Errata for *Mathematics and Statistics for Financial Risk Management, 2nd Edition*

Chapter 3, p37

After equation 3.14, there is a sentence that states “In the special case where E[XY] = E[X]E[Y], we say that X and Y are independent.” This is not correct. The statement is backwards, and should read, “In the special case where X and Y are independent, E[XY] and E[X]E[Y] *will be* equal; if X and Y are *not* independent then E[XY] may or may not equal E[X]E[Y].” In other words, independence implies E[XY] = E[X]E[Y], but not the opposite way around.

As an example of two non-independent random variables where E[XY] does equal E[X]E[Y], consider a random variable X with a 50% chance of being +1 and a 50% chance of being −1, and a random variable Y, where $Y = X^2$. Clearly X and Y are not independent, but, in this special case,

E[X] = 0.50 x (+1) + 0.50 x (−1) = 0
E[Y] = 0.50 x ($+1^2$) + 0.50 x (-1^2) = 1
E[XY] = 0.50 x [(+1) x ($+1^2$)] + 0.50 x [(−1) x (-1^2)] = 0
E[XY] = E[X]E[Y]

Chapter 4, Equation 4.17, p71

The equation is correct for positive values of ρ, but would clearly fail for negative value of ρ. One possible solution: when you want to create two random variables with negative correlation, first create two variables with positive correlation of the same magnitude, then flip the sign of one of the variables. For example, if $\rho = -0.50$, first use Equation 17 with $\rho = 0.50$, then flip the sign of either X_A or X_B. Another solution would be to use a formula that would work for both positive and negative values of ρ. Formulas consistent with the Cholesky decomposition, as described in Chapter 8, would work for both positive and negative correlations.

Chapter 5, Equation 5.8

Current equation is:

$$f_x(x) = \frac{\partial F(x,y)}{\partial x}$$

Should be:

$$f_x(x) = \frac{\partial F(x,y_{\max})}{\partial x}$$

Where $y_{\max}$ is the maximum allowed value of y.

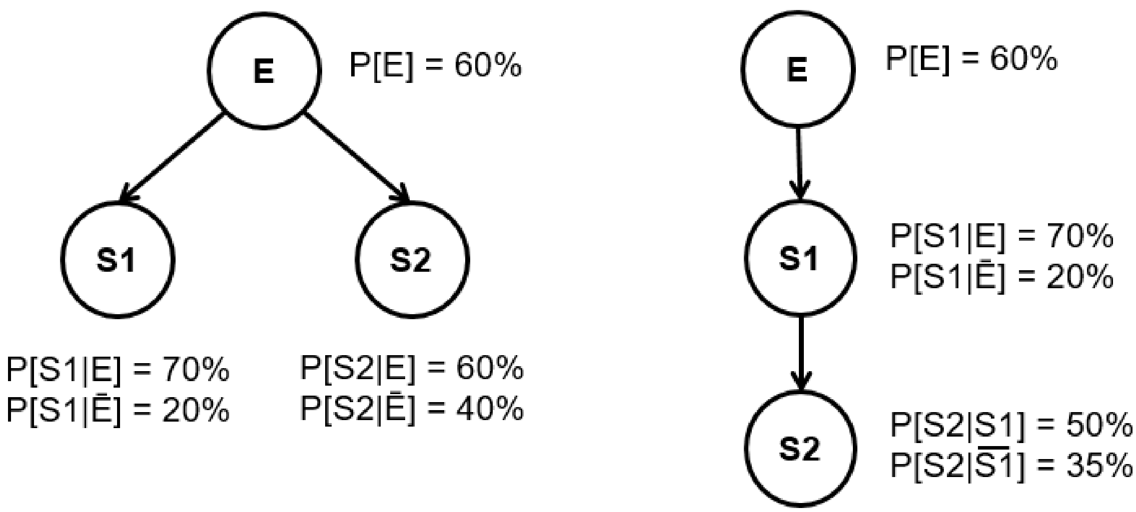
Chapter 5, p108

Changing α usually does change the order of the points. Changing the marginal distribution usually does not. The first paragraph should read:

As it turns out, for many copulas, changing the marginal distribution —say from a uniform distribution to a normal distribution— will transform the data in a way that is similar to the way the data was transformed in Exhibit 5.14. Changing the marginal distribution will change the shape of the data, but it will not change the order. For a given type of copula, then, Kendall's tau is often a function of the copula's parameter, α, and does not depend on what type of marginal distributions are being used. For example, for the FGM copula, Equation 5.16, Kendall's tau is equal to $2\alpha/9$. This leads to a simple method for setting the parameter of the copula. First calculate Kendall's tau, and then set the shape parameter based on the appropriate formula for that copula relating Kendall's tau and the shape parameter.

Chapter 6, p 130

For Exhibit 6.6, in the network on the right, the bottom two conditional probabilities should be conditional on the proceeding node *S1*, not on *E*. That is, the exhibit should be



Chapter 11, Equation 11.44

Current equation is:

$$r_t = \lambda r_{t-1} + (1-\lambda)\theta + \sigma r_{t-1}^{1/2}\varepsilon_t \quad \varepsilon \sim N(0,1), 0 \le \lambda \le 1$$

This is the CIR model, not the Vasicek model. Equation should be:

$$r_t = \lambda r_{t-1} + (1-\lambda)\theta + \sigma\varepsilon_t \quad \varepsilon \sim N(0,1), 0 \le \lambda \le 1$$

Chapter 12, Answer to end-of-chapter question #5

The final answer are correct, but there is are errors in the intermediate steps. The correct equations are

$$\hat{\mu}_t = 0.02x_t + 0.98\hat{\mu}_{t-1}$$
$$\hat{\mu}_1 = 0.02 \cdot 15\% + 0.98 \cdot 10\% = 10.10\%$$
$$\hat{\mu}_2 = 0.02 \cdot (-4\%) + 0.98 \cdot 10.10\% = 9.82\%$$
$$\hat{\mu}_3 = 0.02 \cdot 8\% + 0.98 \cdot 9.82\% = 9.78\%$$