

Chapter 2: Covariance, Correlation, and Efficient Frontiers

Problems

2 (1-7). Use the scenario analysis of the following portfolio to answer questions a to g (Use Chapter 1 Homework Spreadsheet – Template.xls to answer these questions and add them in the answer box – use two decimals and %)

Scenario	Probability	Stock Fund	Bond Fund
		Rate of Return	Rate of Return
Recession	0.35	-9.0%	5.0%
Normal	0.40	6.0%	7.5%
Boom	0.25	28.0%	-6.5%

1. Determine the **mean return** for the stock fund
2. Determine the **mean return** for the bond fund.
3. Find the **standard deviation** of returns on the stock fund
4. Find the **standard deviation** of returns bond fund.
5. Determine the **mean return** on a combined portfolio (stocks “s” and bonds “b”) that consists of 50% in the stock fund and 50% in the bond fund.
6. Calculate the **standard deviation** of the combined portfolio
7. Calculate the **correlation** of the combined portfolio

2 (8-11). Use the following portfolio information to answer questions 2a to 2c:

Assets	Portfolio Allocation %	Expected Rate of Return	Expected Standard Deviation
<u>Risk-Free Assets</u>			
T-Bills	20%	2.0%	0
<u>Risky Assets</u>			
Bonds	50%	6.0%	10%
Stocks	30%	20.0%	34%

8. Assuming the correlation between stocks and bonds is 0.30, compute the standard deviation of the **combined risky portfolio** (use % and three decimals)
9. If you had \$100,000 to invest in this portfolio, based on the allocation above—including cash—compute the expected \$ profit amount. (use two decimals)
10. If you had \$100,000 to invest in this portfolio, based on the allocation above—including cash—compute the expected HPR% (use % and two decimals).
11. Assuming the correlation between stocks and bonds is negative (-1), compute the standard deviation of the **combined risky portfolio** (use % and two decimals)