NELLCO
NELLCO Legal Scholarship Repository

New York University Law and Economics Working Papers

New York University School of Law

1-1-2011

Tying, Bundling, and Loyalty/Requirement Rebates

Nicholas Economides
New York University, economides@stern.nyu.edu

Follow this and additional works at: http://lsr.nellco.org/nyu_lewp

Part of the Antitrust and Trade Regulation Commons

Recommended Citation
Economides, Nicholas, "Tying, Bundling, and Loyalty/Requirement Rebates" (2011). *New York University Law and Economics Working Papers.* Paper 251.
http://lsr.nellco.org/nyu_lewp/251

This Article is brought to you for free and open access by the New York University School of Law at NELLCO Legal Scholarship Repository. It has been accepted for inclusion in New York University Law and Economics Working Papers by an authorized administrator of NELLCO Legal Scholarship Repository. For more information, please contact tracy.thompson@nellco.org.

Forthcoming in Einer Elhauge (ed.),
Research Handbook on the Economics of Antitrust Law
Edward Elgar Publishing.

Tying, Bundling, and Loyalty/Requirement Rebates*

By Nicholas Economides**

Revised February 2011

Abstract

I discuss the impact of tying, bundling, and loyalty/requirement rebates on consumer surplus in the affected markets. I show that the Chicago School Theory of a single monopoly surplus that justifies tying, bundling, and loyalty/requirement rebates on the basis of efficiency typically fails. Thus, tying, bundling, and loyalty/requirement rebates can be used to extract consumer surplus and enhance profit of firms with market power. I discuss the various setups when this occurs.

Keywords: tying, ties, bundling, bundled rebates, loyalty discounts, loyalty requirement rebates, single monopoly surplus, monopolization, market power, foreclosure, antitrust

JEL Classification: C72, D42, D43, K21, L12, L40, L41, L42

* I thank Douglas Broder, Einer Elhauge, William Hebert, and Ioannis Lianos for comments on an earlier draft.

** Professor of Economics, Stern School of Business, New York University, economides@stern.nyu.edu, www.stern.nyu.edu/networks/ (212) 998-0864; Executive Director, NET Institute, www.NETinst.org.

Forthcoming in Einer Elhauge (ed.),
Research Handbook on the Economics of Antitrust Law
Edward Elgar Publishing.

Tying, Bundling, and Loyalty/Requirement Rebates*

By Nicholas Economides**

Revised February 2011

Abstract

I discuss the impact of tying, bundling, and loyalty/requirement rebates on consumer surplus in the affected markets. I show that the Chicago School Theory of a single monopoly surplus that justifies tying, bundling, and loyalty/requirement rebates on the basis of efficiency typically fails. Thus, tying, bundling, and loyalty/requirement rebates can be used to extract consumer surplus and enhance profit of firms with market power. I discuss the various setups when this occurs.

Keywords: tying, ties, bundling, bundled rebates, loyalty discounts, loyalty requirement rebates, single monopoly surplus, monopolization, market power, foreclosure, antitrust

JEL Classification: C72, D42, D43, K21, L12, L40, L41, L42

* I thank Douglas Broder, Einer Elhauge, William Hebert, and Ioannis Lianos for comments on an earlier draft.

** Professor of Economics, Stern School of Business, New York University, economides@stern.nyu.edu, www.stern.nyu.edu/networks/ (212) 998-0864; Executive Director, NET Institute, www.NETinst.org.

Contents

1. Tying and Bundling: Definitions 4

2. The Chicago School Theory of a Single Monopoly Surplus and Why it Typically Fails 6

3. Strategic Reasons for Tying and Bundling 10

a. Use of Tying and Bundling to Extract Consumer's Surplus Through Intra-product Price Discrimination 10

b. Use of Tying and Bundling to Extract Consumer's Surplus Through Intra-consumer Price Discrimination 13

c. Tying Can Implement Inter-product Price Discrimination to the Detriment of Consumers 16

d. Use of Tying and Bundling to Disadvantage Rivals in the Tied Market and Foreclose Entry in the Tied Market 17

4. Bundling and Loyalty/Requirement Programs 18

a. A Loyalty "Discount" is Equivalent to a "Disloyalty Penalty" 18

b. A Loyalty "Discount" Can Be Illusory; No Profit Sacrifice Is Needed in Loyalty/Requirement Pricing 19

c. Buyers Find Themselves in a "Prisoners' Dilemma" 20

d. Differences Among Types of Discounts 21

e. Loyalty/Requirement Pricing Switches Competition From the Last Unit to Competition for Large Chunks of the Demand 24

f. Use of Loyalty/Requirement Programs to Disadvantage Rivals and Foreclose Entry 25

g. Foreclosure 25

5. Loyalty/Requirement Pricing Can be Equivalent to Bundling "Incontestable" and "Contestable" Units of a Single Good 26

6. Defects of the Discount Attribution Test as a Liability Standard For Loyalty/Requirement Programs 28

a. Background 28

b. Which Quantity of the Competitive Product Should be Used in the Attribution Test 30

c. Which Company's Costs Should be Used in the Attribution Test?..... 32

d. Survival of Higher Cost Rival Can Benefit Consumers 33

e. The AMC Attribution Test Fails When Products Are Differentiated..... 33

f. A Loyalty/Requirement Program Reduces Price Transparency 34

g. Even When a Buyer Accepts the Bundle, He May be Worse Off Than in the But-For World; Buyers Find Themselves in a Prisoners' Dilemma..... 34

h. Recoupment is Unnecessary 35

7. Structured Rule of Reason..... 36

Tying, Bundling and Loyalty/Requirement Rebates

1. Tying and Bundling: Definitions

Tying of two products (or services) occurs when a seller sells one good on the condition that the buyer buys the other good from that seller.

> [A tying arrangement is] "an agreement by a party to sell one product but only on the condition that the buyer also purchase a different (or tied) product."[1]

Of particular interest are cases when the seller has market power in the tying product (call it product A) which is the one required to be sold with the other (tied) product. The tied product (call it product B) is the one that the buyer has to take to get the tying product.

There are many different ways in which the sale of a product can be conditioned on the sale of another. The tie that comes first to mind is the sale of two goods together in a 1:1 ratio or, more generally, in a fixed ratio. But there are also other more sophisticated ways to condition tying. A tying condition may require a certain number of units of the tied good to be bought from the same seller. An even more restrictive condition resulting in a "requirements tie" is an agreement to sell the tying product only if the buyer buys all or most of its requirements of the tied product from that seller. The "requirements tie" conditions pricing on the number of units that a buyer buys from a rival. As we will see, the requirements tie has quite different effects from the fixed ratio tie, as well as from the ties that are based on the number of units bought from the same seller.

[1] See, for example, *Yentsch v. Texaco, Inc.*, 630 F.2d 46, 56-57 (2d Cir. 1980).

Bundling is a general term describing selling collections of goods (A, B, C, …) as a package. Such collections may vary in their composition and in the conditions that apply to the availability of special pricing for the collections.

Bundling discounts can be based on a variety of conditions. There can be fixed ratio bundles, such as buying a desktop computer and a video monitor at a lower price than a-la-carte. There can be bundled discounts based on a requirement to buy a certain number of units from the same seller. And there are more sophisticated bundling programs, such as a bundled loyalty agreement where a buyer agrees to buy from a seller all or most of the buyer's needs of two products, generally for terms preferable to those given to buyers who don't buy most or all of their needs of two products from the seller. As we will see,[2] bundles with fixed ratios have effects similar to ties with fixed ratios, bundles with a requirement to buy a certain number of units from the same seller are similar to ties under the same condition, and bundled loyalty agreements have effects similar to requirements ties.[3]

In some cases in a requirement tie, the available prices outside the bundle (the a-la-carte prices) are so high that there are no a-la-carte sales, so that bundling under a requirement tie is *de facto* tying. Then we can think of tying as a special case of bundling.[4]

---

[2] Also see Nicholas Economides, *Loyalty/Requirement Rebates and the Antitrust Modernization Commission: What is the Appropriate Liability Standard?*, 54 ANTITR. BULL. 259 (2009), available at http://www.stern.nyu.edu/networks/Economides_Loyalty_Discounts_AntitrustBulletin.pdf; Nicholas Economides and Ioannis Lianos, *The Elusive Antitrust Standard on Bundling in Europe and in the United States at the Aftermath of the Microsoft Cases*, 76 ANTITR. L. J. 483 (2009) at 510-534, available at http://www.stern.nyu.edu/networks/Economides_Lianos_Bundling.pdf; Einer Elhauge, *Tying, Bundled Discounts, and the Death of the Single Monopoly Profit Theory*, 123 HARV. L. REV. 397 (2009) at 451-53, 457-58.

[3] It is also useful to distinguish bundled loyalty conditions (which simply make receipt of favorable terms conditioned on actually meeting loyalty conditions) from bundled loyalty commitments (where the buyer commits in advance to meet the loyalty conditions in order to get the favorable terms), because they have slightly different effects. For a summary of differences see Elhauge (2009) supra note 2at 460-61, 470-72. Also see Einer Elhauge, *How Loyalty Discounts Can Perversely Discourage Discounting*, 5 J. COMPETITION L. & ECON. 189 (2009).

