Economics 311 — Fall 2017
Daily Problem #11 (which is 311 with capital 3!) — October 9

We are again concerned with the regression of Econ 201 grade on admission credentials. Suppose that for some reason high-school GPA is not included in the regression. (Perhaps it was not collected in the data base or we were for some reason not allowed to use it.)

a. Based on theory, would you expect HSGPA to be positively or negatively correlated with each of the other regressors, and, for each one, why?

b. Based on theory, how would you expect HSGPA to affect the Econ 201 grade.

c. Given the correlation in a and the expected effect in b, identify the expected signs of the two coefficients on the right side of Studenmund's equation (6.7) and predict the direction of bias.

d. Use the two regressions below to assess whether the bias is in the expected direction.

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. reg gpoints hsgpa satv100 satm100 irdr

      Source |       SS           df       MS      Number of obs   =       614
-------------+----------------------------------   F(4, 609)       =     21.59
       Model |  54.5848954         4  13.6462238   Prob > F        =    0.0000
    Residual |   384.93942       609  .632084434   R-squared       =    0.1242
-------------+----------------------------------   Adj R-squared   =    0.1184
       Total |  439.524316       613  .717005409   Root MSE        =    .79504

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     gpoints |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       hsgpa |   .3537593   .0919229     3.85   0.000     .1732349    .5342836
     satv100 |   .0504954    .050856     0.99   0.321     -.049379    .1503697
     satm100 |   .1301921   .0513652     2.53   0.012     .0293176    .2310666
        irdr |   .2629642   .0708958     3.71   0.000     .1237343    .4021941
       _cons |    -.54605   .4460842    -1.22   0.221      -1.4221         .33
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. reg gpoints satv100 satm100 irdr

      Source |       SS           df       MS      Number of obs   =       801
-------------+----------------------------------   F(3, 797)       =     29.23
       Model |   56.458195         3  18.8193983   Prob > F        =    0.0000
    Residual |  513.220631       797  .643940565   R-squared       =    0.0991
-------------+----------------------------------   Adj R-squared   =    0.0957
       Total |  569.678826       800  .712098532   Root MSE        =    .80246

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     gpoints |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     satv100 |   .0460836   .0424574     1.09   0.278    -.0372579    .1294251
     satm100 |    .167636   .0445924     3.76   0.000     .0801036    .2551684
        irdr |   .3406111    .053885     6.32   0.000     .2348379    .4463843
       _cons |   .2882149     .32396     0.89   0.374    -.3477006    .9241305
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