

Conditional Pricing Practices – A Short Primer

Patrick DeGraba
Patrick Greenlee
Daniel P. O'Brien*

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Abstract

Conditional pricing practices are pricing strategies in which a seller conditions its prices on factors such as volume, the set of products purchased, or the buyer's share of purchases from the seller. This short primer provides a unifying overview of the economic literature that addresses these practices.

* Patrick DeGraba is an economist at the US Federal Trade Commission (FTC). Patrick Greenlee is an economist at the US Department of Justice (DOJ). Dan O'Brien is an economist and Partner at Bates White Economic Consulting. This paper was first drafted while O'Brien was a Senior Economic Policy Adviser at the FTC. These authors participated in a Public Workshop on Conditional Pricing Practices cosponsored by the DOJ and FTC on June 23, 2014. This paper can be considered a background document—it does not summarize or evaluate the economic and legal policy issues discussed at the Workshop. We thank Stephanie Beckett, Geoffrey Greene, Matthew Mandelberg, Jim Mongoven, and Andrea Zach for helpful comments. The views expressed herein are our own and do not necessarily represent the views of the DOJ, FTC, or Bates White Economic Consulting.

I. Definitions and Economic Context

Conditional pricing practices (CPPs) include a broad range of pricing strategies employed by many firms in the economy, including firms with large market shares and those with small shares. This broad range of practices¹ includes, among others: all-units and other quantity-based discounts, bundling, and market-share discounts.² Figure 1 provides a concise taxonomy of these practices based on whether they involve single or multiple products and whether the seller conditions price only on the buyer’s purchases of its product or also on the buyer’s purchases of rivals’ products.

	Single Product	Multi-Product
Own Quantities	<ul style="list-style-type: none"> • Incremental units discounts • All-units discounts 	<ul style="list-style-type: none"> • Tying/bundling • Bundled discounts
Own and Rivals’ Quantities	<ul style="list-style-type: none"> • “Loyalty” discounts • Exclusive dealing 	<ul style="list-style-type: none"> • Bundled “loyalty” discounts • Requirements tying

Figure 1: Taxonomy of conditional pricing practices

¹ The distinguishing feature of what we define as CPPs is that price is conditioned on quantities or shares. We exclude resale price maintenance and exclusive territories from this set, although the effects of these practices are sometimes similar to the effects of CPPs.

² An all-units discount is a discount that applies to all units purchased on the condition of reaching a purchase threshold. A quantity discount is any discount that arises from purchasing additional units. An all-units discount is a special case of a quantity or volume discount. Bundling occurs when a seller “charges less for an *A/B* package than the sum of the prices at which it sells *A* and *B* separately.” 10 PHILLIP AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES & THEIR APPLICATION ¶ 1758a (3d ed. 2011). Loyalty pricing (also known as a loyalty or market share discount) is a CPP based on “the share of the buyers’ purchases that come from a particular seller—*e.g.*, a 5 percent discount if one takes 70 percent of its needs from the seller, a 10 percent discount if one takes 80 percent of needs from the seller, and so on.” 3A AREEDA & HOVENKAMP, *supra*, ¶ 749a n.21 (4th ed. 2015); *see also id.* 11 AREEDA & HOVENKAMP, *supra*, ¶ 1807b2 (3d ed. 2011) (treating “loyalty discounts” as synonymous with market share discounts). Quantity discounts, also known as “volume discounts,” are practices in which pricing is linked to purchasing a specified quantity: “*e.g.*, a 5 percent discount if someone takes 100 units or more, a 10 percent discount if someone takes 1,000 units or more, and so on.” 3A AREEDA & HOVENKAMP, *supra*, ¶ 749a n.21 (4th ed. 2015).

Although CPPs encompass a variety of pricing strategies, many of them can induce similar strategic responses from customers and rivals and have similar effects on competition. For example, single-product market share discounts share similarities with exclusive contracts.³ In fact, an exclusive contract can be viewed as a special type of market-share discount—namely, one in which the customer pays the discounted price only when it purchases 100 percent of its needs from the supplier, and the undiscounted price is set sufficiently high that the customer would purchase zero units at that price. Under such a market-share discount, the consumer will purchase 100 percent of its needs from the supplier or none at all, just as if an exclusive contract had been signed. In a similar manner, a firm can often construct a bundling scheme or a bundled loyalty scheme that is equivalent to tying.⁴ In addition, it is possible that tying (or an equivalent bundling scheme) may yield the same or a similar outcome as exclusive dealing.⁵ Although the equivalence of these practices is not always complete—for example, when the market-share requirement or the bundled discount is not large—it is natural to consider the rationales and candidate theories of harm associated with exclusive dealing and tying when assessing single- or multi-product market-share discounts.⁶

II. Common Themes in the Antitrust Treatment of Conditional Pricing Practices

Although the economics literature has tended to study the relevant practices in isolation, some common themes exist. Specifically, in the literature, the rationales for engaging in these practices include, among others: (A) promoting cost savings and investment (for example, discouraging free-riding and encouraging investment in customer service and promotional

³ Exclusive dealing is “an agreement . . . not to deal in the goods of another.” 11 AREEDA & HOVENKAMP, *supra* note 2, ¶ 1821a (3d ed. 2011) (emphasis omitted).

