p. 157: 4th line from the bottom

"critical prices of commodity 1"

may be

"critical prices of commodity 2"

p. 158: Proposition 5.3-3: 3rd line

"$\ldots\ \Upsilon^f\ f = 1, \ldots F$ are closed, strictly convex, and "

may be

"$\ldots\ \Upsilon^f\ f = 1, \ldots F$ are closed, convex, and "

I mean, we should (can) proceed without assuming **strict** convexity in production sets. If we need to assume "strict convexity in production sets", I am afraid that your discussion on p. 157 (5th line in the paragraph below Proposition 5.3-2), "Fortunately, the assumption of strict convexity can be replaced by (weak) convexity", becomes irrelevant. Some other textbooks, such as Starr (1997, p. 229) do not assume "strict convexity in production sets". My students and I spent 5 classes to understand your statements in Proposition 5.3-3. We hope that you will make some clarifications on this proposition.

pp. 158 - 159: From correspondences to functions

This is not a typo, but a confusing point for us to follow. Up to Kakutani's Fixed Point Theorem, the issue is the strict convexity in production sets and the main tool is a correspondence. Just below Kakutani's Fixed Point Theorem, the discussion moves to another topic and we again think about an excess demand function, not an excess demand correspondence. We hope that you will add some sentences to emphasize the changes from correspondences to functions.

p. 159: Proposition 5.3-4: 3rd line

Although not a (possible) typo, I am afraid that you did not define "*bdy*".

p. 161: 2nd line of the 2nd paragraph

"Because $F(\bar{p}) \in H$ it follows ..."

may be

"Because $F(\bar{p}) \in P$ it follows ..."

p. 161: 2nd part of the last equation

$$F_j(\bar{p}) = \lim_{t\to\infty} \frac{\bar{p}^t_j + \frac{z_t(\bar{p}^t)}{1+\|z(\bar{p}^t)\|}}{D^t} =$$

may be

$$F_j(\bar{p}) = \lim_{t\to\infty} \frac{\bar{p}^t_j + \frac{z_j(\bar{p}^t)}{1+\|z(\bar{p}^t)\|}}{D^t} =$$

I mean the z_t in 'the numerator of the numerator' seems to be wrong.

p. 171: 2nd paragraph, line 2

$p_1 = p_{21}{}^s$ may be $p_{11} = p_{21}{}^s$

because p_1 is a price vector in the notation of this section.

p. 175: Proposition 5.6-1, 1st line

"... allocation, $\frac{z_{A2}}{z_{A1}} < \frac{z_{B2}}{z_{B1}}$"

Considering the notation specified in the last paragraph of p. 173, I guess, this is

"... allocation, $\frac{z_{2A}}{z_{1A}} < \frac{z_{2B}}{z_{1B}}$"

p. 175: Proposition 5.6-1, 3rd line

"... of these input-ratios $\frac{z_{i2}}{z_{i1}}, i = A, B$ increase,"

Considering the notation specified in the last paragraph of p. 173, I guess, this is

"... of these input-ratios $\frac{z_{2i}}{z_{1i}}, i = A, B$ increase,"

p. 175: Proof of Proposition 5.6-2: 4th line: 1st equation

$$z^{\lambda}{}_{A} + z^{\lambda}{}_{B} = (1 - \lambda)(z_A + z_B) + \lambda(z'{}_{A} + z'{}_{B}) \leq \bar{z}$$

may be

$$z^{\lambda}{}_{A} + z^{\lambda}{}_{B} = (1 - \lambda)(z_A{}^0 + z_B{}^0) + \lambda(z_A{}^1 + z_B{}^1) \leq \bar{z}$$

p. 176: 1st equation: 9th line

$$\frac{r_2}{r_1} = \mathrm{MRTS}_i(z_i)$$

may be

$$\frac{r_1}{r_2} = \mathrm{MRTS}_i(z_i)$$

p. 178: The 1st of Proof of Proposition 5.6-5: 1st line

"As p_A increases x_A increases."

may be

“As p_A increases q_A increases.”

p. 192: at the bottom: the upper part of equation (6.2-1)

$$\mathfrak{L}(z,\, k_{T+1},\, \lambda) \leq \mathfrak{L}(\bar{z},\, \bar{k}_{T+1},\, \lambda).$$

I am afraid that no “period” is necessary at the end of this line.

$$\mathfrak{L}(z,\, k_{T+1},\, \lambda) \leq \mathfrak{L}(\bar{z},\, \bar{k}_{T+1},\, \lambda)$$

p. 193: 2nd line

$$\frac{\partial \mathfrak{L}}{\partial k_{T+1}}\left(\bar{z},\, \bar{k}_{T+1},\, \lambda\right)\left(k_{T+1} - \bar{k}_{T+1}\right) = -\lambda_t k_{T+1} + \lambda_T \bar{k}_{T+1} \leq \lambda_T \bar{k}_{T+1}.$$

may be

$$\frac{\partial \mathfrak{L}}{\partial k_{T+1}}\left(\bar{z},\, \bar{k}_{T+1},\, \lambda\right)\left(k_{T+1} - \bar{k}_{T+1}\right) = -\lambda_T k_{T+1} + \lambda_T \bar{k}_{T+1} \leq \lambda_T \bar{k}_{T+1}.$$

