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Bogdan Genchev
Julie Holland Mortimer

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ABSTRACT

Conditional pricing practices allow the terms of sale between a producer and a downstream distributor to vary based on the ability of the downstream firm to meet a set of conditions put forward by the producer. The conditions may require a downstream firm to accept minimum quantities or multiple products, to adhere to minimum market-share requirements, or even to deal exclusively with one producer. The form of payment from the producer to the downstream firm may take the form of a rebate, marketing support, or simply the willingness to supply inventory. The use of conditional pricing practices is widespread throughout many industries, and the variety of contractual forms used in these arrangements is nearly as extensive as the number of contracts. This paper reviews empirical evidence on these arrangements.

Bogdan Genchev
Department of Economics
Boston College
140 Commonwealth Ave
Chestnut Hill, MA 02467
genchev@bc.edu

Julie Holland Mortimer
Department of Economics
Boston College
140 Commonwealth Avenue
Chestnut Hill, MA 02467
and NBER
julie.mortimer.2@bc.edu

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BOGDAN GENCHEV
JULIE HOLLAND MORTIMER[*]

Conditional pricing practices (CPPs) allow the terms of sale between a producer and a downstream firm to vary based on the ability of the downstream firm to meet a set of conditions put forward by the producer. The conditions may require a downstream firm to accept minimum quantities or multiple products, to adhere to minimum market-share requirements, or even to deal exclusively with one producer. Payment from the producer to the downstream firm may take the form of a discount at the time of purchase, a rebate paid after a period of time, or marketing support and training. The use of CPPs is widespread throughout many industries, and the variety of contractual forms used in these arrangements is nearly as extensive as the number of contracts.

CPPs have been challenged in courts many times over the years, but there is no consensus among either law practitioners or academics on how they should be analyzed. Fundamentally, adjudication seeks to determine whether a given CPP harms or benefits competition. Under U.S. law, this means determining whether a practice reduces or improves consumer welfare. To a large degree, practitioners' ability to consider this question has rested on two approaches: applying theoretical models of the potential mechanisms behind CPPs, or using evidence from prior litigated contracts. In this article, we consider the effects of CPPs through a third lens: empirical research on CPPs covering several different industries and contractual forms.

Empirical research provides unique insight into understanding the effects of CPPs, which is complementary to the insights gained through theoretical analysis and case discussions. Theoretical models predict a wide range of mechanisms through which CPPs may affect welfare, with the potential for multiple theoretical models to be relevant for analyzing any given CPP. Court cases provide empirical evidence on actual CPPs, but are selected through the process of litigation, with no guarantee of being representative of the wider population of contractual arrangements between firms. Empirical research addresses these limitations, while simultaneously highlighting the wide variety of settings in which CPPs are used. Correspondingly, a limitation of the empirical literature is that it cannot necessarily address the full range of potential settings or contractual forms that one may ultimately want to analyze. Relatedly, the heterogeneity highlighted in this literature does not necessarily lend itself to a single unifying framework by which to adjudicate future contracts.

Some of the terms used to describe CPPs include vertical rebates, which can be structured as "loyalty contracts" or "all-units discounts;" vertical bundling, which includes "full-line forcing" and bundled discounts; and exclusive dealing.[1] Exclusive

[1] We refer to a vertical rebate as a loyalty contract if it is conditional on a market-share requirement, and an all-units discount if it is conditional on a quantity requirement.

dealing can be considered as a loyalty contract with a 100-percent market-share requirement and an "all-or-nothing" clause.[2] The latter can be explicit or implicit. For instance, a non-contract price at which the buyer's demand is zero can achieve the same effect as an explicit all-or-nothing requirement. Thus, the discount that the exclusive dealing contract provides is the difference between the high non-contract price and the contract price.

Table 1 presents a selected group of CPPs and the range of industries they cover, based on both court-based evidence and empirical research. Vertical rebates have been used, for example, in the truck transmission, microprocessor, and confections industries. Vertical bundling contracts have been observed in the markets for video rentals, boat engines, tape products, and some pharmaceutical products, among others. Exclusive dealing has been used in the video game, smartphone, and auto refrigerant equipment industries.[3] A much richer set of contracts is employed across many more industries in reality.

TABLE 1

EVIDENCE ON CONDITIONAL PRICING PRACTICES

Industry	Product Coverage	Nature of Restriction	Downstream Competition
Court-based Evidence:			
Truck Transmissions (*ZF Meritor v. Eaton Corp.*)[4]	Single	Share	Standard
Auto Refrigerant Equip (*SPX Corp. v. Mastercool Inc.*)[5]	Single	Exclusive	Standard
Tape Products (*LePage's v. 3M*)[6]	Multiple	Quantity	Standard
Boat Engines (*Concord Boat v. Brunswick Corp.*)[7]	Multiple	Share	Standard
Anticoagulants (*Eisai v. Sanofi Aventis*)[8]	Single	Share	[1]
Cephalosporins (*SmithKline v. Eli Lilly*)[9]	Multiple	Quantity	[1]
Microprocessors (three Intel cases)[10]	Single	Share	Standard
Hospital Services (*Cascade Health Solutions v. PeaceHealth*)[11]	Multiple	Share	[2]

[2] *Supra* note 1. A contract with a very high, but not 100-percent, market-share requirement and an all-or-nothing clause is considered de facto exclusive dealing.

[3] The Department of Justice defines exclusive dealing as "an arrangement whereby one party's willingness to deal with another is contingent upon that other party (1) dealing with it exclusively or (2) purchasing a large share of its requirements from it." U.S. Dep't of Justice, Competition and Monopoly: Single-Firm Conduct Under Section 2 of the Sherman Act (2008), usdoj.gov/atr/public/reports/236681.htm.

[4] 696 F.3d 254 (3d Cir. 2012).

[5] No. 3:10 CV 1266, 2011 WL 2532889, at *1 (ND Ohio June 24, 2011).

[6] 324 F.3d 141(3d Cir. 2003).

[7] 207 F.3d 1039, 1061 (8th Cir. 2000).

[8] No. 14-2017 (3d Cir. May 4, 2016).

[9] 427 F. Supp. 1089 (E.D. Pa. 1976), aff'd, 575 F.2d (3d Cir. 1978).

[10] *See* Intel Corp., Analysis of Proposed Consent Order & Aid to Public Comment, FTC Docket No. 9341 (Aug. 4, 2010) ftc.gov/sites/default/files/documents/cases/2010/08/100804intelanal_0.pdf; Settlement Agreement, AMD v. Intel, 05-441 (D. Del. Nov. 11, 2009); sec.gov/Archives/edgar/data/ 50863/000005086309000213/exh101.htm; Case COMP/C-3/37.990—Intel, Comm'n Decision, 2009 O.J. (C 277) 13, ec.europa.eu/competition/sectors/ICT/intel_provisional_decision.pdf.

Catheters (*Southeast Missouri Hospital v. C.R. Bard Inc.*)[12]	Multiple	Share	[2]
Airline Reservations (two British Airways cases)[13]	Single	Quantity	Standard
Mobile Phones (Korean Fair Trade Commission fine)[14]	Multiple	Share	Standard
Empirical Research:			
Confections[15]	Multiple	Quantity	[3]
Video Rentals[16]	Multiple	Quantity	Standard
Video Games[17]	Single	Exclusive	[4]
Smartphones[18]	Single	Exclusive	[5]
Beer[19]	Multiple	Share	Standard

"Product coverage" indicates whether the contract governs purchases of a single product or requires the purchase of multiple products. "Nature of the restriction" describes the condition that a downstream firm must meet to qualify for payment. "Share" indicates a market-share requirement, often referred to as a "Loyalty" contract; "Quantity" indicates a minimum (or maximum) quantity requirement, used in all-units discounts, full-line-forcing, or other contractual forms; "Exclusive" indicates exclusive dealing. "Downstream competition" is noted as "Standard" when downstream firms compete on price. Alternative forms of downstream competition vary by industry and are described as follows:

[1] Product administered to patients in hospitals. Insurers reimburse hospitals for a patient's treatment.
[2] Insurers reimburse hospitals for services associated with patient treatment.
[3] Retail prices rarely vary across products or time.
[4] Gaming consoles are durable; consumer demand responds to current and expected future prices.
[5] Carriers subsidize the purchase price of a handset when a consumer agrees to a two-year service plan.

A brief review of cases involving CPPs illustrates the difficulties that courts have faced in adjudicating these legal disputes and the concomitant lack of consensus on an appropriate analytical framework. In *LePage's Inc. v. 3M*, 3M was the dominant player in the market for branded tape products, but was facing competitive pressure from private

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[11] 515 F.3d 883 (9th Cir. 2007).

[12] 642 F.3d 608 (8th Cir. 2010).

[13] *See* Virgin Atl. Airways v. British Airways, 257 F.3d 256 (2d Cir. 2001); Case C-95/04P, British Airways plc v. Comm'n, 2007 E.C.R. I-2331 (CJ).

