Applied Production Analysis – A Dual Approach Errata

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The book "Applied Production Analysis - A Dual Approach" by Robert G. Chambers (1988, Cambridge University Press) is my favourite textbook in applied production economics. Although it is very well written, it has a few typos that could confuse the reader. Here are the typos that I am aware of:

- page 29, first equation:

$$x_i^* = x_i(x_1, x_2, \ldots, x_{i-1}, x_{i+1}, \ldots, x_n, y)$$

- page 29, second equation (eq. 1.10):

$$y = f(x_1, \ldots, x_{i-1}, x_i^*, x_{i+1}, \ldots, x_n)$$

- page 29, fourth equation (eq. 1.11):

$$\frac{\partial x_i}{\partial x_j} = -\frac{\partial f / \partial x_j}{\partial f / \partial x_i}$$

- page 31, second equation (for $MRTS_{2,1}$):

$$-\frac{f_1}{f_2} = -\frac{\alpha_1}{\alpha_2}\frac{x_2}{x_1}$$

- page 33, second equation (eq. 1.15):

$$\sigma_{ij} = \frac{\sum_k x_k f_k}{x_i x_j}\frac{F_{ji}}{F}$$

- page 35, first line of text:

$$K_i = x_i f_i / \Sigma_k x_k f_k$$

- page 35, fourth equation (eq. 1.16):

$$\sigma_{ij}^M = \frac{f_j}{x_i}\frac{F_{ij}}{F} - \frac{f_j}{x_j}\frac{F_{jj}}{F}$$

- page 35, fifth equation (eq. 1.16'):

$$\sigma_{ij}^M = \frac{f_j x_j}{\sum_k f_k x_k}(\sigma_{ij} - \sigma_{jj})$$

- page 63, second and third equation:

$$x_1 = \left(\frac{y}{A}\right)^{1/d}\left(\frac{w_2}{w_1}\right)^{b/d}\left(\frac{a}{b}\right)^{b/d}$$
$$x_2 = \left(\frac{y}{A}\right)^{1/d}\left(\frac{w_1}{w_2}\right)^{a/d}\left(\frac{b}{a}\right)^{a/d}$$

- page 312, lemma 11 and below:
  This lemma is correct but it might be a little unclear: in contrast to the general definition of principal minors, the first principal minor of a *bordered* (Hessian) matrix usually is not just the upper left (scalar) element but the upper left 2×2 matrix; accordingly, the second principal minor is the upper left 3×3 matrix, and so on.
  However, the sentence below lemma 11 is incorrect, because quasi-concavity does not require that the bordered Hessian matrix is negative semi-definite. Negative semi-definiteness of a matrix does not make an exception for *bordered* (Hessian) matrices and—in contrast to lemma 11—requires that the upper left scalar element (first principal minor) of the matrix is non-positive, the determinant of the upper left 2×2 matrix (second principal minor) is non-negative, the determinant of the upper left 3×3 matrix (third principal minor) is non-positive, and so on.
  More detailed information is available, e.g., in Chiang, Alpha C. (1984): Fundamental Methods of Mathematical Economics, Third Edition, McGraw-Hill, pages 393ff, 320, and 325f.