Preview/Study guide for midterm 1
266: Fin. Markets and Institutions
Spring 2015
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- What to bring.

  - Bring a calculator, there will be some calculations.
  - Something to write with. We'll provide the paper.

- 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? Between $15 and $20 trillion would be acceptable. Many of the facts in question will come from lecture 2. Look at the sample questions to get a sense of the sort of thing we ask and what we mean by approximate values.

  3 Straightforward interest rate and present value calculations.

  4 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. These questions often

do require use of the standard supply and demand diagram. The chapter summaries and the (nonquantitative) questions from the text that are listed on the syllabus page, as well as the sample test questions should provide a good guide.

- Equations you will need to know:

  - Rate of change when a value goes from v_1 to v_2 is i in:

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

  And the percent change is $100 \times i$.

  - Annualizing. If the change in value happens over n years (e.g., $n = 1/4$ is 3 months), the annualized rate is,

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

  so that

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

  - You will have to know and be able to sensibly use the various versions of 'the' equation:

$$PV = \frac{FV}{(1 + i)^n}$$

  When there are, say, three future payments and, say, s_j arrives j years in the future:

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

  We have not completed portfolio theory and our treatment of risky returns, but you should know that for a risky payment, FV, coming 1 year in the future, the expected rate of return is i^e in,

$$(1 + i^e) = \frac{FV^e}{PV}$$

- Equations you will be given, but need to know how to apply.

  You will be given the following 'cheat sheet' of more complicated equations. You will have to know what these mean and how to apply them.

- In the following, there are J outcomes, r_j. Outcome r_j happens with probability pr_j:

- Expected return:

$$r^e = \sum_{j=1}^{J} \text{pr}_j r_j$$

- Variance of return:

$$\text{var}(r) = \sum_{j=1}^{J} \text{pr}_j d_j^2$$

where d_j is j^{th} deviation from the mean, $r_j - r^e$.

- Standard deviation of return is the square root of the variance.

- Covariance of returns on assets x and y:

$$\text{cov}(r_x, r_y) = \sum_{j=1}^{J} \text{pr}_j d_{xj} d_{yj}$$

where d_{xj} is the jth deviation from the mean for x, and d_{yj} is analogously defined.

- Correlation has the same sign as covariance but is scaled to fall between -1 and 1.

- Duration: If an asset makes three payments, and payment s_j comes j years in the future, then:

$$DUR = \sum_{k=1}^{3} k \frac{PV_k}{PV} = 1 \times \frac{PV_1}{PV} + 2 \times \frac{PV_3}{PV} + 3 \times \frac{PV_3}{PV}$$

where PV_k is the present value of the kth payment and PV (no subscript) is the full present value of the asset.

- What you need to know about the supply and demand diagram. You will have to know how to use the standard supply and demand diagram, especially the item being bought and sold is an IOU—or any promise to a future flow of payments.

  - What is on the axes? And which curve is which?
  - Why do the curves slope the way they do?

- What would make the curves shift and in what direction?
- What is the equilibrium price and quantity?
- How do shifts in the curves affect equilibrium price and quantity? What is a basic story of how market forces tend to drive the price and quantity toward the equilibrium values?

- Good luck.