Bundles of Trouble: The Possibilities for a New Separate-Product Test in Technology Tying Cases

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Under current Supreme Court tying precedent, a tying violation can only exist if there are two separate products involved. In technologically-dynamic markets, however, it is often difficult to determine if a bundle of goods is one product or more. The best-known example of such a bundle is Microsoft's Windows–Internet Explorer package. Microsoft claims that this bundle is one integrated product, while the Department of Justice has argued that it is two tied products. The recent Microsoft litigation has underscored the significant problems with the Supreme Court's current tying regime. These problems stem from the per se nature of the violation and from the difficulty of determining whether a bundle is one product or two. Recent economic scholarship has demonstrated that tying can have both pro- and anticompetitive effects and that therefore a per se rule is inappropriate. The severity of these problems was clearly illustrated by the D.C. Circuit's decision to ignore relevant Supreme Court precedent and declare a new standard for judging specific types of tying arrangements in Microsoft III. Judges and scholars have proposed a wide range of rules for replacing the current tying regime. These rules fall into two broad categories, proxy-tests, which rely on variables such as consumer demand to indirectly determine whether a bundle is anticompetitive, and economic measurement tests, which attempt to directly measure the economic costs and benefits of bundles. This Comment analyzes these various proposals and concludes that current proxy tests, while judicially manageable, will not always accurately evaluate the competitive effects of bundles and that economic measurement tests, while potentially offering more accuracy, lack judicial manageability. This Comment argues that current proxy tests as applied in Microsoft III and Jefferson Parish rely on an unnecessarily narrow analysis. The Comment further argues that an improved proxy test can be developed, one that can accurately differentiate anticompetitive from procompetitive bundles, that is judicially manageable, and that has the advantage of being a natural extension of, rather than a break with, current tying precedent. The Comment proposes such a test and applies it to the Microsoft III facts.

INTRODUCTION

Imagine a technology company, Company X, which produces two products. One is a computer operating system, the other a web browser. Company X has market power[1] in the operating-system market, but only a tiny share of the browser market. Consumers must own the operating system in order to run the browser. This technology company then strikes on an idea; it combines the browser and the operating system. Now when consumers buy the operating system, they automatically get the browser. Company X's share of the browser market explodes and its main rival is driven to the point of bankruptcy. Has Company X violated the antitrust laws?

Under current tying law,[2] Company X is liable for an antitrust violation under Section 1 of the Sherman Act[3] if four conditions are met: (1) there are two separate products involved; (2) Company X will not allow consumers to purchase the tying product (the operating system) without the tied product (the browser); (3) the arrangement affects a substantial volume of interstate commerce; and (4) Company X has market power in the tying product.[4] This is a "per se" test; if all the elements are satisfied, liability is automatic.[5] In this not-so-hypothetical example, elements two, three, and four are satisfied and liability depends entirely on whether a judge considers the integrated browser and operating system to be one product or two.

Microsoft has argued this case three times over the past several years,[6] and its position has been consistent: by integrating its Windows operating system and its Internet Explorer web browser ("IE"), its software engineers

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1.   Market power is generally defined as the power to control price or exclude competition in a particular market. *See* PHILLIP AREEDA & LOUIS KAPLOW, ANTITRUST ANALYSIS: PROBLEMS, TEXT, CASES 553-62 (5th ed. 1997). While in a competitive market a single firm cannot raise prices without losing sales to competitors, firms with market power can raise prices without suffering a complete loss of sales. Substantial market power combined with barriers to entry will allow a company to set prices above costs and do so without the fear that new competitors will flood the market. *See* IIA PHILLIP AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶¶ 335-38 (2002).

2.   The Supreme Court has defined tying as an "agreement by a party to sell one product . . . only on the condition that the buyer also purchases a different (or tied) product." N. Pac. Ry. Co. v. United States, 356 U.S. 1, 5 (1958). In such situations, consumers who want the tying product are "forced" to buy the tied product as well. *See* IX AREEDA & HOVENKAMP, *supra* note 1, at 3.

3.   15 U.S.C. § 1 (2001).

4.   Eastman Kodak Co. v. Image Technical Servs., Inc., 504 U.S. 451, 461-62 (1992); Jefferson Parish Hosp. Dist. No. 2 v. Hyde, 466 U.S. 2, 12-18 (1984); United States v. Microsoft Corp., 253 F.3d 34, 85 (D.C. Cir. 2001).

5.   *N. Pac. Ry. Co.*, 356 U.S. at 5.

6.   United States v. Microsoft Corp., 253 F.3d 34 (D.C. Cir. 2001); United States v. Microsoft Corp., 147 F.3d 935 (D.C. Cir. 1998); United States v. Microsoft Corp., 87 F. Supp. 2d 30 (D.D.C. 2000). For purposes of convenience, this Comment refers to the 1998 D.C. Circuit decision as "*Microsoft II.*" The more recent Microsoft litigation, including both the 2000 district court decision and the 2001 D.C. Circuit decision, is referred to as "*Microsoft III.*" "*Microsoft I,*" the consent decree decision of 1995, plays only a minor role in the Comment.

created a new, unified product. Because there is only one product involved, Microsoft concludes it cannot, by definition, be liable for tying.[7] In 1998, the D.C. Circuit agreed.[8] It held that the combination of Windows and IE was a "genuine technological integration" and thus one product.[9] The court's ruling rested on its conclusion that the bundle combined "functionalities . . . in a way that offers advantages unavailable if the functionalities are bought separately and combined by the consumer."[10] Two years later, U.S. District Court Judge Thomas Penfield Jackson came to exactly the opposite conclusion about substantially the same facts.[11] Judge Jackson ruled that the D.C. Circuit had ignored Supreme Court precedent and had applied the wrong separate-product test[12] in *Microsoft II.*[13] Instead of the genuine-technological-integration test, Judge Jackson applied the Supreme Court's separate-product rule as stated in *Jefferson Parish Hospital District No. 2 v. Hyde.*[14] In that case, the Supreme Court held that separate products exist when there is separate consumer demand for the individual products. Following this test, Judge Jackson held that there was separate consumer demand for operating systems and web browsers and that therefore they are separate products.[15] Judge Jackson consequently found Microsoft liable for tying.[16]

In 2001, the D.C. Circuit addressed this issue for a second time and attempted to change the focus of the debate.[17] Rather than deciding whether the package was one product or two, the court held that the question itself was irrelevant. Ignoring Supreme Court precedent, the court announced a new tying rule for situations "involving platform software products."[18] The court held that the per se rule is inappropriate because the competitive

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7. United States v. Microsoft Corp., 253 F.3d at 85; United States v. Microsoft Corp., 147 F.3d at 947-48; United States v. Microsoft Corp., 87 F. Supp. 2d at 45.

8. United States v. Microsoft Corp., 147 F.3d 935 (D.C. Cir. 1998). The D.C. Circuit was careful to say that its *Microsoft II* holding, and consequently its definition of "integration," was merely an interpretation of the consent decree that governed Microsoft's behavior. *Id.* at 946. The court was also quite clear, however, that it believed its definition of integration was "consistent with the antitrust laws," and the tone of the opinion suggests the court's belief that its definition was the proper one for settling the separate-product question as an antitrust matter. *Id.* at 948. The issue of whether the decision was based on contractual interpretation or antitrust law resurfaced in Judge Jackson's district court opinion in *Microsoft III. See* United States v. Microsoft Corp., 87 F. Supp. 2d at 43.

9. United States v. Microsoft Corp., 147 F.3d at 948-52.

10. *Id.* at 948.

11. United States v. Microsoft Corp., 87 F. Supp. 2d 30 (D.D.C. 2000).

12. This Comment will use the phrase "separate-product test" to refer to any test whose purpose is to determine whether a particular arrangement represents two distinct products, as required for tying liability by *Northern Pacific Railway Co. v. United States,* 356 U.S. 1 (1958).

13. United States v. Microsoft Corp., 87 F. Supp. 2d at 43-49.

14. 466 U.S. 2 (1984).

15. United States v. Microsoft Corp., 87 F. Supp. 2d at 48-49.

16. *Id.* at 47.

17. United States v. Microsoft Corp., 253 F.3d 34, 84-97 (D.C. Cir. 2001).

18. *Id.* at 84.

effects of tying with platform-software products are uncertain. Instead, a "rule-of-reason" analysis[19] is necessary to evaluate bundles on a case-by-case basis.[20] In other words, the court held that what was important was not whether Windows and IE were separate products, but rather whether the Windows-IE bundle increased or decreased consumer welfare. The court then remanded the case to the district court for judgment under the rule of reason standard.[21]

The D.C. Circuit's ruling directly contravened the law of the land for tying as established by the Supreme Court in *Northern Pacific Railway Co. v. United States*[22] and *Jefferson Parish*[23]. This abrogation of precedent reflects the problems with the Supreme Court's current tying regime. These problems stem from two aspects of this regime: the per se nature of the violation and the requirement that tying involve "separate products." Recent economic scholarship has demonstrated that a per se rule is inappropriate because tying can have both pro- and anticompetitive effects.[24] In addition, while Supreme Court tying precedent requires a finding of two separate products for liability, it is often not clear in practice whether a bundle of goods is one integrated product or two discrete products. The *Jefferson Parish* rule, which relies on consumer tastes, does not always produce a procompetitive outcome as consumers cannot always immediately see the efficiencies of new bundles.

One product or two, or should it even matter? This seems like a fairly straightforward question, but the debate has turned into an extremely contentious one for technology companies and a critical one for public policy.

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19.   The "rule of reason" in antitrust originated in *Standard Oil Co. v. United States*, 221 U.S. 1 (1911). In that case the Supreme Court stated that "[t]he standard of reason ... was intended to be the measure used for the purpose of determining whether in a given case a particular act had or had not brought about the wrong against which [Section 1 of the Sherman Act] provided." *Id.* at 60. The fundamental question for courts applying a rule of reason is whether a practice's procompetitive effects outweigh its anticompetitive effects. If the answer is yes, the practice is legal, unless there is a less anticompetitive alternative. If anticompetitive effects outweigh procompetitive effects, the practice is illegal. *See* VII AREEDA & HOVENKAMP, *supra* note 1, ¶ 1500. The rule of reason stands in contrast to a per se test. Under the latter test, certain types of practices, which have proven to be always anticompetitive, are declared automatically illegal. No investigation into the competitive effects of these practices is deemed necessary. The per se test is designed to conserve judicial resources by allowing courts to avoid "an incredibly complicated and prolonged economic investigation into the entire history of the industry involved," N. Pac. Ry. Co. v. United States, 356 U.S. 1, 5 (1958), if "considerable experience with certain business relationships," United States v. Topco Assocs., 405 U.S. 596, 607-08 (1972), has shown their "pernicious effect on competition and lack of any redeeming virtue," *N. Pac. Ry. Co.*, 356 U.S. at 5.

20.   United States v. Microsoft Corp., 253 F.3d at 90-95.

21.   *Id.* at 95. In September 2001 the Justice Department dropped the tying charge against Microsoft. Press Release, Department of Justice, *Justice Department Informs Microsoft of Plans for Further Proceedings in the District Court* (Sept. 6, 2001), *at* http://www.usdoj.gov/atr/public/press_releases/2001/8981.htm.

22.   356 U.S. 1 (1958).

23.   466 U.S. 2 (1984).

24.   *See infra* Part I.A.

A separate-product test that makes it too easy for a company to integrate a product in a competitive market into a product in a related market in which the company has market power will pave the way for monopolists to drive out competition in new markets, or to illegally protect their existing monopolies. On the other hand, a test that finds all integrations of separate products to be illegal tie-ins will chill innovation when the integration actually gives consumers a better product.

This Comment grapples with the challenge of finding the proper approach for resolving tying claims in a technology setting, and specifically with whether and how to construct a working separate-product test. It will argue that the D.C. Circuit's economic analysis in *Microsoft III* was essentially correct—although its ruling on Microsoft's tying liability was incorrect—and its decision to displace *Jefferson Parish* was the right one. The D.C. Circuit's proposed rule-of-reason test, however, suffers from being too open-ended to provide clear tying guidelines for potential litigants and lower courts. A clearly structured rule-of-reason test is the proper solution to the separate-product problem. This test should accurately differentiate pro- from anticompetitive tie-ins and should be judicially manageable.

Judges and scholars have proposed a number of tests to replace the *Jefferson Parish* test. These proposed tests fall into two broad categories. One category consists of tests that employ proxy variables to determine whether an arrangement is anticompetitive. In other words, these tests look to the behavior of market actors to determine whether a bundle increases consumer welfare. Examples include the *Jefferson Parish* test itself, which uses consumer behavior as a proxy, and Professor Areeda's market-practices test, which uses the actions of manufacturers in the applicable market. The second broad category consists of "economic-measurement" tests. These tests directly measure the costs and benefits of individual bundles to determine if they are anticompetitive. When employed in the context of a structured rule-of-reason test, rather than as part of a per se test, both categories are in harmony with current economic theory, which shows that bundling has the potential to be either pro- or anticompetitive. The categories vary, however, in their degree of judicial manageability and potential accuracy. Proxy tests are judicially manageable because they rely on variables, such as consumer preferences or manufacturing practices, which are relatively easy to measure. Economic-measurement tests have the potential to be more accurate, however, because they directly measure the costs and benefits of particular bundles. This Comment will argue that an improved proxy test can be constructed, one which will be judicially manageable and which will provide accurate assessments of individual bundles. This test will have the added advantage of being a natural extension of, rather than a break with, current tying precedent. The Comment argues that Judge Jackson's application of *Jefferson Parish* was unnecessarily narrow

and that earlier cases, and *Jefferson Parish* itself, suggest a richer and more useful separate-product proxy test.

Part I of the Comment provides a legal and economic background of tying law. Part II reviews recent judicial approaches to the separate-product issue, including those in *Jefferson Parish* and *Microsoft II*. Part III then analyzes the recent rulings in *Microsoft III*. Part IV discusses a number of proposed tests for resolving the separate-product problem. Part V uses the failures of the *Jefferson Parish* regime as a springboard to designing a new test, and Part VI mines relevant tying precedents for the foundations of a new proxy test. Building off the analysis of the previous two Parts, Part VII proposes a new proxy test, and Part VIII shows how that test might be applied to the facts of *Microsoft III*.

