

## QUESTIONS ON FINANCIAL ECONOMICS

1. Explain the theoretical basis of the pricing of risky assets, specifically stocks. Assets are said to be priced based on two factors: the expected future cash flows and the relative riskiness of these cash flows. How does this happen?
  - 1a. Assume a zero transactions cost world. Two firms, A and B, exist and have projects with identical expected cash flows. Firm A issues 100 shares of stock and Firm B issues 200. Firm A plans to pay a 10% dividend yearly and Firm B does not plan to pay dividends for the first 5 years. Do the shares sell for the same price? After 2 years what is the relationship between the shares?
  - 1b. The theory of asset pricing assumes that individuals are risk averse in terms of expected wealth. How is this idea translated into a mean-variance tradeoff?
2. The CAPM says that assets are priced based on a linear relation between the covariance of an asset's return and the return to all other assets. That is, the return on a stock is not related to its own idiosyncratic variance. How can this be? For instance, should not the returns to a poorly managed firm be low? Where does this variance go?
  - 2a. Comment on the following: "CAPM is wrong because it assumes that individuals will hold a portfolio that does not ever need rebalancing. Because no one holds this portfolio, the market is driven by excessive trading that causes excessive volatility in stock prices. This means that the market prices of stocks are driven by fads."
3. Empirical tests of the CAPM have shown that it is less than perfectly accurate in describing stock prices.
  - a) Give some examples of and explanations for the observed anomalies.
  - b) How might it be possible that the inaccuracy of CAPM is symptomatic of the problem of "excess volatility"?
  - c) Is it possible for the market to be efficient and yet investors still hold inefficient portfolios?
4. Stock prices fluctuate in the large and in the small. That is, an investor holding a fully diversified portfolio will observe changes in the value of the portfolio. This is fluctuation in the large. However, the portfolio's value changes because the value of each of the stocks within the portfolio changes. There is price fluctuation for each stock. This is fluctuation in the small. Is it possible that the market might be efficient in the small but not in the large? If so, how so?
  - 4a. Explain why the price of Morton Thiokol stock fell on the day that the Challenger space shuttle crashed. Why did it fall as much as it did? Why did the stock prices of Martin Marietta, Rockwell International, and Lockheed all fall initially and then recover? How does this experience speak to the idea of efficient markets.

5. We know of some startling examples of asset mispricing. The one that was most recently brought to our attention involves equity carve-outs that have market capitalizations in excess of the parent company, which still owns the majority of the stock in the subsidiary.

Consider an example: Assume that ABC Corp has 1 billion shares outstanding and these are trading for \$1. Further assume that it owns 50 percent of XYZ Corp. There are also 1 billion shares of XYZ. The current stock price is \$5.

Answer the following questions:

- a) How would you attempt to capitalize on this mispricing? Be precise about what you would buy and sell. Would you use options if they are available?
- b) What would be the risks associated with this attempted arbitrage?
- c) How is it possible that such mispricing occurs?

6. Describe the concept of a call-covered short sale and explain how this strategy defines the price of a call option. Why is it that increases in the variance of a stock cause the value of a call to increase?

7. Market indexes have futures contracts written on them, and in turn these futures contracts have options contracts written on them. This is true for both stocks and government treasury bonds. Options contracts can be priced by the Black-Scholes formula. This formula can also be used to calculate the volatility implied by the relation between the futures price and the options price. To the extent that this implied volatility is an unbiased predictor of future realized volatility in the underlying security, is this evidence against excess volatility?

8. The model of expected utility maximum in the face of uncertainty is said to be fatally flawed. Rabin and Thaler in a recent paper have popularized what many other researchers have been pointing out for some time. Specifically, the expected utility maximization model implies absurdly large risk premia.

For instance, they claim that if an expected utility maximizer is unwilling to take a 50/50 chance of risking \$100 to gain \$110, then that person would logically not risk \$1000 to win an \$100 trillion. In another example, they say that if a person is unwilling to bet \$1000 to win \$1250 (even odds) then that person will be unwilling to bet \$6000 to win \$100 trillion.

- (i) What do you make of this line of argument? Does their argument make the expected utility maximization model less robust?
- (ii) Outline the arguments made by other scholars criticizing the expected utility maximization model.
- (iii) List the empirical applications of the expected utility maximization model. If the model is faulty, in which of these applications is it most likely to result in seriously flawed policy conclusions.

