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Tied and True Exclusion:
Comment on Jean Tirole's "The Analysis of Tying Cases: A Primer"

Barry Nalebuff

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The takeaway point of Tirole's excellent primer is that tying, while potentially exclusionary, does not deserve special treatment. This commentary offers two reasons why tying should be accorded special treatment. First, unlike predatory pricing, tying offers a monopolist the ability to engage in no-cost predation. A critical component of the predatory pricing test is that the monopolist will be able to later recoup its sacrificed profits. If foreclosure can be accomplished without pricing below cost, then this makes tying a potentially more dangerous tool for anticompetitive conduct. Second, tying allows a firm to leverage its monopoly from one market to another. It can exclude an equally efficient competitor, where the rival has all of the same economies of scale and scope. To the extent that tying allows a monopolist to disrupt competition in a large number of adjacent or even unrelated markets, this vastly increases the potential harm caused by a monopoly.

I. Introduction

The takeaway point of Tirole's excellent primer is that tying, while potentially exclusionary, does not deserve special treatment.[1] As he writes in the conclusion, "It is difficult to think of reasons that tying should be considered a separate offense.... Competition policy should therefore analyze tying cases through the more general lens of a predation test."[2] The point of my commentary is to offer two reasons why tying should be accorded special treatment.

First, unlike predatory pricing, tying offers a monopolist the ability to engage in no-cost predation. A critical component of the predatory pricing test is that the monopolist will be able to later recoup its sacrificed profits. If foreclosure can be accomplished without pricing below cost, this makes tying a potentially more dangerous tool for anticompetitive conduct.

Second, tying allows a firm to leverage its monopoly from one market to another. It can exclude an equally efficient competitor, where the rival has all of the same economies of scale and scope. To the extent that tying allows a monopolist to disrupt competition in a large number of adjacent or even unrelated markets, this vastly increases the potential harm caused by a monopoly.

I expect the first point will be clear after a short explanation. The second point goes against the perceived wisdom and will require more discussion.

The idea of no-cost predation may sound like an oxymoron. For Tirole, predation is intentional and costly and these costs must be recouped though subsequent market power. Of course it is also possible to foreclose rivals via improved efficiency and other strategies, but in these cases the foreclosure is a byproduct of an otherwise profitable strategy.[3] This is Tirole's exclusion category. In *Competition in Telecommunications*, Tirole describes the difference between predation and exclusion:

> "We will define exclusion as the incumbent's denying access to rivals through nonprice methods, with the goal of transferring the incumbent's untapped market power in the bottleneck segment to the competitive segment. Exclusion is an instrument, not a goal, because it is not intended per se to hurt rivals, even though it actually does so....[t]he common features of

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1   Jean Tirole, *The Analysis of Tying Cases: A Primer*, 1 COMPETITION POL'Y INT'L 1-25 (Spring 2005).

2   *Id.* at 25.

3   In some cases, consumers may be harmed when a firm drives out less efficient rivals via above-cost pricing (and becomes a monopolist); this issue is not the subject of this paper.

> [exclusion and predation] are that they are profit maximizing and that they hurt rivals. The rationales for the two behaviors are quite different....[t]he purpose of exclusion is not per se to hurt rivals....[I]n contrast, predation corresponds to a sacrifice of short-term profits in order to boost long-term gains by forcing rivals out of the market. Predation can be profitable only if it leads competitors to exit the market enduringly....[t]o sum up, exclusion increases the operator's profit while it is practiced. Predation lowers the operator's profit and therefore can be rational only if it creates sufficient losses for the rivals that they enduringly exit the market and if future monopoly gains offset current predation losses.**[4]**

What I am suggesting is that there is a third strategy—one where the primary purpose is to foreclose rivals, yet no profit sacrifice is required. The tool for this strategy is tying.

While no-cost predation is a limiting case of costly predation, it is also different in its nature. There is no need to establish recoupment. Thus, if one shows that equally efficient rivals are excluded, the test is passed.[5] The third case below explains how exclusion can even lead to higher profits by the monopolist, but, as discussed below, I do not consider those higher profits a legitimate justification for the foreclosure.