[14] Fine levied against Qualcomm. *See* Press Release, S. Kor. Fair Trade Comm'n, *Qualcomm's Abuse of Market Dominance* (July 23, 2009), eng.ftc.go.kr/bbs.do.

[15] Christopher T. Conlon & Julie Holland Mortimer, *Efficiency and Foreclosure Effects of Vertical Rebates: Empirical Evidence* (Apr. 2015), http://juliemortimer.weebly.com/uploads/7/2/4/8/72489725/submit_rebates_feb2015.pdf.

[16] Katherine Ho, Justin Ho & Julie Holland Mortimer, *The Use of Full-Line Forcing Contracts in the Video Rental Industry*, 102 AM. ECON. REV. 686 (2012) [hereinafter Ho, Ho & Mortimer, *Video Rental Industry*]; Katherine Ho, Justin Ho & Julie Holland Mortimer, *Analyzing the Welfare Impacts of Full-line Forcing Contracts*, 60 J. INDUS. ECON. 468 (2012) [hereinafter Ho, Ho & Mortimer, *Welfare Impacts*].

[17] Robin S. Lee, *Vertical Integration and Exclusivity in Platform and Two-Sided Markets*, 103 AM. ECON. REV. 2960 (2013).

[18] Michael Sinkinson, *Pricing and Entry Incentives with Exclusive Contracts: Evidence from Smartphones* (Jan. 2014), assets.wharton.upenn.edu/~msink/exclusive_handsets.pdf.

[19] Chia-Wen Chen, *Estimating the Foreclosure Effect of Exclusive Dealing: Evidence from the Entry of Specialty Beer Producers*, 37 INT'L. J. INDUS. ORG. 47 (2014); Tim R. Sass, *The Competitive Effects of Exclusive Dealing: Evidence from the U.S. Beer Industry*, 23 INT'L. J. INDUS. ORG. 203 (2005); John Asker, Measuring Cost Advantages from Exclusive Dealing: An Empirical Study of Beer Distribution (Jan. 2004) [hereinafter Asker, Measuring Cost Advantages], chicagobooth.edu/research/workshops/AppliedEcon/ archive/WebArchive20032004/asker.pdf; John Asker, *Diagnosing Foreclosure due to Exclusive Dealing*, J. INDUS. ECON. (forthcoming) [hereinafter Asker, *Diagnosing Foreclosure*].

label tape manufacturer LePage's.[20] 3M responded by entering the private label tape market and offering clients discounts on bundles consisting of private label tape and other of its office products. LePage's could not match this strategy because of its limited product line, and filed suit claiming that its rival's pricing scheme was exclusionary. 3M argued that its conduct was not anticompetitive because it did not sell transparent tape below cost. The Third Circuit rejected the defendant's argument and ruled in favor of the plaintiff despite the absence of below-cost pricing. However, the ruling was widely criticized for failing to provide sufficiently clear guidance on when bundled rebates violate antitrust law.

The Ninth Circuit adopted a different approach in *Cascade Health Solutions v. PeaceHealth*.[21] In this case, the plaintiff and the defendant were the only health care providers in Lane County, Oregon. Whereas Cascade Health offered primary and secondary care, PeaceHealth offered tertiary care as well. The latter offered insurance companies substantial discounts if they made it their sole provider of all three levels of health services. In response, Cascade Health challenged the practice as exclusionary. In a break with the Third Circuit's reasoning, the Ninth Circuit argued that the conduct could not be ruled anticompetitive without demonstrating that it lowered prices below "an appropriate measure of cost." Using a discount attribution test, it ruled in favor of the defendant and reversed the district court's decision.

The lack of agreement on the correct principles for adjudicating conditional pricing practices applies not only to multiproduct discounts, but to single-product loyalty contracts as well. *ZF Meritor v. Eaton Corp.* was a lawsuit brought against the dominant manufacturer of heavy-duty truck transmissions by a rival firm.[22] The contention was that the long-term contracts that the defendant signed with the four major truck manufacturers amounted to de facto exclusive dealing. These contracts provided rebates to the truck manufacturers if they satisfied a high minimum-share purchase requirement, treated Eaton's products preferentially in their sales catalogs, and priced them lower than the plaintiff's products. The Third Circuit ruled against the defendant after applying a rule of reason analysis and declining to employ the price cost test because it found that price was not the primary method of exclusion.

The outcome was different in *Eisai Inc. v. Sanofi Aventis*.[23] In this case, the defendant offered hospitals a discount on its drug Lovenox if they made 90 percent or more of their total anticoagulant drug purchases from Sanofi. Eisai had exclusive distribution rights to Pfizer's competing product, Fragmin, and alleged that Sanofi's conduct bundled customers' contestable and incontestable demand for Lovenox and amounted to de facto exclusive dealing. Because Eisai's claims related to the alleged bundling aspect of Sanofi's conduct and not to its pricing practices, the Third Circuit analyzed the conduct under the rule of reason rather than applying a price-cost test. It concluded that there was no evidence of either restriction of consumer choice or substantial anticompetitive effect and ruled in favor of the defendant.

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[20] LePage's Inc. v. 3M, 324 F.3d 141(3d Cir. 2003).

[21] PeaceHealth, 515 F.3d 883.

[22] ZF Meritor, 696 F.3d 254.

[23] Eisai, No. 14-2017.

One reason for the lack of agreement on the appropriate framework of analysis of CPPs is that there is no such agreement in the theoretical literature either. Economists have found both procompetitive and anticompetitive justifications for these contracts. However, empirical analyses that give more credibility to one theory or another are relatively scarce.

In this article, we provide background on the theoretical literature addressing CPPs and review the existing empirical literature. We identify market features that affect the likelihood that a CPP will have an adverse impact on consumer welfare. We find that anticompetitive effects are more likely when CPPs are used by a dominant firm, and when buyers have limited capacity to carry multiple products. The existence of substitute products or alternative distributors can also influence the impact of conditional pricing on competition. The list of relevant market characteristics demonstrates just a few of the factors that should be considered in the analysis of CPPs. Furthermore, the empirical analyses reveal that different contract terms have different exclusionary effects and should be studied in conjunction with market characteristics. The wide array of contractual forms and market settings prevents broad generalizations and suggests that the effects of conditional pricing can differ case-by-case, based on the specifics of the contract and the market.

I. THEORETICAL BACKGROUND

Interest in CPPs has generated a large amount of scholarly work, but there is no consensus on their predominant competitive effect or on an appropriate analytical framework to be used in a litigation setting. In this section, we review the prevalent points of view on these questions in the theoretical literature, first for single-product and then for multiproduct CPPs.

A. SINGLE-PRODUCT CONDITIONAL PRICING PRACTICES

Benjamin Klein and Andres Lerner view single-product loyalty contracts as a commitment device that allows a seller and a buyer to achieve a mutually beneficial equilibrium off the demand curve.[24] Without commitment, a seller facing a downward-sloping demand curve sells the quantity at which marginal cost equals marginal revenue and charges the price indicated by the demand curve. However, it can do better by writing a contract that offers a lower price only if the buyer agrees to purchase a larger quantity. The seller is better-off, as it sells a sufficiently larger quantity to offset profit foregone through the lower price. The buyer also benefits, as the discount it receives on the units it would purchase in the absence of the contract and the additional units it buys at the discounted price outweighs the negative surplus on units that it values at less than the discounted price.[25] The reason why the buyer can move off the demand curve is that

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[24] Benjamin Klein & Andres V. Lerner, *Price-Cost Tests in Antitrust Analysis of Single Product Loyalty Contracts*, 80 ANTITRUST L. J. 631 (2016). A similar procompetitive justification of conditional pricing is given in Kevin M. Murphy, Edward A. Snyder & Robert H. Topel, *Competitive Discounts and Antitrust Policy*, in THE OXFORD HANDBOOK OF INTERNATIONAL ANTITRUST ECONOMICS (Roger D. Blair & D. Daniel Sokol eds., 2015), at 94–98.

[25] Klein & Lerner, *supra* note 24, at 641–47.

it is not a final consumer, but rather a downstream firm that subsequently resells the product as a component in a different product or service. The model assumes that final consumers are unlikely to substitute to a competing product because of a single component, thus conferring a degree of loyalty to the buyer.[26] The buyer can exploit this loyalty to shift purchases from one seller to another. Sellers compete for these sales-shifting services and compensate the buyer through the loyalty discount.[27]

Despite this procompetitive justification of loyalty contracts, Klein and Lerner acknowledge that loyalty contracts can also be used anticompetitively. In their analysis of antitrust liability, they distinguish between two types of contract terms: performance and incentive. Performance terms stipulate the conditions that a buyer needs to meet, such as market-share, preferential treatment of certain products, and retail pricing requirements.[28] Incentive terms specify what happens if the buyer does not satisfy the performance requirements: for example, it may be forced to forfeit the discount or may even face restricted supply.[29] The authors argue that if the loss of a discount is the only incentive mechanism, the contract resembles predatory pricing, and a "discount attribution test" can be applied.[30] However, if the loyalty contract includes non-price incentive terms, such as a threat to restrict or terminate supply, or if the list price is much higher than what would prevail in the absence of the contract, the authors recommend a rule of reason analysis.[31]

Other scholars recognize that many CPPs resemble both predatory pricing, through the discount terms, and exclusive dealing, through the exclusivity or near exclusivity requirements, but argue that a rule of reason standard better captures the various mechanisms through which CPPs may affect consumer welfare.[32] In a predatory

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[26] For instance, patients will not change the hospital they go to because it does not carry the patient's preferred brand of blood-clotting drug. Similarly, a truck buyer will not go to a rival manufacturer only because it offers different transmissions. *Id.* at 647.

