

**Homework Assignment 6 solution.**

1. (2 point) Explain the difference between adaptive expectations and rational expectations?

**According to the theory of adaptive expectations, prices (which reflect expectations) are formed based on the previously available information. New information is incorporated into prices only slowly. In contrast, rational expectations theory says that the new information is incorporated in prices instantaneously. Expectations are equal to optimal forecasts (best guess) of future prices.**

2. (2 point) Explain what the Efficient Market Hypothesis means? If this hypothesis is true, can an investor expect to earn consistently higher returns than the market average?

**Efficient Market Hypothesis is an application of rational expectations to the stock markets. In practice, if Efficient Market Hypothesis is true, all available relevant information is reflected in the price of a stock. It means that it is very unlikely that anyone would be able to consistently beat the market average (laws of probability allow for a couple of lucky investors, but no more than that). The justification for this hypothesis relies on the following argument: Suppose that fact A is known to all investors and it is not incorporated in a stock price you're interested in. If this fact A is expected to contribute to an increase in the price of this stock, you'll immediately realize that the stock is underpriced (it doesn't reflect favorable information – fact A). So you start buying this stock. Other investors will do the same – fact A is known to everyone, and all investors want to make money. This surge in demand will drive the price up very quickly (can be a matter of seconds with new electronic trading technologies) – the fact A will be incorporated in the price.**

3. (2 points) Suppose that company A paid a \$0.5 dividend on each of its stocks. Assume that the growth rate of dividends is 4% a year. The risk-free interest rate is 2% and the risk premium is 4%. What is the current price of one stock of the company A?

**The formula that was given in the lecture notes is:**

**$P_{\text{today}} = D_{\text{today}} / (i - g)$ , where  $P_{\text{today}}$  is the price today,  $D_{\text{today}}$  is the dividend today,  $i$  is the interest rate (equal to the sum of risk free rate and risk premium), and  $g$  is the dividend growth rate. Pluggin in the numbers, we get:**

$$P_{\text{today}} = D_{\text{today}} / (i - g) = \$0.5 / (0.02 + 0.04 - 0.04) = \$25.$$

**The text-book gives a slightly different formula:**

$$P_{\text{today}} = D_{\text{in one year}} / (i - g) = \$(0.5 * 1.04) / (0.02 + 0.04 - 0.04) = \$26.$$

**Either is fine for this problem.**

4. (2 points) The Enron scandal caused an almost immediate drop in stock prices. Explain what are the primary causes of this drop?

**It is easier to illustrate what happened using the formula from the previous problem:**

$$P_{\text{today}} = D_{\text{today}} / (r_f + r_p - g).$$

**The Enron scandal exposed some problems previously unknown to the general public. The problems were there, it's just they were hidden from the public. Once the news came out, it became obvious that a lot of firms in the US are not as healthy as previously thought. This implies higher risk premium (rp) required by investors. In addition, many investors probably reduced their expected dividend growth rates (g). These two factors both would lead to lower stock prices today.**

5. (2 points) Name at least three types of evidence against the Efficient Market Hypothesis and explain how exactly each one violates this theory.

**There are 6 effects that are listed in your text-book on pages 156-158. The point of each of them is that some patterns in stock price behavior is observed year after year. This means that everyone can predict these with high degree of certainty. This, in turn, implies that investors can make money by exploiting these patterns.**