Before starting on this path, I want to first expand Tirole's definition of tying. According to Tirole, "Tying refers to the behavior of selling one product (the tying product) conditional on the purchase of another product (the tied product)."[6] Tirole emphasizes the case where customers can buy the monopoly good (M) only if they also buy the firm's other good (C). As he recognizes, the practical effect is the same if the price of M is grossly inflated, unless the customer also buys C. In the same vein, but more subtle, is the practice of offering a discount on the entire purchase if the customer buys both M and C from the firm.[7]

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4   Jean-Jacques Laffont & Jean Tirole, Competition in Telecommunications (2000), at 161-163.

5   By equally efficient I mean that there is no loss in social welfare by having the rival(s) produce. Tirole gives the example of a French language economics journal as not providing equal access to non-French-speaking economists. In that case, I would say that the rivals are not equally efficient in writing in French. If there are economies of scope in producing the monopoly and tied product together, then the rival would have to have the same economies of scope from some other operation or be sufficiently more efficient to have the same production costs. If there are economies of scale in the tied product, then only one firm may end up producing, but which one produces would be random—a monopolist would not be able to automatically exclude a rival with the same scale economies.

6   Tirole, *supra* note 1, at 8.

7   In some cases, the customer agrees to a minimum quantity of C; in others, the customer agrees to purchase all or nearly all of its C requirements from the firm.

Since the customer has no alternative to M, the entire discount should be properly applied to C. Even a small discount (applied to the whole volume) can have a large impact on the effective price of C. Thus the conditionality of a tied sale depends on the bundle pricing and not just whether the product is sold à la carte or not.[8] I see tying as akin to half of a mixed bundle. There is a discount for buying M and C together compared to buying M from the firm and an equivalent C′ from a rival.

As Tirole makes clear, tying is but one example of an exclusionary practice. In that sense, why should it be singled out for special treatment? The reason is that unlike most exclusionary practices—such as predatory pricing—tying has the potential to costlessly foreclose rivals.[9] In this case, it is only the law that prevents monopolists from pursuing this strategy.

II. No-Cost Foreclosure

The standard test for predation is whether the prospect of future gains from successful predation offset the current losses. Tying provides an opportunity to get the gains without suffering the losses. This can be accomplished in three different fashions.

A. UNDERPRICING THE COMPETITIVE PRODUCT

Following Tirole's notation, let M be the monopoly good and {C, C'} be the competitive goods. For the purposes of this example, I assume that M and C are bought in fixed proportions and that the competitive price of C and C′ is sufficiently low that all consumers buy C or C′ along with M.[10] The monopoly price of M is denoted by m and the cost and competitive price of C and C′ by c. Here, I am assuming that C and C′ have equal costs and are perfect substitutes. If, instead of (m, c), the monopolist prices the complement at $c - \varepsilon$ and the monopoly good M at $m + \varepsilon$, then all customers will be indifferent. The total package price is $m + c$ in both cases.

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8 To aid non-French speaking economists and thereby provide equal access to this article, "à la carte" refers to the customer's selection of a dish off the menu as opposed to accepting a set menu as part of a *prix fixe* dinner.

9 When rivals are producing complementary goods and can do so more efficiently, then there may be an opportunity cost in foreclosing these firms from the market. But, as Carlton and Waldman explain in their companion paper, the monopolist may not be able to capture the gains from cheaper complements (in multi-period games) and thus may maximize profits via exclusion. *See* Dennis Carlton & Michael Waldman, *How Economics Can Improve Antitrust Doctrine towards Tie-In Sales*, 1 COMPETITION POL'Y INT'L (Spring 2005).

10 If the two goods are consumed in variable proportions, then this pricing tactic will be costly to the monopolist. In that case, the monopolist can employ the opposite contract: it will offer to sell M at $m - \varepsilon$ provided that the customer buys all of its C demand from the firm at a price slightly above c. See case 3 discussed later in this paper.