[27] *Id.* at 647–51. The authors assume that any disadvantages to consumers from increases in the list (non-contract) price, by either the seller or its competitor, are outweighed by the benefits from the contract. In order for the contract to be procompetitive, the model must implicitly assume that at least some portion of the discount is passed on to consumers. This need not always be the case (e.g., if consumers are locked-in to the buyer for some reason).

[28] *Id.* at 632.

[29] *Id.*

[30] *Id.* at 634. The test applies the full amount of discounts to the contestable portion of sales and compares the discounted price to marginal cost, where contestable sales are those for which the rival can "reasonably compete." *Id.* at 639. If the discounted price is lower than marginal cost, then the loyalty discount is likely predatory and the next step in the analysis is to determine if the dominant firm will be able to eventually recoup its "investment." *Id.* at 665.

[31] *Id.* at 673 and note 28. The authors explain that before weighing pro- and anticompetitive effects, the analysis needs to determine whether the contractual arrangement constitutes de facto exclusive dealing, which is the case when the contract gives the buyer no economic choice but to accept the offered terms if the buyer wants to deal with the seller.

[32] Steven C. Salop, *The Raising Rivals' Cost Foreclosure Paradigm, Conditional Pricing Practices and the Flawed Incremental Price-Cost Test* (Georgetown Law Faculty Publications and Other Works. Paper 1620, 2016), scholarship.law.georgetown.edu/facpub/1620/; Joshua D. Wright, Simple but Wrong or Complex but More Accurate? The Case for an Exclusive Dealing-Based Approach to Evaluating Loyalty Discounts, Remarks at the Bates White 10th Annual Antitrust Conference (June 3, 2013),

pricing setting, a firm lowers its price below cost, drives equally efficient rivals out of the market, then raises its price to a supracompetitive level and recoups the profit lost while pricing below cost. The mechanisms that harm consumer welfare are the exclusion of rivals and subsequent higher prices. This is the reason predatory pricing analyses proceed by comparing price to cost, and if price is lower, assessing whether the predator can recoup its "investment."[33]

Unlike predatory pricing, exclusive dealing can lead to exclusion of rivals without below-cost pricing.[34] Moreover, exclusive dealing can also impair competition without inducing full exclusion in the market. By restricting rivals' access to vital inputs or a sufficient customer base, exclusive dealing may effectively raise their costs, forcing them to increase their prices and reducing the competitive constraint they can impose.[35] Similarly, the ability of rivals to compete can be limited if they are relegated to a niche position in the market with limited access to customers. A reduced customer base can also diminish rivals' incentives to invest and innovate, which in turn may lead to less investment and innovation by the dominant firm.[36] Exclusive dealing requires a different analytical framework than predatory pricing because it can lead to competitive harm in more varied ways. Steven Salop follows this logic to argue that a rule of reason standard of adjudication is appropriate, as it can account for the various mechanisms through which harm can occur.[37]

While exclusive dealing can induce foreclosure or raise rivals' costs, this need not automatically translate into consumer harm. For this to happen, the seller employing the contract needs to have "power over price."[38] Such power may not exist if competitors are not significantly disadvantaged by the conduct, if there is sufficient competition from non-foreclosed competitors, or if there are substitute products.[39] Another reason why

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ftc.gov/sites/default/files/documents/public_statements/simple-wrong-or-complex-more-accurate-case-exclusive-dealing-based-approach-evaluating-loyalty/130603bateswhite.pdf.

[33] Salop, *supra* note 32, at 4–7.

[34] The theoretical literature on the exclusionary effects of exclusive dealing is sizeable. Authors in the tradition of the "Chicago School" argued that exclusive dealing cannot lead to the exclusion of an equally efficient rival because compensating the downstream firm for accepting the arrangement makes it unprofitable for the upstream firm to offer it in the first place. Other authors have used models with scale economies and externalities across buyers to show that anticompetitive exclusion is possible. *See, e.g.,* ROBERT H. BORK, THE ANTITRUST PARADOX 299–309 (2d ed. 1993), RICHARD A. POSNER, ANTITRUST LAW: AN ECONOMIC PERSPECTIVE 171–211 (1st ed. 1976), Philippe Aghion & Patrick Bolton, *Contracts as a Barrier to Entry*, 77 AM. ECON. REV. 388 (1987), Eric B. Rasmusen, J. Mark Ramseyer & John S. Wiley, Jr., *Naked Exclusion*, 81 AM. ECON. REV. 1137 (1991), Ilya R. Segal & Michael D. Whinston, *Naked Exclusion: Comment*, 90 AM. ECON. REV. 296 (2000), and the discussion in MICHAEL D. WHINSTON, LECTURES ON ANTITRUST ECONOMICS 133–97 (2008).

[35] Through these effects, exclusive dealing arrangements fit into the "raising rivals' costs" paradigm. Salop, *supra* note 32, at 2.

[36] *Id.* at 14–31 (also discusses other ways exclusive dealing can harm competition).

[37] *Id.* at 10. Salop also discusses various reasons why the price-cost can give too many false positives and false negatives, which makes it unsuitable as a method to analyze alleged anticompetitive conduct related to CPPs. Salop, *supra* note 32, at 40–60.

[38] *Id.* at 39.

[39] *Id.*

consumers may not be harmed by exclusive dealing is that such arrangements can be efficiency-inducing. For example, exclusive dealing can intensify competition among suppliers, provide incentives for better products, service, and increased promotion, and reduce free riding.[40] These procompetitive effects need to be included in the evaluation of the net impact of exclusive dealing on competition.

There is also a growing theoretical literature that focuses specifically on the effects of CPPs that are not as restrictive as exclusive dealing. This literature has found conditions under which loyalty discounts, among a broader group of vertical contracting practices, can lead to foreclosure.[41] However, conditional pricing, and AUDs in particular, can also arise in the absence of an exclusionary motive as a more effective way to price discriminate than a menu of two-part tariffs.[42] Furthermore, CPPs can have procompetitive effects by addressing upstream and downstream moral hazard and by inducing more downstream effort.[43]

B. MULTIPRODUCT CONDITIONAL PRICING PRACTICES

Multiproduct CPPs (or bundled discounts) condition a buyer's discount on his ability to purchase multiple different products.[44] As is the case with single-product CPPs, there is no established consensus on how multiproduct CPPs should be analyzed. Some courts and scholars have recommended using a predatory pricing-based price-cost test.[45] Others, however, have pointed out that multiproduct CPPs can have exclusionary effects even without below-cost pricing and are best considered as forms of tying.[46]

Tying can have both exclusionary and nonexclusionary rationales, and can either

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[40] *Id.* at 31–33 and note 93 referencing Daniel P. O'Brien & Greg Shaffer, *Nonlinear Supply Contracts, Exclusive Dealing, and Equilibrium Market Foreclosure*, 6 J. ECON. & MGMT. STRATEGY 755 (1997); Howard P. Marvel, *Exclusive Dealing*, 25 J.L. & ECON. 1 (1982); Benjamin Klein and Andres V. Lerner, *Expanded Economics of Free-Riding: How Exclusive Dealing Prevents Free-Riding and Creates Undivided Loyalty*, 74 ANTITRUSTL.J. 473 (2007), and Benjamin Klein, *Exclusive Dealing as Competition for Distribution "On the Merits"*, 12 GEO. MASON. L. REV. 119 (2003).

[41] John Asker & Heski Bar-Isaac, *Raising Retailers' Profits: On Vertical Practices and the Exclusion of Rivals*, 104 AM. ECON. REV. 672 (2014) and Zhijun Chen & Greg Shaffer, *Naked Exclusion with Minimum-Share Requirements*, 45 RAND J. ECON. 64 (2014).

[42] Sreya Kolay, Greg Shaffer & Janusz A. Ordover, *All-Units Discounts in Retail Contracts*, 13 J. ECON. MANAG. STRATEG. 429 (2004).

[43] Daniel P. O'Brien, All-units Discounts and Double Moral Hazard (2013), papers.ssrn.com/sol3/papers.cfm?abstract_id=2228746 and David E. Mills, *Inducing Downstream Selling Effort with Market Share Discounts*, 17 INT. J. ECON. BUS. 129.

[44] Some authors use the term "bundling" to describe selling packages of multiple units of the same product and the term "tying" for selling packages of different products. Others do not stick to this convention and use "bundling" for selling different products together. See, e.g., OZ SHY, INDUSTRIAL ORGANIZATION: THEORY AND APPLICATIONS 362 (1996).