I

TYING LAW: AN INTRODUCTION

Section 1 of the Sherman Act forbids "[e]very contract, combination . . . , or conspiracy, in restraint of trade or commerce."[25] One species of restraint of trade is a "tying arrangement." The Supreme Court has defined tying as an "agreement by a party to sell one product . . . only on the condition that the buyer also purchases a different (or tied) product."[26] For example, a manufacturer with market power in bottling machines might tie the sale of its machines (tying product) to the sale of bottles (tied product). Early Supreme Court tying cases primarily involved situations in which a patent owner conditioned the sale or license of its patent on the purchase of unpatented items.[27] After declaring such arrangements illegal, the Supreme Court invalidated other species of contractual tying, such as a scheme tying access to low-interest loans (tying product) to the purchase of the defendant's prefabricated homes (tied product).[28]

Over time, the Court developed a four-part test for finding illegal tying arrangements. Specifically, there must be two separate products involved, the defendant must only allows consumers to purchase the tying product if they also purchase the tied product, the arrangement must affect a substantial volume of interstate commerce, and the defendant must have

25. 15 U.S.C. § 1 (2001).
26. N. Pac. Ry. Co. v. United States, 356 U.S. 1, 5 (1958).
27. *See, e.g.*, Int'l Salt Co. v. United States, 332 U.S. 392 (1947) (tying leases of patented salt-processing machines to sale of salt products); United Shoe Mach. Corp. v. United States, 258 U.S. 451 (1922) (tying use of certain patented shoe-manufacturing machines to use of defendant's other machines); Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502 (1917) (tying sale of a patented movie projector mechanism to use of defendant's motion pictures).
28. United States Steel Corp. v. Fortner Enters., 429 U.S. 610 (1977); *see also* N. Pac. Ry. Co. v. United States, 356 U.S. 1 (1958) (tying leases to land to a promise to ship all products of that land on defendant's railroad lines); Times-Picayune Publ'g Co. v. United States, 345 U.S. 594 (1953) (tying purchase of ads in an evening newspaper to purchase of ads in the morning edition).

market power in the tying-product market.[29] If these conditions are met, the tie-in is illegal per se.[30] Most tying litigation focuses on the first and fourth elements of the test,[31] and in technological-innovation cases the question of whether one product or two is involved has become a very difficult doctrinal issue.[32]

The Supreme Court laid out its current test for determining whether a combination of goods or services represents one product or two in *Jefferson Parish Hospital District No. 2 v. Hyde*.[33] In that case, consumers who purchased surgery services from a hospital were also required to use the hospital's anesthesiologists. The Court held that whether surgery and anesthesiology were two products or one turned "not on the functional relation between them, but rather on the character of the demand for the two items."[34] In other words, if there is "sufficient demand" for the purchase of one product "separate from" the second product, then there are two products for the purposes of tying analysis.[35]

A.   The Economics of Tying

Economists' understanding of tying arrangements has shifted over time from an early consensus that tie-ins are always harmful, to the Chicago School view that tying is never anticompetitive, to the current view that tying arrangements can be either pro- or anticompetitive, depending on the specific characteristics of the arrangement.

Until the 1960s most economic thinkers classified tying arrangements as necessarily anticompetitive. Two primary economic concerns generated this view. First, tying reduces consumers' freedom of choice.[36] To return to the bottling machine example, if a manufacturer with a bottling machine monopoly can tie bottles to machines, the machine consumer does not have an option to buy her bottles elsewhere. Second, tying arrangements have the strong potential to reduce competition on the merits in the tied-product

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29.   Eastman Kodak Co. v. Image Technical Servs., Inc., 504 U.S. 451, 461-62 (1992); Jefferson Parish Hosp. Dist. No. 2 v. Hyde, 466 U.S. 2, 12-18 (1984).

30.   *N. Pac. Ry. Co.*, 356 U.S. at 5.

31.   It is usually obvious whether elements two and three have been satisfied. It is unlikely that parties would contest a tying case that did not affect a substantial volume of interstate commerce, and the question of whether consumers are forced to buy the tied product along with the tying product is almost always answerable from a brief look at the arrangement in question.

32.   *See* Michael Katz & Carl Shapiro, *Antitrust in Software Markets, in* COMPETITION, INNOVATION, AND THE MICROSOFT MONOPOLY: ANTITRUST IN THE DIGITAL MARKETPLACE 29, 72-73 (Jeffrey A. Eisenach & Thomas M. Lenard eds., 1999); J. Gregory Sidak, *An Antitrust Rule for Software Integration*, 18 YALE J. ON REG. 1, 26 (2001); Renato Mariotti, Note, *Rethinking Software Tying*, 17 YALE J. ON REG. 367, 368-69 (2000).

33.   466 U.S. 2 (1984).

34.   *Id.* at 19.

35.   *Id.* at 21.

36.   *See* AREEDA & KAPLOW, *supra* note 1, at 687-92.

market.[37] It is easy to see how this might happen. Other bottle sellers will find it very difficult to compete with the tying company because owners of bottling machines are a significant part of the market for bottles.

The Chicago School approach to tying challenged the traditional view that tying is always anticompetitive. The Chicago School analysis was based to a large extent on the single-monopoly-rent theory, which posits that a monopolist cannot gain two monopoly rents from a single monopoly.[38] In other words, a monopolist cannot gain any extra supracompetitive profits[39] from tying a monopolized product to a product in a competitive market.[40] If this is the case, the Chicago School scholars reasoned, a rational monopolist would only tie products if there was some procompetitive advantage to doing so. These procompetitive advantages might include the creation of economies of scale, the ability to price discriminate,[41] and quality assurance.[42] Whatever a particular monopolist's motivations, the Chicago School theory concluded that "suppression of competition is the one function not accomplished by . . . [tying] arrangements."[43]

Contrary to the Chicago School's conclusion, more recent economic analyses of tying have determined that tie-ins can have both pro- and anticompetitive effects. As the Chicago School scholars had noted, tie-ins may produce procompetitive effects such as transaction-cost savings that result

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37. *Id.* at 686; Katz & Shapiro, *supra* note 32, at 70.

38. *See* ROBERT BORK, THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF 373-75 (1978) ("The tying arrangement, whatever else it may accomplish, is obviously not a means of gaining two monopoly profits from a single monopoly."); *see also* ROGER D. BLAIR & DAVID KASERMAN, ANTITRUST ECONOMICS 403 (1985) ("A seller cannot get two monopoly profits from one monopoly.").

39. Supracompetitive profits, or monopoly profits, are profits above what a firm would earn in a competitive market. *See* BLAIR & KASERMAN, *supra* note 38, at 35-36.

40. George Stigler illustrated this argument in his criticism of the Supreme Court's decision in *United States v. Loew's, Inc.*, 371 U.S. 38 (1962). In that case, the Supreme Court invalidated an arrangement in which movie distributors sold copyrighted films to television stations in blocks. The stations could not choose single movies. As a result, the distributors forced the stations to buy movies they did not want in order to get the movies they did want. Stigler wrote:

> Consider the following simple example. One film, Justice Goldberg cited *Gone With the Wind*, is worth $10,000 to the buyer, while a second film, the Justice cited *Getting Gertie's Garter*, is worthless to him. The seller could sell the one for $10,000, and throw away the second, for no matter what its cost, bygones are forever bygones. Instead the seller compels the buyer to take both. But surely he can obtain no more than $10,000, since by hypothesis this is the value of both films to the buyer. Why not, in short, use his monopoly power directly on the desirable film? It seems no more sensible, on this logic, to block-book the two films than it would be to compel the exhibitor to buy *Gone With the Wind* and seven Ouija boards, again for $10,000.

George J. Stigler, United States v. Loew's, Inc.: *A Note on Block-Booking*, SUP. CT. REV. 152, 152-53 (1963).

41. Price discrimination is the practice of selling the same commodity at different prices to different buyers when the price differences are not based on different costs. *See* BLAIR & KASERMAN, *supra* note 38, at 259. For an explanation of how tying arrangements can be used to achieve price discrimination, see BORK, *supra* note 38, at 376-78.

42. *See* BORK, *supra* note 38, at 375-80. Bork argues that price discrimination is procompetitive. *Id.* at 382-401.

43. *Id.* at 365.

from economies of scope and scale in production, distribution, and marketing.[44] In addition, when two components are used together in a system, a tying arrangement can provide quality assurance. The tie-in allows the monopolist in product A to ensure that lower quality versions of product B do not reduce A's performance.[45]

Tying arrangements, however, can have anticompetitive effects as well. Specifically, tie-ins are anticompetitive when they are designed to foreclose competition. Foreclosure can occur in two ways. The tie-in can directly eliminate competition in the tied-product market by forcing consumers to purchase the monopolist's version of the tied product.[46] The tie-in can also foreclose competition by forcing competitors to enter both the tied and tying markets simultaneously. This "two-stage entry" problem is a barrier that makes it difficult for competitors to emerge.[47]

Current economic analyses of tying have refuted the Chicago School view that the single-monopoly-rent theory proves that tying is never anticompetitive. Specifically, economists have demonstrated that under certain circumstances the extension of a monopolist's power into a second market will have anticompetitive results.[48] The most important scenario in which this might occur would be a situation in which a monopolist's extension of its power from one market into a second market would serve to protect the original monopoly. This situation might arise if the second product could be used to overcome barriers to entry in the monopolized-product market.[49] If the monopolist gains by driving firms out of the second-product market, and this gain is solely a result of the preservation of the original monopoly, the extension of the monopoly is anticompetitive.[50]

In addition, the extension of a monopoly to a second market may allow the monopolist to earn supracompetitive profits not otherwise available. This might occur if the monopolized product has other uses than those associated with the second market.[51] In such a situation, raising the

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44. *See* Katz & Shapiro, *supra* note 32, at 67-68.

45. *Id.* at 68-69.

46. *Id.* at 70.

47. *Id.* at 70-71.

48. *See* Franklin M. Fisher & Daniel L. Rubinfeld, U.S. v. Microsoft—*An Economic Analysis*, 46 ANTITRUST BULL. 1, 12 (2001); Janusz A. Ordover & Robert D. Willig, *Access and Bundling in High-Technology Markets*, *in* COMPETITION, INNOVATION, AND THE MICROSOFT MONOPOLY, *supra* note 32, at 103, 107 (arguing that a "bottleneck-holder" may have incentives to use its power to dominate "non-coincident" markets or to prevent competitors from creating an alternative system that bypasses the bottleneck).

49. *See* Fisher & Rubinfeld, *supra* note 48, at 13. *Microsoft III* provides an illustration. Judge Jackson ruled that Microsoft wanted to drive firms out of the browser market because the company feared that browsers' cross-platform capabilities could overcome the barriers to entry that protected Microsoft's Windows monopoly. United States v. Microsoft Corp., 87 F. Supp. 2d 30, 38-39 (D.D.C. 2000).

50. Fisher & Rubinfeld, *supra* note 47, at 13.

51. *Id.* at 12.

price of the monopolized product may cause a loss of customers for the other uses. By gaining a second monopoly, the monopolist can maintain its prices in the first market and gain extra supracompetitive profits in the second market.[52]

Current economic studies have thus shown that tying arrangements can have both pro- and anticompetitive effects. The challenge for tying law is to accurately determine when an arrangement's anticompetitive aspects outweigh its procompetitive benefits. This has proven to be especially difficult in cases involving technologically dynamic markets.

B.   The Challenges Raised by Technologically Dynamic Markets

In recent years economists have made important strides in their understanding of the workings of technologically dynamic markets. Some have argued that the distinctive features of these markets necessitate a separate tying regime for high-technology products.[53] The better view, however, is that while tying analysis can be more difficult in the fluid environment of high-tech markets, where product definition is particularly slippery, the fundamental challenges are the same as those in other markets.[54] Recent technology tying cases, the Microsoft cases in particular, have highlighted the need for a new tying regime, but this regime should be designed to deal with all markets, not just high-tech markets.

1.   The Economics of Technologically Dynamic Markets

Many economists agree that technologically dynamic markets tend to have four important defining characteristics: strong economies of scale; the presence of network effects; the tendency toward a lock-in effect for successful technologies; and the tendency toward rapid technological change.[55]

Strong economies of scale exist on the supply side in many high-tech markets. Most technologically dynamic industries involve products that are knowledge intensive, rather than labor intensive.[56] Knowledge, especially the kind of knowledge needed to develop software, biotechnology, and other types of high-tech products, is generally expensive to produce.[57] Once these products are developed, however, they are usually cheap to

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52.   *Id.*
53.   *See* Sidak, *supra* note 32, at 28-33; Mariotti, *supra* note 32, at 377-79.
54.   *See* Lawrence J. White, *Microsoft and Browsers: Are the Antitrust Problems Really New?*, in COMPETITION, INNOVATION, AND THE MICROSOFT MONOPOLY, *supra* note 32, at 137-39 (arguing that "[t]he antitrust issues at stake in Microsoft are not new and are not unique to computer software.").
55.   *See, e.g.*, Katz & Shapiro, *supra* note 32, at 32-38; Robert E. Litan, *Antitrust and the New Economy*, 62 U. PITT. L. REV. 429, 429-30 (2001); Daniel L. Rubinfeld, *Antitrust Enforcement in Dynamic Network Industries*, 43 ANTITRUST BULL. 859, 860-68 (1998).
56.   *See* Litan, *supra* note 55, at 429.
57.   *Id.*

reproduce.[58] This means that these industries tend to be characterized by high fixed costs and low marginal costs, and as a result, average costs are reduced as output increases.[59]

Strong "network" effects are a second key characteristic of technologically dynamic markets.[60] Network effects occur when the value to a consumer of using a good or service increases in relation to the number of other consumers who also use it.[61] The telephone system provides a good example. The more individuals who own phones, the more valuable phone ownership becomes to potential consumers who want to be able to call as many people as possible.[62] Computer operating systems are the obvious new-economy example,[63] both because a larger network of users allows individual users to communicate with more people, and because the more users a system has, the more likely it is that applications will be designed for use on that system.[64]

A lock-in effect is a third characteristic of some high-technology products. This means that once consumers are familiar with a product and are trained to use it, they are reluctant to switch to a different product.[65] This is true of many software products, which can be difficult and time-consuming to master.

Technologically dynamic markets also tend to be characterized by rapid rates of change.[66] This is particularly true of the software market, which has seen transformative product evolution over the past two decades.[67]

Three of the above characteristics—supply-side economies of scale, network effects, and lock-in effects—create tendencies toward monopoly in technologically dynamic markets. Microsoft's monopoly in Intel-compatible PC operating systems demonstrates all three of these traits. The fourth characteristic, rapid technological change, can have the opposite effect. The threat of constant technological improvement can make it difficult for a monopolist to dominate a market over the long term as competitors are likely to produce superior products given enough time.

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58. *Id.*

59. *Id.*

60. *See* Katz & Shapiro, *supra* note 32, at 30, 32-34; Litan, *supra* note 55, at 429-30; Rubinfeld, *supra* note 55, at 861.

61. Katz & Shapiro, *supra* note 32, at 32-34; Litan, *supra* note 55, at 430; Robert Pitofsky, *Antitrust and Intellectual Property: Unresolved Issues at the Heart of the New Economy*, 16 BERKELEY TECH. L.J. 535, 538-39 (2001).

62. *See* Rubinfeld, *supra* note 55, at 861.

63. *See* Litan, *supra* note 55, at 430; Pitofsky, *supra* note 51, at 539.

64. *See* Katz & Shapiro, *supra* note 32, at 32.

65. Litan, *supra* note 55, at 430.

66. *See* Katz & Shapiro, *supra* note 32, at 37-38.

67. *See id.* at 37.

