Risk and Return

Peachtree Securities, Inc. (A)

Peachtree Securities is a regional brokerage house based in Atlanta. Although the firm is only 20 years old, it has prospered by following a simple goal – providing quality personal brokerage services to small investors. Jake Taylor, the firm’s founder and president, is well-satisfied with Peachtree’s progress. However, he is apprehensive about the future, as more and more of the firm’s customers are buying mutual funds rather than individual stocks and bonds. Thus, even though the number of customers per office has been increasing because of population growth, the number of transactions per customer has been decreasing, and hence sales growth has slackened.

Taylor believes this trend will continue, so he has been actively expanding his product line in an effort to increase sales volume. As a first step, Peachtree began offering trust and portfolio management services five years ago. Many of the trust clients are retirees who are interested primarily in current income rather than capital gains. Thus, an average portfolio consists mostly of bonds and high yield stocks. The stock component is heavily weighted with electric utilities, an industry that has traditionally paid high dividends. For example, the average electric company’s dividend yield was about 6.3 percent in 1992, versus an average stock’s yield of 3.1 percent.

Until 1993, Peachtree had no in-house security analysts—all stock and bond selections were based on research provided by subscription services. However, these services had become very costly, and the volume of portfolio management had reached the point where hiring an in-house analyst was now cost-effective. Because most of its portfolios were heavily weighted with electric utilities, Peachtree created its first analyst position to track this industry. Taylor hired Laura Donahue, a recent graduate of the University of Georgia, to fill the job.

Donahue reported to work in early January, 1993, jubilant at having the opportunity to use the skills she had worked so hard to learn. Taylor then informed her that her first task would be to conduct a seminar for a group of Peachtree customers on stock investments, including the effects of different securities on portfolio performance. Donahue was asked to pick an electric utility, assess its riskiness, develop an estimate of its required rate of return on equity, and then present her findings to a group of Peachtree’s customers.

Donahue’s first step—choosing the company—was simple. She had been born and raised in Tampa, Florida, so she picked TECO Energy, Inc., the holding company for Tampa Electric. Next, she searched for information on the company. Donahue remembered using the Value Line Investment Survey during her student days, so she turned to this
source first. (See Figure 1 on the last page of this case.) Then, she spent a few days reviewing industry trends to gain a historical perspective.

Electric utilities are granted monopolies to provide electric service in a given geographical area. In exchange for the franchise, the company is subjected to regulation over both the prices it may charge and the quality of its service. In theory, regulation acts to prevent the company from abusing its monopoly position, and its prices are set to mimic those that would occur if the firm were operating under perfect competition. Under such competition, the firm would earn its cost of capital, no more and no less.

In the 1950s and much of the 1960s, electric utilities were in an ideal position. Their costs were declining because of technological advances and economies of scale in generation and distribution. This made everyone happy—managers, regulators, stockholders, and customers. However, the situation changed dramatically during the 1970s, when inflation, along with high gas and oil prices, pushed construction and operating costs to levels which were unimaginable just a few years earlier. The result was a massive change in the economics of the industry and in how investors viewed electric utilities.

Today, the industry is facing many challenges including cogeneration, diversification, deregulation, and nuclear generation. Cogeneration is the combined production of electricity and thermal power, usually steam. Most electric companies use coal or nuclear energy to generate electricity. In the 1980s, though, oil and gas prices dropped sharply, making it cheaper to generate with gas or oil. However, one cannot burn gas or oil in a coal or nuclear plant. The changed fuel cost situation, combined with a need for steam, made it profitable for many industrial customers to switch to cogeneration. This, in turn, has made it very difficult for utilities to forecast industrial demand. Also, since utilities must buy any surplus power generated by their former customers, companies with cogeneration plants are, in effect, competing with the electric companies.

