Slides 11 - The Efficient Market Hypothesis

1. a. A method used to determine the value of a stock by analyzing the earnings prospects while considering the business environment in which the company operates is called _____.

   - (●) fundamental analysis
   - ( ) industry analysis
   - ( ) operational analysis
   - ( ) risk analysis
   - ( ) technical analysis

   Fundamental analysis is a method used by analysts to determine the value of a stock by analyzing the earnings prospects while considering the business environment in which the company operates.

2. a. In an efficient market, _____.

   Check all that apply:

   - [ ] patterns in past prices help predict future prices
   - [x] prices change only in response to new information
   - [x] prices adjust quickly in response to new information
   - [x] prices reflect all available information

   Using historical stock price patterns to predict future prices is called technical analysis (or charting) and is useless in an efficient market.

3. a. If the stock price of a target company jumps up when the acquisition of the company is announced, the market _____.

   - ( ) cannot be semistrong-form efficient
   - (●) cannot be strong-form efficient
   - ( ) is semistrong-form efficient
   - ( ) is strong-form efficient

   The market cannot be strong-form efficient, as the announcement of the acquisition affects the stock price and thus was not already priced in, even though the insiders of the target company (and of the acquirer) knew about the acquisition beforehand.

4. a. A market where prices reflect all available public information is _____.

   - ( ) not efficient
   - ( ) weak-form efficient
   - (●) semistrong-form efficient
   - ( ) strong-form efficient

   A market where prices reflect all available public information (but not insider information) is semistrong-form efficient.

   b. A market where prices reflect all information is _____.

- ○ not efficient
- ○ weak-form efficient
- ○ semistrong-form efficient
- ◉ strong-form efficient

A market where prices reflect all information, including insider information, is strong-form efficient.

c. A market where prices reflect all past trading data is _____.

- ○ not efficient
- ◉ weak-form efficient
- ○ semistrong-form efficient
- ○ strong-form efficient

A market where prices reflect all past trading data, such as past stock prices and trading volumes, is weak-form efficient.

5. a. Which of the following is true about passive vs active management?

- ○ Active managers usually allocate their capital between one or more index funds.
- ○ Active managers usually allocate their capital to a fixed risky portfolio and change their allocations only as a result of changes in their risk tolerance.
- ◉ Active managers usually try to achieve returns higher than commensurate with risk by identifying mispriced assets.
- ○ Passive managers usually engage in both market timing and security selection.
- ○ Passive managers usually engage in market timing.

Investors who decide to pursue active management try to achieve returns higher than commensurate with risk by identifying mispriced assets (security selection) or asset classes (market timing).

b. _____ refers to the attempt to identify mispriced securities or to predict broad market trends.

- ◉ Active management
- ○ Asset allocation
- ○ Passive management
- ○ Security selection

Active management refers to a type of asset management that tries to achieve superior returns by either identifying mispriced securities (security selection) or predicting broad market trends (market timing).

Passive management, on the other hand, calls for holding a diversified portfolio of securities without trying to time the market or find mispriced securities.

6. a. Which of the following statements is true about weak-form tests?

- ○ The small-firm effect is a market anomaly found in weak-form tests.
- ◉ They are often based on tests of serial correlation of stock market returns.
- ○ They are usually based on the stock's P/E ratio or its market capitalization.
- ○ Weak-form tests are tests of the efficacy of fundamental analysis.
- ○ Weak-form tests examine the effects of public events on the company's stock price.

Weak-form tests of market efficiency examine the efficacy of technical analysis in generating abnormal returns. They are often based on tests of serial correlation of stock market returns, in order to find trends in past prices.

7. a. Which of the following statements is true about tests of semistrong-form market efficiency?

   - ○ One of the market anomalies found in semistrong-form tests is the momentum effect.
   - ◉ Semistrong-form tests use easily accessible information to predict abnormal stock returns.
   - ○ Semistrong-form tests investigate the efficacy of technical analysis in predicting abnormal returns.
   - ○ Semistrong-form tests are based on tests of serial correlation of stock market returns.

