Empirical Market Microstructure

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Corrigenda and Addenda: (Typos, Thinkos, Misprints, and Enhancements)

Last updated: Monday, June 18, 2007

Special thanks to Juhani Linnainmaa, Albert Menkveld, Ting Wang and Michel van der Wel.

There are some minor typos of the sort wherein an "an" is printed as "and". I list below the more substantive typos.

Chapter 4. Page 34. The line immediately after the formula should start "where $\{\varepsilon_t\}$ is a zero-mean white noise process…"

Chapter 4. Page 36. Line immediately after the formula should be "…a power series expansion of $(1-\phi L)^{-1}$." (AM)

Chapter 5. Page 45. Equation (5.5) should read:

$$A = E[V \mid Buy] = \frac{\underline{V}(1-\mu)\delta + \bar{V}(1+\mu)(1-\delta)}{1+\mu(1-2\delta)}$$

Chapter 5. Page 46. Equation (5.6) should read:

$$B = E[V \mid Sell] = \frac{\underline{V}(1+\mu)\delta + \bar{V}(1-\mu)(1-\delta)}{1-\mu(1-2\delta)}$$

Chapter 8. Page 68. Third paragraph. Here's some more detail on the timing:

1. The dealer enters time *t* knowing $m_{t-1} = E\left[Value \middle| u_{t-1}, u_{t-2}, \ldots, q_{t-1}, q_{t-2}, \ldots\right]$
2. The time-*t* public information arrives (u_t), and $E\left[Value \middle| u_t, u_{t-1}, u_{t-2}, \ldots, q_{t-1}, q_{t-2}, \ldots\right] = m_{t-1} + u_t$.
3. The time-*t* trader arrives, and submits an order of $q_t = \pm 1$:

$$m_t = E\left[Value \middle| u_t, u_{t-1}, u_{t-2}, \ldots, q_t, q_{t-1}, q_{t-2}, \ldots\right] = m_{t-1} + u_t + \lambda q_t,$$

It is in this sense that $m_t = m_{t-1} + w_t$ where $w_t = \lambda q_t + u_t$.

If there were no non-informational costs $(c = 0)$, then the price paid by a purchaser (the ask) would be $m_t = m_{t-1} + u_t + \lambda$; similarly, the bid would be $m_t = m_{t-1} + u_t - \lambda$. With transaction costs, the ask and bid will be set at $m_t \pm c$.

Chapter 6. Page 58. The "ε_X" in equation (6.3) should be simply "ε".

Chapter 7. Page 63. In (7.3),

$$\mu = \frac{-\alpha\beta\Sigma_0 + \sigma_u^2 p_0}{\sigma_u^2 + \beta^2\Sigma_0}$$

Chapter 8. Page 69.

In equation (8.4), $f_t \equiv \lim_{k\to\infty} E^*\left[p_{t+k} \middle| p_t, p_{t-1}, \ldots\right]$, i.e., the limit of the infinite-horizon expectation. Earlier, in the context of the basic Roll model (page 39), f_t denoted the one-period ahead forecast: $f_t \equiv E^*\left[p_{t+1} \middle| p_t, p_{t-1}, \ldots\right]$. For the basic (and generalized) Roll model, $\lim_{k\to\infty} E^*\left[p_{t+k} \middle| p_t, p_{t-1}, \ldots\right] = E^*\left[p_{t+1} \middle| p_t, p_{t-1}, \ldots\right]$ because price differences are MA(1).

In the last line of the page, "$\beta_0\varepsilon_1$" should be "$\beta_0\varepsilon_t$".

Chapter 8. Page 71.

7th line from the top "$\varepsilon_t + \theta\varepsilon_t$" should be "$\varepsilon_t + \theta\varepsilon_{t-1}$".

In the third paragraph, "$\sigma_s^2 = \underline{\sigma}_s^2$" should be "$\sigma_s^2 \geq \underline{\sigma}_s^2$"

Note on equation (8.7) on page 71. This equation follows from the one in the line above it, $\underline{\sigma}_s^2 = \theta^2\sigma_\varepsilon^2$. There are two ways of getting θ and σ_ε^2. The first way is via direct inspection (as in the preceding paragraph). The second way is to compute the autocovariances γ_0 and γ_1 from equation (8.3), letting $\sigma_u^2 = 0$, and the go from the autocovariances to the MA parameters via (4.2).

