Errata

Dynamic General Equilibrium Modelling, Springer: Berlin 2005

17 August 2015

Chapter 1.1

p. 9/10: Figure 1.1 was computed for the parameter values $T = 59$, $\alpha = 0.50$, and $\rho = 0.35$ and not as stated on p.9 for $\alpha = 0.35$ and $\rho = 0.5$.

Chapter 1.2

p. 15: equation (1.13) should be

$$v(K) = \max_{0 \le K' \le f(K)} \quad u(f(K) - K') + \beta v(K').$$

p. 30: the Lagrangian should be

$$\mathscr{L} = \sum_{t=0}^{\infty} \beta^t \Big[u(C_t) + \lambda_t \left(f(K_t) - C_t - K_{t+1} \right) \\ + \mu_t C_t + \omega_{t+1} K_{t+1} \Big].$$

Chapter 1.3

p. 36: The derivative of $\mathscr{L}$ with respect to K_1 should be:

$$\frac{\partial \mathscr{L}}{\partial K_1} = E_0\{-\lambda_0 + \omega_1 + \beta\lambda_1(1 - \delta + Z_1 f'(K_1))\} = 0,$$

Chapter 1.4

p. 59: in equation (1.43) the index of r is missing. Thus, this equation should read:

$$K_{t+1} - K_t \le w_t N_t + (r_t - \delta)K_t - C_t.$$

p. 63:] the exponent in the second equation from the top of the page is not $-\eta$ but $+\eta$. Thus, the equation should be

$$0 = \left(\frac{Z_t^{\varrho^{s+1}} N_{t+s+1}^{1-\alpha} k_{t+s+1}^{\alpha} + (1-\delta)k_{t+s+1} - a k_{t+s+2}}{Z_t^{\varrho^s} N_{t+s}^{1-\alpha} k_{t+s}^{\alpha} + (1-\delta)k_{t+s} - a k_{t+s+1}} \right)^{\eta} \\ \times \left(\frac{1 - N_{t+s}}{1 - N_{t+s+1}} \right)^{\theta(1-\eta)} - \beta a^{-\eta} \left(1 - \delta + \alpha Z_t^{\varrho^{s+1}} N_{t+s+1}^{1-\alpha} k_{t+s+1}^{\alpha-1} \right).$$

Appendix 2

p. 76: The growth factor of $F(X_t, 1)$, g_F must be smaller not greater than on. Thus:

$$g_F := \frac{F(X_{t+1}, 1)}{F(X_t, 1)} = \text{constant} < 1$$

p. 78: equation (A.2.3), the first line on the rhs of this equation should be

$$\frac{C^{1-\eta} v_1(1-N)}{1-\eta} + v_2(1-N) \text{ if } \eta \neq 1.$$

The brace below the term $u_{11}(\cdot)/u_1(\cdot)C$ should not span the term dC/C, thus:

$$\underbrace{\frac{u_{21}(\cdot)}{u_2(\cdot)}C}_{\xi} \frac{dC}{C} = \underbrace{\frac{u_{11}(\cdot)}{u_1(\cdot)}C}_{-\eta} \frac{dC}{C} + \frac{dA}{A}$$

Problem 1.2

p. 81: in the mylist of the planers problem, line 12 from the top, this equation should be $A_t = A_{t-1}e^{\mu+\epsilon_t}$.

Problem 1.3

p.82: in the statement of the planer's problem, $1 \geq N \geq 0$ (not $1 \geq N \leq 0$)), in the second line below the statement of the planer's problem $\sigma_\xi = 0.01$ (and not σ_γ), in line c): σ_ξ (and not $\sigma_x i$).

Chapter 2.3

p. 111: the matrix in the second line of equation (2.51) should be $W_{x\lambda}$ (and not W_{xx}).

Chapter 2.4

p. 134: In Table 2.3, $\alpha = 0.27$ (and not $\alpha = 0.73$).

