

Intermediate Financial Economics

Homework I

CEMA, CUFE

Due in class on Monday, March 11, 2013

1. Which of the following statements are true about the efficient market hypothesis? Explain why each item is true or false.
 - (a) It implies perfect forecasting ability.
 - (b) It implies that prices reflect some set of information.
 - (c) It implies an irrational market.
 - (d) It implies that prices do not fluctuate.
 - (e) It results from keen competition among investors.
2. A company has changed how it accounts for inventory. Taxes are unaffected, although the resulting earnings report released this quarter is 20% higher than what it would have been under the old accounting system. There is no other surprise in the earnings report and the change in the accounting treatment was publicly announced earlier. Assume market efficiency. Will the stock price be higher when the firm releases the earnings report? Explain.
3. The efficient market hypothesis implies that all mutual funds should obtain the same expected risk-adjusted returns. Therefore, we can simply pick mutual funds at random. Is this statement true or false? Explain. (Note: Risk-adjusted returns are returns that have the risk components subtracted. For example, the expected risk-adjusted return of Stock i under the CAPM is $Er_i - \beta_i(Er_m - r_f)$, which is just r_f .)
4. An individual is risk neutral if and only if he is indifferent between the expectation of a risky gamble z and the gamble itself. Prove that the risk premium is zero for risk neutral individuals.
5. Your current wealth stands at $y = \$10,000$. Suppose you go to the Mollywood Casino and wonder you should play the roulette. The roulette has a spinning wheel that has 38 colored pockets, 18 of which are black, 18 of which are red, and 2 of which are green. The black and red pockets are numbered from 1 to 36. The green pockets are numbered 0 and 00. To determine the winning number and color, a croupier will spin a round ball, which will eventually lose momentum and fall on to the wheel into one of the 38 pockets. Suppose you can only bet on the color red or black, or one of the 38 numbers, and your utility function is $u(w) = \ln w$. The bet size is fixed at \$1,000 for each play, and only one bet is allowed for each play. The payouts are 1 to 1 for black or red, and 35 to 1 for one number. That is, if you bet on the color red or black, and if the ball

falls into a red or black pocket, you will win \$1,000. If you bet on one number, and if the ball falls into a the pocket labeled with that number, you will win \$35,000. If the ball falls into a pocket whose color or number is not what you bet on, you will lose the \$1,000.

- (a) What is your risk premium for betting on red? Is it the same with the risk premium for betting on black? What does the risk premium mean?
- (b) What is the certainty equivalence for betting on red? On black? What does it mean?
- (c) What are your risk premium and certainty equivalence for betting on any one number?
- (d) Are the risk premia for betting on red/black and betting on one number different? Why?
- (e) A fair game is a gamble with zero expected payoffs. What would be the payout of betting on one number such that it is a fair game?
- (f) What should be the payout of betting on any one number for a risk-averse person with log utility such that he/she would feel exactly indifferent between taking and not taking the gamble?