Corrections to *Dynamic Linear Models with R*

This file was last updated *November 29, 2011*.

If you find errors in the book not listed here, please report them to GPetris <at> uark.edu.

Chapter 1

- p. 10, first displayed formula: "$\pi(y_i)$" should be "$F(y_i)$," i.e., the equation should be

$$\mathrm{P}(Y_1 \le y_1, \ldots, Y_n \le y_n) = \int \prod_{i=1}^{n} F(y_i) \, \mathrm{d}\pi(F)$$

- p. 16, line 12: "$s^2 = \sum_{t=1}^{n}(y_i - \bar{y})^2/n$" should read "$s^2 = \sum_{i=1}^{n}(y_i - \bar{y})^2/n$"

- p. 16, line 16: "(θ, σ^2)" should read "(θ, ϕ)"

- p. 16, line 3 from the bottom (last displayed formula) should read:

$$\phi^{\frac{n}{2}+a-1} \, \exp\left\{-\frac{1}{2}\phi(ns^2 + 2b)\right\} \, \phi^{\frac{1}{2}} \exp\left\{-\frac{1}{2}\phi\left(n(\theta - \bar{y})^2 + n_0(\theta - m_0)^2\right)\right\}$$

- p. 19, second line from bottom: "μ_0" should be "m_0"

Chapter 2

- p. 38, last displayed formula: m_3 should be 5.225 instead of 5.568.

- p. 54, line 13 (formula for a_t): "$\mathrm{E}(G_t\theta_{t-1}|y_{1:t})$" should read "$\mathrm{E}(G_t\theta_{t-1}|y_{1:t-1})$"

- p. 57, 3rd line below R code: "`U.D`" should read "`D.C`"

- p. 60, 2nd line of the proof of Proposition 2.3: "$Y_{1:T}$" should be "$Y_{1:t}$"

- p. 66, line 24 of the R code: "`expdSmooth$s[, 3]`" should be "`expdSmooth$s[, 2]`"

- p. 71, Proposition 2.6 (i), displayed equations: "$a_{t,k-1}$" and "$R_{t,k-1}$" should be "$a_t(k-1)$" and "$R_t(k-1)$," respectively

- p. 71, Proposition 2.6 (ii), 3rd line: "V_t" should read "V_{t+k}"

- p. 73, Section 2.9, 2nd line: "Y_y" should read "Y_t"

- p. 74, two lines below equation (2.11a): "e_t" should read "e_{t-1}"

- p. 74, one line below equation (2.11b): "e_t" should read "e_{t-1}"

- p. 75, line 4 from bottom: "Figure 2.9" should read "Figure 2.15"

- p. 75, line 4 from bottom: "Figure 2.9" should read "Figure 2.16"

- p. 81, equation (2.19): "y_t" should be "y_{t-1}"

- p. 81, 2nd line below equation (2.17): "called Riccati" should read "called the Riccati"

- p. 81, one line below equation (2.18): "*algebric*" should be "*algebraic*"

Chapter 3

- p. 91, 2nd paragraph, 9th line: "$1 + K_{t-1}$" should read "$1 - K_{t-1}$"

- p. 94, R code: the link `http://www.robjhyndman.com/TSDL/roberts/plsuper.dat` appears to be dead. A copy of the data set can be found at `http://definetti.uark.edu/~gpetris/dlm/Datasets/lakeSuperior.dat`. Consequently, the first two commands in the R code display should be replaced by the following

```
> loc <- "http://definetti.uark.edu/~gpetris/dlm/Datasets/lakeSuperior.dat"
> lakeSup <- ts(read.table(loc, skip = 3,
+                          colClasses = "numeric")[, 2],
+               start = 1900)
```

- p. 95, 3rd line after displayed R code: "Figure 3.2.1" should read "Figure 3.5"

- p. 113, 2nd displayed formula: "ϵ_{t-r-1}" should be "ϵ_{t-r+1}"

- p. 114, equation (3.29): in the system matrix the (2,3) entry should be "1" and the (3,3) entry should be "0"

