Corrections to 'Bayesian Inference in Dynamic Econometric Models'[1]
Version of October 21, 2005

-page 16: in equation (1.38): replace 'max' by 'min'.

-page 20: 5 lines up from the bottom: replace the word 'same' by 'sample' (size).

-page 39: in equation (2.13): replace $t_n(y_{(n)}, \delta)$ by $\tau_n(y_{(n)}, \delta)$.

-page 47: in the likelihood of the *NORMAL MODEL* there are two mistakes. The correct formula is

$$\begin{aligned} l(\mu, \sigma^2; y) &= \prod_{i=1}^n (2\pi)^{-1/2}\sigma^{-1} \exp[-\tfrac{1}{2\sigma^2}(y_i - \mu)^2] \\ &= (2\pi)^{-n/2} \exp[-(n\mu^2/2\sigma^2) - n \log \sigma \\ &\quad -(\textstyle\sum_{i=1}^n y_i^2/2\sigma^2) + (\mu/\sigma^2)\sum_{i=1}^n y_i]. \end{aligned}$$

(i.e. there was a missing exponent 2 on the μ in the second line, and the last - must be a +.

-page 50: in the last line of (2.54), and in (2.57), there is a missing open parenthesis after the last +, i.e. $(n_0 n)/n_*)$ should be $((n_0 n)/n_*)$.

-page 51: The second paragraph until (2.60) should be as follows:

We can use the properties of matricvariate normal and inverted Wishart densities (see Theorem A.**19**) in order to give more detailed results. In particular, the marginal posterior density of the $1 \times k$ matrix μ' is matricvariate Student with parameters μ'_*, S_*, $\mathbf{n}_*^{-1}$, and ν_*, or equivalently the density of the vector μ is multivariate Student:

$$\mu|y \sim t_k(\mu_*, \mathbf{n}_*, S_*^{-1}, \nu_* + 1 - k)$$

(changes are highlighted in bold).

-page 51: line 7 from the bottom: replace $N(\mu, \Sigma)$ by $N_k(\mu, \Sigma)$ (i.e. the subscript $_k$ is missing).

[1] We thank Helena Beltran, Antonio Cosma, Katsuhiro Sugita, Jeroen Rombouts, Alfonso Valdesogo, Lepoldo Vilcapoma, David Veredas, and Valeri Voev for pointing out errors.

-page 59: in lines 1, 7, and 12, the last term should be $\beta_*' M_* \beta_*$ (i.e. there was a missing transpose sign). In line 13, the last term is $(M_0\beta_0 + X'X\hat{\beta})$ (instead of the same thing transposed).

-page 59: line 10 from the bottom should be **(changes are highlighted in bold)**: (check by **pre**multiplying both sides by $(\mathbf{M_0} + \mathbf{X'X})\mathbf{M_0^{-1}})$). Finally,

-page 70: in Table 3.2, the Jacobian for the transformation from $-\infty, \infty$ (last line) is not correct: the correct one is

$$(d + c\tau^2 - 2d\tau)/[\tau^2(1-\tau)^2].$$

-page 76: equation (3.29) should be

$$\mu_g = \int g(\theta)\, w(\theta)\, \iota(\theta)\, d\theta \,/\, \int w(\theta)\, \iota(\theta)\, d\theta = \mathrm{E}[g(\theta)\, w(\theta)]/\mathrm{E}(w(\theta),$$

(i.e. $\iota(\theta)$ was missing in the second integral and there was a superfluous] at the end).

-page 77: the formula at the bottom of the page should be

$$\mathrm{Var}(\mathbf{r}) \simeq \frac{\partial h}{\partial s'}\Sigma\frac{\partial h}{\partial s} \text{ instead of } \mathrm{Var}(\mathbf{r}) \simeq \frac{\partial h}{\partial x'}\Sigma\frac{\partial h}{\partial x}.$$

(i.e. x was used instead of s).

-page 80: in the line just after formula (3.36), the definition of H should be $H = -\partial^2 \log(\varphi)/\partial\theta\partial\theta'$ (i.e. the 'exponent' 2 on the first ∂ is missing).

