bundling and tying

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Definition

Tying of two products (or services) occurs when a seller sells one good (tying good) on the condition that the buyer buys the other good (tied good) from that seller or imposes on the buyer the requirement that s/he will not purchase the other good from another seller. *Bundling* is a general term describing selling collections of goods as a package. In *pure bundling*, the individual goods are not sold separately but only in combination, so it is essentially equivalent to tying. In *mixed bundling*, the individual goods, as well as the package, are available.

Abstract

We discuss strategic ways in which sellers can use tying and bundling with requirement conditions to extract consumer surplus. We analyse different types of tying and bundling creating (1) intra-product price discrimination; (2) intra-consumer price discrimination; and (3) inter-product price discrimination, and assess the antitrust liability that these practices may entail. We also discuss the impact on consumers and competition, as well as potential antitrust liability of bundling 'incontestable' and 'contestable' demand for the same good.

Tying of two products (or services) occurs when a seller sells one good (tying good) on the condition that the buyer buys the other good (tied good) from that seller or imposes on the buyer the requirement that he will not purchase the other good from another seller (see *Kodak*, 504 U. S. at 461 (*quoting Northern Pacific R. R. Co. v. United States*, 356 U. S. 1, 5–6 (1958))). A tying condition may involve a simple 1:1 combination of goods or 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 a requirement 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 or the percentage of his 'needs' that a buyer buys from a rival.

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. In *pure bundling,* the individual goods are not sold separately but only in combination, so it is essentially equivalent to tying, with the caveat that in tying one of the two goods may be available on its own, which is not possible in pure bundling. In *mixed bundling,* the individual goods, as well as the package, are available. For mixed bundling under a requirement condition, a dominant firm in market *A* also sells in market *B* à la carte. Based on a requirement that a particular buyer buys a large percentage or 100 per cent of his/her needs in both products from the dominant firm, the dominant firm also offers discounts on all units of either *A*, *B* or both, or provides a lump sum discount. The need for monitoring with a requirements bundle implies that such lump sum discounts are typically not offered to final consumers but to companies. The difference between the price under the bundling condition and the à la carte price can be thought of as a penalty for not accepting the bundle, it is implicitly a 'disloyalty penalty' (Rubinfeld, 2005; Elhauge, 2008: 406, 408; Economides, 2009: 260; Economides and Lianos, 2009: 513; Elhauge, 2009b: 402–403, 450), since, when bundled pricing is introduced, a dominant firm can simultaneously increase the à la carte prices above the but-for levels.

Bundling and tying may be based on synergies to the seller in the joint sale of the products as a bundle in packaging, marketing, or alleviation of information and search costs through the sale of 'matching' components in a bundle. Tying and bundling can also be motivated by strategic reasons and can be used as instruments for price discrimination or to impair rival competitiveness (see Adams and Yellen, 1976; Schmalensee, 1984; McAfee, McMillan and Whinston, 1989; Elhauge, 2009b).

When tying and bundling are motivated by strategic reasons, they typically make sellers better off and consumers worse off, but there are exceptions. There has been considerable debate on whether buyers are worse off after tying. In a series of early decisions, the Supreme Court ruled that tying was quasi per se illegal, and is really a form of rule of reason review, where economic harm is inferred when tying market power exists and the tie restrains a substantial dollar amount of tied sales, despite the absence of a substantial FORECLOSURE share in the tied market. (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.

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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 Kramer (1985). For an explanation of why this amounts to a specific form of rule of reason review, see Elhauge (2009b).)

In the late 1970s, prominent Chicago School antitrust scholars (Posner, Easterbrook, Bork) proposed instead that tying should be presumptively per se legal, allowing antitrust liability only in exceptional circumstances (see Posner, 1976; Bork, 1978: 375; Posner and Easterbrook, 1981: 802–810). They argued 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*, because a monopolist in *A* had already appropriated all consumer surplus. However, their conclusion is incorrect when, without tying, the monopolist cannot extract *all* consumer surplus from *each* consumer through perfect price discrimination, which is almost always the case (Economides, 2012). It is also incorrect when the tie forecloses a substantial share of the tied market in a way that increases the degree of market power in the tying market or gives the tying firm market power in the tied market that it can exploit against other buyers (Elhauge, 2009b).

We examine five set-ups of strategic tying and bundling use.

Tying and bundling to extract consumer's surplus through intra-product price discrimination

When a monopolist in good *A* is unable to implement perfect price discrimination among buyers, and buyers differ in willingness to pay for *A*, the seller can use tying of *A* with a good *B*, the use of which is closely correlated with the value of *A*, to extract more or all the surplus of *A* (see, for example, *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, where IBM imposed the requirement to leasees of its tabulating machines to buy its cards, reasoning that card use is closely correlated with value of machine to customer). Thus, good B is used both as a metering device of the value of product A as well as a device for consumer surplus extraction by being priced significantly above cost.

