

Econometric Methods with Applications in Business and Economics

ERRATA LIST MAY 2008

(applies to books printed after mid 2005)

Chapter 2

Page	Now is	Should be
97 (-5/4)	The least squares estimators a and b given in (2.6) and (2.8) are linear expressions in y_1, \dots, y_n . Such estimators are ...	The least squares estimators a and b given in (2.6) and (2.8) are linear expressions in y_1, \dots, y_n . This can be verified from (2.20), which shows that $b = \sum c_i y_i$, and (2.22), which implies that $a = \sum d_i y_i$, where the coefficients c_i and d_i do not depend on y_1, \dots, y_n . Such estimators are ...
107 (+11)	... $x_{2l} = 10$ is in the middle ...	... $x_{2l} = 10$ is near the middle ...

Chapter 3

Page	Now is	Should be
139 (+2)	... Exhibit 3.7 show that $X'_1 e = 0$ (Panel 3), ...	... Exhibit 3.7 show that $X'_1 e = 0$ and $X'_2 e = 0$ (Panel 3), ...
159 (-6)	... 0.47 (shown in Panel 2), ...	... 0.47 (shown in Panel 2 of Exhibit 3.13), ...
168 (+7)	F(1, 469) distribution is 3.84, so ...	F(1, 469) distribution is 3.86, so ...
181 (+18)	<<in 3.6>> 3.6 (↪ Section 3.1.6)	3.6 (↪ Sections 3.1.6, 3.4.1)
182 (-16)	<<in 3.11>> ... $y_l = X_l \beta + \varepsilon$ with least squares ...	... $y_l = X_l \beta + \varepsilon_l$ with least squares ...

Chapter 4

Page	Now is	Should be
224 (+1)	... distribution and of the $t(5)$ distribution ...	... distribution and, as an example, of the $t(5)$ distribution ...
246-249	<<The standard errors of the non-	<<If ML standard errors are used,

	linear model reported in Panels 2 and 4 of Exhibit 4.19 are obtained from the NLS formulas on p. 206, see (4.12), instead of the ML formulas on p. 228 and p. 243, see (4.57). As ML uses the normal distribution, these two standard errors are asymptotically the same, but they differ in finite samples. Here, the sample size of 12 is very small.>>	then this has also consequences for the t-statistics and Probability values in Panel 2 and Panel 4 of Exhibit 4.19 on p. 248. For comparison, the ML results are reported in two tables at the end of these errata of Chapter 4.>>
247 (+6/7)	This corresponds to non-linear least squares.	This corresponds to non-linear least squares estimation of the coefficients, but the ML standard errors are based on (4.35) and (4.57) instead of the NLS standard errors that are based on (4.12).
247-249	<<The results of the Wald test are based on the NLS standard errors. The results shown on the right are obtained by using the ML standard errors. The outcomes differ quite substantially, which is due to the small number of 12 observations.>>	$t_1 = -1.119$ and $t_2 = -0.911$, and $W_1 = 2.225$ and $W_2 = 1.107$; none of these test outcomes is significant at the 5 per cent significance level
256 (-11)	<<reduce spacing>> ... larger errors for ...	... larger errors for ...
263 (+15)	$\hat{\sigma}^2 = 4.49$	$\hat{\sigma} = 4.49$
264 (+3)	$P_{ML}^{GMM} = 0.30$	$P_{ML}^{GMM} = 0.29$
264 (+4)	$P_{ML}^{GMM} = 0.003$	$P_{ML}^{GMM} = 0.004$
264	<<In Exhibit 4.21, Panel 4, standard errors>> 0.334 & 0.066	0.339 & 0.067

Exhibit 4.19, Panel 2 and Panel 4, p. 249

Panel 2: Dependent Variable: LOGQ1 (brand 1)				
Method: Maximum Likelihood				
Included observations: 12				
Convergence achieved after 61 iterations				
LOGQ1 = C(1) + (C(2)/C(3)) * (D1^C(3)-1)				
Parameter	Coefficient	Std. Error	z-Statistic	Prob.
C(1)	5.807116	0.038795	149.6884	0.0000
C(2)	10.29759	3.546852	2.903304	0.0037
C(3)	-13.42942	12.00512	-1.118641	0.2633
Log likelihood	12.52991			

Panel 4: Dependent Variable: LOGQ2 (brand 2)				
Method: Maximum Likelihood				
Included observations: 12				
Convergence achieved after 42 iterations				
LOGQ2 = C(1) + (C(2)/C(3)) * (D2^C(3)-1)				
Parameter	Coefficient	Std. Error	z-Statistic	Prob.
C(1)	4.377873	0.039047	112.1195	0.0000
C(2)	10.27539	2.912369	3.528189	0.0004
C(3)	-8.574115	9.411835	-0.910993	0.3623
Log likelihood	11.64128			