-page 88: in step 6) of the algorithm replace $\varphi(\beta^n|\alpha^n, y)$ by $\varphi(\beta|\alpha^n, y)$.

-page 99: in formula (4.8), last line, replace M_0 by M_0^{-1}.

-page 100: formula (4.13) should be

$$\bar{q}_{0.50} = q_{0.50}s_0$$

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-page 102: formula (4.18) should be

$$s_0 = s_y^2 \, \frac{1 - \bar{r}_{0.50}}{p_{0.50}}.$$

Example 4.3 should be accordingly corrected: the last sentence should be:
"So if $s_y^2 = 50$, $s_0 = 50 \times (1 - 0.60)/0.231 = 86.6$."
NB: the implied prior mean of σ^2 is equal to 28.9, and that of R_p^2 is 0.42.

-page 111: in the sixth line following eq. (4.44), $I(\eta)^{1/2}$ should be replaced by $|I(\eta)|^{1/2}$ (i.e. the determinant has to be taken).

-page 114: in the last line, replace 'see Theorem 2.21' by 'see Theorem 2.22'.

-page 119: in the first sentence of subsection 4.5.1 replace 'Theorem 2.21' by 'Theorem 2.22'.

-page 122: in the sentence preceding equation (4.83) replace 'Theorem 2.21' by 'Theorem 2.22'.
In equation (4.83), second line, the exponent of (σ^2) must be $-(T+2)/2$ (instead of $-(T+1)/2$).

-page 123: in line 9 from the bottom, the numerical values should be:
$0.00069 \times (1 - 0.40)/0.097 = 0.004268$.
NB: it follows that in Table 4.6 (Prior row), the prior mean of σ^2 should be 0.00047423 and the prior standard deviation 0.00025348. However, the posterior results in the rows NIG and Student-IG should then be computed with the correct value of s_0, i.e. 0.004268 (instead of 0.000112). The corresponding marginal densities shown in Figure 4.3 would then be slightly different.

-page 130: at the end of the first line of text, replace '2.5' by '2.6'.

-page 132: in the second line after equation (5.11), x_{-p} should be replaced by x_{-p+1}.

-page 134: equation (5.29) should be

$$-A_{yz}(L) + \bar{c}' A_{zz}(L) = A_{yy}(L)\bar{c}' - \bar{c}' A_{zy}(L)\bar{c}'$$

(i.e. the signs of the terms on the left hand side have to be changed).

-page 136: line 11: read '...because it is not possible...'

-page 139: Replace the following text (around the middle formula)

'gamma-2 density and by Theorem A.11, we deduce that $\varphi(\beta_0, \beta_1, \sigma^2 | X_0^T, \alpha)$ is a normal–inverted gamma-2 density. Hence the joint density

$$f(y_{T+2}, \beta_0, \beta_1, \sigma^2 | X_0^T, \tilde{Z}, \alpha)$$

is also normal–inverted gamma-2 (by Theorem A.13). By Corollary A.15,'

by

'gamma-2 density and by Theorem A.12, we deduce that $\varphi(\beta_0, \beta_1, \sigma^2 | X_0^T, \alpha)$ is a normal–inverted gamma-2 density. Hence the joint density

$$f(y_{T+2}, \beta_0, \beta_1, \sigma^2 | X_0^T, \tilde{Z}, \alpha)$$

is also normal–inverted gamma-2 (by definition). By Theorem A.15,'

We have underlined the parts of the original text that must be changed.

-page 141: in line 6 from the bottom, replace 'Example 2.5' by 'Example 2.8'.

-page 142: the sentence

'When $m_0 = 0$ and $r = 2$, (5.51) becomes (5.50), and (5.52) becomes (5.49): the informative normal priors tend to the non-informative priors.'

must be replaced by

'When $m_0 = 0$ and $r = 2$, (5.51) depends on a in the same way as (5.50), and (5.52) does not depend on a, like (5.49).'