⁴ “Tying occurs when a seller refuses to sell a product that a buyer desires unless the buyer also agrees to purchase a second product, which the buyer would not otherwise want from this seller on the offered terms.” 10 AREEDA & HOVENKAMP, *supra* note 2, ¶ 1700a (3d ed. 2011). As an example of how a bundling scheme can mimic tying, suppose a monopoly seller of A offers a discount on A when the customer purchases some threshold amount of product B from the same seller. This is an example of a bundled discount. If the undiscounted price is sufficiently high, then buyers will only purchase A if they also purchase B. If the buyer would not purchase B if A were available at the discounted price irrespective of whether it purchases B, then the bundled discount mimics tying as defined by Areeda and Hovenkamp. Alternatively, suppose a discount on product A is earned only when the customer is 100 percent loyal on product B, and the consumer would purchase no units of A at its undiscounted price. Effectively, purchasing A from the supplier requires the consumer to purchase all units of B from the supplier as well—that is, the supplier has tied B to A. This is an example of a bundled loyalty discount that mimics a requirements tie.

⁵ Suppose a monopolist in market A ties sales of product B to A. That is, if a buyer wants to purchase any units of A, it must purchase all of its B units from the market A monopolist. If acquiring units of A is very important to the buyer, then such a tie resembles an exclusive deal in B.

⁶ In an individual case, however, it is critically important to examine the effects of the specific practice under investigation.

efforts); (B) aiding in price discrimination; (C) excluding actual or potential rivals to leverage or maintain a monopoly; and (D) softening competition with rivals. It should be noted that these rationales are not mutually exclusive.

A. Promoting Cost Savings and Investment

According to the economics literature, CPPs can reduce costs in several ways. In the multiproduct context, bundling and tying can simplify production and reduce distribution costs,⁷ and they can reduce consumers' search and sorting costs.⁸ For example, auto manufacturers typically offer options in a small number of packages that each include several components rather than offer automobiles with every single possible combination of individual options. Similarly, efficiencies may arise when (i) a good (such as fresh cherry tomatoes) is sold at a uniform price, (ii) the condition of goods varies from unit to unit, and (iii) determining the quality of each unit is costly. Selling multiple cherry tomatoes in a single package reduces the incentive for buyers to spend too much time searching for especially high-quality (and hence underpriced) items.

Bundling also may create efficiencies in circumstances where a supplier has market power over some inputs but not others, and where the producer has some control over how much of each input goes into the final product.⁹ Without bundling, the producer may use less of the input where the supplier has market power, even if the input is inexpensive for the supplier to produce. For example, suppose a firm sells "printing services" using a flexible combination of new printers and printer maintenance. If printers are supplied by a monopolist while maintenance is competitively supplied, the firm will tend to shift its input mix toward maintenance in order to reduce the frequency that it pays a high price for new printers. With bundling, this distortion can be reduced if the printer monopolist can sell a hardware/maintenance bundle in which the hardware/maintenance ratio is set at a more efficient level.

Economists also have identified efficiencies from CPPs in the single product context. Exclusive contracts, for example, can promote efficiency by improving incentives for parties to make beneficial investments when holdup or free-riding might otherwise occur.¹⁰ To the extent

⁷ David S. Evans & Michael Salinger, *Why Do Firms Bundle and Tie? Evidence from Competitive Markets and Implications for Tying Law*, 22 YALE J. ON REG. 37, 52 (2005).

⁸ Roy W. Kenney & Benjamin Klein, *The Economics of Block Booking*, 26 J. L. & ECON. 497, 502-05 (1983).

⁹ See John M. Vernon & Daniel A. Graham, *Profitability of Monopolization by Vertical Integration*, 79 J. POL. ECON. 924 (1971) (explaining that distorted input utilization results in deadweight loss, so decreasing distortion decreases price of final product); Parthasaradhi Mallela & Babu Nahata, *Theory of Vertical Control with Variable Proportions*, 88 J. POL. ECON. 1009, 1023-24 (1980) (same).