9. You are a new highly paid financial economist at the SEC. One of its top attorneys from the fraud division has come to you with a troubling case. They have received a number of complaints from senior citizens who had lost money investing in the Mathematicians Mutual Fund (MMF) last year. The citizens were attracted to the fund at the beginning of last year by ads proclaiming the fund had achieved an average return of 19% over the previous five years. These consumers admitted that the fund had warned them that the previous five year performance was no guarantee of subsequent performance. However, when they met an investor who had lost over

a third of her life savings in MMF over the same five years that MMF had reported an average return of 19%, they became convinced that MMF had lied in their ads.

When contacted by the SEC, managers at MMF defended the ad and provided the following information, which proved to be accurate:

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Year	Annual Return
1995	75%
1996	-60%
1997	65%
1998	-70%
1999	85%

5 year Average Annual Return = 19%

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They admitted that the return for 2000 had been negative, but that outcomes in any one year were not out of the ordinary for high risk, high yield funds.

When the SEC attorney tried to explain to the seniors that the investigation had revealed no misconduct by the MMF they were furious and brought in their congressman, who unfortunately chairs the House committee that regulates and funds the SEC. He obtained the MMF financial statement of the senior citizen who had invested her life savings in 1995. It clearly shows that she had invested \$100,000 at the beginning of 1995 and was left with only \$64,102.50 at the end of 1999.

- a) If you don't produce a written explanation of what's going on, a lot of people at the SEC are going to lose their jobs and you'll never be hired as a financial economist again. Write one.
- b) Can you suggest a change in the reporting requirements imposed by the SEC that will solve this problem? Will your proposal increase information available to consumers? Will it reduce some information? Explain.

10. The social discount rate is a concept that public choice economists appeal to when analyzing long term policy proposals. For instance, when government makes decisions about how to structure the access to common property resources, the social discount rate is called upon to determine the optimal depletion rate. This rate is generally held to be equal to something like the real, long-term government bond rate. When firms make decisions, these are based on a different discount rate, one that is somewhat higher than the long-term treasury rate.

- (i) Briefly describe how firms choose the discount rate that they use to make business decisions.
- (ii) If this discount rate is higher than the social discount rate, does it mean that firms make socially inefficient decisions about things like minimizing the likelihood catastrophic disasters?

11. Describe how you would examine the following proposition and what you would expect to find: "The movement to a more competitive market has caused the riskiness of electric utilities to increase."

12. Convertible bonds are interest bearing notes that can be shifted into stock at the holder's discretion. When would the holder so choose? At what price do they bonds trade relative to comparable bonds without conversion rights?

13. Some bonds are callable. That is, the firm that issues them can demand that the holders turn them in at a stated call price. When would the firm do this? At what price will callable bonds trade relative to non-callable ones?

14. Give a complete but succinct description of the event study methodology as it was employed in the study of airline crashes. In the case of airline crashes, is there a stock market reaction? If so, how large is it, why does it happen, and what is the nature of the evidence? Are there any alternative explanations?

15. A law firm has asked you to consider testifying in a case as an expert witness. The case involves an action against a drug company. The allegation is that the company delayed the release of information about the bad side effects of one of its drugs. The drug was already approved by the FDA and was being marketed. Sales were growing. The information that was allegedly withheld, was ultimately released. Information from other sources also came to light. For instance, the drug was taken off the market in Great Britain by the British regulatory authorities. However, the drug continues to be used in the U.S. and controls a substantial share of the market in its application. The lawyers have asked you to analyze the extent to which bad news stories could have affected the stock price of the firm.

(a) Explain how you would go about such an analysis.

(b) Assuming it is true that any information that might have been withheld was ultimately available to the market, what could the firm have gained from a practice of withholding information and retarding its revelation?

(c) What do you think you will find when you do the analysis that you proposed in (a) and if you find such, what will be your interpretation?

16. A widget manufacturer currently produces 200,000 units a year. It buys widget lids from an outside supplier at a price of \$2 a lid. The plant manager believes that it would be cheaper to make these lids rather than buy them. Direct production costs are estimated to be only \$1.50 a lid. The necessary machinery would cost \$150,000. This investment could be written off for tax purposes using the 7-year tax depreciation schedule. The plant manager estimates that the operation would require additional working capital of \$30,000 but argues that this sum can be ignored since it is recoverable at the end of the 10 years. If the company pays tax at a rate of 34 percent and the opportunity cost of capital is 15 percent, would you support the plant manager's proposal? State clearly any additional assumptions that you need to make.

