

Econ 134A Homework 4:

This assignment is due June 2nd in lecture. Show your work and intermediate steps (the equations used, the numbers, etc.) and support or explain your answers where appropriate. Put your TAs name on your homework, and be prepared to turn it in to your TA's homework pile.

1. Mojave Mines Incorporated is an all-equity firm with earnings expected to be \$800,000 in perpetuity. The firm has 100,000 shares outstanding. The cost of capital is 20%. MMI is considering a major expansion of its Ridgecrest facilities which will require an initial outlay of \$750,000 and which is expected to produce additional annual earnings of \$250,000 per year in perpetuity. Management considers the expansion to have the same risk as the firm's existing assets. Assume throughout that there are no taxes and no costs of bankruptcy.
  - a. What is the value of the firm's assets prior to undertaking the proposed expansion? What is the value of the firm's equity? What is the price per share of the firm's stock?
  - b. Suppose MMI plans to finance the expansion by issuing common stock. How many shares of stock must be issued? What is the value of the firm's equity after the new stock issue? What is the price per share of the firm's stock?
  - c. Suppose Mojave Mines plans to finance the expansion by issuing bonds with an interest rate of 10%. What is the value of the firm after the new bond issue? What is the value of the firm's equity? What is the price per share of the firm's stock?
  - d. Calculate the expected yearly income after interest for the equity holders. Use the expected yearly income to calculate the expected return for the equity holders.
  - e. Use MM Proposition II (no taxes) to determine the expected return for MMI's equity holders.
  
2. Fulcrum Technologies expects earnings before interest and taxes (EBIT) of \$200,000 every year in perpetuity. The firm currently has no debt, but can borrow at 8% per annum. Fulcrum's cost of equity ( $r_0$ ) is 22%, and the firm is subject to a 35% corporate tax rate.
  - a. What is the value of the firm?
  - b. What will the value of Fulcrum be if it borrows \$300,000 and uses the proceeds to repurchase equity?
  
3. In February 2005, a call on Cool Breeze, Inc., common stock with a September 2005 expiration date sells for \$5.45. The exercise price of the call is \$60. T-bills

coming due in September 2005 are priced to pay a yield of 12.6%, and Cool Breeze common stock is selling for \$55 per share. What is the value of a September 2005 put on Cool Breeze common stock with an exercise price of \$60?

4. The price of Wabash Corporation common stock will be either \$25 or \$40 at the end of the year. A standard call option contract for the purchase of 100 shares of Wabash stock has an expiration date in one year. Investors can borrow and lend at 12%.
  - a. Suppose the current price of Wabash stock is \$30 and the exercise price of the call is \$35. What are the possible values of the call contract on the expiration date?
  - b. For the data in part a), what is the current value of the call contract?
  - c. Suppose that the option described in part a). has an exercise price of \$20. What is the value of the call contract?
  - d. Suppose a call contract for 100 shares of Wabash common stock, with an exercise price of \$30, sells for \$1000. What is the current value of the stock?