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# TYING, BUNDLED DISCOUNTS, AND THE DEATH OF THE SINGLE MONOPOLY PROFIT THEORY

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Einer Elhauge\*

*Chicago School theorists have argued that tying cannot create anticompetitive effects because there is only a single monopoly profit. Some Harvard School theorists have argued that tying doctrine's quasi-per se rule is misguided because tying cannot create anticompetitive effects without foreclosing a substantial share of the tied market. This article shows both positions are mistaken. Even without substantial tied foreclosure, tying by a firm with market power generally increases monopoly profits and harms consumer and total welfare, absent offsetting efficiencies. Current doctrine is thus correct to require tying market power and a lack of offsetting efficiencies, but not substantial tied foreclosure. Doing so does not really apply a quasi-per se rule, but rather correctly identifies the conditions for the relevant anticompetitive effects. However, this rule should have an exception for products with a fixed ratio that lack separate utility, because those two conditions in combination generally negate anticompetitive effects absent substantial tied foreclosure.*

*Bundled discounts can produce the same anticompetitive effects as tying without substantial tied foreclosure, but only when the unbundled price exceeds the but-for price. Thus, when the unbundled price exceeds the but-for price, bundled discounts should be condemned based on market power absent offsetting efficiencies, with the same exception for products with a fixed ratio that lack separate utility. When the unbundled price does not exceed the but-for price, bundled discounts should be condemned only when there is substantial foreclosure or direct proof of anticompetitive effects. Alternative tests for judging bundled discounts, such as comparing the effective price to cost, are not only underinclusive, but perversely exempt the bundled discounts with the worst anticompetitive effects.*

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\* Petrie Professor of Law, Harvard Law School. I am grateful for helpful comments from Alden Abbott, Max Blecher, Michael Boudin, Anu Bradford, Dennis Carlton, Eric Cramer, Richard Dagen, David Evans, Patrick Greenlee, Warren Grimes, Andrei Goureev, Kevin Hunt, Jon Jacobson, Bob Lande, Douglas Melamed, Justin Nelson, Mark Popofsky, Richard Posner, Mark Ramseyer, Kenneth Reinker, Tom Rosch, Carl Shapiro, Chris Sprigman, and Willard Tom.

## I. OVERVIEW

Tying law has for too long been in the thrall of the single monopoly profit theory. This theory helped talk generations of students and judges out of the usual intuition that tying can be anticompetitive. Using simple examples, like a monopolist in nuts who tied bolts to them, the theory showed that such tying could not increase any monopoly profits the firm already earned in nuts, and thus suggested tying must reflect real efficiencies. Its analysis was powerful and influential, but turns out to be wrong in most cases.

The single monopoly theory is valid only when, as in the nuts and bolts example, five restrictive assumptions hold. (1) The products are used in a fixed ratio. (2) Buyer demand for them has a strong positive correlation. (3) Each purchaser buys at most a single unit of the tying product. (4) The competitiveness of the tied market is fixed. (5) The competitiveness of the tying market is fixed.

Relaxing those assumptions invalidates the theory. Indeed, as detailed below, each relaxation of an assumption reveals a distinctive way in which tying can increase monopoly profits. (1) With variable ratios, tying can profitably allow price discrimination among buyers of the tying product. (2) Without strong positive demand correlation, tying can profitably permit price discrimination across buyers of both products. (3) If buyers purchase varying amounts of the tying product, tying can profitably extract consumer surplus from individual buyers. (4) Without fixed tied market competitiveness, tying can impair tied rival competitiveness in ways that increase tied product prices and profits. (5) Without fixed tying market competitiveness, tying can increase the degree of tying market power. Because the last two effects require foreclosing a substantial share of the tied market, let's call them the foreclosure effects. Because the first three effects instead require only tying market power, let's call them the power effects.

Although each of these effects has been recognized before, their combined implication has not been: which is that single monopoly profits are the exception, not the rule. At least one of these five profit-increasing effects applies to the lion's share of ties by firms with market power. The single monopoly profit theory does not hold with or without a fixed ratio, with or without a strong positive demand correlation, and with or without substantial tied foreclosure. It takes a combination of a fixed ratio, strong positive demand correlation, *and* a lack of substantial tied foreclosure for the single monopoly profit theory to hold. One thus cannot justify the Chicago school premise that tying by a firm with market power must reflect efficiencies. I will also show that

all five effects generally harm consumer welfare, which is the governing antitrust standard, and usually harm total welfare, even if one measures total welfare ex post to the tying, and even more likely once one considers the ex ante costs of obtaining market power.

Understanding these five effects solves many longstanding doctrinal puzzles. One basic puzzle has been why tying doctrine requires proving market power in the tying product, rather than proving a substantial foreclosure share or effect in the tied market. Some Harvard School theorists have thought this doctrine was misguided because they only recognized the anticompetitiveness of the two foreclosure effects. However, Supreme Court caselaw explicitly holds that the three power effects are anticompetitive. Given that premise, tying doctrine has the elements precisely right because the three power effects require tying market power, but not a substantial tied foreclosure share or effect. So understood, tying doctrine is not a quasi-per se rule at all, but rather a doctrine that correctly states the elements necessary to infer the first three anticompetitive effects under standard rule of reason analysis. The significance of tying doctrine is instead the holding that those three power effects count as anticompetitive.

Critics of tying doctrine thus ultimately must rely on a claim that the Supreme Court has been wrong to hold that these three power effects are anticompetitive. On the first effect, they argue that price discrimination among tying product buyers should not count as an anticompetitive effect because (1) the prohibition on tying just makes firms use less efficient forms of direct price discrimination, and (2) imperfect price discrimination has ambiguous effects on consumer welfare but is likely to increase total welfare. Neither ground is valid. Direct price discrimination is often not feasible, and when feasible would usually be more efficient. As for welfare effects, critics reason by analogy that because perfect price discrimination increases total welfare, tying that leads to imperfect price discrimination is likely to do so as well. But that analogical claim finds little support in the economic literature, which proves that imperfect price discrimination decreases both total and consumer welfare if either the buyers are intermediaries or the demand curves are not unbalanced in a particular direction. Further, to the extent the analogical claim were valid, the same logic indicates that imperfect price discrimination likely decreases consumer welfare. Thus, even if the analogical claim were right, this critique ultimately rests on a claim that total welfare should be favored over consumer welfare, a claim that conflicts with current antitrust policy and would require sweeping changes to antitrust law far beyond changing tying doctrine.

As to the second and third effects, tying doctrine critics simply assume without analysis that the above arguments extend to those power effects because they can be understood as forms of price discrimination. However, notwithstanding this conceptual similarity, the effects and policy implications are quite different. For price discrimination across buyers with different demand, direct price discrimination is generally impossible because the whole purpose of bundling in such cases is to exploit the lack of strong positive demand correlation to allow price discrimination even when firms can neither assess buyer valuations nor prevent arbitrage. Further, tying that achieves such price discrimination across products generally reduces consumer welfare and has ambiguous effects on total welfare. Likewise, extracting individual consumer surplus (1) is less likely to be achievable through direct discrimination, (2) has unambiguously negative effects on consumer welfare; (3) lowers total welfare in the typical tying case; and (4) has worse distributive effects.

Some critics have recently shifted to the different argument that increasing monopoly profits is desirable, even if it reduces ex post total welfare, because it increases investment in the innovation that creates market power, and thus increases total welfare measured ex ante. However, the economic literature shows that competition to obtain market power positions will incur ex ante costs that dissipate expected monopoly profits. Thus, conduct that converts consumer surplus into monopoly profits will actually produce excessive research investments and reduce ex ante total welfare. Indeed, because any additional monopoly profits largely wash out ex ante, power effects that reduce consumer welfare will, even if they increase ex post total welfare, generally reduce overall total welfare.

These are contestable policy issues, but Supreme Court caselaw can be understood as resolving them in favor of the conclusions that these three power effects are anticompetitive. However, a rule that focuses on tying power rather than tied foreclosure should be limited to cases where the assumptions necessary for the three power effects hold. In cases involving products that both (1) have a fixed ratio and (2) lack separate utility, then the three power effects are generally not possible and there should be an exception to the quasi-per se rule. As I will show, this exception helps explain why the factual premises of certain justices led them to be skeptical of the tying claims in *Jefferson Parish* and *Kodak*. It also explains the *Microsoft* holding that substantial tied foreclosure had to be shown for the tying claim there. However, my recommended exception differs from deeming products meeting these two conditions to be a single product, because finding a single product can also oust rule of reason review. It also differs from an exception for technological tying, whose fit

with the relevant conditions is both overinclusive and underinclusive. Understanding the effects that animate tying doctrine also, I will demonstrate, clarifies various issues about damages, market definition, foreclosure, and antitrust injury in tying cases.

Bundled discounts have the same power effects as tying when the unbundled price exceeds the but-for price for the product over which the firm has market power. The terminology bundled “discounts” is actually misleading in these situations because it wrongly implies there is a true discount from the but-for price (i.e., the price that would have been charged “but for” the bundling). Instead, a bundled “discount” just means there is a price difference between what is charged buyers who comply with the bundling condition and those who do not. If the unbundled price exceeds the but-for level, then the price difference we call a “discount” is really a penalty imposed on buyers who refuse the bundle.

Whether or not the unbundled price exceeds the but-for price, bundled discounts can have the same foreclosure effects as tying when a substantial market share is foreclosed. Bundled loyalty discounts can also produce an anticompetitive effect that tying doesn’t produce – affirmatively discouraging discounting even when rival efficiency is not impaired – though this effect generally also requires proof of substantial foreclosure or impact in the affected market.

Thus, when the unbundled price exceeds the but-for price, bundled discounts should be treated like ties, which means they should be condemned based on market power absent offsetting efficiencies, unless the products have a fixed ratio and lack separate utility. Otherwise, bundled discounts should be condemned only if substantial foreclosure or effects are proven. I show below that this test is preferable to alternative tests that are based on whether (1) the bundled or effective price exceeds cost, (2) a high proportion of buyers accept the bundle, or (3) the unbundled price exceeds the pre-bundle price.

## **II. THE DEATH OF THE SINGLE MONOPOLY PROFIT THEORY**

The single monopoly profit theory holds that a firm which has a monopoly in one product cannot increase its monopoly profits by using tying to leverage itself into a

second monopoly in another product.<sup>1</sup> The classic example was a monopolist in nuts who tried to tie nuts to bolts. Suppose nuts and bolts each cost 10 cents to make, and thus would be priced at 10 cents each if the markets for both were competitive. Suppose further that the profit-maximizing price for a combined monopolist in both nuts and bolts would be 40 cents for the nut-bolt set that consumers need. If we have a nut monopolist and a competitive market in bolts, then the nut monopolist would simply charge 30 cents for nuts, with the customers paying 10 cents for bolts on a competitive market to arrive at 40 cents for the nut-bolt set. The nut monopolist would earn monopoly profits of 20 cents per set used. It would earn no additional monopoly profits by tying its sale of nuts to bolts, because if it did so the monopoly price for the nut-bolt set would be 40 cents and the cost 20 cents, leaving it with profits of 20 cents a set. It might try to charge a supracompetitive price of 11 cents for the tied bolts, but if it did so it would have to offer a corresponding 1 cent discount from the nut monopoly price of 30 cents, charging 29 cents for nuts, because the profit-maximizing price of 40 cents for the set is not altered by the tie. In fact, if a competitive market were more efficient and would lower the price of bolts down to 5 cents, the monopolist in nuts would prefer that, because then it could sell nuts for 35 cents and earn 25 cents a set.

Where it holds true, this single monopoly profit theory indicates that a firm would use tying only if there were some efficiency to doing so. It also suggests that a buyer would accept a tie only if the discount on the tying product was at least equal to the supracompetitive premium on the tied product, so the tie cannot injure buyers. This implies that, where the single monopoly profit theory holds, the correct legal standard should be a rule of per se legality.

However, the model indicating a single monopoly profit depended on several key assumptions: (1) fixed product ratio; (2) strong positive demand correlation; (3) single tying unit buyers; (4) fixed tied market competitiveness; and (5) fixed tying market

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<sup>1</sup> See ROBERT BORK, THE ANTITRUST PARADOX 372-375, 380-381 (1978); RICHARD A. POSNER & FRANK H. EASTERBROOK, ANTITRUST 802-803 (2d ed. 1981); RICHARD POSNER, ANTITRUST LAW: AN ECONOMIC PERSPECTIVE 198-199 (2d ed. 2001); Ward S. Bowman, Jr., *Tying Arrangements and the Leverage Problem*, 67 YALE L.J. 19, 20-23 (1957); Aaron Director & Edward H. Levi, *Law and the Future: Trade Regulation*, 51 NW. U. L. REV. 281, 290-92 (1956); Benjamin Klein, *Tying*, in 3 THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 630, 630-631 (1998); Richard A. Posner, *The Chicago School of Antitrust Analysis*, 127 U. PA. L. REV. 925, 926 (1979).

competitiveness. As the economic literature shows, different results are reached if one relaxes these narrow assumptions. Indeed, each relaxation of one of these assumptions produces a distinctive profit-increasing effect.

Further, these effects are in an important respect mutually reinforcing. In particular, the first three effects mean that tying can be profitable without substantial foreclosure of the tied market. This means that tying which does cause foreclosure effects need not require (as is often assumed) any short-term sacrifice of profits nor any commitment to engage in unprofitable conduct to achieve the foreclosure.

### *A. Price Discrimination Among Buyers of Tying Product*

As Professor Bowman first demonstrated, tying can profitably allow price discrimination among buyers of the tying product if the tied product is a complement that is used with the tying product in a variable ratio.<sup>2</sup> Suppose a firm has market power over some capital product that is used with a consumable product: for example, printers that are used with ink cartridges. Suppose further that usage of the consumable varies for different buyers in a way that positively correlates to the value of the capital product to each buyer. For example, buyers who use more cartridges use their printers more often, and thus usually derive more value from their printers. If so, the firm could lower the price for its printer down to marginal cost, contingent on buyers taking all their cartridges from the seller, with the cartridge price set well above marginal cost. Then buyers who use more cartridges will pay more, allowing the firm to price discriminate among buyers of printers. This may be more effective than direct price discrimination if the firm could not otherwise tell how much buyers likely value their printers or could not prevent low-value buyers who bought printers cheaply from reselling them to the high-value buyers. It could also be more feasible than metering usage if printer use is harder to monitor than cartridge purchases. If so, this form of tying would increase monopoly profits, even if it results in no significant foreclosure share in the cartridge market.

Although Professor Bowman's theory assumed the tied products were complements used with the tying product, the theory is equally applicable whenever tied product demand is positively correlated with tying product demand. Being complements is

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<sup>2</sup> Bowman, *supra* note , at 23-24, 33.

just one possible way to have positively correlated demand. For example, suppose that buyers who most value luxury cars also tend to have the greatest desire for cappuccinos. Then a firm with market power in luxury cars could price discriminate if it could tie luxury cars to the purchase of cappuccinos at an above-market price.<sup>3</sup> Those who drink more cappuccinos would effectively pay more, and they would be willing to do so because they are the same buyers who value the luxury car more. It is not necessary that they use their cappuccinos with their luxury cars.

Perfect price discrimination, which charges each buyer precisely how much they value a product, reduces consumer welfare compared to a uniform monopoly price, but increases total welfare if one includes the welfare benefit to the seller of earning additional monopoly profits.<sup>4</sup> However, tying can achieve only imperfect price discrimination by effectively charging different tying product buyers different prices that may come closer to buyer valuations but won't perfectly match them. Such imperfect price discrimination reduces both consumer and total welfare if demand is linear.<sup>5</sup> The reason is that such imperfect price discrimination has no net effect on total output but reallocates some of that output to buyers who put less value on it. Even without linear demand, imperfect price discrimination reduces both consumer and total welfare unless the demand curve shapes are unbalanced in a particular direction.<sup>6</sup> It also reduces both forms of welfare if, as with almost all actual ties, the buyers are intermediaries.<sup>7</sup>

### ***B. Price Discrimination Across Buyers of Both Products***

Tying can also profitably permit price discrimination across buyers of both products. This is true even if the products are used or bundled in a fixed ratio. Indeed, Professor Stigler first suggested this theory to explain the Supreme Court's decision in *Loew's*,

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<sup>3</sup> This particular tie would probably be too difficult to monitor, but it illustrates the conceptual point that what matters is demand correlation, not joint usage.

<sup>4</sup> At a uniform monopoly price, buyers who value the product above that price enjoy consumer surplus. Perfect price discrimination transfers all that consumer surplus to the seller and thus reduces consumer welfare. However, perfect price discrimination increases total welfare because it eliminates all deadweight loss by producing all output that some buyer values above cost.

<sup>5</sup> See *infra* IV.A.

<sup>6</sup> *Id.*

<sup>7</sup> *Id.*

which banned fixed bundles of movies.<sup>8</sup> Although Professor Stigler assumed demand for the two products was negatively correlated, later work has shown the theory also applies when demand is positively correlated unless the correlation is strong.<sup>9</sup> This theory does, however, require some degree of market power in both products.<sup>10</sup>

To illustrate, consider the following situation. A firm has market power in both products *A* and *B*, each of which has a constant marginal cost of \$0. There are 200 buyers whose reservation prices for *A* range from \$0 to \$200, as do their reservation prices for *B*. But their demands for *A* and *B* are negatively correlated, so that a buyer who values *A* at \$200 values *B* at \$0, and vice versa, and the sum of each buyer's valuation of *A* and *B* always equals \$200. Without bundling, the firm would maximize profits by pricing *A* and *B* each at \$100, and 100 buyers would buy each. The monopoly profits would be a total of \$20,000. All the buyers who value the products above the monopoly prices would get positive consumer surplus. For each product, the aggregate consumer surplus would be  $\frac{1}{2}(\$100)(100) = \$5,000$ , for a combined consumer surplus of \$10,000.

Now suppose the firm instead ties *A* and *B* by selling them only in a bundle for \$200. All 200 buyers would buy the bundle, and monopoly profits would increase to \$40,000. Now no buyer would enjoy any consumer surplus, so the tie results in a consumer welfare loss of \$10,000. In effect, the tie allows the firm to exploit the lack of strong positive demand correlation to price discriminate among buyers even when it doesn't know the individual buyer valuations and cannot prevent resales among them. Such tying can clearly both increase monopoly profits and harm consumer welfare.

More generally, assuming a normal distribution of buyer valuations, tying always

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<sup>8</sup> See Stigler, *United States v. Loew's Inc.: A Note on Block Booking*, 1963 Sup.Ct.Rev. 152.

<sup>9</sup> See Adams & Yellen, *Commodity Bundling and the Burden of Monopoly*, 90 Q.J. ECON. 475, 485 (1976); R. Preston McAfee et al., *Multiproduct Monopoly, Commodity Bundling, and Correlation of Values*, 104 Q.J. ECON. 371, 372-373, 377 (1989); Richard Schmalensee, *Gaussian Demand and Commodity Bundling*, 57 J. BUSINESS S211, S220 (1984). If the strength of demand relative to cost is high enough, then bundling can increase monopoly profits for anything other than a perfect positive correlation. *Id.* at S215, S220. For lower demand to cost ratios, strong but imperfect positive correlations may defeat this strategy.

<sup>10</sup> See Richard Schmalensee, *Commodity Bundling by Single-Product Monopolies*, 25 J. L. ECON. 67, 67-69 (1982); Nalebuff, *Bundling as a Way to Leverage Monopoly*, Yale Working Paper No. ES-36, at 5 (Oct. 2004).

decreases consumer welfare absent perfect positive demand correlation.<sup>11</sup> Such tying also decreases total welfare if the strength of demand relative to cost is not high, but increases it otherwise.<sup>12</sup> The mixed efficiency effects result because such tying can increase efficiency by increasing total output, but can also decrease efficiency by reallocating some output to buyers who value it less than those who would have gotten it without tying and might even value one product at less than it costs to make.<sup>13</sup>

### *C. Extracting Individual Consumer Surplus*

As Professor Burstein first pointed out, if buyers buy varying amounts of the tying product, tying can extract individual consumer surplus.<sup>14</sup> The basic reason is that, even at a monopoly price for the tying product, each multi-unit buyer enjoys some consumer surplus. A tying firm can expropriate that consumer surplus by allowing buyers to purchase the tying product at the monopoly price only if buyers agree to purchase their needs of some tied product at supracompetitive prices. Each buyer will agree as long as the burden of paying supracompetitive prices on the tied product is less than the consumer surplus enjoyed by buying the tying product at the monopoly price.

The reason each buyer enjoys consumer surplus even at the monopoly price is as follows. Generally, buyers who buy multiple units of a product value the first unit they purchase more than the second unit, which they value more than the third, and so forth, because they use the first units to meet their greatest needs first. In other words, buyers who buy multiple units generally get declining marginal utility from additional units, giving each individual buyer a downward sloping demand curve. Thus, at the monopoly price, each buyer will value the last (marginal) unit it purchases at that monopoly price, but will value all the other (inframarginal) units more than that monopoly price. The difference between how much it values those inframarginal units and the monopoly price will be the consumer surplus enjoyed by each buyer.

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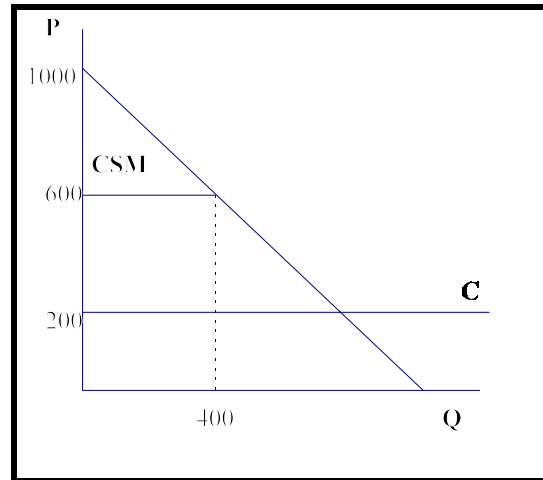
<sup>11</sup> Schmalensee, *supra* note , at S221-222, S229.

<sup>12</sup> *Id.* at S221-S222, S229.

<sup>13</sup> Adams & Yellen, *supra* note , at 482-483, 491-492.

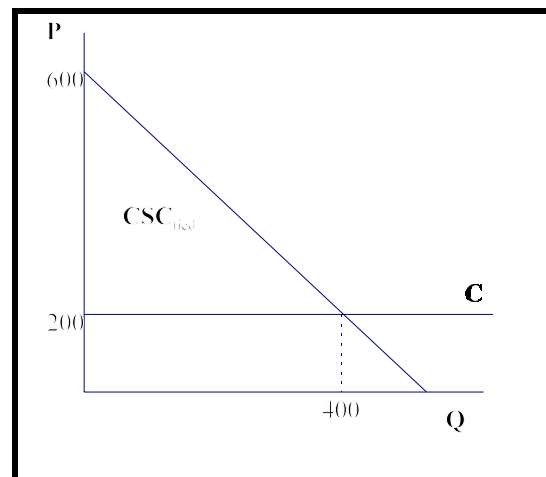
<sup>14</sup> See M.L. Burstein, *The Economics of Tie-In Sales*, 42 REVIEW OF ECONOMICS & STATISTICS 68, 68-69 (1960); M.L. Burstein, *A Theory of Full-Line Forcing*, 55 NORTHWESTERN LAW REVIEW 62, 73-91 (1960).

Suppose, for example, the buyers are all businesses that buy printers they use in the conduct of their business. Each business values the first printer at \$1000, but values each subsequent printer \$1 less than the prior one because the convenience of having an additional printer diminishes the more printers it already has. The printers cost \$200 each to make. A monopolist in printers will thus maximize profits by charging a monopoly price of \$600. At that price, each buyer will buy 400 printers and still enjoy a consumer surplus at the monopoly price (CSM in Figure 1) equal to the area of the triangle, which is  $\frac{1}{2}(\$1000-\$600)(400) = \$80,000$ . Trying to charge any higher price for printers would lower the monopolist's profits. Yet the monopolist is leaving money on the table because each buyer enjoys some consumer surplus at the monopoly price. Nor can the monopolist obtain this consumer surplus by price discriminating between buyers because all the buyers are the same.



**Figure 1. Individual Consumer Surplus at Tying Product's Monopoly Price**

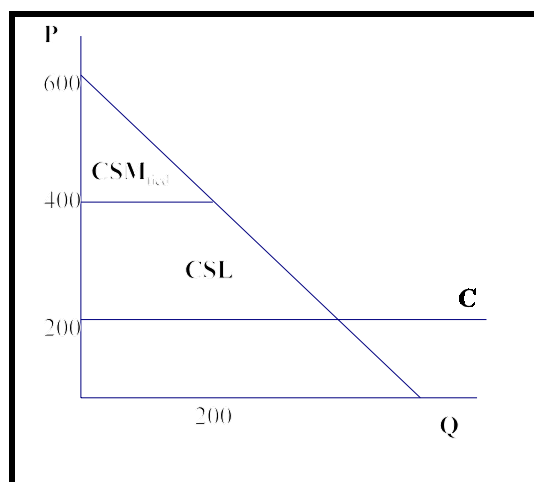
Now suppose that the printer monopolist engages in requirements tying by refusing to sell its printers at the monopoly price to buyers who do not agree to buy all their scanner requirements from the printer monopolist. To illustrate, take a case where each buyer values the first scanner it buys at \$600, values each subsequent scanner \$1 less, and scanners cost \$200 to make. Assume also that scanners are a competitive market and that the foreclosure of the scanner market is small enough that rival competitiveness is not affected in the scanner market. Thus, buyers who reject the tie will buy scanners for the competitive price of \$200. The consumer surplus at the competitive price for the tied product ( $CSC_{\text{tied}}$  in Figure 2) would be the area of that triangle, which is  $\frac{1}{2}(\$600-\$200)(400) = \$80,000$ . Without any tying, then, each buyer would enjoy a total of \$160,000 in consumer surplus, \$80,000 from buying the



**Figure 2. Individual Consumer Surplus in Tied Market Without Tying.**

tying product at its monopoly price and \$80,000 from buying the tied product at its competitive price.