-page 143: in equation (5.57), a^{-1} should be replaced by $|a|^{-1}$, and the line after equation (5.57) should be:

'When r is smaller than two, this function tends to ∞ as a tends to zero, ...'

(i.e. the limit is ∞, not zero).

-page 144: equation (5.61), and the end of the sentence after it, should be:

$$y_t = \beta_0 z_t + \epsilon_t, \quad \text{with } \epsilon_t = u_t - \alpha u_{t-1}$$

where u_t is a white noise.

-page 146: in formula (5.70), in the second line, X' should be $X'(\rho)$, and in the third line, the y's should be $y(\rho)$.

-page 149: in line 1 and 2, the text should be: '...the likelihood function is flat over the direction $\alpha = \phi$, i.e. over the main diagonal...'

-page 152: equation (5.101) should be

$$\epsilon_t = y_t(\alpha) - x_t'(\alpha)\beta + \phi\epsilon_{t-1}$$

(i.e. there is a missing β).

-page 153: the sentence following equation (5.104) should be
'The posterior density of θ obtains as the inverse of the integrating constant of the Student density times the determinant of V from the likelihood function:'
(i.e. the words 'the inverse of' were missing).

-pages 154 and 156: in the equations reporting the estimation results, the signs of the coefficients of r_{t-1} and of p_{t-1} (in the error correction term) should be changed, i.e. the signs should be positive instead of negative.

-page 179: equation (6.69) should be

$$-\mathrm{E}\left(\frac{\partial^2 \log l}{\partial \mu^2}\right) = \frac{T(1-\rho)^2}{\sigma^2},$$

(i.e. the log was missing before l).

-page 198: 7 lines below equation (7.6), read Bauwens and Lubrano (1998) instead of Bauwens and Lubrano (1991).

-page 198: in line 3 of the last paragraph, read:

Although the OLS estimator itself is unbiased, ...
(i.e. "OLS" is missing).

-page 199: formula (7.9) should be

$$\sigma^2\, h(z_t'\alpha) = \sigma^2 + z_t'\tilde{\alpha} \;\text{ with } \tilde{\alpha} = \alpha\sigma^2,$$

-page 201: in formula (7.19), the exponent $-(\nu_* - k)/2$ should be replaced by $-\nu_*/2$.

-page 201: two lines above formula (7.19), one should find $|H(\alpha)|^{1/2}$, rather than $H(\alpha)^{1/2}$.

-page 207: line 7 of second paragraph, read:
$KC = 3.06, 3.27, 3.74, 4.85$
instead of
$KC = 3.062, 3.273, 4.84, 9$.

-page 207: 3 line up from the bottom of the second paragraph, read:
$\lambda = 3(\nu - 2)/(\nu - 4) = 9$, and $KC = 9.79, 13.50, 43.11, \infty$
instead of
$\lambda = 3(\nu - 2)/(\nu - 4) = 15$, and $KC = 9.18, 9.79, 13.5, \infty$.

-page 209: in line 1, there is one 'the' too much.

-page 214: in formula (7.46), second equation, drop the , between $\sqrt{\hat{h}_t}$ and ϵ_t.

-page 215: in formula (7.49), second equation, h_t should be replaced by $\hat{h}_t$ and e^2_{t-j} by $\hat{e}^2_{t-j}$.

-page 217: eighth line of third paragraph, read $\gamma = 0.8$ instead of $\beta = 0.8$.

-page 217: six lines up from bottom, read Theorem (7.1) instead of Theorem (7.2).

-page 221: last line: read
'as emphasized in Subsection 7.3.2' instead of '... Subsection 7.4.1.'

-page 224: line 8: change $\epsilon \sim t(0, 1, 1, \nu)$ into $\epsilon \sim t(0, 1, 1/\nu, \nu)$.

-page 226: in (7.76) and (7.80) change s_0/ν_0 into s_0 (i.e. do not divide by ν_0).

-page 227: in (7.87) and (7.88) change s_*/ν_* into s_* (i.e. do not divide by ν_*). In ((7.89) the expression after the second $=$ sign should simply be $\frac{s_*}{\nu_*-2}P_t^*$ (i.e. there is no need to multiply and divide by ν_*).