Chapter 5

Page	Now is	Should be
304 (+16)	... that $\alpha_1 - \alpha_2$. The latter ...	... that $\alpha_2 = \alpha_1$. The latter ...
329 (-6)	<<at end of displayed formula>> $x_i b^*)^2$.	$x_i' b^*)^2$.
330 (-12)	Formulate the model regression model ...	Formulate the regression model ...
344 (-7/6)	(obtained by a regression over the n_j observations in this group).	(where e_j is the sub-vector of e containing the n_j residuals in this group).
348 (+10/21)	The Likelihood Ratio test (5.39) ... P = 0.000, so that homoskedasticity is again rejected.	The Likelihood Ratio test (5.39) is based on four sums of squared residuals (SSR), that is, for the full sample (with $n = 474$ employees) and also for the three job categories separately (with sample sizes $n_1 = 363$, $n_2 = 27$, and $n_3 = 84$). The full sample has $SSR = 17.864$ so that $s_{ML}^2 = SSR / n = 0.0377$. For the three job categories, we get $SSR_1 = 12.765$ with $s_{1,ML}^2 = SSR_1 / n_1 = 0.0352$, $SSR_2 = 0.456$ with $s_{2,ML}^2 = SSR_2 / n_2 = 0.0169$, and $SSR_3 = 4.643$ with $s_{3,ML}^2 = SSR_3 / n_3 = 0.0553$. With these values, the LR -test is computed as $LR = 474 \log(0.0377) - 363 \log(0.0352) - 27 \log(0.0169) - 84 \log(0.0553) = 14.39$. With the (asymptotic) $\chi^2(2)$ distribution, the P-value is 0.001, so that homoskedasticity is again

		rejected.
360 (+15)	<<both terms $(X'X)^{-1}$ in displayed formula>>	$\left(\frac{1}{n} X'X\right)^{-1}$ (two times)
393 (+9)	... $w_i = g(e_i)$ and estimate ...	... $w_i = g(e_i) / e_i$ and estimate ...
411 (-13)	Hausman text ...	Hausman test ...
429 (-7/6)	<<in 5.11>> ... terms η_i are homoskedastic and uncorrelated. By b we denote ...	... terms η_i are IID($0, \sigma_\eta^2$). By b we denote ...

Chapter 6

Page	Now is	Should be
458 (+1/2)	outcomes provide some evidence for the presence of heteroskedasticity (P = 0.01).	outcomes do not indicate the presence of any heteroskedasticity.
458	<<In Panel 1 of Exhibit 6.4, the line with Heteroskedasticity LM test value (df = 1), 6.237 & 6.186, and the line with corresponding P-value, 0.0125 & 0.0129>>	<<Delete these two lines from Panel 1 of Exhibit 6.4>>

Chapter 7

Page	Now is	Should be
570 (-10/8)	... success equal to $\frac{1}{2}$. The first model is preferred if B is significantly larger than $\frac{1}{2}$, and the second model is better if B is significantly smaller than $\frac{1}{2}$. One can test the hypothesis ...	... success equal to $\frac{1}{2}$. The first model is preferred if B is significantly larger than $\frac{m}{2}$, and the second model is better if B is significantly smaller than $\frac{m}{2}$. One can test the hypothesis ...
592(-2/1)	... over time, and the forecast variance is constant for all horizons.	... over time, the forecast variance is constant for all horizons if the model contains no ARMA terms, and this variance converges to a finite limit for larger horizons if the model contains ARMA terms.
593 (+2)	... variance increases for larger horizons.	... variance increases without bound for larger horizons.

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Chapter 2

Page	Now is	Should be
76 (-9)	y_i is denoted by RENDMARK and x_i by RENDCYCO	x_i is denoted by RENDMARK and y_i by RENDCYCO
82 (+8/9)	first and second sample moments	first and second (non-centred) sample moments
84 (+1)	between y and x	between x and y
96 (-7)	$e_i = y - a - bx_i$	$e_i = y_i - a - bx_i$
98 (+7+9)	<<replace symbol d by g (5 times)>> (+7) $d_i y_i$ (+7) d_1, \dots, d_n (+9) $w_i = d_i - c_i$ (+9) $d_i = c_i + w_i$	$g_i y_i$ g_1, \dots, g_n $w_i = g_i - c_i$ $g_i = c_i + w_i$