The problem is that the rival firms cannot compete at any price below *c*. They do not have a way to recover the below-cost pricing by charging more for some other product—as they have no other product for which they can raise the price. Another way of saying this is that the monopolist can immediately recoup its losses in C by raising the price of M. Unlike traditional predation, the monopolist can raise price without having to wait until its rival has exited. Because the high price in M is just offset by the savings in C, there is no distortion in the market and, hence, no lost profits.

As a result, the firm with market power in M can set its prices to create an economic tie. The only economic way to purchase the firm's M is to also purchase its C. It will then capture 100 percent of the C market and thereby foreclose all other C′ firms in the market.

The following simple numerical example demonstrates the foreclosure. Imagine the M good represents Microsoft Windows sold at a price of 100 and C′ represents a media player sold at price 1. Consumer valuations for the media player (among customers who have purchased Windows) range from 1 to 2, so all Windows customers also purchase the media player. Microsoft can sell its media player at a price of 1 and split the market with its rival. But it alone can profitably sell the media player at a price of 0. When the price of the media player falls from 1 to 0, consumers' willingness to pay for Windows goes up by 1 and thus Microsoft can raise its price of Windows to 101 and not lose any demand.

This example illustrates the simultaneous recoupment offered via the tied sale. But it does not yet suggest an antitrust problem. While this practice harms competitors, so far there is no immediate harm to consumers. Consumers are paying the same price and do not mind the loss of product variety (as the goods are perfect substitutes). The potential loss to consumers is in the future.

If entrants into the M market need a C to make their package whole, they will now be at a disadvantage as the competitive complements market will have disappeared.[11] It might also be possible that the firm will gain power in the C market. If entry is costly, then rivals may not reappear after exiting, especially if they anticipate that the producer of M can drive them out via a costless cross-subsidy. The loss of rivals in the competitive market may change the incentives for innovation, potentially harming consumers.[12]

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11 Here, I am making an implicit assumption that the monopolist might not facilitate compatibility between C′ and M.

12 The incentive to innovate could also rise; *see* J. Choi, *Tying and Innovation: A Dynamics Analysis of Tying Arrangements*, 114 Econ. J. 83, 83-101 (2004).

B. A THREAT TO OVERPRICE THE MONOPOLY GOOD

There is a second way that the firm with market power in M can engage in cost-less predation. It can threaten to raise the price of M unless the customer buys its C. We return to the case where the monopoly price of M is m and the competitive price of C is c. The firm can say to its customers: The price of M is $m + \varepsilon$ unless you buy my C at price c, in which case the price is m.

If the threat is credible, it will not have to be carried out. Thus, in equilibrium, the firm charges the optimal price for M. Yet rivals are excluded, as it would appear to the customer that they are charging a price of $c + \varepsilon$.[13]

It is worth noting that this threat is different from a typical threat in that it potentially imposes a first-order cost on the consumer while only a second-order cost on the firm. If the firm were actually forced to carry out the threat, this would be costly to the customer, but of little cost to the firm (in that as m is the optimal price, $m + \varepsilon$ leads to approximately the same profits). Thus, only the tiniest amount of commitment or reputation effect is required for this threat to be credible.

Once again, there is no immediate loss to consumers from this exclusion. But, as before, eliminating rivals in the C market can make subsequent entry harder in either M or C and thus prolong the incumbent's market power, as well as create the potential to use market power in C.

The difference between tying and predation is that with predation the firm actually has to charge a price below cost and thus lose money. With tying, the firm can either recoup that cost immediately (by raising the price of M) or simply achieve the exclusion at no cost at the start by threatening to raise the price of M.

In some sense, both examples of economic tying are milder forms of a naked tie: If you want to buy the firm's M, you must also buy its C. (The naked tie also results in the elimination of rivals in the C market and also at no cost.)

C. LEVERAGING MONOPOLY IN THE C MARKET

There is a third way that the firm with market power in M can engage in foreclosure. This case is different from the previous two examples in that it leads to higher profits. The higher profits are a result of the firm extracting more of its monopoly power. While this may lead to a short-run increase in efficiency, the long-run impact on competition and innovation in adjacent markets could more than offset these gains.