[4] See Dennis W. Carlton, Patrick Greenlee and Michael Waldman, *Assessing the Anticompetitive Effects of Multiproduct Pricing,* 53 ANTITR. BULL. 587, at 597 (2008); Economides (2009) supra note 2.

2. The Chicago School Theory of a Single Monopoly Surplus and Why it Typically Fails

In a series of early decisions, the Supreme Court ruled that tying was *per se* illegal, so specific analysis of economic harm was unnecessary to find liability.[5] In the late 1970s prominent antitrust scholars (Posner, Easterbrook, Bork) proposed instead that tying should be *per se* legal, and only in exceptional circumstances there can be antitrust liability.[6] Their reasoning was based on early work by Director and Levy (1956) which has been known as the Chicago School "one surplus theory."[7] This theory essentially stated that a monopolist in good A has no reason to tie product B except when there are cost savings or other efficiencies in the joint production or distribution of A and B. In the Chicago School line of reasoning, tying only occurs when it is efficient (because of cost savings), and therefore tying should be allowed in principle, and only occasionally and in special circumstances might be found illegal.

At the heart of the Chicago School analysis, the first question is "why does the monopolist want a second monopoly?"[8] Clearly, the Chicago School is correct to state that cost

---

[5] See *Jefferson Parish Hospital District No. 2* v. *Edwin G. Hyde,* 466 U.S. 2, 12 and fn. 12-14 (1984). See also *Motion Picture Patents Co. v. Universal Film Co.,* 243 U. S. 502 (1917); *United States Steel Corp. v. Fortner Enterprises,* 429 U. S. 610, 429 U. S. 619-621 (1977); *Fortner Enterprises v. United States Steel Corp.,* 394 U. S. 495, 394 U. S. 498-499 (1969); *White Motor Co. v. United States,* 372 U. S. 253, 372 U. S. 262 (1963);*Brown Shoe Co. v. United States,* 370 U. S. 294, 370 U. S. 330 (1962); *United States v. Loew's Inc.,* 371 U. S. 38 (1962); *Northern Pacific R. Co. v. United States,* 356 U. S. 1, 356 U. S. 5 (1958); *Black v. Magnolia Liquor Co.,* 355 U. S. 24, 355 U. S. 25(1957); *Times-Picayune Publishing Co. v. United States,* 345 U. S. 594, 345 U. S. 608-609 (1953); *Standard Oil Co. of California v. United States,* 337 U. S. 293, 337 U. S. 305-306(1949); *International Salt Co. v. United States,* 332 U. S. 392, 332 U. S. 396 (1947). For an historical perspective on this case law, see V. H. Kramer, *The Supreme Court and Tying Arrangements: Antitrust as History*, 69 MINNESOTA L. REV. 1013 (1985).

[6] See Robert Bork, *The Antitrust Paradox* (1978) at 375; Richard A. Posner, *Antitrust Law: An Economic Perspective* (2001); Richard Posner and Frank Easterbrook, *Antitrust Cases, Economic Notes, and Other Materials*, Second Edition, West Publishing Co.1981. St. Paul, Minn. at 802-810.

[7] See Aaron Director & Edward H. Levi, *Law and the Future: Trade Regulation*, 51 Nw. U. L. Rev. 281, 290 (1956).

[8] See Posner and Easterbrook (1981), at 802.

savings in production and distribution is a possible reason for any firm, even a monopolist, to want a second monopoly, not for the second monopoly's revenue and profits, but for the cost savings created in selling the combination of the two goods. However, the Chicago School's proposition that cost savings in joint production and distribution is the *only* reason for tying and bundling is incorrect, as we see below.[9]

The question "why does a monopolist want a second monopoly" is insufficient to describe the incentives of a monopolist to impose tying and bundling. The key to understanding the motives behind the decision to tie or bundle is that a monopolist can extract surplus in varying degrees from buyers. Thus, the word "monopoly" does not describe sufficiently the

---

[9] See Economides (2009) supra note 2 at 262-264; Nicholas Economides and Ioannis Lianos (2009) supra note 2; Nicholas Economides and Ioannis Lianos, *A Critical Appraisal of Remedies in the EU Microsoft Cases*, 2010 COLUMBIA BUS. L. REV. 346 (2010), available at http://www.stern.nyu.edu/networks/Economides_Lianos_Critical_Appraisal_Microsoft_Remedies.pdf; ,; Einer Elhauge, (2009) supra note 2. Also see Michael D. Whinston, *Tying, Foreclosure, and Exclusion*, 80 AM. ECON. REV. 838 (1990); Barry Nalebuff, *Bundling as an Entry Barrier*, 119 Q. J. ECON. 159 (2004); Bruce H. Kobayashi, *Does Economics Provide a Reliable Guide to Regulating Commodity Bundling by Firms? A Survey of the Economic Literature*, 1 J. COMPETITION L. & ECON. 707 (2005); Bruce H. Kobayashi, *The Economics of Loyalty Rebates and Antitrust Law in the United States*, COMPETITION POL'Y INT'L, Autumn 2005, at 115; Thomas A. Lambert, *Evaluating Bundled Discounts*, 89 MINN. L. REV. 1688 (2005); Daniel L. Rubinfeld, *3M's Bundled Rebates: An Economic Perspective*, 72 U. CHI. L. REV. 243 (2005); David Spector, *Loyalty Rebates: An Assessment of Competition Concerns and a Proposed Structured Rule of Reason*, COMPETITION POL'Y INT'L, Autumn 2005, at 89; Daniel A. Crane, *Multiproduct Discounting: A Myth of Nonprice Predation*, 72 U. CHI. L. REV. 27 (2005); Kai-Uwe Kuhn et al., *Economic Theories of Bundling and Their Policy Implications in Abuse Cases: An Assessment in Light of the* Microsoft *Case*, 1 EUR. COMPETITION J. 85 (2005); Christian Ahlborn & David Bailey, *Discounts, Rebates and Selective Pricing by Dominant Firms: A Trans-Atlantic Comparison*, *in* HANDBOOK OF RESEARCH IN TRANSATLANTIC ANTITRUST 195 (Philip Marsden ed., 2006); Herbert Hovenkamp, *Discounts and Exclusion*, 2006 UTAH L. REV. 841; Robert H. Lande, *Should Predatory Pricing Rules Immunize Exclusionary Discounts?*, 2006 UTAH L. REV. 863; Frank P. Maier-Rigaud, *Article 82 Rebates: Four Common Fallacies*, 2 EUR. COMPETITION J. 85 (2006); Martin Beckenkamp & Frank P. Maier-Rigaud, *An Experimental Investigation of Article 82 Rebate Schemes*, 2 COMPETITION L. REV. No. 2 at 1 (Supp. 2006); John Simpson & Abraham L. Wickelgren, *Bundled Discounts, Leverage Theory, and Downstream Competition*, 9 AM. L. & ECON. REV. 370 (2007); Gregory K. Leonard, *The Competitive Effects of Bundled Discounts*, *in* ECONOMICS OF ANTITRUST: COMPLEX ISSUES IN A DYNAMIC ECONOMY 3 (Laurence Wu ed., 2007); Timothy J. Brennan, *Bundled Rebates as Exclusion Rather than Predation*, 4 J. COMPETITION L. & ECON. 335 (2008); Damien Geradin, *A Proposed Test for Separating Pro-Competitive Conditional Rebates from Anti-Competitive Ones*, 32 WORLD COMPETITION No. 1, at 41 (2009); Patrick Greenlee et al., *An Antitrust Analysis of Bundled Loyalty Discounts* (Econ. Analysis Group, Discussion Paper No. 04-13, 2004), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=600799; Janusz A. Ordover & Greg Shaffer, *Exclusionary Discounts* (Centre for Competition Policy, Working Paper No. 07-13, 2007), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=995426).

extent of extraction of consumer surplus[10] by the seller. In some markets, monopolists are able to extract all consumer surplus by selling each unit to every buyer at his/her willingness to pay, a practice called perfect price discrimination. In most markets, this very complex pricing is unfeasible. Perfect price discrimination may be unfeasible for at least three reasons: (i) the seller does not know the willingness to pay for each unit that every buyer may be willing to buy; (ii) the pricing schedule to be implemented is very complex; and (iii) resale among the users (arbitrage) makes price discrimination unfeasible.

The incentive of a monopolist to impose tying or bundling practices depends on the extent to which he is able to extract surplus from each buyer and on the extent to which each buyer is left with some consumer surplus before tying or bundling is imposed. In particular, if a monopolist is able to extract *all* consumer surplus from every buyer without imposing tying or bundling, there is no incentive for tying or bundling that does not create a substantial foreclosure share in the tied product except in the presence of cost savings from joint production and distribution.[11] So, in this very special setting where the monopolist is able to extract *all* consumer surplus from every buyer and the tie does not foreclose a substantial share of the tied product market, the Chicago School Theory is correct.[12] But extracting *all* consumer surplus from every

[10] Consumer surplus is the difference between what consumers are cumulatively willing to pay and what they cumulatively actually pay in a market. It represents the net benefit to consumers from the existence of the market. As long as a consumer or different consumers have varying valuations for different units of a good, and the good is sold at a single price, consumer surplus is positive.