With tying, the printer monopolist refuses to sell its printers even at the monopoly price unless buyers agree to buy scanners from it at the monopoly price of \$400. Buyers who reject the tie would thus get \$80,000 in consumer surplus from buying scanners at the competitive price, but would lose all consumer surplus in the printer market. Buyers who accept the tie would instead get consumer surplus from buying printers at the monopoly price (\$80,000) plus the consumer surplus from buying scanners at the monopoly price ( $CSM_{\text{tied}}$  in Figure 3), which is equal to the area of the triangle, or  $\frac{1}{2}(\$600-\$400)(200) = \$20,000$ . Thus, buyers would accept the tie because they enjoy more consumer surplus from buying both products at their respective monopoly prices (\$100,000), than they would from just buying the tied product at its competitive price (\$80,000). To put it another way, they accept the tie because the consumer surplus lost (CSL in Figure 3) in the tied market is less than the consumer surplus they would lose (CSM in Figure 1) by being unable to buy the tying product at its monopoly price. Thus each buyer accepts, but each buyer is also worse off than it would be if the tie were prohibited because, without tying, buyers would each enjoy a consumer surplus of \$160,000. Thus, tying in this example harms each buyer by \$60,000.



**Figure 3 – Individual Consumer Surplus Lost In Tied Market From Tie**

These results depend on buyers purchasing varying amounts of the tying product. Tying cannot extract individual consumer surplus if buyers purchase only one tying unit or if the products are used or tied in fixed ratios, because then buyers would experience any increase in the tied product price as an increase in the marginal price of buying the tying product.<sup>15</sup> However, extracting individual consumer surplus does not necessitate a requirements tie that forbids buying the tied product from rivals, as Burstein seemed to suppose. A firm could achieve the same effect by requiring buyers

<sup>15</sup> Mathewson & Winter, *Tying as a Response to Demand Uncertainty*, 28 RAND J. ECON. 566, 570 (1997).

to buy some fixed quantity of the tied product at a supracompetitive price (say 200 scanners at \$400) if they want to make purchases of the tying product at the monopoly price. Such a buyer would then be free to buy 200 more scanners from rivals at \$200 and thus would not have to purchase its requirements from the tying firm. But its consumer surplus would be extracted just the same. Indeed, it would be extracted more efficiently because it would not require the deadweight loss from being unable to buy 200 more scanners whose cost is lower than buyer value.

The relationship between prices with and without tying will depend on the relative magnitudes of the respective consumer surpluses. Take first cases where, as in my printer-scanner hypothetical, the sum of the consumer surpluses from buying both products at the monopoly price ( $CSM_{\text{tying}} + CSM_{\text{tied}}$ ) exceeds the consumer surplus from buying only the tied product at competitive prices ( $CSC_{\text{tied}}$ ). Then buyers would accept a requirements tie even if both products were priced at monopoly levels.<sup>16</sup> The tying firm could not extract any more profit by trying to price the products above monopoly levels, so would choose monopoly prices for both products. In such cases, tying does not result in *any* discount on the tying product, but does elevate tied prices to monopoly levels. In short, such tying produces precisely the leveraging of one monopoly profit into two monopoly profits that the single monopoly profit theory said was impossible. And it does so without any need for substantial tied foreclosure share.

Assuming linear demand, consumer surplus for any product is four times greater at the competitive price than at the monopoly price.<sup>17</sup> Thus, the condition  $CSM_{\text{tying}} + CSM_{\text{tied}} > CSC_{\text{tied}}$  is the same as saying  $CSM_{\text{tying}} + CSM_{\text{tied}} > 4CSM_{\text{tied}}$ . Accordingly, this condition is met when  $CSM_{\text{tying}} > 3CSM_{\text{tied}}$  or, equivalently, when  $CSC_{\text{tying}} > 3CSC_{\text{tied}}$ .<sup>18</sup> In other words, a firm will be able to impose a requirements tie that leverages one monopoly profit on the tying product into two monopoly profits on the

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<sup>16</sup> Greenlee, Reitman, & Sibley, *An Antitrust Analysis of Bundled Loyalty Discounts*, 26 INTERNATIONAL J. INDUSTRIAL ORG. 1132, 1137 (2008); Mathewson & Winter, *supra* note , at 568-69.

<sup>17</sup> For any linear demand function  $Q = A - P$  and a product with constant marginal cost  $C$ , the competitive price will be  $C$  resulting in a consumer surplus of  $(A-C)^2/2$ , and the monopoly price will be  $(A+C)/2$ , resulting in a consumer surplus of  $(A-C)^2/8$ . Thus,  $CSC = 4CSM$ . (The analysis extends to any linear demand  $Q = A - sP$  because one could convert that into an equation that takes the form  $Q = A - P$  by using a measure of units that makes the slope  $s = 1$ .)

<sup>18</sup> See Greenlee, et al, *supra* note , at 1137.

tying and tied products whenever the buyers covered by the tie get consumer surplus from the tying product that is more than three times what they get from the tied product (when both are priced at either monopoly or competitive levels). If, as in the hypotheticals, the two linear demands have the same slope, this condition will hold when the difference between the cost and value of the first unit of the tying product is at least 73% higher than the same difference for the tied product.<sup>19</sup> Because typical tying cases involve buyers whose valuations or expenditures for the tying product are far higher than for the tied product, this condition is probably usually met.

Now suppose this condition is not met. Then, a tying firm could still impose a requirements tie that maintained the tying product at its monopoly price and required purchasing the tied product from it at some supracompetitive price, as long as  $CSM_{\text{tying}}$  plus the consumer surplus at the supracompetitive tied price ( $CSS_{\text{tied}}$ ) exceeded  $CSC_{\text{tied}}$ . In other words, it just has to make sure to pick a low enough supracompetitive tied price that  $CSL_{\text{tied}} < CSM_{\text{tying}}$ .<sup>20</sup> For example, suppose that the highest price that buyers would pay for scanners were instead \$700. Then the firm could not impose a requirements tie with a monopoly price for both products because  $CSM_{\text{tying}} + CSM_{\text{tied}} = \$80,000 + \frac{1}{2}(\$700 - \$450)(250) = \$111,250$ , which is less than  $CSC_{\text{tied}} = \frac{1}{2}(\$700 - \$200)(500) = \$125,000$ . However, the tying firm could impose a requirements tie that sold the tying product at its monopoly price and the tied product at up to \$400, because at that price  $CSM_{\text{tying}} + CSS_{\text{tied}} = \$80,000 + \frac{1}{2}(\$700 - \$400)(300) = \$125,000 = CSC_{\text{tied}}$ . Without the tie, buyers would have enjoyed  $CSM_{\text{tying}} + CSC_{\text{tied}} = \$80,000 + \$125,000 = \$205,000$ . Thus, this tie leaves each buyer \$80,000 worse off, totally extracting individual consumer surplus in the tying product.

However, when a tying firm cannot price both products at monopoly levels, it would make even more money if it lowered the tying product price below the monopoly level and raised the tied product price further. The reason is that the monopoly price is the price at which further price increases would produce no marginal gain. Thus, a reduction in the monopoly price on the tying good produces a relatively small loss of profits, whereas increasing the lower price on the tied product produces a relatively

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<sup>19</sup> This is because consumer surplus varies with the square of the difference between the highest buyer value and cost. *See supra* note . Thus,  $CSM_{\text{tying}} > 3CSM_{\text{tied}}$  is equivalent to  $(A_{\text{tying}} - C_{\text{tying}})^2 > 3(A_{\text{tied}} - C_{\text{tied}})^2$ , which is true when  $A_{\text{tying}} - C_{\text{tying}} > \sqrt{3}(A_{\text{tied}} - C_{\text{tied}})$ , which with rounding means  $A_{\text{tying}} - C_{\text{tying}} > 1.73(A_{\text{tied}} - C_{\text{tied}})$ .

<sup>20</sup> *See* Jose Carbajo et al., *A Strategic Motivation for Commodity Bundling*, 38 J. INDUSTRIAL ECONOMICS 283, 284 (1990).

large gain in profits.<sup>21</sup> Thus, a firm using a requirements tie can reap more monopoly profits by lowering the tying price and raising the tied price, and buyers will accept as long as the sum of the consumer surplus at supracompetitive prices in both markets ( $CSS_{\text{tying}} + CSS_{\text{tied}}$ ) is greater than  $CSC_{\text{tied}}$ .

In this hypothetical, the firm using a requirements tie will maximize profits if it prices printers at \$576 and scanners at \$435.<sup>22</sup> The consumer surplus of buyers who accept the tie will be  $\frac{1}{2}(\$1000-\$576)^2 + \frac{1}{2}(\$700-\$435)^2 = \$125,000.50$ . Thus, all buyers will accept the tie and be \$80,000 worse off, the same as if the tying firm used a tie that kept the tying product at its monopoly price. However, the tying firm will reap more monopoly profits because at these prices its profits will be  $(\$576-\$200)(\$1000-\$576) + (\$435-\$200)(\$700-\$435) = \$221,699$ . In contrast, if it priced the tying product at the monopoly price of \$600, it would have had to price the tied product at \$400 to get buyers to accept the tie, and it would have earned profits of  $(\$600-\$200)(\$1000-\$600) + (\$400-\$200)(\$700-\$400) = \$220,000$ . As this example illustrates, even though the tying price may sometimes be discounted from monopoly levels, that is only to allow an even greater supracompetitive increase in the tied product price, and the combined net effect is still to extract consumer surplus and harm consumer welfare.

Indeed, the existence of a discount on the tying product actually implies a *greater* loss of consumer welfare because it reflects a greater ability to extract consumer surplus by raising tied product prices. When both products are priced at monopoly levels, consumers will get consumer welfare of  $CSM_{\text{tying}} + CSM_{\text{tied}}$  which may be significantly greater than  $CSC_{\text{tied}}$ . The loss of consumer welfare,  $CSC_{\text{tied}} - CSM_{\text{tied}}$  may thus be significantly less than  $CSM_{\text{tying}}$ , which means that not all the consumer surplus in the tying product was extracted. This consumer welfare cannot profitably be lowered further with tying because both products are sold at their profit-maximizing level. In effect, the monopoly price level for the tied product in such cases imposes

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<sup>21</sup> Using more technical language, the discount on the tying monopoly price produces second-order profit losses for the firm and first-order consumer surplus gains for buyers, whereas the increase in the tied product price produces first-order profit gains for the firm and second-order consumer surplus losses for buyers. See Greenlee, et al., *supra* note , at 1136; Nalebuff, *Bundling as a Way to Leverage Monopoly*, *supra* note , at 8, 10-11.

<sup>22</sup> More generally, if the demand for the tying product =  $A - P$ , demand for the tied product =  $B - P$ , and both have constant marginal costs of  $C_A$  and  $C_B$  respectively, then the profit maximizing prices when using a requirements tie are  $A - (A-C_A)(B-C_B)/\sqrt{(A-C_A)^2 + (B-C_B)^2}$  for the tying product and  $B - (B-C_B)^2/\sqrt{(A-C_A)^2 + (B-C_B)^2}$  for the tied product. See Greenlee, et al., *supra* note , at 1151.

a constraint on the ability of the monopolist to full expropriate all the consumer surplus in the tying product. In contrast, when both products are being sold below their monopoly level, there is no monopoly price constraint on the tying firm further increasing the tied product price to extract a little more consumer surplus. Thus, the tying firm can pick prices so that  $CSS_{\text{tying}} + CSS_{\text{tied}}$  is barely greater than  $CSC_{\text{tied}}$ , effectively extracting all of  $CSM_{\text{tying}}$ . The above examples illustrate this, because when the tie allowed monopoly pricing in both the tying and tied markets, the consumer surplus loss was \$60,000, whereas when monopoly pricing was not possible in the tied market, the consumer surplus loss was the full \$80,000.

In short, there are two possibilities when tying extracts consumer surplus without a significant foreclosure share. Either both the tying and tied products will be sold at monopoly price levels, and thus one monopoly really will be leveraged into two monopolies. Or the tying price will be discounted somewhat from monopoly levels, but this reflects a greater ability to extract consumer surplus in the tied market, and thus indicates an even *larger* loss of consumer welfare.

Requirements tying that results in both products being sold at monopoly prices also lowers total welfare (even without a significant foreclosure share) because it reduces allocative efficiency in the tied market without improving it in the tying market.<sup>23</sup> When requirements tying results in both products being sold at submonopoly levels without significant foreclosure, the total welfare effect depends on the relative size of the covered buyers' consumer surplus for the tying and tied products. With linear demand, the economic literature shows that requirements tying with submonopoly prices will reduce total welfare whenever  $CSC_{\text{tying}} \geq (16/9)CSC_{\text{tied}}$ , or equivalently when  $CSM_{\text{tying}} > (16/9)CSM_{\text{tied}}$ , and increase it when that condition does not hold.<sup>24</sup> If, for example, the two linear demands have the same slope, this condition will hold when the difference between the cost and value of the first unit of the tying product is at least 33% higher than the same difference for the tied product.<sup>25</sup>

To summarize, in all cases, tying without significant foreclosure reduces consumer

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<sup>23</sup> Tying that merely requires buying a certain volume of the tied product may not reduce allocative efficiency in the tied market without a significant foreclosure share because such tying leaves buyers free to buy more of the tied product at competitive prices.

<sup>24</sup> See Greenlee, et al., *supra* note , at 1137, 1151.

<sup>25</sup>  $CSM_{\text{tying}} > (16/9)CSM_{\text{tied}}$  means  $(A_{\text{tying}} - C_{\text{tying}})^2 > (16/9)(A_{\text{tied}} - C_{\text{tied}})^2$ , *see supra* note , which is true when  $A_{\text{tying}} - C_{\text{tying}} > 1.33(A_{\text{tied}} - C_{\text{tied}})$ .

welfare if the tying firm chooses profit-maximizing prices. The total welfare effects will turn on the extent to which consumer surplus is higher for the tying product than the tied product, when both are priced at monopoly or competitive levels. This can be a hard to establish in particular cases. But we can roughly say that if, for buyers subject to the tie, spending or valuation is significantly higher for the tying product than the tied product, then total welfare will be reduced by requirements tying. And if those buyers' spending or valuation is sharply higher for the tying product than the tied product, then tying will leverage one monopoly profit into two monopoly profits.

The relevant comparison depends on spending and valuation for the buyers subject to the tie, not for the tying and tied markets in general. For example, if there are many buyers who buy only the tied product, and would continue to do so at competitive prices despite the tie, total spending on the tied product may be much higher than for the tying product. Nonetheless, if the buyers who are subject to the tie spend far more on the tying product, the tie will still inflict allocative inefficiency on their purchases.

While I have used the monopoly case for simplicity, the same analysis will hold as long as the tying firm has some market power in the tying product. The reason is that all this theory requires is a declining individual demand curve for that firm's tying good, so that there is some extractable individual consumer surplus at the tying product's profit-maximizing price.

#### ***D. Reducing Rival Competitiveness in the Tied Market***

The single monopoly profit theory also assumed that the tied market was perfectly competitive in a way that tying could not alter. It did so with various sub-assumptions: namely that tied market rivals face no entry or fixed costs, have constant marginal costs that do not vary with output, have incentives to always price at cost, and can expand instantaneously to supply the whole market. Suppose we relax any or all of those sub-assumptions to consider more realistic cases. Then the economic literature shows that a tie which forecloses enough of the tied market can reduce rival competitiveness by impairing rival efficiency, entry, existence, aggressiveness, or expandability. Any one of those adverse effects on rival competitiveness can in turn anticompetitively increase the tying firm's market power in the tied market, thus raising prices and harming consumers.

Consider first situations where tying can reduce tied rival efficiency. If there are costs

to entering the tied market, tying can profitably deter entry by an equally-efficient rival by foreclosing enough of the tied market to make entry profits lower than entry costs.<sup>26</sup> Likewise, if there are fixed costs to operating in the tied market, tying can cause equally-efficient rivals in the tied market to exit (or deter their entry), and thus enable the tying firm to obtain a monopoly in the tied market.<sup>27</sup> Other articles generalize the point to show that foreclosing a market can create anticompetitive effects by depriving rivals of economies of scale, scope, distribution, supply, research, learning, and/or network effects.<sup>28</sup> If foreclosure decreases rival efficiency in any of those ways, it will worsen the market options available to buyers and lessen the constraint on the tying firm's market power in the tied market, thus enabling it to raise prices in the tied market even though rivals are not completely eliminated.

Even if tying does not impair rival efficiency, foreclosure can also impair rival competitiveness by decreasing rival aggressiveness or expandability. Tying can decrease rival aggressiveness in at least two scenarios. First, if firms in the tied market engage in Cournot competition, where each firm sets output in response to the output choices of others, then tying can encourage tied product rivals to reduce output and charge higher prices.<sup>29</sup> Second, if the tied market is concentrated, but (absent tying) would be undifferentiated and result in Bertrand competition that drives prices down to cost, tying can effectively differentiate the tied market (because buyer valuations for the tying product vary) and induce the rival to charge higher tied product prices.<sup>30</sup> Tying in both scenarios will increase profits for the tying firm if,

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<sup>26</sup> See Barry Nalebuff, *Bundling as an Entry Barrier*, 119 Q.J. ECON. 159, 160–61, 168-70 (2004).

<sup>27</sup> See Michael D. Whinston, *Tying Foreclosure, and Exclusion*, 80 AM. ECON. REV. 837, 840, 846 (1990).

<sup>28</sup> See, e.g., Elhauge, *Defining Better Monopolization Standards*, 56 STANFORD L. REV. 253, 320-324 (2003); Eric Rasmusen, Mark Ramseyer & John Wiley, *Naked Exclusion*, 81 AMER. ECON. REV. 1137 (1991); Thomas G. Krattenmaker & Stephen C. Salop, *Anticompetitive Exclusion: Raising Rivals' Costs to Achieve Power Over Price*, 96 YALE L.J. 209, 234-45 (1986); Stephen C. Salop & David T. Scheffman, *Raising Rivals' Costs*, 73 AM. ECON. REV. 267 (1983) (Special Issue).

<sup>29</sup> See Carbajo, *supra* note , at 285-86, 290-92. The reason is that tying effectively commits the tying firm to increase its share of tied product output, which makes it profitable for rivals to lower output and increase prices, reducing total output of the tied product. *Id.*

<sup>30</sup> See *id.* at 285, 287-89. Without tying, the tied market would be undifferentiated because even though buyer valuations of the tied product vary, they consider the tied products of the firm and its rival to be fungible. With tying, however, the fact that buyer valuations of the tying and tied products vary will differentiate buyers in their willingness to shift from the rival tied product to the

absent tying, tying product revenue would exceed tied product revenue, which is typical in tying cases.<sup>31</sup> Tying in both scenarios will also harm consumer welfare.<sup>32</sup>

Tying can also decrease rival expandability and increase tied prices if the tying firm has market power in the tied market. Standard economic models calculate market power to be directly proportional to a firm's market share and inversely proportional to its rivals' supply elasticity, which is the percentage increase in rival supply that would result from a one percent increase in market price.<sup>33</sup> These standard models reasonably assume rivals' ability to expand depends on how large they already are. Thus, if a tying firm can through foreclosure obtain a higher share of the tied market for reasons unrelated to product merits, it will lower rivals' share of the tied market and thus lessen rival expandability and the constraint on tied product prices.

Under any of the above theories, tying can impair rival competitiveness only if it helps foreclose a substantial share of the tied market. However, this foreclosure effect is independent of whether tying produces power effects. Indeed, the models proving the anticompetitive effects from impairing tied rival competitiveness often barred the power effects by assuming fixed unit-to-unit tying and buyers valuations that were either uniform or had perfect positive correlation.<sup>34</sup> But where real market conditions do allow them, the power effects reinforce the rival impairment theory by proving that a foreclosing tie does not require any short-term profit sacrifice by the tying firm. Likewise, any anticompetitive benefit from impairing rival competitiveness makes the power effects all the more attractive to tying firms, and exacerbates the anticompetitive effects. The theories thus are mutually reinforcing and should be assessed in combination.

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tied bundle in response to a rival price increase.

<sup>31</sup> The models conclude that tying would increase profits in this situation if the tying product price exceeds the tied product price. *Id.* at 288, 291. Given that the models assume a set of buyers with equal reservation prices in both products, *id.* at 286-87, this is equivalent to saying tying product revenue exceeds tied product revenue.

<sup>32</sup> *Id.* at 289, 292.

<sup>33</sup> Define  $P$  as price,  $C$  as marginal cost,  $S$  as the firm's market share,  $\epsilon_{rs}$  as the rival supply elasticity, and  $\epsilon_m$  as the market demand elasticity (the percentage reduction in market output that would result from a one percent increase in market price). Then the firm's degree of market power (as measured by its ability to raise prices above cost) is determined by the equation  $(P-C)/P = S/[\epsilon_m + \epsilon_{rs}(1-S)]$ . See William M. Landes & Richard A. Posner, *Market Power in Antitrust Cases*, 94 HARV. L. REV. 937, 945 (1981).

<sup>34</sup> See Whinston, *supra* note , at 841-42; Carbajo, *supra* note , at 286-87.

To illustrate, suppose we have tying that not only extracts individual consumer surplus but also impairs rival competitiveness in the tied market. Then buyers deciding whether to accept a tie would no longer be comparing consumer surplus with the tie to the consumer surplus they would have enjoyed in the tied market *at competitive prices*. Instead, they would compare consumer surplus with the tie to the consumer surplus they would have enjoyed in the tied market *at prices inflated by the rival impairment*. In other words, instead of accepting the tie only if  $CSM_{\text{tying}} + CSM_{\text{tied}}$  exceeded  $CSC_{\text{tied}}$ , they will accept the tie whenever it exceeds the consumer welfare they would enjoy in the tied market if they rejected the tie ( $CSR_{\text{tied}}$ ) and purchased the tied product at inflated prices. Because a substantial foreclosure share that impairs rival competitiveness lowers  $CSR_{\text{tied}}$ , it increases buyer willingness to accept an anticompetitive tie.

For example, take our hypothetical above about printers and scanners with the alteration that the highest price buyers would pay for scanners is now \$1000, so that both demand curves are identical. Because the consumer surplus for printers and scanners would thus equal each other, a tie that does *not* foreclose a substantial share of the tied market would extract consumer surplus and lower consumer welfare but would not reduce total welfare. But suppose the tie does impair rival competitiveness by foreclosing a large enough share of the tied market that rivals cannot achieve economies of scale and will have their costs increased from \$200 to \$500. Then, buyers will accept a tie even if the tying firm charges a monopoly price for both the tying and tied products because the consumer surplus if buyers accept will be  $CSM_{\text{tying}} + CSM_{\text{tied}} = \frac{1}{2}(\$1000 - \$600)^2 + \frac{1}{2}(\$1000 - \$600)^2 = \$160,000$ , whereas if they reject the tie, the consumer surplus they enjoy will be  $\frac{1}{2}(\$1000 - \$500)^2 = \$125,000$ .

In this case, the tie once again succeeds in leveraging a single monopoly profit into two monopoly profits. Further, it does so even though equal amounts are spent on both products, and each is priced well above costs. Thus, no short-term profit sacrifice is ever required, which is one more nail in the coffin of the claim that a profit-sacrifice should be required for monopolization claims.<sup>35</sup> Both consumer welfare and total welfare decrease because allocative efficiency (and rival productive

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<sup>35</sup> For other arguments against the profit-sacrifice theory, see Elhauge, *Defining Better*, *supra* note, at 268-294; Steven C. Salop, *Exclusionary Conduct, Effect on Consumers, and the Flawed Profit-Sacrifice Standard*, 73 ANTITRUST L.J. 311 (2006); Elhauge, *How Loyalty Discounts Can Perversely Discourage Discounting*, 5 J. COMPETITION LAW & ECONOMICS (forthcoming issue 1, March 2009).

efficiency) is reduced in the tied market with no benefit in the tying market.

Unless it also alters the degree of tying market power, tying to impair tied rival competitiveness cannot increase monopoly profits if (1) the products are used or bundled in a fixed ratio *and* (2) the tied product has no utility without the tying product.<sup>36</sup> The reason is that buyers of the tying product would interpret any premium on the tied product as a per-unit price increase on the tying product. Thus, the firm could not reap any additional profits from those buyers with a tie that it could not have achieved by simply exercising its power to increase the price of the tying product, which is by hypothesis fixed in this section.

However, even without affecting tying market power, tying to impair tied market rivals can increase monopoly profits if only one of those two conditions holds. If the products are used or bundled in a fixed ratio, but the tied product also has separate utility, then additional profits can be reaped because the firm can (given diminished rival competitiveness) charge higher than but-for prices on purchases of the tied product that are not used with the tying product. Likewise, if the products are always used together, but in varying ratios, then tying that impairs rival competitiveness can increase monopoly profits, as in the above example of the printer-scanner tie where both are used to run a business.

Finally, even if the products are used or bundled in fixed ratios *and* lack separate utility, foreclosing the tied market might still create anticompetitive effects if it alters the degree of tying market power, as the next theory demonstrates.

### ***E. Protecting The Degree of Tying Market Power***

If one relaxes the assumption that the degree of tying market power is fixed, then tying can create additional anticompetitive effects by making the degree of tying market power higher than it would have been without tying. Tying can increase tying power above but-for levels by either (1) foreclosing enough of the tied market to deter or delay later entry into the tying market, (2) raising the costs of a partial substitute that constrains tying market power, or (3) transferring market power from a waning technology to the next generation technology. Let's take each scenario in turn.

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<sup>36</sup> See Whinston, *supra* note , at 840, 850.

**First**, suppose that a firm's tying market power is vulnerable to an increased threat of future entry if successful rival producers exist in the tied market. If so, then the firm has incentives to engage in defensive leveraging, foreclosing the tied market in order to deter or delay later entry into the tying market, thus maintaining its tying market power for longer or at a higher degree than it would have without tying.

For example, modern literature shows that successful tied product makers are often more likely to evolve into tying product makers in future periods, in which case a firm has incentives to foreclose rivals in the tied market in order to prevent or reduce the erosion of its tying market power over time.<sup>37</sup> Tying can produce this anticompetitive effect even though the rival is not just equally efficient, but more efficient than the tying firm in that the rival can produce a higher quality product at the same cost.<sup>38</sup>

Alternatively, a firm's tying market power might be vulnerable to future entry or expansion by a single-market rival that is more likely to enter the tying market if buyers have attractive rival options in the tied market because both products are essential inputs into some larger operation.<sup>39</sup> For example, suppose each buyer is a business that needs both product *A* and product *B* to stay in business. If a monopolist in *A* could use tying to eliminate rival makers of *B* or to render the rival options in *B* less attractive to buyers, then entrants will have a harder time entering market *A* because buyers would have to combine any entrant's *A* with either no *B* or a less attractive *B* option. Again, this anticompetitive effect holds even though the tied market rival would have been equally efficient without the tie.

