

Risk and Asset Allocation

Springer (2005) - by Attilio Meucci

ERRATA

updated December 6, 2007

symmys.com > Book > Downloads

Errata in all reprints

- p. 79, before (2.191): "The covariance matrix is defined if $\nu > 0$ " should read: "The covariance matrix is defined if $\nu > 2$ "
- p. 98, after (2.299): "Therefore the normal distribution is stable" should read: "Therefore the normal distribution is infinitely divisible"
- p. 240, after (5.10): "simple invertible affine transformation" should read: "simple affine transformation"
- p. 240, after (5.11): " \mathbf{B} is a suitable conformable invertible matrix" should read: " \mathbf{B} is a suitable conformable matrix"
- p. 312, above (6.47): "convex programming is an optimization" should read: "cone programming is an optimization"

Errata in first and second re-print only.

- p. 14, last three lines: "If the skewness is positive (negative), occurrences larger than the expected value are more (less) likely than occurrences smaller than the expected value." should read: "If the skewness is positive (negative), the distribution is bulkier on the left (right), see Figure 1.4."
- p. 22, after (1.84): "The parameter ν , which takes on integer values" should read "The parameter ν , which takes on positive values"
- p. 22, in (1.86) " $f_{\nu,\mu,\sigma}^{\text{St}}$ " should read " $f_{\nu,\mu,\sigma^2}^{\text{St}}$ ". Also, (1.87) should read:

$$F_{\nu,\mu,\sigma^2}^{\text{St}}(x) = \frac{1}{2} + \frac{1}{2} \left[I \left(1; \frac{\nu}{2}, \frac{1}{2} \right) - I \left(\frac{\nu\sigma^2}{\nu\sigma^2 + (x - \mu)^2}; \frac{\nu}{2}, \frac{1}{2} \right) \right] \text{sign} \left(\frac{x - \mu}{\sigma} \right)$$

- p. 23, before (1.88): "the cumulative distribution function of the general Student t distribution" should read "the characteristic function of the general Student t distribution"

- p. 23, (1.90) should read:

$$\text{Sd}\{X\} = \sqrt{\frac{\nu}{\nu-2}\sigma^2}$$

- p. 27, (1.111) should read:

$$F_{\nu, \sigma^2}^{\text{Ga}}(x) = P\left(\frac{x}{2\sigma^2}; \frac{\nu}{2}\right).$$

- p. 31, (1.127) should read:

$$\widehat{\text{Sd}}_{i_T} = \sqrt{\frac{1}{T} \sum_{t=1}^T (x_t - \widehat{\text{E}}_{i_T})^2}$$

- p. 53, in (2.70) "Cov $\{X_n, X_n\}$ " should read "Cov $\{X_m, X_n\}$ "
- p. 66, (2.128) should read:

$$\tau\{X_m, X_n\} \equiv 4 \int_{\mathbb{Q}} \left(F_{U_m, U_n}(u_m, u_n) - \frac{1}{4} \right) f_{U_m, U_n}(u_m, u_n) du_m du_n$$

- p. 74, in (2.167) "Cov $\{X_n, X_n\}$ " should read "Cov $\{X_m, X_n\}$ "
- p. 77, above (2.187): "whose integer value determines the relative importance" should read "whose positive value determines the relative importance"
- p. 78, in (2.189) " $\phi_{\nu, \boldsymbol{\mu}, \boldsymbol{\Sigma}}^{\text{St}}(\mathbf{x})$ " should read " $\phi_{\nu, \boldsymbol{\mu}, \boldsymbol{\Sigma}}^{\text{St}}(\boldsymbol{\omega})$ "
- p. 84, first sentence of Section 2.6.6: "Consider a set of random variables" should read "Consider a set of N -dimensional random variables"
- p. 84, (2.221) should read:

$$\mathbf{X}_t \sim \text{N}(\mathbf{0}, \boldsymbol{\Sigma}), \quad t = 1, \dots, \nu \geq N.$$

- p. 89, (2.245) should read:

$$\widehat{\text{Cov}}_{i_T} \equiv \frac{1}{T} \sum_{t=1}^T (\mathbf{x}_t - \widehat{\text{E}}_{i_T}) (\mathbf{x}_t - \widehat{\text{E}}_{i_T})'$$

- p. 96, in (2.280) " γ " should read " $\boldsymbol{\gamma}$ "
- p. 96, under (2.281): "Then

$$\alpha \mathbf{X} + \beta \mathbf{Y} \sim \text{N}((\alpha + \beta) \boldsymbol{\mu}, (\alpha + \beta) \boldsymbol{\Sigma}).$$

