

Bartman Industries' and Reynolds Inc.'s stock prices and dividends, along with the Wilton 5000 Index, are shown below for the period 1996-2001. The Wilton 5000 data are adjusted to include dividends.

YEAR	BARTMAN INDUSTRIES		REYNOLDS INC.		WILTON 5000
	STOCK PRICE	DIVIDEND	STOCK PRICE	DIVIDEND	INCLUDES DIVS.
2001	\$17.250	\$1.15	\$48.750	\$3.00	11,663.98
2000	14.750	1.06	52.300	2.90	8,785.70
1999	16.500	1.00	48.750	2.75	8,679.98
1998	10.750	0.95	57.250	2.50	6,434.03
1997	11.375	0.90	60.000	2.25	5,602.28
1996	7.625	0.85	55.750	2.00	4,705.97

[a] Use the data given to calculate annual returns for Bartman, Reynolds, and the Wilton 5000 Index, and then calculate average returns over the 5-year period. (Hint: Remember, returns are calculated by subtracting the beginning price from the ending price to get the capital gain or loss, adding the dividend to the capital gain or loss, and dividing the result by the beginning price. Assume that dividends are already included in the index. Also, you cannot calculate the rate of return for 1996 because you do not have 1995 data.)

[b] Calculate the standard deviations of the returns for Bartman, Reynolds, and the Wilton 5000 Index. (Hint: Use the sample standard deviation formula given in Footnote 5 to this chapter, which corresponds to the STDEV function in *Excel*.)

[c] Now calculate the coefficients of variation for Bartman, Reynolds, and the Wilton 5000 Index.

[d] Construct a scatter diagram graph that shows Bartman's and Reynolds' returns on the vertical axis and the market index's returns on the horizontal axis.

[e] Estimate Bartman's and Reynolds' betas by running regressions of their returns against the Wilton 5000's returns. Are these betas consistent with your graph?

[f] The risk-free rate on long-term Treasury bonds is 6.04 percent. Assume that the average annual return on the Wilton 5000 is not a good estimate of the market's required return – it is too high, so use 11 percent as the expected return on the market. Now use the SML equation to calculate the two companies' required returns.

[g] If you formed a portfolio that consisted of 50 percent of Bartman stock and 50 percent of Reynolds stock, what would be the beta and the required return for the portfolio?

[h] Suppose an investor wants to include Bartman Industries' stock in his portfolio. Stocks A, B, and C are currently in the portfolio, and their betas are 0.769, 0.985, and 1.423, respectively. Calculate the new portfolio's required return if it consists of 25 percent of Bartman, 15 percent of Stock A, 40 percent of Stock B, and 20 percent of Stock C.

Sources: From the Brigham & Houston Text Book.