Diversification, or expansion into nonregulated industries, is being evaluated by many utility companies. Due to large depreciation flows following completion of major plant construction programs in the early 1980’s, many companies now have cash flows that exceed immediate needs. Industry officials believe that usage of these cash flows to diversify into nonregulated industries would smooth out the financial risks of the regulated business, while providing companies an opportunity to earn returns above those allowed by regulation. To facilitate diversification, many electric utilities, including TECO, have formed holding companies under which the parent company holds both regulated and nonregulated subsidiaries.

Diversification does have some potential downside for both utility customers (ratepayers) and stockholders. Ratepayers are supposed to pay the costs associated with producing and delivering power, plus enough to cover the utility’s cost of capital. However, a diversified utility could, theoretically, allocate some corporate costs that should be assigned to the unregulated (diversified) subsidiaries to the regulated utility. This would cause reported profits to be abnormally high for the nonregulated business. In effect,
ratepayers would be subsidizing the nonregulated businesses. The total corporation’s overall rate of return would be excessive, because it would be earning the regulated cost of capital on utility operations and more than a competitive return on nonregulated operations. Of course, regulators are aware of all this, so their auditors are always on the alert to detect and prevent improper cost allocations.

There are two significant risks to stockholders from utility diversification programs. First, there is the chance that utility executives, who generally have limited exposure to intense competition, will fail in the competitive, nonregulated, markets they enter. In that case, money that could have been paid out as dividends will have been lost in business ventures that turned out to be unprofitable. Second, if the diversified activities are highly profitable, causing the overall corporation to earn a high rate of return, then regulators might reduce the returns allowed on the utility operations. There is always a question as to what a company’s cost of capital really is—hence the rate of return the utility commission should allow it to earn—and it is easier for a commission to set the allowed rate of return at the low end of any reasonable range if the company is highly profitable because of successful nonregulated businesses.

Thus, it has been argued that diversified utilities might be getting into a “can’t-win” situation. As one analyst put it, a diversified utility’s stockholders are in a “heads you win, tails I lose” situation.

There is also much discussion at present about the deregulation of the electricity markets per se, and there is much controversy over the forced use of “wheeling”, whereby a customer (usually a large industrial customer) buys power from some other party but gets delivery over the transmission lines of the utility in whose service area it operates. This situation has occurred to a large extent in the gas industry, where large customers have contracted directly with producers and then forced (through legal actions) pipeline companies to deliver the gas.

Another problem facing many, but not all, electric companies relates to nuclear plants. A few decades ago, nuclear power was thought by many to be the wave of the future in electric generation. It was widely believed that nuclear was cleaner and cheaper than coal, oil, and gas generation. However, the 1979 accident at Three Mile Island almost instantly reversed the future of nuclear power. Many plants that were under construction at that time were canceled, while the costs of completing the remaining plants skyrocketed. Many partially completed plants had to be retrofitted with new safety devices. As a result, the cost of power from new nuclear plants rose dramatically. Further, several states have held referendums to close nuclear plants.

With this industry overview in mind, Laura Donahue developed the data in Table 1 on returns expected in the coming year. TECO is the stock of primary interest, Gold Hill is a domestic gold mining company, and the S&P 500 Fund is a mutual fund that invests in the stocks which make up the S&P 500 index. Donahue’s final preparatory step was to outline some questions that she believed to be relevant to the task at hand. See if you can answer the questions she developed.
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Questions

1. a. Why is the T-bond return in Table 1 shown to be independent of the state of the economy?
   b. Is the return on a 1-year T-bond risk-free?

2. a. Calculate the expected rate of return on each of the four alternatives listed in Table 1.
   b. Based solely on expected returns, which of the potential investments appears best?

3. Now calculate the standard deviations and coefficients of variation of returns for the four alternatives.
   a. What type of risk do these statistics measure?
   b. Is the standard deviation or the coefficient of variation the better measure?
   c. How do the alternatives compare when risk is considered? (Hint: for the S&P 500, the standard deviation = 16.4%; for Gold Hill, the standard deviation = 9.1%.)