Chapter 8. Page 76. Third paragraph. "$\sigma_w^2 = \left[\phi(1)\right]^2 \sigma_\varepsilon^2$" should be "$\sigma_w^2 = \left[\phi(1)\right]^{-2} \sigma_\varepsilon^2$"

Chapter 8. Page 77. "$\ldots(1-z)B(z)$." should be "$\ldots(1-z)B(z)\sigma_\varepsilon^2$."

Chapter 9, page 80. Equation (9.8) should read (in part):

$$\theta_1 = \begin{bmatrix} 0 & c(\beta-1) \\ 0 & 0 \end{bmatrix}$$

Chapter 9. Page 84. Equation 9.20 should read: "$F' = \ldots$"

Chapter 9. Page 85. 3rd line from the top. "$m_t = m_t + w_t$" should be "$m_t = m_{t-1} + w_t$".

Chapter 10, page 95. Equation 10.2 should read:

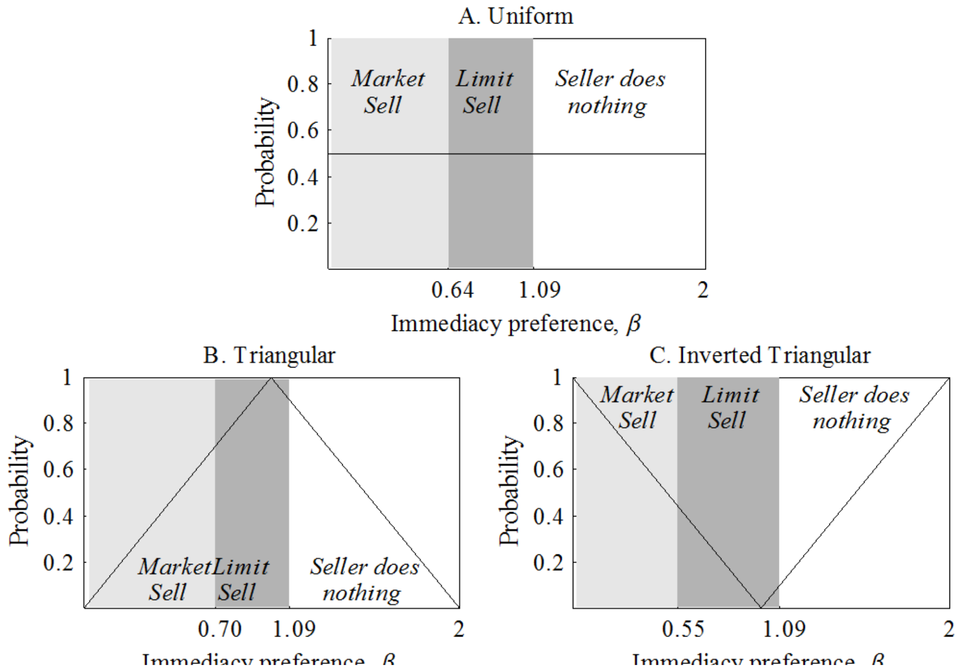
$$\Gamma_0 \equiv \mathrm{Var}(\Delta p_t) = \begin{bmatrix} 2c^2 + \sigma_u^2 & 2\rho c^2 \\ 2\rho c^2 & 2c^2 + \sigma_u^2 \end{bmatrix}$$

(Thanks to Juan Cabrera)

Page 99. Equation (10.10) comes from computing $\theta(L)^{-1}(1-L)$, using $\theta(L) = 1 + \theta_1 L$ and the solution to θ_1 given in (10.8).

Page 123. Third paragraph. "$b_T < B/V$" should read "$\beta_T < B/V$"

Chapter 12. Figure 12-4. The numerical values on the horizontal axis are not correct. The figure should be:


A. Uniform
Market Sell
Limit Sell
Seller does nothing
Probability
0.64
1.09
2
Immediacy preference, β
B. Triangular
Market Sell
Limit Sell
Seller does nothing
0.70
1.09
C. Inverted Triangular
0.55