[45] *See* discussion in Patrick Greenlee, David Reitman & David S. Sibley, *An Antitrust Analysis of Bundled Loyalty Discounts*, 26 INT. J. IND. ORGAN 1132, at 1133–35.

[46] *Id.* and Dennis W. Carlton, Patrick Greenlee & Michael Waldman, *Assessing the Competitive Effects of Multiproduct Pricing*, 53 THE ANTITRUST BULLETIN 587, at 589. Carlton, Greenlee, and Waldman point out additional weaknesses of the price-cost test at 606–10.

increase or decrease consumer welfare. Firms can tie products to attain efficiencies in production stemming from scale economies, to price discriminate, or to achieve greater product differentiation.[47] While these exemplify nonexclusionary uses of tying, bundled discounts can also be used anticompetitively in a variety of ways. For instance, a firm active in a monopoly market for a primary good and a duopoly market for a complementary good can use tying to extend its monopoly power to the "adjacent" market by denying scale to its rival.[48] A firm can also use tying to strengthen its market power by excluding producers of complementary goods, thus making it harder for firms that need the complements to compete in the primary market.[49] Finally, tying can be used to deter entry in the complementary and primary goods markets.[50]

II. EMPIRICAL EVIDENCE

Economic theory suggests that conditional pricing can have positive and negative effects on competition. In reality, both types of effects are likely to occur simultaneously, so that the net impact of a given CPP becomes an empirical question. Empirical work is also helpful for establishing the channels through which CPPs affect consumer welfare. As discussed in the preceding section, below-cost pricing is one mechanism that can lead to rival exclusion, but not the only one. Furthermore, even in the presence of foreclosure, consumer welfare may not be harmed. Thus, empirical work that investigates the net impact and the different mechanisms through which CPPs affect competition can inform both the general attitude of the courts to these types of contracts, and the particular framework to be used in analyzing their impact.

While existing case law illustrates the issues raised by CPPs and the methods used to analyze them, it need not be indicative of the competitive effects of CPPs at large because of sample selection bias.[51] For this reason, independent empirical research is

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[47] *Id.* at 598–601. A firm can differentiate a homogenous product by tying it to a product over which it has monopoly power. *Id.* at 601.

[48] An important requirement is that the complement can be used without the monopoly good. Otherwise the monopolist can achieve the same or higher profit without tying, i.e. tying is a feasible but not necessarily profitable monopolization strategy, an example of the "one monopoly rent" critique. Id. at 601–602 and notes 28–29, referencing Michael D. Whinston, *Tying, Foreclosure, and Exclusion,* 80 AM. ECON. REV. 837 (1990).

[49] *Id.* at 603–604. This can also be seen as an example of raising rivals' costs.

[50] *Id.* at 604. Carlton, Greenlee, and Waldman examine the conditions under which a bundled discount is likely to be anticompetitive. These include situations in which rivals face economies of scale, the discounting firm has market power, the price of the tied good increases for consumers that do not buy the tying good, and rivals exiting or facing increased marginal costs because of the bundled discount. *Id.* at 610–16. Greenlee, Reitman, and Sibley examine the impact of bundled discounts when the adjacent market is perfectly competitive. Greenlee, Reitman & Sibley, *supra* note 45, at 1138 and 1148.

[51] The fact that certain instances of conditional pricing end up in court suggests that these cases may be more likely to be anticompetitive, because plaintiffs expend the effort to litigate. Possible selection bias from relying on litigated cases is discussed in Pauline M. Ippolito, *Resale Price Maintenance: Empirical Evidence from Litigation*, 34 J.L. & ECON. 264–65 (1991). Sample selection bias is an independent issue from whether or not courts reach the correct conclusion about alleged anticompetitive effects. There is a tradeoff between ensuring that courts adjudicate a given practice correctly, and having predictable and easily implementable, albeit occasionally incorrect, court decisions. A thorough evaluation of this tradeoff

essential for shedding light on the impact of these practices. Such inquiries, however, face a variety of challenges, which makes them scarce. First, data are often proprietary and difficult to obtain. Second, when data are available, lack of variation in prices and choice sets often hinders demand estimation. Third, supply-side estimation becomes problematic when agents' actions are endogenous or difficult to observe. Finally, the wide variety of contracts and institutional settings makes it difficult to generalize results and extrapolate from one industry or type of contract to another.

Despite these challenges, economists have made progress in empirically assessing the impact of CPPs. Earlier work primarily consists of "reduced-form" analyses, while more recently researchers have used "structural" models, which allow one to conduct counterfactual experiments and study more closely the mechanisms that affect consumer welfare.[52] There have been empirical studies of the effects of CPPs, including loyalty contracts, all-units discounts, and exclusive dealing. We organize the discussion of these studies by industry and other market features that have implications for the effects of CPPs.

A. CONFECTIONS AND BEER

The confections and beer industries are traditional food and beverage manufacturing industries. New product introductions are relatively infrequent, but there are plenty of imperfect substitutes. In the studies we consider, CPPs are offered by dominant firms, and there is evidence that the arrangements may foreclose rivals under certain conditions. However, the estimated impact on consumer welfare is positive in the case of confections, and negative but small in the case of beer.

1. Confections

Christopher Conlon and Julie Holland Mortimer study the efficiency and foreclosure effects of an AUD used by the dominant firm in the vending channel of the confections industry.[53] The main upstream players are Mars, Nestle, and Hershey.[54] The dominant firm, Mars, offers a per-unit rebate on the total quantity purchased in a given fiscal quarter. To qualify for the rebate, a vending operator needs to meet or exceed a customized quarterly purchase target, which applies to the total across all varieties of

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is beyond the scope of this article.

[52] Structural models typically specify the behavior for both firms and consumers. If these behavioral models are correct, the researcher can estimate parameters of the objective functions of firms and consumers that are robust to policy changes. Knowledge of these "primitives" allows the researcher to conduct counterfactual analyses; thus, one can change a particular feature of the world and predict what market outcomes will be. The parameters estimated in reduced-form models may lack policy robustness and need not reveal anything about agents' objective functions, ruling out the ability to explore counterfactual simulations. However, reduced-form analyses do not require explicit behavioral models of agents in the market.

[53] Conlon & Mortimer, *supra* note 14, at 1–2.

[54] *Id.* at 12, 41 tbl.1.

Mars candy, and satisfy a facing requirement, which specifies that he carry at least six Mars products in each vending machine.[55]

The effect of the AUD on firm profits and consumer utility is theoretically ambiguous. On one hand, the AUD requirements can induce the retailer to restock its vending machines more frequently and reduce the likelihood of a stockout.[56] The increased level of effort also increases consumer welfare, as it ensures customers can buy their top choice of candy. The AUD also mitigates downstream moral hazard, which occurs when the retailer lacks the incentive to exert the level of effort optimal for the manufacturer. For example, if a Mars product is out of stock and customers are forced to substitute to a competing product with a higher margin, the retailer will not restock. This leaves Mars worse-off and the retailer and the competing manufacturer better-off. The AUD rebate effectively increases the retailer's margin on the Mars products, creating an incentive for him to restock more frequently.[57]

On the other hand, AUDs can also have anticompetitive effects. The rebate, quantity threshold, and facing requirement can induce a retailer to replace Hershey or Nestle products with Mars candy bars.[58] Such foreclosure reduces the profits of Mars' competitors, but the sign of its impact on consumers is unclear. Whether consumer welfare increases or decreases depends on whether consumers like the Mars product(s) better than the Nestle/Hershey products that are displaced.

An important feature of the setting, as it relates to the impact of the AUD on consumer welfare, is that downstream prices are the same across products and rarely vary over time. The reasons for the lack of variation in prices are technical difficulties in providing change and the fact that service contracts sometimes require the vendor to commit to a price structure over a multi-year period.[59] Thus, the AUD can affect consumer welfare through product availability and assortment, but not through retail prices.

To assess the impact on consumer welfare and firm profits, Conlon and Mortimer combine a model of demand for different candy bars and a model of restocking. The demand model estimates consumer preferences for different products for one retailer, while the restocking model estimates the optimal time between service visits for the retailer, weighing the cost of a visit against the benefits of extra sales from avoiding a stockout.[60] The authors focus on a representative vending machine carrying five base

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[55] *Id.* at 11.

[56] When the vendor restocks a machine, it replenishes all products, not only the ones manufactured by the firm offering the AUD. *Id.* at 3.

[57] The increased level of retailer effort tends to increase the profits of the dominant manufacturer, whose products are likely to stock out first, and decrease the profits of competing manufacturers. However, this may not be true under all circumstances. If the initial frequency of restocking is so low that Mars, Hershey, and Nestle products all stock out between visits, then an increase in the level of retailer effort can increase the profits of all upstream firms. Conlon and Mortimer provide evidence that this does not occur in the market they study, so that increased retailer effort increases Mars profits, while decreasing Nestle and Hershey profits. *Id.* at 23.

[58] *Id.* at 4 and 24–26.

[59] *Id.* at notes 4 and 25.

