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Exclusionary discounts☆

Janusz A. Ordover [a,b], Greg Shaffer [c,d,*]

[a] New York University, United States
[b] Compass Lexecon, United States
[c] University of Rochester, United States
[d] University of East Anglia, United Kingdom

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ABSTRACT

We consider a two-period model with two sellers and one buyer. Although we assume it is efficient for the buyer to purchase from both sellers in each period, we show that when the buyer's valuations are inter-temporally linked and at least one seller is financially constrained, exclusion can sometimes arise in equilibrium (i.e., the buyer purchases all of its requirements from the same seller in each period). The exclusionary equilibria are supported by contract offers in which the excluding seller's incremental price to supply the contestable part of demand is below its marginal cost and sometimes negative. Our findings contribute to the literatures on market-share contracts, bundling, all-units discounts, and loyalty discounts.

1. Introduction

Upstream firms (sellers) often encourage downstream firms (buyers) to promote their products by offering discounts if the buyers' purchases meet or exceed certain quantity or market-share thresholds. Sometimes the discounts apply only to the incremental units purchased by the buyer that exceed the threshold, while in other cases, they apply retroactively to all the units purchased by the buyer once the threshold is reached. Although both types of discounts reduce the buyer's average purchase price, the latter also have the feature that the buyer's out-of-pocket cost "jumps down" when the triggering threshold is reached, implying that the incremental price faced by the buyer at that point is negative.

Generally these discounts are a sign of healthy competition, and are often required by buyers as a price of doing business; for example, the lower (negative) incremental prices may create powerful incentives for a retailer to deploy market strategies that expand the volume of sales and increase welfare. In other circumstances, however, they may be anticompetitive; the lower (negative) incremental prices may instead create incentives for a retailer to promote the sale of products on which it is eligible to earn a discount at the expense of other, substitute products that may have been more preferred by final consumers. As we will show in this article, when implemented by a dominant seller, who may have easier access to financing than its rival or rivals, the aforementioned discounts can sometimes exclude equally-efficient rivals, misallocate resources, and lower overall welfare.

The potential for the abuse of discounts by a dominant seller has been the subject of several high profile cases and investigations in the U.S. and Europe.[1] The concern in these cases and investigations is whether it would be possible for an equally-efficient rival to make a comparable offer when selling its products. In the case of discounts that are aggregated over multiple products (i.e., bundled discounts),

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* Corresponding author. Tel.: +81 52 789 3819.
E-mail addresses: jao@snet.net (J.A. Ordover), shaffer@simon.rochester.edu (G. Shaffer).

[1] See the European Commission's Intel Decision (13 May 2009), in which Intel was fined 1.06 billion Euros for abusing its dominant position in the market for computer chips and ordered to stop offering discounts that were contingent on retailers' buying less of a rival's product. See also the settlements between the U.S. Federal Trade Commission and Intel (4 August 2010) and the U.S. Federal Trade Commission and Transitions Optical (3 March 2010), and the judgment of the EU's General Court in Tomra vs Commission (Case T-155/06) (9 September 2010).

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for example, an important question is whether a single-product rival would be able to match the attractiveness of the dominant seller's offer, even when the post-discount prices are above cost.[2] In the case of quantity or share-based discounts that apply retroactively to all units, the question is whether an equally-efficient rival could profitably compensate buyers for foregoing the rebates they would receive if they were to meet the threshold set by the dominant seller. And, similarly, in the case of a dominant seller selling a "must-stock" item, where competition takes place over only a subset of the buyers' purchases, the question is whether the dominant seller may have an advantage over its smaller rival because it can average its discount over a larger installed base.[3]

The publicly disclosed fact patterns in the Intel investigation provide a motivating example for the paper. If one assumes that because of prior platform and/or model introductions, there is an installed base for Intel's product (CPU's), so that competition at any point in time between Intel and its rival takes place over only a subset of each buyer's (in this case, original equipment manufacturers) purchase requirements, then the question becomes whether the dominant seller can profitably extend its dominance over the committed portion of the installed base to the contestable part of demand by offering discounts that apply retroactively to all-units purchased by the buyer. We show here that in a two-period model the answer can be 'yes' if tomorrow's installed base depends on today's sales (e.g., if switching costs link sales in the two-periods),[4] and the rival is financially constrained and thus hampered in its ability to compete for the inter-temporal sales.[5]

We illustrate our findings in a simple two-period model with two sellers and one buyer. The buyer requires at most two units of product in each period. We assume that in the first period, one of the units is already captive and thus can only be purchased (if at all) from the "incumbent seller," whereas the other unit is contestable and thus can be purchased either from the incumbent seller or an "entrant seller." We show that when the buyer's valuations are linked over time, specifically, when the contestable unit from the first period becomes part of the installed base for the seller's product in the second period (and therefore itself becomes captive), and the entrant seller is financially constrained, there are plausible conditions under which exclusion arises as the unique equilibrium outcome (i.e., the buyer purchases only from the incumbent seller). This holds even though it is more efficient for the entrant to supply the contestable unit in the first period.