The idea is as follows: the monopolist offers to lower the price of the monopoly good from m to $m - \varepsilon$, provided that the customer agrees to buy all of its

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13 Unlike the previous example, the result here does not require that all customers buy M and C in equal proportions. If customers vary in their demand for C, then the monopolist's threat to charge above m translates into an effective price some amount above c for rivals.

demand for the C good from the firm at a slightly inflated price of $c + \delta$. The original price of m remains available. Lowering the price of the monopoly good is only a second-order loss to the firm, as m is the profit-maximizing price. But, for consumers, this is a first-order gain. Provided that the price increase on C is relatively small, most consumers will accept this offer as they save more on M than they lose on C. The first-order gain to the firm from the price increase on C more than covers the second-order loss on M.

> IF A FIRM ENJOYS A MONOPOLY IN ONE MARKET, THEN THAT IS A PROBLEM THAT WE ACCEPT IN ORDER TO ENCOURAGE COMPETITION AND INNOVATION. BUT IF THAT MONOPOLY ALLOWS THE FIRM TO BEAT OUT EQUALLY EFFICIENT RIVALS IN ANOTHER MARKET, THEN THAT IS A PROBLEM THAT WE NEED TO FIX.

This result relies on consumers having variable consumption of the two goods. As the price of M falls, consumption increases. This is why the loss to the monopolist is so much smaller than the gain to consumers.[14]

Rivals cannot compete with this offer, as all M customers who accept this offer are bound to buy all of the C they demand from the firm. There may be a small number of customers who reject this deal, but this may not provide sufficient scale for other firms to produce C′ efficiently.

The source of the gain is that the monopolist is in effect engaging in two-part pricing. Instead of charging a lump-sum fee, the monopolist has done a markup on the C good. Even with two-part pricing, the tied sale may lead to yet higher profits when demand between the two goods is positively correlated.[15]

If a firm enjoys a monopoly in one market, then that is a problem that we accept in order to encourage competition and innovation. But if that monopoly allows the firm to beat out equally efficient rivals in another market, then that is a problem that we need to fix. The problem becomes even more serious if those are adjacent markets that might become monopolized themselves or could be used as entry points to challenge the original monopoly. I do not find consolation in the fact that the monopolist has found a way to reduce its deadweight loss via the tied sale. (The view that a perfectly price-discriminating monopolist is efficient belies the fact that price discrimination is rarely perfect or costless.[16])

While it is true that with variable demand an exclusionary bundle discount can improve social welfare, the gains arise from reducing the inefficiency of a

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14 For a formal proof of this result, *see* Barry Nalebuff, *Bundling as a Way to Leverage Monopoly*, YALE SOM WORKING PAPER No. ES-36 (Sep. 2004), *available at* http://ssrn.com/abstract=586648; P. Greenlee, D. Reitman, and D. Sibley, *An Antitrust Analysis of Bundled Loyalty Discounts,* DOJ ECONOMIC ANALYSIS GROUP DISCUSSION PAPER, EAG 04-13 (Oct. 2004).

15 *See* Frank Mathewson & Ralph A. Winter, *Tying as a Response to Demand Uncertainty*, 28 RAND J. ECON. 566, 566-583 (1997).

16 Firms spend large resources (such as CRM systems) to manage their complex pricing and customers spend resources to avoid being taken; *see* Barry Nalebuff, *Bundling, Tying, and Portfolio Effects*, UK Department of Trade and Industry Economics Discussion Paper No. 1 (2003).

monopolist. The problem is that the bundle discount also allows a firm to leverage its monopoly from one market to another. A monopolist can exclude an equally efficient competitor, where the rival has all of the same economies of scale and scope in production. The rival is only missing the ability to reduce its inefficient monopoly pricing.