**Second**, defense leveraging has even stronger—and more immediate—anticompetitive effects if a firm's tying market power is constrained by the fact that the tied product is a partial substitute for the tying product. Foreclosing the market for the partial

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<sup>37</sup> See, e.g., Dennis W. Carlton & Michael Waldman, *The Strategic Use of Tying to Preserve and Create Market Power in Evolving Industries*, 33 RAND J. ECON. 194, 194–96, 198–212 (2002); Dennis W. Carlton, *A General Analysis of Exclusionary Conduct and Refusal to Deal*, 68 ANTITRUST L.J. 659, 668–70 (2001); Feldman, *Defensive Leveraging in Antitrust*, 87 GEO. L.J. 2079 (1999); IX AREEDA & HOVENKAMP, ANTITRUST LAW ¶1705 (2d ed. 2004).

<sup>38</sup> See Carlton & Waldman, *supra* note , at 198, 203; Carlton, *supra* note , at 669.

<sup>39</sup> See Choi & Stefanandis, *Bundling, Entry Deterrence, and Specialist Innovators*, 79 J. BUSINESS 2575 (2006); Choi & Stefanandis, *Tying, Investment, and the Dynamic Leverage Theory*, 32 RAND J. Econ. 52 (2001); Barry Nalebuff, *Exclusionary Bundling*, 50 ANTITRUST BULLETIN 324–327 (2005).

substitute can immediately protect or enhance the firm's tying market power, even if such foreclosure does not deter or delay entry into the tying market.<sup>40</sup> Such suppression of competition from partial substitutes is one of the most anticompetitive effects of tying agreements.<sup>41</sup>

Being partial substitutes does not mean that the tying and tied products are in the same product market, unless the existence of the tied product would constrain a tying product monopolist to price at no more than 5% above the competitive level.<sup>42</sup> Suppose, for example, that product *A* costs \$1000 to make and product *B* costs \$2000. Suppose further that some buyers find *A* and *B* fungible and worth \$3000, whereas other buyers have special needs that make them value only product *B*. Then product *B* would not be in the same market as product *A*, because product *B* would not suffice to constrain a monopolist in *A* from charging more than 5% over the competitive price, which would be \$1050. But a competitive market in product *B* does constrain the monopolist in *A* from charging more than \$2000. Thus, if a monopolist could foreclose the market in *B* enough to raise the costs of rival *B* producers to \$2500, it could increase its *A* prices to \$2500, and if it could eliminate rival *B* makers or raise their costs to over \$3000, then the *A* maker could raise its prices to the full \$3000 that reflects its maximum monopoly price.

**Third**, defensive leveraging also has even stronger—and more permanent—anticompetitive effects if the technological trend is from the market where the firm has market power to the market where the foreclosure is occurring. In such a case, a firm can use foreclosure not just to delay the erosion of its current market power over a waning technology, but to shift to having market power over the technology of the future.<sup>43</sup> This can have long-lasting adverse effects by creating market power in the new technology that otherwise might not have existed or by preventing the most efficient firm from winning the new market.

In all three scenarios, tying makes the degree of tying market power higher than it

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<sup>40</sup> See Ordovery & Willig, *An Economic Definition of Predation*, 91 YALE L.J. 8, 38–41 (1981); Whinston, *supra* note , at 852–54.

<sup>41</sup> See IX AREEDA, ANTITRUST LAW ¶1705f (1991); X AREEDA, ELHAUGE & HOVENKAMP, ANTITRUST LAW ¶ 1747c (1996).

<sup>42</sup> See ELHAUGE, U.S. ANTITRUST LAW & ECONOMICS 207-208 (Foundation Press 2008).

<sup>43</sup> See Carlton & Waldman, *supra* note , at 194, 196–97, 212–15; Carlton, *supra* note , at 670–71.

would have been in the but-for world without tying. Absent offsetting efficiencies, such tying thus lowers consumer and total welfare below but-for levels. In many cases, the degree of tying power may have declined from past levels, but that is irrelevant because the correct baseline for assessing causal effects is the but-for world, not the past world.

### ***F. Combined Implications***

In short, the single monopoly profit theory depended on five highly constricting assumptions. These assumptions frequently do not hold, and probably rarely hold in combination. Relaxing each of these assumptions produces a distinctive profit-increasing effect, as the following table summarizes.

<b>THE DEATH OF THE SINGLE MONOPOLY PROFIT THEORY</b>		
<b>Assumption of Theory</b>	<b>Frequent Reality</b>	<b>Profit-Increasing Effect</b>
Fixed Ratio	Variable Ratio and Positive Demand Correlation	Price Discrimination Among Tying Product Buyers
Strong Positive Demand Correlation	No Strong Positive Demand Correlation	Price Discrimination Across Buyers of Both Products
Single Tying Unit Buyers	Varying Tying Product Purchases	Extracting Individual Consumer Surplus
Tied Market Competitiveness Fixed	Tied Foreclosure Can Reduce Tied Rival Competitiveness	Increased Tied Market Power
Tying Market Competitiveness Fixed	Tied Foreclosure Can Protect Tying Market Power	Increased Tying Market Power

Although each of these effects has been recognized in the economic literature, their combined implications have not been appreciated because economic models are generally designed to isolate each effect. Thus, there is a tendency to minimize each modeled effect by saying it applies only in certain circumstances. But in assessing the wisdom of tying doctrine's quasi-per se rule, one must consider the combined implications, and they are striking. Tying can profitably increase monopoly profits whether the ratios are variable *or* fixed, whether demand is positively *or* negatively correlated, and with *or* without substantial tied foreclosure. It takes a combination of a fixed ratio *and* a strong positive demand correlation *and* a lack of substantial tied

foreclosure to prevent tying from increasing monopoly profits. It thus seems clear that single monopoly profits are the exception, not the rule. Tying by a firm with tying market power typically does increase monopoly profits. It also usually harms consumer and total welfare absent offsetting efficiencies.

Nonetheless, many have argued that antitrust law does not consider the power effects to be anticompetitive, or should not do so. I thus consider those claims next.

### **III. SUPREME COURT CASELAW DEEMS ALL FIVE PROFIT-INCREASING EFFECTS TO BE ANTICOMPETITIVE**

I begin with the question of positive law, leaving till the next section the policy question about whether the law is desirable. On the question of positive law, the answer seems resoundingly clear. The doctrinal structure makes sense only if one deems the power effects to be anticompetitive. Further, the Supreme Court has explicitly embraced the proposition that all three power effects justify its tying doctrine.

Unless a defendant can prove that a tie has offsetting efficiencies, Supreme Court doctrine makes it illegal to tie together the sale of separate products when a firm (1) has market power in the tying market, and (2) forecloses a nontrivial dollar amount of sales in the tied market.<sup>44</sup> The fact that tying doctrine focuses on tying market power rather than on a substantial tied foreclosure share or effect has been roundly condemned, even by some Harvard School scholars who accept the existence of foreclosure effects and thus reject the single monopoly profit theory.<sup>45</sup> But those who condemn current tying doctrine assume that the power effects should not be deemed anticompetitive.<sup>46</sup> Once one dismisses all the power effects, it is not surprising that

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<sup>44</sup> See ELHAUGE, U.S. ANTITRUST, *supra* note, at 358-360; *Jefferson Parish v. Hyde*, 466 U.S. 2 (1984); *International Salt v. United States*, 332 U.S. 392 (1947); *Northern Pacific Railway v. United States*, 356 U.S. 1 (1958); *United States v. Loew's Inc.*, 371 U.S. 38 (1962).

<sup>45</sup> See IX AREEDA & HOVENKAMP, *supra* note, ¶1701, at 26, ¶1703d3, at 38; U.S. DEPARTMENT OF JUSTICE, COMPETITION AND MONOPOLY: SINGLE-FIRM CONDUCT UNDER SECTION 2 OF THE SHERMAN ACT 89-90 (2008) [hereinafter “Bush DOJ Single Firm Conduct Report”] (collecting sources).

<sup>46</sup> See IX AREEDA & HOVENKAMP, *supra* note, ¶1703e, ¶¶1710-1711; Bush DOJ Single Firm Conduct Report, *supra* note, at 85-87.

one would conclude that a substantial tied foreclosure share or effect should be required, because that is (by definition) necessary for the remaining theories.

If one instead assumes that the power effects are anticompetitive, then the structure of current tying doctrine fits quite nicely the requirements for proving anticompetitive effects under those theories. After all, those power effects do not require, as we saw above, foreclosing a substantial share of the tied market. But they do require tying market power. And the extent to which they harm consumer welfare by increasing price discrimination or extracting consumer surplus does turn on the dollar amount of the tied market covered, rather than on tied market foreclosure shares or effects.

Thus, the structure of current tying doctrine makes perfect sense if the power effects are deemed anticompetitive, but no sense if they are not. If we restrict ourselves to the traditional legal question of figuring out which normative theory best fits the legal doctrine,<sup>47</sup> treating U.S. Supreme Court caselaw as authoritative, then the clear answer is that the doctrine must embrace the proposition that the power effects are anticompetitive. Nor is this structure unique to U.S. tying law, because EC tying law has the same focus on tying market power rather than tied foreclosure shares or effects.<sup>48</sup> This suggests that the appeal of this conclusion about what counts as an anticompetitive effect is not idiosyncratic to these U.S. cases, but has some more universal appeal.

Tying doctrine is clearly inconsistent with any claim that antitrust law prohibits only conduct that weakens rival competition because the doctrine condemns ties without the substantial tied foreclosure share that would be necessary to weaken rival competition. Instead, tying doctrine is consistent with the principle that antitrust law protects “competition, not competitors.” Normally this principle is invoked to emphasize that antitrust law does not condemn conduct that harms competitors but benefits competition, with “competition” measured by the effects on consumer welfare.<sup>49</sup> But the flip side is that this principle means that antitrust does condemn

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<sup>47</sup> *See, e.g.*, RONALD DWORKIN, *LAW’S EMPIRE* (Harvard University Press 1986).

<sup>48</sup> ELHAUGE & GERADIN, *GLOBAL ANTITRUST LAW & ECONOMICS* 609 (Foundation Press 2007); Commission Decision 88/138/EEC, *Eurofix–Bauco v. Hilti*, O.J. 1988, L65/19; Commission Decision 92/163/EEC, *Tetra Pak II*, O.J. 1992, L 72/1.

<sup>49</sup> *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 224 (1993) (concluding that the principle that antitrust law protects “competition, not competitors” means that below-cost predatory pricing should be allowed if recoupment is not plausible because, even though

conduct that distorts the competitive process in ways that harm consumer welfare even if it does not harm competitors.

In any event, we need not limit ourselves to inferences from doctrinal structure or general antitrust principles, because Supreme Court caselaw has explicitly relied on the three power effects to justify its tying doctrine. This reliance was first stated in a dissent by Justices White and Harlan, which later cases incorporated into Supreme Court majority opinions. In *Fortner I*, the White-Harlan dissent stated “the Court should have in mind the rationale on which the illegality of tying arrangements is based,” and then stressed that the rationale included not only concerns about foreclosing competition in the tied market, but

“[i]n addition to these anticompetitive effects in the tied product, tying arrangements may be used . . . as a counting device to effect price discrimination; and they may be used to force a full line of products on the customer so as to extract more easily from him a monopoly return on one unique product in the line.”<sup>50</sup>

The dissent separately cited the Bowman and Burstein articles noted above for, respectively, the points on price discrimination by counting and extraction of consumer surplus, thus making clear that the dissent embraced both points and understood their differences.<sup>51</sup> The dissent also made clear it understood that it was rejecting the single monopoly profit theory by doing so, stating that although “theoretically” a tie could not increase monopoly profits under certain assumptions, “difficulty in extracting the full monopoly profit without the tie, Burstein, A Theory of Full-Line Forcing, 55 Nw.U.L.Rev. 62 (1960), . . . or other advantages mentioned in the text, may make the tie beneficial to its originator.”<sup>52</sup>

This analysis did not remain buried in a dissent. In *Jefferson Parish*, the Supreme Court justified the fact that the quasi-per se rule focuses on tying market power rather than on the tied foreclosure share by quoting extensively from this *Fortner I* dissent,

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such pricing harms both competitors and efficiency, it benefits “competition” in the sense that “consumer welfare is enhanced”); *Leegin Creative Leather Products, Inc. v. PSKS, Inc.*, 127 S.Ct. 2705, 2713 (2007) (equating an “anticompetitive effect” with being “harmful to the consumer” and “stimulating competition” with being “in the consumer's best interest”).

<sup>50</sup> *Fortner Enter. v. United States Steel*, 394 U.S. 495, 513–514 & n.8 (1969) (White, J., joined by Harlan, J., dissenting)

<sup>51</sup> *Id.* at 513-14& n.8.

<sup>52</sup> *Id.* at 513 n.3.

including its proposition that: “In addition to these anticompetitive effects in the tied product, tying arrangements may be used . . . as a counting device to effect price discrimination; and they may be used to force a full line of products on the customer so as to extract more easily from him a monopoly return on one unique product in the line.”<sup>53</sup> The *Jefferson Parish* Court thus incorporated by reference the *Fortner I* reliance on price discrimination by counting and extraction of consumer surplus as anticompetitive effects justifying current tying doctrine.

In addition to incorporating the *Fortner I* analysis, the *Jefferson Parish* Court explicitly stated that a quasi-per se rule that focused on tying market power was justified because “the law draws a distinction between the exploitation of market power by merely enhancing the price of the tying product, on the one hand, and by attempting to impose restraints on competition in the market for a tied product, on the other.”<sup>54</sup> While merely increasing the price of a product over which a firm had market power would not necessarily be anticompetitive, the Court indicated that using that market power to tie that product to another would be anticompetitive because in the latter case “that power is used to impair competition on the merits in another market . . . This impairment . . . can increase the social costs of market power by facilitating price discrimination, thereby increasing monopoly profits over what they would be absent the tie.”<sup>55</sup> In support of this last proposition, the Court cited not only *Bowman* and *Burstein*, but also Stigler’s article explaining *Loew’s* as a ban on using tying to price discriminate across buyers of two products.<sup>56</sup>

Thus, *Jefferson Parish* cited the seminal articles for each of the three power effects to explain why it was sticking to a rule based on tying power rather than switching to a rule based on substantial tied foreclosure. It also explicitly embraced the proposition that all three power effects were anticompetitive because they increased monopoly profits and the social costs of market power. The Court’s citation to Stigler’s article suggested it also shared his understanding of the rationale for *Loew’s*, another decision that condemned a tie based on market power and a lack of offsetting efficiencies without requiring proof of a substantial foreclosure share.<sup>57</sup>

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<sup>53</sup> *Jefferson Parish*, 466 U.S. at 13 n.19.

<sup>54</sup> *Id.* at 14.

<sup>55</sup> *Id.* 15.

<sup>56</sup> *Id.* 15 n.23.

<sup>57</sup> *United States v. Loew's Inc.*, 371 U.S. 38 (1962).

*Jefferson Parish*'s market definition analysis likewise confirms its doctrinal reliance on power effects. If foreclosure effects were the only ones that mattered, then the correct way to define the geographic market would have been by looking at the alternatives to which tied rivals (here anesthesiologists) could reasonably turn. This is likely to be a much larger geographic market than the local hospital area. But if power effects matter, then the correct way to define the market would be by assessing the alternatives to which buyers (here patients) could reasonably turn, because that would determine whether the defendant had the market power over those buyers to inflict power effects through tying. The Court did precisely that when applying its tying doctrine that focuses on tying power rather than tied foreclosure share.<sup>58</sup> Only when it concluded that such tying power over buyers was absent, so that substantial foreclosure would have to be proven, did it adopt the alternative market definition that focused on the alternatives reasonably available to rival anesthesiologists.<sup>59</sup>

One might wonder whether the same result would hold on the current, more conservative, Supreme Court. However, even relatively conservative justices have embraced the power effects as anticompetitive effects justifying current tying doctrine. In *Kodak*, Justices Scalia, O'Connor and Thomas dissented, in as skeptical an opinion on tying doctrine as we have had in recent years. But they too quoted *Fortner I* for the proposition that price discrimination and extracting surplus justifies a quasi-per se rule that focuses on tying power rather than tied foreclosure share, stating:

Despite intense criticism of the tying doctrine in academic circles, see, e.g., R. Bork, *The Antitrust Paradox* 365-381 (1978), the stated rationale for our per se rule has varied little over the years. When the defendant has genuine "market power" in the tying product – the power to raise price by reducing output – the tie potentially enables him to extend that power into a second distinct market, enhancing barriers to entry in each. In addition: "[T]ying arrangements may be used . . . as a counting device to effect price discrimination; and they may be used to force a full line of products on the customer so as to extract more easily from him a monopoly return on one unique product in the line."<sup>60</sup>

Thus, they also subscribed to the proposition that price discrimination by counting and extraction of consumer surplus are separate anticompetitive effects that justify having

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<sup>58</sup> *Id.* at 26-29.

<sup>59</sup> *Id.* at 29 & n.48.

<sup>60</sup> *Eastman Kodak v. Image Technical Servs.*, 504 U.S. 451, 487 (1992) (Scalia, J., joined by O'Connor & Thomas, JJ., dissenting) (quoting *Fortner I*).

tying doctrine focus on tying power rather than on tied foreclosure share.

Beyond relying on the *Fortner I* analysis, the *Kodak* dissenters acknowledged that “leveraging *and* price discrimination concerns [are] behind the per se tying prohibition.”<sup>61</sup> Further, the *Kodak* dissenters pointed out that tying doctrine prohibited ties:

when the manufacturer's monopoly power in the equipment, coupled with the use of derivative sales as "counting devices" to measure the intensity of customer equipment usage, enabled the manufacturer to engage in price discrimination, and thereby more fully exploit its interbrand power.<sup>62</sup>

These justices thus clearly concluded that Supreme Court caselaw embraces the view that enhancing price discrimination and increasing the exploitation of tying power are anticompetitive effects that justify current tying doctrine.

*Illinois Tool Works* confirms the Court’s understanding that, even when no foreclosure effects exist, power effects justify condemning ties absent offsetting efficiencies. In that case, the Court held that the *Jefferson Parish* quasi-per se rule applied to a tie of unpatented ink to patented printheads used to print barcodes, and that such a tie was thus illegal upon proof of market power over printers, absent offsetting efficiencies.<sup>63</sup> The Court did not conclude that foreclosure effects were necessary. If it had, it would have required evidence of a substantial tied foreclosure share, which would have been implausible because the ink used for one specialized sort of printer is hardly likely to be a big share of all ink.<sup>64</sup> Instead, the Court remanded under instructions that made clear liability turned on proving market power, thus confirming that power effects suffice.<sup>65</sup> Indeed, the case was quite similar to the printer-cartridge hypothetical I discuss above.

The Supreme Court’s premise that these power effects are anticompetitive indicates

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<sup>61</sup> *Id.* at 494 (emphasis added).

<sup>62</sup> *Id.* at 499.

<sup>63</sup> *Illinois Tool Works v. Independent Ink*, 547 U.S. 28, 42-43 (2006).

<sup>64</sup> Although the printheads used a specially-formulated ink, the plaintiff conceded that other ink makers could switch to making that type of ink, thus putting all ink makers in the relevant market because of supply substitutability. *Independent Ink, Inc. v. Trident, Inc.*, 210 F.Supp.2d 1155, 1175-77 (C.D.Cal.2002).

<sup>65</sup> 547 U.S. at 46.

it is actually a misnomer to refer to current tying doctrine as a quasi-per se rule. Given that premise, the focus on tying market power and tied dollar amount does not mean that the doctrine fails to require evidence of anticompetitive effects. That focus instead means that tying doctrine correctly requires the elements necessary to achieve the anticompetitive effects at issue. Perhaps references to a quasi-per se rule instead meant to reflect a notion in older cases that ties lacked any procompetitive justifications. But the Court has always considered procompetitive justifications before rejecting them, and *Illinois Tool Works* affirmatively states that it now accepts the view that ties can have procompetitive justifications.<sup>66</sup> It thus now seems likely that a tie can be justified by evidence that the tie is the least restrictive way to achieve efficiencies large enough to offset the anticompetitive effects.

Accordingly, today it is more accurate to read Supreme Court caselaw on tying as embracing a rule of reason, where anticompetitive effects must be shown or inferred and procompetitive justifications are admissible. The significance of this caselaw lies instead in its holdings that the three power effects (1) count as anticompetitive effects that must be considered in the rule of reason and (2) are properly inferred from tying market power. In contrast, foreclosure effects would be inferred from a substantial foreclosure share, as they are for exclusive dealing and loyalty discounts.

But is the caselaw correct to hold that such power effects should be deemed anticompetitive? It is that issue that we cover next.

#### **IV. SHOULD THE POWER EFFECTS BE DEEMED ANTICOMPETITIVE?**

Chicago school theorists who promoted the single monopoly profit theory have long conceded that it did not apply when tying increased price discrimination, but they generally argued that such price discrimination should not be deemed

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<sup>66</sup>*Id.* at 36; ELHAUGE, U.S. ANTITRUST, *supra* note, at 359.

anticompetitive.<sup>67</sup> So have some Harvard School scholars.<sup>68</sup> They essentially argued that trying to ban the first power effect was futile and likely to have harmful effects. They simply assumed that this same analysis applied to the other power effects because they also involved forms of price discrimination. Even as to the first power effect, their arguments were wrong on both scores, and certainly no more reasonable than the Supreme Court's opposite policy conclusion. Nor can one properly just assume that their arguments apply equally to the other two power effects, which differ in important ways that, we shall see, weaken the critics' arguments.

More recently, some have taken the different tack of arguing that increasing monopoly profits is desirable, even if it reduces ex post total welfare, because it increases investment in the innovation that creates market power, and thus increases ex ante total welfare. This argument fails because, as I explain below, the consumer welfare received at a uniform monopoly price is necessary to prevent socially excessive and duplicative investments in trying to obtain market power. Indeed, because firms competing to obtain market power will incur ex ante costs that dissipate their expected monopoly profits, conduct that converts consumer welfare into monopoly profits will, even if it increased total welfare measured ex post, generally reduce total welfare measured ex ante.

### ***A. Should Price Discrimination Among Buyers of the Tying Product Be Deemed Anticompetitive?***

1. Direct Price Discrimination as a Substitute. Critics of tying doctrine have argued that prohibiting tying because it produces price discrimination among buyers of the tying product is generally futile because firms will instead just substitute less efficient forms of direct price discrimination.<sup>69</sup> But the Supreme Court's contrary premise that

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<sup>67</sup> See BORK, *supra* note , at 376-378; POSNER, *supra* note , at 199-207; Bowman, *supra* note , at 23-24, 33; Director & Levi, *supra* note , at 291-92, 294; Klein, *supra* note , at 632-34; Posner, *The Chicago School*, *supra* note, at 926; *see also* POSNER & EASTERBROOK, *supra* note , at 803-808 (finding it more ambiguous whether such price discrimination should be deemed anticompetitive). The Chicago school theorists also conceded that tying might be used to evade price regulation, but for this article I will assume no such price regulation exists.

<sup>68</sup> IX AREEDA & HOVENKAMP, *supra* note, ¶1710c4, ¶1711b&e.

<sup>69</sup> See POSNER, *supra* note , at 203-204; IX AREEDA & HOVENKAMP, *supra* note, ¶1710c4, ¶1711b&e.

firms generally cannot achieve the same results with direct price discrimination seems at least equally plausible. Direct price discrimination requires ascertaining buyer valuation and preventing resale from buyers who get low prices to buyers who do not.<sup>70</sup> Tying the product to a consumable sold at a supracompetitive profit neatly avoids these problems. Charging per use could conceivably accomplish similar price discrimination, but it may be much harder to monitor actual usage than to monitor purchases of some consumable. Usage fees may also be less profitable than tying because the market rate for the tied product might itself be supracompetitive. Moreover, some forms of direct price discrimination are in fact illegal under the Robinson-Patman Act.

Nor is it true that, if feasible, direct price discrimination would be less efficient than tying. To the contrary, direct price discrimination would, where feasible, generally be more efficient given that it does not entail the additional inefficiencies that result because tying produces suboptimal usage of the tied product by inflating its price above its marginal cost. When firms are willing to incur the greater inefficiencies that result from tying, it is likely to be the case that tying allows profitable price discrimination that could not equally be achieved directly.

A related argument is that it would be arbitrary to condemn tying that produces price discrimination because direct price discrimination is not prohibited unless the conditions of the Robinson-Patman Act are met.<sup>71</sup> But there are all sorts of reasons not to want to review simple price differences that do not apply to condemning tying that achieves price discrimination. Among other things, setting prices is unavoidable, so that a general review of all price discrimination would raise serious administrability problems and impede routine procompetitive price changes, especially because it can be difficult to determine when price differences reflect real price discrimination. In contrast, tying agreements that worsen price discrimination are avoidable, can easily be banned without reaching other conduct, and sometimes also produce adverse foreclosure effects that are hard to prove. Moreover, price discrimination by firms lacking market power can efficiently increase output without increasing supracompetitive profits or harming consumer welfare.<sup>72</sup> Further, the fact that the law

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<sup>70</sup> See Kathleen Carroll and Dennis Coates, *Teaching Price Discrimination: Some Clarification*, 66 SOUTHERN ECON. J. 466, 471 (1999).

<sup>71</sup> See Bowman, *supra* note , at 33.

<sup>72</sup> Elhauge, *Why Above-Cost Price Cuts to Drive out Entrants Do Not Signal Predation or Even Market Power – and the Implications for Defining Costs*, 112 YALE L.J. 681, 732-743 (2003).

allows direct pricing that achieves price discrimination does not imply approval of agreements in restraint of trade that enhance price discrimination. Indeed, the law might permit most direct price discrimination precisely because it is usually hard to maintain given difficulties in ascertaining buyer valuations or preventing resales among them. Tying that enhances price discrimination might evade those ordinary limits and justify a different result.

