March, 2018

List of errata in Dumas and Luciano, *The Economics of Continuous-time Finance*

page 15, foonote 12 should read: "In continuous time, consistently with the split of the price vector S into $\{B, \mathcal{S}\}$, explained in footnote 10, we will use a special symbol for the position in the riskless security, α. The other positions will still be denoted with $\theta_i, i = 1, ..N$, since the risky securities will be N. We will collect the latter in a vector Θ. To help the reader distinguish the θ_i-discrete-time positions from the continuous-time ones, Θ will be replaced by $\{\alpha, \Theta\}$, and Θ will have N entries. $\Theta = \theta_1 = \theta$, meaning that Θ is replaced by θ, only in the presence of a single risky asset."

page 21, footnote 21 should read: "A cone in a vector space is such that, if x belongs to it, αx belongs to it also, for any $\alpha > 0$. The cone H defined here is convex because it contains any convex linear combination of its elements. Because we have assumed that payoffs are non negative and, obviously, that they are not all equal to zero, the origin $h = \mathbf{0}_{N\times 1}$ does not belong to the cone. We do not actually prove that the cone is open."

page 51, exercise 2.2:

"Add to the economy of exercise 2.3 a European call option" should be: "Add to the economy of exercise 2.1 a European call option"

page 69, right-hand side of last equation on the page: $\pi(s)$ is missing under the summation sign.

page 118, it should read: "exercise 2.1 of chapter 2"

page 152, first line: b should be α.

page 207, first line of proof, page 470, footnote 10, page 473, foonote 15, and page 603: "Lipster" should be "Liptser".

page 208, equation at the bottom of the page should have been:

$$d\left(\mathcal{S}(t) B^{-1}(t)\right) = B^{-1}(t)\sigma(t)\, dw^*(t)$$

page 223, very last line: Cheng (1991).

page 224, exercise 8.3, the two equations should have read:

$$\begin{aligned} d(\xi(t)\mathcal{S}(t)) &= [-\mathcal{S}(t)\xi(t)\kappa^{\intercal}(t) + \xi(t)\sigma(t)]\, dw(t) \\ d(\xi(t) B(t)) &= -\xi(t)\kappa^{\intercal}(t) B(t)\, dw(t) \end{aligned}$$

page 224, exercise 8.4: the Novikov condition should have read:

$$\mathbb{E}\left[\exp\left\{\frac{1}{2}\int_0^t \|\kappa(t)\|^2 ds\right\}\right] < \infty.$$

page 224, exercise 8.6: all the expectations need a subscript t.

pages 251, 256 and 257: the symbol ξ should not appear in these equations and should be replaced by λ.

page 255: Y_e at the bottom of the page is a typo. It should be Y.

pages 273 and 274, exercise 10.4: the maximization problems should have read:

$$\max_{\{\alpha(t),\Theta(t)\}} \mathbb{E}\left[\frac{W^{\gamma}(T)}{\gamma}\right]$$

$$\max_{\{c(t)\},\{\alpha(t),\Theta(t)\}} \mathbb{E}\left(\int_0^T e^{-\rho t}\frac{(c\,(t))^{\gamma}}{\gamma}dt\right)$$

$$\max_{\{c(t)\},\{\alpha(t),\Theta(t)\}} \mathbb{E}\left(\int_0^T e^{-\rho t}\frac{(c\,(t))^{\gamma}}{\gamma}dt + \frac{(W\,(T))^{\gamma}}{\gamma}\right)$$

page 274, exercise 10.5: μ is a vector in $\mathbb{R}^N$ and the maximization problem should have read:

$$\max_{\{c(t)\},\{\alpha(t),\Theta(t)\}} \mathbb{E}\left\{\int_0^T \frac{(c\,(s)-\underline{c})^{\gamma}}{\gamma}ds\right\}$$

page 300: please, read: "Returns, dividends and variance-covariances collected in the vectors $\mu, \iota \in \mathbb{R}^N$ and in the matrix $\sigma\sigma^{\intercal} \in \mathbb{R}^{N\times N}$...".

page 301, Definition 12.1: please, read: "*A Radner equilibrium is a collection of securities prices* $\mathcal{S}$ *and* B ...".

page 301, equation (12.2): ω, should be removed.

page 304, equation (12.10): there should be no (t) argument for λ_0^m.

page 326, footnote 6 should have read: "Equivalently, the cumulative probability of transition $P\,(x,t;y,T) \triangleq \int_y^{\infty} p\,(x,t;u,T)\,du$ is given...".

page 346, exercise 13.8: please, replace W with w and $i\phi$ with $i\chi$.

page 354, last line of equation (14.13): a semi-colon should be added before $t \in (0,T)$.