[60] *Id.* at 18–20.

candy products, and estimate the optimal level of retailer effort and the optimal assortment choice for the last two candy products under different vertical payment structures.[61]

Based on this model, the authors analyze the welfare impact of the AUD. In its absence, the retailer's optimal assortment is to carry two Hershey products, Reese's Peanut Butter Cups and Payday, in addition to the five base products. The motivating factor is that even though demand for the Hershey products is slightly lower than for the Mars replacement products, the profit margin on the Hershey products is higher.[62] When Mars offers the AUD, the combination of the per-unit rebate, the quantity threshold, and the facing requirement induces the retailer to increase his restocking frequency and to stock two Mars products, Three Musketeers and Milky Way, instead of Hershey products in the last two slots. This increases the profits realized by the retailer and Mars, but decreases Hershey's and Nestle's profits.[63] The impact on Hershey's bottom line is especially stark, as it loses distribution for two products. Further analysis reveals that as long as the marginal cost per candy bar is above 13 cents, there is no price above marginal cost that Hershey can charge in the presence of the AUD, which would convince the retailer to carry its products.[64] Thus, there is evidence of foreclosure.[65]

Despite the presence of foreclosure, the authors find that consumers are not harmed by the AUD. Retail prices are assumed fixed, so consumer welfare is affected only by the increased level of effort and by the changed assortment. While more retailer effort has an unambiguously positive effect for consumers (by decreasing the number of stockouts and thus increasing availability), the effect of changes in product assortment can be either positive or negative. In the Conlon and Mortimer setting, consumers are better off when the retailer carries Three Musketeers and Milky Way (Mars products) than when it carriers Reese's and Payday (Hershey products) and maintains the same restocking frequency.[66] Thus, the estimate of the overall effect of Mars' AUD on consumer welfare is positive.[67]

2. Beer

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[61] *Id.* at 20–21. The base products are Snickers, Peanut M&Ms, Twix, Plain M&Ms (owned by Mars), and Raisinets (owned by Nestle).

[62] *Id.* at 24.

[63] *Id.* at 25.

[64] *Id.* at 27 and 45, tbl. 10.

[65] These analyses assume that wholesale prices remain unchanged in the counterfactual world without the AUD. While all three firms can adjust their prices in real life, such adjustments make finding an equilibrium a very difficult problem computationally. The authors conduct an additional analysis in which Hershey's and Nestle's wholesale prices are fixed, but Mars' is not. In this case, Mars lowers its price to undercut Hershey and ensure that the retailer carries two Mars products in the last slots. Once again, Hershey is foreclosed, since it cannot offer a price above marginal cost that would induce the retailer to carry its products. *Id.* at 28–29 and 45, tbl. 12.

[66] *Id.* at 44, tbl. 9.

[67] Price-cost tests are not designed to shed light on product availability and consumer preferences, which in this case determine the effect of conditional pricing on consumer surplus. Therefore, a price-cost test would be uninformative about the competitive impact of the AUD in this setting.

The beer industry is another traditional manufacturing industry dominated by a small number of major producers and many smaller ones. Products are differentiated, but there are many close substitutes. The market is characterized by a three-tier vertical structure composed of brewers, distributors, and retailers.[68] Some of the largest brewers, such as Anheuser-Busch and Miller, enter into exclusive agreements with their distributors.[69] The effects of these arrangements have been studied by three authors. Tim Sass summarizes the theoretical literature on exclusive dealing and uses reduced-form analyses to determine which theory best describes the observed market outcomes.[70] Using structural models, Chia-Wen Chen and John Asker study the welfare effects of exclusive dealing and analyze whether such contracts lead to the foreclosure of rivals.[71]

Sass organizes the rationales for using exclusive dealing into three types: to align its distributors' incentives with those of the upstream firm, to foreclose rivals, or to dampen competition among producers.[72] Each of these theories makes predictions about the effect of exclusivity on prices and output, which the author evaluates using data from a survey of 391 U.S. beer distributors.[73] Reduced-form analyses indicate that exclusive dealing tends to increase the prices charged by brewers and distributors, as well as total quantity sold.[74] At the same time, there is no evidence that exclusivity increases the prices of rival brewers and distributors.[75] These results suggest that efficiency-enhancing motives are an important rationale for the use of exclusive dealing in this industry.[76]

John Asker provides further evidence on the effects of exclusive dealing in the market for beer. He focuses on the Greater Chicago area, in which the exclusive contracts

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[68] In most states, owning firms across different tiers is either expressly prohibited or restricted. *See*, *e.g.*, Chen, *supra* note 18, at note 16, and Asker, *Diagnosing Foreclosure*, *supra* note 18, at 4.

[69] Perhaps the most famous campaign to boost a company's number of exclusive distributors is Anheuser-Busch's "100% share of mind." This campaign was started in 1997, and offered distributors discounts, extended credit, and marketing support in exchange for carrying only Anheuser-Busch products. Even though the contracts between the brewer and its distributors are usually referred to as "exclusive dealing," they do not match the definition used by the DOJ (*supra* note 2). In particular, Anheuser-Busch either did not threaten to or did not carry out a threat to stop dealing with a distributor if it refused the contract, which is supported by the fact that the brewer worked with many non-exclusive distributors even two years after the beginning of the campaign. Thus, Anheuser-Busch's contracts resemble loyalty contracts with a 100% market-share requirement more than exclusive dealing. See, e.g., Sass, *supra* note 18, at 211 and note 9, and Asker, *Diagnosing Foreclosure*, *supra* note 18, at 1 and note 4.

[70] Sass, *supra* note 18.

[71] Chen, *supra* note 18; Asker, *Diagnosing Foreclosure*, *supra* note 18; and Asker, *Measuring Cost Advantages*, *supra* note 18.

[72] Sass, *supra* note 18, at 204–08.

[73] Sass, *supra* note 18, at 214.

[74] *Id.* at 204, 218–19.

[75] *Id*. at 219.

[76] *Id.* at 216, 221–22. Sass' analysis does not include a formal evaluation of the impact of exclusive dealing on consumer welfare. The findings suggest an efficiency-enhancing motivation, but it is unclear whether the net effect of higher prices (if higher wholesale prices are passed on to consumers) and increased quantity will be positive or negative.

used by Anheuser-Busch and some other upstream firms raised concerns about the potential foreclosure of rival brewers.[77] Combining a model of consumer demand for beer and a supply-side model of brewer profit maximization, Asker calculates brewer and distributor marginal costs.[78] The results show that brewers that use exclusive dealing enjoy both a cost and a service advantage over their rivals. These advantages can stem from investments that the brewers make in their exclusive distributors, or from two types of foreclosure: cost-based or promotion-based.[79] The article develops tests for each type of foreclosure. The idea behind the test for cost-based foreclosure is to compare the distribution costs of brewers that do not employ exclusives, in markets with and without exclusive distributors. Assuming distribution costs are identically distributed across markets (in the statistical sense), these brewers will face higher costs of distribution on average in markets with exclusives if foreclosure occurs. Specifically, they will not be able to access the most cost-efficient distributors.[80] By contrast, this will not be the case if brewers use exclusive arrangements to protect investments they have made in their distributors.[81] The test for promotion-based foreclosure is based on the same reasoning. Once implemented, the two tests indicate that cost and promotional advantages are not caused by exclusivity-induced foreclosure, and support the conclusion that exclusive beer distribution in metropolitan settings should not raise antitrust concerns.[82]

Asker also conducts two counterfactual analyses in which exclusive dealing is banned.[83] In the first, the cost advantage from using exclusive dealers is attributed entirely to additional brewer investment in the distributor. A ban on exclusives in such a case eliminates the cost benefits enjoyed by brewers using exclusive dealers. As a result, Anheuser-Busch and Miller's prices to distributors and retailers increase. These increases are passed on to consumers. Overall, Asker estimates that the ban would lead to a 20 percent decrease in consumer welfare, retailer profits, and total brewer profits.[84] In the second counterfactual, the cost advantage is attributed entirely to foreclosure. Removing exclusive dealing leads to lower costs for brewers that do not use exclusives, increasing consumer surplus, retailer profits, and brewer profits by 40 percent.[85] The results indicate the potential benefits that an intervention by the antitrust authority can bring if foreclosure is present. However, given that the test results provide no support to the

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[77] *Id*. at 1. The period under study is 1994.

[78] *Id.* at 8–14 and 19–20 for details on the model and its estimation. Distributors in the model are "passive" in that it is not them, but brewers that set the prices charged to retailers. This feature of the model is supported by the fact that brewers provide strong guidelines to distributors about preferred wholesale prices. *Id.* at 7.

[79] Cost-based foreclosure occurs if a rival cannot access low-cost distributors because of the exclusive arrangement, while promotion-based foreclosure occurs if a rival cannot access the distributors most adept at selling its product.

[80] The distribution of distributor costs will be truncated from the left. *Id.* at 6.

[81] *Id.*

[82] *Id.* at 25.

[83] Asker, *Measuring Cost Advantages*, *supra* note 18, at 40–41.

[84] *Id.* at 43.