2. The Welfare Effects. A more substantive argument is that antitrust law should allow tying to achieve imperfect price discrimination because it has desirable welfare effects. This argument rests on a claim that imperfect price discrimination has ambiguous effects on consumer welfare and likely increases total welfare.<sup>73</sup> The claim about total welfare is based on an argument by analogy: that because perfect price discrimination increases total welfare, imperfect price discrimination is likely to do so as well. But this argument fails on two counts. (1) The analogical claim is wrong because the economic literature shows that, unlike perfect price discrimination, imperfect price discrimination likely reduces both consumer and total welfare. (2) Even if the analogical claim were true, it would also indicate that imperfect price discrimination likely reduces consumer welfare, which justifies condemnation under traditional antitrust standards that focus on consumer welfare rather than total welfare. Let's take each point in turn.

*First*, when tying achieves price discrimination among tying product buyers, it does so imperfectly by categorizing buyers of the tying product into different groups (based on the number of tied products they buy) and charging each group a different effective price for the same tying product (because of the inflated tied product prices). For example, suppose buyer valuations of printers range from \$1000 to \$0, printers cost \$200 each to make, and the profit-maximizing uniform monopoly price were \$600. Suppose further that each buyer uses one to four cartridges, and (just to simplify the math) that each cartridge costs \$0 to make. The firm ties printers to cartridges by selling the printer with one cartridge included for \$300, and requires buyers to purchase any additional cartridges from the firm for \$200 each. Thus, one-cartridge users will pay \$300, two-cartridge users will pay \$500, three-cartridge users will pay \$700, and four-cartridge users will pay \$900. The resulting price discrimination is precisely the same as if the firm engaged in direct price discrimination without any tying by dividing buyers into those four groups and charging the first group \$300 for

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<sup>73</sup> See IX AREEDA & HOVENKAMP, *supra* note, ¶¶1710a&c4, 1711, 1729i1; BORK, *supra* note, at 381, 395-401; Klein, *supra* note, at 633-34.

a printer, the second group \$500 per printer, the third group \$700 per printer, and the fourth group \$900 per printer, allowing each buyer to buy cartridges on a competitive market at \$0 each.

Such price discrimination is imperfect because the number of tied products used provides only a rough guide to buyer valuation of the tying product. Some buyers may use only one cartridge but value the printer enormously because they use it for high-profit business deals. Other may use many cartridges but value them less because they use them to print out low-value fliers. Moreover, even if we avoided the problem that buyers who use more cartridges may actually value the printers less, each category would remain relatively crude. For example, suppose that all one-cartridge users value printers from \$200 to \$400, while all two-cartridge users value them from \$400 to \$600, so that there is no overlap. The problem would remain that the first set of buyers would face a price of \$300, which is higher than valuation for some buyers in the set and lower than valuation for others. The second set of buyers would face a price of \$500, with the same problem.

Economic analysis of such imperfect price discrimination is well-developed.<sup>74</sup> It proves that, with linear demand, imperfect price discrimination reduces not just

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<sup>74</sup> In technical economic lingo, this form of imperfect price discrimination is called third-degree price discrimination, which is defined as charging a different price to different buyers of the product over which a firm has market power. See Hal R. Varian, *Price Discrimination*, in 1 HANDBOOK OF INDUSTRIAL ORGANIZATION 600 (Richard Schmalensee & Robert D. Willig eds., 1989). Some have instead thought that tying to meter demand produces second-degree price discrimination. See IX AREEDA & HOVENKAMP, *supra* note , ¶1711b4(B). But this is incorrect because second-degree price discrimination involves charging all buyers the same price schedule, and varying prices with the units bought of the product over which the seller has market power. See Varian, *supra*, at 600. That is not what it happening when tying is used to meter. Buyers are not paying less per printer if they buy more printers. Buyers are instead effectively paying more for the same printer if they fall into a category of buyers who use more cartridges with it.

Even if tying did achieve second-degree price discrimination, such discrimination decreases total welfare if the demand curves of the high and low demand buyers do not cross. See Michael L. Katz, *Non-Uniform Pricing, Output and Welfare under Monopoly*, 50 REV. ECON. STUD. 37, 51 (1983); Varian, *supra* note , at 617. Otherwise, the effects on output and total welfare are ambiguous, so overall it seems more likely to decrease total welfare than increase it. See also Richard A. Posner, *Vertical Restraints and Antitrust Policy*, 72 U. CHI. L. REV. 229, 236 (2005) (acknowledging that net total welfare effect of second-degree price discrimination is “probably negative”). Because total welfare includes the increased producer profits, this makes it even more likely that overall it decreases consumer welfare.

consumer welfare, but total welfare as well.<sup>75</sup> The reason is that such imperfect price discrimination does not alter the profit-maximizing output, but reallocates some output from high value buyers to low value buyers. The subcompetitive output thus remains the same, but the reallocation of output from high to low value buyers produces an additional decrease in consumer surplus, thus producing a net total reduction in total welfare.

Output is unchanged because, with imperfect price discrimination, the seller charges a separate monopoly price to each group that, like all monopoly prices, will result in some non-purchases by buyers in that group. In the above example, the \$900 price charged to four-cartridge users would result in no sales to users in this group who value the printer less than \$900; the \$700 price to three-cartridge users would result in no sales to those who value the printer less than \$700, and so on. What the economic literature proves is that, if each group has linear demand, the separate monopoly prices charged to each group will result in a total output that is the same as if one monopoly price were charged to the groups combined. However, that output would be reallocated. With uniform monopoly pricing, printers would be bought by four-cartridge users who value printers from \$600 to \$900, and by three-cartridge users who value them from \$600 to \$700, but with imperfect price discrimination those users would not buy printers. Likewise, with uniform monopoly pricing, printers would not be bought by two-cartridge users who value printers from \$500 to \$600, nor by one-cartridge users who value printers from \$300 to \$600, but with imperfect price discrimination those users would buy printers. Thus, the net effect of imperfect price discrimination is to reallocate some output from users who value printers from \$600 to \$900 to users who value printers from \$300 to \$600. Because the second set of users put less value on the printers, this reallocation of output is inefficient.

This output misallocation is a greatly underappreciated inefficiency caused by imperfect price discrimination. One of its important implications is that it is not the case (as is often mistakenly supposed) that price discrimination increases total welfare whenever it increases output. Increasing output is *necessary* for price discrimination to increase total welfare, so that total welfare clearly declines if price discrimination

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<sup>75</sup> See Carroll & Coates, *supra* note , at 472; Stephen K. Layson, *Third-Degree Price Discrimination with Interdependent Demands*, 46 J. INDUS. ECON. 511, 512, 520 (1998); Richard Schmalensee, *Output and Welfare Implications of Monopolistic Third-degree Price Discrimination*, 71 AMER. ECON. REV. 242, 242 (1981); Varian, *supra* note , at 599, 621-622.

decreases output or leaves it unchanged.<sup>76</sup> However, it is *not* sufficient. Price discrimination that increases output increases total welfare only if the welfare gains from the output increase are large enough to exceed the welfare loss from the output misallocation.

Because of this output misallocation, imperfect price discrimination decreases total welfare not only with linear demand, but as long as one adopts the balanced assumption that the demand curves are as likely to be concave as convex.<sup>77</sup> Imperfect price discrimination is likely to increase total welfare only if we make the unbalanced assumption that high demand buyers have more concave curves and low demand buyers have more convex curves.<sup>78</sup> Because an unbalanced assumption in one particular direction seems unlikely to hold generally, tying that produces the first power effect will, overall, likely reduce total welfare.

The above analysis assumes buyers who are final consumers. But the welfare effects are even worse if we instead assume buyers are intermediaries who resell to consumers. In such cases, the economic literature shows that imperfect price discrimination reduces output and total welfare, other than in the extreme case when it induces inefficient integration.<sup>79</sup> The reason is that the intermediary paying a higher price will resell at a higher price that tends to drive consumers to the intermediary that pays the lower price, which will tend to drive up the profits of the latter and allow increased prices to it as well. Because most tying cases involve intermediary buyers, this only strengthens the case for concluding most tying with the first power effect likely harms total welfare.

Finally, because total welfare includes the additional monopoly profits earned by price discrimination, the likelihood that tying that produces the first power effect will likely reduce total welfare means that it is even more likely that it decreases consumer welfare. These adverse welfare effects may be hard to prove definitively in individual

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<sup>76</sup> See Schmalensee, *Output and Welfare*, *supra* note , at 241-42, 245; Varian, *supra* note , at 621.

<sup>77</sup> Schmalensee, *Output and Welfare*, *supra* note , at 246. See also Posner, *Vertical Restraints*, *supra* note , at 235-236 (2005) (acknowledging that third-degree price discrimination generally has negative effects on total welfare).

<sup>78</sup> Layson, *supra* note , at 512, 522-23; Varian, *supra* note , at 621-623.

<sup>79</sup> Michael L. Katz, *The Welfare Effects of Third-Degree Price Discrimination in Intermediate Good Markets*, 77 AMER. ECON. REV. 154, 161-162 (1987).

cases. But that is a reason to have a categorical rule inferring anticompetitive effects from tying with market power, rather than requiring that decreased consumer welfare be established in each case. To make such a categorical judgment, one instead must decide whether negative or positive welfare effects seem more likely for cases involving tying with market power that lacks offsetting efficiencies. Given the economic literature, the premise of tying doctrine that the welfare effects are more likely negative than positive seems well-founded. Certainly critics have not proven that the opposite premise is true, and one would expect them to have the burden of proof because they are the ones who wish to change current doctrine.

*Second*, even if the analogical claim were valid, the same analogical logic means that because perfect price discrimination definitely decreases consumer welfare, tying that achieves imperfect price discrimination is likely to decrease consumer welfare as well. That is, even if we ignore the above analysis showing that imperfect price discrimination likely harms total welfare, the critics' analogy instead implies that imperfect price discrimination is likely to both increase total welfare and decrease consumer welfare. Critics cannot have it both ways by accepting the analogy to perfect price discrimination for total welfare effects but ignoring the analogy for consumer welfare effects.<sup>80</sup>

Thus, even if their analogical reasoning were correct, the critics must ultimately rest on the claim that antitrust law does or should protect total welfare rather than consumer welfare. However, antitrust law clearly protects the latter when the two are in conflict. The Supreme Court has never embraced a total welfare standard, but has repeatedly stated that “Congress designed the Sherman Act as a ‘consumer welfare prescription.’”<sup>81</sup> *Jefferson Parish* itself stressed that “the consumer” was the one “whose interests the [Sherman Act] was especially intended to serve.”<sup>82</sup> The recent *Leegin* opinion equated an “anticompetitive effect” with being “harmful to the consumer” and “stimulating competition” with being “in the consumer's best

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<sup>80</sup> Indeed, although his tying critique argues that price discrimination has ambiguous effects on consumer welfare but likely benefits total welfare, *see supra* note , Professor Hovenkamp concludes the opposite elsewhere, stating that “[a]ll forms of persistent price discrimination transfer wealth away from consumers and toward sellers,” but that the total welfare effects of imperfect price discrimination are ambiguous. HOVENKAMP, *FEDERAL ANTITRUST POLICY* 576-77 (3<sup>rd</sup> ed, 2005).

<sup>81</sup> *NCAA v. Board of Regents*, 468 U.S. 85, 107 (1984); *Arizona v. Maricopa County Med. Soc’y*, 457 U.S. 332, 367 (1982); *Reiter v. Sonotone Corp.*, 442 U.S. 330, 343 (1979).

<sup>82</sup> 466 U.S. at 15.

interest.”<sup>83</sup> Most telling, in *Brooke* and *Weyerhaeuser*, the Court expressly held that antitrust law allows below-cost pricing or overbidding when recoupment is implausible because, although such pricing is inefficient (and thus reduces total welfare), it enhances “consumer welfare.”<sup>84</sup> This cannot be dismissed as dicta because the proposition that consumer welfare trumps total welfare was necessary to hold that antitrust law allows inefficient below-cost pricing that benefits consumer welfare. Further, if the critics were right that tying’s power effects likely increase total welfare, then the tying cases also provide binding authority that antitrust favors consumer welfare over total welfare when they conflict, because the tying cases do condemn tying based on power effects without foreclosure effects.

Likewise, countless lower court decisions have stated that the antitrust laws are designed to protect consumer surplus from being transferred to producers.<sup>85</sup> Further, the lower courts have held that antitrust law does not allow efficiencies to justify a merger that would increase prices, even though such a merger might increase total welfare by creating cost-savings for the merging firm that exceed the price increase to consumers. Instead, the courts, and the merger guidelines, require proof that any cost-savings would be sufficiently passed on to consumers that the merger would result in a net price reduction that benefits consumer welfare.<sup>86</sup> Again, this is not dicta

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<sup>83</sup> *Leegin Creative Leather Products, Inc. v. PSKS, Inc.*, 127 S.Ct. 2705, 2713 (2007).

<sup>84</sup> *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 224 (1993); *Weyerhaeuser Co. v. Ross-Simmons Hardwood Lumber*, 549 U.S. 312, 324 (2007).

<sup>85</sup> John B. Kirkwood & Robert H. Lande, *The Fundamental Goal of Antitrust: Protecting Consumers, Not Increasing Efficiency*, 84 NOTRE DAME L. REV. 214, 219-224 (2008).

<sup>86</sup> *See id.* at 224-227; U.S. DOJ/FTC, Horizontal Merger Guidelines §4 (1992, revised 1997). Some argue that antitrust law protects not consumer welfare, but the “competitive process.” *See* Gregory J. Werden, *Competition, Consumer Welfare, & the Sherman Act*, 9 SEDONA CONF. J. 87 (2008). But what does the “competitive process” mean? It cannot turn on whether the process involves more competitors or more competitive behavior among them, for antitrust law allows mergers that reduce the number of competitors and joint ventures that limit competitive behavior if they benefit consumer welfare, and prohibits tying that harms consumer welfare even when it produces no substantial foreclosure that could reduce the number or competitiveness of rivals. Nor can it turn on a combination of those factors and conduct efficiency, for antitrust law allows inefficient below-cost pricing that reduces the number of rivals but benefits consumer welfare and prohibits efficient mergers that reduce the number of rivals but harm consumer welfare. Instead, as this legal pattern shows, courts judge whether conduct worsens the competitive process by whether it produces a process that is likely to harm consumer welfare. *See, e.g., Grappone, Inc. v. Subaru of New England, Inc.*, 858 F.2d 792, 794 (1st Cir. 1988) (Breyer, J.) (“the antitrust laws protect the competitive process in order to help individual consumers”); *Geneva Pharmaceuticals Technology*

because the proposition that consumer welfare trumps total welfare was necessary to hold that antitrust law prohibits efficient mergers that harm consumer welfare.

This caselaw is also consistent with the legislative history, which indicates Congress wanted to protect consumer welfare.<sup>87</sup> To be sure, Judge Bork argued that this legislative history supported a total welfare standard. But what he actually showed for the first 109 pages of his famous book was that the antitrust laws embody a “consumer welfare” standard, which on page 110 he converted into a total welfare standard with the logic that “the monopoly and its owners . . . are also consumers,” so that conduct that provides benefits to a monopolist that exceed the harm to traditional consumers is “merely a shift in income between two classes of consumer.”<sup>88</sup> Although economists do sometimes confusingly use consumer welfare to mean total welfare (including producers), Bork offered no evidence that Congress ever shared that rather

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Corp. v. Barr Laboratories Inc., 386 F.3d 485 (2d Cir. 2004) (“The antitrust laws ... safeguard consumers by protecting the competitive process.”); Brunswick Corp. v. Reigel Textile Corp., 752 F.2d 261, 266-67 (7th Cir.1984) (“[t]he purpose of the antitrust laws ... is to preserve the health of the competitive process – which means ... to discourage practices that make it hard for consumers to buy at competitive prices”).

This does not mean that courts must assess consumer welfare effects on a case by case basis. Often they use rules, like the quasi-per se rule against tying with market power, that identify conduct likely to harm consumer welfare. It just means that consumer welfare is the ultimate metric used to design antitrust laws, whether they take the form of rules or standards. See Stephen Bundy & Einer Elhauge, *Knowledge About Legal Sanctions*, 92 MICH. L. REV. 261, 267-79 (1993) (explaining the tradeoffs in determining whether rules or standards best advance social goals). Nor does a consumer welfare standard mean that antitrust law allows inefficient conduct that harms firms or upstream sellers unless one proves downstream harm to consumers. Antitrust law condemns anticompetitive agreements that boycott single firms or create buyer market power in local upstream markets, even when it would be hard to prove any effect on downstream consumers, See ELHAUGE, U.S. ANTITRUST, *supra* note, at 94, 664 & n.27. But condemnation in such cases is perfectly consistent with a consumer welfare standard because, to the extent such conduct has any effect on consumer welfare at all, it can only be negative. Allowing the anticompetitive elimination of one firm or creation of upstream market power could only reduce output and market choices in the downstream consumer market, either currently or in the future by making firms less willing to enter such markets.

<sup>87</sup> Lande, *Wealth Transfers as the Original and Primary Concern of Antitrust: The Efficiency Interpretation Challenged*, 34 HASTINGS L.J. 65, 74-77, 82-106, 142-51 (1982); HOVENKAMP, *supra* note, at 76 (“the legislative history of the Sherman Act shows a great deal of concern for the fact that monopolists transfer wealth away from consumers, but no concern at all for any articulated concept of efficiency.”)

<sup>88</sup> See BORK, *supra* note, at 110.

specialized understanding of what a “consumer” meant.<sup>89</sup>

Sound policy reasons also counsel against replacing the current consumer welfare standard with a total welfare standard. First, any additional monopoly profits enjoyed by tying will be dissipated by the costs of competing to obtain market power.<sup>90</sup> Because a total welfare standard does not discount the additional monopoly profits by these costs, it will generally produce inefficient results compared to a consumer welfare standard. Indeed, as Judge Posner showed, the fact that monopoly profits will be dissipated by the costs of obtaining market power means that: “Even when price discrimination is perfect, so that the deadweight loss of monopoly is zero, the total social costs of a discriminating monopoly are greater than those of a single price monopoly.”<sup>91</sup>

Second, if conduct really enhances total welfare, a firm should usually be able to structure that conduct in a way that passes on enough of its gain to convert a total welfare gain into a consumer welfare gain. Because efficiency claims are often speculative, a consumer welfare standard can force firms to put their money where their mouth is. If a firm really believes that it will reap the size of efficiency gains that it claims, it can generally use those gains to fund a consumer welfare trust or some other mechanism for lowering prices enough to give consumers a net benefit.<sup>92</sup>

Third, it is much easier to coordinate international antitrust regulation around a consumer welfare standard.<sup>93</sup> In a world of concurrent antitrust jurisdiction, the decisive regulator will be the most aggressive nation, and the nations likely to regulate most aggressively are importing nations that are harmed by the conduct. Under a consumer welfare standard, this effective allocation of regulatory authority works well

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<sup>89</sup> See Herbert Hovenkamp, *Antitrust Policy After Chicago*, 84 MICH. L. REV. 213, 250 (“Bork’s work has been called into question by subsequent scholarship showing that in 1890 Congress had no real concept of efficiency and was really concerned with protecting consumers from unfavorable wealth transfers.”); Philip Areeda, *Introduction to Antitrust Economics*, 52 Antitrust L.J. 523, 536 (1983) (antitrust law and legislative history embraces consumer welfare standard rather than total welfare).

<sup>90</sup> See Richard A. Posner, *The Social Costs of Monopoly and Regulation*, 83 J. POL. ECON. 807, 807-809, 822 (1975).

<sup>91</sup> *Id.* at 822.

<sup>92</sup> ELHAUGE, U.S. ANTITRUST, *supra* note, at 638-39.

<sup>93</sup> ELHAUGE & GERADIN, *supra* note, at 1102-1103.

because importing nations have incentives to apply a consumer welfare standard correctly. In contrast, importing nations would have incentives to misapply a total welfare standard by underweighing producer benefits and overweighing consumer harms.

Fourth, the redistributive effects of allowing conduct that increases monopoly profits more than it harms consumer welfare are likely to be undesirable because shareholders of monopoly firms generally have higher income than consumers. In other sorts of cases, one might argue that efficient conduct should be allowed because one can tax the profits and redistribute them to those who are harmed. But that argument depends on the premise that the tax system would be a more efficient means of redistribution. That is unclear here because taxes clearly deter efficient behavior, whereas tying that achieves imperfect price discrimination among buyers of the tying product has at best mixed efficiency effects. Further, such tying can be hard to disentangle from tying which has the other four effects that decrease total welfare.

In short, tying that leads to imperfect price discrimination among buyers of the tying product probably decreases total welfare, and even if one thought otherwise, powerful policy arguments favor consumer welfare. Further, the claim that antitrust law should embrace total welfare rather than consumer welfare would require a far more wholesale change in antitrust law than just changing tying law. One thus cannot say that current tying doctrine does not reflect a reasonable policy choice. If we reasonably put the burden of proof on those who would change current tying doctrine, then it seems clear that this burden has not been met under either a consumer or total welfare standard.

### ***B. Should the Other Power Effects Be Deemed Anticompetitive?***

Critics of current tying doctrine have not really grappled with the two other power effects. Instead, they simply categorize them both as forms of price discrimination, and then simply assume that the same arguments addressed in the last section apply equally to them.<sup>94</sup> One can understand the temptation to do so. The second power effect does achieve a form of inter-buyer price discrimination, and the third power effect could be thought of as a form of intra-buyer price discrimination across units

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<sup>94</sup> See BORK, *supra* note , at 375-378; POSNER, ANTITRUST LAW, *supra* note , at 200 n.15, 235; IX AREEDA & HOVENKAMP, *supra* note, ¶1711 & n.2.

bought by a single buyer. But notwithstanding their conceptual similarity, their effects differ in ways that have important policy implications and that greatly weaken the critics' arguments. In particular, these effects are less likely to be achievable by direct substitutes and are more likely to harm welfare.

1. Less Feasible Substitutes. The second and third power effects are less likely to be achievable without tying. Consider tying that achieves price discrimination across buyers of both products. As long as the products lack strong positive demand correlation, tying will neatly achieve price discrimination even when difficulties in observing individual buyer demand and preventing resales would make direct discrimination in both products unfeasible.<sup>95</sup> Indeed, that is its whole point: it avoids any need to know buyer valuation or prevent resale in either product. Nor need firms know the precise degree of demand correlation; they can simply experiment with bundling to see whether it increases profits, which will mean the demand correlation was not too positive. The ability to use bundling to achieve price discrimination across two products with hardly any information or any monitoring is quite remarkable. Thus, tying to price discriminate across buyers will clearly be feasible in many cases where direct price discrimination is not.

Moreover, to the extent direct price discrimination were feasible, it could reduce the inefficiencies that result from the fact that bundling can allocate output to buyers who value one product at less than its cost.<sup>96</sup> Thus, even if the tying prohibition led firms to substitute direct price discrimination, that would be desirable.

Likewise, extracting individual consumer surplus is less likely to be achievable through direct discrimination. Here the closest alternative using direct discrimination would be two-tier pricing: charging a lump sum for the right to buy the tying good at some per unit price. Where available, this could extract individual consumer surplus. However, we cannot justifiably assume that two-tier pricing can always extract all individual consumer surplus. It may be difficult to get buyers to pay the lump sum because of financing costs or because of the risk that market conditions may change in a way that makes buyers want to purchase less of the tying product. Tying agreements can avoid this problem because sellers would have to adjust future prices if, say, their market power in the tying product declines. Seller uncertainty about

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<sup>95</sup> Adams & Yellen, *supra* note, at 476.

<sup>96</sup> Adams & Yellen, *supra* note, at 482-483, 491-492.

buyer demand can also make a separate two-part tariff less effective than tying at extracting individual consumer surplus.<sup>97</sup> Or two-tier pricing may be difficult to maintain if the firm cannot prevent resale of the tying product from a buyer paying the fee to another buyer who doesn't. In at least some cases, tying will be a feasible strategy for extracting individual consumer surplus that two-tier pricing cannot reach.

Indeed, although two-tier pricing is available in theory, it is less prevalent in actual practice than charging different prices to buyers of the same product.<sup>98</sup> It also seems to be a feasible substitute less often. One often observes a tying firm charging different prices to different buyers before it starts to tie. It is rarer to see a firm engage in two-tier pricing before it begins to tie. If two-tier pricing *were* feasible, firms would be likely to use it (rather than tying) to extract individual consumer surplus because two-tier pricing would be more profitable, for two reasons. One is that the lump sum charged would not be restricted by the monopoly price for the tied good, and thus can fully extract the consumer surplus at the tying monopoly price. The other is that the marginal price for the tying good could be lowered to marginal cost, thus allowing the firm to extract the larger consumer surplus that would have existed at competitive tying prices. If firms would be tempted to use tying despite those factors, it must be because it provides a more feasible means of extraction than two-tier pricing could.

Finally, two-tier pricing reduces the allocative inefficiencies that result from the fact that ties create subcompetitive consumption in the tying and tied markets. Thus, if the tying prohibition does lead firms to substitute two-tier pricing, we need not cry about it: such substitution is a social boon, not a liability.

2. Worse Welfare Effects. The critics' claim that price discrimination has ambiguous effects on consumer welfare but likely increases total welfare is even more clearly wrong for the other two power effects. For tying that price discriminates across both products, this claim has matters precisely backwards. There consumer welfare clearly is harmed, and it is the effects on total welfare that are ambiguous.<sup>99</sup>

Likewise, using tying to extract individual consumer surplus unambiguously reduces

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<sup>97</sup> See Greenlee, et al., *supra* note , at 1136, 1138, 1143-44.

<sup>98</sup> See Varian, *supra* note , at 600, 617 (noting that third-degree price discrimination is probably the most common form of price discrimination).

<sup>99</sup> See *supra* II.B.

consumer welfare. When two-tier pricing is not a feasible alternative, requirements tying where buyers purchase multiple units of the tying product will definitely harm consumer welfare by extracting individual consumer surplus.<sup>100</sup> The effects are less ambiguous than with enhancing inter-buyer price discrimination because extracting individual consumer surplus does not harm some consumers and benefit others. Further, unlike with inter-buyer price discrimination, the effects do not depend on buyers differing in their preferences. Tying to extract individual consumer surplus will also decrease total welfare whenever the tied buyers' purchases or valuation of the tying product are significantly larger than for the tied product, which is typically true in actual tying cases.

