

Quiz B for 9:45 Class: 7/20/12

Name Key

Note: There are no points for solving this problem. All points are for setting up the equations, plugging in the relevant numbers, and stating what you want to solve for.

Given the following returns on Proctor & Gamble (PG) and Ebay (EBAY) over the past four years (June 1 through June 1 of each year), calculate the covariance between the returns on Proctor & Gamble and Ebay and the standard deviation of returns on a portfolio consisting of \$300,000 invested in Proctor & Gamble and \$700,000 invested in Ebay.

Year	PG	EBAY
2012	0%	+30%
2011	+9%	+65%
2010	+21%	+14%
2009	-14%	-37%

$$\begin{aligned}
 +6 \text{ (SD)}_P &= \sqrt{X_{PG}^2 \text{Var}_{PG} + X_{EBAY}^2 \text{Var}_{EBAY} + 2 X_{PG} X_{EBAY} \text{COV}_{PG, EBAY}} \\
 +2 X_{PG} &= \frac{300,000}{300,000 + 700,000} & X_{EBAY} &= \frac{700,000}{300,000 + 700,000} \\
 +3 \text{ (Var)}_{PG} &= \frac{1}{3} \left((0 - \bar{R}_{PG})^2 + (9 - \bar{R}_{PG})^2 + (21 - \bar{R}_{PG})^2 + (-14 - \bar{R}_{PG})^2 \right) \\
 +3 \text{ (}\bar{R}_{PG}) &= \frac{1}{4} (0 + 9 + 21 - 14) \\
 +3 \text{ (Var)}_{EBAY} &= \frac{1}{3} \left((30 - \bar{R}_{EBAY})^2 + (65 - \bar{R}_{EBAY})^2 + (14 - \bar{R}_{EBAY})^2 + (-37 - \bar{R}_{EBAY})^2 \right) \\
 +3 \text{ (}\bar{R}_{EBAY}) &= \frac{1}{4} (30 + 65 + 14 - 37) \\
 +6 \text{ (COV)}_{PG, EBAY} &= \frac{1}{3} \left((0 - \bar{R}_{PG})(30 - \bar{R}_{EBAY}) + (9 - \bar{R}_{PG})(65 - \bar{R}_{EBAY}) \right. \\
 &\quad \left. + (21 - \bar{R}_{PG})(14 - \bar{R}_{EBAY}) + (-14 - \bar{R}_{PG})(-37 - \bar{R}_{EBAY}) \right)
 \end{aligned}$$