Appendix 4

p. 144: equation (A.4.8) should be

$$y_t := \frac{Y_t}{A_t} = Z_t N_t^{1-\alpha} k_t^\alpha \left[n_t \frac{P_{At}}{P_t} + (1-n_t)\frac{\pi}{\pi_t} \right] - j_t F \left[(1-\varphi)\frac{P_{At}}{P_t} + \varphi \frac{\pi}{\pi_t} \right].$$

p. 146:

- equation (A.4.10d) should be

$$\alpha \hat{N}_t + \hat{w}_t = \alpha \hat{k}_t + \hat{g}_t + \hat{Z}_t.$$

- equation (A.4.10e) should be

$$(\alpha - 1)\hat{N}_t + \hat{r}_t = (\alpha - 1)\hat{k}_t + \hat{g}_t + \hat{Z}_t.$$

- equation (A.4.10f) should be

$$\hat{y}_t - \vartheta(1-\alpha)\hat{N}_t = \vartheta\alpha\hat{k}_t + \vartheta\hat{Z}_t + (1-\vartheta)\hat{j}_t.$$

- the next to last line should be:
  from equation (A.4.8). The six equations (A.4.10a) through (A.4.10f) ...

Chapter 4.3

p. 212: the equation step 4) should be

$$R(\boldsymbol{\gamma}, K_0) := \beta \left[\frac{\hat{C}_1}{\hat{C}_0}\right]^{-\eta} \left(1 - \delta + \alpha K_1^{\alpha-1}\right) - 1.$$

p. 217: the last equation should be

$$\phi(Z, K) := \beta \int_{\underline{z}}^{\bar{z}} g(e^{\varrho z + \epsilon}, Z, K)(2\pi\sigma^2)^{-1/2} e^{-(1/2\sigma^2)\epsilon^2} d\epsilon.$$

p. 214: there are some missing rows in Table 4.1. The table should appear as follows:

Chapter 5.1

p. 243: the expression for the Lagrangian should be

$$\mathcal{L} = E_0 \sum_{t=0}^{\infty} \{\beta^t [u(c_t) + \lambda_t (1_{\epsilon_t = u} b_t + (1-\tau) r_t a_t + 1_{\epsilon_t = e}(1-\tau) w_t + a_t - a_{t+1} - c_t)]\}$$

p. 243: equation (5.5) should be

$$\frac{u'(c_t)}{\beta} = E_t \left[u'(c_{t+1})(1 + (1-\tau) r_{t+1})\right].$$

Table 4.1

Coefficient	Least Squares	Galerkin	Collocation
	$\alpha = 0.28$, $\beta = 0.994$, $\delta = 1$, $\eta = 1$		
γ_0	0.432874	0.432875	0.432877
γ_1	0.064087	0.064088	0.064102
γ_2	−0.006156	−0.006154	−0.006156
γ_3	0.000926	0.000926	0.000943
γ_4	−0.000173	−0.000171	−0.000165
Distance[a)]	0.000084	0.000089	0.000063
	$\alpha = 0.28$, $\beta = 0.994$, $\delta = 0.011$, $\eta = 2$		
γ_0	2.399436	2.399443	2.399444
γ_1	0.516137	0.516136	0.516066
γ_2	−0.034548	−0.034591	−0.034723
γ_3	0.005088	0.005086	0.005199
γ_4	−0.000931	−0.000898	−0.000844
Distance[b)]	0.000960	0.000900	0.001110

[a)] to analytic solution; [b)] to solution from value function iteration.

Chapter 5.3

p. 284: equation (5.38) should be

$$\gamma_0 \frac{(1-n_t)^{-\gamma_1}}{c_t^{-\eta}} = \frac{1-\tau_y}{1+\tau_c} w_t e.$$

In the paragraph below this equation, in the second line instead of $\sigma = 1$ it should be $\eta = 1$.

Chapter 6.3

p. 320: the condition with respect to the stationary interest rate r should be

$$r = \alpha Z \left(\frac{N}{K}\right)^{1-\alpha}$$

p. 325: the transition probability matrices are:

$$\Gamma(\epsilon'|Z' = Z_g, Z = Z_g, \epsilon) = \begin{pmatrix} 0.9615 & 0.0385 \\ 0.9581 & 0.0419 \end{pmatrix},$$

$$\Gamma(\epsilon'|Z' = Z_b, Z = Z_b, \epsilon) = \begin{pmatrix} 0.9525 & 0.0475 \\ 0.3952 & 0.6048 \end{pmatrix}.$$

Chapter 7.2

p. 405: The lower left panel of Figure 7.11 does not show the impulse response of the aggregate capital stock (it is aggregate consumption). Here is the correct Figure:

