

**SLOAN SCHOOL OF MANAGEMENT
MASSACHUSETTS INSTITUTE OF TECHNOLOGY**

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15.414

Financial Management
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Sample Final

Instructions:

You have 1 hour 20 minutes for the exam. To receive full credit, you must hand in your exam promptly at the end of the allotted time. Be sure to answer all **5 questions**.

You may use a calculator or a laptop during the exam. You are also permitted to use both the lecture notes and the textbook. You may NOT use the people sitting next to, in front of, or behind you.

Show your work for each question. The logic underlying your analysis is more important than the final answer.

I have tried to leave a generous amount of space to answer each question. Do not feel that you need to fill up all the space.

When in doubt, ask. I will rarely be sympathetic if you answer a question incorrectly because you misinterpreted it.

Good luck!

Name

ID #

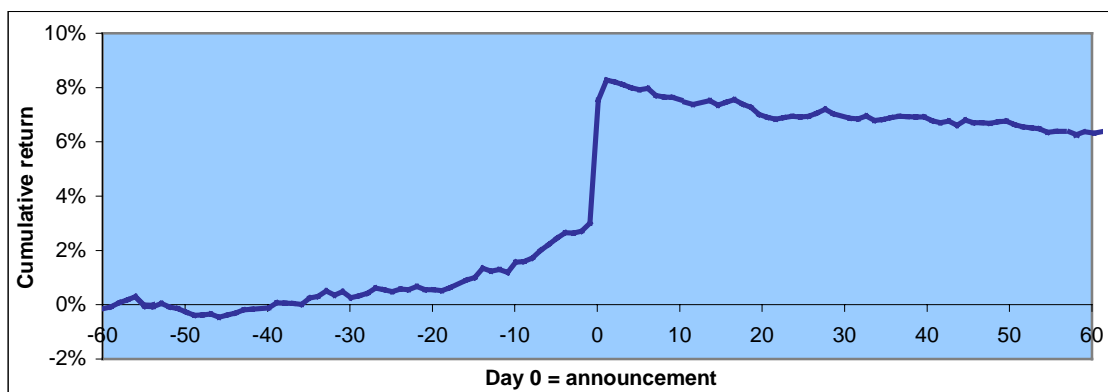
1. True or false? Briefly explain.

(a) _____ Your firm has the opportunity to invest \$20 million in a new project. The interest rate on the firm's debt is 7% and the cost of equity is 14%. The cost of capital for the project depends on whether the firm finances the project with new debt or new equity.

(b) _____ You are thinking about investing in either stock A or stock B. Both stocks have an expected return of 12%, but stock A has a standard deviation of 25% annually and stock B has a standard deviation of 35% annually. You should invest in stock A since it is less risky.

(c) _____ Your firm currently has a debt-to-equity ratio of 10%: debt = \$50 million and equity = \$500 million (market values). The interest rate on the firm's debt (r_D) is 8% and the cost of equity (r_E) is 13%. Since the cost of debt r_D is lower than the cost of equity r_E , the firm can lower its overall cost of capital by borrowing more. Ignore taxes.

(d) _____ Your firm had a terrific year. You will soon announce that annual EPS is \$0.10 above your earlier forecast. You wonder how the stock market will react. To help understand the market's reaction, you have gathered data on all firms with positive earnings surprises last year:



This plot is consistent with an efficient market.

2. Your firm currently supplies audio equipment to car manufacturers. You are thinking about expanding into the home retail market, selling high-quality stereo components directly to consumers. Describe how you would estimate the cost of capital for this expansion. Specifically, what information do you need and how you would estimate it?
3. You work for Microsoft. Your boss, Steve Ballmer, asks you to evaluate the firm's capital structure. Microsoft currently has a market value of \$200 billion and no long-term debt outstanding. You forecast that the firm will earn \$10 billion next year and will generate cashflows of \$8 billion after all investments have been made. The forecasts are accurate to within \pm \$1.2 billion. The firm's marginal tax rate is 40%.
- (a) Microsoft is thinking about issuing \$30 billion in public bonds. It will use the proceeds from the sale to repurchase equity. How will this transaction affect the riskiness of the firm's equity? Why?
- (b) If Microsoft is similar to other firms that have a leverage recapitalization, how will the stock market react to this transaction? Why does the market react this way?
- (c) The interest rate on the new debt is 7% and Microsoft plans to roll-over this debt in perpetuity (sell new debt when the old debt matures). How much does the debt add to Microsoft's value? Be precise.
- (d) Microsoft currently has a 14% cost of capital. After the leverage recapitalization, will Microsoft's cost of capital be higher, lower, or the same? Why?

4. Your firm, Cambridge Entertainment (CE), has two distinct operating divisions. The first division, which represents 60% of market value, is a traditional publishing company (magazines, books, etc.). The second division, which represents 40% of market value, owns a large collection of TV and radio stations broadly dispersed around the U.S. Your boss asks you to evaluate the firm's cost of capital. You have collected the following information about the firm and its main competitors:

| Firm | Debt / (Debt + Equity) | r_D | Equity β |
|--------------------|------------------------|-------|----------------|
| CE | 0.25 | 0.08 | 1.3 |
| Publishing firms | 0.25 | 0.08 | 1.1 |
| Broadcasting firms | 0.25 | 0.08 | 1.6 |

The tax rate is 40%, the Tbill rate is 6%, and the market risk premium is 5%.

- (a) If the CAPM is accurate, what is Cambridge Entertainment's after-tax WACC?
- (b) CE has the opportunity to buy a small publishing company. The acquisition is expected to generate cashflows of \$12 million in the first year, with annual growth of 4%. CE will finance the acquisition entirely with equity, but the deal will have a negligible effect on the firm's overall capital structure (D/V will remain at 25%). How much should CE be willing to pay for the acquisition?

5. Suppose the stock and bond markets are efficient.

(a) What implication does market efficiency have for your personal investment decisions?

(b) What implication does market efficiency have for your firm's financing decisions?