The fact that welfare rises is not a sufficient justification to engage in exclusionary bundling. It does not demonstrate that the welfare gains could not have been achieved in a different manner without causing foreclosure. My critique of leveraging market power it not meant to imply that a dominant firm has a duty to maintain competition. The dominant firm need not reduce its production efficiency or charge inflated prices to create a price umbrella for inefficient rivals. I only require that the firm not engage in strategies that exclude equally efficient rivals. For example, if the firm seeks to engage it a two-part tariff, it should do so directly by charging a lump-sum fee rather than requiring that the consumer purchase its complementary good at an inflated price.[17] One could argue that the ability to use an adjacent good to engage in price discrimination or to extract a lump-sum fee is an economy-of-scope efficiency that the rival does have. My response is that the monopolist must find some other way to capture those efficiencies without distorting competition in other markets. If a lump-sum fee is less opaque to consumers and thus harder to implement, that is not a sufficient excuse to foreclose equally efficient rivals.

III. An Antitrust Test

The examples of foreclosure lead to a definition of when a tie or bundle discount is exclusionary. A bundle discount leads to foreclosure if even the monopolist could not afford to sell the competitive good at a large enough discount to offset the loss of the bundle discount. More formally, I refer to this type of bundle pricing as exclusionary bundling.[18] Exclusionary bundling arises when a firm has market power in product A and faces competition in product B. It engages in exclusionary bundling when the incremental price for an A-B bundle over A alone is less than the long-run average variable costs of B. The A-B bundle discount is measured relative to the à la carte prices of A and B.[19] The discount could be

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17 One could argue that the ability to use good C to engage in price discrimination or to extract a lump-sum fee is an economy-of-scope efficiency that the rival does have. My response is that the monopolist must find some other way to capture those efficiencies without distorting competition in other markets.

18 Exclusionary bundling is the subject of Barry Nalebuff, *Exclusionary Bundling* (Sep. 2004) (on file with author). Note that exclusionary bundling could also be called exclusionary tying.

19 For a different perspective, *see* Greenlee, *supra* note 14. The authors are concerned with whether the monopolist increased (or threatened to increase) the à la carte price of A (in which case there is an antitrust problem) or lowered the price of A, in which case there is not a violation.

offered for buying A and B together in a bundle or in return for an agreement to purchase all of the customer's needs for B from the monopolist.[20] Note that all three of my examples would violate the exclusionary bundling test.

In applying this test, I agree with Tirole about considering what fraction of the B market is foreclosed by the tie. If there is only a small overlap between the customers of A and those of B, then foreclosure is not of great concern. Antitrust issues loom largest when almost all customers purchase both A and B and, thus, the entire B market is subject to foreclosure. The large overlap is possible even when the two products are substitutes rather than complements. For example, in the *LePage's* case, most stores carried both Scotch-brand tape (A) and generic transparent tape (B).[21]

The exclusionary bundling test need not lead to the same conclusion for all customers when the A-B bundles need not be consumed in fixed proportion. Specifically, rivals will not be foreclosed from the market of customers who buy little or no A. The exclusionary bundling test is not intended to be the sole criteria for an antitrust violation.[22] One must consider the magnitude of foreclosure to the B market. One should also confirm that the monopolist could have reasonably understood that its tie or bundle discount would have the effect of foreclosing rivals. When the foreclosure is significant and the monopolist could have reasonably understood the effect of its pricing, then I am in favor of employing a per se rule.

There is one other important practical difference between predation and what I have called exclusionary bundling. The difference is based on information. When a firm engages in predation, one can actually see the price below cost. A rival firm knows what it needs to offer in order to win the business and can determine if this is above or below cost. With tied sales, these calculations become much more difficult.

Consider the case where a monopolist offers a customer a one percent discount on all of its purchases if the customer buys M and C together.[23] Since the customer would have had to purchase M under any circumstance, it is proper to attribute the entire 1 percent discount to the purchase of C.

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20 For a detailed explanation, see Nalebuff, *Exclusionary Bundling*, *supra* note 18. In practice, the exclusivity agreements often allow the buyer to obtain some small percentage of its B goods from other firms.

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

22 *See generally*, Nalebuff, *Exclusionary Bundling*, *supra* note 18.

23 Such an offer was at the heart of the LePage's case. *See supra* note 21.

The problem is that the rival in the C market needs to make forecasts over the expected demand for both M and C. It might not know the demand for M. This makes it much more difficult for the one-good rival to compete as it does not really know what price its rival is charging. It can rely on the customer's representation, but the customer might also be confused or misinformed. The ability to obscure the foreclosure is a further reason to be suspicious of this practice.

