Preview/Study guide for midterm 2
266: Fin. Markets and Institutions
Spring 2016
Jon Faust/Daniel Garcia

- 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.

- Relation to midterm 1

  The midterm will be very similar in structure to midterm 1.

  The midterm will focus on material since midterm 1—it will not be comprehensive. However, many ideas and concepts in the course build and continue throughout, so there will obviously be some overlap.

  As for the 'real world quantities' part, there are a bunch of facts that you need to know and run throughout the course: level of GDP, level of interest rates, etc. Any of those general facts about the world are fair game. As always, we are trying to stick to ballpark figures and broadly important facts.

- Preview: 5 types of questions

  1 Brief definitions. The concepts to be defined will all be taken from the key terms listed on the syllabus page of the course website. You should have some sense of the level of detail we are looking for from the first midterm and old exams.

  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? Market capitalization of equity markets in the U.S. and around the world. Size of derivatives markets relative to markets for the underlying.

3 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. The main new quantitative things we've added since the last midterm are those related to statistics (e.g., mean, variance, etc.), portfolio theory (e.g., the main CAPM equation), and equity pricing (e.g., Gordon growth model).

4 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. There will be at least one question drawn from the news stories on the news page of the course website.

- 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

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

– You need to know how to compute a mean, median, variance, covariance, and value at risk.

We will provide formulae for variance and covariance:

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

where $d_j = x_j - x^e$, and x_j is the jth outcome, which happens with probability pr_j and x^e is the mean of x.

$$\text{cov}(x, y) = \sum_{j=1}^{J} \text{pr}_j d_{x,j} d_{y,j}$$

where now we have random variables x and y and $d_{x,j} = x_j - x^e$ and $d_{y,j} = y_j - y^e$.

– We'll provide the formula for the Gordon growth model:

$$P_0 = \frac{D_0(1+g)}{k-g}$$

but you need to know what the letters mean.

- Some general guidance:

We have focused in this segment on how financial markets and institutions help bring buyers and sellers together in both primary and secondary markets. You need to understand why (in contrast with the standard assumption in elementary economics classes) it is pretty tricky to bring buyers and sellers together when there is a great deal of asymmetric information.

We've learned about how secondary markets work, taking secondary markets in equities as a main example. You need to know how orders are placed and executed and have a sense of why it is complicated to run a good secondary market. You need to understand the order types

listed on the key terms of the syllabus and understand the basics of buying on margin.

You need to understand primary markets and the key role that investment banks play in primary markets.

Finally, we have also built on our basic understanding of risk management and the valuation of financial assets by introducing portfolio theory. You need to understand the basics of portfolio theory and what it implies for risk management, which (at the level we are discussing it) basically comes down to understanding the key CAPM equation and what it implies about risk and return. Understanding portfolio theory and what it implies for risk managment also requires understanding the basic probability and statistics we've discussed.

Materials covered with the visitor and on the news page are fair game. We won't be nit-picky, and will focus on broad ideas that fit with ideas in the course.

- Good luck.