Finally, tying to extract individual consumer surplus also has more negative distributive effects. Extracting individual consumer surplus simply transfers wealth from buyers to the tying producer. This is likely to be unattractive on distributive grounds because the average buyer generally has less income than the average shareholder. Inter-buyer price discrimination has that effect as well, but also tends to shift consumer surplus from buyers who are not price sensitive to buyers who are. Because the latter will tend to have lower income, this is more likely to have desirable distributive effects.

### ***C. The Claim that Increasing Monopoly Profits Is Desirable***

More recently, some have offered a more radical claim: that any vertical conduct (including tying) that increases the monopoly profits extracted from market power should be deemed desirable – even if it reduces ex post total welfare – because the increased profits will induce more investment in the innovation that creates market power.<sup>101</sup> Because they apply their claim only to increased profit extraction, and not

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<sup>100</sup> See Burstein, *supra* note , at 68–69; Mathewson & Winter, *supra* note , at 567–69; discussion above at \_\_\_\_.

<sup>101</sup> See Dennis W. Carlton & Ken Heyer, *Extraction v. Extension, The Basis for Formulating Antitrust Policy Towards Single-Firm Conduct*, 4 COMPET. POL'Y INT'L 285, 285, 290-292 (2008). Although the authors refer to the relevant conduct as “single-firm” conduct, they explicitly extend their analysis to tying and bundled discounts, exclusive dealing and loyalty discounts, and resale price maintenance. *Id.* at 290. Because all those practices involve multi-firm agreements, where the buyer agrees to abide by some seller condition restricting buyer choice, it is more accurate to say the authors are arguing for a test applicable to all vertical practices and agreements. True single-firm conduct, like merely setting unconditioned prices or deciding with whom to deal, can be

to conduct that extends market power, their claim would here mean that the law should stop treating the power effects as anticompetitive, but still treat the foreclosure effects that way. This new claim usefully gives up the ghost on the single monopoly profit theory, and acknowledges that even the power effects from tying and bundled discounts can reduce total welfare.<sup>102</sup> It clarifies that the real claim is that increasing monopoly profits is likely to create beneficial ex ante effects that offset any harmful welfare effects that flow after (ex post) the tie is imposed.

However, this new claim rests on a mistaken premise. That premise is that ex ante investment will be suboptimal whenever firms “capture less than the total surplus created by their innovations.”<sup>103</sup> This premise is false because it ignores the fact that firms compete to obtain the patents or other property rights that give them market power. This will lead to competitive investments that dissipate those monopoly profits. Thus, the patent race literature has proven that firms will make socially excessive (and often duplicative) investments if they capture all the total surplus created by their innovations. The basic reason is that firms do not stop investing when marginal investment cost equals the marginal gain, but continue investing until it equals the average gain from such an investment. For example, a firm would invest \$1 million to be the hundredth research team with a 1/100 chance of becoming the first discoverer of an innovation that will generate \$100 million in profits, even though having a hundredth team does not meaningfully increase the marginal odds that someone will discover the innovation. Indeed, this literature proves that investments will be excessive whenever firms capture more than a certain fraction of total surplus.<sup>104</sup> What keeps that fraction from being too high is precisely the fact that part of that total surplus is instead enjoyed by consumers, as the consumer surplus they earn at a uniform monopoly price.

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challenged as monopolization or attempted monopolization only if it is reasonably capable of making a significant causal contribution to the acquisition or maintenance of monopoly, which means that those laws require extension and do not cover pure extraction. See ELHAUGE, U.S. ANTITRUST, *supra* note, at 302-04; Elhauge, *Defining Better*, *supra* note, at 331-34. But the legal standards applicable to agreements are not limited to extension.

<sup>102</sup> *Id.* at 292-293.

<sup>103</sup> *Id.* at 291 n.12.

<sup>104</sup> SUZANNE SCOTCHMER, *INNOVATION AND INCENTIVES* 100-103 (MIT Press 2005); Tandon, *Rivalry and the Excessive Allocation of Resources to Research*, 14 BELL JOURNAL OF ECONOMICS 152, 152, 156-57 (1983); Dasgupta & Stiglitz, *Uncertainty, Industrial Structure, and the Speed of R&D*, 11 BELL JOURNAL OF ECONOMICS 1, 18 (1980).

True, one could imagine maintaining the same fraction by shortening the patent term to adjust for the proposed legal change allowing firms to extract all the consumer surplus during their patent term. But this approach raises several problems. First, in fact patent terms have been set based on current law, which does not allow a patent holder to extract greater monopoly profits through tying. Instead, current law not only subjects patent holders to the same quasi-per se tying rule as everyone else, but affirmatively treats such ties as a patent misuse.<sup>105</sup> Patent holders are entitled to the normal monopoly profits they make by selling their patented goods, but are not currently entitled to extract more than those profits through tying. Thus, one would have to change tying doctrine and the patent terms simultaneously to effectuate the proposed change without causing excessive investment incentives.

Second, not all patent holders can equally extract consumer surplus through tying. It would be unsound policy to adopt a legal change that awards greater returns to those with greater extraction ability, even though their innovations are no more valuable, because that would inefficiently distort research toward less valuable innovations. One could try avoid this problem by adjusting for variations in extraction ability with different patent terms that depend on each firm's extraction ability, but that would be hard to assess and would vastly complicate patent law.

Third, even if one could keep the fraction at the optimal level by perfectly varying patent terms to adjust for variations in the newly permitted extraction ability, the costs of doing so would not be worth it, because such a legal change would create no gain in either total or consumer welfare. The only effect would be to redistribute consumer surplus from current to future consumers. If anything, this seems likely to be distributionally undesirable because it would leave current consumers with a zero share of total surplus during the patent term in order to give future consumers all of the total surplus during the term reduction period, rather than leaving each of them with an equal share of that surplus during a longer patent term. Moreover, future generations are generally better off.

Fourth, varying the patent term would not help with all the other property rights that protect market power. Copyright terms are too long for marginal changes in them to meaningfully alter the present value of expected profits, trade secrets last as long as the secret can be held, and regular property rights have infinite terms. They all protect

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<sup>105</sup> *Illinois Tool Works v. Independent Ink*, 547 U.S. 28, 33-34, 40-43 (2006)

market power, and it would be implausible and disruptive to adjust them all in order to offset the effects of a legal change allowing firms to extract more monopoly profits from that market power.

The last point is important because this patent race literature in effect formalizes a more general insight by Judge Posner: that competition to obtain market power dissipates the resulting monopoly profits regardless of the source of that market power.<sup>106</sup> As he pointed out, firms will find it profitable to incur costs to obtain market power up until those costs equal the expected monopoly profits. If the costs were lower than expected monopoly profits, then more firms would incur those costs to try to obtain the market power position, until the two equilibrated. Thus, if one properly includes the costs of those who failed to obtain the market power position, the total firm costs of obtaining market power will dissipate the resulting monopoly profits.<sup>107</sup> Accordingly, considering ex ante effects does not support allowing additional exploitation of market power. To the contrary, considering ex ante costs *increases* the social loss from such exploitation, and means that even perfect price discrimination actually reduces social efficiency, even though it produces an ex post increase in total welfare.<sup>108</sup>

To be sure, Judge Posner's claim that 100% of the monopoly profits will be dissipated has been disputed by Professor Fisher.<sup>109</sup> He made two points. First, sometimes firms luck into unearned monopolies or happen to have advantages in obtaining them. But to the extent that is true, we have even less reason to give such firms a larger share of social surplus because doing so is unnecessary to incentivize them. Second, if one assumes rising marginal costs in obtaining market power, then not all producer surplus will be dissipated when the expected profit gain equals marginal costs. But Judge Posner's contrary assumption of constant costs also seems reasonable and consistent with the usual economic assumption that costs are constant in the long run.<sup>110</sup>

In any event, even Professor Fisher acknowledges that some of the monopoly profits will be dissipated by ex ante acquisition costs: he disputes only that all or nearly all

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<sup>106</sup> See Posner, *The Social Costs of Monopoly*, *supra* note , at 807-809.

<sup>107</sup> *Id.* at 812.

<sup>108</sup> *Id.* at 822.

<sup>109</sup> Franklin M. Fisher, *The Social Costs of Monopoly and Regulation: Posner Reconsidered*, 93 J. POL. ECON. 410 (1985).

<sup>110</sup> See Posner, *The Social Costs of Monopoly*, *supra* note , at 810-811.

will be.<sup>111</sup> There are thus two possible cases. In cases where Judge Posner is right that 100% of monopoly profits are dissipated, then any ex post increase in monopoly profits effectively washes out ex ante, which means that the consumer welfare effects actually determine the overall total welfare effects. To the extent tying's power effects decrease consumer welfare, they would also decrease overall total welfare, even if they increased ex post total welfare by producing an increase in monopoly profits that exceeded the consumer welfare harm, because those profits will be eaten up by ex ante costs. In cases where Professor Fisher is right, then some share less than 100% of monopoly profits are dissipated, which still means that tying that increases ex post total welfare will often decrease overall total welfare, indeed will do so whenever the consumer welfare harm exceeds the non-dissipated share of the gain in monopoly profits. In short, either Posner is right, and consumer welfare actually provides a truer guide to total welfare effects, or Fisher is right, and there is no reason to think ex post total welfare effects provide any better guide to overall total welfare than consumer welfare does. Ex ante effects thus eliminate the main argument for an ex post total welfare test, and strengthen the case for applying a consumer welfare standard.

Ex ante effects also greatly strengthen the grounds for thinking that tying's power effects likely reduce total welfare. The analysis in Sections A and B already indicated that tying's power effects are likely to reduce ex post total welfare. Considering ex ante effects further increases the likelihood that tying's power effects decrease total welfare because it means that, even in those cases where power effects increase ex post total welfare, they often decrease overall total welfare even under the Fisher analysis, and even more often under the Posner analysis.

## **V. HOW THIS ANALYSIS HELPS LIMIT AND ILLUMINATE THE CASES AND DOCTRINE**

The analysis thus far indicates that tying doctrine's quasi-per se rule, which focuses on tying power rather than tied foreclosure share, is reasonable given the power effects caused by tying. We can use this analysis to define the proper limits to this quasi-per se rule and to illuminate the cases and various doctrinal issues.

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<sup>111</sup> See Fisher, *supra* note , at 416.

### *A. The Cases and Proper Limits to the Quasi-Per Se Rule*

While the power effects explain why it generally makes sense to have a tying doctrine that focuses on tying power rather than tied foreclosure share, that does not mean it makes sense to do so in cases where market conditions negate the possibility of power effects. In such cases, a substantial tied foreclosure share or effect is necessary for anticompetitive effects, which would seem to justify an exception to the so-called quasi-per se rule. Given the analysis in Part II, all three power effects are negated by the combination of a fixed ratio and a strong positive demand correlation. The latter can be hard to measure directly, but can generally be inferred when the products lack separate utility, because that indicates that demand for each product will reflect demand for their joint functionality. Thus, an exception to the quasi-per se rule is warranted when the products both (1) are used or bundled in a fixed ratio, *and* (2) lack separate utility. Consistent with this, Supreme Court tying opinions have been most divided when some justices held empirical premises that matched those two conditions. Thus, understanding the power effects helps not only to explain the doctrine, but also to predict its fault lines.

*Jefferson Parish* involved a tie of anesthesiology to hospital services.<sup>112</sup> Obviously, these are services that are far more useful with each other, so it seems likely that demand for them would have a strong positive correlation. If we also assume that medical need fixes the ratio of anesthesiology to hospital services, then this could well represent the atypical case where market conditions negate power effects. Indeed, the Court and concurrence assumed that at least one part of the ratio was fixed, concluding that medical need dictates the amount of anesthesiology services for each surgery, making the use of tying to enhance inter-buyer price discrimination implausible.<sup>113</sup> This factual premise is actually debatable,<sup>114</sup> but even if it were true it would not mean that the ratio was fixed because the number of hospital days and intensity of hospital services probably do vary, especially in the modern era of managed care where insurers are active decisionmakers about consumption decisions. Thus, the amount of the tying hospital services purchased probably could vary from

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<sup>112</sup> *Jefferson Parish v. Hyde*, 466 U.S. 2 (1984).

<sup>113</sup> *Id.* at 28 n.47; *id.* at 36 n.4, 43 (Justice O'Connor, joined by Burger, C.J., and Powell & Rehnquist, JJ, concurring in the judgment.)

<sup>114</sup> For example, anesthesiologists might vary in how often they visit a pregnant woman in labor, how much they monitor post-operation recovery, whether they provide 24-hour coverage, or the extent to which they use highly-trained anesthesiologists for particular procedures.

the amount of tied anesthesiology used, which could permit extracting individual consumer surplus.

However, the Court and concurrence did not focus on whether fixed ratios and positive demand correlation negated power effects in a way that justified an exception to the quasi-per se rule. Instead, the issues were framed around whether, as the concurring justices argued, the Court should: (1) completely repeal the quasi-per se rule, or (2) deem two items a single product, incapable of being tied, whenever the tied product is useless without the tying one.<sup>115</sup>

Because concurring claim 1 encompassed all tying cases, the Court focused on the fact that the quasi-per se rule made sense in cases where market conditions did not negate power effects.<sup>116</sup> Given the scope of the claim, the Court thus had little trouble rejecting it. But the fact that claim 1 was plausible on the facts of the particular case probably fueled the concurrence's skepticism and helps explain why this case produced such a divided opinion.

Concurring claim 2 came closer to the relevant issue, but was overbroad in two ways. First, without fixed ratios, a lack of separate utility would not alone rebut the possibility of power effects. In rejecting this claim, the Court explicitly recognized this point, pointing out that: "In fact, in some situations the functional link between the two items may enable the seller to maximize its monopoly return on the tying item as a means of charging a higher rent or purchase price to a larger user of the tying item. See n. 23, *supra*."<sup>117</sup> And the note 23 to which the Court referred was precisely the footnote pointing out that scholarship by Bowman, Burstein, and Stigler showed that tying can allow a tying firm to extract greater monopoly profits.<sup>118</sup> Thus, standing alone, a lack of separate utility cannot negate power effects, and accordingly cannot justify an exception to standard tying doctrine.

Second, deeming the two items a single product would in many cases oust not only the quasi-per se rule, but also ordinary rule of reason inquiry even when substantial tied foreclosure did exist, because it would mean the case just involves the sale of a

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<sup>115</sup> *Id.* at 35, 38-40, 43, 46 (Justice O'Connor, joined by Burger, C.J., and Powell & Rehnquist, JJ, concurring in the judgment.)

<sup>116</sup> *Id.* at 12-18.

<sup>117</sup> *Id.* at 19 n.30.

<sup>118</sup> *Id.* at 15 n.23.

single product.<sup>119</sup> This would be unjustified because a lack of separate utility does not eliminate the possibility that foreclosing the tied market might preserve the degree of tying market power. Nor would a lack of separate utility eliminate the plausibility of adverse foreclosure effects within the tied market absent the additional factor of fixed ratios. To the contrary, the absence of alternative uses for the tied product would indicate that the tie is more likely to achieve a substantial tied foreclosure share that could lead to the two foreclosure effects. Thus, the Court was right to reject the argument that two items should be considered a single product when they are functionally related or separately useless.<sup>120</sup>

The *Kodak* dissenters came much closer to the mark. There the dissenters argued that the tied parts and service should be deemed either a single product or outside the scope of the quasi-per se rule because parts and service were (1) used in fixed ratios and (2) useful only with each other.<sup>121</sup> This, the dissenters argued, meant that no incremental monopoly profit could be gained from a tie of parts to service that could not have been achieved by simply raising parts prices. Leaving aside possible price discrimination between those subject to the tie and those not, those factors would (if true) indeed negate power effects from tying. The fixed ratios would eliminate the possibility that tying might achieve price discrimination among buyers of the tying product or extract individual consumer surplus. The lack of separate utility would establish the sort of strong positive demand correlation that would negate price discrimination across both products. Those two factors would also eliminate the possibility that foreclosing a substantial share of the tied service market would create tied market power that the defendant could exploit against purchases that otherwise would not have been subject to its tying market power in parts.

Those two factors thus (if true) would come close to knocking out four of the five possible anticompetitive effects from tying. However, they would not eliminate the fifth possibility: that foreclosing the tied market might enhance tying market power. Suppose, though, we add a third premise, which was probably implicitly assumed by the dissent: that Kodak had patents over parts for its own machines, which presumably is how Kodak prevented others from making those parts. If so, the patents probably

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<sup>119</sup> In the actual case, there was an exclusive dealing agreement that made the arrangement independently reviewable, but that will not always be the case.

<sup>120</sup> *Jefferson Parish*, 466 U.S. at 19 & n.30.

<sup>121</sup> *Eastman Kodak v. Image Technical Servs.*, 504 U.S. 451, 494 n.2, 498-499 (1992) (Scalia, J., joined by O'Connor & Thomas, JJ., dissenting).

would bar rivals from entering the parts market even without any tie, so that the tie was unlikely to reduce rival entry into the parts market, and thus unlikely to increase the degree of tying market power. True, even without affecting parts entry, foreclosing rival service providers might enhance tying market power if service were a partial substitute for parts. But partial substitutability would be inconsistent with the *Kodak* dissenters' factual premise that parts and services are used in fixed ratios because partial substitutes by definition can be used in varying ratios. Thus, given the dissenter's factual premises, it is not surprising that the facts of this case produced a divided opinion.

However, there was reason to doubt the validity of the dissent's factual premise on separate utility and fixed ratios. As the Court pointed out, in fact service is sometimes purchased without parts, and those who self-service buy parts without buying service.<sup>122</sup> Thus, the ratio of usage also varies. This reintroduces all the possible anticompetitive effects. Further, it seems quite likely that service is a partial substitute for parts. After all, firms that use more service to maintain their machines tend to have them break down less often, and thus need fewer parts. Further, firms can sometimes use additional service to repair existing parts without replacing them. This means that foreclosing this partial substitute could increase the degree of tying power over parts.

Moreover, while the usual price discrimination issue with tying involves price discrimination among buyers subject to the tie, this case raised the distinct issue of discrimination between those buyers and buyers who were *not* subject to the tie. The reason is that the tie did not apply to buyers who supplied their own service, which the Court noted could permit a form of price discrimination between self-service buyers and buyers who buy service.<sup>123</sup> If the need to buy service is a good proxy for buyer unsophistication or willingness to pay more for parts, then a tie can aid price discrimination in parts by helping to sort out buyers even if the ratios are fixed. The *Kodak* dissenters dismissed this claim with the observation that Kodak could have achieved the same price discrimination by simply charging more for parts sold to those who buy service.<sup>124</sup> But such direct price discrimination might have been hard to maintain because those who do self-service may resell parts or misrepresent who

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<sup>122</sup>*Kodak*, 504 U.S. at 483 & n.7.

<sup>123</sup> *Kodak*, 504 U.S. at 475-76.

<sup>124</sup> *Id.* at 499 n.3 (Scalia, J., joined by O'Connor & Thomas, JJ., dissenting).

the buyer is. These problems are avoided by charging all buyers the same price for parts, but tying those parts to high service prices, which would naturally affect only buyers who could not self-service. A tie here might thus have allowed price discrimination that was not otherwise possible.

In any event, the cases where many justices expressed skepticism about applying the quasi-per se rule map well onto cases where those justices plausibly thought the products had a fixed ratio and lack of separate utility that would negate likely power effects. Thus, power effects not only explain the quasi-per se rule, but also help explain fault lines in the doctrine by predicting when its applicability is most likely to be contested. The Court has never quite directly confronted the issue whether fixed ratios plus a lack of separate utility should (at least presumptively) make the quasi-per se rule inapplicable. The legal argument was not quite raised in that fashion in *Jefferson Parish*, and the factual premise for that argument was dubious in both *Jefferson Parish* and *Kodak*. But the analyses in the majority and non-majority opinions suggest that, in a proper case, such an argument for cabining the quasi-per se rule might well be received favorably. Although there has been an unfortunate tendency to instead discuss this issue under the rubric of whether the two items should be considered a single product, it is more appropriate to consider it a reason not to apply the quasi-per se rule, because that makes it clearer that rule of reason review would remain available in cases where the tie does contribute to substantial market foreclosure.

The above analysis also helps explain the D.C. Circuit's en banc decision in *Microsoft*. In that case, the court upheld the tying claim under a monopolization rule-of-reason standard, but held that the quasi-per se rule was inapplicable.<sup>125</sup> The court reasoned that the tie there was unlike the ones considered in past cases that invoked the quasi-per se rule because the case involved physical integration and claimed justifications. The existence of justifications seems irrelevant if, as now seems clear, justifications are admissible under the current quasi-per se rule.<sup>126</sup> But the physical integration indicated a fixed ratio, and at the time a browser lacked any separate utility without a operating system on which to run. Those two factors suggested that none of the three power effects could apply, making the quasi-per se rule inappropriate. Indeed, those same factors also suggested that the tie was unlikely to create additional

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<sup>125</sup> *United States v. Microsoft Corp.*, 253 F.3d 34, 84 (D.C. Cir. 2001) (en banc).

<sup>126</sup> *See supra* Part III.

market power against buyers of the tied product. This left the fifth possibility, that the tie might help preserve tying market power. This was the one the court relied upon for its monopolization rule-of-reason holding, reasoning that Microsoft feared that browsers would in the future be able to run applications in competition with the operating system.

Interestingly, the European Commission, in its own claim that Microsoft tied its media player to its operating system, also declined to rely on the EC's own quasi-per se tying rule, and instead required evidence of substantial tied foreclosure.<sup>127</sup> This indicates tribunals on both sides of the Atlantic share the intuition that the quasi-per se rule should not apply in cases where market conditions negate power effects.

My recommended exception correlates with, but differs from, the claim that technological tying should not be treated like contractual tying.<sup>128</sup> Most technological ties involve fixed ratios and products that lack separate utility, and to the extent they do, an exception for them would be consistent with the claim here that such ties should not be covered by the quasi-per se rule. But sometimes a technological tie may permit the tying product to work with only one consumable whose usage is variable. Other times the ratio may be fixed, but the tied product may also have other uses. A technological tying exception to the quasi-per se rule would thus be over-inclusive. It would also be under-inclusive because there are many non-technological ties that involve fixed ratios and a lack of separate utility.

To be sure, technological tying may often involve procompetitive justifications. However, one cannot assume that is so because firms may integrate technologies in order to achieve anticompetitive effects. Indeed, adopting a legal exception for technological tying would predictably induce more anticompetitive technological integration. This is particularly true for technologies like software, because their plasticity makes the costs of integration low. So one should not judge the desirability of a technological tying exception by looking at how often technological integration today is procompetitive, because current practices reflect the lack of such an exception. Further, many nontechnological ties involve procompetitive justifications. Thus, a technological tying exception is both overinclusive and underinclusive if it is meant to target cases where procompetitive justifications exist. It is better to focus

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<sup>127</sup> Case T-201/04, *Microsoft Corp. v. Commission* ¶¶977-984, 1031-1036 (CFI 2007).

<sup>128</sup> See Bush DOJ Single Firm Conduct Report, *supra* note , at 87-89 (collecting sources).

directly on the elements that do bear on the existence of both procompetitive justifications and anticompetitive effects.

### ***B. Other Doctrinal Issues***

Understanding the five theories of anticompetitive effects that animate current tying law also illuminates other doctrinal issues. First, it shows that damages should generally be available to buyers in tying cases. Some have mistakenly stated that “a buyer can be forced to pay an above-market price for the tied product only if the seller reduces the price of the tying product by the same amount.”<sup>129</sup> But this statement clearly reflects an application of the mistaken single monopoly profit theory, which unfortunately has persuaded some courts to presumptively hold that buyers cannot prove damages.<sup>130</sup> As shown in Part II, even without a substantial tied foreclosure share, tying by a firm with market power generally harms buyers absent offsetting efficiencies, and often requires no reduction in the tying price. If tying causes substantial tied market foreclosure, it can also make tied or tying market power higher than it would be in the but-for world, which further injures consumers. Absent efficiencies, it is the unusual case when tying does not harm buyers, and those unusual cases are likely cases where the quasi-per se rule should not apply at all.

The same logic disproves the related claim that buyers who reject a tie cannot be harmed because they “cannot be made to pay more than the market price for the combination.”<sup>131</sup> Even without substantial tied foreclosure, buyers who reject a tie can be relegated to just the consumer surplus they get from buying the tied product at market prices, when absent the tie they would have enjoyed that plus the additional consumer surplus they would have gotten from buying the tying product at the monopoly price. If the tie does cause substantial tied foreclosure, it can also elevate tied and tying market prices above but-for levels, thus forcing all buyers to pay more than they would have paid without the tie.

Another frequent claim is that “any time there is an overcharge on the tied good, there

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<sup>129</sup> See II AREEDA, BLAIR & HOVENKAMP, ANTITRUST LAW ¶358b, at 464 (2d ed. 2000).

<sup>130</sup> *Id.* at 464-465.

<sup>131</sup> *Id.* at 465.

must be an undercharge on the tying good.”<sup>132</sup> This claim is more modest because it does not assert that the overcharge must equal the undercharge. However, it is also incorrect because Section II.C shows that, even without substantial foreclosure, tying can create an overcharge in the tied product without any undercharge in the tying product, and in fact generally does so if covered buyers’ spending or valuation for the tying product is sharply higher than for the tied product. Further, Sections II.D-E show that, if there is substantial foreclosure, it can increase both tied and tying market power, and thus create overcharges in both the tying and tied markets.

Second, the relevant effects explain why, although the Supreme Court has talked about the “forcing” effect that tying has, it has rejected the argument that tying should not be condemned if buyers would have bought the tied product from the defendant anyway.<sup>133</sup> This rejection makes sense because the fact that a buyer would have bought the tied product from the defendant even without a tie would not prevent any of the power effects from increasing the prices at which buyers would buy the combination of tying and tied products. Buyers who would have bought the same product from the defendant would also still suffer from any foreclosure effects because, absent that foreclosure, they would have been able to buy the defendant product at a lower price. The rejection also makes factual sense because rational firms would not bother having a tying agreement unless it were expected to alter buyer choices.