Tying and bundling to extract consumer's surplus through intra-consumer price discrimination

When a buyer buys more than one unit of a good *A* and is left with a positive consumer surplus absent tying (for example, if the monopolist charges a single (monopoly) price to a seller and the seller buys multiple units), tying can be used to transfer the remaining consumer surplus to the seller. Suppose that, originally, product B was offered at a competitive price. Tying is implemented as follows: the monopolist seller in *A* refuses to offer *A* by itself but offers it only with product *B* which he now sells at an inflated price. The buyer will accept if the consumer surplus from being able to continue buying *A* at the monopoly price exceeds the harm from having to buy *B* at an inflated price, but the buyer is worse off under tying compared to the but-for world, and the seller extracts additional surplus (and has higher profits) by tying (see Mathewson and Winter, 1997; Nalebuff, 2004, 2009; Greenlee, Reitman and Sibley, 2008; Elhauge, 2009b: 407–413; Economides, 2012). 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 many buyers to buy the tied products *A* and *B* (rather forego *A* altogether) increases the seller's market power in the tying market. In a bundling set-up, the monopolist seller sets a prohibitively high price for *A* if sold alone and gives a discount on *A* if the buyer buys a sufficiently high share of his requirements of *B* from this seller. The effect of the bundling requirement contract is very similar to the one of tying.

Tying and bundling can implement inter-product price discrimination to the detriment of consumers

In the two cases above, monopolization of the second market though tying and bundling is typically not the

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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 and tied markets (see Schmalensee, 1982: 67–69; Elhauge, 2009b: 406), 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 (see also Adams and Yellen, 1976; Schmalensee, 1982, 1984; McAfee, McMillan and Whinston, 1989; Economides and Hebert, 2008: 465; Elhauge, 2009b: 405–407, 415).

For illustration, suppose that consumers are 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. 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.

Tying and bundling can impair rival competitiveness

Tying and bundling, including under a loyalty/requirement programme 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 (see Whinston, 1990; Economides, 2009: 268; Economides and Lianos, 2009: 511–516; Elhauge, 2009b: 413–419). This can be profitable even when products A and B are tied in fixed proportions or the tied product has no other use (see Nalebuff, 2004; Economides and Hebert, 2008: 466. Also see Aghion and Bolton, 1987, showing that a monopolist can extract a new entrant's technology advantage using contracts which require 100 per cent of a customer's total purchases). This requires that a substantial share of the tied market be foreclosed (see Elhauge, 2009b: 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, 2009b: 416). 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 products may exit the market as a result of tying.

Bundling 'incontestable' and 'contestable' units of a single good

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' 'discount' on all units or a subset of units below a certain threshold, such as 90 per cent of the buyer's purchases in market *A* during a defined time period. 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 once the threshold is met, even to purchases made before the threshold was met. This is distinguished from an 'incremental' discount which is applied only to units sold after the threshold is met (for similar definitions, see Commission of the European Communities, *EU Guidance*, ¶ 42). 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 per cent of his purchases from the dominant firm, or the discount may be available only if a large percentage of the buyer's purchases in market *A*, say 90 per cent, are from the dominant firm. The requirement, the base prices, the extent of the discounts, and even the time period on which it applies can vary across buyers.

Bundling incontestable and contestable demand is very similar to multiproduct bundling and should be analysed very similarly (see Economides, 2012). 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. (This conforms with the definitions used by the European Commission. See *EU Article 82 Guidance*.) 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

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Table 1 *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	Necessary 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

uncontested sales in market *A* are leveraged to obtain the contested sales also in market *A*. 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 27 June 2005, settled 12 November 2009); *New York v. Intel Corp.*, 1:2009cv00827 (D. Del. filed 4 November 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 (16 December 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., 13 May 2009, available at http://ec.europa.eu/competition/sectors/ICT/intel.html. *Intel* involved both a single-product loyalty requirement programme as well as a loyalty requirement programme on bundles involving chip sets. The FTC case was settled with Intel on 29 October 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. See Economides, 2012).

Table 1, adapted from Economides (2012) summarizes the effects of tying in implementing different types of price discrimination.

Given the antitrust liability arising from tying as well as bundling with requirement conditions, businesses should, in general, avoid offers that contain restrictions of these types. In contrast, firms may offer quantity discounts when they can be reasonably based on decreasing unit costs with scale.

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See also

FORECLOSURE

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