¹⁰ Ilya R. Segal & Michael D. Whinston, *Exclusive Contracts and Protection of Investments*, 31 RAND J. ECON. 603 (2000); see also Howard P. Marvel, *Exclusive Dealing*, 25 J.L. & ECON. 1, 10 (1982) (discussing free riding); David Besanko & Martin K. Perry, *Equilibrium Incentives for Exclusive Dealing in a Differentiated Products Oligopoly*, 24 RAND J. ECON 646, 647-49

that they functionally resemble exclusive contracts, similar efficiencies also may arise from loyalty pricing practices. As an example, a high-end shoe manufacturer might be more willing to invest in marketing that draws customers to a particular retailer if the manufacturer knows that competing shoe brands are not sold by that retailer.¹¹

B. Price Discrimination

Another rationale identified in the literature for CPPs is price discrimination.¹² Linking different products via bundling, tying, or a multiproduct loyalty discount may allow a firm with market power to extract additional rents from consumers via price discrimination. Similarly, linking the units of a single product through a volume, all-units, or market share discount can be seen as bundling units of the same product and may facilitate price discrimination. In both the multiproduct and single product context, price discrimination can happen in a variety of ways, and the overall welfare effects may be positive or negative.

In the multiproduct context, bundling can be a profitable way to price discriminate in various scenarios. One context in which this occurs is when buyers' valuations for the bundled products are negatively correlated. For instance, one-half of purchasers of a particular cable television bundle may value watching CNN most while the other half values ESPN most. Imagine that Buyer One is willing to pay \$3 for CNN and \$1 for ESPN, while Buyer Two is willing to pay \$1 for CNN and \$3 for ESPN. If the seller cannot bundle, it will charge \$3 for each service and sell CNN only to Buyer One and ESPN only to Buyer Two. However, if the seller can bundle, it will charge \$4 for the bundle and sell both products to both buyers. By bundling, the seller employs a price discrimination strategy—extracting more rents by, in effect, collecting varying amounts from consumers in the sale of each good in the bundle.¹³

Bundling various combinations of goods also may allow a seller to sort consumers and charge higher prices for consumer-types with high valuations. For example, if business travelers

(1993) (same); B. Douglas Bernheim & Michael D. Whinston, *Exclusive Dealing*, 106 J. POL. ECON. 64, 90 (1998) (same).

¹¹ Marvel, *supra* note 10, at 7-8; *see also* Scott E. Masten & Edward A. Snyder, *United States versus United Shoe Machinery Corporation: On the Merits*, 36 J.L. & ECON. 33 (1993) (describing how long-term leases with some potentially exclusionary features can foster competitive and efficient behavior).

¹² Price discrimination describes various practices of charging different prices to different consumers for the same units or different prices for different units (whether sold to the same or different consumers) in an effort to profit from variations in willingness pay across consumers or units. Rents are profits and other benefits that exceed the cost of production.

¹³ George J. Stigler, *United States v. Loew's Inc.: A Note on Block Booking*, SUP. CT. REV. 152 (1963); William J. Adams and Janet L. Yellen, *Commodity Bundling and the Burden of Monopoly*, 90 Q.J. ECON. 475 (1976). A negative correlation of values is not required for profitable bundling, and bundling may raise or lower output. *See* R. Preston McAfee, John McMillan & Michael D. Whinston, *Multiproduct Monopoly, Commodity Bundling, and Correlation of Values*, 104 Q.J. ECON. 371, 372-73 (1989) (establishing that negative correlation of values is not required for this effect).

(i) typically take short trips, (ii) have a higher willingness to pay for air travel than vacationers, and (iii) are unlikely to travel for business on weekends, then an airline can set lower prices for itineraries that include a Saturday night. Setting a roundtrip price for a specific departure and return combination (bundle) is necessary to accomplish this type of price discrimination. A Thursday outbound flight paired with a same day return, by assumption, is unlikely to be holiday travel, whereas that same outbound flight with a return two weeks later, by assumption, is unlikely to be business travel.

Bundling strategies also may be profitable when products are complementary—that is, when goods are used together. For example, consider a seller that produces a printer, a durable good for which the seller has market power, and a toner cartridge, a consumable good that may be supplied competitively. A printer/toner tie could facilitate selling the printer for less and the toner cartridges at a premium. Using this strategy, the seller can collect additional rents from consumers that highly value using the printer and hence use many toner cartridges, as well as attract and earn more from consumers who might only use printers sparingly. The tie allows the seller to set its toner cartridge price above the prevailing competitive price, and as a result, the seller earns more (via extra margin on large cartridge volume) from users that value the printer more. This strategy has the seller using a second (perhaps competitive) market to extract additional rents from the printer market in which it already has market power.¹⁴ Note that the welfare effects of this strategy are ambiguous.¹⁵ Users may print less due to the high toner price, but the lower printer price may increase the number of printers sold.

