

Problem Set #4

1. If the dividend stream of a company is a random walk,  $D_t = D_{t-1} + u_t$  where  $u_t$  is random forecastable noise which is always revealed on the dividend date and if the price of a share of the stock is the present value with constant discount rate of the expected future dividends, is the price of a share a random walk too? Explain.

2. If the dividend per share  $D_t = D_0 e^{gt} + u_t$  where  $u_t$  is random forecastable noise which is always revealed on the dividend date, and  $g$  is the growth rate of dividends, is the price of a share of the stock still a random walk? Explain.

3. The basic efficient markets model says that price per share is the present value of expected future dividends per share. Is this efficient markets model then inconsistent with the Modigliani-Miller theory that dividend policy is irrelevant to firm value? In answering this question, consider the case of a firm that is retaining half its earnings (which are at level \$10 per share at time 0) to invest in factories and equipment to advance the earnings of the firm and whose earnings are growing at rate one percent per year. The interest rate is five percent and there is no uncertainty ( $u_t$  is zero). The market has been expecting that the firm would continue to do this forever. Suppose this firm switches today to a 100% dividend-payout policy, which it will continue forever, and will now always issue shares to get the money to do the same investing in factories and equipment that it was doing under the old regime. Show the present value formulas for price per share both before and after, and consider whether and why they are different.

4. Companies Consider two companies that differ only in their capital structure. Company number 1 is financed 25 percent debt and 75 percent equity. Company number 2 is financed 5 percent debt and 95 percent equity. There is no risk in either company.

- If you own 1 percent of the common stock of the first company, what other investment package involving the other company would produce identical cash flows for you?
- If you own 1 percent of the common stock of 2, what other investment package involving company 1 would produce the identical cash flows for you?
- Explain why it is that no one would invest in the second company if the total value of this company were greater than that of the first company.

5. Log on to the web site of the Securities and Exchange Commission, read the 10-K report of a company that interests you, and describe its balance sheet and how it relates to their recent business, in a few paragraphs. What does the company own and what does it owe?? To do this, go to [www.sec.gov](http://www.sec.gov), and, and then click under "Filing and Forms (Edgar)" "Search for Company Filings." It comes up with "Search the Edgar Database." Click on "Companies and Other Filers." Enter where it says "Company Name" e. g., enter Ford Motor. Then click on the pink number next to the company name. Then, in the upper right corner, enter 10-K into the box where it says "Form Type."