   Semistrong-form tests investigate the efficacy of fundamental analysis in predicting abnormal stock returns. They use easily accessible information like book-to-market ratios, P/E ratios, market capitalization or takeover announcements to measure abnormal stock returns.

8. a. Which of the following statements is true about the reversal effect?

   - ○ It implies that stocks of less well-known companies tend to generate higher returns.
   - ○ It is a tendency of stocks that have performed relatively well in one period to continue that abnormal performance in the following period.
   - ○ It is a tendency of stocks that have high book-to-market ratios to outperform the rest of the market.
   - ○ It is a tendency of stocks that have low P/E ratios to generate abnormal returns.
   - ◉ It is a tendency of stocks that have performed relatively well in one period to underperform the market in the following period.

   The reversal effect is a tendency of stocks that have performed relatively well (badly) in one period to underperform (outperform) the market in the following period. Since it's based on publicly available past trading data, it is inconsistent with the (weak form of the) efficient market hypothesis.

9. a. The book-to-market effect implies that shares of companies with _____ ratios tend to _____ the market.

   - ◉ high book-to-market; outperform
   - ○ high book-to-market; underperform
   - ○ high P/E; outperform
   - ○ high P/E; underperform
   - ○ low book-to-market; outperform

   The book-to-market effect implies that shares of companies with high book-to-market ratios tend to outperform the market.

10. a. The fact that less than half of all equity fund managers beat the market in most years indicate that the stock market is _____.

    - ○ ripe for disruption
    - ○ profitable for more competent manager
    - ◉ largely efficient
    - ○ not fully efficient

    The fact that professional fund managers as a group, with the best data, employees and trade execution, cannot beat the index indicates that the stock market is mostly efficient.

11. LightWorks Inc. has a cost of equity of 12%. The firm will pay an annual dividend of $3.5 in one year and its dividends had been expected to grow by 6% per year thereafter. You just heard on the news that LightWorks has changed its growth forecasts and now expects its dividend to grow by 4% per year forever after the first year.

    a. What is the change in the intrinsic value of LightWorks (in $)? Choose the right sign.

Original intrinsic value:

`V_0 = D_1/(r-g) = 3.5/(0.12 - 0.06) = 58.33`

New intrinsic value:

`V_0^' = D_1/(r-g) = 3.5 / (0.12 - 0.04) = 43.75`

Change in intrinsic value:

`V_0^' - V_0 = 43.75 - 58.33 =` **-14.583**

b. If you tried to sell LightWorks stock immediately after the news broadcast, what price would you most probably get?

Since markets are mostly efficient, it is very likely that the information would get incorporated immediately into the stock price, so that you would only be able to sell your stock at the new intrinsic value of $**43.75**. Therefore, you will not be able to profit from the news.

12. The daily returns for a stock and the S&P 500 are given below. The stock has an expected return equal to the index return.

Date	Stock return (%)	S&P 500 return (%)
Feb. 8	0.5	0.5
Feb. 9	-0.2	-0.4
Feb. 10	0.1	-0.1
Feb. 11	-0.3	-0.2
Feb. 12	0.6	0.3
Feb. 13	0.4	0.3
Feb. 14	0.2	0.5

a. What is the cumulative abnormal return over that period (in percentage points)?

Abnormal return = Observed return - Expected return (here: S&P 500 return)

	Stock return (%)	S&P 500 return (%)	Abnormal return (%)	Cumulative abnormal return (%)
Feb. 8	0.5	0.5	0	0
Feb. 9	-0.2	-0.4	0.2	0.2
Feb. 10	0.1	-0.1	0.2	0.4
Feb. 11	-0.3	-0.2	-0.1	0.3
Feb. 12	0.6	0.3	0.3	0.6
Feb. 13	0.4	0.3	0.1	0.7
Feb. 14	0.2	0.5	-0.3	**0.4**

13. There are 10,000 mutual fund managers. 14 claim that they are the best, since their fund beat the relevant index every year for 6 years.