- p. 116, line 8 (2nd line of (3.35)): "$Y_t^{(p)} = Y_{t-1}^{(p)} + \delta_t + \epsilon_t$" should read
"$Y_t^{(p)} = Y_{t-1}^{(p)} + \delta_{t-1} + \epsilon_t$"

- p. 118, 4th line: "ϕ_5" should be "ϕ_2"

- p. 118, second line between 2nd and 3rd R code: "ϕ_2" should be "$\hat{\phi}_2$"

- p. 126, equation (3.38), 2nd line: "$w_t^{(i)}$" should be "$w_{i,t}$"

- p. 137, last displayed formula: "$\epsilon_{k,t}$" should be "$\epsilon_{m,t}$"

Chapter 4

- p. 145, R code, 2nd line: "`skip=3))[,2], start=c(1900,1)`" should read
"`skip=3)[,2], start=c(1900,1))`"

- p. 151, equations (4.12):

    − in the first line, "$\tilde{R}_t F_t \tilde{Q}^{-1}$" should be "$\tilde{R}_t F_t' \tilde{Q}_t^{-1}$"

— in the second line, "$\tilde{R}_t F_t' \tilde{Q}_t^{-1} \tilde{R}_t'$" should read "$\tilde{R}_t F_t' \tilde{Q}_t^{-1} F_t \tilde{R}_t$"

- p. 151, proof (i), 5th line: "α_t, β_t" should read "$\alpha_{t-1}, \beta_{t-1}$"

- p. 153, first line: "$G_t' C_{t-1} G_t + W_t$" should read "$G_t C_{t-1} G_t' + W_t$"

- p. 153, formula (4.17): "$G_t' C_{t-1} G_t$" should read "$G_t C_{t-1} G_t'$"

- p. 167, last equation before Section 4.5: there is a missing comma between ψ_2 and $y_{1:T}$, i.e., "$\psi_2 y_{1:T}$" should be "$\psi_2, y_{1:t}$"

- p. 171, R code, 1st line: "`[-(1:burn), ]`" should read "`[-(1:burn)]`"

- p. 171, 6th line before Section 4.5.2: "three" should read "four"

- p. 173, Example: SUTSE models, 6th line: "ϕ_2" should read "Φ_2"

- p. 176–178: The MCMC summaries reported in the book, including Figures 4.7–4.9, were obtained with different values of the (hyper)parameters of the prior. The correct figures obtained with the prior specified in the book are reported at the end of this errata list. The correct values of numerical summaries is the following.

```
> cbind(mcmcMean(gibbsV[1, 1, -burn]),
+       mcmcMean(gibbsV[2, 2, -burn]),
+       mcmcMean(gibbsV[2, 1, -burn]))
     gibbsV[1, 1, -burn] gibbsV[2, 2, -burn] gibbsV[2, 1, -burn]
mean          86.344691          58855.9784          1017.21798
sd             1.225223            742.4657            21.69204
> cbind(mcmcMean(gibbsWbeta[1, 1, -burn]),
+       mcmcMean(gibbsWbeta[2, 2, -burn]),
+       mcmcMean(gibbsWbeta[2, 1, -burn]))
     gibbsWbeta[1, 1, -burn] gibbsWbeta[2, 2, -burn] gibbsWbeta[2, 1, -burn]
mean              38.8510470             311840.776             353.60793
sd                 0.9094044               2174.637              40.72121
```

- p. 189, line 5: "versus i" should be "versus n"

- p. 190, R code and p. 204, line 7: "`mcmcMeans`" should be "`mcmcMean`"

Chapter 5

- p. 210, first line after dispalyed formula (5.4): "left-hand side" should read "right-hand side"

- p. 224, displayed equation (5.7) and displayed mixture of gamma distributions below: "w_{t-1}^i" should be "$w_{t-1}^{(i)}$"

- p. 213, first displayed formula: "G_g" should be "G_t"

