

Foundations of Finance  
Final Exam Study Guide  
Joel Hasbrouck, Fall, 2008

### **Materials**

You should have on hand this guide, the class notes, and the books. Online materials include answer keys to the problem sets; sample final exams (mine and Silber's).

### **Format**

The exam will consist of about 30 multiple choice questions. Roughly 65%-75% of the problems will require a numerical calculation of some sort; the remainder will be non-numerical/conceptual questions. The exam paper will have space for you to do the calculations, but only the final choice recorded on the answer sheet will count.

You should bring your financial calculator. If it is not one of the following, let me know prior to the exam: Texas Instruments (BA II, BA II plus, BA-35 solar, BA Real Estate) an HP (10b, 10bII, 12c, 17b, 17bII); a Sharp (EL-733, EL-733a).

As in the midterm, you can bring one 8 ½ x 11 inch sheet of paper with notes. The sheet can contain verbatim material from the book, class notes, problem solutions, etc. The sheet may be covered on both sides. Your sheet should include the Black-Scholes equation (see "option valuation" in the summary of readings, below), but if there's a problem that requires it, I'll supply the  $N(d)$  table.

### **Study Priorities**

You are responsible for all assigned readings, problems and class notes/discussions. Not all of this material is weighted equally, however. Generally, I try to cover the most important things in the class notes, and the recommended problems focus on this material. Below, I offer some further suggestions.

The final is not cumulative: I won't be testing directly for any of the material we covered in the first half of the semester. Still, some of the material is inherently cumulative. Bond math draws heavily on time-value-of-money concepts and calculations. Standard deviation ("volatility") is a key input in option valuation. Etc.

### **Broad priorities**

1. Review the class notes.
2. Skim the indicated sections of the book
3. Try the recommended problems, going back to the solutions or assigned readings as needed.  
The problems are not picked at random. I select particular problems to illustrate concepts, tools or techniques that are important.
4. Try the practice exams, going to the solutions or assigned readings as needed.

Note: the practice exams include actual questions from previous exams. The coverage and emphasis of the current class, however, may differ from the previous classes. I've tried to indicate the relevant problems, but some questions on things we didn't cover may have slipped through.

5. Read the text in depth.

### **Summary of topics, readings and problems**

Capital Budgeting.

Readings: RWJ Chapter 8 except 8.3 (the accounting rate of return); BKM Chapter 24, pp. 823-824 ("Dollar-weighted returns")\*

Problems: RWJ Chapter review and self-test problems 8.1 and 8.2; RWJ General problems 5, 6, 22, 23  
The capital budgeting material is background for the pricing and yield calculations we do in BKM chapter 14.

\*The dollar-weighted return is not of direct interest. I did an example in class to illustrate the IRR calculation, and to give an example of why the timing of the cash flows (and who controls the timing) is important in applying the IRR.

Bond prices and yields

Readings: BKM Chapter 14

Problems: Concept check questions; Problem sets 1-4, 9, 16, 19, 23, CFA problem 2

There are many terms and definitions introduced in this chapter. These are important because they define the vocabulary for talking about the securities. The key calculations are bond price, yield to maturity (to call, to worst) and realized compound return. There will not be any questions on accrued interest, or on the material under the heading "current events in the bond markets".

The term structure of interest rates.

Readings: BKM Chapter 15

Problems: 2, 3, 4, 6, 11 (difficult)

The most important concepts here include: the yield curve, forward rates (definition and calculation), the expectations hypothesis and the liquidity preference theory.

Managing bond portfolios

Readings: BKM Chapter 16 (In section 16.2, skip the formalities of convexity (page 524).)

Problems: Concept check questions; Problem sets: 3, 4, 6, 7, 11; CFA problems 2(d, e, f)

The two most important concepts here are duration (including modified duration, calculation and usage) and immunization. Other important concepts are bond swaps and their classification, convexity (what it is, but not its computation).

Option markets

Readings: BKM Chapter 20 (except section 20.7)

Problems: All concept check questions; Problem sets 5(a,b,c), 6, 8, 10, 17, 20, 24

This chapter introduces many important terms and definitions. Particularly important concepts include

how puts and calls work, strategies that involve options, and put-call parity. There are a large number of option strategies. You should know the definitions of these four strategies: protective put, covered call, straddle, and collar. You don't need to know the butterfly, iron butterfly, etc. On the last problem set, there was one question of the form "what combination would give us the following payoff structure?" and one question of the form "what will the payoff structure look like for the following portfolio?" The final will include (in multiple choice form) one or both of these types of questions.

#### Option valuation

Readings: BKM 21.1-21.5, except skip:

Dividends and call option valuation (pp. 735-736)

Dividends and put option valuation (p. 737)

Hedging bets on mispriced options (pp. 743-747)

Problems: All concept checks; Problem sets 2, 5, 6, 8, 9, 21, 24, 26

The most important concepts are the restrictions on option values, the binomial option pricing model (for calls and puts), hedge portfolios, the Black-Scholes equation, and implied volatility. Your formula sheet should include the Black-Scholes equation, but if there is a necessary calculation, I'll supply the  $N(d)$  table.

#### Futures markets

BKM Chapter 22: Read preface + sections 22.1-22.4 (skip 22.5)

Problems: All concept check problems; Problem sets 7, 8, 10, 13, 16

This chapter introduces many terms and definitions. The most important concepts are the definitions of futures contracts, profits and losses, margin and mark-to-market (daily resettlement), convergence and the futures-spot parity principle.

#### Financial futures

Readings BKM Chapter 23. Sections 23.2 (Stock index futures) and 23.3 (Interest rate futures) ONLY.

(Although I cover a bit about swaps in the class session, this won't be on the final.)

Problems: All concept check problems; Problem sets 4, 7, 8, 9, 16

These most important concepts are stock index arbitrage (also covered in Chapter 22, pp. 775-776), the uses of stock index futures (synthetic stock, market timing and hedging market risk) and the use interest rate futures to hedge interest rate risk.

#### **Additional Help**

Frank Cavallo (the TA) holds office hours M & W, 5-6p and 9-10p. You can also email us.