[11] Full consumer surplus can be extracted when each buyer buys only one unit and the seller is able to sell to each buyer at the price that buyer is willing to pay, thereby leaving no consumer surplus for any buyer. Or, more generally, a seller sells many units to each buyer, but is able to offer very sophisticated, individually tailored pricing, that extracts all consumer surplus from all units bought by each buyer.

[12] Even with full consumer surplus extraction by the seller and tying not creating substantial foreclosure in the tied product, the Chicago School Theory can fail if a buyer has made complementary investments that require the use of a certain amount of the relevant goods. By manipulating the prices and ratios of tied goods in the tying contract, the monopolist can effectively threaten not to sell the amounts that the buyer counted on buying when making the complementary investments, and thereby the buyer can extract even more surplus. In this case, the buyer would be willing to give up more surplus so as not to lose the value of the complementary investments.

buyer is very unlikely to occur in practice, and thus, the Chicago School's theory fails most of time.

The Chicago School Theory is developed under the assumption of a homogeneous monopolized good and a homogeneous tied good. If there is consumer demand for variety or quality product differentiation, the Chicago School Theory can easily fail because entry of even an inefficient rival in new variety or quality can add to consumer surplus.

Besides extracting additional consumer surplus from its current degree of tying market power, a monopolist might be able to gain if it forecloses a substantial share of the tied product and that (1) gives the firm tied market power it can use against tied product buyers who were not subject to the tie, or (2) increases the degree of tying market power.[13]

The specific inabilities of a monopolist to extract the full consumer surplus from all buyers define a roadmap of how tying and/or bundling without a substantial foreclosure share can be profitably used by a monopolist to extract additional surplus in the absence of joint production and distribution cost savings. If buyers buy one unit each but vary in willingness to pay, a single-price monopolist will fail to extract all consumer surplus. The monopolist can then use tying and/or bundling mechanisms to extract more surplus from buyers. If a buyer buys more than one unit and values each unit differently, again a single-price monopolist will fail to extract all consumer surplus, and can use tying and bundling practices to extract more surplus from buyers. Typically each buyer buys more than one unit of varying valuations *and* buyers differ in their valuations, so even sophisticated non-linear pricing by the monopolist will have a very hard time extracting *all* surplus from *all* buyers. Then the availability of tying and bundling strategies increase the ability of a monopolist to extract consumer surplus.

[13] See section 3.c and Elhauge (2009) supra note 2, at 413-419.

3. Strategic Reasons for Tying and Bundling

I now analyze a number of reasons/settings that provide an incentive to a monopolist to impose tying restrictions that go beyond cost savings, as described above. I assume no cost savings from joint distribution and production and no substantial foreclosure share and look for other reasons that may drive a monopolist in good A to tie product B or to create a bundling contract that involves A and B.[14] If cost savings from joint distribution and production exist, they can be taken into consideration as efficiencies to counterbalance consumer losses, but cost savings are not a necessary cause for a dominant firm to profitably introduce tying and/or bundling, including a loyalty/requirement discount program.

a. Use of Tying and Bundling to Extract Consumer's Surplus Through Intra-product Price Discrimination

The first strategic reason for tying is when tying helps extract more consumer surplus of product A than the monopolist is able to extract through single-price monopoly of good A. In this practice, the main objective is not appropriating additional surplus from product B. Instead, the main objective of tying that I identify in this section is to appropriate more consumer surplus from product A.[15] The key assumption here is that, absent tying, the monopolist in A is unable to implement perfect price discrimination, and therefore unable to extract all the consumer surplus of product A as its profits. Tying A with B and requiring that only the monopolist's product B is

[14] The arguments can be easily extended to ties and bundles that involve more than two goods.

[15] This does not imply there may not be other incentives for tying, such as increasing tying power in A and increasing market power in B. Also monopolization of the B market raises concerns about the loss of consumer surplus of buyers of B who do not buy A, as well as common concerns of monopolization such as elimination of competitive pressure for cost reduction and innovation.

used with A (rather than a rival's B) can be used as a metering device for the use of A, and can implicitly reveal the willingness to pay of a buyer of A if the willingness to pay for A is highly positively correlated with use of B. Once B is tied and sold at a supra-competitive price, the monopolist can extract more surplus than without tying. Of course, if a consumer uses A and B in fixed proportions, increasing the price of B will have the same effect as increasing the price of A, and tying B would be unnecessary to implement intra-product price discrimination. Therefore, for the tying of B to be profitable and useful to the seller of A in intra-product price discrimination, it is necessary that A and B are not sold/demanded in fixed proportions.[16]

The arguments for the strategic reason for tying outlined above work both when each buyer buys a single unit of A or many units of A, as long as the pricing conditions in the absence of tying leave some consumer surplus to the buyer or buyers.

A good example of intra-product discrimination may be found in *IBM v. US.* [17] There IBM required leasees of tabulating machines to buy paper cards used by these machines only from itself. The extent of use of paper cards can measure the use of the machine and may be closely correlated with the willingness to pay for the lease. Clearly the same setup applies more generally to tying a durable good with a complementary consumable, such as a printer with replacement ink. Sometimes companies use patents in an attempt to implement the tie as well as go around the antitrust issues that arise in tying.[18]

---

[16] As we will see in section 3.d, tying with a fixed ratio between the products can also accomplish inter-product price discrimination. Also see Elhauge (2009) supra note 2 at 405-07, 455-56.

[17] See *International Business Machines Corp. v. United States*, Supreme Court of the United States, 1936. 298 U.S. 131, 56 S.Ct. 701, 80 L.Ed. 1085.

[18] See, e.g., *Microsoft Corp.*, 253 F.3d at 63; C.R. Bard, Inc. v M3 Sys., Inc., 157 F.3d 1340 (Fed. Cir. 1998); *Image Technical Servs., Inc. v. Eastman Kodak Co.*, 125 F.3d 1195 (9th Cir. 1997). For a recent example, see *Xerox v. Media Sciences*. Civil Action No.: 06-CV-4872 (RJH), UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF NEW YORK. Media Sciences is the only rival to Xerox in the market for replacement ink used in Xerox printers. Xerox patented the design of the entry chute for the replacement ink so as to exclude

Tying in this context typically reduces consumers' surplus in A and forecloses rival firms in good B.[19] Firms may not be able to enter the market for B unless they also enter the market for A.[20] Posner and Easterbrook (1981) claim that, since this tying is based on price discrimination, whether such behavior is anticompetitive is debatable, depending on whether price discrimination in the particular case can be proved to reduce consumers' surplus and therefore be deemed illegal.[21] However, the law disallows the exclusion effects of tying and has no exception for tying when the objective of tying is to implement price discrimination. Additionally, often it is very difficult, if not impossible, to implement perfect price discrimination, so one cannot argue that the same outcome would have been achieved absent tying.

Bundling with a requirement condition can work very much like tying in extracting consumer surplus through intra-product price discrimination. In this setup, the monopolist in A can demand that a very large percentage of the needs in product B of a buyer be bought from it instead of requiring that all product B be bought from it. Additionally, the monopolist in A can

---

Media Sciences from the replacement ink market. See also Nicholas Economides and William Hebert, *Patents and Antitrust: Application to Adjacent Markets*, 6 J. ON TELECOMM. & HIGH TECH. L. 455 (2008) at 463-481, available at http://www.stern.nyu.edu/networks/Economides_Hebert_Patents_and_Antitrust.pdf.

[19] Also see Barry Nalebuff, *Price Discrimination and Welfare,* 5 COMPETITION POL'Y INT'L (2009) 221 at 231-32; Einer Elhauge, *The Failed Resurrection of the Single Monopoly Profit Theory,* 6 COMPETITION POL'Y INT'L (2009) 155 at 186-92.

[20] Such tying forecloses rivals in B from selling to buyers subject to the tie, but may not foreclose rivals from market B in general since rivals may be able to sell product B to buyers who are not subject to the tie.

[21] Note that the Posner and Easterbrook argument about case by case analysis is inconsistent with the claim that ties should be *per se* legal, but is consistent with the quasi *per se* rule which actually is based on a case by case analysis (despite its name). See Elhauge (2009) supra note 2 at 425-26. Some claim that tying should be legal when it results in intra-product price discrimination. See Posner, *Antitrust Law*, supra note 6, at 203–04; 9 Phillip E. Areeda & Herbert Hovenkamp, *Antitrust Law* ¶ 1705, ¶ 1710c4, at 99–100, ¶ 1711b, at 102–07, ¶ 1711e, at 110–12. However, implementing price discrimination without tying requires no resale (to avoid arbitrage) and knowledge of the willingness to pay of specific buyers and specific units for each buyer. Tying a second product that is highly correlated with usage of the first product allows the discovery of the value each unit of the first good. Tying also eliminates the need for the no resale requirement. Finally, tying may be a much easier pricing scheme than the very complex pricing required for perfect price discrimination. For additional reasons why the analogy to price discrimination does not justify changing tying doctrine, see Elhauge (2009) supra note 2 at 427-34.

increase the a-la-carte price of A as it institutes this bundling program, even to an above-monopoly level, to induce consumers to accept the bundle. These issues are discussed in detail in section 4.

b. Use of Tying and Bundling to Extract Consumer's Surplus Through Intra-consumer Price Discrimination

As long as some consumer surplus is left to a buyer of a good even when this good is sold by a monopolist, the monopolist can use tying and/or bundling to extract the remaining surplus from the buyer. This setup requires that a buyer buy more than one unit, and that he values some unit(s) more than another (or other units). In other words, the buyer values one or more infra-marginal units more than the marginal unit. Some surplus left to a buyer means that the seller, absent tying and bundling, is unable to implement intra-consumer perfect price discrimination.

