Corrections and additions to:

Matrix Algebra
Econometric Exercises 1
Cambridge University Press, 2005

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Below we have compiled a list of typos, errors, ambiguities, and additions, both as a service to our readers and as a reminder to ourselves to be included in possible reprints of the book.

Some of the items are very trivial, but still need to be attended to; others involve typos and errors.

We are always on the look-out for mistakes and we encourage our readers to report them to us. Please address your comments to Jan Magnus at magnus@uvt.nl.

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Exercise 3.53 (page 69)

From line 4 to line 12, each occurrence of $\boldsymbol{x}$ (but not of $\boldsymbol{x}_n$ and $\boldsymbol{x}_m$) should be replaced by $\boldsymbol{y}$.

Exercise 4.27 (page 86)

The solution to (a) should read:
(a) The matrix $|\boldsymbol{A}|$ is nonsingular because $\mathrm{rk}(\boldsymbol{A}) = \mathrm{rk}(\boldsymbol{A}'\boldsymbol{A}) = \mathrm{rk}(\boldsymbol{I}_n) = n$.

Exercise 5.40 (page 118)

In the displayed formula in the exercise, $|A|$ should be boldface: $|\boldsymbol{A}|$.

Exercise 6.19 (page 141)

Line 4 in the solution runs over the margin.

Exercise 7.25 (page 167)

In the first line of the solution to (c), replace 'latter' by 'former'.

Exercise 7.78 (page 198)

In the first display of the solution to (d), the second matrix should be preceded by $\boldsymbol{A}_{(4)} :=$.

Exercise 7.79 (page 199)

In the second line from the bottom, Exercise 7.78 is employed (not 7.77 as written).

Exercise 7.91 (page 206)

Line 2 in the exercise: delete comma after displayed matrix $\boldsymbol{A}$.

Exercise 8.10 (page 215)

Line 1 in the solution runs over the margin.

Exercise 8.23 (page 220)

The solution is not as tight as it should be. The correct solution reads as follows.

Solution
Since $\boldsymbol{A}$ is positive definite, Exercise 8.22 implies that $\boldsymbol{A} = \boldsymbol{B}\boldsymbol{B}'$ where $\boldsymbol{B}$ is square. Since $\boldsymbol{A}$ has full rank, so has $\boldsymbol{B}$ (Exercise 4.13(d)). By the QR decomposition (Exercise 7.35), we can write $\boldsymbol{B}' = \boldsymbol{Q}\boldsymbol{L}'$, where $\boldsymbol{Q}$ is orthogonal and $\boldsymbol{L}$ is lower triangular with positive diagonal elements. Hence, $\boldsymbol{A} = \boldsymbol{B}\boldsymbol{B}' = \boldsymbol{L}\boldsymbol{Q}'\boldsymbol{Q}\boldsymbol{L}' = \boldsymbol{L}\boldsymbol{L}'$.

Exercise 8.69 (page 239)

The last two lines of the solution should be replaced by:

Now premultiply both sides by $\boldsymbol{V}^{-1/2}$ and postmultiply both sides by $(\boldsymbol{X}'\boldsymbol{X})^{-1}$. Upon transposing, we obtain the required equality. (Compare Exercise 12.29.)

Chapter 9, Introduction (page 245)

Last line: "theeigenvalues" should be "the eigenvalues".

Exercise 9.11 (page 253)

Line 1 should read: "Let $\boldsymbol{C}$ and $\boldsymbol{D}$ be two real $n \times n$ matrices, ..."

The reason for restricting $\boldsymbol{C}$ and $\boldsymbol{D}$ to be real (which is only needed for part (a)) is that the logarithmic function is multiple-valued, even in the case of a scalar complex variable. Taking logarithms on both sides of an equation, the equality may not hold anymore if the principal value is taken on both sides.

Exercise 12.1 (pages 322–323)

In the solution to b), second line: $(1/\boldsymbol{b}\boldsymbol{b}')\boldsymbol{b}\boldsymbol{b}'$ should read $(1/\boldsymbol{b}'\boldsymbol{b})\boldsymbol{b}\boldsymbol{b}'$. Also, in the solution to c), third line from the end: "if and only" should read "if and only if".

Exercise 13.25 (page 366)

Line 5 from bottom: At the end of the formula giving $\mathrm{D}\boldsymbol{F}(\boldsymbol{X})$, the differential $\mathrm{d}\mathrm{vec}\,\boldsymbol{X}$ should be removed.

Exercise 13.38 (page 373)

Last line: "$\mathrm{dvec}(\boldsymbol{Y}) = \boldsymbol{D}^{+}\,\mathrm{dvec}\,\boldsymbol{Y} = \ldots$" should be:
"$\mathrm{dvech}(\boldsymbol{Y}) = \boldsymbol{D}^{+}\,\mathrm{dvec}\,\boldsymbol{Y} = \ldots$".

Exercise 13.53 (page 382)

Line 9: displayed formula should end with full stop (.).

Exercise 13.56 (page 384)

Line 1: "Then, since $\boldsymbol{R}'\boldsymbol{\beta} = \boldsymbol{c}$, we find the solution for $\boldsymbol{l}$ as" should be: "Then, denoting the constrained solution by $(\tilde{\boldsymbol{\beta}}, \tilde{\boldsymbol{l}})$, we have $\boldsymbol{R}'\tilde{\boldsymbol{\beta}} = \boldsymbol{c}$, and hence"

Line 4: $\boldsymbol{X}\boldsymbol{\Omega}^{-1}\boldsymbol{X}$ should be $\boldsymbol{X}'\boldsymbol{\Omega}^{-1}\boldsymbol{X}$.

Appendix A, Section A.3.4 (page 408)

Line 17: the formula

$$f^{(n)}(c)(x-c)^n/n!$$

should read

$$f^{(n)}(c)(x-b)^n/n!$$