Erratum to "Dynamic Pricing with Constant Demand Elasticity"

R. Preston McAfee

January, 2012

Kurt Helmes and Rainer Schlosser have pointed out an error in equation (14) in McAfee and te Velde (2008). The value $a(t)$ should have been the arrival rate of customers $\lambda(p,t)$, which is $a(t)p_n^{-\varepsilon}(t)$. What matters is the transition from n available to $n-1$, which occurs with the arrival of an actual buyer, not the arrival of a potential buyer. This missing term $p_n^{-\varepsilon}(t)$ propagates into (15), which should have been

$$(15) \qquad -p_n^{'}(t) \le a(t)p_n^{-\varepsilon}(t)(p_{n-1}(t) - p_n(t))$$

And then (16) becomes

$$(16) \qquad \left(1 + \frac{1}{\varepsilon}\beta_n^{-\varepsilon/\varepsilon-1}\right)\left(1 - \frac{\varepsilon-1}{\varepsilon}\beta_n^{-\varepsilon/\varepsilon-1}\right)^{1/\varepsilon-1} \le 1$$

In their recent paper, Helmes and Schlosser (2011) prove that this equation is true for all $n \ge 2$, which is a striking improvement on the analysis, for it shows that waiting for a price improvement is never optimal.

References:

Helmes, Kurt and Rainer Schlosser, "Dynamic Advertising and Pricing with Constant Demand Elasticities", preprint, Humboldt University of Berlin, 2011.

McAfee, R. Preston and Vera te Velde, "Dynamic Pricing with Constant Demand Elasticity" *Production and Operations Management*, Special Issue on Revenue Management and Dynamic Pricing, Volume 17, number 4, July-August 2008.