BUAD 340 Principles of Finance Fall 2018/Dr. Minor Risk and Return Handout 181029

Van Horne Chapter 5. Risk and Return (continued)

Beta

- The **systematic risk** component measures the contribution of the investment to the risk of the market portfolio. For example: War, recession.
- The **unsystematic risk** is the element of risk that does not contribute to the risk of the market and is diversified away. For example: Product recall, labor strike, change of management.

Beta is an index of *systematic risk*. It measures the *sensitivity* of a stock's returns to changes in returns on the market portfolio. The *beta* for a portfolio is simply a weighted average of the individual stock betas in the portfolio.

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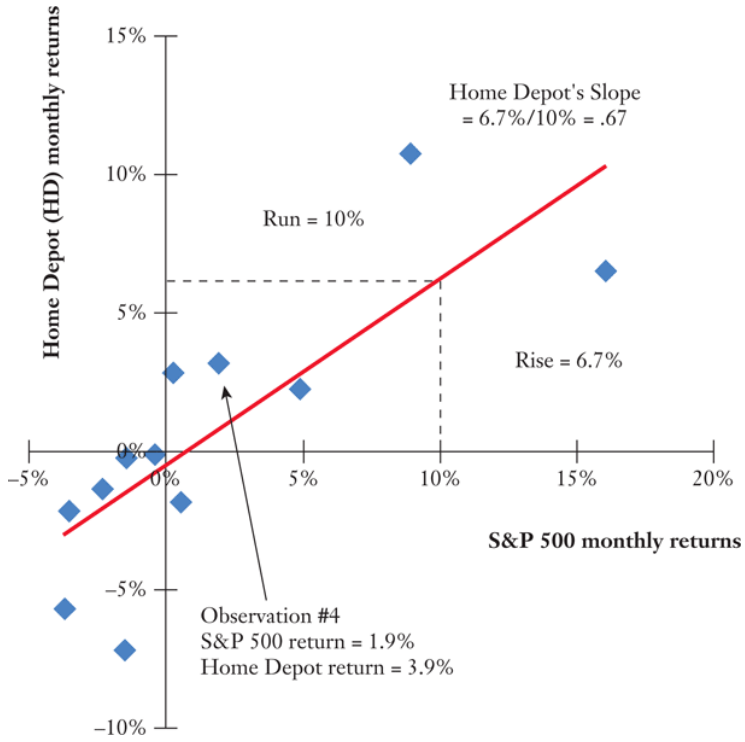

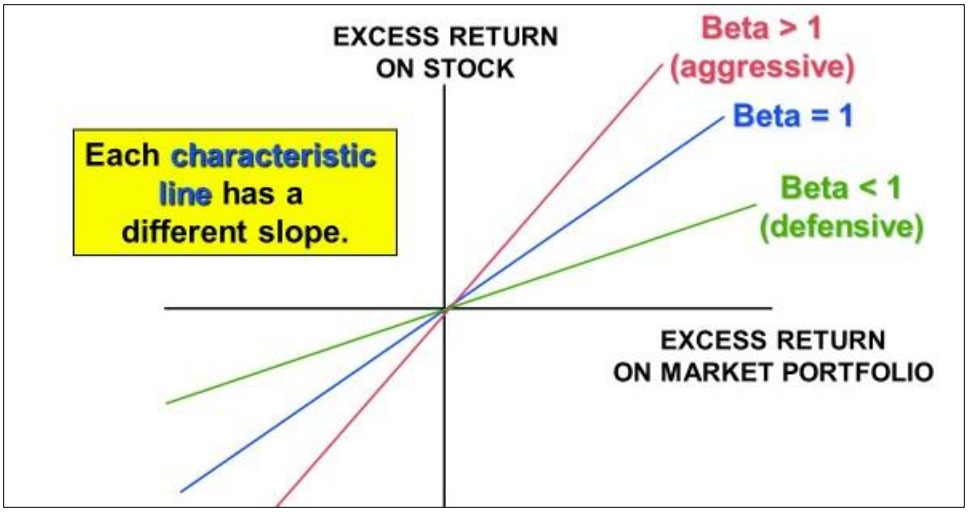

Capital Asset Pricing Model (CAPM

CAPM is a model that describes the *relationship* between *risk* and expected (required) *return*; in this model, a security's expected (required) return is the risk-free rate plus a premium based on the *systematic risk* of the security.

CAPM Assumptions:

1. Capital markets are efficient.
2. Homogeneous investor expectations over a given period.
3. *Risk-free* asset return is certain (use short- to intermediate-term Treasuries as a proxy).
    a. *T-bill*: less than one year (doesn't pay interest before maturity)
    b. *T-note*: 1, 3, 5, 7, or 10 years (pays interest semi-annually until maturity)
    c. *T-bond*: greater than 10 years (pays interest semi-annually until maturity)
4. Market portfolio contains *only systematic risk* (use S&P 500 Index or similar as a proxy).

CAPM describes how the betas relate to the expected rates of return. Investors will require a higher rate of return on investments with higher betas.

$$\bar{R}_j = R_f + \beta_j(\bar{R}_M - R_f)$$

R_j is the required rate of return for stock j,
R_f is the risk-free rate of return,
b_j is the beta of stock j (measures systematic risk of stock j),
R_M is the expected return for the market portfolio.

Example 5.52. Lisa Miller at *Basket Wonders* is attempting to determine the rate of return required by their stock investors. Lisa is using a 6% R_f and a long-term market expected rate of return of 10%. A stock analyst following the firm has calculated that the firm beta is 1.2. What is the *required rate of return* on the stock of *Basket Wonders*? Is this return better than the market?

$$R_{BW} = R_f + \beta_j(R_M - R_f)$$
$$R_{BW} = 6\% + 1.2(10\% - 6\%)$$
$$R_{BW} = 10.8\%$$

The required rate of return exceeds the market rate of return as BW's beta exceeds the market beta (1.0).

Intrinsic Value

Example 5.54. Lisa Miller at BW is also attempting to determine the intrinsic value of the stock. She is using the *constant growth model*. Lisa estimates that the dividend next period will be $0.50 and that BW will grow at a constant rate of 5.8%. The stock is currently selling for $15. What is the intrinsic value of the stock? Is the stock over or underpriced?

Constant Growth Model:

D_1: Dividend paid at time 1.
g: The constant growth rate.
k_e: Investor's required return.

$$\frac{D_1}{(k_e - g)}$$

Intrinsic Value = $.50/(10.8% - 5.8%) = $10
The stock is *overvalued* as the market price ($15) exceeds the intrinsic value ($10).

Exam 4: Van Horne Chapter 5; Smart Chapter 4; Handouts; Weekly Finance in the News Reports