Bundling substitute products similarly can have price discrimination benefits. Consider, for example, two imperfect substitutes, A and B. Because the products are substitutes, the incremental value of each product in a bundle (that includes both A and B) is less than the value of each product (A or B) consumed alone. Absent bundling, the supplier can extract at most the incremental value of each product. Thus, the supplier has an incentive to distort the marginal transfer price (for example, the per-unit component of a two-part tariff) of each product upward in order to increase the incremental value to the buyer of the other product. This allows the supplier to extract higher rents from the other product with a fixed fee or some other transfer that does not affect decisions at the margin. Because this incentive exists for both substitute products, the supplier will distort the marginal transfer prices of both products A and B upward, leading to a reduction in output. Different forms of tying or bundling, however, allow the supplier to extract greater rents¹⁶ without distorting marginal transfer prices. Thus, tying or bundling in this context typically will increase output, other factors equal.¹⁷

¹⁴ Richard Schmalensee, *Monopolistic Two-Part Pricing Arrangements*, 12 BELL J. ECON. 445, 445-47 (1981); Benjamin Klein, *Market Power in Antitrust: Economic Analysis After Kodak*, SUP. CT. ECON. REV. 43, 66-67 (1993); Zhiqi Chen & Thomas W. Ross, *Refusals to Deal, Price Discrimination, and Independent Service Organizations*, 2 J. ECON. & MGMT. STRATEGY 593, 595-96 (1993).

¹⁵ Schmalensee, *supra* note 14, at 448; Chen & Ross, *supra* note 14, at 596.

¹⁶ Greg Shaffer, *Capturing Strategic Rent: Full-Line Forcing, Brand Discounts, Aggregate Rebates, and Maximum Resale Price Maintenance*, 39 J. INDUS. ECON. 557, 564 (1991).

¹⁷ Thibaud Vergé, *Multiproduct Monopolist and Full-line Forcing: The Efficiency Argument Revisited*, 12 ECON. BUL. 1, 5 (2001); Daniel P. O'Brien & Greg Shaffer, *Bargaining, Bundling and Clout: The Portfolio Effects of Horizontal Mergers*, 36 RAND J. ECON. 573, 575 (2005).

In the single-product context, all-units discounts and other volume discounts constitute a form of nonlinear pricing that can be interpreted as bundling the units of a specific product.¹⁸ That is, just as the preceding example described bundling multiple imperfect substitute units together to achieve price discrimination, single-product volume discounts can achieve price discrimination by bundling multiple perfect (identical) substitute units. For example, under a volume discount, the price of a bundle of units that aggregate to a specific volume is less than the sum of the prices that would be paid if each unit were purchased separately.¹⁹ Bundling of this sort (which is a form of nonlinear pricing) may allow a supplier to extract additional rents and often can increase output, other factors equal. In the context of vertical relationships in which a supplier sells a product to a downstream firm with market power who resells the product to final customers, this efficiency is known as eliminating double marginalization.²⁰

Share-based loyalty discounts also may have price discrimination motives. When there is uncertainty about a buyer's demand, market-share discounts can improve rent extraction by a

¹⁸ The economics literature generally uses the term “nonlinear pricing” to refer to a single-product pricing scheme that is something other than the (uniform) price of a good multiplied by the quantity purchased. By focusing on a single product, the term “nonlinear pricing” generally does not refer to multiproduct pricing strategies like bundling and tying. However, the economics of bundling substitutable units of a single product is qualitatively similar to bundling substitutable products. See Daniel P. O'Brien and Greg Shaffer, “Tying, Bundling, and Bundled Discounts,” paper presented at the 29th Summer Conference on Industrial Organization: Advances in Competition Policy, University of British Columbia, July 10-11, 2015, on file with the authors; ROBERT B. WILSON, *NONLINEAR PRICING* 88-89 (1993).

¹⁹ As an example, consider a two-part tariff with a fixed fee of \$10 and a per-unit price of \$5 for each unit. The price of purchasing a bundle of two units is then \$20 ($= 10 + 5 + 5$). By contrast, the price of purchasing two units separately is \$30 ($= [10+5] + [10+5]$), as the fixed fee must be paid twice. As another example, consider an all-units discount schedule with a price of \$15 per unit unless the customer purchases at least two units, in which case the price is \$10 on all units purchased. Under this schedule, a bundle of two units also costs \$20, while purchasing the units separately would cost \$30.

²⁰ Double marginalization occurs when an upstream firm with market power uses a simple linear (per-unit) price to sell through a downstream firm that has market power in the final product market. When the upstream firm raises the wholesale price, it accounts for how this affects its sales, but it does not account for the negative externality inflicted on the downstream firm. Similarly, when the downstream firm raises the final price, it ignores the negative externality inflicted on the upstream firm. These negative “vertical externalities” lead to a higher final price than would prevail if the firms set prices as an integrated unit. If the firms remain separated, they can mimic the integrated outcome by “bundling units” through various nonlinear pricing schemes such as a two-part tariff (a fixed fee combined with a per-unit wholesale price), quantity forcing, or an all-units or other volume-related discount. See JEAN TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION* 174-177 (1988); Patrick Rey & Thibaud Vergé, *Economics of Vertical Restraints*, in *HANDBOOK OF ANTITRUST ECONOMICS* 353, 360-62 (Paolo Buccirossi ed., 2008). An often-cited reference for double-marginalization is Joseph J. Spengler, *Vertical Integration and Antitrust Policy*, 58 *J. POL. ECON* 347 (1950).

