# Errata for Accounting and Causal Effects

- *ch. 1, p. 5* the limits of integration at the bottom of the page

$$\int_{-1}^{Y+1} f(X_2, Y)\, dX_2 \quad -3 < Y < -1$$

*should read*

$$\int_{-2}^{Y+1} f(X_2, Y)\, dX_2 \quad -3 < Y < -1$$

and

$$\int_{Y-1}^{1} f(X_2, Y)\, dX_2 \quad 1 < Y < 3$$

*should read*

$$\int_{Y-1}^{2} f(X_2, Y)\, dX_2 \quad 1 < Y < 3$$

- *ch. 2, p. 12* Econometric analysis of equilibrium earnings management is **pursed** in chapters 3 and 13. *should read* Econometric analysis of equilibrium earnings management is **pursued** in chapters 3 and 13.

- *ch. 3, p. 20*

$$\begin{aligned}
E[b \mid X] &= E\left[\left(X^T X\right)^{-1} X^T Y \mid X\right] \\
&= E\left[\left(X^T X\right)^{-1} X \left({}^T X\beta + \varepsilon\right) \mid X\right] \\
&= \beta + \left(X^T X\right)^{-1} X^T E[\varepsilon \mid X] = \beta + 0 = \beta
\end{aligned}$$

*should read*

$$\begin{aligned}
E[b \mid X] &= E\left[\left(X^T X\right)^{-1} X^T Y \mid X\right] \\
&= E\left[\left(X^T X\right)^{-1} X^T (X\beta + \varepsilon) \mid X\right] \\
&= \beta + \left(X^T X\right)^{-1} X^T E[\varepsilon \mid X] = \beta + 0 = \beta
\end{aligned}$$

- *ch. 3, p. 20*

$$\begin{aligned}
Var[b \mid X] &= Var\left[\left(X^T X\right)^{-1} X^T Y \mid X\right] \\
&= Var\left[\left(X^T X\right)^{-1} X^T (X\beta + \varepsilon) \mid X\right] \\
&= E\left[\left\{\beta + \left(X^T X\right)^{-1} X^T \varepsilon - \beta\right\} \left\{\left(X^T X\right)^{-1} X^T \varepsilon\right\}^T \mid X\right] \\
&= \left(X^T X\right)^{-1} X^T E\left[\varepsilon\varepsilon^T\right] X \left(X^T X\right)^{-1} \\
&= \sigma \left({}^2 X^T X\right)^{-1} X^T I X \left(X^T X\right)^{-1} \\
&= \sigma^2 \left(X^T X\right)^{-1}
\end{aligned}$$

*should read*

$$
\begin{aligned}
Var\left[b \mid X\right] &= Var\left[\left(X^T X\right)^{-1} X^T Y \mid X\right] \\
&= Var\left[\left(X^T X\right)^{-1} X^T \left(X\beta + \varepsilon\right) \mid X\right] \\
&= E\left[\left\{\beta + \left(X^T X\right)^{-1} X^T \varepsilon - \beta\right\} \left\{\left(X^T X\right)^{-1} X^T \varepsilon\right\}^T \mid X\right] \\
&= \left(X^T X\right)^{-1} X^T E\left[\varepsilon\varepsilon^T\right] X \left(X^T X\right)^{-1} \\
&= \sigma^2 \left(X^T X\right)^{-1} X^T I X \left(X^T X\right)^{-1} \\
&= \sigma^2 \left(X^T X\right)^{-1}
\end{aligned}
$$

- *ch. 3, p. 20*

$$
\begin{aligned}
Var\left[b_0 \mid X\right] &= \sigma^2 \left[D + \left(X^T X\right)^{-1} X^T\right] \left[D + \left(X^T X\right)^{-1} X^T\right]^T \\
&= \sigma^2 \begin{pmatrix} DDT + \left(X^T X\right)^{-1} X^T D^T + DX\left(X^T X\right)^{-1} \\ + \left(X^T X\right)^{-1} X^T X \left(X^T X\right)^{-1} \end{pmatrix}
\end{aligned}
$$

*should read*

$$
\begin{aligned}
Var\left[b_0 \mid X\right] &= \sigma^2 \left[D + \left(X^T X\right)^{-1} X^T\right] \left[D + \left(X^T X\right)^{-1} X^T\right]^T \\
&= \sigma^2 \begin{pmatrix} DD^T + \left(X^T X\right)^{-1} X^T D^T + DX\left(X^T X\right)^{-1} \\ + \left(X^T X\right)^{-1} X^T X \left(X^T X\right)^{-1} \end{pmatrix}
\end{aligned}
$$

