Supplemental Materials for Aaron Edlin and Eric Emch, "The Welfare Losses from Price Matching Policies," *The Journal of Industrial Economics* 47 (2), June 1999, pp. 145-167

Appendix C

For simplicity, we assumed in Proposition 1 that a firm cannot build multiple plants. In this appendix, we show that Proposition 1 would still hold if we relaxed this assumption. To see this, suppose that building multiple plants is possible, and that when firms charge the same price, the market is divided evenly among *plants*. (The proof would be easier if we assumed that demand were divided among *firms*.) Consider the equilibrium proposed in the proposition. If a firm deviated by building n additional plants and posting price $p < p^{pm}$, then the demand curve for each plant would be $\frac{D(p)}{N^{pm}+n}$, and each plant's sales would be $\min\{Q, \frac{D(p)}{N^{pm}+n}\}$. The profits of a deviator would then be

$$(n+1)\min\left\{Q, \frac{D(p)}{N^{pm}+n}\right\}(p-c)-(n+1)F.$$

Let $n^*$and p^*maximize profits for the deviator. Then

$$p^* \in \max_p \left[(n^*+1)\min\{Q, \frac{D(p)}{N^{pm}+n^*}\}(p-c)-(n^*+1)F\right],$$

which implies that $p^* \in \max_p \min\{Q, \frac{D(p)}{N^{pm}+n^*}\}(p-c)$.

Observe that

1. $\min\left\{Q, \frac{D(p^{pm})}{N^{pm}+n^*}\right\}(p^{pm}-c) = \frac{D(p^{pm})}{N^{pm}+n^*}(p^{pm}-c)$, since $\frac{D(p^{pm})}{N^{pm}+n^*} < Q$; and
2. $\min\left\{Q, \frac{D(p)}{N^{pm}+n^*}\right\}(p-c) \leq \frac{D(p)}{N^{pm}+n^*}(p-c), \forall p$.

Since p^{pm} maximizes $\frac{D(p)}{N^{pm}+n^*}(p-c)$, observations (1) and (2) imply that p^{pm} also maximizes profits for the deviator.