The Beta for Colgate-Palmolive

1. Go to finance.yahoo.com and download the ending monthly stock prices for Colgate-Palmolive for the last 60 months. Use the adjusted closing price, which adjusts for dividend payments and stock splits. Next, download the ending value of the S&P 500 index over the same period. For the historical risk-free rate, go to the St. Louis Federal Reserve Web site (www.stlouisfed.org) and find the three-month Treasury bill secondary market rate. Download this file. What are the monthly returns, average monthly returns, and standard deviations for Colgate-Palmolive stock, the three-month Treasury bill and the S&P 500 for this period?

2. Beta is often estimated by linear regression. A model often used is called the market model, which is:

Ri — Rft = αi + βi [Rmi— Rfi] + εi

In this regression, R, is the return on the stock and Rft is the risk-free rate for the same period. RM, is the return on a stock market index such as the S&P 500 index. a, is the regression intercept, and (3, is the slope (and the stock’s estimated beta). s, represents the residuals for the regression. What do you think is the motivation for this particular regression? The intercept, a, is often called Jensen’s alpha. What does it measure? If an asset has a positive Jensen’s alpha, where would it plot with respect to the SML? What is the financial interpretation of the residuals in the regression?

3. Use the market model to estimate the beta for Colgate-Palmolive using the last 36 months of returns (the regression procedure in Excel is one easy way to do this). Plot the monthly returns on Colgate-Palmolive against the index and also show the fitted line.

4. When the beta of a stock is calculated using monthly returns, there is a debate over the number of months that should be used in the calculation. Rework the previous questions using the last 60 months of returns. How does this answer compare to what you calculated previously? What are some arguments for and against using shorter versus longer periods? Also, you’ve used monthly data, which is a common choice. You could have used daily, weekly, quarterly, or even annual data. What do you think are the issues here?

5. Compare your beta for Colgate-Palmolive to the beta you find on finance.yahoo.com. How similar are they? Why might they be different?