Errata, Style Corrections, and Reference Update to the 1st Printing (2008) of How to Price

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Chapter 5: Multipart Tariff

p.156: using (5.2) and (5.8), equation (5.9) should be

$$f^{2p} = gcs(q^{2p}) - q^{2p} \cdot p^{2p} = \frac{(2\alpha - \beta q^{2p})q^{2p}}{2} - q^{2p} \cdot p^{2p} = \frac{(\alpha+\mu)(\alpha-\mu)}{2\beta} - \frac{\alpha-\mu}{\beta}\,\mu = \frac{(\alpha-\mu)^2}{2\beta}.$$

There is no mistake in (5.9), only a minor typo, as the left "(" should be deleted.

Chapter 6: Peak-load Pricing

p.186: Equation (6.2) should be

$$MR(q) = \frac{\mathrm{d}x(q)}{\mathrm{d}q} = \frac{\mathrm{d}[p(q)\,q]}{\mathrm{d}q} = \alpha - 2\beta q.$$

That is, the first "=" sign is missing.

p.188: Why is peak-load pricing profitable? The method used to solve for the uniform price p is incorrect and should be replaced with the following procedure:

In view of the seasonal demand functions (6.1), we must distinguish between two cases: $p \leq \$100$ and $p > \$100$. We first compute the profit-maximizing uniform price p for the low-price range $p \leq \$100$. In this price range, both, summer and winter markets are served. That is, $q_S = 200 - p > 0$ and $q_W = 100 - p > 0$. Also, because the summer demand is higher than the winter demand at every price p, capacity is determined by the summer demand, so we set $k = q_S$. See problem 6.1(b) for the case where the demand functions cross each other. The firm sets a uniform-across-seasons price p to solve

$$\max_p y_{S,W} = (p-20)q_S + (p-20)q_W - 20q_S - 2000 = 2(180p - p^2 - 6000)$$

yielding

$$p_{S,W} = \$90, \quad q_S = 110, \quad q_W = 10, \quad \text{and} \quad y_{S,W} = \$4200.$$

If the firm sets $p > \$100$ then $q_W = 0$ so only summer passengers are served. This case is already solved on the top of p.189 in the textbook. Equation (6.7) computes the profit to be $y_S = \$4400 > \$4200$, which is the profit made when the firm charges a low price.

Comparing the two profit levels, under the restriction that the firm must charge uniform price across all seasons, the firm should set $p = \$120$. However, as shown in (6.7), uniform price yields a lower profit than peak-load pricing simply because peak-load pricing makes it possible to charge a high price during the summer without losing the winter passengers who are willing to pay a much lower price. Under uniform pricing capacity stays idle during the winter. This example shows that peak-load pricing can be viewed as a pricing discrimination technique in which the basis for discrimination is the "season" in which consumers need to be served.

Chapter 12: Instructor and Solution Manual

p.396: The solution to 6.1(b) is incorrect and should be replaced by the following solution: Let $p = p_W = p_S$. In this case, the direct demand functions are:

$$q_S = 2(12 - p) \quad \text{and} \quad q_W = 12 - \frac{p}{2}.$$

We first would like to "estimate" which would be the "high" season. From the above $q_S \le q_W$ if $p \ge 8$. So, let us assume (and later verify) that winter is the "high" season (which means that the equilibrium price should satisfy $p > \$8$). In this case the seller solves

$$\max_p y_{S,W} = p(q_W + q_S) - (2+2)q_W - 2q_S = 42p - \frac{5}{2}p^2 - 96$$

The first-order condition yields $0 = dy/dp = 42 - 5p$. The second-order condition for a maximum is satisfied since $d^2y/dp^2 = -5 < 0$. Therefore,

$$p_{S,W} = \frac{42}{5} = \$8.4 \quad \text{and} \quad y_{S,W} = \$80.4 < \$92.5$$

which is the profit obtained under peak-load price discrimination. Notice that $p_{S,W} = 8.4 > 8$ which confirms that winter is indeed the peak season. Alternatively, we can also confirm that winter is the peak season by looking at the equilibrium quantities: $q_W = 7.8 > 7.2 = q_S$.

Finally, we are not done until we check one more possibility which is raising the price above $p = \$12$ thereby serving only winter consumers. In this case, solving $MR_W = 24 - 4q_W = 2 + 2 = r + c$ yields $q_W = 5$, hence $p = 24 - 2q_W = \$14 > \$12$. Under $p = \$14$, the profit is

$$y_W = pq_W - (c + r)q_W = 14 \cdot 5 - 4 \cdot 5 = \$50 < \$64.9.$$

Therefore, $p = \$8.4$ is the profit-maximizing price when the monopoly is forced to set uniform prices across all seasons.

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End of Errata File