Under these conditions, the monopolist in market A leverages the remaining surplus with a buyer in market A to induce him to buy the monopolist's product in market B. That is, the seller's tying essentially threatens the buyer with loss of all his *ex ante* remaining consumer surplus to induce him to buy B from this seller. This requires that, without the use of tying and/or bundling strategies, some consumer surplus is left to affected buyers in market A, for example, because they purchase multiple units of the tying product. The threat of appropriation of this surplus by the monopolist is used in the tying or bundling scheme to induce the affected buyers to buy the monopolist's product in market B. Again, some consumer surplus is needed to be left with affected buyers under monopoly before tying and bundling is implemented. Therefore the

necessary assumption (no consumer surplus left *ex ante*) for the Chicago School Theory to work is violated and it fails.[22]

I now go into the details of how this tying and/or bundling program works. Suppose that a buyer buys goods A and B and, in the absence of bundling and tying, is left with some consumer surplus $CS_{monop.A}$ in the monopolized market A at monopoly pricing and with consumer surplus $CS_{comp.B}$ in market B. For simplicity assume that the market in product B is originally competitive, although this is not necessary. Then the introduction of tying between A and B can force the buyer to give more surplus to the seller.

This works as follows. Before tying, a buyer has total consumer surplus from the two goods $CS_{monop.A} + CS_{comp.B}$. The monopolist seller in A refuses to offer A by itself but offers it only with B which he now sells at a monopoly price (and may offer A a-la-carte at a prohibitively high price in a bundling setting, as discussed later in the chapter). The buyer's consumer surplus from B in the tied arrangement is $CS_{monop.B}$ which is lower than without tying, $CS_{monop.B} < CS_{comp.B}$. The consumer surplus from both products under tying is $CS_{monop.A} + CS_{monop.B}$, which is lower than in the but-for world, $CS_{monop.A} + CS_{monop.B} < CS_{monop.A} + CS_{comp.B}$. Therefore (i) the buyer is worse off under tying compared to the but-for world (which was the original monopoly in A only); and (ii) the seller extracts additional surplus (and has higher profits) by tying.[23]

---

[22] See M. L. Burstein, *The Economics of Tie–In Sales*, 42 REV. OF ECON. & STAT. 68 (1960); M. L. Burstein, *A Theory of Full–Line Forcing*, 55 NORTHWESTERN L. REV. 62 (1960).

[23] *See* Patrick Greenlee, David S. Reitman, and David S. Sibley, *An Antitrust Analysis of Bundled Loyalty Discounts,* INT'L J. INDUS. ORG. (2008), Barry Nalebuff, *Bundling as a Way to Leverage Monopoly*, Yale Working Paper (Oct. 2004), Frank Mathewson and Ralph Winter, *Tying as a Response to Demand Uncertainty*, 28 RAND J. ECON. (1997), and Elhauge, (2009) supra note 2 at 407-13 (2009).

The buyer has the option of not buying the tied goods A and B from the monopolist, which means foregoing A altogether and buying B from a rival. If the buyer does not buy the tied products A and B from the monopolist, he loses his pre-tying consumer surplus from good A, $CS_{monop.A}$, and is left with only his consumer surplus from B at a competitive price, $CS_{comp.B}$. Because of this, the buyer may prefer to buy under tying, specifically when the alternative, that is, buying only B at competitive prices, is not as desirable. Therefore, in the world when tying is offered, the buyer prefers to buy under tying when $CS_{monop.A} + CS_{monop.B} > CS_{comp.B}$ even thought he is worse off compared to the but-for, pre-tying, world.[24] Greenlee *et al.* (2008) also show that even when a buyer prefers not to buy under tying, the introduction of tying reduces consumer surplus.[25]

Notice that the price discrimination implemented through tying here is intra-consumer price discrimination, and requires that a buyer buys more than one unit, values units differently, and that the seller is unable to implement perfect price discrimination on each buyer, so a buyer is left with some consumer surplus absent tying and bundling. Since the price discrimination implemented through tying is among the units bought by the same consumer and is done separately for each consumer, it does not depend on differences across consumers. The tying scheme can be applied even if all buyers are identical in their valuations of the two products. Additionally, there is no requirement that market power and market share in the tied market B are significant before tying starts. However, once the tying scheme is in effect, the acceptance by

[24] If both A and B have linear demand curves and constant marginal costs, the condition of accepting to buy under tying, $CS_{monop.A} + CS_{monop.B} > CS_{comp.B}$, is equivalent to $CS_{monop.A} > 3CS_{monop.B}$ or equivalently $CS_{comp.A} > 3CS_{comp.B}$. See Greenlee, Reitman & Sibley (2008) supra note 24 at 1137, Elhauge (2009) supra note 2 at 410.

[25] See Greenlee *et al*. (2008) supra note 24 at 1137; Elhauge (2009) supra note 2 at 410-11.

many buyers to buy the tied products A and B (rather forego A altogether) increases the seller's market power in the tying market.

Bundling with a requirement condition can work very much as tying in extracting consumer surplus through intra-consumer price discrimination. I discuss this in section 4 under loyalty/requirement programs.

c. Tying Can Implement Inter-product Price Discrimination to the Detriment of Consumers

Tying and bundling as described in the previous two sections are mainly instruments to implement price discrimination and extract more consumer surplus from a single monopolized market with the caveats stated in the previous sections. In those settings, the monopolization of the second market though tying and bundling is typically not the monopolist's main goal. However, there are settings where the objective of tying and bundling is the extraction of surplus in the second (tied good) market.

In the presence of substantial market power in the tying market,[26] when consumers buy two goods and their demands do not have very strong positive correlation, introduction of tying or bundled pricing can increase profits and reduce consumer surplus.[27] This applies for both fixed and variable ratio tying and bundling. The starting point for this analysis is the Supreme Court's decision in *United States v. Loew's Inc.*[28] which banned fixed ratio bundles of movies and Stigler's subsequent analysis of this case.[29] For illustration, suppose that consumers are

[26] Substantial market power in the tied good or foreclosure effect is not required.

[27] See also Elhauge (2009) supra note 2 at 405-07, 415; Economides and Hebert (2008) supra note 18 at 465.

[28] 371 U.S. 38 (1962).

[29] *See* George J. Stigler, *United States v. Loew's Inc.: A Note on Block-Booking*, 1963 SUP. CT. REV. 152.

distributed uniformly according to type x in [0, 100] so that consumer x has willingness to pay p(x) for good A and willingness to pay $100 – p(x) for good B. Additionally, let the willingness to pay for consumer of type x be inversely related to his type, p(x) = 100 – x. Then, if the goods are sold separately, a single-price monopolist will charge $50 for each of goods A and B, and, in each of these markets, consumer surplus will be $1250.[30] However, if A and B are tied in a 1:1 ratio, the willingness to pay for AB is $100 for every consumer. The monopolist charges $100 for the bundle, all consumers buy the good, and consumers are left with zero consumer surplus. Although this example is constructed with negative correlation between the willingness to pay for the two goods, similar results can be established when the correlation between the willingness to pay for the two goods is not too positive.[31]

d. Use of Tying and Bundling to Disadvantage Rivals in the Tied Market and Foreclose Entry in the Tied Market

Tying and bundling, including under a loyalty/requirement program can be used by a monopolist in A to foreclose rivals, reduce their scale of operations, and thereby increase their unit costs and reduce their competitiveness.[32] This can be profitable even when products A and B are tied in fixed proportions or the tied product has no other use. Tying and bundling can also be

[30] For a linear demand consumer surplus is the triangle below the demand curve from zero units to the market equilibrium quantity, here of area $(50)x(50)/2 = $1250.

[31] See Richard Schmalensee, *Gaussian Demand and Commodity Bundling,* 57 J. BUS. (1984); Richard Schmalensee, *Commodity Bundling by Single-Product Monopolies*, 25 J.L. & ECON. 67 (1982); William James Adams & Janet L. Yellen, *Commodity Bundling and the Burden of Monopoly,* 90 Q.J. ECON. 475 (1976); R. Preston McAfee et al., *Multiproduct Monopoly, Commodity Bundling, and Correlation of Values*, 104 Q.J. ECON. 371 (1989).

[32] See Economides (2009) supra note 2 at 268, Economides and Lianos (2009) supra note 2 at 511-516, Elhauge supra note 2 at 413-419.

used by a monopolist to foreclose rivals in the tied market or reduce their scale of operations and increase their costs.[33] This requires that a substantial share of the tied market be foreclosed.[34]

Facing a smaller market, rivals with entry costs may not enter the tied market, resulting in less competition and lower consumer surplus. Based on the same argument, a company that only produces one of the tied product may exit the market as a result of tying.

