1 Model

$$
\begin{aligned}
P_i &= Z_i b_1 + b_2 + \widetilde{\varepsilon}_{pi} && (1)\\
Y_i &= \left[(Z_i b_1 + b_2)\beta_1 + \beta_2 + \widetilde{\varepsilon}_i\right] D_i && (2)\\
D_i &= I\left[0 \leq V_i + (Z_i b_1 + b_2)\gamma_1 + \gamma_2 + \widetilde{e}_i\right] && (3)
\end{aligned}
$$

The independent variables (V and the instruments Z) are normally distributed with means and variances matching those in the dataset. The correlation between them is set to 0. The true parameter on the profit variable is from the MLE with the full set of dummies. The constant term in each equation is taken to be the mean of the dummies*coefficients for the equation. The variance covariance matrix of the errors is chosen so that the means, variances, and the covariances of the generated P_i, Y_i, and D_i roughly match those in the data.

2 Summary of the Data

Means of generated $Y_i \sim P_i \sim D_i$ (in that order)
0.1294 0.1207 0.7945

Means of true $Y_i \sim P_i \sim D_i$ (in that order)
0.1296 0.1207 0.7947

Variance-cov. matrix of generated dep. variables:$Y_i \sim P_i \sim D_i$ (in that order)
0.0366 0.0064 0.0266
0.0064 0.0278 0.0046
0.0266 0.0046 0.1634

Variance-cov. matrix of true dep. variables: $Y_i \sim P_i \sim D_i$ (in that order)
0.0366 0.0064 0.0266
0.0064 0.0278 0.0046
0.0266 0.0046 0.1633

Variance-cov matrix of the generated errors $\widetilde{e}_i \sim \widetilde{\varepsilon}_i \sim \widetilde{\varepsilon}_{pi}$

$$
\Sigma_{e\varepsilon u} = \begin{bmatrix} \delta_6^2 & \delta_6\delta_4\delta_5 & \delta_6\delta_1\delta_3 \\ \delta_6\delta_4\delta_5 & \delta_4^2 & \delta_4\delta_1\delta_2 \\ \delta_6\delta_1\delta_3 & \delta_4\delta_1\delta_2 & \delta_1^2 \end{bmatrix} = \begin{bmatrix} 7.3441 & 0.1096 & 0.0038 \\ 0.1096 & 0.0389 & 0.0016 \\ 0.0038 & 0.0016 & 0.0137 \end{bmatrix}
$$

Estimated variance-cov matrix of the errors $\widetilde{e}_i \sim \widetilde{\varepsilon}_i \sim \widetilde{\varepsilon}_{pi}$

$$
\Sigma_{e\varepsilon u} = \begin{bmatrix} \delta_6^2 & \delta_6\delta_4\delta_5 & \delta_6\delta_1\delta_3 \\ \delta_6\delta_4\delta_5 & \delta_4^2 & \delta_4\delta_1\delta_2 \\ \delta_6\delta_1\delta_3 & \delta_4\delta_1\delta_2 & \delta_1^2 \end{bmatrix} = \begin{bmatrix} 4.9680 & 0.4390 & 0.0055 \\ 0.4390 & 1.3600 & 0.0132 \\ 0.0055 & 0.0132 & 0.0137 \end{bmatrix}
$$