Third, the relevant effects have implications for what should count as antitrust injury. Some have argued that tying that covers a small share of an intermediary market does not create antitrust injury because raising prices or price discrimination to intermediary buyers does not lessen competition unless it is passed on to downstream consumers.<sup>134</sup> But increased prices or price discrimination are precisely the power effects deemed anticompetitive under Supreme Court case law. Antitrust injury doctrine should not be manipulated to circumvent substantive antitrust law about what constitutes an anticompetitive effect, nor to effectively impose a substantial foreclosure share requirement that substantive tying doctrine has rejected. Nor is it true that conduct that raises prices to intermediaries must be passed on to downstream consumers to constitute antitrust injury, as one can readily see by considering how

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<sup>132</sup> *Id.* ¶394, at 549.

<sup>133</sup> *United Shoe Machinery v. United States*, 258 U.S. 451, 462 (1922); X AREEDA, ELHAUGE & HOVENKAMP, *ANTITRUST LAW* ¶1753c (2d ed. 2004) (collecting cases).

<sup>134</sup> *See* II AREEDA, BLAIR & HOVENKAMP, *supra* note, ¶358b, at 465-466.

courts would treat horizontal price-fixing to intermediaries. Requiring affirmative proof of such a pass-through also seems inconsistent with the *Illinois Brick* rule that concentrates antitrust claims in direct purchasers to avoid difficult inquires into the degree of pass-through.<sup>135</sup>

Fourth, as noted above, the relevant market definition differs for power and foreclosure effects.<sup>136</sup> To the extent the claimed injury involves power effects, the relevant market is the market to which buyers of the tying product reasonably can turn. To the extent the claimed injury involves foreclosure effects, the relevant market is the market to which tied product rivals could reasonably turn.

Finally, understanding the relevant anticompetitive effects clarifies the issue of bundled discounts, which is the topic of our next section.

## VI. BUNDLED DISCOUNTS

The most important thing to get straight about bundled discounts is that they need not reflect true discounts at all. Unfortunately, the rhetoric of the word “discounts” has beguiled many into mistakenly assuming that bundled discounts must lower prices to buyers and thus should be considered presumptively procompetitive.<sup>137</sup> However, all a bundled “discount” means is that the defendant charges higher prices to buyers who won’t comply with a bundling condition than to buyers who will. Because the defendant is free to set the noncompliant prices at whatever level it wishes, it can set them above the levels that would have prevailed “but for” the bundling. There is no warrant for presuming that noncompliant prices equal but-for prices, and thus no justifiable grounds for assuming that “discounts” from noncompliant prices reflect a true discount from but-for levels. If the unbundled price charged to noncompliant

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<sup>135</sup> *Illinois Brick v. Illinois*, 431 U.S. 720 (1977).

<sup>136</sup> *See supra* Part III.

<sup>137</sup> *See* Daniel A. Crane, *Mixed Bundling, Profit Sacrifice, and Consumer Welfare*, 55 EMORY L.J. 423, 465 (2006); Hovenkamp, *Discounts and Exclusion*, 2006 UTAH L. REV. 841, 844; Thomas A. Lambert, *Evaluating Bundled Discounts*, 89 MINN. L. REV. 1688, 1726 (2005). All the points made in Professor Hovenkamp’s article about bundled and loyalty discounts reappear in IIIA AREEDA & HOVENKAMP, *ANTITRUST LAW* ¶749 (2008), but none of these points can fairly be attributed to Professor Areeda given that they were written over a decade after his unfortunate demise. I will thus cite only to Professor Hovenkamp’s article for these points.

buyers exceeds the but-for level, then the program in fact imposes a price *penalty* on buyers who refuse the bundle.

Proper analysis must thus not pre-judge the merits by assuming that bundled discounts reflect real discounts from but-for prices. Instead, we need to assess whether unbundled prices are greater or lower than but-for levels, and then analyze the effects under both possibilities. Because part of the question will be when bundled discounts have similar effects to tying, I will refer to the products not as tying or tied, but as “linking” and “linked,” where the linking product means the one over which the defendant has market power.

As the analysis will show, if the unbundled price for the linking product exceeds its but-for price, then bundled discounts can produce all the same power effects as tying. Indeed, one can think of tying as simply a special case of bundled discounts, where the unbundled price on the linking product is set at infinity. Thus, if those power effects merit condemnation, as Supreme Court tying cases clearly hold, then so do bundled discounts whenever the unbundled price on the linking product exceeds but-for levels. When the unbundled price for the linking product equals but-for levels, then the same power effects are not possible.

Whether or not the unbundled price on the linking product exceeds the but-for price, bundled discounts that cover a substantial share of the linked market can also produce adverse foreclosure effects. In addition, bundled loyalty discounts can discourage price competition in a way that tying cannot, but this effect also generally requires substantial foreclosure.<sup>138</sup>

This analysis thus supports the following legal test. When the unbundled price for the linking product exceeds its but-for price, bundled discounts should be equated with tying. In such cases, bundled discounts should be condemned based on linking market power absent offsetting efficiencies, with (as with tying) a recommended exception when the products have a fixed ratio and lack separate utility. When the unbundled price does not exceed the but-for price, then bundled discounts should not be equated with tying, but rather should be condemned only when a substantial foreclosure share or effect is proven and offsetting efficiencies are not shown.

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<sup>138</sup> See Elhauge, *How Loyalty Discounts*, *supra* note , at .

The analysis below shows that bundled discounts can raise prices even if the bundled or effective price is above cost. Thus, the cost-based tests adopted by some courts and commissions are not only mistaken, but perversely immunize the most anticompetitive form of bundled discounts: those that inflate prices far above costs. I also show that the relevant anticompetitive effects are not well-captured by alternative tests that focus on the proportion of buyers who accept the bundle or on whether unbundled prices exceed pre-bundle prices.

***A. The Same Power Effects as Tying Are Possible If and Only If the Unbundled Price For the Linking Product Exceeds the But-For Level***

The analysis below will generally assume bundled loyalty discounts, that is discounts on the linking product that require buyers to buy all or a high share of the linked product from the defendant. Unit-to-unit bundled discounts would negate two of the power effects, for the same reasons that fixed ratio ties do.

*1. Extracting Individual Consumer Surplus.* Take first the case where the bundle does not cover a substantial share of a competitive linked market, but buyers buy multiple units of the linking product and the two products are not used or bundled in a fixed ratio. Then the economic literature clearly proves that bundled loyalty discounts produce precisely the same extracting of individual consumer surplus as requirements tying.<sup>139</sup> In fact, it proves that the bundling firm would maximize profits by setting an unbundled price for the linking product that chokes off unbundled purchases. To illustrate, consider the hypotheticals discussed in Section II.C, only now assume that, instead of tying, the defendant offers an unbundled printer price that equals the Y-intercept of \$1000, with its price discounted to a lower level for buyers who agree to buy scanners from the defendant. Then precisely the same conclusions that were elaborated in Section II.C would still follow.

If the sum of the consumer surpluses at monopoly prices in the linking and linked markets ( $CSM_{\text{linking}} + CSM_{\text{linked}}$ ) exceeds the consumer surplus at competitive prices in the linked market ( $CSC_{\text{linked}}$ ), then the defendant will maximize profits by setting the “discounted” prices for both the linking and linked products to equal their

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<sup>139</sup> See Greenlee, et al., *supra* note , at 1137; Nalebuff, *Bundling as a Way to Leverage Monopoly*, *supra* note , at 2-4.

monopoly prices.<sup>140</sup> When demand is linear, this will be true whenever the covered buyers' consumer surplus at monopoly or competitive prices would be more than three times larger for the linking product than for the linked product, which will generally be true if the covered buyers's purchases or valuations are sharply higher for the linking product than the linked product.<sup>141</sup> Clearly in this case the nominal bundled "discounts" do not reflect any discount from but-for prices at all. To the contrary, the "discounted" linking price equals its but-for price and the "discounted" linked price exceeds it, so that the overall bundled discount price clearly exceeds but-for levels. The bundled discount here also clearly worsens allocative efficiency by resulting in monopoly prices in both markets rather than just one, and excludes equally-efficient rivals in the linked market who price at cost.<sup>142</sup>

If instead  $CSM_{\text{linking}} + CSM_{\text{linked}} < CSC_{\text{linked}}$ , then the bundled price for the linking product will be lower than the but-for monopoly price.<sup>143</sup> However, the price for the linked product will exceed its but-for price, and the combined bundled price will result in lower consumer welfare than in the but-for world without bundled discounts, where buyers would have bought the linking product at the monopoly price and the linked product at the competitive price.<sup>144</sup> Thus, here again, the overall bundled discount price leaves buyers worse off than but-for prices and excludes equally-efficient rivals pricing at cost. It also worsens allocative efficiency (assuming linear demand) whenever the covered buyers' consumer surplus at monopoly or competitive prices for the linking product would be more than 16/9th of the same surplus for the linked product, assuming linear demand.<sup>145</sup> Thus, as with requirements tying, bundled loyalty discounts are (when the unbundled linked price exceeds the but-for price) likely to harm total welfare in the typical case where the covered buyers purchase or value the linking product at significantly higher levels than the linked product.

The same effects would not follow if the unbundled price for the linking product equaled its but-for price. Then the price with the bundled discount on the linking product must necessarily be lower than its but-for price. Further, because the

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<sup>140</sup> See Greenlee, et al., *supra* note , at 1137.

<sup>141</sup> *Id.*; see *supra* Section II.C.

<sup>142</sup> See Greenlee, et al., *supra* note , at 1137.

<sup>143</sup> *Id.*

<sup>144</sup> *Id.*

<sup>145</sup> *Id.*; see *supra* Section II.C.

alternative to accepting the bundled discount would be buying both products at but-for prices (given that here we assume no substantial foreclosure affecting market prices in the linked market), consumer welfare cannot be lowered. Instead, the economic literature shows that, in such a case where the unbundled linked price equals the but-for price and there is no substantial foreclosure, a bundling firm will set prices so that consumer welfare with the bundled discount equals consumer welfare without it.<sup>146</sup> Total welfare would increase (because the bundling firm earns higher profits), but the bundled discount would still foreclose an equally-efficient producer of the linked product who was pricing at cost.<sup>147</sup>

However, unless antitrust law *requires* bundling firms to set unbundled prices equal to but-for levels, it would not be profit-maximizing for firms to do so when the linked market is competitive. Instead, they would always make more profits by setting unbundled prices that exceed but-for levels, and maximize profits by setting the unbundled price for the linking product to equal the price that chokes off unbundled purchases.<sup>148</sup> The latter would thus be the predictable result in a regime that allowed bundled discounts that were above cost. Such a regime would accordingly produce bundled discounts that clearly harmed consumer welfare, and also harmed total welfare in the typical case where the covered buyers purchase or value the linking product at significantly higher levels than the linked product.

A firm might also set the unbundled price for the linking product above but-for levels but not quite at the choke price that eliminates all demand. Such a bundled discount could not extract *all* the consumer surplus that buyers would get at the monopoly price for the linking product, because buyers could always get some of that consumer surplus by rejecting the bundle. However, such a bundled discount could extract all of the difference between the consumer surplus obtainable by buying the linking product at monopoly prices and the consumer surplus obtainable by buying the linking product at the higher unbundled price. As long as that consumer surplus difference exceeds the consumer surplus buyers would lose from buying the linked product at an elevated price, buyers will accept the bundled discount. The linking firm thus would set the bundled price for the linked product to extract the whole difference, and all

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<sup>146</sup> Greenlee, et al., *supra* note , at 1136.

<sup>147</sup> *Id.*

<sup>148</sup> *Id.* at 1137. In actual cases, there will likely be enough variation in buyer demand that we see them make some unbundled purchases from the defendant even when it tries to maximize profits in this way.

buyers would suffer lower consumer welfare.

Finally, all the same effects follow even if the bundled loyalty discounts require less than 100% loyalty. With a lower loyalty percentage, the defendant would simply set a higher linked price to extract the same consumer surplus on the linking product.<sup>149</sup>

2. Price Discrimination Among Linking Good Buyers. Now consider a case where the bundled items are used in variable ratios and demand for them is positively correlated. For example, suppose buyers each buy one printer which they use with cartridges, and the amount of cartridges they use correlates well with how much they value the printer. Suppose further that (if tying were legal) a firm with monopoly power over printers could price discriminate by tying printers to cartridges, with the printer sold at marginal cost and the cartridges sold at a supracompetitive price. Then (if bundled discounts were legal) a firm could achieve precisely the same effect by setting the unbundled price for printers to equal the choke price, but offering printers at a bundled discount that makes the printer price equal marginal cost to buyers who agree to buy their cartridge needs from the firm at elevated prices.

The firm could not achieve the same harmful effect on consumer welfare if the unbundled printer price equaled its but-for monopoly price, because then all the buyers who value the printer at more than its monopoly price would reject the bundled discount to buy at the but-for/unbundled price. Those buyers thus would not lose consumer surplus from the bundling, and the new buyers could only gain consumer surplus. However, the firm could still price discriminate in a way that harms consumer welfare by setting an unbundled price for the linking product that exceeds the but-for monopoly price but is not quite as high as the choke price. Such a bundled discount would not price discriminate as perfectly as setting unbundled prices to equal the choke price, but it would improve price discrimination. Thus, this power effect also requires an unbundled price that exceeds the but-for price.

The same price discrimination effects could be achieved even if the loyalty condition were less than 100%. The linking firm would just have to increase the linked price to compensate for the fact that buyer usage of the linked product produces somewhat fewer sales of that product by the firm. Suppose, for example, a printer monopolist required buyers to purchase 90% of cartridges from it to get a discount on printers.

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<sup>149</sup> *Id.* at 1135 n.18.

With such a 90% loyalty condition, the monopolist could accomplish the same price discrimination as with a 100% loyalty condition by simply raising the cartridge price by 11% above the price it would have charged with a 100% condition.

*3. Price Discrimination Across Buyers of Both Products.* Consider next a case where buyer demand for the linking and linked products has no strong positive correlation. Then, bundled discounts could achieve price discrimination across buyers of both products for the same reasons that tying can.<sup>150</sup> Indeed, bundled discounts are more profitable than tying as a means of achieving such inter-buyer price discrimination.<sup>151</sup> The reason is that the bundled discount could offer each product separately for the bundled price minus the cost of making the other product. With that pricing, the firm will make as much money whether buyers take the bundle or just one of the products. But it would sell to more buyers than with tying because it will add sales of one product to some buyers who valued the other product at less than its cost. Further, although using tying to achieve price discrimination across buyers of both products requires market power in both products, bundled discounts can achieve the same effect with market power in only one product.<sup>152</sup>

With market power in both products, the firm would maximize profits by setting unbundled prices for both products that exceed the but-for price.<sup>153</sup> With market power in only one product, the firm would maximize profits by setting the unbundled price for that product above the but-for price.<sup>154</sup> If a firm were constrained not to charge unbundled prices that exceeded but-for levels, the firm might still be able to make (somewhat less) profits by using bundled discounts to price discriminate across buyers of both products.<sup>155</sup> But in that case the firm would be offering buyers a Pareto improvement because buyers would take the bundle only if they preferred the bundle to unbundled prices that (by hypothesis) equaled but-for prices.<sup>156</sup> Thus, under this theory, power effects harmful to consumer welfare are possible only when unbundled prices exceed but-for prices.

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<sup>150</sup> See McAfee, *supra* note, at 374, 377; Adams & Yellen, *supra* note, at 478-488.

<sup>151</sup> See McAfee, *supra* note, at 374; Adams & Yellen, *supra* note, at 483 & n.12.

<sup>152</sup> See Richard Schmalensee, *Commodity Bundling by Single-Product Monopolies*, *supra* note, at 67-71.

<sup>153</sup> See McAfee, *supra* note, at 375; Adams & Yellen, *supra* note, at 486-87.

<sup>154</sup> See Schmalensee, *supra* note, at 69-70.

<sup>155</sup> See Nalebuff, *Bundling as a Way to Leverage Monopoly*, *supra* note, at 5.

<sup>156</sup> See *id.*

***B. Foreclosure Effects Are Possible Whether or Not the Unbundled Price For the Linking Product Exceeds the But-For Level***

*1. Impairing Linked Rival Competitiveness.* Bundled discounts that foreclose a substantial share of the linked market can impair rival competitiveness in that market. This is trivially true when the unbundled price for the linking product equals the choke price, for then bundled discounts are economically indistinguishable from tying. But it is equally true when the unbundled price for the linking product is only slightly above the but-for price, and even when the unbundled price equals the but-for price so that the bundled discount gives some real discount on the linking product.

The reason is that externality problems give buyers an incentive to agree to anticompetitive foreclosing agreements that produce large marketwide price increases in exchange for a nominal individual discount, even though the result of all of them agreeing is that the monopolist's rivals are excluded and the buyers then pay higher prices than they otherwise would have paid.<sup>157</sup> For example, if there are 10,000 buyers of a product, any individual buyer agreement to an exclusionary commitment that contributes to a marketwide price increase externalizes 99.99% of the harm caused by that buyer's contribution to the market price increase. Each buyer would thus agree in exchange for any individual discount (or avoided price penalty) that exceeded 0.01% of that buyer's contribution to the marketwide price increase.

One can analogize the externality problem to the problem of why drivers change lanes to try to get ahead in traffic even though the practice of all of them doing so slows down traffic. The problem is that it is individually rational for each driver to change lanes when he sees one lane moving faster to get a slight individual edge, but that driver's lane change slows down many other drivers. And that driver is in turn slowed

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<sup>157</sup> See Farrell, *Deconstructing Chicago on Exclusive Dealing*, 50 ANTITRUST BULLETIN 465, 476 (2005); Elhauge, *How Loyalty Discounts*, *supra* note ; Elhauge, *Defining Better*, *supra* note, at 284-92; Segal & Whinston, *Naked Exclusion: Comment*, 90 AM. ECON. REV. 296 (2000); MICHAEL D. WHINSTON, LECTURES ON ANTITRUST ECONOMICS 144-47, 166 (2006); Kaplow & Shapiro, *Antitrust*, in 2 HANDBOOK OF LAW & ECONOMICS 1073, 1203-1210 (eds. Polinsky & Shavell, 2007); Rasmusen, et al., *supra* note ; ELHAUGE, U.S. ANTITRUST, *supra* note , at 406-410. Although many of these models focus on the simple case of excluding an entrant, the results are equally applicable when the exclusionary commitments prevent small rivals from achieving economies of scale. WHINSTON, *supra*, at 147; Kaplow & Shapiro, *supra*, at 1206; Elhauge *Defining Better*, *supra*, at 320-23; ELHAUGE, U.S. ANTITRUST, *supra*, at 316-17, 408.

down when all the other drivers do the same. Thus, frequent lane changes that are individually rational can, because of the externality problem, collectively harm all drivers. Similarly, agreeing to exclusionary commitments to earn small nominal “discounts” is individually rational even though it is collectively harmful to all buyers.

The externality problems are even worse when the relevant buyers are not consumers, but rather are intermediaries who resell to others. Such intermediate buyers externalize an even higher percentage of the harm by passing much or all of the price increase on to downstream buyers. Intermediary buyers are thus even more likely to agree to anticompetitive foreclosing commitments.<sup>158</sup>

Although the above-noted literature has focused on single product loyalty commitments given in exchange for discounts on that product, it is equally applicable to loyalty commitments on a linked product made in exchange for discounts (or avoided penalties) on a linking product. If anything, the bundled discount (or avoided penalty) makes it easier to enforce the loyalty commitment.<sup>159</sup> Unlike with extracting individual consumer surplus, the threatened consumer surplus loss for non-agreeing buyers need not exceed the consumer welfare loss created by agreeing, because most of the consumer welfare loss from any individual agreement to the bundled discount is externalized onto other buyers.

However, the same limitations applicable to tying that causes foreclosure apply to bundled discounts. In particular, bundled discounts cannot increase monopoly profits by diminishing linked market competitiveness for products with a fixed ratio that lack separate utility.<sup>160</sup> Even in such cases, though, bundled discounts might increase the degree of linking market power, for reasons discussed in the next section.

It does not matter if the bundled discount contracts periodically come up for termination, because the same externalities that give buyers incentives to agree

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<sup>158</sup> See Simpson & Wickelgren, *Naked Exclusion, Efficient Breach, and Downstream Competition*, 97 AM. ECON. REV. 1305, 1306 (2007); Farrell, *supra* note , at 475-477; Christodoulos Stefanadis, *Selective Contracts, Foreclosure, and the Chicago School View*, 41 J.L. & ECON. 429 (1998); Jose Miguel Abito & Julian Wright, *Exclusive Dealing With Imperfect Downstream Competition*, 26 INT’L J. INDUS. ORG. 227 (2008); Elhauge, *Defining Better*, *supra* note , at 288-292.

<sup>159</sup> See Elhauge, *How Loyalty Discounts*, *supra* note , at .

<sup>160</sup> See *supra* II.D, IV.

(despite the collective marketwide harm) also give buyers incentives not to terminate the contracts. Nor does it matter whether buyers agreed to the bundled discounts voluntarily – or even initiated a request for a bundled discount contract – because agreeing to anticompetitive bundled discounts is individually profit-maximizing for buyers even though it collectively harms all buyers in the market. Buyers face a collective action problem that requires a collective action solution through antitrust law.

Bundled loyalty discounts can also create foreclosure effects even if the loyalty commitment in the linked product is less than 100%. The reason is that the anticompetitive effects flow from the share of the linked market foreclosed, not from the share of individual buyer purchases foreclosed.<sup>161</sup> For example, if bundled loyalty discounts in a certain market foreclosed 90% of linked sales to 80% of the buyers, then those contracts would achieve 72% marketwide foreclosure in the linked market. This foreclosure would be even more anticompetitive than 100% foreclosure of 70% of linked buyers.

To illustrate the above analysis, suppose the following case. A firm is both a monopolist in product *A*, for which it charges \$1000, and has market power in product *B*, for which it charges \$200 and has a per-unit cost of \$100. There are thousands of buyers of *B*, 80% of which also buy *A*. Other firms stand poised to enter market *B* or expand in it until they achieve economies of scale that would also give them a cost of \$100, in which case competition would drive *B* prices down to the but-for price of \$100. To prevent this competitive result from occurring, the monopolist announces that it will charge unbundled buyers \$1010 for product *A*, but will give buyers a

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<sup>161</sup>See Kaplow & Shapiro, *Antitrust*, *supra* note 2, at 1203 n.198 (stating that “the economic principles and analysis are similar” for “exclusive dealing” and “discounts to buyers that purchase a large fraction of their needs from the incumbent supplier”); *id.* at 1206 n.207 (stating that “formal exclusivity contracts are not necessary for this result [that rivals can be excluded by a dominant firm’s contracts]. Similar effects may arise from pricing strategies (such as quantity or loyalty discounts)”); Willard K. Tom, David A. Balto & Neil W. Averitt, *Anticompetitive Aspects of Market-Share Discounts and Other Incentives to Exclusive Dealing*, 67 ANTITRUST L.J. 615, 615, 623-24, 627 (2000) (“market-share discounts structured to produce total or partial exclusivity should be judged according to the same economic principles that govern exclusive dealing” and should be condemned “if they produce anticompetitive effects without counterbalancing procompetitive effects”); Elhauge, *How Loyalty Discounts*, *supra* note 2, at 1, 4-5, 19-25, 30 (“These anticompetitive effects occur . . . even if the loyalty conditions require no buyer commitments and less than 100% loyalty.”); ELHAUGE, U.S. ANTITRUST, *supra* note 1, at 407-408.

bundled “discount” of \$10 on product *A* if they commit to buy 90% of their needs of product *B* from the monopolist. All the buyers of product *A* agree because their individual decision to agree gets them all of the nominal \$10 “discount” but externalizes the vast bulk of their marginal contribution to marketwide foreclosure onto the rest of the market. The result is a 72% foreclosure share that prevents rivals in *B* from entering or expanding enough to achieve economies of scale, so that product *B* continues to get sold at \$200, which is double its but-for price. The price for *A* with the nominal “discount” would remain at its monopoly price of \$1000.<sup>162</sup> Thus, here the bundled “discount” would clearly harm consumer welfare and efficiency because product *B* would be sold well above cost.

To illustrate the case where the unbundled price for the linking product equals its but-for price, take the hypothetical above, but now instead assume the firm maintains the unbundled price for *A* at \$1000, giving a \$10 discount (to \$990) to buyers of *A* who commit to buy *B* from it. Buyers will benefit from the \$10 discount on product *A*, but will be harmed by paying \$100 more for *B* than they would have paid without the bundled discount. They can thus still suffer a net loss of consumer welfare, assuming the consumer welfare they lose from paying \$100 more for *B* exceeds the consumer welfare they gain from paying \$10 less for *A*. Allocative efficiency can also decrease, assuming the additional inefficiency in *B* from paying 100% above its but-for price exceeds the additional efficiency they get in *A* from paying 1% below its but-for price.

*2. Preserving Linking Market Power.* Bundled discounts might also preserve market power in the linking market, again whether or not the unbundled price exceeds the but-for level. The same externality problems noted above give buyers incentives to agree to the bundled discount, even when their doing so contributes to a marketwide foreclosure in the linked market that makes the degree of linking market power higher than it otherwise would have been, thus leading to a marketwide price increase that harms all buyers. Each buyer agrees because it gains a nominal individual discount (or avoided penalty) by agreeing, but incurs only a small portion of the harm because the full impact of the harm is shared proportionately by all buyers across the market, and also is (for intermediate buyers) to some extent passed on to buyers further downstream.

To illustrate the case where the unbundled price exceeds the but-for level, take the

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<sup>162</sup> This assumes *A* and *B* are not used in fixed ratios.

hypothetical above where the unbundled price for *A* is set to \$1010, but add to it the proposition that, if rivals can enter and achieve economies of scale in *B*, they are likely to enter market *A*, and drive prices for *A* down to its per-unit cost of \$500. The bundled discount would in that case cause the additional harm of keeping the price for *A* at \$1000, double its but-for price. This only exacerbates the harm to consumer welfare and efficiency. Likewise, the same harms discussed in Section II.E follow if *B* is a partial substitute for *A* or is likely to become a substitute in the future.

The same effects are possible even if the unbundled price on the linking product initially equals but-for levels. Thus, modify the previous hypothetical to make the unbundled price for *A* \$1000. Then the \$10 bundled discount would result in a price for *A* of \$990, which is \$10 below initial but-for levels, but \$490 above the ultimate but-for price that would have resulted if rival entry or expansion into *B* would have diminished the degree of power in *A*.