A dominant firm with market power in two markets where a typical buyer buys both products can protect itself from entry in either of the markets by tying (or by offering a requirement/loyalty program). Thus, tying (and requirement/loyalty programs) may be used as entry-deterring devices by making it economically unprofitable for an entrant to enter one market without simultaneously entering the second market.[35]

4. Bundling and Loyalty/Requirement Programs

a. A Loyalty "Discount" is Equivalent to a "Disloyalty Penalty"

In a typical loyalty/requirement bundling contract, a dominant firm in market *A* also sells in market *B* a-la-carte. Based on a requirement that a particular buyer buys a large percentage or 100% of his needs in both products from the dominant firm, the dominant firm also offers

---

[33] *See* Barry Nalebuff, *Bundling as an Entry Barrier*, 119 Q.J. Econ. 159 (2004); Economides and Hebert (2008) supra note 18 at 466. Also see Phillip Aghion & Patrick Bolton *Contracts as a Barrier to Entry*, 77 AMER. ECON. REV. 388 (1987). The paper shows that a monopolist can extract a new entrant's technology advantage using contracts which require 100% of a customer's total purchases.

[34] See Elhauge (2009) supra note 2 413-419. Creating tied market power with ties cannot be profitable if the tie or bundle is in fixed proportions and the tied product has no use other than with the tying product. See Elhauge (2009) supra note 2 at 416.

[35] *See, e.g.*, Barry Nalebuff, *Bundling as an Entry Barrier*, 119 Q.J. ECON. 159 (2004); Daniel L. Rubinfeld, *3M's Bundled Rebates: An Economic Perspective*, 72 U. CHI. L. REV. 243 (2005) at 257; Aaron S. Edlin & Daniel L. Rubinfeld, *Exclusion or Efficient Pricing? The "Big Deal" Bundling of Academic Journals*, 72 Antitrust L.J. 119 (2004).

discounts on all units of either *A*, or *B*, or both,[36] or provides a lump sum discount.[37] The requirement/loyalty programs can be sufficiently tailored to the scale of each buyer (based on a percentage of his purchases of similar products) so that additional surplus is extracted by the monopolist.[38]

Bundling at a first glance seems pro-competitive since, in terms of actual prices offered, the bundle price is lower than the a-la-carte price. However, this is highly misleading because the comparison of the actual price under the bundle/condition with the a-la-carte price is done in the presence of the bundle and the requirement condition. The correct comparison is comparing the actual prices (a-la-carte and bundled) with prices in the but-for world (without bundling). Note that the difference between the price under the bundling condition and the a-la-carte price can also be thought of as a penalty for not accepting the bundle, a "disloyalty penalty."[39]

b. A Loyalty "Discount" Can Be Illusory; No Profit Sacrifice Is Needed in Loyalty/Requirement Pricing

When bundled pricing is introduced, a dominant firm can simultaneously increase the a-la-carte prices above the but-for levels. And this can also result in the price of the bundle being

[36] This setup can easily be extended to collections of more than two goods.

[37] Need for monitoring implies that such discounts are typically not offered to final consumers but to companies

[38] One may also distinguish bundled loyalty/requirement conditions (which simply make receipt of favorable terms conditioned on actually meeting loyalty conditions) from bundled loyalty/requirement *commitments* (where the buyer commits in advance to meet the loyalty conditions in order to get the favorable terms). For a summary of their slightly different effects see Elhauge (2009) supra note 2 at 460-61, 470-72; Einer Elhauge, How Loyalty Discounts Can Perversely Discourage Discounting, 5 J. COMPETITION L. & ECON. 189 (2009).

[39] See Economides (2009) supra note 2 at 260; Economides and Lianos (2009) at 513: Elhauge (2009) supra note 2 at 402-03, 450; Einer Elhauge, *United States Antitrust Law and Economics* (2008) at 406, 408.

higher than the but-for prices, so that the discount is in fact illusory and also results in higher market share for the dominant firm.[40]

Suppose that, in the but-for world, unit cost is $150, but the dominant firm sells at $250.[41] As the loyalty discount is introduced, the seller can increase the a-la-carte (or no commitment) price to $300 (or more) while offering a price of $250 under the commitment (by offering a $50 discount per unit). As more buyers accept the commitment, the market power and the market share of the dominant firm increase, and simultaneously the collective market share of the rivals decreases. This allows the monopolist to increase price or at least maintain it at the old monopoly level. So the loyalty discount program enables the monopolist to increase market share without decreasing price. In implementing a loyalty/requirement program, the monopolist does not need to suffer any profit sacrifice. See also the detailed discussion in section 3.b.

c. Buyers Find Themselves in a "Prisoners' Dilemma"

Given a choice between buying a bundle at a discount under a loyalty/requirement program and buying a-la-carte, many buyers will buy under the loyalty/requirement program, for the reasons explained in section 3.b. Even though buyers may each prefer to buy under the bundle when it is offered, this does not imply that buyers are better off than in the but-for world

---

[40] *See* Nicholas Economides & Ioannis Lianos (2009) supra note 2 at 513 ; Einer Elhauge, *United States Antitrust Law and Economics* 406,408 (2008); Greenlee, Reitman & Sibley, (2008) supra note 24; Daniel L. Rubinfeld, *3M's Bundled Rebates: An Economic Perspective*, 72 U. Chi. L. Rev. 243, 252 (2005); Elhauge (2009) supra note 2 at 402-03, 450 (2009).

[41] In the example, the dominant firm is able to sell at a higher price than unit cost in the but-for world because of its market power.

(where the loyalty/requirement program is not offered) for the reasons as explained in section 3.b.[42]

Additionally, if many buyers accept to buy under the bundle, the seller's market power will increase thereby making the buyers worse off. The situation is similar to the well-known game of the "prisoners' dilemma." In this game, two prisoners are offered a lower sentence if they accept a "deal" with the prosecutor. The prisoner who accepts the deal is better off if the other prisoner does not accept the deal. But once they both have accepted the deal, they are both worse off than when neither accepted the deal. Similarly, here each buyer is better off by buying under the bundle assuming the bundling and a-la-carte prices are not affected by his decision and the decision of other buyers. But once many buyers buy under the requirement, the market power of the monopolist increases and he is able to increase both the a-la-carte and bundled prices. Therefore buying under the requirement does not make buyers better off than in the but-for world.[43]

d. Differences Among Types of Discounts

It is important to distinguish between different types of discounts. First, there can be standardized quantity discounts that are triggered once a buyer passes a certain quantity threshold. Among these there can be (i) discounts for the incremental units above a threshold; or (ii) discounts for all units once a threshold has been achieved, sometimes called "first unit discounts" and sometimes "retroactive discounts." Second, there can be individualized discounts

[42] See Economides (2009) supra note 2 at 271-2; Economides and Lianos (2009) supra note 2 at 513; Elhauge (2009) supra note 2 at 451-55; Einer Elhauge, *The Failed Resurrection of the Single Monopoly Profit Theory, 6* COMPETITION POL'Y INT'L (2009) 155, at 177-183.

[43] See Economides (2009) supra note 2 at 260; Economides and Lianos (2009) supra note 2 at 513-14; Elhauge (2009) supra note 2 at 456.

that are conditioned on the share of the requirements/needs of a buyer that are bought from the monopolist, or are conditioned on individualized quantities for each buyer. Again these discounts may be (i) for the incremental units above a threshold; or (ii) for all units (first unit or retroactive discounts). It should be clear that a discount on the share of the requirements of a buyer is an individualized discount because buyers generally have different requirements and it will apply at a different quantity for each buyer. Also note that a lump sum discount is a special case of an all units discount.

We should be much more concerned about individualized loyalty/requirement discounts than about standardized discounts.[44] Individualized discounts can be tailored to exclude rivals. If the same discount is available to all buyers who buy the same quantity (or combinations of quantities of A and B), a quantity-based price discount will leave some consumer surplus with buyers when buyers vary in their demand for the product(s). But an individualized loyalty-requirement pricing scheme with a condition based on the percentage sales by the monopolist of the needs of a buyer can be tailored to extract more surplus for the monopolist. A loyalty/ requirement program can be written so that the discount will apply to different buyers according

[44] The European Commission distinguishes between individualized-threshold and standardized-threshold discounts. Individualized-threshold discounts are based on a percentage of the total requirements of a buyer or an individualized target volume, while the standardized-threshold discounts are the same for all customers. EU's article 82 applies to both types of discounts, although standardized discounts are treated more leniently. See *Communication from the Commission — Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings* [2009] OJ C 45/7, ¶45 (hereinafter *EU Guidance*), also available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2009:045:0007:0020:EN:PDF :

> "It is normally important to consider whether the rebate system is applied with an individualized or a standardized threshold. An individualized threshold – one based on a percentage of the total requirements of the customer or an individualized volume target - allows the dominant supplier to set the threshold at such a level as to make it difficult for customers to switch suppliers, thereby creating a maximum loyalty enhancing effect. By contrast, a standardized volume threshold – where the threshold is the same for all or a group of customers – may be too high for some smaller customers and/or too low for larger customers to have a loyalty enhancing effect. If, however, it can be established that a standardized volume threshold approximates the requirements of an appreciable proportion of customers, the Commission is likely to consider that such a standardized system of rebates may produce anticompetitive foreclosure effects."

to the percentage of their purchases from the dominant firm, and therefore it can affect different units for each buyer. For example, a discount based on a 90% requirement/loyalty program affects different units when applied to a buyer of 100 units than when applied to a buyer of 1000 units. Of course, pricing that depends on an individual buyer's demand and gives the same discount to one buyer for say unit number 100 while to another buyer for unit 1000 is very hard to justify on efficiency considerations.[45] Finally, a volume discount will tend to be less restrictive since it will not require that fewer purchases be made from the rival(s) and leaves open the possibility for the buyer to buy from the rival(s) at competitive prices.[46]

Table 1: Types of Loyalty/Requirement Discounts

	To Which Units The Discount Applies	
Qualifier/Requirement	**Discount on Incremental Units**	**Discount on All Units**
Standardized Quantity Discounts	Not a concern if after-discount price is above unit cost Concern on the effects on rivals if after-discount price is below unit cost	Concern if after-discount prices are below unit cost for some users
Individualized Buyer-Specific Share or Buyer-Specific Quantity Discounts	May be a concern if tailored to exclude rivals	Major concern since this type of discount is typically aimed at excluding rivals

We should also be much more concerned about conditional discounts that apply to all units rather than discounts that apply only to incremental units. Table 1 summarizes this discussion.