17. The McGregor Whisky Company is proposing to market diet scotch. The product will first be test-marketed for 2 years in southern California at an initial cost of \$500,000. This test launch is not expected to produce any profits but should reveal consumer preferences. There is a 60 percent chance that demand will be satisfactory. In this case, McGregor will spent \$5 million to launch the scotch nationwide and will receive an expected annual profit of \$700,000 in perpetuity. If demand is not satisfactory, diet scotch will be withdrawn.

Once consumer preferences are known, the product will be subject to an average degree of risk, and, therefore, McGregor requires a return of 12 percent on its investment. However, the initial test-market phase is viewed as much riskier, and McGregor demands a return of 40 percent on this initial expenditure.

What is the NPV of the diet scotch project?

18. Over the year 2001, the equally weighted portfolio of all NYSE, AMEX, and Nasdaq stocks out performed the valued weighted portfolio by 40 percent. The equally weighted portfolio was up 30 percent while the value weighted portfolio was down 10 percent. Is this an example of inefficient markets? Is this a potential trading rule; that is, can you make money by rebalancing your portfolio toward equal weighting?

### QUESTIONS ON STRUCTURE OF THE FIRM

1. What are the agency costs between stockholders and managers? What are the agency costs between stockholders and bondholders?
2. Why has the modern stock corporation, which creates a separation of ownership and control, survived and become the most domination business organization in the economy?
3. Discuss the different ways in which the problem of the separation of ownership and control in the modern corporation is resolved. How well do these mechanisms work?
4. One of the fundamental theorems of finance is than firms are risk neutral. What is the basis of this argument? What does it imply about the organizational structure of the firm?
5. Why do shares to small companies sell for a significant discount from the present value of the cash flows when the shares are initially offered? Can the same argument be used to explain the discount of initial public offerings of larger firms? What about the public offerings of new issues of common stock for companies that already have publicly trading stock (so called, seasoned equity issues)?
6. A business is being sold under the following contract (dollar amounts in thousands): Annual royalty payments for 4 years based on net income; \$45 minimum per year; \$180 maximum. Title to office furnishings transfers after \$35; title to building transfers after \$175. The building is valued at \$115 to the buyer and has a salvage value to the seller of 90 percent of this (because of brokerage charge); the office furnishings are valued at \$10 to the buyer and have a salvage value of \$5 to the seller. Assume that the minimum and maximum royalties reflect the 90 percent tails of the distribution of cash flows. What is the proper discount rate to use in valuing this business based on these forecasts of cash flow fluctuations? What is the expected present discounted value of the business? How much of this is in business brand name and goodwill? What agency costs, if any, are present in this contract?
7. What is the meaning of malleable assets and how does malleability of assets affect the organization of the firm?
8. Why are shares to industrial corporations alienable? Why are the shares to country clubs not? What are the efficiency characteristics of non-profit firms (such as Clemson University)?
9. What is the meaning of the distinction between decision management and decision control in the organization of the modern corporation?