### 3. Neither Foreclosure Effect Requires Short-Term Profit Sacrifice or Commitment.

Even though power effects harmful to consumer welfare are not possible when the unbundled linked price equals its but-for price, such bundled discounts are still profitable to the bundler without foreclosure.<sup>163</sup> Thus, whether or not unbundled prices exceed but-for levels, bundled discounts need not require any short-term profit sacrifice or commitment by the bundler to achieve foreclosure effects.<sup>164</sup>

### ***C. When Bundled Loyalty Discounts Perversely Discourage Discounting***

Bundled loyalty discounts can also affirmatively discourage price competition in a way that tying cannot. This is true whether or not the unbundled price on the linking product exceeds the but-for price. However, the bundled loyalty discount must involve a seller commitment to charge loyal buyers a discount from any future price it charges to disloyal buyers on at least one of the products.<sup>165</sup> If so, loyalty discounts can perversely discourage discounting because the firms using them know that they cannot cut prices to compete for disloyal buyers without also cutting prices for loyalty

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<sup>163</sup> See Nalebuff, *Bundling as a Way to Leverage Monopoly*, *supra* note , at 11.

<sup>164</sup> See *id.* at 11.

<sup>165</sup> See Elhauge, *How Loyalty Discounts*, *supra* note , at .

buyers.<sup>166</sup> As a result, there will be some price that rivals can charge disloyal buyers that is above-cost, but low enough that the firm using loyalty discounts would find the gains from matching it lower than the losses from charging lower prices to loyal buyers.

When the discount for loyalty is high enough (considering the foreclosure share) and the firm has just one rival that has achieved economies of scale in the unforecasted market, both the rival price and the price with the loyalty discount would equal the monopoly price, even though rival efficiency is not impaired.<sup>167</sup> For example, if the foreclosure share were 50%, then (assuming linear demand) both firms will sell at monopoly prices if the loyalty discount exceeds the per unit profit at the monopoly price. The higher the foreclosure share, the lower the loyalty discount needs to be to produce monopoly prices for both firms. If the foreclosure share were 80%, then the loyalty discount would have to be at least half the per unit monopoly profit. If the foreclosure share were 20%, the loyalty discount would have to be double the per unit monopoly profit. Because the loyalty discount is just the difference between loyal and disloyal prices, nothing prevents it from exceeding the per unit monopoly profit.<sup>168</sup>

Even when the loyalty discount is somewhat lower, the rival price and the price with the loyalty discount will still exceed costs and but-for levels. This is true whether the loyalty condition requires a buyer commitment or can be abandoned by the buyer at will.<sup>169</sup> However, buyer commitments produce somewhat higher prices. For example, suppose demand is linear, the foreclosure share is 50%, the monopoly price is \$100, the constant marginal cost is \$20, and the loyalty discount is \$20. Then, a loyalty discount with buyer commitment leads to prices of at least \$54.32, whereas without

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<sup>166</sup> *Id.* at .

<sup>167</sup> If  $d$  is the loyalty discount,  $P_m$  is the monopoly price,  $C$  is a constant marginal cost, and  $\theta$  is the foreclosure share, then with linear demand both prices will be at the monopoly level if  $d \geq (P_m - C)\sqrt{(1 - \theta) / \theta}$ . This is true for loyalty discounts with buyer commitments under all conditions, *see id.* at Lemmas 1a, 1b, 1c, and without buyer commitments if rivals pick prices first, *see id.* at Lemma 4a.

<sup>168</sup> *Id.* at \_\_\_.

<sup>169</sup> With buyer commitments and constant marginal costs, then (assuming linear demand) the rival price and the price with the loyalty discount will be at least  $P_m + \theta d - \sqrt{(1 - \theta) ((P_m - C)^2 - \theta d^2)}$ . Prices can range from that level up to the monopoly price. *Id.* at Lemmas 1a, 1b, 1c. Without buyer commitments and constant marginal costs, the price formulas are somewhat lower, but are still all above both cost and but-for levels. *See id.* at Lemmas 4a, 4b, 4c.

buyer commitment it leads to prices of at least \$40.<sup>170</sup>

On the other hand, without a high foreclosure share, buyer loyalty commitments will lead to rival prices that are lower than the price with the loyalty discount, which makes buyers unlikely to agree to the commitments.<sup>171</sup> Without buyer commitments, buyers are more likely to agree to loyalty conditions because they can always switch to a rival that prices lower, but the share of buyers who accept loyalty conditions will affect the size of anticompetitive effects. For example, if we lower the foreclosure share in the last hypothetical to 10%, then without buyer commitment the rival price and price with loyalty discounts would instead be \$22.47.<sup>172</sup> This, coupled with other factors, suggest that this theory should require proof of a substantial foreclosure share.<sup>173</sup>

The analysis above all applies in the case of single-product loyalty discounts, but is equally true if the loyalty discount on the product at issue was procured using a bundled discount on another product. Indeed, such bundling makes it easier to procure and enforce buyer agreements to loyalty discounts that discourage discounting.<sup>174</sup>

The above conclusions also still apply if the loyalty discount requires less than 100% loyalty.<sup>175</sup> Indeed, less than 100% loyalty does not alter the price effects of loyalty discounts without buyer commitments. With buyer commitments, less than 100% loyalty leads to prices that are lower than they would be 100% loyalty, but higher than they would be without buyer commitment.

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<sup>170</sup> The solution without buyer commitment assumes the rival picks prices first. *See id.* at Lemma 4a. If the firm using loyalty discounts picks price first or both pick prices simultaneously, then other formulas apply that also lead to prices that exceed costs and but-for levels. *See id.* at Lemmas 4b,c.

<sup>171</sup> *Id.* at \_\_\_.

<sup>172</sup> This again assumes the rival picks price first. *See supra* note .

<sup>173</sup> *See* Elhauge, *How Loyalty Discounts*, *supra* note .

<sup>174</sup> *Id.* at \_\_\_.

<sup>175</sup> *Id.* at \_\_\_.

## *D. Implications for Possible Legal Tests*

*1. Cost-Based Tests.* Some advocate condemning bundled discounts only if the bundled price is lower than the cost of making both products.<sup>176</sup> The above analysis indicates this test would be unwise because none of the anticompetitive effects depend on the bundled price being lower than the bundled cost. To the contrary, in all the illustrations above, power and foreclosure effects harmful to consumer and total welfare resulted even though the bundled price was well above the bundled cost.

Advocates for this cost-based test rely on experiments that they say show bundled discounts usually do not harm consumer welfare.<sup>177</sup> But those experiments allowed only fixed ratio bundles, and thus precluded two of the relevant power effects.<sup>178</sup> Nowhere did those experiments consider bundled loyalty discounts. Further, those experiments assumed a perfect positive demand correlation for the explicit purpose of preventing the third power effect, because they wanted to “isolate” the exclusionary effect.<sup>179</sup> Having put all three power effects off the table, these experiments cannot assess whether bundled discounts cause power effects that harm consumer welfare. Indeed, their experimental design nicely matches my recommended exception to any legal rule that focuses on the power effects from bundling.

In addition, those experiments prohibited entry into the linking market by firms in the linked market, thus barring the possible foreclosure effect that bundling might increase the degree of linking power.<sup>180</sup> The experiments also assumed the linked market had recurring fixed costs, but constant marginal costs, zero entry costs, and infinite rival supply elasticity up to a capacity limit.<sup>181</sup> This made the remaining

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<sup>176</sup> See Timothy J. Muris & Vernon L. Smith, *Antitrust and Bundled Discounts: An Experimental Analysis*, 75 ANTITRUST L.J. 399, 425 (2008).

<sup>177</sup> See *id.* at 402-03.

<sup>178</sup> Caliskan, et al., *Exclusionary Bundling and the Effects of a Competitive Fringe*, 163 J. INSTIT. & THEORETICAL ECON. 109, 114 (2007).

<sup>179</sup> *Id.* at 111. Muris and Smith report that they also ran an alternative experiment assuming a perfect negative demand correlation. See Muris & Smith, *supra* note , at 414, 420. Because this experiment did not appear in the underlying economic paper, it is difficult to discern its design, but they do not appear to have used a normal distribution of buyer preferences, which is the distribution under which bundling has been proven to reduce consumer welfare. See *supra* II.B.

<sup>180</sup> See Muris & Smith, *supra* note , at 412.

<sup>181</sup> Caliskan, et al., *supra* note , at 112, 116.

foreclosure effect much less likely by barring any anticompetitive effect from lowering rival share, and instead requiring complete rival exit for foreclosure effects.<sup>182</sup> Also making the remaining foreclosure effect unlikely was the combination of a fixed ratio and perfect positive demand correlation. The fixed ratio meant that buyers who bought both products would experience any increase in the linked product price as an increase in the linking product price.<sup>183</sup> The perfect positive demand correlation meant there would be few buyers who bought the linked product without the linking product. In short, their experimental design precluded four of the possible anticompetitive effects and made the remaining one unlikely. It is not surprising that such experiments would find little harm to consumer welfare, but that tells us little about whether actual bundled discounts would.

Further, these experiments not only excluded bundled loyalty discounts, but also included all unit-to-unit bundled discounts even when it was not the case that either (a) the unbundled price exceeded the but-for price or (b) substantial foreclosure impaired rival competitiveness. Such experiments cannot provide a useful guide for assessing legal rules that condemn only bundled discounts meeting such tests. A similar problem besets the proponents' reliance on a general observation that in real life most bundled discounts are desirable.<sup>184</sup> This observation is often stressed in the literature, but is irrelevant. The relevant policy question is whether the subset of bundled discounts that would be prohibited by the proposed legal tests are usually undesirable, as is the case for the tests I propose. The proponent's argument makes no more sense than saying that, because driving is generally desirable, we should legalize driving by drunks.

Others have concluded that bundled discounts should not be illegal unless attributing all of the bundled discount to the linked product would result in an effective price that is lower than the defendant's costs of making that product.<sup>185</sup> But the above analysis

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<sup>182</sup> See *supra* II.D.

<sup>183</sup> See *supra* II.D.

<sup>184</sup> See Muris & Smith, *supra* note , at 399, 425.

<sup>185</sup> See ANTITRUST MODERNIZATION COMMISSION, REPORT AND RECOMMENDATIONS 12, 82, 99-100 (2007) [hereinafter "AMC Report"]; *Cascade Health Solutions v. PeaceHealth*, 502 F.3d 895 (9th Cir. 2007); Bush DOJ Single Firm Conduct Report, *supra* note , at 101-102; Crane, *Mixed Bundling*, *supra* note , at 474-475; Hovenkamp, *Discounts and Exclusion*, *supra* note \_\_, at 852-854; Nalebuff, *Exclusionary Bundling*, *supra* note , at 328-343. The *Ortho* standard instead compares the effective price to the rivals' costs, but achieves much the same effect by also requiring that rival

shows that bundled discounts can produce anticompetitive foreclosure that impairs rival efficiency even though the effective price for the linked product exceeds the defendant's costs, and indeed even though the discount amount is small. The rival cannot match that effective price precisely because the bundled discount forecloses enough of the market to prevent it from achieving the same costs as the defendant.<sup>186</sup> Nor does a cost-based test even focus on the worst bundled discounts. Instead, a cost-based test would perversely exempt the *most* worrisome form of bundled discounts: charging penalty prices to get buyers to agree to bundles at prices that are above but-for levels, and thus necessarily above cost.<sup>187</sup>

Proponents of cost-based tests generally rely on the argument, first put forth by Judge Posner, that antitrust law should deem conduct exclusionary only if it could exclude an equally-efficient rival.<sup>188</sup> But Judge Posner himself has acknowledged that his equally-efficient rival test does not justify immunizing a bundled or loyalty discount that is above cost when the bundled or loyalty discount has itself made the rival less efficient by depriving it of economies of scale. As he puts it, because “economies of scale are a market rather than a firm attribute,” preventing a rival from achieving such economies with above-cost bundled or loyalty discounts does not make the defendant “a more efficient company in a sense relevant to antitrust policy.”<sup>189</sup> His point is

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costs be no higher than the bundler's costs. *Ortho Diagnostic Systems v. Abbott Laboratories*, 920 F.Supp. 455 (S.D.N.Y. 1996). The AMC Report also adds a recoupment element, but this element makes little sense because bundled discounts are generally profitable and thus incur no losses that have to be recouped. *Accord* Dennis W. Carlton, et al., *Assessing the Anticompetitive Effects of Multiproduct Pricing*, 53 ANTITRUST BULLETIN 587, 609 (2008).

<sup>186</sup> For another article acknowledging that a cost-based test can under-inclusively fail to condemn some bundled discounts that create foreclosure effects, see Carlton, et al, *supra* note, at 621. However, this article mainly criticizes the cost-based test for over-inclusively condemning some cases where the defendant profits from power effects. *Id.* at 606-609, 620-621. This latter critique fails because it depends on their premise that power effects are not anticompetitive, *id.* at 601, a premise that rests on a policy claim which I rebutted in Section IV.C, and that conflicts with the law for reasons detailed in Parts III-V.

<sup>187</sup> This same logic shows the error in the claim that single-product loyalty discounts should be immunized when the price with the loyalty discount exceeds cost. See Hovenkamp, *Discounts and Exclusion*, *supra* note \_\_, at 844-849; Lambert, *supra* note \_\_, at 1712-1714. When loyalty discounts/penalties procure loyalty commitments that raise rivals' costs and market prices, it would perversely exempt their most anticompetitive type to immunize them when the price with the loyalty condition is above cost. This claim also conflicts with Supreme Court caselaw. See *infra* at \_\_.

<sup>188</sup> See RICHARD POSNER, ANTITRUST LAW 184-96 (1976); POSNER, *supra* note \_\_, at 194-95.

<sup>189</sup> See Posner, *Vertical Restraints*, *supra* note \_\_, at 240.

related to a point I have made, that antitrust law should not treat defendant efficiencies that are obtained by taking those efficiencies away from rivals the same as other efficiencies, because a mere transfer of efficiency from rivals to the defendant may decrease overall *market* efficiency, which is what is relevant to consumer welfare.<sup>190</sup>

More generally, the equally-efficient rival test reaches the wrong result whenever the exclusionary conduct *prevented* the rival from achieving equal efficiency, which disables the test from assessing the usual theory of foreclosure effects. It also reaches the wrong result when, without impairing rival efficiency, bundled loyalty discounts impair the competitiveness of equally-efficient rivals by decreasing their aggressiveness or expandability or affirmatively discouraging discounts.<sup>191</sup> In such cases, bundled discounts harm consumer and total welfare even though effective prices are well above cost and rivals “could” defeat the loyalty discount by cutting prices to some above-cost level, because the loyalty discount eliminates the rival incentive to do so by making it more profitable not to cut prices.

Nor, even when rivals would remain less efficient without substantial foreclosure, is there any good reason to allow less-efficient rivals to be foreclosed in ways that harm consumer and total welfare. Suppose, for example, that the monopoly price for the linked product is \$200, and the per-unit cost is \$100 for the defendant and \$150 for the less efficient rival. In that case, using bundled discounts to exclude the less efficient rival will raise prices from \$150 to \$200, harming both consumer welfare and efficiency. Why should inefficient conduct that harms consumers be tolerated by antitrust law merely because another harmed party was less efficient than the defendant? The equally-efficient rival test seems oddly focused on the competitive virtue of the rival, rather than on the effects of the defendant’s conduct on consumer welfare and efficiency.<sup>192</sup> The focus seems even odder given that, when foreclosure effects are proven, the defendant’s conduct itself is what tarnishes that virtue by rendering rivals less efficient.

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<sup>190</sup> See Elhauge, *Defining Better Monopolization Standards*, *supra* note , at 324-29.

<sup>191</sup> See *supra* II.D; VI.C.

<sup>192</sup> In contrast, above-cost pricing should be allowed, not because excluding less efficient rivals cannot be anticompetitive, but because a firm cannot avoid setting some price and the systematic effects of barring above-cost price cuts that exclude less efficient rivals would be harmful to consumers and efficiency. See Elhauge, *Why Above-Cost Price Cuts*, *supra* note \_\_. The same analysis does not extend to exclusionary conditions that lack any redeeming justification and are thus eminently avoidable and can be banned without systematic ill-effects. *Id.* at 698 n.53.

Using the equally-efficient rival test to judge bundled discounts also has a profound conceptual problem. If a rival that was equally efficient at making the linked product did enter the linking market, but was less efficient at making the linking product than the defendant, this test allows exclusion because the rival is less efficient at making the combination of products. If the same rival cannot make the linking product at all, this test prohibits exclusion because now the rival is equally efficient at making the one product it chooses to make. But isn't the rival less efficient in the latter case than in the first one? Because the equally-efficient rival test focuses on the competitive virtue of the rival rather than the conduct's effect on consumer welfare or market efficiency, it is not clear why attention should arbitrarily focus on the products a rival attempts to make.

Any cost-based test for bundled discounts would also be inconsistent with tying caselaw. This is not only because a cost-based test would allow precisely the anticompetitive effects condemned by tying, but also because Supreme Court cases like *International Salt* and *Northern Pacific* prohibited tying conditions that allowed buyers to purchase the tied product from a rival whenever the defendant wouldn't match the rival price.<sup>193</sup> A cost-based test would instead conclude that the rival could defeat these tying conditions by offering a price one penny below the defendant's tied product price, making the condemned tying conditions the equivalent of a bundled discount of half a penny. Thus, a cost-based test would find these tying conditions to be neither foreclosing nor illegal, directly contrary to this binding Supreme Court authority. The best explanation for these cases is that such a tying condition would eliminate any incentive for rivals to try to undercut the defendant's price, because the rivals know that no matter what above-cost price they offer, the defendant can always win all sales by matching it. Any bundled discount has this same effect because even equally-efficient rivals in the linked product know that no matter what above-cost price they might offer on the linked product, the defendant can always win sales by matching that linked product price because of the bundled discount on the linking product. Thus, even if a rival *could* undercut a bundled discount with a price cut, considering the strategic response of the defendant can eliminate any incentive for the rival to actually do so. This points to another problem with a cost-based test: it depends on rivals offering price cuts that the rival may have no incentive to offer

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<sup>193</sup> See *International Salt v. United States*, 332 U.S. 392, 396–397 (1947); *Northern Pacific Railway v. United States*, 356 U.S. 1, 9, 11-12 (1958);

given the bundled discount.<sup>194</sup>

Any cost-based test also seems inconsistent with various other Supreme Court cases. In *United Shoe*, the Court condemned bundled discounts that (along with other clauses) had the practical effect of a tie without requiring any evidence that they resulted in a bundled or effective price that was below cost.<sup>195</sup> In *Loew's*, the Court held that an injunction against a firm that engaged in illegal bundling should prohibit bundled discounts that either had the effect of imposing a tying condition or exceeded any efficiency gains created by the bundling, without requiring any evidence that the bundled discounts resulted in a bundled or effective price that was below cost.<sup>196</sup> Although injunctive remedies can extend beyond illegal conduct, the Court would have designed its remedy to avoid interfering with bundled discounts it deemed procompetitive. This ruling thus indicates that the Court did not believe that any bundled discounts that left bundled or effective prices above costs were procompetitive or merited a safe harbor. This conflicts with the logic of the cost-based tests, which conclude precisely the opposite.

Other Supreme Court decisions have held that single-product loyalty discounts violate antitrust law without any requirement of proving they are below cost, which *a fortiori* suggests that no cost-based test should apply to bundled loyalty discounts given that they are, if anything, even more anticompetitive than single-product loyalty discounts. In *Standard Fashion*, the Court held that Clayton Act §3 was violated by exclusive dealing agreements that were procured by loyalty discounts, without any evidence that the resulting price was below cost.<sup>197</sup> Likewise, in *FTC v. Brown Shoe*, the Court held that the central policy of both Sherman Act §1 and Clayton Act §3 was violated by single-product loyalty discounts, even though they were terminable at will, required only 75% loyalty, and no evidence suggested that they resulted in below-cost prices.<sup>198</sup>

*Linkline* is not to the contrary. *Linkline* held that a price squeeze did not state a claim when the downstream price was above cost unless the high upstream price amounted to a constructive refusal to deal and the other conditions for a duty to deal were met,

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<sup>194</sup> See ELHAUGE, U.S. ANTITRUST, *supra* note, at 412-413; see also Greenlee, et al., *supra* note, at 1139 (noting that a cost-based test assumes disequilibrium behavior).

<sup>195</sup> *United Shoe Machinery v. U.S.*, 258 U.S. 451, 464 (1922).

<sup>196</sup> *United States v. Loew's Inc.*, 371 U.S. 38, 54-55 (1962).

<sup>197</sup> *Standard Fashion v. Magrane-Houston*, 258 U.S. 346 (1922).

<sup>198</sup> 384 U.S. 316, 318-319 & n.2 (1966).

which is the same conclusion I reached before the opinion.<sup>199</sup> Just as litigants sometimes mistakenly tried to re-characterize refusals to deal by calling them “ties” between the upstream product and the downstream service,<sup>200</sup> doubtless litigants will try to mistakenly re-characterize price squeezes as bundled discounts by claiming they involve a bundle of the upstream product and downstream service at a discount. Plaintiffs will likely do so in an effort to escape *Linkline* for true price squeezes, and defendants will likely do so in an attempt to argue that *Linkline* means bundled discounts cannot be illegal unless the bundled price is below the cost of the bundle or the unbundled price amounts to a constructive refusal to deal. But the phenomenon differ. Ties differ from refusals to deal because a tie doesn’t just refuse to deal: it conditions dealing on a buyer agreement to restrict dealing with rivals. Likewise bundled discounts differ from price squeezes because a bundled discount doesn’t just insist on a high price; it conditions avoiding that high price on a buyer agreement to restrict dealing with rivals. One can try to conflate the two by arguing that, in refusals to deal or price squeezes, the defendant is insisting buyers purchase a bundle consisting of the upstream product and downstream service. But in refusal to deal or price squeeze cases, the downstream product is a finished product that the relevant buyers have no desire or ability to purchase unbundled.<sup>201</sup> Nor does the rival in such cases seek to have those buyers purchase the upstream product unbundled from the downstream service, in a way that would allow the rival to sell those buyers the downstream service separately. Instead the rival seeks the upstream product as an input, so it can sell the same finished/bundled downstream product as the defendant.

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<sup>199</sup> *Pacific Bell Telephone v. Linkline Communications*, 129 S.Ct. 1109, 1119-20 (2009).; *See ELHAUGE, U.S. ANTITRUST, supra* note, at 287-88. In implicitly holding that an unduly high price could constitute an constructive refusal to deal, *Linkline* confirmed prior cases which established that offering unfavorable terms could amount to an illegal refusal to deal, at least when the terms were worse than voluntarily offered previously or than the defendant was willing to charge nonrivals. *See Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585 (1985) (finding an illegal refusal to deal when firm demanded a higher share of joint pass revenue than in past dealings and refused to sell rival lift tickets at the same retail price offered skiers); *Verizon Communications v. Law Offices of Curtis V. Trinko*, 540 U.S. 398, 404-05, 409 (2004) (indicating that delayed service could constitute an illegal refusal to deal, but not finding one where there was no change from prior dealings nor discrimination against rivals); *Associated Press v. United States*, 326 U.S. 1 (1945) (finding concerted refusal to deal when defendant charged higher fees to rivals than others); *United States v. Terminal R.R. Ass’n of St. Louis*, 224 U.S. 383 (1912) (same).

<sup>200</sup> *See X AREEDA, ELHAUGE & HOVENKAMP, supra* note, ¶1748.

<sup>201</sup> *See id.*; *ELHAUGE, U.S. ANTITRUST, supra* note, at 359-60.

2. “Only Viable Option” Test. Without determining when bundled discounts are illegal, some courts have held that they should not be treated like ties unless taking the bundle is the “only viable option” for buyers.<sup>202</sup> Read literally, this would indicate that bundled discounts should not be treated like ties unless the unbundled price for the linking product was set at the choke price and literally prevented any separate sales of the tying product. Although a bundling firm would generally maximize profits under the above theories by setting the unbundled price to equal the choke price, the above analysis also showed that a firm could achieve similar (though somewhat smaller) power effects with an unbundled price that exceeds the but-for price, even though some buyers would buy the tying product at the unbundled price.

A less extreme version of this approach, used by other courts, would treat a bundled discount like a tie if users of the linked product buy only a low proportion (say 10% or less) of the linking product at the unbundled price.<sup>203</sup> But this approach would wrongly apply tying doctrine when the unbundled prices equal but-for prices and the bundled discounts are attractive enough that no one buys the linking product at the unbundled price. Such a bundled discount cannot produce harmful power effects, and thus should not be treated like a tie and condemned without substantial tied foreclosure. This approach would also fail to capture other bundled discounts that did produce power effects similar to tying. Suppose, for example, that 80% of buyers have the individual demand curve for printers described in Section II.C. The other 20% instead value printers at up to \$2000. A bundled discount that chooses an unbundled price of \$1000 would extract all consumer surplus from 80% of the buyers, harming consumer welfare and typically total welfare, even though the other 20% would buy the printers at the unbundled price.

3. Whether Unbundled Price Exceeds the Pre-Program Price. Some have argued that bundled discounts should be legal if the unbundled price for the linking product is less than or equal to the pre-bundle price.<sup>204</sup> This test has several problems.

First, while power effects depend on the unbundled price exceeding the but-for price, the pre-bundle price may well be far higher than the but-for price during the period of bundling. This will be true if costs are declining, which is often the case for

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<sup>202</sup> X AREEDA, ELHAUGE & HOVENKAMP, *supra* note, ¶1758b, at 328.

<sup>203</sup> *Id.* at 327-328.

<sup>204</sup> *See* Greenlee, et al., *supra* note, at 1138.

industries marked by technological progress. It will also be true if the defendant's market power is eroding, or would have eroded without the bundling, which is often the case because defendants are most likely to use exclusionary conduct in order to try to slow the erosion of waning market power.<sup>205</sup>

Second, as shown above, bundled discounts can create harmful foreclosure effects even when the unbundled price for the linking product exceeds neither but-for *nor* pre-bundle levels. Even if the unbundled price is below both levels, foreclosure can elevate prices for the linked product in a way that harms consumer welfare, and can ultimately do so for the linking product too.