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2. *Tying Analysis in Technologically Dynamic Markets*

The distinctive characteristics of technologically dynamic markets, and the software market in particular, have helped shape economists' views of the proper role of tying law in those markets. Specifically, some economists argue that the traditional economics of tying do not map well onto software markets.[68] This is partially because the innovation rate in technologically dynamic markets is much higher than that in the traditional markets upon which tying law is based.[69] As a result, it is often very difficult to determine whether a bundle is one product or two, or whether the bundling will produce anticompetitive effects. In "static" industries, products change slowly and product boundaries tend to be easily recognized. In technologically dynamic industries, however, products change rapidly and identifying product boundaries is difficult.[70] Constantly changing product characteristics make it harder to determine whether an offering is a bundle of two products or a single, integrated product. In addition, because marginal costs of production are low enough that a manufacturer can bundle a program at minimal cost, there are many situations in which bundling is efficient.[71]

The difficulties attendant in evaluating new high-technology designs have prompted some to call for a policy of governmental noninvolvement in technologically dynamic markets.[72] These observers argue that rapid technological change will prohibit long-term monopolization, as new competitors will inevitably produce a product superior to the currently dominant product.[73] They fear that governmental interference could lead to a quashing of innovation because antitrust-enforcement agencies and judges, who often lack technological savvy, may fail to recognize the procompetitive effects of bundles.[74] They also worry that government involvement will preempt the natural workings of the market.[75]

The differences between the challenges raised by applying tying law in technologically dynamic markets and applying tying law in other types of markets are differences of degree, not differences of kind. The challenge for tying law in any market is to differentiate pro- from anticompetitive

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68. *See, e.g., id.* at 75; Litan, *supra* note 55, at 430.

69. *See* Sidak, *supra* note 32, at 26.

70. *Id.*

71. *Id.* at 67.

72. David J. Teece & Mary Coleman, *The Meaning of Monopoly: Antitrust Analysis in High-Technology Industries,* 43 ANTITRUST BULL. 801, 843, 846 (1998); Robert J. Barro, *Why the Antitrust Cops Should Lay Off High Tech,* BUS. WK., Aug. 17, 1998, at 20.

73. *See* Katz & Shapiro, *supra* note 32, at 37; Barro, *supra* note 72, at 20.

74. The D.C. Circuit cited the concern that courts may fail to recognize the procompetitive efficiencies of high-tech bundles as one reason for its abandonment of the per se test. United States v. Microsoft, 253 F.3d 34, 93 (D.C. Cir. 2001) ("[B]ecause of the pervasively innovative character of platform software markets, tying in such markets produces efficiencies that courts have not previously enconntered."). *See infra* Part III.B (discussing the D.C. Circuit's ruling in *Microsoft III*).

75. *See* Barro, *supra* note 72, at 20.

arrangements. The characteristics of high-tech markets and the nature of high-tech products may make this determination more difficult, but the fundamental goal is the same for all markets.[76]

The recent spate of high-technology tying litigation, the Microsoft cases in particular, has thrown into sharp relief the failings of the current legal framework. An effective tying rule must be able to differentiate between pro- and anticompetitive tie-ins, a particularly difficult task in technologically dynamic markets. None of the current judicially-crafted tying frameworks are up to the task.

II
RECENT JUDICIAL APPROACHES TO THE TYING PROBLEM

Having laid out the fundamental economics of tying in technologically dynamic markets, the next step is to consider the current legal regimes for evaluating tying arrangements. There are currently three significant judicially crafted tests available for judging tying cases. Two of them, the "separate-demand" test and the "genuine-technological-integration" test, are designed to determine whether the arrangement in question involves one product or two. The third test, applying a "rule of reason," eschews this question altogether and asks whether detailed economic analysis declares the arrangement to be on the whole pro- or anti-competitive.

A.   The Jefferson Parish *Separate-Demand Test*

1.   The Supreme Court's Separate-Product Rule

The Supreme Court laid out its test for determining whether a combination of goods or services represents two products or one in *Jefferson Parish Hospital District No. 2 v. Hyde*.[77] This case concerned a hospital policy of selling surgery services in combination with anesthesiology services.[78] Patients having surgery at the hospital had no choice about which doctor would administer the anesthetic.[79] The Court held that for the purposes of a tying charge, the question of whether there were two products involved turned "not on the functional relation between them, but rather on the character of the demand for the two items."[80] In other words, the fact that linking two services may make sense from the provider's point of view or from an efficiency standpoint is irrelevant if there is separate demand for the two goods or services being combined. Thus, in order to determine the existence of a tying arrangement, the Court in *Jefferson Parish* constructed

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76.   *See* White, *supra* note 54, at 137.
77.   466 U.S. 2 (1984).
78.   *Id.* at 4.
79.   *Id.*
80.   *Id.* at 19.

a two-product test seemingly based on a single factor: whether there is sufficient demand for one product separate from the second product.[81]

The application of this one-factor test was fairly simple in *Jefferson Parish*. The Court noted that patients and doctors often requested their own anesthesiologists rather than the ones provided by the hospital.[82] This fact was sufficient to demonstrate that separate demand existed for anesthesiology and therefore that anesthesiology and surgery were two products rather than one.[83]

The Court expanded upon the *Jefferson Parish* separate-product test in *Eastman Kodak Co. v. Image Technical Services*.[84] In *Kodak* the question was whether the parts and service used to repair copiers were separate products. The Court found that Kodak likely had market power in parts[85] but faced competition in service.[86] Kodak argued that parts and service were not distinct products because there was no demand for parts separate from service. In making this assertion, Kodak relied on an argument similar to the one made by Justice O'Connor in her concurrence in *Jefferson Parish*.[87] There, Justice O'Connor had argued that anesthesia and surgery should not be considered separate products because "[p]atients are interested in purchasing anesthesia only in conjunction with hospital services."[88] Justice O'Connor's argument was based on the single-monopoly-rent theory, which states that when two products are sold together in proportional amounts, a monopolist can acquire no additional market power from the tie-in.[89] She argued that the link between anesthesia and hospital services would affect neither the amount of anesthesia provided nor the combined price of surgery and anesthesia.[90]

The Court rejected both Kodak's defense and Justice O'Connor's approach. It responded to these arguments by noting that "[b]y that logic, we would be forced to conclude that there can never be separate markets . . . for cameras and film, computers and software."[91] The Court refused to countenance such a situation and held that there is no reason to deny the existence of a tying arrangement between two "functionally linked products," even when one of them "is useless without the other."[92]

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81. *Id.* at 21. For a different reading of *Jefferson Parish*, see *infra* Part VI.C.

82. *Jefferson Parish*, 466 U.S. at 22-23.

83. Nonetheless, the defendant escaped liability because the Court ruled that the hospital did not have the requisite market power. *Id.* at 27-29.

84. 504 U.S. 451 (1992).

85. *Id.* at 477-78.

86. *Id.* at 457-58.

87. *Id.* at 463.

88. *Jefferson Parish*, 466 U.S. at 43.

89. *See* AREEDA & KAPLOW, *supra* note 1, at 688; *supra* Part 1.A.

90. *Jefferson Parish*, 466 U.S. at 43.

91. Eastman Kodak Co. v. Image Technical Servs., 504 U.S. 451, 463 (1992).

92. *Id.* (quoting *Jefferson Parish*, 466 U.S. at 19 n.30).

Considered together, *Jefferson Parish* and *Kodak* lay out an easily satisfied separate-product standard. The only requirement for finding separate products is that there be separate demand.[93] The fact that one of the products is useless without the other does not affect the analysis.

2. *Drawbacks to the* Jefferson Parish *Approach*

As the D.C. Circuit observed in *Microsoft III*, the *Jefferson Parish* test is a "prox[y] for net efficiency."[94] In other words, it is a relatively simple way of determining whether a particular tying arrangement increases consumer welfare. The logic is that separate demand for products will exist when the benefits of product choice outweigh the efficiencies of a particular product integration.[95] Because the *Jefferson Parish* analysis aims at determining whether an integration increases consumer welfare, it serves as a truncated rule-of-reason test within the larger per se framework. It is questionable, however, how useful a proxy variable consumer demand is; it appears effective in some, but not all, cases.

The primary criticism of *Jefferson Parish*, echoed by a number of observers, is that the separate-product inquiry makes little sense in cases involving technologically dynamic markets.[96] When technology is in a constant state of flux, it is difficult and misleading to try to decide whether a product is an entirely new, singular thing, or two separate products melded together.[97] Economists such as Michael Katz and Carl Shapiro, authors of influential works on the economics of technologically dynamic markets,[98] suggest ending reliance on the two-product inquiry and focusing instead on the "overall impact of tying on the total cost to consumers of the tying and tied products."[99] In legal terms, this analysis is equivalent to a broad rule-of-reason inquiry.[100]

The D.C. Circuit echoed these criticisms in *Microsoft III*. Noting what it called the "poor fit between the separate-products test and the facts of

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93.   *Id.* at 462.

94.   United States v. Microsoft Corp., 253 F.3d 34, 88 (D.C. Cir. 2001).

95.   *Id.*

96.   Katz & Shapiro, *supra* note 32, at 72-73 (noting that the *Jefferson Parish* rule does not reflect some economists' understanding of tying); Sidak, *supra* note 32, at 25-32 (proposing a new tying rule for products in technologically dynamic markets).

97.   *See, e.g.,* Sidak, *supra* note 32, at 26-27 ("In a technologically dynamic market, it is misguided (and potentially harmful to consumer welfare) to dwell on the question of whether A and B are or are not 'separate products' for the purposes of tying law, since the very definition of the relevant product may be in constant flux.").

98.   *See, e.g.,* Michael Katz & Carl Shapiro, *Systems Competition and Network Effects*, 8 J. ECON. PERSP. 93 (1994); Michael Katz & Carl Shapiro, *Product Introduction with Network Externalities*, 40 J. INDUS. ECON. 55 (1992); Michael Katz & Carl Shapiro, *Network Externalities, Competition and Compatibility*, 75 AM. ECON. REV. 424 (1985).

99.   Katz & Shapiro, *supra* note 32, at 75.

100.   For a description of the rule of reason, see *supra* note 19.

this case,"[101] the court pointed out the possibility that the separate-product rule may not be able to identify all efficiency-enhancing bundles and that therefore it has the potential to quash innovation. The court held that this risk is particularly high in the context of "newly integrated products."[102]

Critics of *Jefferson Parish* have rightly observed that the test has glaring deficiencies. These deficiencies arise from the fact that consumers, while they tend to understand the market they are in, are not always able to judge the efficiencies of a particular product integration.[103] The danger of this occurring is enhanced in the high-technology setting as the boundaries between product types are in a constant state of fiux due to the high rate of innovation. This boundary shifting may make it difficult for consumers to determine accurately whether a bundle is preferable to having a choice between the stand-alones. It is not difficult to imagine a situation in which separate consumer demand continues to exist after the creation of an efficiency-enhancing integration because consumers are slow to recognize the efficiencies. If the other elements of a tying charge were met, a court relying on *Jefferson Parish* would find such an integration illegal. This type of ruling would not advance the goals of antitrust law, which exists not to quash innovation, but to prevent forced buying.

B.   *The* Microsoft II *Genuine-Technological-Integration Test*

1.   *A Deferential Separate-Product Rule*

The D.C. Circuit took its first look at the Windows-IE bundle in 1998, and it applied a much different separate-product test than that required by *Jefferson Parish* and *Kodak*.[104] In *Microsoft II*, the Department of Justice alleged that Microsoft had violated a 1995 consent decree in which the company had agreed not to enter into any license agreement whose terms were conditioned upon the licensing of any second product.[105] The consent decree included a key caveat, however. It stated that this provision "shall not be construed to prohibit Microsoft from developing integrated products."[106] In retrospect it is clear, in light of the inherent difficulties of determining whether a bundle is one integrated product or two tied products, that this caveat would eventually lead to confiict.

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101.   United States v. Microsoft Corp., 253 F.3d 34, 85 (D.C. Cir. 2001).

102.   *Id.* at 92.

103.   One commentator has suggested that relying on consumer demand is problematic because consumer perception of products is significantly affeeted by marketing and packaging. In other words, there is the risk that consumers will believe that browsers and operating systems are not separate products simply because Microsoft promotes an integration of the two as a unified product. The ability of software designers to make what might be two distinct products appear unified on a PC desktop heightens this risk. Mariotti, *supra* note 32, at 377-79.

104.   United States v. Microsoft Corp., 147 F.3d 935 (D.C. Cir. 1998).

105.   *Id.* at 946.

106.   *Id.* at 939.

Such a conflict arose in 1995, when Microsoft began to license its Windows 95 operating system with the requirement that original equipment manufacturers ("OEMs")[107] accept and install a software package that included IE.[108] The Department of Justice brought suit, claiming that this license agreement violated the consent decree.[109] It relied on *Jefferson Parish* to argue that because separate demand existed for operating systems and browsers, the two products were distinct.[110] In defense, Microsoft relied on the "integrated products" caveat to argue that any time it added a feature to the operating system it was creating a new product.[111] Microsoft went so far as to argue that merely placing a second, compatible program in Windows packaging created an integrated product.[112]

The D.C. Circuit began its analysis by describing the problem faced by the court.[113] On the one hand, it was confronted with a concern for the anticompetitive effects of tie-ins; on the other, with the importance of Microsoft's "freedom to design products that consumers would like."[114] The court rejected the use of *Jefferson Parish* to solve this problem because it provided no way to distinguish "an upgrade from a separate product."[115] In other words, the opinion noted, there are situations in which it is procompetitive to combine what had been two separate goods into one more-efficient good, but a court using the *Jefferson Parish* test may not always recognize such a situation.[116] In an attempt more effectively to bridge the potential gap between the values of competition and ability to innovate, the D.C. Circuit created a new separate-product rule for the technology setting.[117]

Under the new test, the D.C. Circuit held that any "genuine technological integration" should be treated as one product, "regardless of whether elements of the integrated package are marketed separately."[118] The court defined a "genuine technological integration" as any "product that combines functionalities ... in a way that offers

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107.   OEMs are manufacturers of personal computers, such as Compaq and IBM. *Id.*
108.   *Id.* at 940.
109.   *Id.*
110.   *Id.* at 946.
111.   *Id.* at 947.
112.   *Id.*
113.   *Id.* at 948.
114.   *Id.*
115.   *Id.* at 947.
116.   *Id.*
117.   As noted, *supra* note 8, while the D.C. Circuit claimed that its opinion was merely an interpretation of the consent decree, it was clear the court believed it to be the correct antitrust rule as well. In any event, the genuine-technological-integration rule has been treated as one potential substitute for the current tying rule and therefore should be considered in that light. *See* Sidak, *supra* note 32, at 34-48.
118.   United States v. Microsoft Corp., 147 F.3d at 948.

advantages unavailable if the functionalities are bought separately and combined by the purchaser."[119]