[45] Also see Einer Elhauge, *United States Antitrust Law and Economics* (2008) at 415.

[46] See Elhauge (2009) supra note 2 at 412 n.27.

e. Loyalty/Requirement Pricing Switches Competition From the Last Unit to Competition for Large Chunks of the Demand

Consider a buyer who buys 100 units in total from the dominant firm and the rival. If the dominant firm's lump sum rebate kicks in at the 90th unit, it is very unlikely that the buyer will buy 89 units, just short of achieving the quota necessary for the rebate. A buyer that might have bought 80 units in the but-for world in the absence of the rebate will consider buying 90 units to receive the rebate. Thus, competition is no longer for the last unit (the 81st unit to be sold by the dominant firm) as in the but-for world, but-for whole chunks of the demand, here units 81 to 90. This favors the monopolist and can lead to foreclosure of the rival who has to fight not only for the 81st unit of the dominant firm (his 19th unit) as in the but-for world, but-for units 81-90 (his units 10-19). This can create significant foreclosure as underlined by the European Commission:

> "Retroactive rebates may foreclose the market significantly, as they may make it less attractive for customers to switch small amounts of demand to an alternative supplier, if this would lead to loss of the retroactive rebates."[47]

Furthermore, many companies, once they buy a large percentage of their needs from one seller, may not want to buy a small percentage of their needs from another. This may be to avoid training personnel in a new product, compatibility issues, necessity of investments in complementary goods, and other reasons. Thus, often once a buyer commits to buying a very large share of his needs from one seller, he may end up buying *all* his needs from the same seller. Therefore the impact of the loyalty/requirement program may be larger than the share thresholds on which it is based.

[47] See *EU Guidance,*¶40.

f. Use of Loyalty/Requirement Programs to Disadvantage Rivals and Foreclose Entry

The commitment to buy under a loyalty/requirement program reduces the scale of rival(s) and, in the presence of fixed costs, increases the costs of rivals. The monopolist can also deter a new entrant by locking customers into a requirement/loyalty program. All other things equal, the customer will decide to break the contract with the monopolist only if it is compensated by the new entrant's lower price. That is, the monopolist has lowered the incentives for entry and thus created barriers for potential new entrants to compete as an efficient competitor.

g. Foreclosure

Loyalty/requirement programs can lead to substantial foreclosure, even if the loyalty commitment requirement is less than 100%. Foreclosure should be calculated market-wide. For example, if the loyalty/requirement program foreclosed 95% of sales of 80% of buyers, then the foreclosure percentage in market B is 76%.[48] Bundling, like tying can impair the competitiveness of a rival though market foreclosure. A rival that is forced to a small market share will have higher unit costs when there are fixed costs (costs that do not vary with output), and will thus be marginalized or forced to exit the market.

[48] The foreclosure percentage of the market is larger than a 100% foreclosure of 75% of the buyers. See also Elhauge (2009) supra note 2 at 457.

5. Loyalty/Requirement Pricing Can be Equivalent to Bundling "Incontestable" and "Contestable" Units of a Single Good

A very similar setting to multi-product loyalty requirement contracts arises in single-product market.[49] Suppose that a dominant firm in a market sells at a constant per unit price. Provided the particular buyer commits to buying a large percentage or all of his "needs" from the dominant firm, the seller also offers a "retroactive"[50] "discount" on all units or a subset of units below a certain threshold, such as 90% of the buyer's purchases in market *A* during a defined time period. The retroactive discount can be a lower price on all units below the threshold or a subset of these, or it can be a lump sum discount. The requirement may be "sole-sourcing," that is, a requirement that a particular buyer buys 100% of his purchases from the dominant firm, or

---

[49] Some prominent single-product loyalty discounts cases are the ones involving Intel. In the US: *Advanced Micro Devices, Inc. v. Intel Corp.*, No. 05-441 (D. Del. filed June 27, 2005, settled on November 12, 2009; *New York v. Intel Corp.*, 1:2009cv00827 (D. Del. filed Nov. 4, 2009) available at http://www.oag.state.ny.us/media_center/2009/nov/NYAG_v_Intel_COMPLAINT_FINAL.pdf; *Complaint, Intel Corp.*, FTC Docket No. 9341 (Dec. 16, 2009), available at http://www.ftc.gov/os/adjpro/d9341/091216intelcmpt.pdf. In the European Union, *see* Commission Decision, COMP/C-3/37.900—Intel Corp., May 13, 2009, available at http://ec.europa.eu/competition/sectors/ICT/intel.html. *Intel* involved both a single-product loyalty requirement program as well as a loyalty requirement program on bundles involving chip sets. The FTC case was settled with Intel on October 29, 2010. See the proposed "Decision and Order" at http://www.ftc.gov/os/adjpro/d9341/101102inteldo.pdf and the "Analysis of Proposed Consent Order" at http://www.ftc.gov/os/adjpro/d9341/100804intelanal.pdf . The FTC/Intel settlement has three prongs. First, it prohibits certain pricing practices in single products and in bundles. Second, it prohibits "predatory design" of products that would disadvantage rivals without improving efficiency. Third, it prohibits deception relating to benchmarking of performance. We discuss here only the prohibition of pricing practices which are detailed in Section IV (page 9 onwards) of the Decision and Order. Section A1 prohibits sole sourcing, that is, buying all the relevant products from Intel. Section A2 prohibits giving benefits to a buyer on the condition that he does not buy from Intel's rivals. Sections A3-4 prohibit Intel giving benefits to a buyer on the condition that he does not buy complementary goods from Intel's rivals. A5 prohibits giving benefits to a buyer on the condition that he limits his *share* of rival purchases of the basic or complementary products. Section A6 prohibits bundling and other discounts that if attributed to any product of the bundle would lead to a price below total cost. A7 prohibits lump sum discounts based on a threshold amount in units or in share except for such discounts applied only to purchases beyond a threshold (incremental discounts). All the restrictions proposed are in line with the arguments of this chapter except A6 which is weak because (i) it is based on total and not incremental cost; and (ii) attribution is on all units and not on the contestable ones.

[50] The term "retroactive" is used because the "discount" (or difference between prices adhering to and not adhering to the requirement) applies to all units sold in a time period or a subset thereof, while it may be announced in the last part of this time period. This discount is distinguished from an "incremental" discount which is applied only to the last unit or units sold. For similar definitions, see Commission of the European Communities, *EU Guidance* ,¶42.

the discount may be available only if a large percentage of the buyer's purchases in market *A*, say 90%, are from the dominant firm.[51] The requirement, the base prices, the extent of the discounts, and even the time period on which it applies can vary across buyers.

It makes sense to apply the same antitrust standard for discounts on loyalty/requirement practices irrespective of whether we are in a single-product or multiproduct case. In the former case, the demand is divided between an incontestable part that is always purchased from the dominant firm and a contestable part of the demand where the customer may buy from any firm.[52] In both the multi- and single-product cases, the dominant firm leverages its monopoly or dominant position to obtain higher sales in the remaining market. The only difference is that in the multiproduct case, sales in market *A* are leveraged to obtain higher sales in market *B*, while in the single-product case, the uncontested sales in market *A* are leveraged to obtain the contested sales also in market *A*.

If the seller commits to charge loyal buyers a discount from any future price it charges to disloyal buyers, this can result in higher prices. This is akin to a "most favored nation" clause. It makes it more costly to the seller to cut prices to non-committed buyers because then prices will have to be cut to committed buyers. Therefore it leads to higher prices at equilibrium.[53]

---

[51] For the arguments I make here it is not necessary to have the discount apply to all units.

[52] This conforms with the definitions used by the European Commission. *See EU Article 82 Guidance*.

[53] *See* Steven Salop, Practices that (Credibly) Facilitate Oligopoly Coordination, *New Developments in the Analysis of Market Structure*, Edited by Joseph E. Stiglitz and G. Frank Mathewson. The MIT Press (1986). Also see Elhauge (2009) supra note 2 at 449-61; Einer Elhauge, How Loyalty Discounts Can Perversely Discourage Discounting, 5 J. COMPETITION L. & ECON. 189 (2009); Elhauge & Wickelgren, *Robust Exclusion Through Loyalty Discounts,* Harvard Law School Discussion Paper No. 662 (Jan. 2010).