dominant firm that faces limited competition.²¹ If a market-share discount is not employed, a buyer with high demand can shift many of its purchases to the competitive fringe and mimic a low-demand buyer to the dominant firm. This possibility limits the degree to which the dominant firm can extract rents from buyers. With a market-share discount, however, the dominant firm can make this type of mimicry much less profitable to the high demand buyer. As a result, the dominant firm is better able to extract rents.

C. Full or Partial Exclusion of Rival Firms²²

A third rationale for using CPPs and exclusive deals is to harm competition by leveraging a monopoly position from one market into another, or by protecting an existing monopoly against entry or expansion. One critique of these theories asks why a buyer would agree to a contract that reduces beneficial competition. Every theory summarized in this section overcomes this critique by establishing a *contracting externality* in which the harmful effects of the contract are borne by a third-party.²³ That is, each practice imposes a cost on a non-party to the contract and transfers wealth from that non-party to (at least one of) the contracting parties. The literature provides several examples in which practices that inflict contracting externalities can be harmful. As described below, the predictions from these models can be sensitive to assumptions about market conditions, including, among other things, market structure, uncertainty and risk, the existence of scale economies, the information known by market participants, and the timing of contracts and entry.

In one model with ambiguous predictions, an established firm A employs linear pricing to sell to downstream firms with local monopoly power but not monopsony power. Firm A can pair linear pricing with exclusive dealing to extract profits that would otherwise flow to rival firm B selling an imperfect substitute for firm A's product.²⁴ By imposing exclusive dealing, firm A may cause downstream firms that would otherwise purchase some of firm B's product to substitute to firm A's product. The profit and welfare effects of exclusive dealing in this model

²¹ Adrian Majumdar & Greg Shaffer, *Market-Share Contracts with Asymmetric Information*, 18 J. ECON. & MGMT. STRATEGY 393, 417 (2009); see also Giacomo Calzolari & Vincenzo Denicolò, *Competition with Exclusive Contracts and Market-Share Discounts*, 103 AM. ECON. REV. 2384, 2386-87 (2013) (explaining that competing sellers can better extract informational rents by imposing market share discounts).

²² The economic theories presented in this subsection typically explain how in certain settings various pricing strategies can be used to fully exclude a rival firm and generate competitive harm. The basic logic of these theories continues to hold if the exclusion is only partial, provided that the resulting denial of scale makes the rival firm a less robust competitor (that is, increases its marginal costs). With this understanding, we use the term "exclusion" in this subsection to refer to complete exclusion and to partial exclusion that results in less efficient rival firms.

²³ For a discussion of the role of contracting externalities in exclusion, see MICHAEL WHINSTON, *Exclusionary Vertical Contracts*, in LECTURES ON ANTITRUST ECONOMICS 133, 144-62, 182-83 (2008).

²⁴ G. Frank Mathewson & Ralph A. Winter, *The Competitive Effects of Vertical Agreements: Comment*, 77 AM. ECON. REV. 1057 (1987).

may be positive or negative. Exclusive dealing reduces product variety, but it has ambiguous effects on prices. On the one hand, as downstream demand shifts to firm A's product because of the exclusive dealing, that can put upward pressure on wholesale and retail prices. On the other hand, the imposition of exclusivity may intensify competition with firm B for the right to be the exclusive supplier, putting downward pressure on price. The exclusive contract is more likely to be profitable and welfare-reducing as firm A's market share increases. The exclusive contract also may be profitable even if it lowers price and it may increase or decrease welfare, depending on the details.²⁵

The important contracting externality in the above-described model is the negative effect of exclusivity on firm B. Further research has found that this externality hinges on the seller's inability to capture the downstream buyer's rents with nonlinear pricing. When nonlinear pricing such as two-part tariffs or volume discounts are feasible and information is complete, exclusive dealing typically is unprofitable for suppliers unless there are additional contracting externalities.²⁶ If the seller, however, has incomplete information about the buyer's characteristics, this motivation for exclusion may exist even if the seller can use nonlinear pricing.²⁷ In this case, the exclusion may be complete (exclusive dealing) or partial (market-share discounts), depending on the details. As is true under linear pricing, exclusive dealing or market-share discounts may intensify competition; thus, the welfare effects of these practices are ambiguous in this case as well.

The need to balance potentially negative effects of exclusive dealing (or market-share discounts) against potentially enhanced competition arises in environments where rival firms are present in the market and can compete simultaneously for customers. Some theories of harm focus on competitive effects that arise when the firm imposing an exclusive contract (or market-share discount) has a first-mover advantage, which in this context means that the excluded rival does not compete for the right to be exclusive.