The bar set by the D.C. Circuit for determining if a product meets the genuine-technological-integration test is extremely low. A defendant only has to show "a plausible claim" that the combination "brings some advantage."[120] A corporation need not even demonstrate that the combined product is better than its stand-alone rivals.[121] It appears that the only instance in which the court would find the existence of two products in a technology-integration setting is if the combination is an obvious sham.[122] The court would reject an arrangement, for instance, that purported to create an integration simply by taking two programs which had been sold under separate cover and packaging them in the same box.[123] Short of this, however, the D.C. Circuit's decision suggests that under its rule, it will be impossible to bring a successful tying claim in technology-integration cases. The logic behind setting such a low bar is traceable to the D.C. Circuit's argument that courts cannot be in the business of evaluating high-tech product designs.[124] "A court's evaluation of a claim of integration," Judge Williams wrote, "must be narrow and deferential."[125]

On the basis of this genuine-technological-integration test, the D.C. Circuit found that Microsoft had not violated the consent decree by incorporating IE into Windows.[126] Judge Williams held that the integration benefited users by "enhancing the functionality of a wide variety of applications."[127] In addition, because the OEMs and end-users were not competent to combine the two programs, these benefits could only have been achieved if Microsoft performed the integration itself.[128] Because the integration of Windows and IE benefited users and could not have been achieved by consumers, the genuine-technological-integration test was satisfied and the court ruled in Microsoft's favor.[129]

2. *Drawbacks to the* Microsoft II *Approach*

The primary problem with the genuine-technological-integration test, as Judge Wald's dissent in *Microsoft II* pointed out, is that it is far too

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119.   *Id.*
120.   *Id.* at 950.
121.   *Id.*
122.   *Id.* at 948.
123.   *Id.* at 948-50.
124.   *Id.* at 950. The opinion suggests that "the limited competence of courts to evaluate high-tech product designs and the high cost of error should make them wary of second-guessing the claimed benefits of a particular design decision." *Id.* at 950 n.13.
125.   *Id.* at 949-50.
126.   *Id.* at 952.
127.   *Id.* at 951.
128.   *Id.* at 952.
129.   *Id.*

lenient.[130] The test does little to ensure that markets remain competitive, and in fact seems certain to pave the road for increased anticompetitive behavior on the part of technology monopolists. Under the rule, Microsoft may link any feature to Windows by combining the code of the products. As long as it shows that the commingling of the programs has some potential benefit, the court will find that the resulting program is a genuine technological integration—a single product not open to a tying charge.[131] Microsoft can thus push competitors out of markets for stand-alone programs by offering new, combined programs that may or may not be superior to the stand-alones. Such a result is inconsistent with the purpose of antitrust law, which is to protect consumer welfare.[132]

In sum, as of 1998, technology tying law offered a pair of separate-product tests, both of which had the potential to bring about results inconsistent with the goals of the antitrust regime. The Supreme Court's *Jefferson Parish* test could stunt innovation by forbidding the integration of products thought of as separate by consumers, regardless of the advantage of combining them. The D.C. Circuit test could chill competition by allowing firms like Microsoft to use their monopoly in one market to clear other markets of competition by selling integrated products that might be of lesser value to consumers than the stand-alones. Neither test was in harmony with the most current economic analyses, which showed that tie-ins could be either pro- or anticompetitive, depending on their particular characteristics. This was the situation confronted in *Microsoft III*, first by Judge Jackson in the District Court, and then by the D.C. Circuit.

III
MICROSOFT III: STRAINING THE BOUNDS OF TYING LAW

A.   *The District Court Ruling*

In May of 1998, the Department of Justice and a group of nineteen state plaintiffs filed a new antitrust suit against Microsoft. The plaintiffs alleged four types of antitrust violations: unlawful exclusive-dealing arrangements and unlawful tying in violation of Section 1 of the Sherman Act, and unlawful monopoly maintenance and attempted monopolization in violation of Section 2 of the Sherman Act.[133]

The allegations against Microsoft sprang from what the plaintiffs characterized as the company's efforts to maintain its operating-system

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130.   *Id.* at 957 (Wald, J., dissenting).

131.   *Id.* at 950.

132.   The Supreme Court has described the goals of the antitrust laws as "unfettered competition in the marketplace," S. Motor Carriers Rate Conference v. United States, 471 U.S. 48, 61 (1984), and protection of "consumer welfare," NCAA v. Bd. of Regents of the Univ. of Okla., 468 U.S. 85, 107 (1984).

133.   Compl. at 47-49, United States v. Microsoft Corp., 87 F. Supp. 2d 30 (D.D.C. 2000) (No. 98-1232), *available at* http://www.usdoj.gov:80/atr/cases/f1700/1763.wpd.

monopoly by destroying threats posed by Netscape Navigator, a web browser, and Sun Java, a cross-platform programming language.[134] Both Navigator and Java are species of "middleware," software programs that can serve as platforms for other software applications.[135] According to the plaintiffs' theory, middleware posed two distinct threats to the Windows monopoly. First, because the middleware applications themselves could be used as software platforms, they competed directly with Windows.[136] Second, middleware was designed to run on multiple operating systems and would allow software developers to write programs that worked on any of these systems, potentially leading to a lowering of the "applications barrier to entry"[137] that, plaintiffs argued, protected Microsoft's Windows monopoly.[138]

The plaintiffs alleged, and the District Court agreed, that Microsoft recognized the threat posed by middleware and took several anticompetitive actions to combat it.[139] First, in 1995, Microsoft tried to convince Netscape not to release a version of its browser that would have acted as a substantial platform for applications.[140] When Netscape refused, Microsoft allegedly decided to reduce Netscape's share of the browser market by making its own browser, IE, number one in the market.[141] To do so, Microsoft pursued a number of strategies, including entering into exclusive-dealing contracts with OEMs and Internet Access Providers ("IAPs") that barred these entities from using Navigator in addition to IE, and pressuring Apple Computer to stop using Navigator.[142] More importantly, for purposes of this discussion, Microsoft bundled Windows and IE.[143]

Judge Jackson applied the *Jefferson Parish* consumer-demand test to this bundle and ruled that it was an illegal tying scheme.[144] As the judge noted, however, because he did not apply the genuine-technological-integration test, his decision seemed to contravene that of the D.C. Circuit

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134. *Id.* at 38-39.

135. United States v. Microsoft Corp., 84 F. Supp. 2d 9, 22-23 (D.D.C. 1999).

136. Compl. at 1-2, United States v. Microsoft Corp., 87 F. Supp. 2d 30 (D.D.C. 2000) (No. 98-1232), *available at* http://www.usdoj.gov:80/atr/cases/f1700/1763.wpd.

137. *Id.* The "applications barrier to entry" refers to the fact that very little software existed for use on operating systems other than Windows. A new operating system would have little chance to succeed because so little software could be run on it. The applications barrier is a species of network effects; its power derives from the fact that the value of operating systems increases as their user base increases. In this case the applications barrier was a very effective buffer for Microsoft. *See* United States v. Microsoft Corp., 84 F. Supp. 2d at 24-25.

138. Complaint at 1-2, United States v. Microsoft Corp., 87 F. Supp. 2d 30 (D.D.C. 2000) (No. 98-1232), *available at* http://www.usdoj.gov:80/atr/cases/f1700/1763.wpd.

139. United States v. Microsoft Corp., 87 F. Supp. 2d at 39-44.

140. *Id.* at 39.

141. *Id.*

142. *Id.* at 39-43.

143. *Id.* at 49.

144. *Id.* at 47-51.

in *Microsoft II*.[145] Judge Jackson gave two reasons for not adhering to the decision of the higher court.[146] First, he asserted that, because *Microsoft II* was based on an alleged violation of a consent decree, it was in a strict sense not an antitrust case, but one about contractual intent.[147] As such, Judge Jackson held that the decision in *Microsoft II* was not intended to state a controlling rule of law for the present case.[148] Judge Jackson also asserted that the part of the *Microsoft II* decision that dealt with the antitrust implications of combining software products conflicted with Supreme Court precedent in three ways.[149] First, rather than viewing the market from the consumer's perspective, as required by *Jefferson Parish, Microsoft II* viewed the market from the defendant's point of view. Second, the defendant's claim of advantage from the combination of products needed only to be plausible and did not have to be proved. Third, the *Microsoft II* test did not balance any hypothetical advantages of the combination against any anticompetitive effects.[150]

Relying on *Jefferson Parish*, Judge Jackson held that a bundle contains separate products if the evidence at trial establishes the existence of consumer demand for the products as separate entities.[151] He concluded that consumers viewed operating systems and browsers as separate products.[152] The remaining three requirements for a per se tying violation were much easier to ascertain. It was clear that consumers could not purchase Windows without IE and that the arrangement affected a substantial amount of interstate commerce.[153] Judge Jackson also found that Microsoft had monopoly power in the market for "worldwide licensing of Intel-compatible PC operating systems."[154] On these findings, Judge Jackson held that Microsoft's bundling of Windows and IE was an illegal tying arrangement in violation of Section 1 of the Sherman Act.[155] Microsoft appealed.

B.   *The D.C. Circuit Ruling*

In confronting the question of whether the Windows-IE bundle was one product or two, the D.C. Circuit faced a situation in which the logic of the relevant Supreme Court precedent was no longer supported by current

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145.   *Id.* at 47.
146.   *Id.* at 47-48.
147.   *Id.* at 47.
148.   *Id.*
149.   *Id.* at 47-48.
150.   *Id.* at 47.
151.   *Id.* at 48-51.
152.   *Id.* at 49.
153.   *Id.* at 37.
154.   *Id.* at 35.
155.   *Id.* at 51.

economic theory. Noting that "not all ties are bad,"[156] the court relied upon current economic theory for the idea that tying arrangements can produce transaction-cost savings and economies of scale or scope.[157] The court also noted that the *Jefferson Parish* test cannot always differentiate pro- from anticompetitive tie-ins.[158] As a result, the D.C. Circuit overturned the district court's holding that Microsoft's bundling of IE and Windows was unlawful and announced a new tying rule for situations "involving platform software products."[159] Rather than judging these arrangements under the per se rule, as required by *Northern Pacific Railway Co. v. United States*[160] and *Jefferson Parish Hospital District No. 2 v. Hyde*,[161] the court held that the case should be decided under a "rule of reason,"[162] and remanded the matter to the district court for judgment under this standard.[163] It suggested that to prevail, the plaintiffs would have to show that "Microsoft's conduct unreasonably restrained competition."[164] In other words, the plaintiffs would have to prove that the anticompetitive effects of Microsoft's bundling outweighed whatever procompetitive justifications the company offered.[165]

The D.C. Circuit justified its special exception to the Supreme Court's tying regime by referring to the more general Supreme Court precedent on the applicability of per se rules. The Supreme Court has held that the purpose of per se rules is to conserve judicial resources in cases involving practices that "are presumed to be unreasonable" because of their "pernicious effect on competition and lack of any redeeming virtue."[166] The D.C. Circuit pointed to the Supreme Court's admonition that such a presumption is only appropriate once courts have had "considerable experience with certain business relationships."[167] The D.C. Circuit concluded that "technological integration of added functionality into software that serves as a platform for third-party applications" is not such a familiar business relationship.[168]

This justification collapses upon the slightest scrutiny. The Supreme Court has already held that tying arrangements as a category always hurt

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156.   United States v. Microsoft Corp., 253 F.3d 34, 87 (D.C. Cir. 2001).
157.   *Id.*
158.   *Id.* at 84.
159.   *Id.*
160.   356 U.S. 1 (1958).
161.   466 U.S. 2 (1984).
162.   United States v. Microsoft Corp., 253 F.3d at 84.
163.   *Id.*
164.   *Id.* at 95.
165.   *Id.* ("[P]laintiffs must show that Microsoft's conduct was, on balance, anticompetitive.").
166.   *N. Pac. Ry. Co.*, 356 U.S. at 5.
167.   United States v. Microsoft Corp., 253 F.3d at 84 (quoting Broadcast Music, Inc. v. CBS, 441 U.S. 1, 9, 60 (1972)).
168.   *Id.*

competition and therefore are illegal per se.[169] Given such clearly applicable Supreme Court precedent, the D.C. Circuit's reliance on more general principles was unwarranted. In addition, the court's creation of a product-specific rule has no precedent in antitrust law. Antitrust rules are based on practices, not products. There are no other cases in which particular products are treated differently than others based on their design characteristics. The D.C. Circuit likely sees its rule as superior to *Jefferson Parish* for tying cases in general, although the opinion went out of its way to deny this.[170] The court limited its holding to platform-software products, however, to minimize the extent of its trespass on the *Jefferson Parish* rule, while at the same time implying that the rule must be amended.[171]

The D.C. Circuit held that a rule-of-reason analysis is necessary because tying in software markets produces efficiencies that courts are not yet trained to recognize and that are not accounted for by the per se rule.[172] The court noted that the course of product development in technologically dynamic markets is very difficult to predict and that the efficiencies of new arrangements are often difficult to understand.[173]

Based on these considerations, the court remanded the tying charge for consideration under the rule of reason. The court provided very little gnidance as to how the test should be administered, however. The opinion stated only that the district court should balance the bundle's "benefits against the costs to consumers."[174]

C.   *The D.C. Circuit's Unstructured Rule-of-Reason Test*

The D.C. Circuit's response to the shortcomings of the available separate-product tests was to eliminate them altogether. Instead of deciding whether the Windows-IE bundle is one product or two, the court would require plaintiffs to prove that Microsoft's conduct was "on balance anticompetitive."[175] Under this approach, Microsoft would offer procompetitive justifications for its product design, and the plaintiffs would have to prove that the anticompetitive effects of the arrangement outweighed these justifications.

This rule-of-reason test is simply a direct, but much more complicated, time-consuming, and expensive way to get at the same conclusion

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169. *N. Pac. Ry. Co.*, 356 U.S. at 5.
170. United States v. Microsoft Corp., 253 F.3d at 95 ("Our judgment regarding the comparative merits of the per se rule and the rule of reason is confined to the tying arrangement before us.... While our reasoning may at times appear to have broader force, we do not have the confidence to speak to facts outside the record ....").
171. *Id.* at 93.
172. *Id.*
173. *Id.* at 94.
174. *Id.*
175. *Id.* at 95.

the consumer-demand test is designed to achieve. Because it appears to be more consistent with the current economic understanding of the effects of tying, the unstructured rule of reason looks good when compared to *Jefferson Parish* and *Microsoft II*.[176] The test has two significant drawbacks, however. The first and most important is that the unstructured rule-of-reason test provides virtually no predictability to innovating firms whose actions may brush up against the antitrust laws. With evaluation of net efficiency determined on a case-by-case basis, firms would have very little idea how a trial might turn out. This uncertainty might chill innovation or embolden monopolists.[177] Because the D.C. Circuit's rule of reason provides no guidelines at all, it is not even clear what economic variables courts will consider. Potential litigants and their lawyers are likely to have little ability to predict how courts will view new tying arrangements.[178]

The other main drawback to the D.C. Circuit rule is that there is some question whether courts are equipped to make the sorts of determinations demanded by the rule. The D.C. Circuit itself has acknowledged this point. In her dissent in *Microsoft II*, Judge Wald suggested a balancing test under which Microsoft could only sell an integrated product if it achieved "synergies great enough to justify" the "extension of its monopoly to an otherwise distinct market."[179] This was in essence a rule-of-reason test in which a court would balance an integration's benefits to consumers against the strength of the market demand for the products as separate programs.[180] The D.C. Circuit's response to Wald's proposed rule was that "[c]ourts are ill-equipped to evaluate the benefits of high-tech product design."[181] There is merit to this criticism. What sort of evidence would courts rely upon to

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176. For another argument supporting use of the rule of reason in tying cases, see Todd J. Anlauf, Comment, Severing Ties with the Strained Per Se Test for Antitrust Tying Liability: The Economic and Legal Rationale for a Rule of Reason, 23 HAMLINE L. REV. 476 (2000) (arguing that because tying arrangements can produce efficiencies, they should not be judged under the per se rule).