- p. 217, next-to-the-last displayed equation, and p. 218, Algorithm 5.2: in the formula for the unnormalized weights $\tilde{w}_t^{(k)}$ the term "$\hat{\theta}_t^{(k)}$" should be "$\hat{\theta}_t^{(I_k)}$"

- p. 225, last displayed formula of Algorithm 5.4: "$m^{(I_k)}$" should read "$\mu^{(I_k)}$"

Appendix A

- p. 235, 2nd line from bottom: there is a missing parenthesis in the expression for c. The correct expression is
$$c = \Gamma((k+p)/2)/(\Gamma(k/2)\pi^{p/2}k^{p/2}|\Sigma|^{1/2})$$

Bibliography

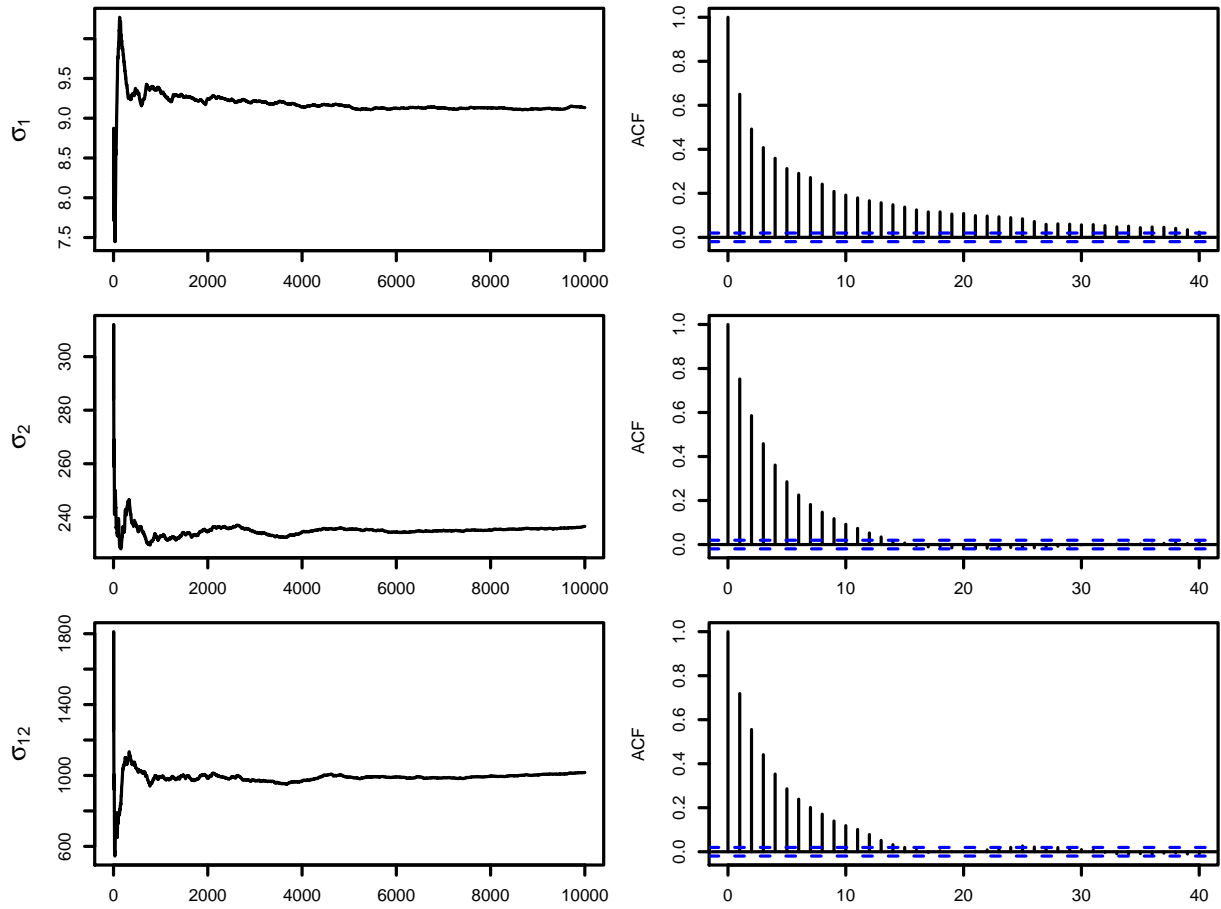- p. 249, line 11 from the bottom: "Lopez" should read "Lopes" (Apologies to Hedibert...)
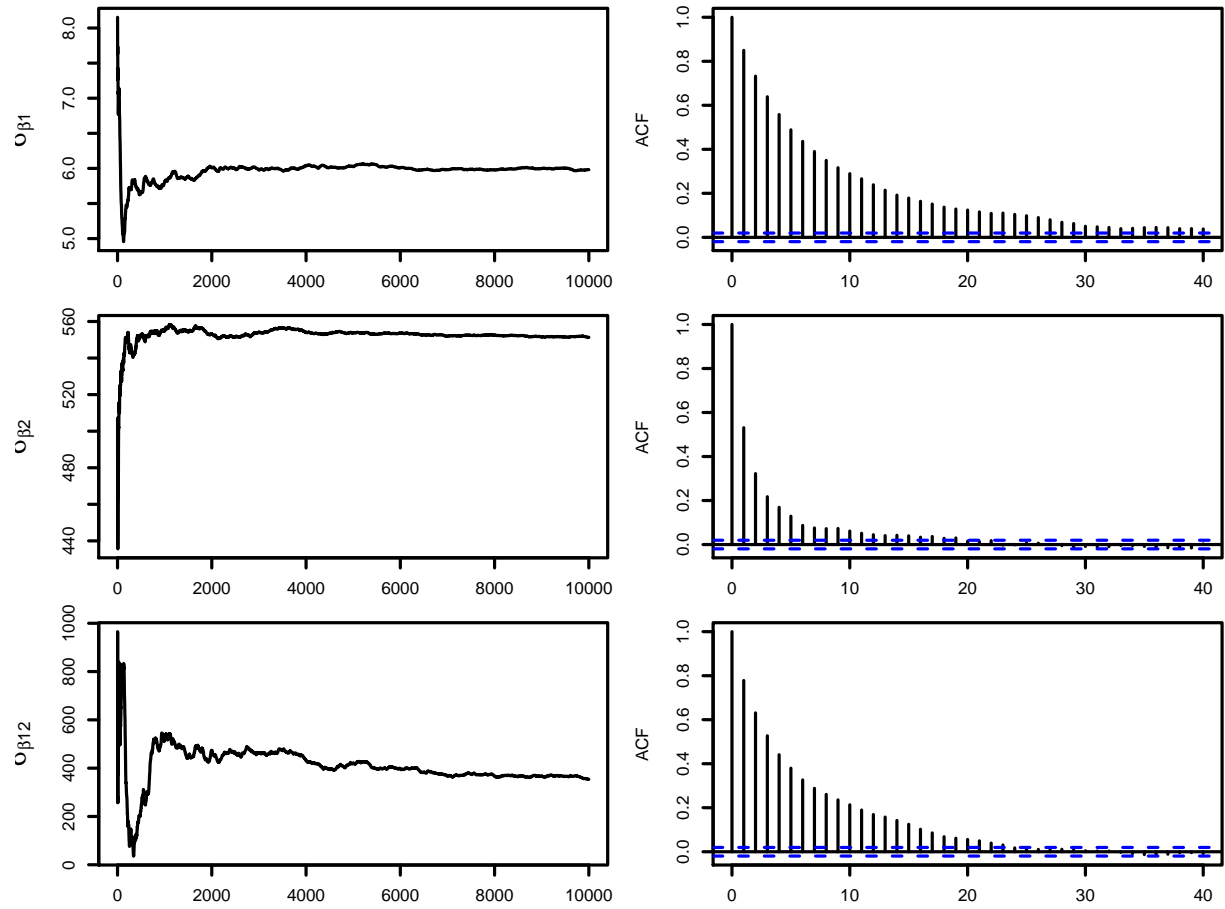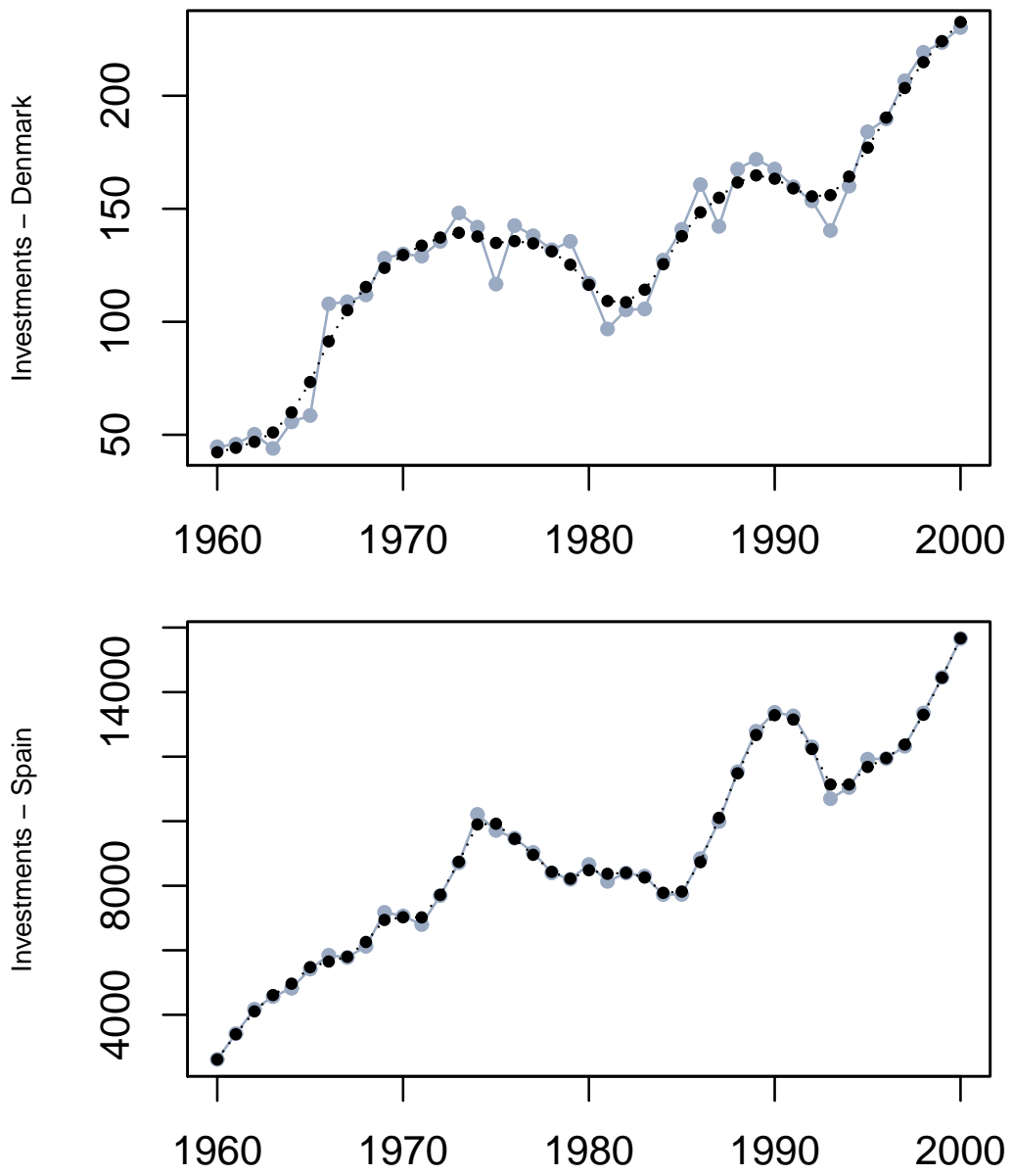
Figure 4.7

Figure 4.8

Figure 4.9