An established firm with a first-mover advantage can make competitive entry less likely by having end-user buyers sign exclusive or market-share contracts that include large stipulated

²⁵ *Id.* at 1060-62 (describing welfare effects of model); *see also* Benjamin Klein & Kevin M. Murphy, *Exclusive Dealing Intensifies Competition for Distribution*, 75 ANTITRUST L.J. 433, 465-66 (2008) (explaining that a manufacturer's exclusive or partially exclusive contract for supermarket shelf space can increase competition for distribution); Hans Zenger, *When Does Exclusive Dealing Intensify Competition for Distribution? Comment on Klein and Murphy*, 77 ANTITRUST L.J. 205, 211 (2010) (explaining that this procompetitive effect is weaker or even absent when the firm that imposes exclusivity has substantial market power).

²⁶ *See* Daniel P. O'Brien & Greg Shaffer, *Nonlinear Supply Contracts, Exclusive Dealing, and Equilibrium Market Foreclosure*, 6 J. ECON. & MGMT. STRATEGY 755, 757-59 (1997).

Additional contracting externalities may arise (and exclusive dealing may be profitable for the suppliers) if the suppliers compete in other markets and the exclusive contract in one market reduces rival firm B's incentive to invest. *See* Bernheim & Whinston, *supra* note 10, at 67.

²⁷ Majumdar & Shaffer, *supra* note 21, at 404; Calzolari & Denicolò, *supra* note 21, at 2389-90.

damages provisions.²⁸ Under a liquidated damages provision, a buyer essentially faces a “disloyalty tax” if it switches too many of its purchases to an entrant. As a result, profitable entry requires a potential entrant to be especially efficient because that entrant will need to compensate switching buyers for damages paid to the incumbent firm. By excluding entry of firms that are not efficient enough to pay the disloyalty tax (but would have been efficient enough to enter absent the disloyalty tax), these contracts can lessen competition.²⁹ Here, the contracting externality is imposed on an entrant that is sufficiently more efficient than the incumbent such that it can enter and pay the disloyalty tax. Entry is less profitable after compensating the buyer for the damages.³⁰

In a second theory involving an incumbent firm with a first-mover advantage, the incumbent can reduce competition by executing a series of exclusive contracts that essentially prevents a potential entrant from accessing a sufficient number of end-user buyers. If the remaining buyers do not provide sufficient scale for the entrant to cover costs, or if reduced scale makes the entrant less efficient, then entry does not occur (or is less robust) and the remaining buyers face higher (perhaps monopoly) prices rather than competitive prices.³¹ In this case, there are two contracting externalities. The first is imposed on the non-signers of an exclusive contract who pay a monopoly price. The second is an externality the signing customers impose on each other in a “prisoners’ dilemma” situation. All customers would be better off if no one signed an exclusive, which would allow all customers to pay the competitive price. However, the signers pay a price in excess of the competitive price, but lower than the price paid by non-signers.

Although the preceding two theories assume that the incumbent has a first-mover advantage, this is not a requirement for exclusion that relies on denying an entrant sufficient

²⁸ Philippe Aghion & Patrick Bolton, *Contracts as a Barrier to Entry*, 77 AM. ECON. REV. 388, 389, 390-92 (1987).

²⁹ See *id.* at 392.

³⁰ This result is not robust to allowing renegotiation by the established firm and the buyer upon entry by a more efficient rival. See Katherine E. Spier & Michael D. Whinston, *On the Efficiency of Privately Stipulated Damages for Breach of Contract: Entry Barriers, Reliance, and Renegotiation*, 26 RAND J. ECON. 180, 183-186, 198 (1995). In addition, if the entrant is differentiated from the incumbent and has known costs, the incumbent may accommodate entry and prices may fall. See Leslie M. Marx & Greg Shaffer, *Predatory Accommodation: Below-Cost Pricing without Exclusion in Intermediate Goods Markets*, 36 RAND J. ECON. 22, 22-24, 34-36 (1999). In this case, the welfare effects depend on market details.

³¹ Eric B. Rasmusen, J. Mark Ramseyer & John S. Wiley Jr., *Naked Exclusion*, 81 AM. ECON. REV. 1137, 1139-41 (1991); Ilya R. Segal & Michael D. Whinston, *Naked Exclusion: Comment*, 90 AM. ECON. REV. 296, 297, 307 (2000); Rang Jing & Ralph A. Winter, *Exclusionary Contracts*, 30 J.L. ECON. & ORG. 833, 834-35, 853-54 (2014). See also Chiara Fumagalli & Massimo Motta, *Exclusive Dealing and Entry, When Buyers Compete*, 96 AM. ECON. REV. 785 (2006) (exploring the role of downstream competition by using an example where the customers are competing retailers rather than final consumers)). These theories all focus on the case of linear pricing, which can be restrictive. For a variant that yields similar contracting externalities with nonlinear pricing, see Bernheim & Whinston, *supra* note 10, at 86-90.