4. Suppose an investor forms a stock portfolio by investing $10,000 in Gold Hill and $10,000 in TECO.
   a. What would be the portfolio’s expected rate of return, standard deviation, and coefficient of variation?
   b. How does this compare with values for the individual stocks?
   c. What characteristic of the two investments makes risk reduction possible?
   d. What do you think would happen to the portfolio’s expected rate of return and standard deviation if the portfolio contained 75 percent Gold Hill? If it contained 75 percent TECO? Using excel, construct the portfolio to substantiate your answers.

5. Now consider a portfolio consisting of $10,000 in TECO and $10,000 in the S&P 500 Fund.
   a. Would this portfolio have the same risk-reducing effect as the Gold Hill-TECO portfolio considered in Question 4? Explain.
   b. Construct a portfolio using TECO and the S&P 500 Fund in excel to substantiate your answer.
6. Suppose an investor starts with a portfolio consisting of one randomly selected stock.
   a. What would happen to the portfolio’s risk if more and more randomly selected stocks were added?
   b. What are the implications for investors?
   c. Do portfolio effects impact the way investors should think about the riskiness of individual securities?
   d. Would you expect this to affect companies’ costs of capital?
   e. Explain the differences between total risk, diversifiable (company-specific) risk, and market risk.
   f. Assume that you choose to hold a single stock portfolio. Should you expect to be compensated for all of the risk that you bear?

7. Now change Table 1 by crossing out the state of the economy and probability columns and replacing them with Year 1, Year 2, Year 3, Year 4, and Year 5. Then, plot three lines on a scatter diagram which shows the returns on the S&P 500 (the market) on the X axis and (1) T-bond returns, (2) TECO returns, and (3) Gold Hill returns on the Y axis. What are these lines called? Estimate the slope coefficient of each line. What is the slope coefficient called, and what is its significance? What is the significance of the distance between the plot points and the regression line, i.e. the errors? (Note: If you have a calculator with statistical functions, use linear regression to find the slope coefficients.)

8. Plot the Security Market Line. (Hint: Use Table 1 data to obtain the risk-free rate and the required rate of return on the market.) What is the required rate of return (use CAPM) on TECO’s stock using Value Line’s beta estimate of 0.6 as reported in Figure 1? Plot Teco’s expected rate of return you calculated in 2a. Based on the SML analysis, should investors buy TECO stock?
9. a. What would happen to TECO’s required rate of return if inflation expectations increased by 3 percentage points above the estimate embedded in the 8.0 percent risk-free rate?

b. Now go back to the original inflation estimate, where $K_{rf} = 8\%$, and indicate what would happen to TECO’s required rate of return if investors’ risk aversion increased so that the market risk premium rose from 7 percent to 8 percent.

c. Now go back to the original conditions ($k_{rf} = 8\%, \; RP_m = 7\%$) and assume that TECO’s beta rose from 0.6 to 1.0. What effect would this have on the required rate of return?

d. What is the efficient markets of hypothesis (EMH)?

   a. What impact does this theory have on decisions concerning the investment in securities?

   b. Is it applicable to real assets such as plant and equipment?

   c. What impact does the EMH have on corporate financing decisions?

   d. Should Jake Taylor be concerned about the EMH when he considers adding to his staff of security analysts? Explain.

10. Notwithstanding the Value Line report, suppose TECO’s long-term debt ratio (Long-term debt/Total assets) decreased during the period 1982 through 1992. Further, suppose this ratio was projected to continue decreasing in 1993 and beyond. What impact would this have on TECO’s riskiness, hence on its beta and required rate of return on equity?
Case 2  Risk and Return

Figure 1. Value Line Investment Survey Report

(8) Based on average price deviations. See notes 9.2, 124. 126, 119.
(11) Net deficit incurred is not currently due to be paid. The figures in parentheses for any year in which such liabilities exceeded total  working capital.
(9) The current ratio is based on the company’s financial statements for the most recent fiscal year. The figures in parentheses represent figures for the company’s financial statements for the most recent fiscal year.