[85] *Id.*

foreclosure hypothesis, the author concludes that the most likely outcome of an intervention is a welfare loss.[86]

Chia-Wen Chen offers additional insights into the impact of exclusive dealing by examining the effect of Anheuser-Busch's exclusive arrangements on microbrewers' entry decisions in Northern California markets.[87] This setting allows her to consider foreclosure effects in both metropolitan and rural areas, which complements Asker's results.[88]

Chen's analysis utilizes a model of consumer demand for beer combined with a model of a microbrewer's decision to enter a market, which depends on the expected demand for its product and on the entry decisions of other microbrewers.[89] The demand and entry models recover the impact of exclusivity on the fixed cost and probability of entry. The results highlight two facts. First, the interdependence of firms' entry decisions is important. There are substantial spillover effects of entry into a market: the more microbrewers there are in a market, the easier it is for others to enter, and the harder it is for another firm to deter entry.[90] Strategic interactions are also important because they affect the estimates of the impact of Anheuser-Busch's exclusive arrangements. The article finds that if strategic interactions are not taken into consideration, there are no estimated foreclosure effects of exclusivity. However, when such interactions are accounted for, the results provide a more nuanced picture: foreclosure is present in rural areas, outside of the Bay Area and Sacramento counties.[91] Where a foreclosure effect is present, exclusivity decreases the probability of a specialty beer producer's entry by six percentage points—a substantial effect given a base entry probability of 28 percent.[92] A possible reason for the presence of such an effect is that there are relatively fewer distributors in rural counties than in metropolitan areas.[93]

Despite the finding of foreclosure in some areas, Chen concludes that foreclosing rivals is not the main motivation behind the use of exclusive distributors.[94] Counterfactual simulations show that banning exclusivity does not have a big impact on

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[86] *Id.*

[87] Chen, *supra* note 18, at 47. The period under study is April 2006 to April 2008 (*id.* at 50). Each store that sells beer is considered a separate market (*id.* at 56).

[88] Foreclosure in this setting occurs if a microbrewer cannot obtain distribution at a particular store because of exclusive dealing. This definition differs from Asker's, which focuses on the cost-efficiency or marketing aptitude of distributors.

[89] *Id.* at 48, 51–58 (detailing the model and its estimation). The article studies only the entry decisions of specialty brewers. The large national brewers enter essentially all markets. *Id.* at 51.

[90] *Id.* at 60.

[91] *Id.* at 60–61.

[92] *Id.* at 61.

[93] Thus, the existence of a foreclosure effect does not contradict Asker's article, which finds no foreclosure in Greater Chicago. In that area, it seems that the relative abundance of distributors helps prevent foreclosure. In particular, even though Anheuser-Busch uses eight, and Miller uses five, exclusive distributors, there are 29 other distributors to serve the rest of the brewers. Asker, *Diagnosing Foreclosure*, *supra* note 18, at tbl. 1.

[94] *Id.* at 62.

entry behavior, as at most one additional brewer enters a market.[95] Furthermore, the consumer welfare benefit of the expanded product variety is negligible. Even if all specialty beers are stocked, the potential increase in consumer welfare remains fairly inconsequential.[96] The likely reason for such a limited impact is the presence of many substitute products, and the fact that many of the specialty brewers are fringe firms that cater to a small segment of the market. Moreover, as small players in the market, microbreweries have minimal impact on equilibrium prices.[97] Finally, demand substitution estimates indicate that by foreclosing a specialty brewer, Anheuser-Busch can sell at most 31 additional six-packs per store per quarter, a negligible amount for a firm of its size.[98] Such a strategy to increase sales seems inefficient. Together with the rest of the results, this suggests that foreclosure is more likely to be a side effect rather than the main rationale for using exclusive dealing, and gives credibility to an efficiency-inducing motivation.

Some conclusions can be drawn from the analyses of AUDs in the confections industry and exclusive dealing in the beer industry. First, CPPs can lead to foreclosure of rivals, but need not cause substantial (or any) harm to consumers. Second, the channels through which consumer welfare is affected are retail prices, product availability and variety. Whether the contract affects retail prices (Sass's and Asker's articles) or not (Conlon and Mortimer's and Chen's articles) has implications for consumer welfare. Third, foreclosure is more likely when there are fewer distributors available. Thus, even though Hershey is foreclosed by Mars' AUD from accessing a particular retailer, it may be able to find other distributors in the same area. Fourth, the existence of many close substitutes attenuates the effect of changes in product variety and availability on consumer welfare. For instance, in Conlon and Mortimer's article, the change in product variety actually benefits consumers, while in Chen's article the exclusion of specialty beers decreases consumer surplus minimally.

B. VIDEO RENTALS

The movie industry differs from traditional manufacturing industries in that the product is an information good. Having "consumed" the content of the product, a consumer does not need to obtain it again.[99] This feature forces producers to continually update their products. The result of this constant "churn" is that firms are only as good as their last few products. As their product lines change, firms face different incentives to use conditional pricing.

The use of full-line forcing contracts (FLFs) in the video rental industry and their

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[95] *Id.*

[96] *Id.* In particular, a ban on exclusives will lead to a $15 increase in consumer surplus per store per quarter. The potential increase if all specialty brewers are stocked at a given store is $45 per store per quarter. These results assume exclusive dealing has no procompetitive effects. If it does, banning exclusive dealing may increase consumer welfare less or may even decrease it.

[97] *Id.* at 62, 56, and tbl. 5.

[98] *Id.* at 62.

[99] Ho, Ho & Mortimer, *Video Rental Industry*, *supra* note 15, at 687.

welfare effects are the focus of two articles by Katherine Ho, Justin Ho, and Julie Holland Mortimer.[100] The wide spread of the internet and advances in information technology in the late 1990s, which facilitated tracking transactions from a distance, allowed movie distributors to offer rental stores two new contract types, revenue sharing (RS) and FLF, in addition to traditional linear pricing. FLF and RS contracts are similar, in that they offer lower upfront prices per tape in exchange for a portion of the revenue and a commitment to buy a minimum (or a maximum) number of tapes. The difference between the two contract types is that FLFs offer more generous per-tape prices and revenue-sharing terms in exchange for the rental store's agreeing to carry all movies released by a distributor over a year. This bundling feature, together with the minimum and maximum purchase requirements, is what makes FLFs a form of conditional pricing.[101]

The authors estimate a flexible demand system and a model of retailers' portfolio and contract choices and use it to analyze the competitive effects of FLF contracts.[102] Theoretically, there are three potential effects. An efficiency effect occurs when a FLF contract allows a rental store to keep a higher level of inventory of a given title, increasing its availability to consumers. A market coverage effect is observed when a store signs a FLF contract with a distributor and carries more titles from that distributor than it would otherwise. Finally, a leverage effect is present if a rental store drops titles from one distributor when it enters into a FLF contract with another.[103]

The findings indicate that FLFs have positive effect on consumer surplus.[104] First, the results indicate that the leverage effect is negligible, positive for some distributors and negative for others.[105] This is not obvious and perhaps a bit surprising, as one might expect the costs of holding the tapes of the additional movies taken under the FLF to force rental stores to drop titles by rival distributors. However, the empirical evidence suggests that the advantageous FLF terms generate savings which the stores use to purchase additional titles from competing distributors.[106] Second, the article finds that the market coverage effect is substantial.[107] The bundling aspect of the contract induces stores to carry more movies by an FLF distributor than they would otherwise. The effect is bigger for relatively "weak" distributors as stores carry many of the stronger

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[100] *Id.* and Ho, Ho & Mortimer, *Welfare Effects*, *supra* note 15, at 468.

[101] Ho, Ho & Mortimer, *Video Rental Industry*, *supra* note 15, at 690.

[102] *Id.* at 697–712 gives details about the model and its estimation. The article also analyzes the optimality of the distributors' decisions to offer FLF contracts and finds that, for all but one distributor, their real-world decisions are profit-maximizing. *Id.* at 716-718. Ho, Ho & Mortimer, *Welfare Effects*, *supra* note 15, at 491–96 discusses the welfare implications of using FLF contracts.

[103] Ho, Ho & Mortimer, *Welfare Effects*, *supra* note 15, at 470–71.

[104] We focus on the impact on consumer surplus because it is the quantity relevant for antitrust analysis under U.S. law. However, the effect on total welfare can be negative if the profit losses to a distributor are larger than the gains to rental stores and consumers. This can happen if the distributors that do not offer FLFs in the real world offered FLFs in a counterfactual scenario. In such a case, the losses from lower upfront tape prices may outweigh the gains from selling more titles. *Id.* at 496.

[105] *Id.* at 493–95.

[106] *Id.* at 495.

