University of Texas at Austin

Quiz #15

Expected returns. Volatility.

Provide your **complete solution** to the following problems:

Problem 15.1. (10 points) Your model for the economy at the end of your period has three different states *good, so-so* and *bad*. You think that the probability that the economy will be in the *so-so* state is twice the probability that it will be in the *good* state. You also think that the probability that the economy will be in the *good* state is twice the probability that it will be in the *bad* state.

There are two assets in your market model called S and Q. Their returns, depending on the state of the economy are modeled as follows:

Asset	*good*	*so-so*	*bad*
S	10%	2%	-5%
Q	8%	-1%	-4%

Your portfolio is equally weighted between assets S and Q. What is the volatility of this total portfolio?

Problem 15.2. (5 points) According to your model, the economy over the next year could be *good* or *bad*. You believe that *bad* and *good* are equally likely.

Consider two assets, X and Y, existing in this market. If the economy is *good* the return on asset X is 0.12, and the return on asset Y is 0.08. If the economy is *bad* the return on asset X is -0.04 and the return on asset Y is -0.02.

You construct a portfolio P using assets X and Y so that the portfolio's expected return equals 0.0325.

Calculate the volatility of this portfolio's return.