Online Appendix C

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February 2024

Abstract

This online appendix shows that, as mentioned in Section 4.1 of the main paper, our results on exclusive dealing extend to more general exclusive dealing contracts, in which the manufacturer of the established product pays the retailer a lower fixed fee if the retailer holds product 2.

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1 Introduction

Section 4.1 of the main paper shows that exclusive dealing replicates the vertically integrated outcome. For simplicity, this section assumed an extreme type of exclusive dealing contract: an "all or nothing clause", in which if the retailer refuses the manufacturer's exclusive dealing contract, the manufacturer does not sell product 1 to the retailer, and the retailer is forced to sell only product 2. This online appendix shows that our result extends to more general exclusive dealing contracts, in which the manufacturer pays the retailer a lower fixed fee if the retailer refuses to sell only product 1.

2 More general exclusive dealing contracts

Suppose that the manufacturer is allowed by antitrust rules to offer the retailer a contract the terms of which depend on whether the retailer sells product 2. We prove the following proposition:

Proposition 1. *The following exclusive dealing contract replicates the vertically integrated outcome:*

(i) For $\delta \in [0, \widetilde{\delta}]$, or $\delta \in [\delta^{VI}, 1]$, exclusive dealing is redundant, so the contract is identical to the one offered in the main paper.

(ii) For $\delta \in [\widetilde{\delta}, \delta^{VI}]$, if the retailer sells only product 1 in all periods, the manufacturer sets $w_1 = c_1$ and $t_1 = \pi_1^{VI} - (1-\delta)\pi_2^{VI} - \delta\pi_{2H}^{VI}$. Conversely, if the retailer sells both products in a certain period, the manufacturer sets $w_1 = c_1$ and $t_1 = \underline{T}(c_1)$.

Proof. Denote the total fee over all periods when the retailer accepts the manufacturer's exclusivity contract by t^{ed}. The retailer's profit from accepting the manufacturer's exclusivity contract is:

$$\frac{\pi_1^R(w_1)}{1-\delta} - t^{ed}$$

The retailer's profit from refusing the exclusivity contract is:

$$\pi_{12}^R(w_1) - t_{12} + \frac{\delta}{1-\delta}\pi_{2H}^{VI}$$

where t_{12} denotes the fixed fee charged by the manufacturer when the retailer refuses the exclusive dealing contract. It is set to make the retailer indifferent between selling only product 2 and selling both products, i.e.:

$$\pi_{12}^{R}(w_1) - t_{12} + \frac{\delta}{1-\delta}\pi_{2H}^{VI} = \pi_2^{VI} + \frac{\delta}{1-\delta}\pi_{2H}^{VI}$$

Hence $t_{12} = \pi_{12}^{R}(w_1) - \pi_2^{VI} = \underline{T}(w_1)$ and the retailer's profits from refusing the exclusivity contract are $\pi_2^{VI} + \frac{\delta}{1-\delta}\pi_{2H}^{VI}$. The manufacturer's profit when the retailer refuses the exclusivity contract are $(w_1 - c_1)\widehat{q}_1(w_1) + \underline{T}(w_1) = \pi_{12}^{VI}(w_1) - \pi_2^{VI}$, as in the case of the manufacturer's optimal accommodation contract in the main paper (equation (9) of the main paper), which is maximized at $w_1 = c_1$. The t^{ed} that makes the retailer indifferent between refusing the exclusivity contract and accepting it is thus $t^{ed} = \frac{\pi_1^{R}(w_1)}{1-\delta} - (\pi_2^{VI} + \frac{\delta}{1-\delta}\pi_{2H}^{VI})$. Hence, the manufacturer's profits when the retailer accepts the exclusivity contract are $\frac{\pi_1^{VI}(w_1)}{1-\delta} - (\pi_2^{VI} + \frac{\delta}{1-\delta}\pi_{2H}^{VI})$, which are maximized at $w_1 = c_1$. The manufacturer's exclusionary profits are higher than its profits from accommodating product 2 if and only if $\frac{\pi_1^{VI}}{1-\delta} - \frac{\delta}{1-\delta}\pi_{2H}^{VI} \geq \pi_{12}^{VI}$, i.e., if and only if $\delta \leq \delta^{VI}$ (see equation (1) of the main paper). Hence, the vertically integrated outcome is replicated when the manufacturer offers $w_1 = c_1$ and a fixed per-period fee of $t_1 = (1-\delta)t^{ed} = \pi_1^{VI} - (1-\delta)\pi_2^{VI} - \delta\pi_{2H}^{VI})$ if the retailer buys only product 1 and $w_1 = c_1$, $t_1 = \underline{T}(c_1)$, if the retailer refuses the exclusivity contract. $\square$

The proposition shows that any form of exclusive dealing (i.e., any form of making the vertical contract explicitly contingent on whether the retailer buys product 2), and, in particular, a contract charging a lower per-period fixed fee, of $\pi_1^{VI} - (1-\delta)\pi_2^{VI} - \delta\pi_{2H}^{VI})$, instead of $\underline{T}(c_1)$, when the retailer accepts the exclusivity contract, replicates the vertically integrated outcome. Indeed, it can be verified that $\pi_1^{VI} - ((1-\delta)\pi_2^{VI} + \delta\pi_{2H}^{VI})) < \underline{T}(c_1)$ if and only if $\delta > \frac{\pi_1^{VI} - \pi_{12}^{VI}}{\pi_{2H}^{VI} - \pi_2^{VI}} = \widetilde{\delta}$, i.e., if and only if selling 1+2 binds.