

**SLOAN SCHOOL OF MANAGEMENT
MASSACHUSETTS INSTITUTE OF TECHNOLOGY**

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Financial Management
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Assignment 4 – Due Thursday, August 7

1. You are thinking about investing in a risky portfolio. In one year, you expect the portfolio to be worth either \$120,000 or \$160,000, with equal probability, and you expect to receive \$4,000 in dividends. The interest rate on one-year Tbills is 3%.
 - a. If you require a risk premium of 7%, how much would you be willing to pay for the portfolio?
 - b. Suppose the portfolio can be purchased for the amount found in part (a). What is the expected return on the portfolio?
 - c. Now suppose you require a risk premium of only 4%. What is the new price that you would be willing to pay? In general, if investors' required risk premium changes over time, what effect will this have on stock prices?

2. You are a resident of the U.S. and currently have all of your wealth invested in the U.S. stock market. After learning about diversification, you consider moving part of your portfolio into international stocks. You have estimated the following information (dollar denominator annual returns):

Country	Exp. return	Std. dev.	Correlations			
			U.S.	Netherlands	India	Thailand
Tbills	5.0%	--	--	--	--	--
U.S.	8.0%	17.13%	1	0.458	0.032	0.165
Netherlands	9.0%	18.05%	0.458	1	0.022	0.189
India	12.0%	26.25%	0.032	0.022	1	0.095
Thailand	15.0%	41.97%	0.165	0.189	0.095	1

The spreadsheet Portfolio.xls on SloanSpace can be used to help answer the following questions.

- a. You decide to invest 20% of your portfolio in *either* the Netherlands or India. Which is the better investment given the information above? Why? Does the Netherlands or India contribute more to the risk of your portfolio?

- b. You are not sure that 20% is the right amount to invest in those countries. If you could chose any combination of U.S., Netherlands, and India, what portfolio would you hold? (You can also invest in Tbills, but you only need to find the best portfolio of the three countries.)

- c. You are extremely risk averse and would like to hold the portfolio with the least risk. If you can invest only in the U.S. and Thailand, what portfolio should you hold (ignore Tbills)? What if you can invest in the U.S., Netherlands, and India?

- d. You can now invest in any combination of the four countries and Tbills. What international portfolio has the highest risk-return trade-off? What is its expected return, standard deviation, and Sharpe ratio?

3. You work for Selectronics, a national chain of electronics stores. Traditionally, the firm has focused on retailing and most of its revenues have come directly from consumer sales. However, in recent years, Selectronics has begun to offer financing to customers. This part of the business has become a more important source of profits. The CEO has asked you to analyze an expansion of its credit business.

You estimate that a major expansion of the credit business would require an initial outlay of \$25 million. In subsequent years, Selectronics will need to invest an additional \$2 million as the business expands, increasing 5% annually. Cash profits (after tax, not including new investment) are forecast to be \$3 million in the first year, growing 5% annually.

Selectronics uses a discount rate of 12% to analyze new stores. You wonder if the company should use the same discount rate for the credit business. To help answer this question, you have collected stock return data for Selectronics and its major competitors. You have also collected return data for a group of finance companies that are similar to Selectronics' credit business.

The spreadsheet Selectronics.xls on SloanSpace contains the data. You may assume that the riskfree rate is 5% and the market risk premium is 6%.

- a. According to the CAPM, what discount rate should Selectronics use to analyze the project?
- b. What is the value of the project using the discount rate estimated in part (a)? Should Selectronics proceed with the project?
- c. Using the CAPM, how does the value of the project change if the market risk premium decreases to 4%?