

Capital asset pricing model assignment

Business



1. For each of the scenarios below, explain whether or not it represents a diversifiable or an undiversifiable risk. Please consider the issues from the viewpoint of investors. Explain your reasoning

Undiversifiable (market) risk: Market risk is the variability in all risky assets caused by macroeconomic variables. This risk cannot be avoided, regardless of the amount of diversification.

Systematic risk (Market risk) factors are those macroeconomic variables that affect the valuation of all risky assets such as variability in the growth of the money supply, interest rate volatility, variability in aggregate industrial production, and natural shocks like drought, earth quake, hurricane, etc.

Diversifiable (unique) risk: Many of the risks faced by an individual company are peculiar to its activity, its management, etc. These are the unique risks and can be diversified away.

Examples of unique risks are a company winning a large contract, wildcat strikes hitting a company, litigation hitting a company or the company facing a governmental investigation.

a. A large fire severely damages three major U. S. cities. **Diversifiable risk** The entire economy will not be affected by a large fire in three major US cities. In fact some companies in cities not affected by fire will benefit as they will meet the demand not being met by companies in the three cities that are affected by the fire.

b. A substantial unexpected rise in the price of oil.

Undiversifiable risk A substantial unexpected rise in the price of oil will increase the inflation rate that will affect the entire economy and all the companies

c. The bridge on a major highway collapsed and the repairs of the

bridge may take up to a year to complete. Diversifiable risk The entire economy will not be affected; in fact some companies in areas not affected by bridge collapse will benefit as they will be able to transport their output at the expense of companies that are not able to transport their goods because of the bridge collapse. . Use the CAPM to answer the following questions: a. Find the Expected Rate of Return on the Market Portfolio given that the Expected Rate of Return on Asset “ i” is 12%, the Risk-Free Rate is 5%, and the Beta (b) for Asset “ i” is 1. 5. CAPM (Capital Asset Pricing Model equation is: $r_A = r_f + \beta_A (r_m - r_f)$ risk free rate= $r_f = 3\%$ beta of stock= $\beta_A = 1.5$ return on market portfolio= $r_m =$ to be determined required return on stock $r_A = 10.00\%$ Plugging in the values $r_m = 7.6667\% = (10.0\% - 3.0\%) / 1.5 + 3.0\%$

Answer: return on market portfolio= 7.6667% b. Find the Risk-Free Rate given that the Expected Rate of Return on Asset “ j” is 15%, the Expected Return on the Market Portfolio is 12%, and the Beta (b) for Asset “ j” is 1. 4. CAPM (Capital Asset Pricing Model equation is: $r_A = r_f + \beta_A (r_m - r_f)$ risk free rate= $r_f =$ beta of stock= $\beta_A = 1.5$ return on market portfolio= $r_m = 12\%$ required return on stock $r_A = 14.00\%$ Plugging in the values $r_f = 8.0\% = (1.5 * 12.0\% - 14.0\%) / (1.5 - 1)$ Answer: risk free rate= 8.0% c. What do you think the Beta (β) of your portfolio would be if you owned half of all the stocks traded on the major exchanges? Explain. The beta would be close to 1 This is because if the stocks are chosen randomly, they would be a fair representation of the market and the market beta is 1.3. In one page explain what you think is the main ‘ message’ of the Capital Asset Pricing Model to corporations and what is the main message of the CAPM to investors? The

Capital Asset Pricing Model (CAPM) is a model to explain why capital assets are priced the way they are.

An important consequence of the modern portfolio theory as introduced by Markowitz was that the only meaningful aspect of total risk to consider for any individual asset is its contribution to the total risk of a portfolio. CAPM extended Harry Markowitz's portfolio theory to introduce the notions of systematic (undiversifiable) and unsystematic (diversifiable or unique) risk.

Main message of the CAPM to investors The total risk of a portfolio (indeed of a security) consists of two parts: Market (or systematic) risk and Unique (Unsystematic or firm-specific) risk.

Diversification reduces the unique risk; but the market risk cannot be diversified away. Therefore, the Capital Asset Pricing Model (CAPM) advocates that investors should not expect to be compensated (expect more profit) for taking on unique risk as it can be diversified away, but they can expect to receive higher returns for taking on more market risk. Main message of the CAPM to corporations “ The major conclusion of CAPM is that expected return on an asset is related to its systematic and not to its total risk or standard deviation.

Its systematic risk is given by its beta coefficient (β). An asset's beta is a measure of its co-movement with the market index. CAPM (Capital Asset Pricing Model) equation is: $r_A = r_f + \beta_A (r_m - r_f)$ where r_f is the risk free rate, r_m is the return on market portfolio. r_A is the required return on a risky asset like equity. Corporations often use CAPM to help estimate the cost of

equity financing, which is in turn, an important component of the weighted average cost of capital (WACC). “