Econ413 RP 1

# Expected Value, Variance and Standard deviation

* 1. SP500 & MRK(Jul 11 2016–Jul 10 2017)
     1. (**GREEN BOLD** MEANS IT'S BEEN FINISHED)
     2. **Give a company summary of SP500 and MRK stock**
     3. **Download the last year daily close prices for SP500 index from yahoo finance**

[**http://finance.yahoo.com/q?s=%5EGSPC**](http://finance.yahoo.com/q?s=%5EGSPC)

* + 1. **Download the last year daily close prices for MRK from yahoo finance**

**https://finance.yahoo.com/quote/MRK?p=MRK**

* + 1. **Import daily close values into excel and compute**
       1. **Log return**
       2. **Expected return**
       3. **Variance–theoretical mean zero variance formula**
       4. **Standard deviation**
       5. **Covariance– theoretical formula and Excel COVAR function**
          1. **Comment on the covariance measurement**

**Note: When calculating above statistics, make sure your *M* (# of variables) is consistent with# of returns**

**i.e. if you have 10 daily close prices you will have 9 daily returns**

# Utility Analysis and Risk Attitudes

* 1. A gamble based on a fair coin toss which pays $8 if the coin lands heads and $17 if the coin lands tails. (fair coin toss i.e. probability of heads is 50%=probability of tails is 50%)
     1. Calculate the Expected value of this gamble
     2. Calculate Expected utility and the utility of expected value for

a. U(w)=2.33w, state the relationship and classify the risk attitude

b. U(w)=ln(w) state the relationship and classify the risk attitude

c. U(w)= w2 state the relationship and classify the risk attitude

* 1. You are a risk agent, whose utility is given by U(w)=sqrt(w). Your initial wealth is$10,000 is

faced with a potential loss of $3,600 with a probability of p=0.25. What is the maximum premium you

would be willing to pay to protect against this loss?(i.e. probability of earning $0 is 0.75 and probability

of losing $3,600 is 0.25 but think what your opportunities of terminal wealth are)

* + 1. What is the agents risk appetite?
    2. Find the expected value
    3. Find the expected utility(of wealth)
    4. Find the maximum premium(y) to equate

U(w−y)=E[U(w)]

***Show all your work***

* + 1. What if you were given the opportunity to purchase insurance for $500, would you take the insurance? Why?
  1. Calculate and classify the following utility functions according to the absolute and relative risk aversion
     1. U(w)=ln(w)
     2. U(w)=w- bw2

***Show all your work***

## Extra: Choose 1

* What is the difference between QE and Open Market Operations by the Fed?
* Reflect upon Brexit and the following podcast [*Were Economists Wrong about Brexit*](http://podcast.ft.com/2016/09/08/were-economists-wrong-about-brexit/)*?*

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