IV exercise

Consider a supply model for edible chicken,

$$\ln(QPROD_t) = \beta_1 + \beta_2 \ln(P_t) + \beta_3 \ln(TIME) + \beta_4 \ln(QPROD_{t-1} + e_t)$$

$QPROD$ = aggregate production of fresh chicken, P = real price index of fresh chicken, PF = real price index of broiler feed, $TIME$ = 1,2,...,52. The supply equation is dynamic, with lagged production on the right-hand side. This predetermined variable is know at time t and is treated as exogenous. Some potential external instruments are $\ln(Y)$, where Y is per capita income; $\ln(PB)$, which is log of broiler price; $POPGRO$ = percentage population growth; $\ln(P_{t-1})$, which is log of the broiler price lagged one period; $\ln(EXPTS)$, which is log of chicken exports. Use the *newbroiler.gdt* data from our website.

1. Estimate the equation using least squares. Are the signs and significance what you anticipated?

2. Estimate the equation using an IV estimator with all available instruments. Compare to results in (a).

3. Test for the endogeneity of ln(P).

4. Check whether the instruments are strong enough.

5. Do you suspect the validity of any instruments on logical grounds. If so, which ones and why? Check the instrument validity using the Sargan test.