sample size 974.0000
replications 5000.0000
OLS
MEAN SD LQ MED UQ RMSE MAE MDAE MESE %2SE TRUE
0.1015 0.0029 0.0996 0.1015 0.1034 0.0048 0.0041 0.0039 0.0074 1.0000 0.0976 β_2
0.2314 0.0166 0.2205 0.2316 0.2426 0.1825 0.1817 0.1815 0.0360 0.0000 0.4132 β_1
TSLS
MEAN SD LQ MED UQ RMSE MAE MDAE MESE %2SE TRUE
0.0858 0.0034 0.0834 0.0858 0.0880 0.0123 0.0119 0.0118 0.0086 0.9418 0.0976 β_2
0.3619 0.0228 0.3463 0.3621 0.3774 0.0561 0.0515 0.0511 0.0509 0.9866 0.4132 β_1
Exogenouse sample selection
MEAN SD LQ MED UQ RMSE MAE MDAE MESE %2SE TRUE
0.1990 0.0035 0.1968 0.1988 0.2008 0.0039 0.0028 0.0022 0.3659 1.0000 0.1973 δ_4
0.2203 0.1289 0.1358 0.2145 0.2972 0.1298 0.0996 0.0803 1.3683 1.0000 0.2050 δ_5
2.7338 0.2530 2.5534 2.7147 2.8881 0.2540 0.2000 0.1670 0.1112 0.6310 2.7100 δ_6
0.1145 0.0094 0.1093 0.1153 0.1207 0.0193 0.0175 0.0178 0.0409 0.9998 0.0976 β_2
0.2683 0.0198 0.2547 0.2681 0.2818 0.1462 0.1448 0.1451 0.1023 0.9968 0.4132 β_1
-1.9184 0.2025-2.0599-1.9355-1.7895 0.2716 0.2137 0.1761 0.6585 1.0000-2.0994 γ_2
1.7337 0.6003 1.3325 1.7255 2.1249 1.5208 1.4053 1.4061 1.8624 0.9992 3.1311 γ_1
Endogenous sample selection
MEAN SD LQ MED UQ RMSE MAE MDAE MESE %2SE TRUE
0.1169 0.0000 0.1169 0.1169 0.1169 0.0001 0.0001 0.0001 1.0000 1.0000 0.1170 δ_1
0.0699 0.0162 0.0589 0.0700 0.0807 0.0162 0.0129 0.0109 0.0165 0.9598 0.0700 δ_2
0.0120 0.0353-0.0114 0.0121 0.0360 0.0353 0.0282 0.0237 0.3014 1.0000 0.0120 δ_3
0.1980 0.0034 0.1958 0.1977 0.1997 0.0035 0.0025 0.0019 0.3658 1.0000 0.1973 δ_4
0.2117 0.1306 0.1274 0.2043 0.2892 0.1308 0.1002 0.0810 1.3671 1.0000 0.2050 δ_5
2.7236 0.2524 2.5441 2.7046 2.8803 0.2527 0.1995 0.1683 0.1114 0.6312 2.7100 δ_6
0.0270 0.0000 0.0270 0.0270 0.0270 0.0000 0.0000 0.0000 0.0111 1.0000 0.0270 b_2
0.7980 0.0000 0.7980 0.7980 0.7980 0.0000 0.0000 0.0000 0.0586 1.0000 0.7980 b_1
0.0970 0.0102 0.0914 0.0978 0.1036 0.0102 0.0077 0.0061 0.0443 1.0000 0.0976 β_2
0.4138 0.0282 0.3942 0.4132 0.4334 0.0282 0.0225 0.0195 0.1454 1.0000 0.4132 β_2
-2.0884 0.2007-2.2281-2.1049-1.9620 0.2009 0.1588 0.1334 0.6555 1.0000-2.0994 γ_2
3.1429 0.8446 2.5633 3.1112 3.7072 0.8446 0.6730 0.5716 2.6676 1.0000 3.1311 γ_1
Exogenous semiparametric
MEAN SD LQ MED UQ RMSE MAE MDAE MESE %2SE TRUE
0.1321 0.0090 0.1258 0.1320 0.1383 0.0356 0.0345 0.0343 0.0096 0.0382 0.0976 β_2
0.2425 0.0453 0.2129 0.2431 0.2728 0.1766 0.1707 0.1701 0.0494 0.0598 0.4132 β_1
Endogenous semiparametric
MEAN SD LQ MED UQ RMSE MAE MDAE MESE %2SE TRUE
0.1125 0.0107 0.1054 0.1127 0.1196 0.0183 0.0157 0.0152 0.0112 0.7552 0.0976 β_2
0.3990 0.0613 0.3582 0.3986 0.4400 0.0629 0.0501 0.0427 0.0664 0.9606 0.4132 β_1