scale.³² As one example, suppose that if a potential entrant decides to enter, it will compete with the incumbent in two or more markets. If the entrant would lose competition for an exclusive contract in one market, it may not achieve sufficient scale in other markets (or in future markets) to make entry profitable. Once again, an exclusive agreed to by one buyer imposes a contracting externality on others, and exclusion may occur.³³

The theories in the preceding two paragraphs also assume that the buyers do not compete against one another in downstream markets. These theories rely on economies of scale that make it unprofitable for a rival to enter if enough of these buyers sign exclusive contracts. If there were no economies of scale, it would be too costly for the incumbent to entice downstream firms to agree to exclusive contracts. If the downstream buyers, however, are competing intermediaries, such as competing retailers, then exclusion may be possible even when there are no scale economies. Specifically, exclusion is possible because competition among the retailers keeps their profits relatively low in the absence of exclusive contracts, which means that the incumbent does not have to pay them as much to entice them to agree to exclusive contracts. In outcomes where retailers agree to exclusives, the supplier charges the retailers a high wholesale price for its good. This causes the retailers to charge high retail prices to end-user customers, extracting supra-competitive rents from these customers that could not be extracted but for the exclusive. The supplier distributes a portion of the rents back to the retailers in the form of a lump sum payment in exchange for retailers' exclusivity to the supplier.³⁴ In this theory, competing suppliers need not exit (or be prevented from entering) the market when harmful exclusive contracts are used, and under specific assumptions, loyalty discounts of less than 100 percent may be used to cause such harm.³⁵ In these models, the end-user customers incur the contracting externality.

In some circumstances, linking multiple products together via a bundle, tie, or multiproduct loyalty discount can have exclusionary effects somewhat analogous to the effects of exclusive dealing and loyalty discounts in environments with economies of scale. These

³² Bernheim & Whinston, *supra* note 10 at 91.

³³ The welfare effects of exclusive dealing in these models are ambiguous. Among other difficulties, equilibria exist in which only one firm serves the market even without exclusive dealing, O'Brien & Shaffer, *supra* note 26, at 7-11, so entry deterrence can occur given the right scale conditions even if exclusive dealing is not used, Bernheim & Whinston, *supra* note 10 at 83-86.

³⁴ John Simpson & Abraham L. Wickelgren, *Naked Exclusion, Efficient Breach, and Downstream Competition*, 97 AM. ECON. REV. 1305, 1317-18 (2007); Jose M. Abito and Julian Wright, *Exclusive Dealing with Imperfect Downstream Competition*, 26 INT'L J. INDUS. ORG. 227, 230, 232 (2008). This result is sensitive to market details, such as the costs retailers incur to remain in the market and the costs of contractual breach. For example, exclusion is not profitable for the incumbent supplier if breach is prohibitively costly, retailers are intensely competitive, and retailers incur a small fixed cost to remain active. See Fumagalli & Motta, *supra* note 31 at 787 n.5, 792-93. It is currently unsettled whether intense retail competition makes exclusion through exclusive dealing more or less likely.

³⁵ Patrick DeGraba, *Naked Exclusion by a Dominant Input Supplier: Exclusive Contracting and Loyalty Discounts*, 31 INT'L J. IND. ORG. 516, 524 (2013).

practices can harm competition by allowing an incumbent firm to (i) extend market power from one product market (“A”) into a second product market (“B”), or (ii) preserve existing market power (in “A”). Theories of the first type must overcome the “one monopoly rent” critique—that is, that a monopolist can only extract its monopoly rent once. This critique may be overcome when tying is used to induce exit in the tied market, and the subsequent lack of substitute producers in the tied market enables the firm to increase its current profits in that market.³⁶ For example, suppose that a restaurant in the only hotel on a resort island competes with local restaurants. If meals are included (or tied) in all stays at the hotel restaurant, then there may be fewer local restaurants as a consequence of reduced patronage. With fewer local restaurants, local residents will have fewer alternatives, with the result that more of them may decide to frequent the hotel restaurant. In this case, tying can be profitable because it reduces competition in the tied market.³⁷

As another example, suppose goods A and B are complements and there are scale economies. Under these circumstances, an incumbent firm may be able to profitably maintain or strengthen its existing market power by linking the complementary products as the following three hypotheticals illustrate.

First, if product A is an operating system sold by a monopolist and a rival sells an inferior version of A, then the monopolist’s tie of product B, the monopolist’s application software, to A may deny scale to rival suppliers of application software. If this induces rival suppliers of application software to exit, then consumers that are considering the inferior operation system no longer have a source for application software other than the monopolist selling the better operating system. This keeps the rival operating system out of the market and harms consumers by eliminating the competition that the rival operating system and application software suppliers would have provided.