Chapter 3

Page	Now is	Should be
118 (+14)	half of the variance can be explained	half of the variability (as measured by the variance) can be explained
127 (-5)	sample mean	sample average
152 (+3)	Sections 1.4.1, 1.4.2.	Sections 1.2.3, 1.4.1, 1.4.2.
152 (-6)	(p. 31-5)	(p. 32 and 34-5)
156 (+20)	(3.31)). For	(3.31) and (3.32)). For

Chapter 4

Page	Now is	Should be
194 (-6)	first term	first expression in the last line
194 (-5)	fourth term	fourth expression
211 (-4/2)	, so that ... we get <<NOTE: Reshuffle formulas and text parts, but do not change	, and using the fact that $z_h = e_h + X_h \hat{\beta}_h$ it follows that $\hat{\beta}_{h+1} = (X_h' X_h)^{-1} X_h' z_h = (X_h' X_h)^{-1} X_h' (e_h + X_h \hat{\beta}_h)$ and

	formulas! The formulas in the book are correct, whereas those shown here in the right column suffer from Word inconveniences>>	hence
215 (+19)	null hypothesis β_0 holds true	null hypothesis $\beta_2 = 0$ holds true
217 (+12)	$e_i = y_i - f(x_i, \beta_1, \beta_2)$	$e_i = y_i - f(x_i, b_1, b_2)$
222 (+16)	great variety of models, and applications models of special interest	large variety of models, and applications for models of special interest
268 (+15)	<<add text in Exercise 4.4, directly above part (a); do not use new paragraph for this text>>	For simplicity, assume that x^* , ε_x and ε_y are all IID (identically and independently distributed).
269 (+23)	<<add 'prime' in Exercise 4.9.d>> $\beta = (0, 1, 0)$	$\beta = (0, 1, 0)'$
271 (-8)	<<add text in Exercise 4.14, directly above part (a); do not use new paragraph for this text; NOTE: normal size italic 'sigma' and capital roman NID (not italic!) >>	It is assumed that the error terms ε are NID(0, σ^2).

Chapter 5

Page	Now is	Should be
370 (+24)	between the residuals. Panel 5	between the residuals (see p. 362 and Exercise 5.11). Panel 5
410 (+3)	$\text{var}(d) \approx \text{var}(\dots)$	$\text{var}(d) = \text{var}(\dots)$ <<NOTE: the \approx in lines 2, 4 and 5 are correct and should not be changed>>
410 (-15)	<<reduce space between parameter and restriction>> parameter restriction	parameter restriction
433 (-15)	<<in 5.25 (b)>> Sort the data with increasing values of x_i .	Check that the data in the data file are sorted with increasing values of x_i .

Chapter 6

Page	Now is	Should be
485 (+4)	<<numerator>> $P[\varepsilon_i \leq t]$	$P[-x_i' \beta / \sigma < \varepsilon_i \leq t]$
485 (+4)	<<numerator>> $F(t)$	$F(t) - F(-x_i' \beta / \sigma)$

485 (-7)	<<numerator>> $F((t - x_i' \beta) / \sigma)$	$F((t - x_i' \beta) / \sigma) - F(-x_i' \beta / \sigma)$
485 (-5)		<<at end formula (6.26) add, after some open space and directly before the closing dot, within parentheses as shown>> ($y_i > 0$)
493 (+15)	<<displayed formula>> $E[\eta_i] = \dots = \dots + \lambda_i$	$E[\eta_i] = \dots = \dots + \varphi_i$ <<SO: replace λ_i by φ_i >>
493 (+17)	<<formula>> $\omega_i = \dots = \dots - \lambda_i$	$\omega_i = \dots = \dots - \varphi_i$ <<SO: replace λ_i by φ_i >>
493 (+19)	<<displayed formula>> $y_i = \dots =$ $\dots + \sigma \varphi(x_i' \beta / \sigma) / \Phi(x_i' \beta / \sigma) + \sigma \omega_i$	$y_i = \dots =$ $\dots + \sigma \varphi(x_i' \beta / \sigma) + \sigma \omega_i$ <<SO: delete the denominator term $\Phi(x_i' \beta / \sigma)$ of the fraction and also the fraction line itself, and keep the numerator term, now displayed on normal line level>>
527 (-14)	<<Exercise 6.9 (d)>> (6.34) that implies	(6.35) that implies (see p. 494)

Chapter 7

Page	Now is	Should be
582 (+14)	$E[y_t | y_1] = (t-1)\alpha$	$E[y_t | y_1] = y_1 + (t-1)\alpha$
713 (+13)	<<left column>> all the roots $\varphi(z) = 0$ lie outside	all the solutions of $\varphi(z) = 0$ lie outside