[107] *Id.* at 493.

distributors' titles even without an FLF.[108] The negligible leverage effect and the strong market coverage effect expand the assortment of titles, which increases consumer surplus.[109]

Third, the analysis also finds that there is a positive efficiency effect, which is driven by the fact that lower upfront per-tape prices paid by stores ameliorate the double marginalization problem.[110] The impact of this efficiency effect is particularly large for titles that a store would have taken on a linear pricing (as opposed to RS) contract in the absence of a FLF contract.[111] Furthermore, the efficiency effect under a FLF, which forces a store to buy all of a distributor's titles, is much larger than what a RS contract can achieve, because stores purchase the most popular titles on linear pricing contracts to avoid sharing the revenue.[112] The increased holdings of inventories induced by FLFs improve the availability of products, which further increases consumer surplus.[113]

A more detailed look at the FLF contract reveals the different channels through which its terms affect consumer welfare.[114] The bundling aspect of the contract is the main factor driving the market coverage effect. By forcing a store to forego taking a title on a linear pricing contract, bundling also strengthens the efficiency effect. The lower upfront price, the revenue-sharing terms, and the minimum purchase requirement also induce firms to buy larger inventories. Finally, the bundling term strengthens the leverage effect, while the lower upfront price and revenue sharing weaken it.

Aside from the contract terms, there are a few other factors that determine the overall competitive effect of FLFs. First, movie distributors introduced the FLF contract to augment existing pricing options available to rental stores rather than to replace them. As long as linear prices remain the same, this likely benefits rental stores and final consumers.[115] Furthermore, linear prices can "discipline" the terms of the FLF contract,

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[108] Indeed, it is these relatively weak distributors that benefit from offering FLF contracts. The stronger movie distributors do not benefit and do not offer FLFs in the real world. *See* Ho, Ho & Mortimer, *Video Rental Industry*, *supra* note 15, at 716.

[109] The effect on consumer surplus is nevertheless constrained by the fact that rental stores are predicted to carry the most popular titles even without FLF contracts. Thus, the additional movies that stores take as a result of the FLF contract tend to cater to smaller audiences with idiosyncratic preferences, which contributes only marginally to the estimate of overall consumer surplus. Ho, Ho & Mortimer, *Welfare Effects*, *supra* note 15, at 496.

[110] *Id.* at 480 and 495. Double marginalization occurs when an upstream firm sells inputs to a downstream firm with a markup and the downstream firm charges final consumers a markup as well. This is suboptimal for the upstream firm, because the downstream firm purchases fewer inputs compared to what a vertically integrated firm would choose.

[111] This is true because the drop in the upfront price is much larger under linear pricing than under RS.

[112] *Id.* at 495.

[113] *Id.* at 496. The authors assume that retailers do not re-optimize their rental prices when they adopt a FLF contract. This assumption rules out impacts on consumer surplus through the retail price channel. *Id.* at 492 and note 24.

[114] *Id.* at 472.

[115] Of course, it is also possible that distributors simultaneously introduce a FLF and raise linear prices to force rental stores to accept the FLF contract. Such a strategy can have anticompetitive effects. A similar situation is analyzed by Greenlee, Reitman, and Sibley, *supra* note 45.

because stores can choose linear pricing if they are not satisfied with the FLF terms.[116] Second, one of the factors driving the negligible leverage effect is the low cost of holding inventory. The authors explain that a store effectively faces no capacity constraints as it can display titles spine-forwards or put additional tapes in a storage room.[117] If this were not so, the cost of storage would be higher, possibly giving rise to a leverage effect that could harm consumers. Lastly, the lack of anticompetitive effect, and the fact that non-dominant distributors offer FLFs, reinforces the idea that such contracts are less likely to harm competition when used by weaker, rather than dominant, players.

C. OCEAN SHIPPING

Ocean shipping differs from all other industries considered in this article by the fact that it enjoys partial exemption from antitrust laws. In particular, ocean carriers are allowed to participate in legal cartels, called "conferences," and to engage in price and quantity fixing.[118] The impact of the conferences' preferred form of pricing, dual-rate loyalty contracts, is analyzed by Pedro Marin and Richard Sicotte.[119] Under this form of conditional pricing, a cartel offers its customers a lower rate for shipping services as long as they do not use the services of non-cartel carriers. If customers do not satisfy the exclusivity requirement, they must pay the higher, non-contract, rate.[120] The use of dual-rate contracts was the focus of a protracted legal and legislative battle that lasted from the late 1950s to the early 1960s. Proponents of the contracts argued that such contracts allowed carriers to provide stable rates and regular shipping services of high quality. Opponents, on the other hand, claimed the main purpose of the contracts was to deter entry and augment cartel members' market power.[121]

The authors identify seven court actions and legislative developments that affected the likelihood of the dual rate contracts remaining legal. If the purpose of the contracts was to prevent entry and raise rates without providing a substantial benefit to customers, any event that calls into question the legality of dual-rate contracts should harm the financial prospects of cartel members and improve them for customers (i.e. exporting firms). This in turn should be reflected in these firms' stock returns. The authors conduct an event study and confirm that the stock indexes of ocean shippers and net exporting industries moved in opposite directions during the seven selected periods.[122] This leads them to conclude that loyalty contracts enhanced market power but

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[116] Ho, Ho & Mortimer, *Video Rental Industry, supra* note 15, at 691.

[117] *Id.* at 696.

[118] Pedro L. Marin & Richard Sicotte, *Exclusive Contracts and Market Power: Evidence from Ocean Shipping,* 51 J. INDUS. ECON. 193 (2013), at 196. Ocean shipping benefits from antitrust exemptions not only in the United States but in European and other countries as well. *Id.* at note 3.

[119] Id. at 193 and 197.

[120] In some cases, customers that break the contract must pay even larger damages. *Id.* at 197.

[121] *Id.*

[122] *Id.* at 205–08. The authors focus on net exporting industries because they surmise that a decrease in rates brought about by a ban on dual-rate contracts should benefit exporting firms but harm importing firms, thus benefiting the industry on net. *Id.* at 202.

did not lead to efficiencies that were passed on to customers.[123] Even though these results may not currently apply to the ocean shipping industry, as the legal framework has been amended since the 1960s, they provide evidence of the potential negative effect of conditional pricing on competition in an industry that enjoys some protection from antitrust laws.

D. SMARTPHONES AND VIDEO GAMES

A distinctive feature of the mobile telecommunications and video games industries is the presence of network effects.[124] This characteristic encourages rivals to compete for larger customer bases. The competition for customers can be a motivating factor in firms' decisions to use conditional pricing.

1. *Smartphones*

Michael Sinkinson provides an inquiry into the competitive effects of exclusive contracts in the telecommunications industry.[125] The focus of his study is on the agreement between AT&T and Apple for the exclusivity of the first-generation iPhone, which attracted a lot of attention when it was announced in 2007. Opponents of the deal were concerned that it would lead to higher prices and limited choice for consumers, while proponents claimed that it would encourage wireless carriers to innovate.[126]

Sinkinson builds a model in which exclusivity allows a carrier to differentiate the handset-network bundles it offers consumers not only through the quality of wireless service but also through product variety.[127] This additional differentiation may allow a carrier to charge a higher markup. Furthermore, if prices are strategic complements, the higher price on the differentiated bundle leads to higher prices on all other bundles in equilibrium.[128] This effect is known as "softening of price competition." If demand for handsets is less sensitive to price than demand for wireless service, softened price competition for wireless service can increase a carrier's profits to such an extent that it can compensate the handset manufacturer for the foregone opportunity to sell to other wireless carriers.[129]

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[123] The authors conduct a similar analysis with net importing industries, whose stock indexes should move in the same direction as those of the ocean shippers. It provides weaker support for the hypothesis that loyalty contracts are used for exclusionary purposes. The authors speculate that a possible reason for this is that the largest firms in net importing industries drive movements in the industry indexes and are also large exporters who might benefit from abolishing dual-rate contracts. *Id.* at 210.

[124] See, e.g., JEAN TIROLE, THE THEORY OF INDUSTRIAL ORGANIZATION 404-409 (1988). Positive network externalities, or network effects, exist when a good or service becomes more valuable as more people use it.

[125] Sinkinson, *supra* note 17, at 1.

[126] *Id.* at 2–3.

[127] *Id.* at 2-4 and 6-7. His model builds on the model developed in Patrick Rey & Joseph Stiglitz, *The Role of Exclusive Territories in Producers' Competition,* 26 RAND J. ECON. 431 (1995).

[128] In game theory, players' actions (usually choice of price or quantity) are strategic complements if an increase by one player leads the other players to increase their strategic variable as well.

[129] Sinkinson, *supra* note 17, at 3–4.