177. For evaluation of the difficulties created by the unstructured rule-of-reason test, see Philip Areeda, *Antitrust Law as Industrial Policy: Should Judges and Juries Make It?*, in ANTITRUST, INNOVATION, AND COMPETITIVENESS 29 (Thomas M. Jorde & David J. Teece eds., 1992); Frank H. Easterbrook, *Ignorance and Antitrust*, in ANTITRUST, INNOVATION, AND COMPETITIVENESS, at 119; Gregory J. Werden, *Antitrust Analysis of Joint Ventures: An Overview*, 66 ANTITRUST L.J. 701, 733-34 (1998) ("Sorting out the facts of actual cases under the rule of reason is apt to be difficult and subject to significant error.").

178. Professor Areeda has warned that "[a] rule that cannot be intelligently applied invites confusion and quixotic results contrary to the statutory purpose." VII PHILLIP AREEDA, ANTITRUST LAW ¶ 1507a, at 396 (1986).

179. United States v. Microsoft Corp. 147 F.3d 935, 958 (D.C. Cir. 1998) (Wald, J., dissenting).

180. *Id.* at 959 (Wald, J., dissenting).

181. *Id.* at 952-53. The most recent D.C. Circuit opinion failed in its attempt to explain away this earlier statement, asserting that "[t]o the extent that [*Microsoft II*] completely disclaimed judicial capacity to evaluate 'high-tech product design,' . . . it cannot be said to conform to prevailing antitrust doctrine (as opposed to resolution of the decree-interpretation issue then before us)." United States v. Microsoft Corp., 253 F.3d at 92.

determine whether an integration's efficiencies outweigh the loss of consumer choice? The D.C. Circuit does not suggest any.[182]

The deficiencies of the current judicially-crafted tying tests prompt the question of whether a happy medium exists between the formalistic *Jefferson Parish* rule and the formless D.C. Circuit rule. Is there a test that demands a more thorough analysis than that required by *Jefferson Parish* but is not so open-ended that courts have no useful guideposts for evaluating tying arrangements in technologically dynamic markets? A number of candidates already exist.

IV
ALTERNATIVE TYING TESTS

Judges and academics have proposed a range of tests to replace *Jefferson Parish*. These tests fall into three major categories: product-focused tests, market-practices tests, and economic-measurement tests. Like *Jefferson Parish*, the first two categories of proposed replacements rely on proxy variables to determine if an arrangement is anticompetitive. Economic-measurement tests eschew proxies in favor of a direct analysis of the costs and benefits of particular bundles.

A.   Product-Focused Tests

In a product-focused test, the analysis centers on the attributes of the bundle itself. The best-known example is the D.C. Circuit's rule from *Microsoft II*. As discussed above, in that case the court held that any "genuine technological integration" should be treated as one product, "regardless of whether elements of the integrated package are marketed separately."[183] The court defined a genuine technological integration as any "product that combines functionalities ... in a way that offers advantages unavailable if the functionalities are bought separately and combined by the purchaser."[184] The D.C. Circuit set an extremely low bar for determining whether a product meets this test. All the defendant has to show is "a plausible claim" that the combination "brings some advantage."[185]

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182.   This is not to say that courts should abdicate their role in the face of technological complexity. It is only to suggest that courts need well-defined guidelines when entering these waters.

183.   United States v. Microsoft Corp., 147 F.3d at 948.

184.   *Id.*

185.   *Id.* at 950. The D.C. Circuit insisted that all it was doing in *Microsoft II* was interpreting the consent decree that governed Microsoft's behavior. *Id.* at 946. However, the court's assertion that its definition of integration was "consistent with the antitrust laws" and the general tone of the opinion suggest that the court believed that this rule was the proper one for settling the separate-product question as an antitrust matter. *Id.* at 948. In any event, the genuine-technological-integration rule has been treated as one potential substitute for the current tying rule and therefore should be considered in that light.

This genuine-technological-integration test provides clear guidelines for deciding the separate-product question; any plausible claim of advantage wins the day for the defendant. As a result, the genuine-technological-integration test heavily favors potential innovation over protection of competition. The advantage of the test is that courts can avoid the mistake, possible under *Jefferson Parish,* of finding a truly procompetitive bundling arrangement illegal simply because separate demand continues to exist for the elements of the bundle.

The genuine-technological-integration test articulated in *Microsoft II* is also consonant with some earlier technology tying cases. Specifically, the test is supported by a line of Ninth Circuit decisions dealing with integration of functions in disk-drive technology. The most significant of these decisions was *California Computer Products, Inc. v. IBM Corp.*[186] In the early 1970s, IBM changed the design of its disk drive by integrating the disk-drive control functions, which were previously external components, into the central processing unit ("CPU") it produced.[187] IBM appeared to have market power in CPUs, and this change allegedly made it more difficult for independent disk-drive manufacturers to produce external drives that were compatible with IBM's new CPU.[188] As a result, IBM gained a competitive advantage over the independent manufacturers of external disk drives.[189]

The parallels with *Microsoft II* are clear. In both situations a firm with monopoly power in a particular good integrated a function into that good that made it difficult for independent firms to compete in a related market. Although IBM was charged with attempting to maintain or extend its monopoly,[190] rather than with tying, the Ninth Circuit's analysis of the integration question is still informative. The court held that a monopolist has the right to redesign its products to "make them more attractive to buyers whether by reason of lower manufacturing cost and price or improved performance."[191] There was evidence that the integration of the disk-drive control functions into the CPU saved IBM money and improved

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186. 613 F.2d 727 (9th Cir. 1979). Other Ninth Circuit decisions involving IBM's disk-drive control technology include: *Transamerica Computer Co. v. IBM Corp.*, 698 F.2d 1377 (9th Cir. 1983) (holding, among other things, that IBM's CPU design changes, which made it more difficult for other firms to compete in the peripheral markets, were not anticompetitive), and *Memorex Corp. v. IBM Corp.*, 636 F.2d 1188 (9th Cir. 1980) (holding, based on facts that the court held were indistinguishable from *California Computer Products*, that design changes to disk-drive control technology, which made it more difficult for manufacturers of disk drives to compete, were not anticompetitive).

187. *Cal. Computer Prods., Inc.*, 613 F.2d 727 at 743-44.

188. *Id.* at 743.

189. *Id.*

190. *Id.* at 734-35.

191. *Id.* at 744.

performance.[192] Therefore, IBM's integration, although it was exclusionary to some extent, did not breach the antitrust laws.

This analysis is similar to the genuine-technological-integration analysis. The genuine-technological-integration test asks whether the combination "brings some advantage."[193] The Ninth Circuit test asks whether the integration lowers manufacturing costs and price or improves performance. Both tests focus solely on the benefits of the integration, rather than balancing those benefits against potential costs resulting from loss of consumer choice.

The genuine-technological-integration test is also supported by some scholars. For instance, Professors John E. Lopatka and William H. Page point out that any number of what had been separately marketed applications programs—including disk defragmenters, data compressors, and backup utilities—were integrated into the Windows operating system in a way that provided consumers with a more efficient product.[194] The critical point, they note, is that "the line between the operating system and applications is indistinct and permeable."[195] They conclude that while the genuine-technological-integration rule is deferential, it preserves this indistinct line between operating systems and applications and ensures further innovation.[196] "Judicial interference in this process," they argue, "runs the risk of long-lived and costly errors."[197]

The great, and probably fatal, disadvantage of the genuine-technological-integration test, however, is that it opens the door to increased anticompetitive behavior by monopolists.[198] Under the test, for instance, Microsoft may link any feature to Windows and survive antitrust scrutiny simply by making claims of some potential benefits.[199] These benefits may never accrue, or they may be so slight as to be far outweighed by the anticompetitive effect of the tie-in. In either case, the arrangement would almost assuredly survive the genuine-technological-integration test.[200]

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192.   *Id.*

193.   United States v. Microsoft Corp., 147 F.3d 935, 950 (D.C. Cir. 1998).

194.   John E. Lopatka & William H. Page, *Antitrust on Internet Time: Microsoft and the Law and Economics of Exclusion*, 7 SUP. CT. ECON. REV. 157, 192 (1999).

195.   *Id.* at 193.

196.   *Id.* at 198-200.

197.   *Id.* at 200.

198.   United States v. Microsoft Corp., 147 F.3d at 956-57 (Wald, J., dissenting) (arguing that the majority rule creates "too safe a harbor with too easily navigable an entrance").

199.   *Id.* at 957 (Wald, J., dissenting); *see also* Mariotti, *supra* note 32, at 386-89.

200.   Professor Lawrence Lessig proposed a useful variation on this test in his amicus brief submitted in *Microsoft III*. Brief of Lawrence Lessig as Amicus Curiae, United States v. Microsoft Corp., 87 F. Supp. 2d 30 (D.D.C. 2000) (No. 98-1232). Unlike some other separate-product tests for software integrations, Professor Lessig's concern is with separate functions, not separate code. *Id.* at 39. In other words, the fact that the monopolist has combined code from two previously separate products is not a dispositive fact for determining the status of the bundle. Rather, courts should focus

B.   Market-Practices Tests

While the *Microsoft II* test focused on the attributes of the product itself, market-practices tests rely on the behavior of market participants for clues about whether a tying arrangement is anticompetitive.[201] Professor Phillip Areeda has proposed a well-known example. His market-practices test concentrates on whether bundling is universal in the market in question.[202] Universal bundling, according to Areeda, indicates either that consumers prefer the bundle to the stand-alones, that producing the bundle creates cost savings which appeal to consumers more than freedom of product choice, or that the bundle provides an improvement in quality that outweighs loss of product choice.[203] If the market in question is not competitive, analogous markets can be used to perform the analysis.[204] If bundling is predominant rather than universal, the Areeda test would still find one product rather than two.[205]

The primary problem with the Areeda test is that because of network effects, economies of scale, and lock-in, software markets are often not competitive.[206] This means that courts will need to identify "analogous markets" to perform the test. It is not always clear, however, what markets are "analogous." In the *Microsoft* cases, for example, geographical analogues are not available because the market for Windows is worldwide and there are very few consumers who are not locked in. Thus, while the theory behind the Areeda test makes sense, it appears to be unworkable in practice.[207]

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on whether the functions (operating-system function and browser function, for example) are still separately demanded by consumers. Professor Lessig also argued that courts should begin with the presumption that a software integration is one product rather than two and that a showing of special anticompetitive concern should be necessary to overcome this presumption. *Id.* at 40. Professor Lessig noted that anticompetitive concerns are raised by particular market conditions. For instance, if the bundled products are partial substitutes for each other, and the defendant has monopoly power in the tying product, then the bundle may be a way to ensure that the tied product does not become a competitive threat to the tying-product monopoly. *Id.*

This rule is an improvement over the *Microsoft II* rule. While both rules favor potential innovation over protection against anticompetitive conduct, the Lessig rule makes it more likely that anticompetitive bundles will be rooted out. Professor Lessig's analysis openly acknowledges the risk that a low bundling bar will allow monopolists to engage in "strategic bundling" with anticompetitive effect. *Id.* However, the rule also provides some guidance for courts to recognize when this type of strategic bundling is taking place.

201.   *See* Mariotti, *supra* note 32, at 374-77.

202.   X PHILLIP AREEDA ET AL., ANTITRUST LAW ¶ 1744 (1996).

203.   *Id.* at 197.

204.   Analogues may include similar markets in different geographic regions, historical markets, and markets for buyers who are not "locked in." *Id.* at 198-200.

205.   Predominant bundling occurs when less than ten percent of the tying items are sold unbundled. *Id.* at 202.

206.   *See supra* Part I.B.1.

207.   For a detailed discussion of these problems with the Areeda test, see Mariotti, *supra* note 32, at 374-77.

Another problem with the Areeda test is that it fails to recognize that manufacturers with market power may bundle products for different reasons and with different effect than manufacturers without market power.[208] For instance, a manufacturer with only a small market share may bundle products to achieve economies of scale, while one with market power may do so to gain supracompetitive profits. The fact that all manufacturers in a market bundle products does not necessarily mean that a manufacturer with market power is not acting anticompetitively by producing the same type of bundle.

C. Economic-Measurement Tests

Another alternative is what I term "economic-measurement" tests. Unlike market-practices tests, which analyze the behavior of market participants for clues as to whether an arrangement is anticompetitive, economic-measurement tests attempt to directly evaluate the costs and benefits of tying arrangements. Professors Janusz A. Ordover and Robert D. Willig have formulated one such test.[209] Their three-step approach applies to situations in which the defendant has "bottleneck power"[210] in the primary market. If such power exists, the first step is to determine whether the alleged exclusionary conduct creates a dangerous probability of a new monopoly in a "non-coincident" market.[211] This market must be clearly identified, and the challenged conduct must be the cause of the potential monopolization.[212] The second step is to weigh profit from the challenged conduct against profit from a hypothetical, less exclusionary alternative with the assumption that the excluded rival continues to compete.[213] If the less exclusionary conduct is more profitable, then the monopolist is sacrificing short-term profits in exchange for adverse effects on present and future competition.[214] The final step is to determine whether the challenged conduct is more profitable than the less exclusionary strategy because it has led to the reduction of competition in the relevant market.[215] This step assumes that no rivals have survived.[216]

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208. *See* Rubinfeld, *supra* note 55, at 872.

209. Ordover & Willig, *supra* note 48, at 103.

210. Bottleneck power is defined as control over a component of a system in which the other components are independently useless. *Id.* This bottleneck component is akin to an "essential facility." *Id.* at 105.

211. *Id.* at 109-11. A non-coincident market is a market outside the primary market. Examples include the primary market at a future date, the primary market at another geographic location, or an entirely different market. *Microsoft III* concerned the first of these possibilities, an attempt to control the primary market (operating systems) at some later date (a possible future in which middleware supplanted Windows). *Id.* at 110.

212. *Id.*

213. *Id.* at 110-11.

214. *Id.*

215. *Id.* at 111-13.