For example, suppose the buyer is willing to pay at most 100 for the captive unit in the first period, 80 for the contestable unit if purchased from the incumbent seller, and 100 for the contestable unit if purchased from the entrant seller. Suppose also that the buyer's valuations are the same in the second period, except now the formerly contestable unit is captive and can only be purchased from the seller that supplied it in the first period. Suppose finally that each seller's marginal cost of production for each unit in each period is 30. In this case, the incumbent can earn a second-period profit of (100–30) + (80–30) = 120 if it supplies both units in the first period, but only a profit of 100–30 = 70 if it does not. Thus, the incumbent increases its second-period profits by 50 if it wins the first-period contestable unit. In contrast, if the entrant supplies the contestable unit in the first-period, then it can earn 100 − 30 = 70 in the second period, which is more than what the incumbent earns on its incremental sale. (Recall that by assumption the buyer prefers to diversify its purchases across the two vendors.) It is precisely because the first-period contestable unit is more valuable when it is supplied by the entrant than when it is supplied by the incumbent that one might ordinarily expect the entrant to win the "bidding" for the right to supply the buyer's requirements for this unit. However, this will not necessarily be the case in this example if the entrant is financially constrained. To see this, suppose, to continue the example, that the entrant must earn non-negative profit in each period and thus cannot "borrow" from its expected second-period profits from supplying the contestable unit in period one. Then, when the entrant cannot commit to its second-period price in period one,[6] the best the entrant can do is to offer to supply the contestable unit in period one at a price of 30 (i.e., its marginal cost of production) — which can be dominated by an offer from the incumbent seller to supply the contestable unit in period one at an incremental price of no more than 10. For example, the incumbent seller can profitably offer to supply the first-period captive unit at a price of 120 and the captive plus contestable unit at a price of 110. Given this offer, it is optimal for the buyer to purchase both units from the incumbent, giving the incumbent an expected two-period profit from its sales of (110 − 60) + (100 − 30) + (80 −30) = 170, which exceeds what its expected two-period profit would be if it did not supply the contestable unit in period one: (100 − 30) + (100 − 30) = 140. In effect, the incumbent sacrifices 20 in profit in the first period in order to gain an extra 50 in profit in the second period, a strategy that is not available to the financially-strapped entrant.

In this example, the incumbent offers the contestable unit at a negative incremental price even though a positive incremental price of up to 10 would also suffice (e.g., the incumbent could achieve the same outcome by offering to supply the captive unit at a price of 100 and the captive plus contestable unit at a price of 110). If the marginal cost of production for each unit were instead 15, however, the incumbent would not have a choice. The incremental price of the contestable unit would then have to be negative in order to support exclusion in equilibrium. More generally, we focus in this paper on the role played by negative incremental prices and find that they can arise (under some conditions) in both efficient and exclusionary equilibria. However, whereas they cannot always support efficient equilibria (when these equilibria exist), they can always support exclusionary equilibria (when these equilibria exist). In particular, we find that a common feature of all exclusionary equilibria is that they are supported by contract offers in which the incumbent seller offers to sell the contestable unit at a price that is below its marginal cost. In some cases, it *must* even offer to sell the contestable unit at a negative price if exclusion is to be supported in equilibrium.

That negative incremental prices can arise in both efficient and exclusionary equilibria is an attractive feature of the model. However, it raises the question of whether it is possible ex-ante to distinguish when they will be pro-competitive and when they will be anti-competitive. We examine this question by considering first the consequences in our model of a ban on offers in which a seller charges an incremental price on the contestable unit that is below its marginal cost of production. We then consider the welfare effects of a ban on

[2] See the decision in Ortho v. Abbott, 920 F. Supp. 455 (S.D.N.Y., 1996), in which one of the tests is to apportion the entire aggregated discount to the competitive product. See also the brief for the United States as Amicus Curiae at 12–13, No. 02-1865 3 M Co. v. LePage's Inc. (2004), available at http://www.usdoj.gov/atr/cases/f203900/203900.pdf.

[3] See the European Commission (2005) white paper on the application of Article 82 to exclusionary abuses. See also the decisions in the EC Commission's Case COMP/E-1/38.113 — Prokent-Tomra (2006), and Case Nos IV/34.073, IV/34.395 and IV/35.436 Van den Bergh Foods Limited (1998), in which the Commission mentions that the rival could not capture the entire supply either because of its need to gradually prove itself (Tomra) or because of the range of products and brand value making the dominant seller a must-stock item (Van den Bergh).

[4] This inter-temporal link provides the needed rationale for anticompetitive conduct in our model.

[5] For more on the relevance of financial considerations in antitrust, see the recent paper by Shehadeh (2009).

[6] If the entrant could commit to its second-period price in period one, it could avoid being excluded by offering to sell its second-period unit at a price that is equal to its marginal cost, thereby committing not to earn positive profit in period two.