- *ch. 3, p. 28*

$$
\begin{aligned}
\widehat{\beta}^{OLS} &= \left(X^T X\right)^{-1} X^T M_D X \widehat{\beta}^{WG} + \left(X^T X\right)^{-1} X^T P_D X \widehat{\beta}^{BG} \\
&= \left(X^T X\right)^{-1} X^T M_D \left(X^T M_D X\right)^{-1} X^T M_D Y \\
&\quad + \left(X^T X\right)^{-1} X^T P_D X \left(X^T P_D X\right)^{-1} X^T P_D Y \\
&= \left(X^T X\right)^{-1} X^T M_D \left(X^T M_D X\right)^{-1} X^T M_D \left(X\beta + u\right) \\
&\quad + \left(X^T X\right)^{-1} X^T P_D X \left(X^T P_D X\right)^{-1} X^T P_D \left(X\beta + u\right)
\end{aligned}
$$

*should read*

$$
\begin{aligned}
\widehat{\beta}^{OLS} &= \left(X^T X\right)^{-1} X^T M_D X \widehat{\beta}^{WG} + \left(X^T X\right)^{-1} X^T P_D X \widehat{\beta}^{BG} \\
&= \left(X^T X\right)^{-1} X^T M_D X \left(X^T M_D X\right)^{-1} X^T M_D Y \\
&\quad + \left(X^T X\right)^{-1} X^T P_D X \left(X^T P_D X\right)^{-1} X^T P_D Y \\
&= \left(X^T X\right)^{-1} X^T M_D X \left(X^T M_D X\right)^{-1} X^T M_D \left(X\beta + u\right) \\
&\quad + \left(X^T X\right)^{-1} X^T P_D X \left(X^T P_D X\right)^{-1} X^T P_D \left(X\beta + u\right)
\end{aligned}
$$

- *ch. 4, p. 60* Simplification yields

$$\begin{aligned} & \hat{\theta}\left[c_1\left(1-F\left(\hat{\theta}\right)\right)+c_2F\left(\hat{\theta}\right)\right] \\ = & \; c_1\left(1-F\left(\hat{\theta}\right)\right)E\left[\theta \mid y,\hat{\theta}\leq\theta\right]+c_{22}F\left(\hat{\theta}\right)E\left[\theta \mid y,\hat{\theta}>\theta\right] \end{aligned}$$

  *should read* Simplification yields

$$\begin{aligned} & \hat{\theta}\left[c_1\left(1-F\left(\hat{\theta}\right)\right)+c_2F\left(\hat{\theta}\right)\right] \\ = & \; c_1\left(1-F\left(\hat{\theta}\right)\right)E\left[\theta \mid y,\hat{\theta}\leq\theta\right]+c_2F\left(\hat{\theta}\right)E\left[\theta \mid y,\hat{\theta}>\theta\right] \end{aligned}$$

- *ch. 5, p. 78* where $V=\varepsilon_a-\varepsilon_b$. *should read* $-V=\varepsilon_a-\varepsilon_b$.

- ch. 7, p. 119 footnote 11 part (e) Calculate the ratio $F=\frac{L\left(y_n|\beta_n^1\right)\phi\left(\beta_n^1|b,W\right)}{L\left(y_n|\beta_n^0\right)\phi\left(\beta_n^0|b,W\right)}$ where $L\left(y_n \mid \beta_n^1\right)$ is a product of logits, and $\phi\left(\beta_n^1 \mid b,W\right)$ is the normal density. *should read*

(e) Calculate the ratio $\alpha=\frac{L\left(\beta_n^1|b,y_n\right)\phi\left(\beta_n^1|b,W\right)}{L\left(\beta_n^0|b,y_n\right)\phi\left(\beta_n^0|b,W\right)}$ where $L\left(\beta_n^1 \mid b,y_n\right)$ is the likelihood for the proposal and $\phi\left(\beta_n^1 \mid b,W\right)$ is the prior for the proposal with $L\left(\beta_n^0 \mid b,y_n\right)$ and $\phi\left(\beta_n^0 \mid b,W\right)$ the analogs for the initial or previous draw.

- *ch. 8, p. 135-141* The discussion of strategic choice models has been substantially revised and is separately reported at

  http://fisher.osu.edu/~schroeder.9/AMIS900/StrategicChoiceModel.pdf

- *ch. 10, p. 219* Then, we can replace $\Pr\left(D_{1i}-D_{0i}=1\right)$ with $E\left[D_i \mid Z_i=1\right]-E\left[D_i \mid Z_i=0\right]$ and

$$\begin{aligned} & \Pr\left(D_{1i}-D_{0i}=1\right)E\left[Y_{1i}-Y_{0i} \mid D_{1i}-D_{0i}=1\right] \\ = & \left(E\left[D_i \mid Z_i=1\right]-E\left[D_i \mid Z_i=0\right]\right)E\left[Y_{1i}-Y_{0i} \mid D_{1i}-D_{0i}=1\right] \\ = & \left(E\left[D_i \mid Z_i=1\right]-E\left[D_i \mid Z_i=0\right]\right)\left(E\left[Y_i \mid Z_i=1\right]-E\left[Y_i \mid Z_i=0\right]\right) \end{aligned}$$

