1. Use the file **Chicken consumption** (which can be found in the d2l submodule for homework assignment 3). This data set contains 38 years of data from 1980 to 2017 on chicken consumption in the US. Variables in the data set include:

**chicken**: the quantity of chicken consumed per capita in pounds.

**income**: real per capita income in $.

**pchicken**: the price of whole chicken, $/pound

**papple:** the price of apples (Red Delicious), $/pound

Your model is pure linear as follows:

(1)

1. (10 pts) You suspect that **papple** might be highly correlated with other variables in the model. Derive the variance inflation factor (VIF) for **papple** based on the above model (1) and determine whether multicollinearity is severe.

* Show the regression output table needed for this VIF. Label it as **VIF regression for papple**.
* Show your calculation of the VIF and provide conclusion based on your VIF results.

**b**. (10 pts) Use the simple correlation coefficient method to determine whether **pchicken** is highly correlated with **income**.

* Show the regression output table needed for this simple correlation coefficient and label it as **SIMCOR regression**.
* Calculate *r* and provide your conclusion.

2. (15 pts) You have data (EViews file **Books**) from 60 U.S. university and college libraries and build a model as in eq(2):

(2)

where Vol = books in the school’s library (in 1000 books)

STU = number of students in the school

FAC = number of faculty members in the school

SAT = average SATs of students in the school

1. Conduct the White’s test in EViews and provide the results labeled as **White’s test for regression Library**.
2. Provide your conclusion at the 5% level of significance (you can either refer to an F-test critical value table or use the *p*-value from EViews White’s test output). Does heteroskedasticity exist in this model?
3. Suppose heteroskedasticity is found to be present in the model (regardless of your part b answer). Correct the problem by running the regression with Huber-White standard errors. Provide the output table and label it **as Regression with White standard errors.**

3. Use EViews workfile **Bangladesh**for this question***.*** This file includes acres of sugar cane (area) farmers in Bangladesh planted and price of sugar (price) in 34 years.

1. (5pts) Estimate the following linear model: area=f(price) using OLS. Provide your output table and label it as **Regression sugar cane.**
2. (10pts) Test for positive first order serial correlation based on the Durbin-Watson stat from your regression at the 5% level of significance. Make sure to:

* Clearly identify your null and alternative hypotheses
* Identify the critical values of the DW-d test, and clearly state your decision rules and test conclusion.

1. (5pts) Regardless of your conclusion in part b (e.g. whether you find positive S.C. or not), apply the robust Newey-West standard errors to address the S.C. problem. Provide regression results with the Newey-West standard errors and label it **Regression with** **Newey-West standard errors.**