

Preview/Study guide for midterm 1
266: Fin. Markets and Institutions
Spring 2016
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- What to bring.
 - Bring a calculator, there will be some calculations.
 - Something to write with. We'll provide the paper.
 - No other materials allowed.
- Will you have to rush? We aspire to write the exam so that most students do not feel great time pressure. Sometimes we mess up a bit either way, but generally do pretty well. You know your own pace and style, so take this for what it is worth.
- Preview: 5 types of questions

The practice questions, many collected from past exams, illustrate each type of question and the questions and answers provided should give you a sense of the sort of answer we are looking for.

- 1 Brief definitions. The concepts to be defined will all be taken from the keywords listed on the syllabus page of the course website. To get a sense of the appropriate detail for the answers, see the sample questions and answers.
- 2 Real world facts and quantities. We will be looking for approximate values, and we try to only ask about things that are of broad importance: What is the approximate value of U.S. nominal GDP? Around \$18 trillion. What is the current interest rate on short-term Treasury securities: about zero. And the 10-year yield? Say, between 1.5% and 2% When was this rate at its peak? Around 1980. And what was the peak? Nearly 20 percent. Approximate magnitude of household, nonfinancial business, and government debt in the U.S. relative to GDP. Market capitalization of U.S. and world stock markets. What is the typical slope of the yield curve? In most economies what is the main source of financial sector credit to businesses?
- 3 Straightforward percent change, interest rate, and present value calculations.

4 Deeper quantitative questions. These are typically ‘story problems’ requiring you to apply the financial formulas we’ve learned. See the comments below on formulas that you do and don’t need to memorize.

5 Short answer. These questions will require applying and explaining concepts and will be less quantitative. The news we have covered and the chapter summaries and the (nonquantitative) questions from the text that are listed on the syllabus page, as well as the past test questions, should provide a good guide.

- Equations you WILL need to know:

– The percent change when a value goes from v_1 to v_2 is $100 \times i$ in:

$$1 + i = \frac{v_2}{v_1}$$

– Rate per unit item. We express changes over a span of time in the rate of change stated at an annualized rate. If the change from v_1 to v_2 happens over h years (e.g., $h = 1/4$ is 3 months), the annualized rate is,

$$(1 + i) = \left(\frac{v_2}{v_1}\right)^{1/h}$$

or stated equivalently:

$$(1 + i)^h = \frac{v_2}{v_1}$$

so that

– You will have to know and be able to sensibly use the various versions of ‘the’ equation:

$$\begin{aligned} PV &= \frac{FV}{(1 + i)^h} \\ FV &= PV(1 + i)^h \\ (1 + i)^h &= \frac{FV}{PV} \end{aligned}$$

- The present value several payments coming at different times is simply the sum of the individual present values: If there are 3 payments and s_j arrives j years in the future, then

$$PV = \frac{s_1}{(1+i)} + \frac{s_2}{(1+i)^2} + \frac{s_3}{(1+i)^3}$$

- Expectations theory of the term structure and forward rates. The expectations theory says, e.g.:

The 4 year forward rate for 3 years in the future is $f_{4,t+3}$ in:

$$(1+i_{7,t})^7 = (1+i_{3,t})^3(1+f_{4,t+3})^4$$

That is, the rate that would make rolling a 3-year bond into a 4-year bond give the same yield as the current 7-year bond.

The expectations theory says that the forward rate is the rate that folks expect to prevail in 3 years time:

$$(1+i_{7,t})^7 = (1+i_{3,t})^3(1+i_{4,t+3}^e)^4$$

so that $i_{4,t+3}^e = f_{4,t+3}$.

This does not hold in practice because of the liquidity premium in longer-term yields.

Using our approximation $\ln(1+z) \approx z$, the expectations theory also says that, e.g., the current 7 year rate will approximately be the average of the 7 1-year rates over the 7 years:

$$i_{7,t} \approx \frac{i_{1,t+0} + i_{1,t+1}^e + \dots + i_{1,t+6}^e}{7}$$

- You may need the duration formulae, but if you do, they will be provided. You'll have to know how to use them.
- Good luck.