IV. Further Comments on Tirole

In this section, I offer some short comments on specific points raised in Tirole's primer.

A. COURNOT EFFECT

Tirole is right to emphasize that the Cournot effect will give a firm selling two complementary products an extra incentive to cut price and thus an advantage in the market. This effect persists even when there is imperfect competition in the M market. In a paper published in *Incentives, Organization, and Public Economics*, I describe how a firm that can bundle thereby solves the coordination or free-rider problem and thereby gains an advantage over its one-product rivals who cannot offer a competing bundle.[24] This efficiency gain should be balanced against the potential long-run harm if the market becomes monopolized. The European Commission's (mis)application of bundling theory to the *General Electric/Honeywell* merger suggests the value of caution.[25]

B. TWO-SIDED MARKETS

Tirole is again right to emphasize that firms might want to set prices at marginal cost, even zero, especially where there are two-sided markets. Thus the seller sets the price of Adobe reader at zero to consumers and makes its profits by charging a positive price to those who want to encode in the Acrobat format.

A problem arises when the competitive price for the B product is negative. When this occurs, it is not because the marginal cost of B is negative. Instead, the firm realizes that it will make enough selling to the other side of the market that it is willing to pay customers to use its B product.

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24 *See* Nalebuff, *Competing Against Bundles, in* Incentives, Organization, and Public Economics (Peter Hammond & Gareth Myles, eds., Oxford University Press 2000). The flip side is that if rival firms can offer a competing bundle, then the ensuing bundle-versus-bundle competition is the most competitive outcome of all.

25 Barry Nalebuff, *Bundling and the GE-Honeywell Merger*, in The Antitrust Revolution (John Kwoka & Lawrence White eds., Oxford University Press 2003).

The problem is that a firm cannot offer a negative price unless it can be sure that its product will be used. Adding up all the advertisements in a typical issue of *Forbes* magazine, one can see that advertisers are willing to pay roughly $9 per reader. Thus, *Forbes* would be willing to pay a CEO to read their magazine. But if the person is getting the magazine without having asked for it or having paid for it, then there is much less assurance that the customer will actually read it.

Forced tying in software can solve that problem, but also eliminate competitors at the same time. Thus, Microsoft required Apple to employ its Explorer browser as the default option.[26] Apple's choice of Explorer was tied to Microsoft's upgrading its Office software suite for Apple. Thus, even if Netscape wanted to pay Apple to make Netscape the default, it was precluded from doing so.[27]

C. PRICE DISCRIMINATION

I am not persuaded that market segmentation is a legitimate justification to engage in tying. As Tirole explains, tying may facilitate price discrimination via metering. While this is a common practice, my question is whether the price discrimination can be achieved in another way without harm to competitors. Consider the case where a monopolist in laser printers wants to charge more to high-volume users. The tied-sale approach is to tie the toner cartridge to the laser printer and charge a premium for the cartridge. But as a side effect, the tie could change the competitive landscape in the toner cartridge market. Instead, the monopolist could price discriminate by metering directly. Rather than charge a premium for a toner cartridge, the laser printer monopolist could charge a price per page. Imagine that the printer needs to be recharged after each 1,000 pages. This direct metering is becoming practical as more and more products are connected to the Internet.

> THE PROBLEM IS THAT A FIRM CANNOT OFFER A NEGATIVE PRICE UNLESS IT CAN BE SURE THAT ITS PRODUCT WILL BE USED....FORCED TYING IN SOFTWARE CAN SOLVE THAT PROBLEM, BUT ALSO ELIMINATE COMPETITORS AT THE SAME TIME.

D. THE COST TEST

The first step of Tirole's three-part test,[28] is to see if the product costs are high or low. But, even when variable product costs are low, tying can still have a large

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26 The forced tie goes further than offering the Internet Explorer browser at a negative price or zero; it ensures that the product is used by making it the default.

