Exam: Midterm, 1:20 hour
Ivo Welch. UCLA Anderson Finance MFE 237A, Winter 2017.

READ THIS FIRST:

- Paraphernalia: One US letter-paper (any notes on front [but not back] that you wish). One calculator. No computers, notes, or textbooks allowed.

- You have 1:20 hour to answer 22 questions on 7 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.

- 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. (1) For course timing, we have a number of choices. Please rank by preference:

    (i) Slow down and cover everything. Final in finals week.

    (ii) Same speed and Final (1.5 hours) in the last class session.

3. (12) Write a computer program that calculates geometric and arithmetic rates of return for the two CRSP equal-weighted and value-weighted index series from 2000/01/01 to 2010/01/01. Note that you do not have to calculate the indexes themselves, but can use the CRSP series.

4. (12) Write a program that extracts all dividend day announcement and dividend ex-days for all CRSP stocks and saves them in a csv file.

5. (8) Construct a valid XHTML table (proper openings and closings) that looks like this:

Value	**A**	**B**
My Grade	0	1

6. (4) Which perfect-market assumptions does the CAPM need? Which perfect-market assumptions does it not need?

7. (4) A 1-year semi-annual coupon bond promises to pay $100,000. The prevailing interest rate on such bonds is 4%. What is its price?

8. (4) The 2016 inflation rate in Argentina is 35% per annum. The local bond yield is 30% per annum. What <u>exactly</u> is the real rate of return? Is this an optimistic of a pessimistic scenario for a retail investor?

9. (4) If a stock offers a normally distributed rate of return of 5 bp per month with a volatility of 4% per trading day (truncated at –90% and +90%), then what would you expect to end up with for a buy-and-hold one-year investment strategy investing $1 today?

10. (4) Is it easier to maintain an equal-weighted portfolio than a value-weighted portfolio?

11. (4) How would you arbitrage a situation in which there is a risk-free rate and another asset with an expected rate of return lower than the risk-free rate?

12. (4) The average mutual fund trading in 2014 had positive alpha of about 1-2% per annum over the last 3 to 5 years. Why?

13. (4) What is strong market efficiency?

14. (4) List 3 human bias problems that managers have to deal with.

15. (4) Why is it not possible that firms can have eternal negative growth rates g of earnings?

16. (4) Cologuard is a non-invasive DNA-based test for colon cancer, almost as good as a colonoscopy. It could take over the global colonoscopy market, a $15 billion/year industry, but its patent will run out in 7 years. Moreover, its market-beta is very low. What would you estimate its value to be?

17. (10) What are the first interest and principal payments on a 20-year monthly level-payment loan with an interest rate of 5% per annum?

18. (4) How would a hedge fund maximize a Sharpe ratio even in the absence of any skill whatsoever?

19. (4) How is an efficient market different from a perfect market?

20. (12) Stocks A and B have expected rates of return of 1% and 2% respectively, and standard deviations of 10% and 20%. Their returns have 50% correlation. If you invest 1/3 of your portfolio in A and 2/3 in B, what is your portfolio expected rate of return and standard deviation?

21. (4) List some strategic options.

22. (12) A Falcon-9 rocket is carrying a communication satellite. The cost of capital for rockets is about 5%; for communication satellites, it is 20%. 1-in-20 rockets tend to blow up. The rocket costs $60 million. The comm satellite costs $300 million, and is expected to fail with a 1-in-10 probability every year. If it functions, it is expected to earn a net of $100 million in a year. Is this a positive NPV investment?

other course related comments are welcome. otherwise, use as scratch.