The author estimates a model of consumer demand that accounts for the durable nature of the good and uses it to simulate counterfactual scenarios and measure the effects of exclusivity.[130] The first analysis calculates AT&T's and Verizon's willingness to pay for the exclusive contract by comparing each firm's profits when it obtains exclusive rights to sell the iPhone to its profits when its rival obtains the exclusive rights.[131] The outcome is that AT&T has higher willingness to pay only after equilibrium price adjustments are taken into account, which underscores the importance of modeling the equilibrium price changes. The results are driven by the fact that AT&T offers lower quality service than Verizon, and without the iPhone it attracts fewer customers and has to cut its monthly service fees.[132] At the same time, Verizon's higher quality network insulates it from price competition and makes it less dependent on the iPhone in the counterfactual. Thus, exclusivity raises retail prices and limits consumer choices, which decreases consumer welfare. Restricting choice by making the iPhone available on only one carrier harms consumers that switch to AT&T to get the iPhone by forcing them to pay early termination fees (if they are on two-year contract) and by reducing the quality of their network (if they switch from a carrier with a higher-quality network). Non-AT&T consumers who would have purchased the iPhone from their carrier in the absence of the exclusive deal are also harmed by being constrained to using a less preferred handset.[133]

Another counterfactual reveals that manufacturers of Android-based smartphones would make approximately $1.4 billion less in profits if the iPhone were available on all carriers. [134] This demonstrates that the exclusive contract between AT&T and Apple created strong incentives for entry into the smartphone market. The article does not estimate the net welfare effect of exclusivity because the change in the likelihood of entry brought about by the exclusive contract cannot be estimated given the available data.[135] However, the counterfactual analyses demonstrate that exclusivity can generate powerful competing forces by restricting choice and softening price competition, which harms consumers in a static setting, and by creating entry and innovation incentives, which benefits consumers in a dynamic setting.[136]

2. *Video Games and Consoles*

Robin Lee conducts another study of the effects of exclusivity in an industry with

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[130] *Id.* at 4, and 16–23 (detailing the model and its estimation).

[131] *Id.* at 25.

[132] *Id.* at 25–6.

[133] The exclusive dealing arrangement between Apple and AT&T can be a seen as a way to raise rivals' costs by foreclosing their access to an important input, which limits their ability to differentiate the network-handset bundles they offer. However, the existence of substitute handsets and the ability of the other carriers to differentiate their offerings through exclusive contracts of their own limits the impact of AT&T's exclusivity.

[134] *Id.* at 26–27.

[135] *Id.* at note 10.

[136] *Id.* at 29.

network effects, video games.[137] The industry is comprised of console manufacturers, who produce the platform needed to play games, developers, who create games, and publishers, who bring games to market.[138] A title can become exclusive to a particular console as a result of vertical integration, a contract, or a voluntary decision by the developer.[139] The author focuses specifically on the sixth generation of the industry during which Sony released PlayStation 2 (PS2), the successor to the highly successful PlayStation, while Nintendo and Microsoft entered the market a year later with their own platforms, Game Cube (GC) and Xbox (XB).[140] This setting allows the author to empirically analyze the possible pro- and anticompetitive effects of exclusivity. In the context of the video game industry, theory predicts that exclusive arrangements can limit consumer choice and lead to entry deterrence and rival foreclosure, but also that they can encourage investment, solve coordination problems, and help entrants gain a foothold in an established industry.[141]

The author estimates a model of dynamic consumer demand for both video games and consoles, which takes into account the fact that consumers are forward-looking and platforms are durable goods; and a model of hardware adoption by software developers, who weigh the costs and benefits of exclusivity and multihoming.[142] Modeling both sides of the market allows agents to react to past and future actions of other agents, which is an important feature of consumer and firm behavior. Based on these models, the author analyzes the set of market outcomes that would have been obtained in the absence of exclusive arrangements. The counterfactuals indicate that a ban on exclusives benefits the incumbent firm at the expense of entrants, while also increasing consumer surplus.[143] Hardware and software sales increase by 7 percent and 58 percent, respectively, both driven by higher PS2 and lower GC and XB sales of consoles and titles. Consumer welfare increases by $1.5 billion.

Two facts are driving the counterfactual results. First, in the real world GC and XB have a higher-quality stock of exclusive titles than PS2.[144] As a result, PS2 benefits more by gaining access to its rivals' exclusive titles than by retaining exclusivity over its

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[137] Lee, *supra* note 16, at 2960.

[138] *Id.* at 2965.

[139] Video games created by a vertically integrated entity are called "first-party" titles, while those produced by independent developers are called "third-party" titles. In some cases, the console manufacturer and the developer sign a contract that makes a title exclusive to the particular console in exchange for financing. In other cases, the developer voluntarily makes the title exclusive if the "porting" costs of making the title compatible with other platforms ("multihoming") exceed the benefits of reaching a wider audience. *Id.*

[140] *Id.* at 2966. Over that year Sony sold 5 million PS2 consoles.

[141] *Id.* at 2961.

[142] *Id.* at 2969–83 (detailing the model and its estimation).

[143] *Id.* at 2992–93 and tbl.8. We focus on the results from the counterfactual in which all titles are free to re-optimize the set of consoles to support. In addition, Lee considers two other counterfactuals as well: one in which PS2 loses its exclusive titles while GC and XB keep theirs; and another one in which all titles are forced to be compatible with all consoles. In all three counterfactuals, banning exclusives increases consumer welfare.

[144] *Id.* at 2993.

own. Second, as the incumbent, PS2 has a larger installed base that attracts developers who want to reach a wider audience.[145] As almost all hit titles become available for PS2 following the ban on exclusives, the incentive to purchase competing consoles disappears. The two factors together lead to the large increase in sales of PS2 consoles and titles at the expense of GC and XB. The same mechanisms also drive the gains in consumer surplus. PS2 owners get access to a much wider range of hit titles, while most consumers who own multiple platforms can play their preferred games on PS2 without the need to purchase additional consoles.[146]

The telecommunications and video game industries illustrate how firms can use exclusivity to differentiate themselves and expand their customer base. In particular, exclusive arrangements can lead to higher prices and limited choice, while also creating entry incentives and helping entrants compete against an incumbent. Evaluating the impact of such conduct is particularly challenging, as it requires weighing short-term harm against possible long-term benefits to consumers.

V. CONCLUSION

The reviewed empirical articles demonstrate the range of competitive effects that CPPs can have. Full-line forcing contracts are estimated to have a positive effect on consumer welfare in the video rental industry. In the confections industry, all-units discounts can have exclusionary effects, but they also motivate the downstream firm to exert more effort, and may benefit consumers through better availability and variety of products. Exclusive dealing can similarly foreclose rivals in the beer industry, but only in rural areas where there are presumably fewer available distributors. Despite the presence of foreclosure, this conduct has a very small negative impact on consumer welfare and is likely to have an important efficiency-inducing motivation. The impact of exclusivity is more difficult to evaluate in the video game and smartphone industries, because it leads to short-run consumer harm while simultaneously creating entry incentives that can have beneficial effects in the long run. Finally, loyalty contracts can have anticompetitive effects as suggested by the case of ocean shipping.

The empirical work reveals not only the variety of possible effects, but the variety of CPPs as well: AUDs, FLFs, dual-rate contracts, and various exclusive arrangements are a small sample of all contracts used in the real world. A closer look at the contractual terms shows that the various aspects of these contracts may have different potential to induce anticompetitive effects. In the confections industry, for instance, an unconditional rebate cannot profitably exclude Hershey. However, once quantity or facing requirements are included, an AUD can lead to foreclosure and be profitable for Mars. Furthermore, a quantity threshold may provide a more flexible way to influence the amount of effort

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[145] *Id.*

[146] The counterfactual analysis is "partial," which means that the quality and set of products are kept fixed, and that platform manufacturers are not strategic. Modeling all these decisions is computationally infeasible, but the author conducts robustness checks in which he varies the price of consoles, the quality of first-party titles, and the magnitude of the porting costs. The results indicate that the prohibition of exclusives is still detrimental to entrants and beneficial to consumers, although consumer welfare gains are substantially diminished in some cases. *Id.* at 2994–95.

exerted by the retailer. In the video rental industry, the lower upfront price, revenue sharing format, and minimum purchase requirement of the FLF induce rental stores to purchase larger inventories, increasing product availability and consumer welfare. The bundling aspect of the contract also benefits consumers by strengthening the market coverage and efficiency effects, but has the potential to make stores drop competing distributors' titles and thus lead to foreclosure.

The reason why the FLF used in the video rental industry has no leverage (or foreclosure) effect is that rental stores face very low costs of holding additional tapes. Similarly, Mars can partially exclude Hershey because vending machines have only a limited number of slots. The reviewed articles reveal other common features of the markets that influence whether CPPs have a negative effect on competition. For example, the studies of the confections, beer, and video rental industries confirm that conditional pricing is of greater concern if it is exercised by a dominant firm. In particular, the contracts used by Mars and Anheuser-Busch show potential to exclude rivals, while the ones used by relatively weak movie distributors do not. The existence of many substitute products is another characteristic that reduces the likelihood of consumer harm. The study of exclusive beer distribution in Northern California shows that foreclosed brands add little to consumer utility if they are included in consumers' choice sets. Lastly, the beer industry articles suggest that distribution foreclosure is more difficult when there are many active distributors in the market, as is the case in metropolitan areas.

This list of market characteristics that affect the likelihood and degree to which CPPs can have anticompetitive effects is by no means exhaustive. Rather, it points out only some of the market features that should be considered when evaluating the impact of conditional pricing. The multiplicity of relevant market characteristics and the wide variety of contractual terms make reaching general conclusions about the competitive effects of CPPs very challenging, and suggest that analyses of the effects of CPPs should take into account the specifics of each case.