Problem Set 4

You are required to turn in an **Excel file**. Please submit through Brightspace. You are allowed to work in groups of 3-4 students and turn in one assignment for the group. You can work alone, if desired. Please submit your own work, do not copy from classmates, the internet, or any other sources. Plagiarism will result with a grade of zero for this problem set.

1. Go to `https://finance.yahoo.com/` , look up the S&P 500 ETF (Ticker: VOO), emerging markets ETF (Ticker: VWO), and the total bond market ETF (BND). Navigate to historical prices and download the daily prices from the period 1/1/2018-12/31/2018. In Excel calculate the daily percent return using the adjusted closing price. What is arithmetic average return? What is the geometric average? Variance? Standard Deviation? Graph the returns for each ETF (on the same graph)? What do you observe (discuss relative to risk and return)?

2. Consider the following information:

| | | Return (%) | | | |
State	Probability	GE	AMD	TWTR	BAC
Super Boom	0.05	65.96	50.34	29.43	51.5
Boom	0.125	46.84	32.79	10.72	34.79
Normal plus	0.15	41.43	26.02	3.49	33.95
Normal	0.25	40.71	16.13	-5.41	31.2
Normal minus	0.15	31.65	15.91	-15.27	22.37
Slowdown	0.125	30.51	14.92	-21.49	17.67
Recession	0.075	24.07	10.76	-21.75	14.39
Great Recession	0.05	20.95	9.13	-24.9	13.86
Depression	0.025	6.92	4.06	-32.71	2.1

   (a) What is the expected return and standard deviation of each stock?

   (b) Assuming an equal weighted portfolio. What is the expected return and standard deviation on the portfolio. (Note for full credit I should be able to update any of the weights, use GE as the balance, and the answers should update)

   (c) What weight on AMD would result in a Expected portfolio return of 15%. (Hint use Excel Goal seek function) Explain the resulting weights.

   (d) Look up the beta for each stock. What is the portfolio beta? You want a market beta for your portoflio. If you want to maintain 25% weights in AMD and TWTR, what are the new weights on GE and BAC?

3. Read the following article: https://www.investopedia.com/terms/j/jensensmeasure.asp. Briefly explain what Jensen's Alpha is and what it implies about efficient markets. (be happy I'm not asking you to calculate it!!)

4. You are consulting for a private video game company, "FROMDACOUCH" focusing on VR gaming. The company wants to know its cost of capital to evaluate a project. You decide to use Activision Blizzard (ATVI) as a representative public company. Use yahoo finance to

find the relevant information to calculate the WACC. Use the 3-month treasury bill as the risk free rate (ÎRX) and a market risk premium of 5.5%. You will need to gather data on the market price, market value of equity, book value of equity, shares outstanding, dividend history, and beta.

(a) What is the cost of equity. Use both CAPM and the dividend growth model. (Use 5-years of data for dividend growth estimate)

(b) Use the book value of long-term debt from the most recent 10K as an approximation of market value of debt. Use the yield on this bond `https://www.finra.org/finra-data/fixed-income/bond?symbol=ATVI5026499&bondType=CORP` as an estimate of the cost of debt.

(c) Use all of this information to calculate the WACC Assume a 21% marginal tax rate.

(d) Briefly discuss the potential issues using ATVI to estimate the cost of capital for FROM-DACOUCH.