6. Defects of the Discount Attribution Test as a Liability Standard For Loyalty/Requirement Programs

a. Background

The Antitrust Modernization Commission (AMC) proposed using a discount "attribution test." Separately, the European Union (EU) proposed a different discount attribution test. [54] The AMC test takes all discounts on a bundle and attributes it to the more competitive of the two products, that is, subtracts the discounts from the total revenue of the competitive product, and divides by a sales quantity of the competitive product. Then it tests whether the resulting hypothetical "effective" price established through the attribution is above a measure of avoidable cost (average variable cost).[55] It finds an antitrust violation if (i) the effective price is below the average variable cost of product B of the monopolist in product A; and (ii) the dominant firm is likely to recoup its losses; and the requirement contract is likely to have anti-competitive consequences; and (iii) the requirement contract is likely to have anti-competitive

[54] For an analysis see, Economides and Lianos (2009) supra note 2 at 501-510. For a criticism of the Commission's approach, see Ioannis Lianos, The Price/Non Price Exclusionary Abuses Dichotomy: A Critical Appraisal. (2009) 2 CONCURRENCES REVIEW. Available at SSRN: http://ssrn.com/abstract=1398943.

[55] The AMC uses the words "incremental cost" in its cost criterion. Often average variable cost (AVC) is used instead. The EU uses the terminology average avoidable costs (AAC) to denote costs that can be avoided if the units in question are not produced. However, it should be understood that AAC and AVC include the cost of additional plants (or plant expansion) and fixed investment required to produce the additional units. Also see Einer 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 LAW JOURNAL 681, 707-26 (2003)

consequences.[56] As I show below, this test is inappropriate for finding liability of loyalty/requirement programs.[57]

The AMC proposed (and DOJ under President George W. Bush agreed) that a safe harbor should be established if the hypothetical effective price established through the attribution process is above avoidable cost of the monopolist for product B.[58] The present DOJ under President Obama withdrew this recommendation.[59] The idea of the discount attribution test was to eliminate plaintiff claims from inefficient competitors. The first prong of the AMC test was adopted by the Ninth Circuit in *PeaceHealth.*[60] In contrast, the same Circuit upheld a jury verdict finding liability in the loyalty/requirement case *Masimo Corp. v. Tyco Health Care Group*[61] based on the argument that Masimo "could not price its sensors low enough" to meet the effective price of Tyco based on the volume for which could compete – an implicit acceptance that Masimo could compete only for a contestable quantity.[62]

---

[56] Antitrust Modernization Commission, Report and Recommendations, 99 (Apr. 2007): ("Courts should adopt a three-part test to determine whether bundled discounts or rebates violate Section 2 of the Sherman Act. To prove a violation of Section 2, a plaintiff should be required to show each one of the following elements (as well as other elements of a Section 2 claim): (1) after allocating all discounts and rebates attributable to the entire bundle of products to the competitive product, the defendant sold the competitive product below its incremental cost for the competitive product; (2) the defendant is likely to recoup these short-term losses; and (3) the bundled discount or rebate program has had or is likely to have an adverse effect on competition.").

[57] Also see Economides and Lianos (2009), 506-510; Lianos (2009) supra note 54. See also Elhauge(2009) supra note 2 at 463-64.

[58] See U.S. Dep't of J., *Competition and Monopoly: Single-Firm Conduct Under Section 2 of the Sherman Act* 101 (Sept. 2008).

[59] *See* Justice Department Withdraws Report on Antitrust Monopoly Law, at http://www.usdoj.gov/atr/public/press_releases/2009/245710.htm .

[60] *See* Cascade Health Solutions v. PeaceHealth, 515 F.3d 883, 906-10 (9th Cir. 2008).

[61] No. CV-02-4770 (MRP), 2006 WL 1236666 (C.D. Cal. Mar. 22, 2006), *aff'd*, 30 Fed. App'x 95 (9th Cir. 2009).

[62] See Jonathan Jacobson, *A Note on Loyalty Discounts*, ANTITR. SOURCE (June 2010), at 3-4.

b. Which Quantity of the Competitive Product Should be Used in the Attribution Test

In calculating the hypothetical attribution price, AMC used the total sales quantity of the "competitive" product. In contrast, the EU differentiated between "contestable" and "incontestable" parts of the demand.[63] In many markets, a significant portion of the sales of the dominant firm is uncontested by competitors because of reputation, fear of punishment of executives if something goes wrong when they do not buy from the dominant firm, complementary investments by buyers of the dominant product, limitations in the production capacity of the competitor, availability of a full range of varieties, and other reasons. The contestable part of the market is defined in the EU Guidance Paper for Article 82 as "how much of a customer's purchase requirements can realistically be switched to a rival."[64]

A dominant firm does not offer a loyalty discount to attract buyers to the incontestable part of the demand since it already is able to sell these units at full price. The requirement/

---

[63] *See EU Guidance* at ¶39. Also note that the EU Guidance paper may find a violation if the resulting effective price is above average avoidable cost of the monopolist, based on more detailed examination. In particular, the Commission notes:

> Where the effective price is between [average avoidable cost AAC] and [Long run average incremental cost LRAIC], the Commission will investigate whether other factors point to the conclusion that entry or expansion even by as efficient competitors is likely to be affected. In this context, the Commission will investigate whether and to what extent rivals have realistic and effective counterstrategies at their disposal, for instance their capacity to also use a "non contestable" portion of their buyer's demand as leverage to decrease the price for the relevant range. Where competitors do not have such counterstrategies at their disposal, the Commission will consider that the rebate scheme is capable of foreclosing equally efficient competitors.

See EU Guidance at ¶44.

[64] In applying this standard in its *Intel* decision, the European Commission notes that the contestable part of the market can be small. European Union, Press Release, Antitrust: Commission imposes fine of €1.06 bn on Intel for abuse of dominant position; orders Intel to cease illegal practices (May 13, *2009), available at* http://europa.eu/rapid/pressReleasesAction.do?reference=IP / 09 /745&fonnat=HTML :

> Because computer manufacturers are dependent on Intel for a majority of their x86 CPU supplies, only a limited part of a computer manufacturer's x86 CPU requirements is open to competition at any given time.

loyalty "discount" is offered to attract customers in the contestable part of the demand. Therefore its effects have to be analyzed on that part of the demand.

The EU correctly noted that the loyalty/requirement program aims to win for the monopolist the contestable part of the demand. The monopolist does not offer a loyalty discount to attract buyers to the uncontested part of the demand since it already is able to sell these units at full price. Therefore, the EU correctly reasoned, the appropriate number of units to which the attribution is applied should be only the contestable ones.

Clearly, which units a discount should be attributed to is crucial if this test is being used as a basis for liability. For example, suppose a firm has a monopoly in A and sells 80 units out of a total demand of 100 units in product B for a specific buyer. Suppose the monopolist offers to this buyer a lump sum discount of $1000 if this buyer commits to buy 90 units of his demand of B from him.[65] The AMC test may attribute the discount to all units of B presently sold by the monopolist in A, and then the discount will be $12.50 ($1000/80) per unit. The European Union will apply the discount to the contested units. One may argue that the contestable units are the difference between the existing sales of the monopolist in B (80 units) and the requirement amount (90 units), but of course this is a fact issue that the court can determine. Then the discount for these ten contested units is $100 per unit – a huge difference from the $12.50 attributed discount of the AMC test. Typically the liability test will be more likely to find liability if the discount is applied to the contestable units rather than the all sales of the monopolist in A. If, for example, the unit cost of good B is $20 and the market price is $40, the AMC application of the attribution test results in a effective price of $28.50 ($40-$12.50), which is above unit cost, and therefore in the safe harbor. In contrast, the correct application of the

[65] Similar examples can be created for a percentage discount on the contestable units rather than a lump sum discount. See Jonathan Jacobson "A Note on Loyalty Discounts, *Antitrust Sou*rce (June 2010), at 7.

attribution test to contestable units as posited by the EU results in a below-zero effective price of $-60 ($40 - $100) which is obviously below unit cost and implies liability. [66]

c. Which Company's Costs Should be Used in the Attribution Test?

Both the AMC and the EU use the monopolist's costs to calculate avoidable cost. This is incorrect. In the presence of economies of scale, the monopolist's average costs at its high level of market share are lower than those of a rival who is equally efficient, that is, a rival which has the same average cost *function* (average cost as a function of quantity) as the monopolist. A rival should not be deemed less efficient because its scale of production forces its costs to be higher even though it would have the same average cost as the monopolist if the two had the same scale of operation (or market share). In fact, it would be ironic to use the large scale of the monopolist which may be an effect of its anti-competitive actions to weaken the test and make it more likely that the monopolist is found to have no liability.[67]

---

[66] In its *Intel* decision (Case COMP/C-3/37.990—Intel, Comm'n Decision (May 13, 2009), at http://ec.europa.eu/competition/antitrust/cases/decisions/37990/provisional_decision_en.pdf), the European Commission provides an example of a rival (AMD) to the monopolist (Intel) that was unable to "sell" its product at zero price because of Intel's loyalty/requirement practice. A buyer (computer manufacturer) refused to accept to "buy" AMD's CPUs at zero price because, if it did, it would forego Intel's loyalty discount which was based on the requirement that this buyer buys a very large share of its CPU needs from Intel.