  *should read* Then, we can replace $\Pr\left(D_{1i}-D_{0i}=1\right)$ with $E\left[D_i \mid Z_i=1\right]-E\left[D_i \mid Z_i=0\right]$ and

$$\begin{aligned} & \left(E\left[Y_i \mid Z_i=1\right]-E\left[Y_i \mid Z_i=0\right]\right) \\ = & \Pr\left(D_{1i}-D_{0i}=1\right)E\left[Y_{1i}-Y_{0i} \mid D_{1i}-D_{0i}=1\right] \\ = & \left(E\left[D_i \mid Z_i=1\right]-E\left[D_i \mid Z_i=0\right]\right)E\left[Y_{1i}-Y_{0i} \mid D_{1i}-D_{0i}=1\right] \end{aligned}$$

- *ch. 13, p. 341*

$$Y=\exp\left[\sum_{j=1}^{m}\lambda_j\left\{f_j\left(X_1\right)-f_j\left(X_0\right)\right\}\right]$$

*should read*

$$Y = -\sum_{j=1}^{m} \lambda_j \left\{ f_j \left( X_1 \right) - f_j \left( X_0 \right) \right\}$$

- *ch. 13, p. 357* or green widgets (decision $D_3$) is

  $L\left(D_3; n_1, n_2, n_3\right) = R\left(n_1 - S_1 - 200\right) + R\left(n_2 - S_2\right) + R\left(n_3 - S_3 - 200\right)$

  *should read* or green widgets (decision $D_3$) is

  $$L\left(D_3; n_1, n_2, n_3\right) = R\left(n_1 - S_1\right) + R\left(n_2 - S_2\right) + R\left(n_3 - S_3 - 200\right)$$

- *ch. 13, p. 361*

  $$\begin{aligned} E\left[L\left(D_2\right)\right] &= \sum_{n_1=0}^{\infty} p\left(n_1\right) R\left(n_1 - 100\right) + \sum_{n_2=0}^{\infty} p\left(n_2\right) R\left(n_2 - 350\right) \\ &\quad + \sum_{n_3=0}^{\infty} p\left(n_3\right) R\left(n_3 - 50\right) \\ &= 6.902 + 3.073 + 10.06 = 10.06 \end{aligned}$$

  *should read*

  $$\begin{aligned} E\left[L\left(D_2\right)\right] &= \sum_{n_1=0}^{\infty} p\left(n_1\right) R\left(n_1 - 100\right) + \sum_{n_2=0}^{\infty} p\left(n_2\right) R\left(n_2 - 350\right) \\ &\quad + \sum_{n_3=0}^{\infty} p\left(n_3\right) R\left(n_3 - 50\right) \\ &= 6.902 + 3.073 + 0.085 = 10.06 \end{aligned}$$

- *ch. 13, p. 362* Today's total demands for red, yellow and green widgets are

  $$n_1 = \sum_{r=1}^{\infty} r u_r, \quad n_2 = \sum_{y=1}^{\infty} y u_y, \quad n_3 = \sum_{g=1}^{\infty} g u_g$$

  whose expectations from stage 2 are $E\left[n_1\right] = 50$, $E\left[n_2\right] = 100$, and $E\left[n_3\right] = 10$. The total number of individual orders for red, yellow, and green widgets are

  $$m_1 = \sum_{r=1}^{\infty} u_r, \quad m_2 = \sum_{y=1}^{\infty} u_y, \quad m_3 = \sum_{g=1}^{\infty} u_g$$

  *should read* Today's total demands for red, yellow and green widgets are

  $$n_1 = \sum_{r=1}^{\infty} r u_r, \quad n_2 = \sum_{y=1}^{\infty} y v_y, \quad n_3 = \sum_{g=1}^{\infty} g w_g$$

whose expectations from stage 2 are $E[n_1] = 50$, $E[n_2] = 100$, and $E[n_3] = 10$. The total number of individual orders for red, yellow, and green widgets are

$$m_1 = \sum_{r=1}^{\infty} u_r, \quad m_2 = \sum_{y=1}^{\infty} v_y, \quad m_3 = \sum_{g=1}^{\infty} w_g$$

- *ch. 13. p. 402* $m_t = g\ m_{t-1} + e_t$ *should read* $m_t = g\ m_{t-1} + \varepsilon_t$
- *ch. 13. p. 402* $B^t \begin{bmatrix} den_0 \\ num_0 \end{bmatrix} = S\Lambda^t S \begin{bmatrix} 1 \\ 0 \end{bmatrix}$ *should read* $B^t \begin{bmatrix} den_0 \\ num_0 \end{bmatrix} = S\Lambda^t S^{-1} \begin{bmatrix} 1 \\ 0 \end{bmatrix}$
- *ch. 13. p. 406* $m_t = g\ m_{t-1} + e_t$ *should read* $m_t = g\ m_{t-1} + \varepsilon_t$
- missing reference, p. 435. Hogan, C. 1997. "Costs and benefits of audit quality in the IPO market: A self-selection analysis," *The Accounting Review* 72. 68-86.