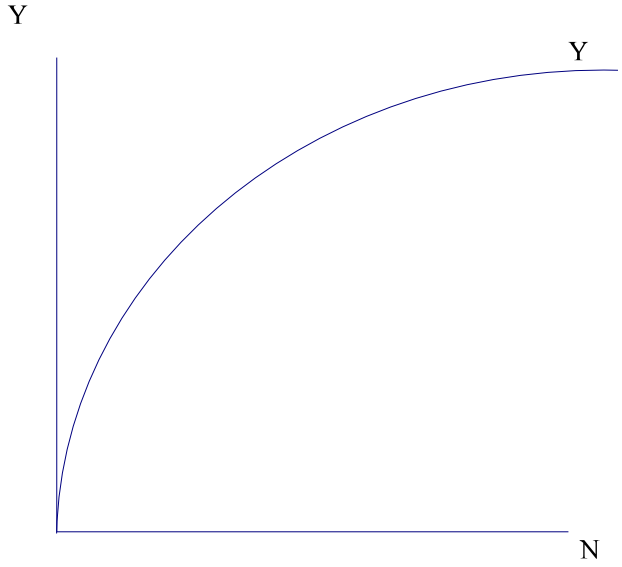
Wilf Csaplar Jr. Economics 350 Homework #5 Key **Due Wednesday 3/4**

1) (25 points) Use the page on the Excel Sheet entitled "Question_1" to answer this question. Run a regression to predict quantity sold. Would you consider the results to be good results? Explain your logic. Which variable(s) would say are significant? Explain your logic. How much would you expect to sell if the price is $15/unit and the income is $60,000? Show all work.
For the regression, Q is the Y-variable and P & Income are the X variables. Make sure you run the regression that way. As for the quality of the results, I would say they are great. The adjusted R square says about 2/3 of the variation in Q can be explained by the regression. That is good, but it would be nice if it was bigger. 100 Observations is good because it is over 30, but as always, more would be better. The most important aspect is Sig F at 2E-24. That is far below .01, so it says we are virtually guaranteed that our relationships actually exist. Which variables are significant? We look at t Stat, P-value, and lower 95% and upper 95%. We want the absolute value of the t Stat to be greater than 2. That says only income is significant. For P-value, we want it less than .05. Again, only income fits that, and since it is less than .01, it is highly significant. You want the lower and upper 95% to have the same sign. So, only income is significant. To find the value if the price is $15 and the income is $60,000, we go to the spreadsheet and type in the formula. My coefficients are in cells F17, F18, and F19, so my formula is F17 + F18*15 + F19*60,000 = 210.3098. So the predicted sales are 210. Can include the answer key Excel sheet if you want, but I think all of you did well on it, or I gave you the answer on your Excel sheet.

2) (25 points) Use the pages on the Excel Sheet entitled "Question_2" to answer this question. This is actual data from my ECON 162 class an earlier semester. Run a regression to predict the student's grade on the test. Would you consider the results to be good results? Explain your logic. How much would you expect your test grade to go down if you missed one class? Show all work. Why do you think the Adj R_2 and Significance of F take the values they do? In other words, in the real world, what determines the grade and how does that relate to those values?
The regression results are both good and poor. The significance of F is less than .01, so the results are highly significant. However, the adjusted R square is .09. So, we only explain about 9% of the variance in grades. That is not good. The number of observations' being over 30 says it is possible to get good results, but does not guarantee it. If you missed 1 class, then the coefficient on absences says your grade will go down by almost 5 points. The adjusted R square is low because many things other than attendance determine your grade. Some examples are, your intelligence, how many hours you studied, have you had any economics before, did you see the tutor, did you work hard on the homework, and your mathematical background. So, it is surprising to be able to explain even 9%. The significance of F is highly significant because attending class is very important to learning the material.

3) (35 points) In the Neo-Keynesian model, what do they predict about the cyclicality of real interest rates, inflation, unemployment rate, and the marginal productivity of labor? For the one they predict wrong, draw the appropriate graph to explain their version of the cyclicality. Explain how they reach that conclusion. How do they explain the fact that the data contradicts the theory?
They predict that real interest rates are pro-cyclical, inflation is pro-cyclical, unemployment rate

is counter-cyclical, and the MPN is counter-cyclical. The MPN is the one the get wrong. As you can see from the graph on the next page, as GDP increase, we slide along the production function and it gets flatter. Since the MPN is the slope, it decreases. They explain the contradiction using labor hoarding. When the economy goes down, the workers work fewer hours, so they look less productive. When the economy goes back up, they work more hours looking more productive.



4) (15 points) Why might firms have a fixed markup? How would that cause price rigidity?

The relationship between MR and P is a fixed percent unless the elasticity of demand changes. This is because $MR = P(1 + 1/\eta)$ where η is the elasticity of demand. So, when you set MR = MC, you have a fixed relationship between P and MC. This will cause price rigidity if you have long-term contracts with labor and suppliers of raw materials. Those types of contracts are common, so the marginal costs will not change often. Thus, prices won't change either.