216. *Id.*

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This test directly measures the costs and benefits of the arrangement to the monopolist. An arrangement offering higher costs than benefits, absent monopolization of a non-coincident market, will be anticompetitive.[217] While the spirit of the test is consistent with current economic theory, it suffers from the same implementation problems as the Areeda test. An analysis that requires courts to make suppositions about hypothetical markets and to measure hypothetical costs may be difficult to apply in practice.[218]

Judge Wald's dissent in *Microsoft II* proposed another example of an economic-measurement test. As noted above, Judge Wald recommended a test that would balance the "synergies" generated by integrating two software products against the strength of evidence that distinct markets exist for the two products.[219] Put slightly differently, this test measures whether an integration "confers benefits on the consumer that justify a product's bridging of two formerly separate markets."[220] While this test directly measures the benefits of an integration, it would be as difficult to apply as the Ordover-Willig test. How is a court to accurately measure the pertinent "synergies"? Judge Wald suggested using "affidavits, consumer surveys ... as well as testimony from experts,"[221] but this provides only marginally more guidance than the unstructured rule-of-reason test. It is hard to disagree with the majority's statement that the test "is not feasible in any predictable or useful way."[222]

Other scholars have proposed similar balancing tests.[223] One commentator has suggested a test for technologically dynamic markets that balances the increased demand or reduced costs created by an integration against the losses to consumer welfare resulting from the reduced competition caused by the integration.[224] As with Judge Wald's test, this

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217.   *Id.* at 109.
218.   As one observer noted of the Ordover-Willig test:

[M]y major question concerns the practicability of prongs 2 and 3. Though they may be sensible in principle, how much practical guidance do they provide to antitrust policy makers? How would they help ... decide whether Microsoft should or should not be forced to allow the PC manufacturers to delete its Explorer browser from their licensed software. How would prongs 2 and 3 help ... decide whether Microsoft should be allowed to bundle its browser with Windows 98 or instead be required to sell the browser separately. I fear that an understanding of prongs 2 and 3 will not provide much help in addressing these questions.

White, *supra* note 54, at 150.
219.   United States v. Microsoft Corp., 147 F.3d 935, 958-59 (D.C. Cir. 1998) (Wald J., dissenting).
220.   *Id.* at 958 (Wald, J., dissenting).
221.   *Id.* at 958 n.3 (Wald, J., dissenting).
222.   *Id.* at 952.
223.   *See, e.g.*, Mariotti, *supra* note 32, at 367 (balancing the gains in innovation and reduction in transaction costs for consumers who want both the tying and tied product against the costs to consumers who only want the tying product).
224.   Sidak, *supra* note 32, at 29-33. Sidak proposes a four-part test for determining whether an integration in a technologically dynamic market violates the antitrust laws. *Id.* at 28-33. The first step is to determine whether the market is technologically dynamic. *Id.* at 28. If it is not, *Jefferson Parish* will

formulation asks the right question, whether the integration increases consumer welfare, but it is difficult to imagine the test being applied in practice. The problem with all these tests is that the variables to be balanced are difficult to measure.

Economic-measurement tests are attractive because, rather than using proxies to determine whether conduct is anticompetitive, they strive to measure competitive effects directly. The problem with these tests, or at least those proposed to date, is that they are difficult to put into practice. They require courts either to perform complicated economic analyses of purely hypothetical markets and practices, or to make measurements that can be inexact at best.

V

THE FAILURES OF *JEFFERSON PARISH* AND THE FOUNDATIONS FOR A
NEW TEST

The flaws of the *Jefferson Parish*, *Microsoft II*, and *Microsoft III* tests demonstrate the need for a new separate-product test. The first step in the process of designing such a test is to consider the merits of the three species of tests described in the previous section, as well as those of the consumer-demand test.

It is clear at the outset that the product-focused tests are inferior to the market-practices, consumer-demand, and economic-measurement tests. The latter three types of tests are designed to evaluate, either by proxy or directly, the costs and benefits of tie-ins. The product-focused tests look at only one side of this equation, the benefits, and assume that if the bundle brings even a minimal benefit it should be legal. No effort is made to measure costs associated with loss of consumer choice. Product-focused tests simply are not an effective way of screening out anticompetitive bundles.

This leaves the market-practices, consumer-demand, and economic-measurement tests. All are to some extent consistent with current economic theory in that they recognize the potential for bundles to have either pro- or anticompetitive effects. They are designed to determine whether specific arrangements are on the whole procompetitive. The most important difference between these tests is that the first two types use proxy variables to make this determination, while the third type is designed to measure

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apply. *Id.* If it is, the next step is to determine whether consumers will benefit from the integration, with benefits measured by increased consumer demand, lowered costs of production, or both. *Id.* at 29-30. These benefits are not measured in comparison with a hypothetical world in which the products have not been integrated; the only question is whether some actual benefits have been created by the integration. *Id.* at 31. The third step is to determine whether the integration will preserve a monopoly over the tying-product market. *Id.* at 32. If it will, the fourth step is to balance the integration's consumer benefits against the losses in consumer welfare caused by any reduction in competition. *Id.* at 32-33.

directly the competitive effect of particular bundles. Both approaches have advantages and drawbacks.

The market-practices and consumer-demand tests have the potential to be more judicially manageable because they rely on proxies, such as evidence of manufacturing patterns, that are relatively easy to measure. On the downside, these tests are an indirect measure of an arrangement's effects. They rely on the behavior of market actors and will produce accurate results only to the extent that the market actors fully understand the specific product and its advantages.

The plusses and minuses of economic-measurement tests are a mirror image of those of the proxy tests; they are valuable because they directly measure the effects of bundles, but they are not as judicially manageable. The ideal solution would be either a proxy test that would produce consistently accurate results, or a manageable economic-measurement test.

There are three reasons to consider using a proxy test. First, because the variables involved are more easily measured than those involved in economic-measurement tests, a proxy test provides clearer guidelines both to courts and to companies at risk of violating the laws. Second, as the following sections will show, the market-practices test can be combined with the consumer-demand test to create a "market-participants test" that will achieve more accurate results than either individual test. Third, as the subsequent sections will argue, this market-participants test has a basis in precedent that economic-measurement tests lack.

The challenge, then, is to desigu a proxy test that will deliver more accurate results than those proposed to date. In order to design such a test, it is useful to begin by looking more closely at why the leading current test, the *Jefferson Parish* test, fails in its task.[225]

As noted above, in high-technology cases in particular, the *Jefferson Parish* rule may fail to determine adequately whether a bundle is two products or one, integrated product. In addition to the standard explanations for this failure, as discussed above,[226] two important drawbacks to this test have received little attention. The first is shared by all the major proxy tests; they limit courts to consideration of only one analytical factor. *Jefferson Parish* relies solely on consumer demand,[227] the genuine-technological-integration test on the efficiency of the product itself, and the market practices test on manufacturing patterns. The second drawback is specific to *Jefferson Parish*; the consumer-demand test has been applied in

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225.   Critics of *Jefferson Parish* and *Microsoft II* have been quick to conclude that the deficiencies of these proxy tests mean that the only other alternative is an unstructured rule of reason. However, little effort has been expended to identify specifically the drawbacks to the current proxy tests. This section will look closely at the content and limitations of the major proxy tests in an attempt to identify the elements of an improved test.

226.   *See supra* Part II.A.2.

227.   *See supra* Part II.A.1.

a fashion too cursory and vague to make what is often a tricky determina-
tion about product definition. Thus, *Jefferson Parish* unnecessarily limits
courts to the use of one analytical factor and then measures that factor
poorly.

A.   The Limitations of All One-Factor Tests

The *Jefferson Parish*, genuine-technological-integration, and Areeda
market-practices tests are all one-factor analyses. They rely solely on con-
sumer opinion, product functionality, and manufacturing practices, respec-
tively. As a result, each limits the amount of useful information available
for determining whether an arrangement should be treated as one product
or two.

The *Jefferson Parish* test, particularly as used in *Microsoft III*, relies
exclusively on consumer demand to resolve the separate-product question.
Justice Stevens wrote that the reasoning behind this test is linked to the
"underlying rationale of the rule against tying," which is to protect compe-
tition in a distinct product market.[228] With this goal in mind, the consumer-
demand test makes some sense. If the goal is to ensure that consumers are
able to benefit from the choice provided by competition in the market for a
particular type of good, there should be some indication that consumers are
indeed interested in buying that type of good on its own. Consumers, for
instance, are generally not interested in buying an automobile engine with-
out the rest of the automobile, so the combination of these two goods in
one product poses no problems.

Considering only the consumer point of view, however, raises poten-
tial difficulties. First, it limits the amount of useful information available to
a court in making a difficult determination. Although consumer demand is
pertinent, manufacturers may also have worthwhile information to share
about the market. Significantly, a manufacturer may recognize efficiencies
in a product integration that consumers cannot yet see because of their lack
of sophistication. The danger of this occurring increases in relation to the
technical sophistication of the integration in question. In the software mar-
ket, for example, programmers may see a technological advantage to bun-
dling two currently separate products before consumers, who might
continue to want to purchase the products separately for some period. If a
court were to rely solely on consumer demand, and the other elements of a
tying charge were met, it would find this integration to be illegal. Such a
ruling, however, would not advance the goals of antitrust law. Tying law is
not in place to quash innovation, but rather to prevent forced buying.

The *Jefferson Parish* test also fails to consider the functionality of the
product itself. While there is some question whether courts should be in the

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228.   Jefferson Parish Hosp. Dist. No. 2 v. Hyde, 466 U.S. 2, 21 (1984).

business of evaluating technology, evidence that two products need to be sold as a unit should be critical in a tying case. As stated above, the role of tying law, and antitrust law in general, is to discourage anticompetitive behavior and to increase consumer welfare. The functionality of an integration should weigh on the question of whether that integration is anticompetitive. Take, for example, an integration of two software products. There may be consumer demand for the separate products, and the manufacturer may have integrated with the primary intention of forcing consumers to buy the tied product. Still, it may be that the integration itself is a great advance and increases consumer welfare. If a court were to consider only the consumer's and manufacturer's points of view, it would quash an important innovation. For cases like this, it is critical that courts consider the attributes of the product itself in making a separate-product determination.

The proxy test set out in *Microsoft II*, the genuine-technological-integration test, may fail to produce the right result in some tying cases for the same reason that *Jefferson Parish* fails; it relies on only one factor. Whereas the *Jefferson Parish* test ignores the functionality of the integration in question, the *Microsoft II* test only evaluates functionality, and considers neither the consumer's nor the manufacturer's points of view. This could allow a monopolist to use an integrated product, inferior to competing stand-alones, to deprive consumers of options by driving the stand-alones out. A similar problem plagues Professor Areeda's market-practices test, which relies only on the manufacturer's point of view, and references neither consumer demand nor product efficiency.

The *Jefferson Parish*, *Microsoft II*, and market-practices tests all unnecessarily reduce the amount of information available to courts considering the separate-product question. This is one critical reason these tests are poor proxies for determining the net efficiencies of high-technology integrations.

B.   A Test Without Substance: The Limitations of the Jefferson Parish Consumer-Demand Test as Applied

In addition to limiting courts to the consideration of only one factor, *Jefferson Parish's* consumer-demand analysis is, in and of itself, far too vague and cursory. The opinion provides no guidance about how to determine who the consumers of a product are or what kind of consumer opinions matter. Additionally, it does not explicitly address how consumer opinion might be altered by what a product costs, or how price should be weighed in a consumer-demand test. Thus, even assuming that the consumer-demand test follows from the spirit of the antitrust laws, the test needs to be drawn with more detail than it was in *Jefferson Parish* and, more recently, in Judge Jackson's opinion in *Microsoft III*.

1. The Need to Identify the Consumer

In *Jefferson Parish*, the Supreme Court found that "consumers differentiate between anesthesiological services and the other hospital services."[229] It is unclear, however, which consumers matter and why. Justice Stevens noted that, as a general matter, both patients and surgeons like to choose their own anesthesiologists.[230] Are the consumers that concerned the Court patients or doctors? This is an important distinction because doctors and patients are very different types of consumers and their opinions might lead to different conclusions. For example, a doctor's opinion might be weighted differently than a patient's because doctors might recognize efficiencies that patients do not. This is not necessarily the way it would turn out, of course; patients may also possess information doctors do not, such as the feeling of confidence engendered by using an anesthesiologist one trusts.

The weighting of consumer opinions is particularly difficult in the technology arena because consumers are less likely to be fully informed. In an ideal situation, consumers have all the information they need and understand the attributes of the products they are buying. This is the case, for example, for many consumers of disposable pens. The great majority of consumers recognize the advantages of buying a disposable pen with the ink already installed. This is not always true for all products, however. A court should not be confident that the average home personal computer user knows whether it is more efficient to bundle central processing units with math coprocessors or to purchase them separately. Since not all consumer opinions carry the same authority, it is important to know what types of consumer opinions matter and how they should be weighted. The *Jefferson Parish* test provides no such formula.

To understand the amorphous nature of the *Jefferson Parish* test, one ouly need consider its application by Judge Jackson in determining whether Windows and IE are one product or two. In applying *Jefferson Parish*, Judge Jackson held that the "resolution of product and market definitional problems must depend upon proof of commercial reality."[231] The outlines of this "commercial reality" were treated as obvious and dismissed in a single declarative sentence: "[C]onsumers today perceive operating systems and browsers as separate 'products,' for which there is separate demand."[232]

Judge Jackson never described who he considered those consumers to be; he referred only to "consumers" generally.[233] Microsoft and Netscape

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229.   *Id.* at 23.
230.   *Id.* at 22.
231.   United States v. Microsoft Corp., 87 F. Supp. 2d 30, 49 (D.D.C. 2000).
232.   *Id.*
233.   *Id.* at 48-49.

primarily distributed their browsers through OEMs, not directly to end-users. OEMs and end-users are very different types of consumers. OEMs are much more familiar with the capabilities of computers and the comparative technical advantages of various software bundles. End-users, on the other hand, generally know less about the technical functioning of computers, but as the actual users of the software they can speak to the usefulness of particular integrations. It may be helpful to consider both types of consumers or to consult them for different types of questions. Because the consumer-demand test fails to address the various types of opinions available from different consumer groups, the conclusions it engenders lack depth.

2. The Need to Address the Impact of Price

An additional issue not sufficiently addressed by the *Jefferson Parish* test is how a court should consider the effect of product pricing on consumer opinion. Both Netscape and IE are free. Thus, with respect to browsers, consumers are not voting with their dollars at all. This fact ought to have been considered more thoroughly by Judge Jackson in his application of *Jefferson Parish*. Separate demand for products is easy to see when consumers are choosing to spend money by selecting one product over another. When consumers are not spending money, it is difficult to know what they are thinking. The *Jefferson Parish* test provides no guidance for addressing this problem.

C. Lessons from a More Robust Consumer-Based Test: The Trademark Consumer-Confusion Test

Both *Jefferson Parish* and *Microsoft III* apply a consumer-demand test that is too vague and that lacks clear standards. The insufficiency of the consumer-demand test is even more obvious when compared to consumer tests used in other areas of the law. The well-known and important consumer-confusion test from trademark law provides a good basis for comparison with the *Jefferson Parish* test.