Therefore setting $\gamma \equiv 0$ and $\delta \equiv (\alpha + \beta)$ the relation" should read: "Then from (2.163) we obtain:

$$\alpha \mathbf{X} + \beta \mathbf{Y} \sim \text{N}((\alpha + \beta) \boldsymbol{\mu}, (\alpha^2 + \beta^2) \boldsymbol{\Sigma}).$$

Using (2.163) again we can verify that setting $\boldsymbol{\gamma} \equiv (\alpha + \beta - \sqrt{\alpha^2 + \beta^2}) \boldsymbol{\mu}$ and $\delta \equiv \sqrt{\alpha^2 + \beta^2}$ the relation"

- p. 111, last line: "defines new invariants for the equity market" should read "defines new invariants for the fixed-income market"
- p. 125, in (3.76) " $\text{Cov}\{\mathbf{X}_{T+\tau, \bar{\tau}}\}$ " should read " $\text{Cov}\{\mathbf{X}_{T+\tau, \tau}\}$ ".
- p. 125, after (3.76) erase: "More in general, a multiplicative relation such as (3.75) or (3.76) holds for all the raw moments and all the central moments, when they are defined".
- p. 149, (3.196) should read:

$$\sum_{K=1}^N \binom{N}{K} = 2^N - 1.$$

- p. 152, after (3.212): "For example, the correlation of the one-year rate with the two-year rate is less" should read "For example, the correlation of the one-year rate with the two-year rate is higher".
- p. 179, footnote: "heuristic" should read "heuristic".
- p. 189, in (4.71) " i_T " should read " I_T ".
- p. 205, (4.150) should read:

$$\text{PErr}^2(\widehat{\boldsymbol{\Sigma}}, \boldsymbol{\Sigma}) = \frac{1}{T} \left(1 + \left(1 - \frac{1}{T} \right) \frac{\left(\sum_{n=1}^N \lambda_n \right)^2}{\sum_{n=1}^N \lambda_n^2} \right).$$

- p. 206, (4.154) should read:

$$\text{PErr}^2(\widehat{\boldsymbol{\Sigma}}, \boldsymbol{\Sigma}) = \frac{1}{T} \left(1 + \left(1 - \frac{1}{T} \right) N^2 \right).$$

- p. 216, first paragraph after (4.190): "... \mathbf{x} varies in a wide range in the space of observations and as the distribution of the invariants $f_{\mathbf{x}}$ varies in a wide range..." should read "... \mathbf{x} varies in the space of observations and as the distribution of the invariants $f_{\mathbf{x}}$ varies in a wide, yet bounded, range..."
- p. 218, (4.207) should read:

$$\boldsymbol{\psi}(\mathbf{x}, \boldsymbol{\mu}, \boldsymbol{\Sigma}) \equiv \left(\begin{array}{l} \text{as in the book} \\ w(\text{Ma}_{\mathbf{x}, \boldsymbol{\mu}, \boldsymbol{\Sigma}}^2) \text{vec}[(\mathbf{x} - \boldsymbol{\mu})(\mathbf{x} - \boldsymbol{\mu})'] - \text{vec}[\boldsymbol{\Sigma}] \end{array} \right)$$

- p. 220, (4.218) should read:

$$\boldsymbol{\psi}(\mathbf{x}, \mathbf{f}, \mathbf{B}, \boldsymbol{\Sigma}) \equiv \left(\begin{array}{l} \text{as in the book} \\ w(\text{Ma}_{\mathbf{x}, \mathbf{B}\mathbf{f}, \boldsymbol{\Sigma}}^2) \text{vec}[(\mathbf{x} - \mathbf{B}\mathbf{f})(\mathbf{x} - \mathbf{B}\mathbf{f})'] - \text{vec}[\boldsymbol{\Sigma}] \end{array} \right)$$

- p. 222, (4.225) and below should read:

$$\boldsymbol{\psi} \equiv \left(\begin{array}{l} \text{as in the book} \\ \zeta(\text{Ma}_{\mathbf{x}, \boldsymbol{\mu}, \boldsymbol{\Sigma}}^2) \text{vec}[(\mathbf{x} - \boldsymbol{\mu})(\mathbf{x} - \boldsymbol{\mu})'] - \eta(\text{Ma}_{\mathbf{x}, \boldsymbol{\mu}, \boldsymbol{\Sigma}}^2) \text{vec}[\boldsymbol{\Sigma}] \end{array} \right),$$

where the functions γ , ζ and η satisfy some regularity criteria and are such that $\boldsymbol{\psi}$ is bounded.