We mean the subscript of the lagrange multiplier in the middle may be wrong.

p. 193: 7th line: Kuhn-Tucker conditions

$$\frac{\partial \mathfrak{L}}{\partial z_j}(\bar{z},\, \bar{k}_{T+1},\, \lambda) \leq 0 \quad \text{with equality if} \quad \bar{z}_j = 0, \forall j.$$

may be

$$\frac{\partial \mathfrak{L}}{\partial z_j}(\bar{z},\, \bar{k}_{T+1},\, \lambda) \,\leq\, 0 \quad \text{with equality if} \quad \bar{z}_j \,>\, 0, \forall j.$$

We think that a Kuhn-Tucker condition for this problem is

$$\frac{\partial \mathfrak{L}}{\partial z_j}(\bar{z},\, \bar{k}_{T+1},\, \lambda) \,\leq\, 0, \;\; \bar{z}_j \,\geq\, 0, \;\; \bar{z}_j \frac{\partial \mathfrak{L}}{\partial z_j}(\bar{z},\, \bar{k}_{T+1},\, \lambda) \,=\, 0$$

If the condition above is correct, the following sentence may be

"Therefore either $\frac{\partial \mathfrak{L}}{\partial z_j}(\bar{z},\, \bar{k}_{T+1},\, \lambda) \,=\, 0, \;\; \bar{z}_j \,>\, 0$ or $\frac{\partial \mathfrak{L}}{\partial z_j}(\bar{z},\, \bar{k}_{T+1},\, \lambda) \,<\, 0, \;\; \bar{z}_j \,=\, 0$

p. 193: 9th line

"Because $z_j \,\geq\, 0$, in both cases it follows that $\frac{\partial}{\partial z_j}(\bar{z},\, \bar{k}_{T+1},\, \lambda)(z_j \,-\, \bar{z}_j) \,\leq\, 0$.

may be

"Because $z_j \,\geq\, 0$, in both cases it follows that $\frac{\partial \mathfrak{L}}{\partial z_j}(\bar{z},\, \bar{k}_{T+1},\, \lambda)(z_j \,-\, \bar{z}_j) \,\leq\, 0$.

p. 195: 2nd equation in 'An Example'

$$\max_{\{x_t,\, W_t)}$$

We mean that the left part may be (, not {.

p. 195: 2nd equation from the bottom

$$x_t = \frac{(1 - \alpha)W_t}{1 - \alpha^{T-t+1}}$$

may be

$$x_1 = \frac{(1 - \alpha)W_1}{1 - \alpha^{T}}$$

The sentence above says " ...the optimal first-period consumption is"

p. 202: 2nd equation from the top

$$V_1\left(\bar{k}_1\right) = \max_{(x_1, k_2)} \{u(k_1, k_2) + \delta V_2(k_2) \,|\, k_2 \geq g_1(x_1, k_1)\}$$

may be

$$V_1\left(\bar{k}_1\right) = \max_{(x_1, k_2)} \left\{u(x_1, k_2) + \delta V_2(k_2) \,|\, k_2 \geq g_1(x_1, \bar{k}_1)\right\}$$

We mean something seems to be wrong inside $u()$ and $g_1()$.

p. 202: 2the line below (6.4-1)

"...Thus utility is $u(c_t, k_t) + \ldots$

may be

"...Thus utility is $u(x_t, k_t) + \ldots$

p. 202: the Lagrangian just above (6.4-2)

$$\mathfrak{L} = u(x_t, k_t) + \delta V_{t+1}(k_{t+1}) + \mu_t[g_t(k_t, x_t) - k_{t+1}]$$

may be

$$\mathfrak{L} = u(x_t, k_t) + \delta V_{t+1}(k_{t+1}) + \mu_t[g_t(x_t, k_t) - k_{t+1}]$$

p. 202: equation (6.4-3)

$$\frac{\partial \mathfrak{L}}{\partial x_{t+1}} =$$

may be

$$\frac{\partial \mathfrak{L}}{\partial k_{t+1}} =$$

p. 203: 3rd line

"…conditions (6.4-3) and (6.4-4) as follows:"

may be

"…conditions (6.4-2) and (6.4-4) as follows:"

p. 203: First equation from the top

$$\delta^{t-1}\frac{\partial u}{\partial x_t} - \delta^t V'_{t+1}(k_{t+1})\frac{\partial g_t}{\partial x_t} = 0$$

may be

$$\delta^{t-1}\frac{\partial u}{\partial x_t} + \delta^t V_{t+1}^{'}(k_{t+1})\frac{\partial g_t}{\partial x_t} = 0$$

p. 203: Equation in the 2nd paragraph

$$\lambda_t = \delta^t V_{t+1}^{'}(k_{t+1})\frac{\partial g_t}{\partial x_t}$$

may be

$$\lambda_t = -\delta^t V_{t+1}^{'}(k_{t+1})\frac{\partial g_t}{\partial x_t}$$

We guess that

$$\frac{\partial g_t}{\partial x_t} \le 0.$$

so the shadow price λ_t is positive. But we are not sure how does this typo affect the argument in the 2nd paragraph.

