How to bootstrap the 2-step Binary Choice Probit Model with a Continuous Endogenous Explanatory Variable

This refers to the problem in eqs. (15.39)-(15.41) in Wooldridge.

1. Estimate the model in (15.40) via OLS by regressing $y_2$ on $z$ yielding coefficient estimates $\hat{\delta}_2$ and $\hat{v}_2$.

2. Estimate the model in (15.39) via probit of $y_1$ on $z_1$, $y_2$, and $\hat{v}_2$.

3. Do pairs bootstrapping by randomly drawing a new sample where for a given randomly chosen observation you pick values for all variables: the explanatory variables in both stages and $inlf$. You must use RANDOM (DRAW=XYMAT) VAR1_STAR-VARXX_STAR, where XYMAT is a matrix of all the variables from steps 1) and 2) created using MMAKE XYMAT VAR1-VARXX. Also VAR1_STAR is the first randomly generated variable in the list of all variables used in both stages and VARXX_STAR is the last randomly generated variable in this list.

4. Reestimate steps 1) and 2) using the pairs data.

5. Record all estimated coefficients for bootstrap trial $b = 1, \ldots, B$.

6. Return to step (3) and repeat through step (5) $B$ times.

7. Compute the estimated standard deviation of all $B$ estimates for each coefficient.