page 355, topmost equation, first line: the differential under the integral sign should be ds instead of dt. Second line: the differential under the first integral sign should be $d\mathcal{S}\,(s)$ instead of $d\mathcal{S}\,(t)$.

page 381, foonote 15: instead of "let us assume", please, read, "we could assume".

page 383, third line before the bottom: please, read: "the Dynkin $\mathcal{D}^*$ is defined as (14.32).".

page 404, last-but-one equation should be:

$$dB(t) = r\,(t)\,B(t)dt$$

page 404, instead of being $B\,(t) =$, the left-hand side of the last equation should have been: $B\,(T) =$

page 405, equation (16.1): $1/B\,(t)$ should have been $1/B\,(T)$.

page 418, after equation (16.30): please, read: "The SDE for the short rate – imagining a single Wiener for simplicity – can then..".

page 433, exercise 16.2 should have read: "the terminal price of a bond is certain: $\mathcal{P}\,(T,T) = 1$."

page 433, exercise 16.3, $\mathcal{P}(t,r;T)$ should have been $\mathcal{P}(t,T)$.

page 434, exercise 16.4, the first formula should have been:

$$\sigma(t,T) = -\frac{1}{\varrho}\left(1 - e^{-\varrho(T-t)}\right)\sigma_r$$

and the second one:

$$dr(t) = \varrho(\bar{r} - r(t))\,dt + \sigma_r dw^*(t); \quad r_0 > 0 \text{ given}$$

page 435, exercise 16.7, the last formula should have read:

$$f(t,T) = f(0,T) + \sigma_r \int_0^t e^{-\varrho(T-s)} dw^*(s) - \frac{(\sigma_r)^2}{2\varrho^2}\left(1 - e^{-\varrho(T-t)}\right)^2$$

page 435, exercise 16.8: the first formula should have been:

$$\mathcal{P}(t,T) = \frac{\mathcal{P}(0,T)}{\mathcal{P}(0,t)} \exp\left[-B(t,T)\, I(t) - a(t,T)\right],$$

page 446, first sentence of first full paragraph should have read: "The cumulative transition probability P^* (cumulative probability function of $S(T)$ from $\mathcal{K}$ to ∞) is then obtained..."

page 452: the last SDE of the page should have been:

$$\frac{dC(t,\mathcal{K},T)}{C(t,\mathcal{K},T)} = \sigma_C(t,\mathcal{K},T)\,\sigma_K(t)^{-1}\,\mu_K(t)\,dt + \sigma_C(t,\mathcal{K},T)\,dw(t); \qquad \forall T$$

page 459, exercise 17.2: the second and third sentences should have read: "The dividend attached to risky tree i ($i = 1, 2$) over a small period of time dt is equal to $\delta_i(t)\,dt$. The sum of the two dividends $\delta_1(t) + \delta_2(t)$ is the total flow of physical resources available for consumption in the economy over the time interval t to $t + dt$." and the first formula should have been:

$$\frac{d\delta_1(t)}{\delta_1(t)} = f_1(t)\,dt + \frac{\sigma_1}{\sqrt{1 + (\rho(t))^2}} \times (dw_1(t) + \rho(t)\,dw_2(t))$$

page 511, the first equation should be:

$$\frac{1}{2}\overline{I}_{zz}\sigma^2 + \left(\mu - r - \frac{1}{2}\sigma^2\right)\overline{I}_z + \delta\overline{I} = 0$$

The left-hand side of equation (19.40) should be $I(\theta)$. And the phrase "of (19.40)" two lines below should be struck out.

page 537, exercise 20.2: the first sentence should have been: "If it is not possible for the household to be a a net borrower at the optimum,.."

page 544, last equation: there should be $\mathbb{E}[V(t+1)]$.

page 545, last three lines and page 546: the Ws should be $\mathcal{W}$.

page 552, top: in the PDE, there is a J that should be G.

page 552, footnote 17: F should be G.

page 555, third bullet point, last line but one: F^m should be W^m.

page 566, exercise 21.1 should start with: "Consider an economy...".

page 567, second equation, and two lines below it: θ should be replaced by $\bar{y}$.

page 567: $V_{(y)}$ should be $V(t)$.

page 572, section entitled "Random variables and processes," the first item should have read: "$\mathcal{N}(0,1)$ is the distribution of a standard Gaussian random variable."

page 596: reference missing:

Basak, S. 2000, A Model of Dynamic Equilibrium Asset Pricing with Heterogeneous Beliefs and Extraneous Risk, *Journal of Economic Dynamics and Control*, 24, 63–95.

page 597: reference missing:

Cheng, S. T., 1991, On the feasibility of arbitrage-based option pricing when stochastic bond price processes are involved, *Journal of Economic Theory*, 53, 185-198.

page 615: add page reference 267 to the entry on "Dynkin operator".