> "Moreover, in order to be able to compete with the Intel rebates, for the part of the computer manufacturers' supplies that was up for grabs, a competitor that was just as efficient as Intel would have had to offer a price for its CPUs lower than its costs of producing those CPUs, even if the average price of its CPUs was lower than that of Intel. For example, rival chip manufacturer AMD offered one million free CPUs to one particular computer manufacturer. If the computer manufacturer had accepted all of these, it would have lost Intel's rebate on its many millions of remaining CPU purchases, and would have been worse off overall simply for having accepted this highly competitive offer. In the end, the computer manufacturer took only 160,000 CPUs for free."

[67] See Economides & Lianos supra note 2 at 20-24; Elhauge (2009) *supra* note 2, at 412, 463-4. If the qualities of the products of the dominant firm and the rival differ, the costs can be appropriately adjusted for quality differences.

d. Survival of Higher Cost Rival Can Benefit Consumers

Even a higher-cost competitor can constrain price and increase consumer surplus, therefore inefficient rivals should not be automatically excluded. In the presence of monopoly pricing, the entry of an inefficient (higher cost) rival can result in a lower market price and higher consumer surplus.[68] It is a very significant flaw of the attribution test that it aims to exclude all inefficient competitors irrespective of their influence on price and consumer surplus. The fact that such entrants are excluded creates a lack of correspondence between consumer surplus comparisons and liability established under this test. Since change in consumer surplus is the right criterion for liability, the AMC attribution test clearly fails since it points to no liability even when the monopolist's bundling action reduces consumer surplus.

e. The AMC Attribution Test Fails When Products Are Differentiated

In the presence of product differentiation (either in variety or in quality) the AMC attribution test makes little sense. Since a rival to the dominant firm does not offer the same products, why should we be using the dominant firm's costs to evaluate the survival of the rival's products that differ in quality and variety from the dominant firm's ones? Additionally, when the products are differentiated, consumers may gain in surplus from the presence of additional varieties and qualities offered by the rival even if the rival prices above the dominant firm.[69]

---

[68] See Economides (2009) supra note 2; See Economides & Lianos (2009) *supra* note 2 at 508-509; Elhauge (2009) supra note 2 at 462-63; Elhauge (2008) supra note 8 at 413.

[69] See Nicholas Economides, *Quality Variations in the Circular Model of Variety-Differentiated Products*, 23 REGIONAL SCI. & URB. ECON. 235 (1993).

f. A Loyalty/Requirement Program Reduces Price Transparency

Introduction of a loyalty/requirement makes the calculation of the price paid by a buyer for the monopolist's product B opaque to a rival because this price typically depends on the sales of A by the monopolist to this buyer which a rival does not know. Thus, it will be difficult for a rival to accurately calculate the effective price offered by the dominant firm to particular buyers, and therefore attempt to match it. This uncertainty may tend to reduce price competition. This is ignored by the AMC attribution test.

g. Even When a Buyer Accepts the Bundle, He May be Worse Off Than in the But-For World; Buyers Find Themselves in a Prisoners' Dilemma

As discussed earlier (sections 3 and 4), a buyer accepting to buy under the loyalty/requirement program does not necessarily imply higher consumers' surplus compared to the but-for world, since the monopolist has the opportunity to increase prices as he implements the loyalty/requirement program. Still, it may be optimal individually for each buyer to buy under the requirement bundle so that he is not penalized by the higher prices outside the requirement. However, individual buyer's acceptance to buy under the requirement does not imply that collectively buyers are better off compared to the but-for world.[70]

Even if each buyer is better off individually when he buys under the requirement bundle, collectively buyers may be worse off because find themselves in a prisoners' dilemma setting. Collectively all buyers lose because of the increase in market power of the monopolist as more buyers accept the requirement.

[70] See also Einer Elhauge and Abraham L. Wickelgren, "Robust Exclusion Through Loyalty Discounts," Harvard Law School, Discussion Paper #62, January 2010.

h. Recoupment is Unnecessary

The recoupment prong of the AMC test is irrelevant because it is not clear that the monopolist actually loses money under the requirement contract compared to the but-for world. The difference between prices under the requirement contract and without it does not necessarily imply losses for the monopolist because the monopolist can increase both the uncontested and contested prices as the introduction of the loyalty/requirement program.

The fact that a dominant firm's profit sacrifice is not necessary in a requirement/loyalty rebate is shared by the European Commission: [71]

> Conditional rebates can have such [actual and potential foreclosure] effects without necessarily entailing a sacrifice for the dominant undertaking.

The text is accompanied by this footnote:

> In that regard, the assessment of conditional rebates differs from that of predation, which always entails a sacrifice.[72]

Additionally, as explained earlier, and acceptance of the requirement contract gives the monopolist more market power. As discussed earlier, when the dominant firm's price outside the requirement/loyalty contract is higher than in the but-for world, this is an indication that the action is anticompetitive.[73] Additionally, bundling can also be used to create threats of higher a-la-carte prices, even if all consumers buy under the bundle and therefore the threat of buying at higher a la carte prices is not enforced at equilibrium.[74]

---

[71] *EU Guidance,* supra note 43, ¶37.

[72] Id. at p. 13, n.3.

[73] See Greenlee *et al*. (2008) supra note 24, Economides and Lianos (2009) supra note 2, Elhauge (2009) supra note 2.

[74] See Barry Nalebuff, Tried and True Exclusion, 1 COMPETITION POL'Y INT'L 41 (2005).

7. Structured Rule of Reason[75]

I propose the "structured rule of reason" standard as the correct approach to establish liability. The court should look at a number of variables to ascertain whether tying, bundling, and a loyalty/requirement rebates program violates antitrust law, with the central question being whether the introduction of tying and bundling, including a loyalty/requirement rebates program, reduces consumer surplus.

This chapter explains how tying can result in consumer harm in a variety of different settings. The common feature of these settings is substantial market power in the tying good, which is necessary for tying implementing intra-product price discrimination (section 3.a), intra-consumer price discrimination (section 3.b), inter-product price discrimination (section 3.c), and tying used to disadvantage rivals in the tied market and foreclose entry in the tied market (section 3.d). In the cases of sections 3.a to 3.c, where tying is used to implement intra-product, intra-consumer, and inter-product price discrimination, market power in the tied market is not required to establish liability. In contrast, disadvantaging rivals in the tied market and preventing entry in this market require substantial foreclosure in the tied market.

When A and B are demanded in fixed proportions, a monopolist does not have an incentive to use tying to implement intra-product or intra-consumer price discrimination.[76] However, even when A and B are demanded in fixed proportions, a monopolist in A using inter-product price discrimination can increase its profits and decrease consumer surplus. Finally the

[75] See also Elhauge's "quasi-per-se" rule. See Elhauge (2008) note 38 supra, at 358-9; Elhauge (2009) supra note 2 at 442-3.

[76] Also see Elhauge, (2009) supra note 2 at 407-13 (2009) and Frank Mathewson and Ralph Winter, Tying as a Response to Demand Uncertainty, 28 RAND J. ECON. (1997).

court should consider whether there are sufficient offsetting efficiencies to balance the anti-competitive effects in each of these cases.

Table 2 summarizes the requirements and effects of the various types of price discrimination that tying implements.

Table 2: Summary of Requirements and Effects of Tying in Implementing Different Types of Price Discrimination

Type of Price Discrimination that Tying Implements	**Significant Market Power in the Tying Market**	**Market Power in the Tied Market and Foreclosure in the Tied Market**	**Tying Gives Additional Profits to Monopolist Even When A and B are Demanded in Fixed Proportion**	**Consumer Surplus (CS) Can Decrease Because of Tying**
Inter-product Price Discrimination	Necessary for Tying Resulting in CS Reduction	Unnecessary for Tying Resulting in CS Reduction	Yes	Yes
Intra-product Price Discrimination	Necessary for Tying Resulting in CS Reduction	Unnecessary for Tying Resulting in CS Reduction	No	Yes
Intra-consumer Price Discrimination	Necessary for Tying Resulting in CS Reduction	Unnecessary for Tying Resulting in CS Reduction	No	Yes

Therefore the crucial requirement to establish tying liability is market power in the tying good, and insubstantial offsetting efficiencies. Substantial foreclosure in the tied market is not required, although, in its presence, the monopolist can disadvantage rivals in the tied market and can prevent rivals from entering.

For bundling and loyalty/requirement programs, I should first note that a safe harbor cannot be established based on a price/cost attribution test. This is because changes in consumer surplus as a result of entry or expanded operation of a rival non-dominant firm do not, in general, correspond directly to any price/cost attribution test comparisons, as I have shown above. Under the structured rule of reason standard, a violation can be established even when none is found by the attribution tests, and, in particular, even when the calculated effective price in the attribution test is above the average variable cost of the dominant firm.[77]

For bundling and loyalty/requirement programs, liability can be established when the dominant firm's price outside the requirement/loyalty contract (that is, the a-la-carte price) is higher than in the but-for world.[78] This is very close to tying to implement intra-consumer price discrimination (see section 3.b) and does not require market power in the tied good. Otherwise liability can be established when there is substantial foreclosure of the tied market.

[77] In *LePage's v. 3M Co.* 324 F.3d 141 (3rd Cir. 2003), the court did not require a price/cost test to establish liability.

[78] See Economides (2009) at 277-278; Greenlee et al. (2008) supra note 24, Elhauge (2009) supra note 2 at 402-03, 450-55, 468-69.