Finally, a test based on pre-program prices would create an obvious loophole. The defendant could simply raise its pre-program prices to high levels before it institutes bundled discounts.<sup>206</sup>

4. The Appropriate Test. When the unbundled price for the linking product exceeds the but-for price, bundled discounts have the same power effects as ties and thus should be treated like ties. This means that in such a case liability should turn on market power in the linking product and an absence of offsetting efficiencies, rather than requiring substantial foreclosure in the linked product. The recommended exception to tying doctrine's quasi-per se rule for products that have a fixed ratio and lack separate utility should also apply to bundled discounts because those two conditions negate power effects.

Although this test is conceptually clear, determining the but-for price can be difficult. However, internal documents are often revealing on this issue, showing that the business plan was to raise the unbundled price in order to induce agreement to the bundle. Other times, regression analysis or economic models may yield good results on the but-for price. Or one might rely on a presumption that unbundled prices that exceed the pre-program price also exceed the but-for price, rebuttable by some showing that costs have increased over time.

Alternatively, one might rely on a general presumption, rebuttable by the defendant, that the absence of any efficiency justification coupled with market power means the

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<sup>205</sup> See Elhauge, *Defining Better*, *supra* note , at 337-338.

<sup>206</sup> See Greenlee, et al., *supra* note , at 1138 (acknowledging this problem with their pre-bundle test).

defendant likely set the unbundled price above but-for levels because the analysis above shows that doing so is profit-maximizing. Such a presumption would be consistent with the general economic assumption that firms are rational profit-maximizers. Even in cases where the presumption turned out to be overinclusive, capturing cases where the unbundled price did equal but-for levels and there was no substantial foreclosure, the above shows that even in such cases a firm has incentives to set bundled discounts to leave consumer welfare unchanged. This means that, even in the overinclusive case, the presumption creates no real overdeterrence under a consumer welfare standard. In contrast, such a presumption does reduce the underdeterrence of power effects harmful to consumer welfare when unbundled prices exceed but-for levels in a way that is hard to prove, and reduces the underdeterrence of foreclosure effects when they are hard to ascertain. Reducing underdeterrence without increasing overdeterrence is a desirable legal tradeoff. Given the posited lack of any efficiency justification, there is little reason to tolerate any under-deterrence to protect other cases where the conduct is at best neutral and perhaps harmful.

Where the unbundled price for the linking product does not exceed the but-for price, then power effects are not possible, so ordinary rule-of-reason review should apply. This requires that anticompetitive effects either be directly proven or inferred from a substantial foreclosure share in the linked market. Because the foreclosure effects are the same as with exclusive dealing, it makes sense (when effects are not directly proven) to require the same 20-30% foreclosure share threshold that is, depending on the authority and on whether the defendant has monopoly power, required to infer anticompetitive effects from exclusive dealing.<sup>207</sup> The foreclosure produced by bundled discounts should be aggregated with any foreclosure produced by other exclusionary agreements, such as tying, exclusive dealing, or loyalty discounts,

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<sup>207</sup> See *Twin City Sportservice, Inc. v. Charles O. Finley & Co., Inc.*, 676 F.2d 1291, 1298, 1304 (9th Cir. 1982) (24% suffices for a monopolization case); *Stop & Shop Supermarket Co. v. Blue Cross & Blue Shield of R.I.*, 373 F.3d 57, 68 (1st Cir. 2004) (generally need at least 30–40% in §1 case); *United States v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001) (en banc) (need less foreclosure in a monopolization case than in §1 case). Professor Areeda concluded that “foreclosure [should] be presumed unreasonable when it reaches 20 percent for an individual seller.” IX AREEDA, *supra* note, ¶1729, at 377, 387 (1991). In a subsequent edition written after Professor Areeda’s death, Professor Hovenkamp altered that percentage to 30%, but did not justify the alteration. See IX AREEDA & HOVENKAMP, *supra* note, ¶1729, at 328, 337. In other treatise volumes, Professor Hovenkamp has vacillated between 20% and 30% as the right foreclosure threshold. Compare XI HOVENKAMP, ANTITRUST LAW ¶1821, at 152, 164-65 (1998) (20%); XI HOVENKAMP, ANTITRUST LAW ¶1821, at 167, 182 (2d ed. 2005) (20%), with *id.* at 176, 182 (30%).

because the effect on rival competitiveness depends on the market foreclosure share, regardless of the particular means used to achieve it.<sup>208</sup> If a few large sellers are using exclusionary agreements, their foreclosure shares should also be aggregated, for reasons discussed in the next section. The defendant can then introduce offsetting efficiencies that could not be achieved through less anticompetitive means.

Measuring a foreclosure share raises the issue of when to deem a bundled discount foreclosing. When, as typical, the bundled discount is used to induce buyer commitments to purchase the linked product from the defendant, clearly all purchases under such commitments should count toward the foreclosure share, for the same reason that exclusive dealing cases measure foreclosure shares to include all purchases under exclusive dealing agreements. But when should the foreclosure share include purchases under a bundled discount that involves no buyer commitment, but just makes pricing conditional on what the buyer does at each moment?

Clearly a cost-based test should not be used to judge when a no-commitment bundled discount is foreclosing, both because a cost-based test correlates poorly to when bundled discounts are anticompetitive and because it conflicts with Supreme Court precedent. Indeed, because *International Salt* and *Northern Pacific* hold that a tie is foreclosing even when the tying condition requires only that the rival price be at least one penny below the defendant, they suggest that any bundled discount above zero is legally foreclosing. This makes some sense because, as noted above, even a trivial discount can produce anticompetitive effects given buyer collective action problems and effects on rival incentives to cut prices. Further, the purpose of measuring the foreclosure share here is simply to determine whether anticompetitive effects are plausible enough to require the defendant to come forth with some procompetitive justification. If a firm charges a higher price to buyers who refuse to comply with its exclusionary condition than to buyers who do, then it does create some clog on competition that seems unjustifiable absent some offsetting efficiency. Because the noncompliant price always exceeds the compliant price for a bundled discount, this approach suggests that the foreclosure share should include all purchases of the linked product that received a bundled discount, even without any buyer commitment.

This approach makes sense to the extent that the foreclosure share is being used defensively, to rebut an argument that anticompetitive effects are impossible because

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<sup>208</sup> See IX AREEDA & HOVENKAMP, *supra* note, ¶1709, at 78, 87.

the foreclosure share is too low. In that case, one should include all purchases under no-commitment bundled discounts in the foreclosure share, because economic theory shows that anticompetitive effects are indeed *possible* with a high foreclosure share despite a small discount. But if the bundled discount is trivial, one might hesitate to use the same foreclosure share offensively, in order to infer that anticompetitive effects are *likely*, because such a trivial bundled discount may have little impact on rival sales. Thus, for a small bundled discount without buyer commitments, any offensive inference from the foreclosure share should be confirmed by evidence that the bundled discounts actually had an adverse impact on rival competition. Such an adverse impact could, for example, be proven with evidence that buyers receiving bundled discounts bought significantly less from rivals than other buyers or by direct evidence that rival efficiency or competitiveness was impaired.

When the size of the bundled discount is significant compared to purchases of the linked product, so that buyers would incur a significant penalty if they were noncompliant, one can infer an adverse effect on rival competition from a substantial foreclosure share without the need for such confirmatory evidence. This makes the legal rule consistent with the fact that antitrust law infers such an effect when exclusive dealing covers a substantial market share, because the existence of an exclusive dealing agreement tells us only that there is some significant penalty for non-compliance: it doesn't tell us the size of the penalty nor show that the penalty is large enough that it could not be offset by an equally-efficient rival pricing at cost. In fact, generally it would seem that an exclusive dealing agreement could be offset by an equally-efficient rival pricing at cost. After all, few contractual breaches result in suit and here the contract might be deemed unenforceable because it unreasonably restrains trade. Even if the defendant were 100% likely to sue and win, expectation damages would generally equal lost profits per sale (price minus per-unit cost) times the quantity bought from the defendant. The breaching buyer who shifts to buying from a rival pricing at cost would gain the difference between price and per-unit cost times the quantity it bought from the rival. The price-cost difference would be the same and the buyer would buy more quantity from the rival (because it is buying at a lower price), so it would seem that expectation damages could never deter a shift to a rival pricing at cost.<sup>209</sup> In reality, such breaches would generally not occur, not only because the foreclosure may itself prevent the rival from being equally efficient, but also because of reputational sanctions, links to other contractual duties, and lack of

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<sup>209</sup> See Simpson & Wickelgren, *supra* note .

rival incentives to price at cost, which are just further problems with a cost-based test.<sup>210</sup> But the point here is that exclusive dealing doctrine indicates courts should infer anticompetitive effects from substantial foreclosure share whenever exclusionary agreements impose a significant penalty on buyers who shift purchases to rivals, whether or not those penalties are high enough to prevent shifts to a rival pricing at cost.

In short, the foreclosure share should in all cases be measured to include any purchases of the linked product that received a bundled discount. For bundled discounts with buyer commitments, a substantial foreclosure share suffices to infer anticompetitive effects. The same holds for bundled discounts without buyer commitments if the size of the discount is significant in relation to purchases of the linked product. For small bundled discounts without buyer commitments, a substantial foreclosure share suffices to show that anticompetitive effects are possible, but should not be used to infer likely anticompetitive effects unless confirmed by evidence of an adverse impact on rival competition.<sup>211</sup> Whether anticompetitive effects are inferred or directly shown, bundled discounts should remain legal if the defendant can prove they were the least restrictive means of producing offsetting efficiencies that were passed on to consumers to an extent large enough to eliminate any harm to consumer welfare.

With the benefit of this analysis, we can take another look at the much (and unfairly) maligned *LePage's* case.<sup>212</sup> *LePage's* involved bundled loyalty discounts on branded Scotch tape sold to retailers who agreed to buy private label tape from the defendant. The bundled discounts were significant in size and sometimes used to procure loyalty commitments.<sup>213</sup> Although the two types of tape were in a common tape market, demand for them differed in a way that made bundled discount analysis appropriate. The court ruled that the bundled discounts could be illegal even if above cost, rejecting a dissent claim that the effective price should have been compared to costs.<sup>214</sup> The court did not find the bundled discounts quasi-per se illegal based on defendant market power and the lack of offsetting efficiencies, nor did it reach any conclusion

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<sup>210</sup> See *supra* at \_\_\_; Elhauge, *How Loyalty Discounts*, *supra* note , at .

<sup>211</sup> The conclusions of this paragraph also apply to single product loyalty discounts.

<sup>212</sup> *LePage's Inc. v. 3M*, 324 F.3d 141 (3d Cir. 2003) (en banc).

<sup>213</sup> *Id.* at 145, 147, 154, 157-159.

<sup>214</sup> *Id.* at 147-152.

that the unbundled prices exceeded but-for levels in a way that might make such a quasi-per se approach appropriate. Instead, the court found liability because the bundled discounts not only lacked any offsetting efficiencies, but were significant enough to foreclose major outlets and create adverse effects on rival competitiveness, which it found directly proven by evidence that the foreclosed rival lost economies of scale.<sup>215</sup>

Although this case has been much criticized, it reflects a rather straightforward application of garden-variety rule of reason analysis. To be sure, *LePage's* did not rely on proof of a substantial foreclosure *share*, but foreclosure shares are just a possible basis for inferring anticompetitive effects. When direct evidence of anticompetitive effects on rival competitiveness exists, then it obviates the need to prove a market or foreclosure share.<sup>216</sup> Indeed, such direct evidence is far preferable because it directly establishes that the foreclosure share did indeed produce the anticompetitive effect. Given directly-proven anticompetitive effects and the absence of any redeeming procompetitive efficiency, the rule of reason required condemnation.

The same rule-of-reason approach was used in the Third Circuit's decision in *SmithKline*, which condemned bundled discounts on three antibiotics that required no buyer commitment, without requiring any evidence that bundled discounts resulted in an effective price that was below cost.<sup>217</sup> Instead, the court relied on two points. First, the size of the bundled discount was significant in relation to purchases of the

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<sup>215</sup> *Id.* at 159-164.

<sup>216</sup> *FTC v. Indiana Federation of Dentists*, 476 U.S. 447, 460-61 (1986) (“Since the purpose of the inquiries into market definition and market power is to determine whether an arrangement has the potential for genuine adverse effects on competition, ‘proof of actual detrimental effects, such as a reduction of output,’ can obviate the need for an inquiry into market power, which is but a ‘surrogate for detrimental effects.’”)

<sup>217</sup> See *SmithKline Corp. v. Eli Lilly & Co.*, 575 F.2d 1056 (3d Cir. 1978). Some argue that the district court in *SmithKline* required evidence that the effective price was below cost. See Bush DOJ Unilateral Conduct Report, *supra* note , at 92. However, the appellate court affirmed liability without ever comparing effective prices to cost, and thus held it was unnecessary. Moreover, the district court actually found that the effective price would have left an equally-efficient rival with a 4% return on sales, thus clearly indicating that the effective price was above incremental cost. 427 F. Supp. 1089, 1122-23 (E.D. Pa. 1976). The district court instead relied on an expert claim that, with such a low but positive profit margin, the rival would not want to retain salespersons to promote its rival antibiotic. *Id.*

linked antibiotic because, although the discount was only 3%, the relative amounts of product purchases made the discount equal to 16% of linked product purchases. Second, the court concluded that, although the effective price was above cost, the bundled discount was likely to adversely impact rival competition by making the profits too low to make it worth promoting the rival antibiotic. This case is thus also consistent with my approach.

Professor Hovenkamp acknowledges that above-cost loyalty discounts can create anticompetitive effects, but argues that they should nonetheless be immunized because the above sort of approach would “make impossible information demands” on courts, by requiring courts to determine whether the foreclosure produced anticompetitive effects and whether those effects were offset by redeeming efficiencies.<sup>218</sup> This is an odd argument, because the above approach not only reflects the sort of rule of reason analysis that courts apply all the time, and applied to bundled discounts in *LePage’s* and *SmithKline* without difficulty, but also mirrors the same inquiry that Professor Hovenkamp advocates for tying and exclusive dealing.<sup>219</sup> It is hard to see how the recommended inquiry there could suddenly become inadministrable here. Indeed, the above approach involves the same rule-of-reason approach that Professor Hovenkamp himself says should apply to bundled discounts that flunk the cost-based test.<sup>220</sup>

Professor Hovenkamp and others further argue that the above sort of approach is misguided because rival competitiveness might also be harmed by above-cost price-cutting.<sup>221</sup> But above-cost price-cutting is different because it always involves true discounts, benefits consumer welfare, and harms rivals only if the monopolist has increased its own efficiency.<sup>222</sup> As the above shows, that is decidedly not true for bundled discounts. Moreover, for bundled or loyalty discounts, what requires justification are the exclusionary conditions, not the pricing. The above approach imposes no limit at all on firms lowering prices to above-cost levels without attaching exclusionary conditions to them. Nor can one just assume that bundled discounts lower prices. That commits the intellectual error of allowing oneself to get so

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<sup>218</sup> Hovenkamp, *Discounts and Exclusion*, *supra* note \_\_, at 843-844, 847.

<sup>219</sup> See IX AREEDA & HOVENKAMP, *supra* note, ¶1701, at 26, ¶1703d3, at 38; XI HOVENKAMP, *supra* note, ¶1820, at 145-151.

<sup>220</sup> Hovenkamp, *Discounts and Exclusion*, *supra* note \_\_, at 855.

<sup>221</sup> See Hovenkamp, *Discounts and Exclusion*, *supra* note \_\_, at 847-848; AMC Report, *supra* note , at 97 (collecting sources).

<sup>222</sup> See Elhauge, *Defining Better*, *supra* note , at 315-324.

beguiled by the rhetoric of “discounts” that one pre-judges the issues of (1) whether the price difference really reflected an unbundled penalty rather than a true discount from but-for levels, and (2) whether the foreclosure increased market price baselines.

A case where the bundled discount was equated with tying was *Advance Business Systems*.<sup>223</sup> In that case, the defendant offered its copier separately for \$4250 and in a bundle with other supplies and service for 3.5 cents a copy. The court held that such a bundled discount constituted a tie unless “the components are separately available to the customer on a basis as favorable as the tie-in arrangement.”<sup>224</sup> As stated, this test goes too far because any bundled discount, by definition, offers the bundle on a basis more favorable than separate sale. Literally read, this test would mean that all bundled discounts constitute a tie. However, the facts of the case suggest that the court was concerned that the separate price was set far above the but-for price, so far above it that no buyer ever wanted to buy it separately.<sup>225</sup>

Finally, consider again the holding in *Loew’s* that an injunctive remedy for bundling should ban bundled discounts that either have the effect of imposing a tying condition or exceed any efficiency gains.<sup>226</sup> That holding is consistent with my suggested approach because an unbundled price that exceeds the but-for price and lacks offsetting efficiencies has the same effects as a tying condition and causes a differential that exceeds any efficiency gains.

5. Multiple Bundlers and Cumulative Foreclosure. Cases when multiple firms engage in bundling create their own issues. Professor Hovenkamp has argued that if at least one significant rival could offer the same bundle, then the appropriate test is to compare the bundled price to the cost of making the bundle.<sup>227</sup> However, unless the rival’s existence eliminates all of the defendant’s linking market power, all three of the power effects remain possible despite prices well above costs. The rival’s existence is relevant in assessing the degree of linking market power, but does not disprove power effects. Moreover, in a differentiated linking market, it is entirely possible that the two firms might have linking power over different sets of buyers,

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<sup>223</sup> See *Advance Business Systems v. SCM Corp.*, 415 F.2d 55 (4th Cir. 1969).

<sup>224</sup> See *id.* at 62.

<sup>225</sup> *Id.*

<sup>226</sup> *United States v. Loew's Inc.*, 371 U.S. 38, 54-55 (1962).

<sup>227</sup> See Hovenkamp, *Discounts and Exclusion*, *supra* note \_\_, at 844-845, 848-849; see also Bush DOJ Single Firm Conduct Report, *supra* note \_\_, at 101 (accepting Hovenkamp’s argument).

enabling both of them to inflict power effects.

As for foreclosure effects, if two significant firms are engaged in bundling, then their cumulative foreclosure of the linked market is even greater, producing an even greater foreclosure effect on other rivals.<sup>228</sup> If those other rivals are driven from the market, bundling could create or preserve a duopoly where otherwise a competitive market could have existed. Indeed, Professor Hovenkamp himself acknowledges that if a seller and a few rivals engage in exclusionary agreements, courts should aggregate their foreclosure shares.<sup>229</sup>

Having two firms use bundled loyalty discounts also only worsens the extent to which their cumulative effect can discourage discounting.<sup>230</sup> Further, if the two markets are differentiated, then having multiple firms offer bundled discounts decreases social and consumer welfare by producing an inefficient product mix and excessive bundling, even though it also lowers both firms' profits.<sup>231</sup> This effect on firm profits makes it even worse policy to adopt the rule, suggested by some, that above-cost bundled discounts should be allowed if other firms *could* form a joint venture to offer the same bundle,<sup>232</sup> because the first bundled discount would generally make forming such a joint venture unprofitable and thus deter its formation.<sup>233</sup>

In other cases, permitting bundling because a rival could offer the same bundle will

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<sup>228</sup> See ELHAUGE, U.S. ANTITRUST, *supra* note , at 335-337 (explaining economics of cumulative foreclosure); Aaron Edlin & Daniel Rubinfeld, *Exclusion or Efficient Pricing?*, 72 ANTITRUST L.J. 119, 121, 152, 156 (2004) (concluding that cumulative foreclosure could be appropriate to judge the foreclosing effect of bundled discounts that multiple publishers offer to libraries); Joseph Lin, *The Dampening-of-Competition Effect of Exclusive Dealing*, 39 J. INDUS. ECON. 209, 209-210, 217 (1990) (cumulative foreclosure economically justified when multiple sellers engage in exclusive dealing in a concentrated, differentiated market).

<sup>229</sup> See IX AREEDA & HOVENKAMP, *supra* note, ¶1709, at 78 , 87, ¶1729, at 328, 337.

<sup>230</sup> Elhauge, *How Loyalty Discounts*, *supra* note , at .

<sup>231</sup> See Gans & King, *Paying for Loyalty: Product Bundling in Oligopoly*, 54 J. INDUS. ECON. 43, 45-46 (2006); Matutes & Regibeau, *Compatibility and Bundling of Complementary Goods in a Duopoly*, 40 J. INDUS. ECON. 37, 37, 44, 46-47 (1992); Barry Nalebuff, *Competing Against Bundles*, in INCENTIVES, ORGANIZATION, AND PUBLIC ECONOMICS 323, 332 & n.19 (eds. Hammond & Myles 2000).

<sup>232</sup> See Crane, *Mixed Bundling*, *supra* note , at 480-481; Hovenkamp, *Discounts and Exclusion*, *supra* note \_\_, at 855-856; Lambert, *supra* note , at 1741-1747.

<sup>233</sup> Nalebuff, *Competing Against Bundles*, *supra* note , at 325, 331.

force other rivals who wish to remain in the market to engage in similar bundling. If the bundling lacks any efficiency justification, then forcing other rivals to engage in the same bundling forces them into less efficient arrangements, thus undermining market efficiency. Even if one thought that bundle-to-bundle competition between two firms that offer both products were procompetitive, there is a less restrictive alternative. The firms could offer ties or bundled discounts with full carveouts for purchases from rivals who do not offer both products. Bundles with such full carveouts could achieve any purported procompetitive benefits of bundle-to-bundle competition without foreclosing firms that do not make all the products in the bundle.<sup>234</sup>

Finally, a test that immunized above-cost foreclosing bundles when another significant firm also uses a foreclosing bundle would be inconsistent with Supreme Court precedent, which cumulates the foreclosure shares created by above-cost foreclosing agreements when they are used by a few large firms.<sup>235</sup> In all these cases, the Court reached that conclusion without any finding or evidence of a conspiracy between the firms whose foreclosure shares were aggregated. Indeed, in one case, the dissenting argument that such a horizontal conspiracy should be required was explicitly rejected

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<sup>234</sup> Avoiding any foreclosing effect requires a full carveout that makes purchases from a single-product rival satisfy any loyalty requirement to the same extent as purchases from the defendant. A limited carveout (which excludes purchases from a single-product rival from denominator but does not make them count the same as purchases from the defendant) would not eliminate foreclosing effects. For example, suppose a buyer complied with a 90% loyalty condition by buying 90 units from the defendant and 10 from its two-product rival. With a limited carveout, the buyer would be foreclosed from shifting 10 units from the defendant to a single-product rival because such a shift would leave it only 72% (80/90) loyal.

<sup>235</sup> *Standard Oil & Standard Stations v. United States*, 337 U.S. 293, 295, 309, 314 (1949) (assessing foreclosure by aggregating defendant's exclusive contracts with those of the seven leading oil producers to produce an aggregate foreclosure of 65%); *FTC v. Motion Picture Advertising Service*, 344 U.S. 392, 395 (1953) (concluding that, under the Sherman Act and FTC Act, the relevant foreclosure was the aggregate 75% produced by adding the exclusive dealing arrangements of four firms); *Tampa Electric v. Nashville Coal*, 365 U.S. 320, 334 (1961) (describing and distinguishing *Standard Stations* as a case where there was an "industry-wide practice of relying upon exclusive contracts"); *United States v. Philadelphia Nat'l Bank*, 374 U.S. 321, 365-66 (1963) (interpreting *Standard Stations* and *Motion Picture* to rest on cumulative foreclosure measures); *Jefferson Parish v. Hyde*, 466 U.S. 2, 30 n.51 (1984) (favorably citing both *Standard Stations* and *Tampa Electric* on the appropriate foreclosure measure).

under the Sherman Act.<sup>236</sup>

Although cumulative foreclosure is appropriate when exclusionary agreements (such as bundled discounts) are used by a few large firms, it obviously would be inappropriate if 100 small firms all engaged in the same exclusionary agreements, because in the latter situation the agreements would not produce any anticompetitive effect and must be motivated by efficiencies. Where is the dividing line? I would define the “few” and “large” conditions functionally, based on the relevant anticompetitive theory. “Few” should generally mean less than the number of firms deemed necessary to secure competition under the merger guidelines, because driving the market below that number is usually necessary to cause the claimed anticompetitive effect.<sup>237</sup> “Large” should generally mean above minimum efficient scale. Cumulative foreclosure should generally not include exclusionary agreements used by firms below their minimum efficient scale because such agreements could not contribute to the usual claimed anticompetitive effect, which is preventing a greater number of firms from operating at the minimum efficient scale. Indeed, agreements by such small firms are likely to procompetitively help them achieve their own economies of scale.

## VII. CONCLUSION

Stylized assumptions can produce the conclusion, contrary to intuition and precedent, that tying and bundled discounts cannot create additional monopoly profits and thus must be explicable by efficiencies. But under more realistic assumptions, economics shows that the opposite is true. Where a substantial share of the tied market is foreclosed, tying can increase market power, prices, and profits in both the tied and tying markets. Even without foreclosure, ties by a firm with tying market power generally harms consumer and total welfare absent efficiencies. Tying doctrine thus

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<sup>236</sup> *Motion Picture*, 344 U.S. at 393-95; *id.* at 399-400 (dissent). The contrary decision in *Paddock Publ’ns. v. Chicago Tribune*, 103 F.3d 42 (7th Cir. 1996), was thus mistaken.

<sup>237</sup> See ELHAUGE, U.S. ANTITRUST, *supra* note , at 336-37. This is consistent with the conclusion by Professors Areeda and Hovenkamp that “foreclosure should be presumed unreasonable when it reaches ... a total of 50 percent for five or fewer sellers.” See IX AREEDA & HOVENKAMP, *supra* note, ¶1729, at 328, 337. Presumably they would not include in the five a firm that foreclosed only a trivial market share, but they do not offer criteria for determining how large a firm has to be included in the five.

correctly condemns ties based on tying market power absent offsetting efficiencies, even without substantial tied foreclosure. However, this so-called quasi-per se rule should not apply to products that have a fixed ratio and lack separate utility because those conditions generally negate anticompetitive effects absent substantial tied foreclosure.

When the unbundled price for the linking product exceeds its but-for price, bundled discounts can produce the same harmful power effects as tying, and thus should be condemned based on linking market power absent offsetting efficiencies, unless the products have a fixed ratio and lack separate utility. Otherwise, bundled discounts should be judged under ordinary rule-of-reason analysis that requires proof of substantial foreclosure or direct proof of anticompetitive effects.