p. 207: the first equation: Lagrangian at the top

We are afraid that the first Lagrangian confuses a general class of optimization problem on p. 206 and Example 1 on the same page. We mean

$$\mathfrak{L} = \sum_{t=1}^{T} U_t(k_t, x_t) + \delta^T V_T(k_{T+1}) + \lambda_t(F_t(k_t, x_t) - k_{t+1} + k_t)$$

may be

$$\mathfrak{L} = \sum_{t=1}^{T} U_t(k_t, x_t) + V_T(k_{T+1}) + \lambda_t(F_t(k_t, x_t) - k_{t+1} + k_t)$$

If this correction is correct, we also need to delete δ^T in (6.5-3).

p. 207: 2nd paragraph of Reducing the Time between Periods

We are not sure what the first sentence means:

"...we redefine decision point t to be the decision made after t periods of length Δt have elapsed."

For an non-English native speaker like me, this seems to mean $t = t\Delta t$. If this is true, $\Delta t = 1$. Then the next equation becomes weird as follow:

$$k_{t+1} - k_t = F_t(k_t, x_t) \equiv f_t(k_t, x_t)\,\Delta t = f_t(k_t, x_t)$$

p. 208: right-hand part of equation 6.5-5

My student and I stuck this part, and still cannot understand it well. Your clarification will be highly appreciated.

In my understanding, What this part did is

$$\frac{\lambda_t - \lambda_{t-1}}{\Delta t} = \frac{\Delta\lambda}{\Delta t}$$

In the numerator, the time between periods is 'one', while it is Δt in the denominator.

If this is

$$\frac{\lambda_t - \lambda_{t-\Delta t}}{\Delta t} = \frac{\Delta\lambda}{\Delta t},$$

we can understand the transition from equation (6.5-6) to (6.5-7).

On the other hand, if $\Delta t = 1$ as the 2nd paragraph of "Reducing the time between Periods" suggests, we cannot understand the argument just below equation (6.5-6): taking the limit as $\Delta t \to 0$.

p. 209: 2nd equation from the top

$$H(k, x, t) = u(k, x, t) + \lambda \cdot u(k, x, t),$$

Considering the ordinary definition of n state vector and the argument related to equation (6.5-11) on p. 210, this may be

$$H(k, x, t) = u(k, x, t) + \lambda' \cdot u(k, x, t),$$

p. 211: first equation from the top

$$U(\varepsilon) = \overline{V}(k(T, \varepsilon)),$$

may be

$$U(\varepsilon) = \overline{V}(k(T, \varepsilon), T),$$

p. 212: 2nd equation from the top

$$k_s(s,\ 0) \ = \ f(k^*(s),\ x,\ s) \ - \ f(k^*(s),\ x,\ s)$$

may be

$$k_s(s,\ 0) \ = \ f(k^*(s),\ x,\ s) \ - \ f(k^*(s),\ x^*(s),\ s)$$

p. 212: the equation just above Step 3

Below I typed argmax instead of argMax in the text.

$$x^*(s) \ = \ \arg\max_{x \in X}\{H(k^*(s),\ x,\ s)\}$$

may be

$$x^*(s) \ = \ \arg\max_{x \in X}\{H(k^*(s),\ x(s),\ s)\}$$

I mean, x in the text looks like the constant x in Figure 6.5-1 (a)

p. 212: 2nd equation in Step 3

$$\frac{\partial}{\partial \varepsilon}\left(\frac{\partial k_i}{\partial t}\right) \ = \ \frac{\partial f_i}{\partial k}\,(k(t,\ \varepsilon),\ x^*(t),\ t) \cdot k_\varepsilon\,(k(t,\ \varepsilon),\ t)\,,$$

Following the notation defined on p. 211, this may be

$$\frac{\partial}{\partial \varepsilon}\left(\frac{\partial k_i}{\partial t}\right) \ = \ \frac{\partial f_i}{\partial k}\,(k(t,\ \varepsilon),\ x^*(t),\ t) \cdot k_\varepsilon\,(t,\ \varepsilon)\,,$$

p. 214: the beginning of the 2nd paragraph in Application ...

“If at time t k(t), her financial ...”

may be

“If at time t, k(t), her financial ...”

References

Starr, Ross M. 1997. *General Equilibrium Theory*. Cambridge: Cambridge University Press.