1. The Trademark Consumer-Confusion Test

The basis for finding liability in trademark cases is consumer confusion.[234] Accordingly, when a plaintiff claims infringement of her mark, a court will determine whether consumers have difficulty telling the two marks in question apart.[235] In *AMF Inc. v. Sleekcraft Boats*, the Ninth Circuit spelled out the elements of its trademark consumer-confusion test. The court identified nine factors: strength of the mark; proximity of the

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234.   *See* AMF Inc. v. Sleekcraft Boats, 599 F.2d 341, 348 (9th Cir. 1979).
235.   *Id.* at 346.

goods; similarity of the marks; evidence of actual confusion; marketing channels used; type of goods; degree of care the purchaser likely used in selecting the product; defendant's intent in selecting the mark; and likelihood of product-line expansion.[236] The court also noted that this "list is not exhaustive" and "[o]ther variables may come into play depending on the particular facts presented."[237] Each of the nine factors was discussed at some length in the opinion.

The *Sleekcraft* test is an illustration of how much more seriously the idea of a consumer-based test is taken in trademark law than in tying law. Arguably, what determines liability in trademark cases explains this result; in other words, because the basis of liability in a trademark claim is consumer confusion, it makes sense that courts would develop intricate tests to determine whether consumers are actually confused. This distinction proves less powerful, however, upon consideration of the goals of the consumer-demand test in tying cases. A tying arrangement exists where the defendant's actions "foreclosed competition . . . in a product market distinct from the market for the tying item."[238] The consumer-demand test in tying cases rests on the idea that consumers are the best judges of whether a distinct product market exists.[239] So, while consumer opinion is not itself at the heart of the claim, as it is in trademark cases, it serves as a proxy for consumer welfare, the variable that is at the heart of the claim in tying cases.

2. *Factors to Include in a Consumer-Based Test for Tying*

Because the import of consumer opinion in tying cases is comparable to that in trademark cases, courts should develop a consumer-based test for the tying arena that approximates the complexity of the trademark test. The *Sleekcraft* factors provide some clues as to what such a tying test might look like. Two factors, evidence of actual confusion and degree of care likely to be exercised by the purchaser, are of particular interest.

Courts require parties to go to some lengths to demonstrate evidence of actual confusion in trademark cases. Anecdotal evidence from consumers may be helpful, but parties will more likely rely on consumer surveys.[240] This same kind of evidence could and should be used in tying cases. Rather than simply making assumptions about consumer attitudes towards products, courts should ask for proof of how consumers view the market or markets involved.

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236.   *Id.* at 348-49.
237.   *Id.* at 348 n.11.
238.   Jefferson Parish Hosp. Dist. No. 2 v. Hyde, 466 U.S. 2, 21 (1984).
239.   *Id.* at 21-22.
240.   *See, e.g.,* Mut. of Omaha Ins. Co. v. Novak, 836 F.2d 397, 400-01 (8th Cir. 1987); Union Carbide Corp. v. Ever-Ready Inc., 531 F.2d 366, 387-88 (7th Cir. 1976).

The "degree of care" language is also instructive. By measuring the degree of care with which consumers evaluate the products at issue in a trademark case, courts attempt to determine the level of knowledge these consumers bring to the marketplace.[241] In theory, the more knowledgeable the consumer, the less likely she will be confused by similar trademarks.[242]

The level of sophistication consumers bring to a market should also play a role in a consumer-based test for tying. The idea behind the consumer-demand test is that purchasers know their own needs best.[243] The degree to which this is true, however, depends to some extent on the sophistication of the consumers of the product in question. Take, for instance, the question of whether consumers view CPUs and math coprocessors as two separate products. The average PC buyer is likely to have no opinion on the matter and will buy them in whichever form they are offered, separate or bundled. High-end computer users, however, will likely have informed opinions. They may be aware of increased efficiency in the integrated processing product, or they may enjoy the freedom to choose from several coprocessors. In either case, the opinion of the knowledgeable consumer is more valuable in determining whether the integration increases consumer welfare than that of the neophyte purchaser. Put slightly differently, the knowledgeable consumer is more likely to recognize a bundle's new efficiencies than is the uninformed buyer. Thus, the persuasive value of consumer demand must depend on the sophistication of the purchasers of the products in question. Separate demand for two products among informed consumers strongly indicates that continued choice between stand-alones increases consumer welfare and that two markets exist;[244] separate demand among purchasers who know little about the products, and who do not have a preference for either separate or bundled products, does not.

3. *Putting the Lessons to Use*

The current consumer-demand test as used in *Jefferson Parish* and *Microsoft III* is too cursory to satisfy the demands of tying analysis. If courts are going to continue to use the test, the test needs to be fleshed out. As an initial matter, courts must identify the relevant consumers of a particular product. The test also needs to take into account consumer sophistication in the relevant product market. The higher this sophistication level, the more reliance courts should put on the consumer's point of view. Courts should be wary of relying too greatly on the opinions of consumers who do not fully understand the products they are buying.

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241. *Sleekcraft*, 599 F.2d at 353-54.
242. *Id.; see also* Allen v. Nat'l Video, Inc., 610 F. Supp. 612 (S.D.N.Y. 1985).
243. *Jefferson Parish*, 466 U.S at 21-22.
244. *Id.* at 21-23.

Second, courts should not base their opinion solely on the fact that two products were purchased separately before the integration occurred. Consumers will purchase items in the forms in which they appear on the market. Consumers of web browsers initially had no choice but to buy them separately from operating systems; this does not mean, however, that consumers preferred this state of affairs. A court should not assess whether consumers will purchase stand-alone products, but rather whether, if offered the choice, they would prefer an integrated product. This is perhaps a difficult question to answer without examples of the integrated product for consumers to use. Still, a general answer can likely be found through consumer surveys, a tool used by courts in trademark cases to rule on the existence of consumer confusion.

The previous sections have argued that the *Jefferson Parish* test fails both because it is limited to only one factor and because it does not measure that factor in a thorough manner. An improved proxy test would include a consumer-demand element as one of its variables, but other variables will be necessary as well. The following section will argue that the identity of these other variables is to be found in a series of tying cases decided in the years before the high-tech explosion of the 1990s.

VI
PRECEDENTIAL BASES FOR A NEW PROXY RULE

In concluding that the unstructured rule-of-reason test was the proper one for the current Microsoft case, the D.C. Circuit held that courts were unfamiliar with the type of arrangement at issue and that little guidance was available either in Supreme Court or lower court precedent.[245] The court searched in vain, the opinion asserted, for a Supreme Court case in which the "tied good" was "physically and technologically integrated with the tying good."[246] The court reviewed several lower court cases in which software was bundled with hardware, but it held, largely without explanation, that the logic of these cases was not transferable to the software environment.[247] Even assuming that technologically dynamic markets pose distinct problems for tying law, cases involving integration of software and hardware should still offer some guidance. In any event, the court's claim that applicable cases do not exist is incorrect. There are at least three cases, including one from the Supreme Court and one upheld by the Supreme Court, which contain the basis of an improved separate-product proxy test. These cases also demonstrate how such a test would naturally flow from tying precedent.

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245.   United States v. Microsoft Corp., 253 F.3d 34, 90-91 (D.C. Cir. 2001).
246.   *Id.* at 90.
247.   *Id.* at 91.

A.   Jerrold Electronics

One of the earliest attempts to develop a workable separate-product test can be found in *United States v. Jerrold Electronics Corp.*[248] The judge in this case employed a separate-product analysis that relied on three factors: the consumer's point of view, the manufacturers' point of view, and the functionality of the product itself.

Jerrold manufactured television antenna systems, which it sold to remote communities that had difficulty getting reception.[249] The Jerrold system had four parts: an antenna site; a device that carried the signal from the antenna to the town; a "skeleton system" that distributed the signal through the town; and the "tap-off" which carried the signal from the skeleton system to individual homes.[250] Jerrold only sold this equipment as a complete system; none of the four parts could be purchased separately.[251] The government argued that this constituted a tie-in because Jerrold held market power in some individual pieces of the antenna-site technology and was forcing consumers who wanted the antenna to buy the other three parts of the system.[252] Jerrold responded that the system was one product, not an amalgamation of four separate products.[253]

In determining whether the system was one product or many, Judge Van Dusen considered several relevant factors. First, Jerrold's competitors offered individual components as well as complete systems.[254] Second, the completed systems themselves often looked quite different from one another according to the specific needs of the community making the purchase.[255] Third, customers were charged for each individual component rather than for the entire set.[256] All these facts suggested that the system was four products, not one.

On the other hand, Judge Van Dusen noted that other manufacturers' behavior was not conclusive, that some customers wanted to purchase the entire system rather than its constituent parts, and that different communities got different systems because each system was designed to adapt to specific sets of adverse reception conditions.[257] Further, the fact that the systems had to be custom built according to the needs of individual communities explained why the customers were billed per part rather than per system.[258]

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248.   187 F. Supp. 545 (E.D. Pa. 1960), *aff'd per curiam*, 365 U.S. 567 (1961).
249.   *Id.* at 549.
250.   *Id.* at 551.
251.   *Id.* at 552.
252.   *Id.* at 555.
253.   *Id.* at 559.
254.   *Id.*
255.   *Id.*
256.   *Id.*
257.   *Id.*
258.   *Id.*

Ultimately, the dispositive factor in Judge Van Dusen's analysis was that Jerrold had valid business reasons for selling the system in the integrated form.[259] Jerrold argued that when it was first offered for sale, its system was still in an unfinished state and hence "sensitive and unstable."[260] Jerrold did not want outside parts used in conjunction with the system because they might upset its fragile workings. This argument convinced Judge Van Dusen as it applied to the period during which the system first entered the marketplace. The judge noted that had the first systems sold failed because of the use of non-Jerrold parts, the product's reputation might never have recovered.[261] Therefore, the tie-in was permissible because it was "instituted in the launching of a new business with a highly uncertain future."[262]

Judge Van Dusen's analysis, fragmented as it might seem, contains the basic themes around which an improved separate-product test can be developed. The judge's analytical factors can be divided into three categories: ways in which consumers viewed the system; ways in which the defendant and other manufacturers viewed the system; and the system's functional characteristics. All three categories of information are potentially useful in determining whether a bundle is one product or two.

With respect to consumers, separate demand for the integrated products is a useful clue that the good in question is two products rather than one. This is why Judge Van Dusen emphasized that some consumers wanted to buy the entire system rather than just the separate parts. As for manufacturers, one can assume that producers have special insight into whether an integration of two goods constitutes a single product. Pricing is one indication of how a manufacturer views the goods he sells. By charging for each element separately, even when selling an entire system, Jerrold implied that it viewed the system as an amalgamation of distinct products, not a single product unto itself. The manufacturers' point of view is also illustrated by the actions of the defendant's competitors. Whether they are selling the systems piece-by-piece or as one product should indicate how they perceive the product in question.

As for the characteristics of the system itself, Judge Van Dusen noted that the product configuration differed from community to community.[263] This made it less likely that the system should be viewed as a single product.[264] In the judge's estimation, however, the instability of the product

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259.   *Id.* at 560.
260.   *Id.* at 556.
261.   *Id.*
262.   *Id.*
263.   *Id.* at 559.
264.   *Id.*

when it first went to market trumped this factor because it dictated that the defendant sell the system in its entirety.[265]

In sum, *Jerrold Electronics* laid out three factors to consider when deciding if a good is two products or one: the consumer's point of view; the points of view of the defendant and its competitors; and the functionality of the product itself.[266] These three factors should serve as the basis for an improved proxy test.

B.   In re Data General Corp. Antitrust Litigation

Another useful case for building an improved separate-product proxy test is *In re Data General Corp. Antitrust Litigation*.[267] Data General was charged both with tying purchases of its operating-systems software (the tying product) to purchases of its CPUs (the tied product)[268] and with tying purchases of its CPUs to purchases of its memory equipment.[269] Judge Orrick applied the same separate-product analysis to both combinations. In considering the CPU/memory combination, he began by noting that neither of these products could function independently from the other.[270] Because the CPU and memory board were physically distinct items, however, Judge Orrick saw the real question as whether the two goods needed to be supplied by the same company.[271]

As in *Jerrold Electronics*, the court examined a range of factors, rather than applying a formal separate-product test. Judge Orrick began by

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265.   *Id.* at 556-57. This latter fact serves as a justification for the practice rather than as a factor in determining the separate-product question.

266.   Interestingly, according to *Jerrold Electronics*, the same arrangement can be an illegal tie-in at one point and perfectly legal at another, depending on the circumstances. Judge Van Dusen found that there was no tie-in when the system entered the marketplace, but as soon as the workings of the system were stabilized, Jerrold's justification for requiring the purchase of all four parts of the system together disappeared, and the arrangement became an illegal tie-in. *Id.* at 557-58. This reasoning has two potentially important ramifications for tying law, especially as applied to technology cases. First, it is not uncommon for a new technological product to be unstable when first put up for sale. If the product is an amalgamation of separate components, a technology company can use *Jerrold* to argue that there was no tie-in initially because the use of outside components might have caused the product to fail, resulting in fatal damage to its reputation. This argument would be particularly powerful, according to *Jerrold*, if a great deal of research and capital had been devoted to the product. *Id.* at 556. Second, a defendant might use *Jerrold* to argue that while a product was initially a tie-in, it became an integrated product as circumstances changed. For example, a company that sells two software products and holds market power in one of them might decide to sell them together. If the company initially packaged the two programs in the same box but did not integrate the code, the package would clearly be a tie-in. If, over time, the defendant's software engineers fused the programs' code to create a new, unified product, the combination would no longer be an illegal tie-in. In both of these cases, the defendant would be liable for a tying violation for part of the time during which it sold the products together but could use *Jerrold* to limit its liability.

267.   490 F. Supp. 1089 (N.D. Cal. 1980).

268.   *Id.* at 1098-99.

269.   *Id.*

270.   *Id.* at 1107.

271.   *Id.*

considering the manufacturers' point of view. He found that Data General's own marketing practices implied that CPUs and memory boards were separate products.[272] Specifically, Judge Orrick pointed out that while Data General would not sell a CPU without a memory board, it would sell a memory board without a CPU.[273] Judge Orrick then considered the practices of other manufacturers of CPUs and memory boards. Data General demonstrated that at least one other manufacturer bundled its CPUs with its memory boards.[274] Judge Orrick disposed of this argument by noting that all of Data General's competitors also sold memory boards separately.[275]

Judge Orrick next analyzed the consumer's viewpoint. One consumer of Data General's CPUs stated that his firm consistently removed the memory boards bundled with the CPUs and replaced them with competing memory boards.[276] Data General admitted that this was not a unique practice among its customers.[277] Based on this information, Judge Orrick found that "at least some customers do not view CPUs and memory boards as a single product."[278]

Finally, Judge Orrick considered whether bundling was functionally more efficient than manufacturing and selling the two goods separately.[279] Data General argued that joint research and development of the two goods had lowered costs.[280] Judge Orrick was not swayed, however, because the defendant had produced no evidence of these cost savings, nor of any savings passed on to consumers.[281] Judge Orrick left open the possibility, however, that a showing of cost savings might weigh on the side of judging the bundle to be a single product.[282] Data General also argued that the joint design of the two goods ensured the "proper functioning of the various components of a computer in unison."[283] Judge Orrick rejected this argument in the absence of a showing that the benefits would be lost if the components were sold separately, that cost savings were passed along to consumers, or that cost savings could not be reflected in different pricing for bundled and unbundled sales.[284] This again left open the possibility that

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272. *Id.* at 1107.
273. *Id.*
274. *Id.* at 1108.
275. *Id.*
276. *Id.*
277. *Id.*
278. *Id.* at 1109.
279. *Id.* at 1109-10.
280. *Id.* at 1109.
281. *Id.* Judge Orrick held that Data General had also provided no proof of cost savings from the combination of operating systems and CPUs. *Id.* at 1105-06. In addition, the judge pointed out that even if cost savings existed, there was no evidence that the savings would be sacrificed if Data General were forced to market the operating systems and CPUs separately. *Id.* at 1106.
282. *Id.* at 1104.
283. *Id.* at 1110.
284. *Id.*

if Data General had made these showings, the court would have held the bundle to be one product.