As a second example, if the entry path for firms is first in application software and subsequently in operating systems, then the monopolist’s linking of B (the application software) to A (the operating system) can deny scale to potential software entrants. If this induces them not

³⁶ See Michael D. Whinston, *Tying, Foreclosure, and Exclusion*, 80 AM. ECON. REV. 837, 839-40 (1990); Barry Nalebuff, *Bundling as an Entry Barrier*, 119 Q.J. ECON. 159 (2004). As Dr. Whinston notes in *Tying, Foreclosure and Exclusion*, the welfare effects of the exclusion in his model are ambiguous. The reason for the ambiguity is that production is subject to economies of scale, which can lead to socially-excessive entry in the absence of tying. Whinston, *supra*, at 845-46.

³⁷ By contrast, if the island contained no local residents who lived outside the hotel, the monopoly hotel could not profit further by tying food to lodging; thus every potential customer would be buying both food and lodging. Moreover, even if there were competition from standalone restaurants, a lodging/meal tie would not allow the hotel monopolist to extract additional rents than it could obtain by selling the lodging at monopoly rates. That is, the tie would not overcome the one monopoly rent critique.

to enter the software market, then there is no subsequent entry into the operating systems market, either.³⁸

Finally, in a third example, if the monopolist's operating system is initially the only operating system running application software, then the monopolist's tie of B (the application software) to A (the operating system) prevents independent providers of application software from entering. The tie also forces all consumers to purchase software from the operating system monopolist, and to spend extra on an independent provider's software. This then raises entry costs because a potential rival would have to enter simultaneously both markets.

D. Softening Competition

In the theories discussed in the preceding subsection, the competitive harm from CPPs (when it exists) arises because competitors are partially or fully excluded from the market. As a result, pricing may become less aggressive because there are fewer or less efficient competitors. Another potential mechanism for competitive harm is that CPPs may induce rivals to compete less intensely. This is sometimes referred to as "softening competition."

For example, a dominant supplier may use a market-share discount to encourage retailers to raise the price of rivals' products, thereby blunting head-to-head competition and enhancing the dominant supplier's profits. To illustrate, suppose that a dominant supplier and a passive fringe firm distribute differentiated products through two similar retailers.³⁹ Suppose first that the dominant firm can write observable nonlinear contracts with retailers, but it cannot condition its wholesale prices on shares. That is, the dominant firm can condition wholesale prices on its own quantity, but not on its share. The dominant firm would like to induce retailers to charge the monopoly price and capture monopoly rents with fixed transfer fees. The dominant firm, however, cannot do this because the retailers will substitute to the fringe firm's product in response to the dominant firm's price increase. Now suppose that the dominant firm can condition wholesale prices on its share. In particular, suppose that the dominant firm charges a lower price the greater its share. This makes it more costly for retailers to substitute to the fringe firm's product in response to the dominant firm's price increase. In fact, in this example, the dominant firm's optimal market-share discount leads to the monopoly outcome.⁴⁰

As with most softening competition arguments in the literature on vertical relationships, this argument is quite sensitive to specific details. Indeed, with respect to the above example, the

³⁸ Dennis W. Carlton & Michael Waldman, *The Strategic Use of Tying to Preserve and Create Market Power in Evolving Industries*, 33 RAND J. ECON. 194 (2002).

³⁹ By "passive", we mean here that the fringe firm sells to retailers at a fixed wholesale price, instead of setting its own optimal price.

⁴⁰ Roman Inderst & Greg Shaffer, *Market-share Contracts as Facilitating Practices*, 41 RAND J. ECON. 709, 715-19 (2010). Market-share discounts also can soften competition in environments with economies of scale where both entry conditions and competition softening issues are in play. See Zhijun Chen & Greg Shaffer, *Naked Exclusion with Minimum Share Requirements*, 45 RAND J. ECON. 64, 66, 75, 80-81 (2014).

competition-softening result requires that the retailers observe each other's contracts. It is unclear whether the same result would hold if the fringe firm was active rather than passive.

III. Conclusion

This paper provides a brief overview of conditional pricing practices, which have been defined as pricing strategies in which a seller conditions its prices on factors such as volume, the set of products purchased, or the buyer's share of purchases from the seller. A unifying theme is the economic relationship between certain conditional pricing practices.

This set of strategies—richer than uniform pricing—can have welfare-enhancing or competition-reducing effects relative to uniform pricing. A key element in settings where competition is harmed is a contracting externality. In such cases, a buyer foregoes otherwise beneficial seller competition because the buyer and seller jointly extract rents from a third party (which may, for example, be other buyers, a potential entrant, or a seller in an adjacent market). Ultimately, assessing the competitive effects of a conditional pricing practice will depend on details of the market setting.