10. What are the issues involved in the structure of managerial compensation? Are the top managers of large corporations paid too much? How should this be measured? Is their pay efficiently linked to the performance of the firm? How can you tell? Is the structure of management compensation in the United States inherently inefficient? Discuss in detail.
11. Executives of Enron Corporation were selling stock while the company was engaged in questionable deals that ultimately led to bankruptcy. Discuss the facts of this story. Does this suggest that stock option compensation for managers is inefficient?
12. The CEOs of both Hewlett-Packard and Compaq will receive bonuses if this merger is completed. It now appears that a majority of the shareholders of H-P will vote against the merger. Does the managerial compensation scheme for these CEOs represent a conflict of interest for them?
13. Manne's argument concerning insider trading is that it is efficient to allow managers to buy and sell stock freely without informing the public of their trades. In this way, information about the true value of the security is immediately impounded into the shares. Make the best case possible for Manne's insider trading proposition.
14. Manne's argument concerning insider trading is that it is efficient to allow managers to buy and sell stock freely without informing the public of their trades. Many people claim that such trading increases the likelihood of stock manipulation. Aside from the possibility that stock manipulation might increase, what are the most compelling arguments against Manne's insider trading proposition.
15. Describe the market for corporate control. How do proxy contests work? How do tender offers work? How common are each? What causes firms to be the object of a takeover?
16. The Manne Hypothesis concerning tender offers is that this transaction is a way of sanctioning bad management and resolving agency cost problems when they reach extreme proportions. What are the theoretical and empirical dimensions of this hypothesis? That is, does it make sense theoretically and is there any empirical support?
17. What is the evidence concerning proxy contests? Are they a resolution of agency problems or simply turf battles between management teams attempting to capture the value of the firm.
18. How does the board of directors function to reduce agency costs between stockholders and managers?
19. How does debt work to reduce the agency costs between stockholders and managers? Is it effective in achieving this goal?
20. What is the most compelling theory and evidence in support of the hypothesis that poison pills are economically efficient?
21. What is the most compelling theory and evidence in support of the hypothesis that golden parachutes are economically efficient?
22. Some say bust-up takeovers destroy wealth while others maintain that they create value. What is the best evidence on this issue?
23. In their seminal paper on tournaments, Lazear and Rosen apply the model to executive compensation. While the model has strong empirical support in many applications, there are some questions posed in its use to explain executive compensation. (i) What are these? (ii)

- What are the competing hypotheses that can be used to explain the structure of executive compensation? (iii) How could one distinguish between the various hypotheses used to explain the structure of executive compensation?
24. Stock options seem to be growing as a method of executive compensation and well as compensation to board members. Stock options are usually issued with a strike price that is equal to the price of the companies shares at the time the options are granted. The options are usually exercisable after five or so years. (i) What are the advantages of using stock options as a method of compensating executives? (ii) What are the costs? (iii) Stock option compensation has been increasingly common in the '.com' startups. Are the costs of this form of compensation likely to be more pronounced among this class of firms? Explain.
  25. What do Miller & Modigliani say about why firms pay dividends? How have subsequent theories based on (1) agency costs and (2) asymmetric information modeled the role of dividends? What type of cross-sectional analysis might be used to distinguish between the theories of dividend policy? How might one study dividend initiations? How might one study dividend omissions?
  26. Distinguish between an equity carve-out and a spin-off. What are some theoretical explanations about why firms conduct carve-outs or spin-offs? What are some theories as to the choice between the two divestiture methods? What empirical analysis might one perform to distinguish the theory? How might the analysis of industry rivals aid in testing the various theories of divestitures and the choice of divestiture mode?
  27. What does the theory of efficient markets say about the stock price reaction to the announcement that a firm is an acquisition target? (Be sure to clearly state your exact definition of efficiency.) In an efficient market, what should be the stock price reaction of bidders and targets on the date the merger is completed? What should be the post-merger equity performance of the combined entity?
  28. Assume you know a firm is to announce less than expected earnings next week. What is the basic optimization problem you face in attempting to profit from the information? Would the problem be different if the information related to a pending takeover announcement? Would the trading location -- NYSE versus NASDAQ -- affect your trading decision? Does it matter whether options are traded on the security in question? How would insider trading penalties affect your decision? How do you think insider trading sanctions affect market efficiency?
  29. The NYSE is considering going public. What are the costs and benefits of such a move to the members of the NYSE? What are the economic efficiency considerations?
  30. Many brokerages pay for order flow. What does this mean? Is it bad?
  31. A criticism of on-line trading is that orders are not executed at the true market price. While this may or may not be true, trade execution is part of the bundle of services purchased in the investor's choice of broker. (a) Explain how the various brokerage services execute trades. (b) Evaluate the claim that on-line brokers are less efficient in this regard and in fact may cheat their customers. (c) In the absence of government regulation, what do you predict will be the response of brokerage companies to this issue?
  32. UPS recently announced that it will sell 10 percent of its stock to the public but only 1 percent of the voting rights. UPS is a corporation in which all of the shares, until now, have been held by the employees. (a) What do you predict was the stock price reaction of UPS's

main competitor, FedEx? (b) Why should there be any stock price reaction by FedEx to an announcement of a change in the capital structure of UPS? (c) How much will the IPO sell for relative to projected earnings? What will be the effect of the limited voting rights associated with the offering?