-page 235: in formula (8.13), the exponent $-(T-k)/2$ should be replaced by $-\nu_*/2$.

-page 239: formula (8.31) should be

$$ID(z_t - c) = \begin{cases} 0 & \text{if } z_t < c \\ 1 & \text{if } z_t \geq c. \end{cases}$$

-page 245: in the title of section 8.4.2, the first word is 'Linearity'.

-page 272: in formula (9.26), there is a missing $-$ (minus sign) just after the $=$ sign.

-page 274: in formula (9.29), the X matrix should be

$$X = \begin{pmatrix} 1 & \Delta x_0' & \dots & \Delta x_{2-p}' \\ 1 & \Delta x_1' & \dots & \Delta x_{3-p}' \\ \vdots & \vdots & & \vdots \\ 1 & \Delta x_{T-1}' & \dots & \Delta x_{T-p+1}' \end{pmatrix}$$

(i.e. the last subscript of the second column was incorrect).

-page 279: the reference to Corollary 9.1 should be to Corollary 9.4 (see line 3 after the table, and the last line of the next paragraph).

-page 279: line 10 from the bottom: the reference to formula (A.83) should be to (A.80).

-page 291: in formula (A.15), $\sqrt{x}$ should be $\sqrt{X}$.

-page 295: in the proof, the first line of the formula defining $f(x)$ should end with $d\sigma^2$ rather than dx.

-page 298: at the end of the proof of Theorem A.10, the last equality should be $|A|.|\Sigma|^{\frac{1}{2}} = |A\Sigma A'|^{\frac{1}{2}}$ (i.e. there should be no minus sign in the exponent of $|\Sigma|$).

-page 301: at the end of line 11: drop 'vec' in $X \sim MN_{p\times q}(\text{vec}M, Q\otimes$

-page 302: in formula (A.71), the subscript to C^{-1} should be NIg instead of Ng.

-page 304: in the proof of Theorem A.15, the subscript to C^{-1} should be NIg instead of Ng.

-page 305: formula (A.97) should be

$$C_{IW}(S,\nu;q) = 2^{\frac{1}{2}\nu q}\,\pi^{\frac{1}{4}q(q-1)}\prod_{i=1}^{q}\Gamma\left(\frac{\nu+1-i}{2}\right)|S|^{-\frac{1}{2}\nu}.$$

(i.e. the product ranges from $i=1$ to $i=q$ rather than $i=p$).

-page 307: formula (A.107) should be

$$\begin{aligned} f_{Mt}^{p\times q}(X|M,P,Q,\nu) &= C_{Mt}^{-1}(P,Q,\nu;p,q) \\ &\quad\times|Q+(X-M)'P(X-M)|^{-\frac{1}{2}(\nu+p)}, \end{aligned}$$

(i.e. the square brackets around $Q+(X-M)'P(X-M)$ should be replaced by the symbol $|$ since the determinant of $Q+(X-M)'P(X-M)$ must be taken).

-page 314: formula (B.4) should be

$$f(x_i) \geq c\,\mu(x_i|\alpha)\,U_i,$$

(i.e. the inequality sign was in the wrong direction).

-page 315: line 3 from the bottom of the page should be

2) deliver $x = -\beta \log u$ as Expo(β)

(i.e. the minus sign is missing).

-page 318: in line 10, replace Theorem A.6 by Theorem A.7.

-page 320: in line 2, replace Theorem A.6 by Theorem A.7.
The sentence starting on line 10 should be:
For a $t(\mu, s, M, \nu)$, the algorithm, based on Theorem A.15, is:

-page 320: in subsection B.4.4, in the second line, replace $\Omega = C\Sigma C'$ by $\Omega = C^{-1}\Sigma C'^{-1}$.

-page 334: a reference is missing (it is invoked on page 278):

Phillips, P.C.B. (1994). Some exact distribution theory for maximum likelihood estimators of cointegrating coefficients in error correction models. *Econometrica*, 62, 73-93.