Investment Analysis

Mini S4, 1999
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Welcome Back!

Course Objectives

Basic tools used by investment professionals:
1. term structure: definitions and interest rate risk management
2. optimal risky portfolios: mean–variance and ‘factor’ models
3. apply equilibrium models to strategies/portfolios
4. performance measurement
Evaluation

1. Homeworks — 20% 4-5, work in groups
2. Project — 20%, work in groups
3. Final Exam — 60%

Readings

- *Investments* by Bodie, Kane and Marcus
- course package

TA Session

Wednesdays
Time?
Topics

- Introduction
- Term Structure
- Bond Portfolio Management
- Options (?)
- Portfolio Mechanics
- Optimal Portfolios
- Equilibrium Models
- Performance Evaluation

Introduction

Objectives

- explain basics of investment process
- basic asset classes
- issues in index construction
- basic trading terminology
- explain how margin trading works
Major Ideas and Consequences

1. Efficient Markets Hypothesis
   - optimally structured portfolios not ‘beat the market’
   - more complex stuff?

2. Diversification
   - top down vs bottom up
   - indexation
   - globalization

3. Equilibrium Models
   - risk/return trade-off

4. Statistics
   - Quantitative vs. fundamental and technical analysis
   - benchmarks
   - statistical return decompositions
5. Derivative Securities
   - financial engineering
   - customized securities/new markets

6. Technology
   - computers
   - speed

7. Institutionalization
   - sharing fixed costs
   - increased trading activity

8. Internationalization
   - F/X
   - Increased diversification
   - Information improves
**Investment Process**

- **Investor Objectives**
  1. Pension liability hedging
  2. Lifecycle savings

- **Investment Strategy**
  1. Strategic asset allocation
  2. Dynamic asset allocation
  3. Asset selectivity

- **Implementation**
  1. NYSE or regional
  2. Market or limit orders
  3. Discount or full service broker

- **Portfolio Holdings**
  Good or bad execution

- **Financial Outcomes**
  Events
  1. Political (elections)
  2. Economic
  3. Financial (currency deval.)

**Market/Economic Conditions**
- Suitability of strategy
- Assessment of forecast accuracy

**Performance Evaluation**
- Today’s Prices
- Tomorrow’s Prices

**Major Asset Classes**
- Debt
  - Money market
  - Bonds
- Common Stock
- Preferred Stock
- Derivatives
Asset Indexes

- Uses
  - track average returns
  - comparing performance of managers
  - base of derivatives
- Factors in construction
  - representative?
  - broad or narrow?
  - how is it constructed?

Examples of Indexes—Domestic

- DJIA (30 Stocks)
- S &P 500 Composite
- NASDAQ Composite
- NYSE Composite
- Wilshire 5000
Construction of Indexes

- How are stocks weighted?
  - Price weighted (DJIA)
  - Market value weighted (S&P 500, NASDAQ)
  - Equally weighted (Value Line Index)

- How are returns averaged?
  - Arithmetic (DJIA, S&P)
  - Geometric

Averaging Method

- Component Returns:
  \[ A = 10\% \quad B = -5\% \quad C = 20\% \]

- Arithmetic Average
  \[ \frac{[0.1 + (-0.05) + 0.2]}{3} = 8.33\% \]

- Geometric Average
  \[ \sqrt[3]{(1.1)(0.95)(1.2)} - 1 = 7.84\% \]
Derivatives

- Options

- Futures

Trading

- Organization of Markets:
  - organized exchanges
  - OTC
  - Third Market
  - 4th Market
Organized Exchanges

- auction markets
- dealers
- Securities: stocks, futures contracts, options, bonds (somewhat)
- Examples: AMEX, NYSE, CBOE

OTC Market

- dealer market w/out centralized order flow
- NASDAQ: largest
- Scandal?
- Stocks, bonds, and some derivatives
**Trading Costs**

- Commission: paid to broker
- Spread: cost of trading with dealer
  - bid: dealer buys
  - ask: dealer sells

**Order Types**

- basic idea:
- Market:
- Limit
- Stop loss
Margin Trading

- Maximum margin
  - currently 50%
  - set by Fed
- Maintenance margin
  - minimum equity margin can be
- margin call:

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**Example—Initial Conditions**

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<thead>
<tr>
<th>Yahoo</th>
<th>$70</th>
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<tbody>
<tr>
<td>50%</td>
<td>Initial Margin</td>
</tr>
<tr>
<td>40%</td>
<td>Maintenance Margin</td>
</tr>
<tr>
<td>1000</td>
<td>Shares purchased</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Initial Position</th>
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<tbody>
<tr>
<td>Stock</td>
</tr>
<tr>
<td>Borrowed</td>
</tr>
<tr>
<td>Equity</td>
</tr>
</tbody>
</table>
Maintenance Margin

- Stock Price falls to $60 per share
- New position:
  - Stock $60,000
  - Borrowed $35,000
  - Equity $25,000
- Margin = 25,000/60,000 = 41.67%
- Margin call: margin must drop to 40%. How much should price drop?

Summary

- introduction to investment process
- basic security classes
- index formation
- brief trading discussion
- margins

Next Time

- introduction to bonds
- references: Cougars case, Term Structure by Kritzman (readings), Text: Ch. 15, pages: 436–444