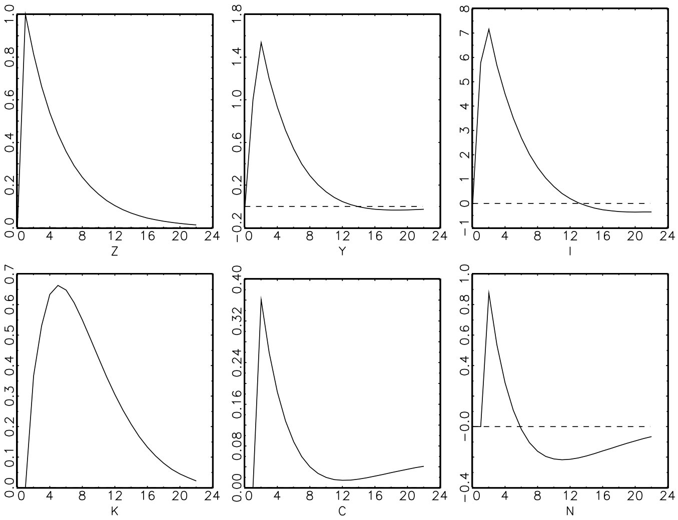

Figure 7.11: Impulse responses in the OLG model

Chapter 8.2

p. 431: In the definition of orthogonal polynomials, equation (8.30), the statement "if and only if" refers to the case $i \neq j$ only, i.e., there is no special requirement for the case $i = j$ (except in the definition of orthonormal polynomials).

In equation (8.33), the second line on the right of the brace should read:

$$\frac{\pi}{2} \text{ if } i = j \neq 0.$$

p. 435: equation (8.44), the upper summation index must be m instead of n and $i, j < m$

Chapter 8.3

p. 445: the first equation on this page should be

$$f(\bar{x} + h) - f(\bar{x} - h) = 2f^{(1)}(\bar{x})h + \left(f^{(3)}(\xi_1) + f^{(3)}(\xi_2)\right)\frac{h^3}{6}.$$

p. 450: the next to last equation should be

$$E(f(z)) := (2\pi\sigma^2)^{-1/2} \int_{-\infty}^{\infty} f(z) e^{[-(z-\mu)^2/2\sigma^2]} dz.$$

p.451: equation (8.65) should be

$$E(f(z)) \simeq \pi^{-1/2} \sum_{i=1}^{n} \omega_i f\left(\sqrt{2}\sigma x_i + \mu\right).$$

The next line should be:

For $i = 2, \dots, 5$ the integration nodes x_i and weights ω_i are given in Table 8.2.

The Table on this page should be

Table 8.2

n	x_i	ω_i
2	−0.7071067811	0.8862269254
	0.7071067811	0.8862269254
3	−0.01224744871	0.2954089751
	0.0000000000	1.18163590
	0.01224744871	0.2954089751
4	−1.650680123	0.08131283544
	−0.5246476232	0.8049140900
	1.650680123	0.8049140900
	0.5246476232	0.08131283544
5	−2.02018287	0.01995324205
	−0.9585724646	0.3936193231
	0.0000000000	0.9453087204
	2.02018287	0.3936193231
	0.9585724646	0.01995324205

Source: JUDD (1998), Table 7.4

Chapter 8.5

p. 458: Equation (8.76) should be

$$x_{s+2} = x_{s+1} - \frac{x_{s+1} - x_s}{f(x_{s+1}) - f(x_s)} f(x_s)$$

p. 461: second paragraph, `FixvMN2` should be `FixvMN`. The source code of this program is in the file `Toolbox.src`. The source code of the program `FixvMN1` is in the file `Ch8_Toolbox.src`.

p. 459: Next to last line: In the definition of the Lipschitz property, the statement should be: “for all $\underline{x}^1, \underline{x}^2 \in \mathcal{N}(\underline{x}^s)$“.

Chapter 9.2

p. 495: the first element in the second row of the matrix P^2 should be 0.09 instead of 0.81.

Chapter 9.4

p. 504: equation (9.19):

$$\min_{(g_t)_{t=1}^T} \sum_{t=1}^{T} (y_t - g_t)^2 + \lambda \sum_{t=2}^{T-1} [(g_{t+1} - g_t) - (g_t - g_{t-1})]^2.$$

p. 505: the entry in the second row and fourth column of the matrix K should be 1 and not zero.