However, you think that markets are efficient and that the average fund manager is as likely to deliver a better performance than the index as to underperform the index, before fees.

a. What is the probability that the average single fund managers beats the index 6 years in a row (before fees)?

The probability of beating the index in a single year is 50%. The probability of beating the index every year for 6 years is

0.5^6 = **0.015625**

b. How many fund managers would you expect to beat the index 6 years in a row if only luck and no skill was involved?

Since there are 10,000 fund managers and each of them has a 1.5625% chance of beating the index 6 years in a row, the expected number of managers to beat the index 6 years in a row is

10,000 * 0.015625 = 156.25

Therefore, the fact that 14 managers were able to beat the index every year for 6 years doesn't prove that they are better, since we would expect **156.25** managers to do so by luck alone.

14. Matrix Semiconductor makes memory chips. It has 5 million shares outstanding, currently trading at $164, and a weighted average cost of capital of 10%.

The company just announced that a major hurricane has damaged its production plant in Boston and that free cash flows will be reduced by $85 million this year and $50 million next year.

a. What stock price do you expect after the announcement of the damage and its impact on free cash flows (in $)?

Change in the value of the firm:

`ΔV_0 = (ΔFCFF_1)/(1+"WACC") + (ΔFCFF_2)/(1+"WACC")^2`

= `-85/1.1 + (-50)/1.1^2`

= `-118.6` (million)

Change in the stock price:

`ΔP_0 = (ΔV_0)/ N = -118.6 / 5 = -23.72`

New stock price:

`P_0^' = P_0 + ΔP_0`

= `164 + (-23.72)`

= **140.28**

b. What price would you likely get for selling the stock immediately after the announcement?

Since markets are mostly efficient, it is very likely that the information would get incorporated immediately into the stock price, so that you would only be able to sell your stock at the new price of $**140.28**. Therefore, you will not be able to profit from the news.

15. The daily returns for a stock and the S&P 500 are given below. The stock has an expected return equal to the index return.

Date	Stock return (%)	S&P 500 return (%)
Feb. 8	0.3	0.5
Feb. 9	-0.2	-0.4
Feb. 10	0.1	-0.1

Date	Stock return (%)	S&P 500 return (%)
Feb. 11	-0.3	-0.2
Feb. 12	-1.6	0.3
Feb. 13	0.4	0.3
Feb. 14	0.2	0.2
Feb. 15	0.4	0.3
Feb. 16	-0.4	-0.6

a. What is the cumulative abnormal return over that period (in percentage points)?

Abnormal return = Observed return - Expected return (here: S&P 500 return)

	Stock return (%)	S&P 500 return (%)	Abnormal return (%)	Cumulative abnormal return (%)
Feb. 8	0.3	0.5	-0.2	-0.2
Feb. 9	-0.2	-0.4	0.2	0
Feb. 10	0.1	-0.1	0.2	0.2
Feb. 11	-0.3	-0.2	-0.1	0.1
Feb. 12	-1.6	0.3	-1.9	-1.8
Feb. 13	0.4	0.3	0.1	-1.7
Feb. 14	0.2	0.2	0	-1.7
Feb. 15	0.4	0.3	0.1	-1.6
Feb. 16	-0.4	-0.6	0.2	**-1.4**

b. If the company released worse than expected earnings on Feb. 12, are the observed returns consistent with semistrong-form efficient markets?

- ○ No, because there were abnormal returns on most days.
- ○ No, because the cumulative abnormal return is different from zero at the end of the period.
- ◉ Yes, because the cumulative abnormal return changed significantly only on that date.
- ○ Yes, because the cumulative abnormal return is different from zero at the end of the period.

The observed returns are consistent with semistrong-form efficient markets because the cumulative abnormal return changed significantly only on that date, showing that the market reacted to the news without delay, overreaction or underreaction.