March 16, 2017

Exam: Final, 2:00 hour

Ivo Welch. UCLA Anderson Finance MFE 237A, Winter 2017. March 16, 2017

READ THIS FIRST:

- Paraphernalia: One US letter-paper (any notes on front and back, as you wish). One calculator. No computers, notes, or textbooks allowed.
- You have 2:00 hours to answer 33 questions on 5 pages, which is not a whole lot. If you do not know the answer, *just move on*.
- **If you do not put down your pen when the TA states you have to do so, then we may reduce your score and/or assign you a 0. Everyone is to follow the rules to the letter.**
- The number in parentheses in front of each question is the number of points.
- For a clearly wrong question, you can receive negative points. If you have no clue about the answer, you are probably better off leaving the answer blank. If you have some clue, give it your best shot. We will liberally subtract points for wrong answers—in particular, we do not like the idea of 3 different answers, one of which is correct, two of which are incorrect. So, if you show us two different solutions, you can at best only get half credit and more likely 0, unless you clearly outline assumptions that you have to make because my question is ambiguous. If you show us 2 wrong answers and 1 right answer, you will get negative points. The point is to stop you from wild-guessing or showering us, not to stop you from writing what you really know.
- Your *final answer* must be in the right units, so make sure to distinguish between raw numbers and percent, between dollars and dollars-squared, etc.
- We will try to give partial credit, so show your work. Spell out assumptions that you are making.
- Write clearly. If we cannot understand what you mean, you lose. Generally, try to be concise. If you have the correct answer and an incorrect answer, you will get 0.
- If you believe a question is ambiguous, please make reasonable assumptions, and spell them out in your answer. The TA is not allowed to answer questions about specific questions. I may also deliberately include questions that cannot be answered. If you believe this is the case, please explain why you cannot answer a question.
- **Assume a perfect market, unless otherwise indicated.**
- You must turn in this exam itself together with your answers in it. Use only the blank rear of the pages for your calculations. We want to be able to check that you did the work in cases of doubt. Usually, we just ignore everything on the rear pages.

1. (1) What is your name and section (morning or afternoon)? Who sits to the left of you? Who sits to the right of you? (Yes, we do give points here, too.)

2. (3) What is the CRSP SHRCD variable? What is it used for?

3. (6) What are the following Compustat variables? TA, TL, CEQ, CH (or CHE), SALE, NI?

4. (3) How can one combine CRSP and Compustat into one giant panel?

5. (6) Assume that a firm has a value of $150 given a debt/equity ratio of 6/4. The cost of debt capital is 20%, the cost of equity capital is 25%. The market here is not perfect. The corporate income tax is 40%. The personal income tax rate is 25%. How would the value of the firm change if it changed to a debt/equity ratio of 3/7?

6. (12) A firm will be worth \$100, \$200, or \$300 with equal probability next year. The firm has a cost of capital of 25%. The risk-free rate of return is 10%. Assume in (i-iii) that the market is perfect.

   (i) If the firm wants to finance itself by borrowing \$50 today, what is value and cost of capital of its resulting residual equity?

   (ii) If the firm wants to finance itself by borrowing \$100 today, which requires a promised interest rate of 30%, then what is the value and cost of capital of the residual equity?

   (iii) Calculate the standard deviation of the rates of return for the three different financing methods (Zero Debt, \$50 Debt, \$100 Debt) in all the capital structures above. Discuss the relative riskiness-es of the five different claims. Do debt-heavy capital structures increase risk? If so, of what?

(iv) With these capital structure, let's introduce a market imperfection. Assume that bankruptcy entails legal fees of $10. Roughly, what would be the value of the firm under the three different financing methods now?

7. (3) When can you use the typical median cash flow in the NPV formula?

8. (4) Can fund managers reduce risk by diversifying? Does this help their investors?

9. (3) When should corporate managers worry and when should they not worry about cannibalization? Why?

10. (3) What is a public goods problem? Give 2-3 examples.

11. (6) List three kinds of agency problems.

12. (4) In what kinds of firms are agency problems more or less severe?

13. (4) If agency problems are severe, what can firms do to remedy them?

14. (4) Explain the regression discontinuity approach. What problem does it solve?

15. (3) What are the key control rights of debt and equity?

16. (4) Discuss the remedies for the 1/X problem when valuing firms with P/E comparables.

17. (3) Is it better to use cash flows or earnings in comparables?

18. (5) What is the monthly payment for a 2-year consumer loan of 12% interest (12.68% effective) that borrows $10,000 today if the first payment has a 6 month grace period (during which the loan is not free, however) and the inflation rate is 2%?

19. (3) Why do tax-exempt investors not predominantly hold equity? Or the debt of growth firms? After all, they are not taxed on them. If all other tax-exempts did this, what would you advice the UCLA endowment to invest in and how would you explain your reasoning in the board meeting?

20. (3) If the entrepreneur knows more about the projects than the outside investors, what form of investment will the project likely be funded with?

21. (3) Is it usually better or worse to discount earnings or EBITDA?

22. (3) Based on monthly rates of return, when annualized, a high-leverage investment has an expected arithmetic rate of return of 12% and standard deviation of 50%. The low-leverage investment sits at 10% and 45%. If you want to buy-and-hold one of them for the long run, which one would you prefer under what assumptions?

23. (2) Why is a Treasury bond, that has certain returns under all states of the world, not considered an arbitrage?

24. (3) How would you intelligently maximize an index fund's Sharpe ratio?

25. (3) Why is the Sharpe ratio an idiotic measure?

26. (3) Why is Debt/Assets an idiotic measure of leverage?

27. (3) Is the expected borrowing rate equal to the expected lending rate?

28. (3) If there are no synergies or externalities between two merging firms, is the combined P/E ratio the value-weighted average of the two constituent P/E ratios?

29. (6) Give an example in which shareholder value maximization can induce managers to take negative NPV projects.

30. (3) Is the cost of debt in a perfect market its quoted interest rate?

31. (4) Discuss how bad the market efficiency assumption is in the context of an event study.

32. (3) What is the difference between earnings and cash flows?

33. (3) The SEC allows mutual funds to “incubate” in order to acquire a track record before going public. Why is this protecting investors?