27 Netscape would have had to pay Apple the lost value of not having Office, which might be the entire value of Apple. The potential loss to Microsoft was much smaller. If the threat had been carried out, most of Apple users would have switched to Windows where it could have sold them a Windows version of Office.

28 *See* Tirole, *supra* note 1, at Fig. 5.

impact on a rival's ability to compete. We are familiar with raising rival's costs.[29] Tying creates the opportunity to lower customers' values. As Tirole recognizes, a customer is much less willing to pay for WordPerfect once the person already has Microsoft Word. In that sense, tying one product to another can make it much harder for a rival to compete: it can only charge the *incremental* value of its product, conditional on already having the other product.

Assume, for example, that the customer values Word at 2, WordPerfect at 4, and WordPerfect at 1 conditional on already having Word.[30] If the marginal cost of producing Word and WordPerfect were each 1, then in the competition for this customer, the price of Word would fall to 1 and the customer would buy WordPerfect for 3, leading to a profit of 2. But if the customer already has Word, then the incremental value of WordPerfect is only 1, and, thus, all profits are eliminated. The tying (or bundling) of Word to other software programs can reduce the customer's valuation to a level at or below costs and thus foreclose WordPerfect from the market. Even if all marginal costs were zero, including Word as part of a software suite would reduce the market price of WordPerfect from 2 to 1 and thus cut WordPerfect's profits in half. Consequently, the firm may no longer be able to cover its fixed costs.

> JUST AS WE CONDEMN PRACTICES BY MONOPOLISTS THAT RAISE (POTENTIAL) RIVALS' COSTS, WE CAN ALSO CONDEMN CERTAIN PRACTICES THAT LOWER CUSTOMERS' VALUES.

Just as we condemn practices by monopolists that raise (potential) rivals' costs, we can also condemn certain practices that lower customers' values. While more efficient firms can sometimes still compete even after its costs have been raised, a firm with a superior product must compete after its customers' values have been lowered. The end result can be that customers do not end up with their most preferred products and efficient producers are foreclosed from the market.

V. Conclusion

I agree with Tirole that tying (and bundling) fall under the larger class of exclusionary behavior. While they can be looked at under that larger lens, there is enough distinct about these practices that it is worthwhile not mixing them in with predation.

In his primer, Tirole argues for a rule of reason rather than a per se prohibition of tying by a firm with a dominant market position. I have argued the opposite case. I am suggesting that the per se rule against tying by a firm with a dominant

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29 Steven C. Salop & David T. Scheffman, *Raising Rival's Costs*, 73 AM. ECON. REV., 267-71 (1983).

30 This example is slightly peculiar in that the value of Word and WordPerfect together is only 3 and this is below the stand-alone value of WordPerfect. This might be due to the fact that having to learn two systems is complicated. A similar point can be made when the isolated value of Word is 3.

position should be extended to cover cases where the tie is achieved via pricing. If exclusionary bundling can be established, then the firm with a dominant position has created an economic-tied sale. A violation should be found if a significant share of the tied market is foreclosed (and the firm could reasonably have understood that this would be the consequence of its pricing).

Section I of the Sherman Act states, "Any contract in restraint of trade shall be declared illegal."[31] On its face, that language eliminates all contracts, as a contract between seller S and buyer B restrains other sellers from contracting with this buyer (and may restrain other buyers from contracting with this seller). In practice, the language is interpreted as having an "unreasonable" included.[32] Only unreasonable restraints of trade, such as price-fixing, are illegal.

The same can be said of tying. What is and should remain a per se violation is unreasonable tying by a monopolist. I have admitted some element of a rule of reason in that there is a "reason" in unreasonable. The idea is that the courts have and will continue to declare various tying arrangements as per se unreasonable. I think the case of exclusionary bundling should fall in that per se category. When a monopolist creates a tie that equally efficient rivals cannot match and, as a result, a significant share of a competitive market is foreclosed, this creates a dangerous ability to leverage monopoly power across markets. ▼

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31 Sherman Act, 15 U.S.C. § 1 (1890).

32 *See* U.S. v. Trans-Missouri Freight Association, 166 U.S. 290 (1897).