- p. 222, (4.227) and below should read:

$$\widehat{\Sigma} = \sum_{t=1}^T \frac{\zeta \left(\text{Ma}_{\mathbf{x}_t, \widehat{\boldsymbol{\mu}}, \widehat{\Sigma}}^2 \right)}{\sum_{s=1}^T \eta \left(\text{Ma}_{\mathbf{x}_s, \widehat{\boldsymbol{\mu}}, \widehat{\Sigma}}^2 \right)} (\mathbf{x}_t - \widehat{\boldsymbol{\mu}}) (\mathbf{x}_t - \widehat{\boldsymbol{\mu}})'.$$

Since $\boldsymbol{\psi}$ is bounded, so is ...

- p. 222, (4.228) and below should read:

$$\gamma(x) \equiv \zeta^{\frac{1}{2}}(x) \equiv \eta^{\frac{1}{2}}(x) \equiv \begin{cases} 1 & \text{if } x \leq a^2 \\ \frac{a}{\sqrt{x}} e^{-\frac{(\sqrt{x}-a)^2}{2b^2}} & \text{if } x > a^2, \end{cases}$$

where $a \equiv \sqrt{N} + \sqrt{2}$.

- p. 227, (4.244) should read:

$$\binom{T}{T_G} \equiv \frac{T!}{T_G! (T - T_G)!}.$$

- p. 231, (4.266) should read:

$$\boldsymbol{\Sigma}^{(u+1)} \equiv \frac{1}{T} \sum_t \left[\mathbf{C}_t^{(u)} + (\mathbf{x}_t^{(u)} - \boldsymbol{\mu}^{(u)}) (\mathbf{x}_t^{(u)} - \boldsymbol{\mu}^{(u)})' \right]$$

- p. 247, (5.43) should read:

$$\text{SSD: } \mathbb{E} \left\{ -(\Psi_{\alpha} - \psi)^- \right\} \geq \mathbb{E} \left\{ -(\Psi_{\beta} - \psi)^- \right\}.$$

- p. 248, last paragraph: "...an order q such that a portfolio stochastically dominates or is dominated by another" should read "an order q such that any two portfolios can be ranked"
- p. 252, two lines below the first shaded box: "if and index" should read "if an index"
- p. 283, (5.175) should read:

$$\mathbf{Q}_c(\boldsymbol{\alpha}) = \mu_{\boldsymbol{\alpha}} + \sqrt{2} \sigma_{\boldsymbol{\alpha}} \text{erf}^{-1}(1 - 2c)$$

- p. 286, above (5.191): "convexity/concavity of the certainty-equivalent" should read "convexity/concavity of the quantile"
- p. 287, below (5.192): "because the conditional covariance in does" should read "because the conditional covariance does"
- p. 297, (5.229); p. 298, (5.232); p. 299, (5.236); p. 300, (5.241): " $\mathcal{I}[\cdot]$ " should read " $\mathcal{I}[\cdot](1)$ "
- p. 320, (6.70) should read:

$$(\boldsymbol{\alpha}^*, \lambda^*) \equiv \arg \left(\max_{\boldsymbol{\alpha} \in \mathcal{C}} \min_{\lambda \in \mathbb{R}} \{ \mathbb{E} \{ \Psi_{\boldsymbol{\alpha}} \} - \lambda (\text{Var} \{ \Psi_{\boldsymbol{\alpha}} \} - v^*) \} \right).$$

- p. 322, above (6.78): "form (3.100)" should read "from (3.100)"
- p. 326, above (6.94): "we focus one affine" should read "we focus on one affine"
- p. 357, (6.216) and above should read: "which in this context is equivalent to:

$$\boldsymbol{\alpha}^* \equiv \underset{\substack{\boldsymbol{\alpha} \geq \mathbf{0} \\ \boldsymbol{\alpha}' \mathbf{p}_T \leq w - \boldsymbol{\alpha}' \mathbf{D} \boldsymbol{\alpha}}}{\text{argmax}} \quad \mathbb{E} \left\{ \frac{1}{\gamma} (\boldsymbol{\alpha}' \text{diag}(\mathbf{p}_T) e^{\mathbf{C}_{T+\tau, \tau}})^\gamma \right\}$$

- p. 413, in (8.102) the first formula should read:

$$\hat{e} \sim \text{N} \left(e, \frac{v}{T} \right)$$

- p. 415, in (8.112) " $\boldsymbol{\alpha}_s$ " should read " $;\boldsymbol{\alpha}_s$ ".