As in *Jerrold Electronics*, the *Data General* decision implicitly applied a three-part separate-product test. The court considered the attitudes of manufacturers, the desires of consumers, and the functionality of the good in question. The opinion made no effort, however, to discuss how these factors should be weighted or how the test might be applied in the future. In that sense it shares the problems of the *Jerrold Electronics* opinion. Would, for instance, a showing that joint production and marketing resulted in cost savings that were passed along to consumers trump the fact that both manufacturers and consumers viewed the constituent elements of the bundle as separate products? Part of designing an improved proxy test must be an analysis of how best to weight these several factors.

C.   Jefferson Parish *(Revisited)*

In *Microsoft III* Judge Jackson held that *Jefferson Parish* was controlling law on the separate-product question.[285] His reading of the rule was that "product and market definitions were to be ascertained by reference to evidence of consumers' perception of the nature of the products and the markets for them."[286] This indeed appears to be the blunt holding of *Jefferson Parish*. This holding would seem to overrule *Jerrold Electronics* since that case relied on a number of factors beyond consumer demand.

A closer look at *Jefferson Parish*, however, reveals that the opinion did not intend to overrule *Jerrold Electronics*; in fact, it cited favorably to the *Jerrold Electronics* analysis.[287] The text of the *Jefferson Parish* opinion referred only to the consumer's point of view, stating that "the record amply supports the conclusion that consumers differentiate between anesthesiological services and the other hospital services provided by petitioners."[288] To support this conclusion, the opinion applied Judge Van Dusen's *Jerrold Electronics* analysis, calling it "[o]ne of the most frequently cited statements on this subject."[289] The section of the *Jerrold Electronics* analysis excerpted by Justice Stevens's opinion, however, contradicts the Court's apparent holding that consumer perception is the only dispositive factor.

The Court first listed three factors Judge Van Dusen relied upon to conclude that the antenna system was not an integrated product, none of which relate to the consumer point of view. The first of these factors was that "[o]thers who entered the community antenna field offered all of the

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285.   United States v. Microsoft Corp., 87 F. Supp. 2d 30, 47-49 (D.D.C 2000).
286.   *Id.* at 49.
287.   Jefferson Parish Hosp. Dist. No. 2 v. Hyde, 466 U.S. 2, 23 n.39 (1984).
288.   *Id.* at 23.
289.   *Id.* at 23 n.39.

equipment necessary for a complete system, but none of them sold their gear exclusively as a single package as did Jerrold."[290] This evidence comes not from the consumer's point of view but from the manufacturers'. The next factor was that "the number of pieces in each system varied considerably so that hardly any two versions of the alleged product were the same."[291] This evidence comes from the product design itself, not from the consumer's point of view. A third factor was that "the customer was charged for each item of equipment and not a lump sum for the total."[292] Again, this was evidence of how the manufacturer viewed the product, not how the consumers viewed it.

Having listed these factors, which appear to contradict *Jefferson Parish*'s major holding, the Court applied the *Jerrold Electronics* analysis to the *Jefferson Parish* facts.[293] The Court noted that "other hospitals often permit anesthesiological services to be purchased separately, that anesthesiologists are not fungible in that the services provided by each are not precisely the same, [and] that anesthesiological services are billed separately."[294] On this basis the Court concluded that "the *Jerrold* analysis indicates that there was a tying arrangement here."[295] This is a very different test than the one applied in the text of the opinion.

The *Jefferson Parish* holding is thus more complicated than it appeared in Judge Jackson's application of it in *Microsoft III*. Indeed, it is not clear for what *Jefferson Parish* stands. While its bare holding requires a one-factor analysis, this other language indicates that a multifactor proxy test could also be consistent with *Jefferson Parish*.[296]

VII
A NEW SEPARATE-PRODUCT TEST

Both *Jerrold Electronics* and *Data General* asked the right questions. In order to discover whether specific bundles raised or reduced consumer welfare, both courts turned to the sources that knew those particular product markets best—manufacturers and consumers. To deal with the possibility that both these sources had it wrong, both courts also considered the advantages of the integration itself. These cases highlight the shortcomings of the *Jefferson Parish*, genuine-technological-integration,

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290.   *Id.* (quoting United States v. Jerrold Elecs. Corp., 187 F. Supp. 545, 559 (E.D. Pa. 1960), *aff'd per curiam*, 365 U.S. 567 (1961)).

291.   *Id.* (quoting *Jerrold Elecs. Corp.*, 187 F. Supp. at 559).

292.   *Id.* (quoting *Jerrold Elecs. Corp.*, 187 F. Supp. at 559).

293.   *Id.*

294.   *Id.*

295.   *Id.*

296.   For another discussion of the possible readings of *Jefferson Parish*, see Mariotti, *supra* note 32, at 370-73.

and market-practices tests, which rely on only one factor, and they offer the foundation for an improved separate-product test.

A review of all the separate-product tests and their various strengths and weaknesses suggests several things. First, the problem of evaluating the competitive impact of bundles is a complex one, and no one-factor test will be sufficient in most technology cases. To promote the goals of the antitrust laws successfully in a technology setting, a separate-product test must be a multifactor test. Considering both the drawbacks of the current tests and the strengths of the *Jerrold Electronics* and *Data General* analyses, three main factors should emerge as elements necessary to ensure a procompetitive result. These factors are the consumer's point of view, the manufacturers' point of view, and the functionality of the integration itself.

A.   The Consumer's Point of View

An evaluation of the consumer's approach to a particular market must have two distinct elements. It must take into account both demand at the time of the integration and demand once the integration has been on the market for a period of time. The latter variable appears the more useful, but it may not be available if competing stand-alones have been driven from the market by the tying arrangement.

1.   Demand at the Time of the Integration

Demand at the time of the integration must be approached in a more nuanced fashion than it was in *Jefferson Parish* and *Microsoft III*. It is not adequate for a court simply to state that separate demand existed; this will always be true before integration. A deeper analysis of the strength of the separate markets is necessary. Courts must first identify the consumers with whom they are concerned. They must also take into account the sophistication of these consumers. The more knowledge consumers have about a product market, the more weight a court must give their opinion. This is because of the increased likelihood that knowledgeable consumers will be able to spot the efficiencies of a new bundle.

Courts must consider other issues, such as price, as well. The idea behind the consumer test is that consumers will choose a bundle to the extent that it increases their welfare. Specifically, consumers will choose a bundle if the benefits it offers outweigh the cost of reduced choice in the tied-product market. This assumes, however, that product attributes are the only variables. If the bundle is free, or priced well below the cost of the stand-alones, consumers' buying patterns may have little to do with the efficiencies of the product itself. As noted earlier, Judge Jackson did not seem concerned that IE and Navigator were both free, but this fact must impact the power of evidence about consumer preferences.

2. *Postintegration Demand*

Postintegration consumer demand can potentially tell a court a great deal about the merits of an integration. This factor must be handled with care, however. If the monopolist is acting to tilt the playing field in its direction in some way, and demand for the stand-alone is reduced, it will be difficult to know if this reduction in demand is being caused by the integrated product's relative efficiency.

One useful way to measure postintegration demand is through what Professors Lopatka and Page call the "experimental test."[297] It requires that consumers be given a choice between the stand-alone and the integrated products. If consumers continue to choose the stand-alone, it is clear that the integration is not necessarily more efficient. Professors Lopatka and Page object to this test because it requires the monopolist to offer both the integration and the stand-alone, forcing the firm to offer a product that it might believe is inferior.[298] With the marginal cost of producing the stand-alone at near zero, however, offering both products should not be a burden for the monopolist. To the extent that it is burdensome, the burden is outweighed by the protection this strategy provides consumers.

The main drawback of the experimental test is that the monopolist may resort to predatory pricing to push the integration.[299] If consumers stop purchasing the stand-alone, the court will not know whether consumers changed their preferences because the integration is more efficient or because the stand-alone has been unfairly priced out of the market. Thus, in cases in which competing stand-alones have already been driven from the market, the experimental test will not be of much use.

In some situations, postintegration demand can be measured without the experimental test. This occurs when there are stand-alones produced by competitors that continue to sell after the integration. The continued existence of these stand-alones should be evidence enough that the integration is not significantly more efficient. The Microsoft situation is a good example. The fact that Netscape continues to have a share of the market after the integration of Windows and IE must mean that the Windows-IE combination is not sufficiently more efficient than a stand-alone to drive the stand-alone from the market.[300] Consequently, consumers continue to see browsers and operating systems as two separate products. The fact that Netscape continues to exist and sell its browser has received limited attention in both

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297. Lopatka & Page, *supra* note 194, at 205-06.
298. *Id.*
299. *Id.* at 206-07.
300. As of December, 1999, IE's share of total browser usage was 79.4%. Fisher & Rubinfeld, *supra* note 48, at 66. Thus, while Netscape certainly suffered a huge loss of usage share, it continued to survive.

the case and postcase commentary, but it is convincing evidence that the combination of Windows and IE is an illegal tie-in.

B.   The Manufacturers' Point of View

There are two elements to consider regarding the manufacturers' point of view: the actions of other manufacturers in the market, and the actions of the defendant itself.

1.   Other Manufacturers

In *Jerrold Electronics*, Judge Van Dusen noted that Jerrold's competitors offered individual antenna components as well as complete systems, and in *Data General*, Judge Orrick observed that competing manufacturers sold memory boards separately. This type of information is useful in determining whether a bundle is one product or two. Manufacturers tend to have a very good understanding of their markets. If they continue to offer both stand-alones and integrations, this strongly indicates that they believe that the value of consumer choice outweighs the increased efficiency of the bundle.

There are, however, two limits to the usefulness of this inquiry. First, in some situations there are no competitors in a position to offer both the stand-alones and an integration. This was the situation in the Microsoft cases, for example. No other major companies produce both operating systems and web browsers, so the actions of competing companies are not of much use to the analysis.[301] Second, manufacturers with market power may have different reasons for bundling than manufacturers without market power. A small manufacturer would have no hope of gaining supracompetitive profits through bundling and therefore would only bundle products to achieve some procompetitive result, such as economies of scale. A manufacturer with market power, however, can gain supracompetitive profits through bundling. The fact that all manufacturers in a market bundle products does not necessarily mean that a manufacturer with market power is not acting anticompetitively by producing the same type of bundle.[302]

2.   The Defendant's Point of View: Intent Analysis

Another way to address the manufacturers' point of view is by analyzing the monopolist's intent in integrating the two products. If a court can determine that the main reason a monopolist bundled two products was to

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301.   An exception to this conclusion might arise if a competing company that produced only the tied product approached the monopolist with an offer to create an integration of the tied and tying products. For example, had Netscape gone to Microsoft before Microsoft developed Internet Explorer and proposed integrating Windows and Navigator, this would be convincing evidence that Netscape viewed the integration of the operating system and the web browser as one product.

302.   *See* Rubinfeld, *supra* note 55, at 872.

dominate the market in the tied product, rather than to produce a more effi-
cient good, this is strong evidence that two separate markets exist and that
the integration of the two items is artificial. The logic is that if the manu-
facturer itself does not expect any efficiencies from the integration, the
bundle is probably anticompetitive. Due to lack of evidence, the intent
analysis may not always be possible. However, in cases where it is possi-
ble, it will give the court important insight into the purpose of the integra-
tion.

Intent analysis would have been useful in *Microsoft III*. Evidence in-
dicated that Microsoft wanted to integrate Windows and IE to dominate the
browser market.[303] This implied that Microsoft's leaders saw browsers as a
market separate from operating systems. The evidence also suggested that
Microsoft was more concerned with bundling the two products in order to
leverage Windows' monopoly than it was with creating a product superior
to the stand-alones.[304]

Professors Lopatka and Page counsel against the use of an intent
analysis in separate-product cases because they believe that determining
this type of intent strains the institutional competence of courts.[305] This ar-
gument is not persuasive. Courts are called upon to determine the intent of
actors in a variety of settings, often with less evidence than was available
in a case like *Microsoft III*. In fact, intent analysis plays an important role
in antitrust. The Supreme Court has ruled that one element of the test for
attempted monopolization under Section 2 of the Sherman Act is "a
specific intent to monopolize."[306] There is little reason to believe that a test
sanctioned by the Supreme Court in one antitrust arena cannot be used in
another.

Still, the intent analysis does have an important limitation. There may
be instances, and the Windows-IE bundle may be one example, in which
the monopolist intended to use its market power in one product to domi-
nate another market through an integration, but the integration nonetheless
turned out to be more efficient than the stand-alones. The problem with the
intent test is that it tells the court nothing about the merits of the integration
itself. There is no reason why an integration instituted for anticompetitive
reasons cannot have procompetitive results. If the ultimate goal of antitrust
laws is to benefit consumers, intent analysis can sometimes miss the point.

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303.   United States v. Microsoft Corp., 87 F. Supp. 2d 30, 45 (D.D.C. 2000).
304.   United States v. Microsoft Corp., 84 F. Supp. 2d 9, 130-31 (D.D.C. 1999).
305.   Lopatka & Page, *supra* note 194, at 204. Professors Lopatka and Page argue that internal
corporate memos can be deceiving because managers may be speaking only for themselves rather than
the company as a whole or may be exaggerating their claims. *Id.* at 205. This, however, should not be
troubling. Judges are aware of the limitations of evidence and are trained to evaluate the accuracy of
statements. Contrary to Lopatka and Page's assertions, the facts of the Microsoft case lend themselves
to an intent analysis. This analysis may not be sufficient on its own to resolve the tying question, but it
should be one step in the resolution.
306.   Spectrum Sports, Inc. v. McQuillan, 506 U.S. 447, 456 (1993).

This limitation should not take the intent analysis off the table, however. When used as one factor in a larger separate-product test, an intent analysis can provide an important signpost to courts.

C.   The Functionality of the Integration

While equal in importance to the previous two elements, the functionality of the integration does not share equal ease of proof. Generally, it will not be overwhelmingly difficult for a court to evaluate consumers' and manufacturers' perspectives. It will likely be significantly more difficult for a court to determine whether an integration represents a true technological advance. As with other technical questions, both sides would present experts, and in the end, the court would have to make a decision that did not fall within its institutional competence. The difficulty of addressing this factor does not mean it should be ignored. It does mean, however, that this factor cannot carry as much weight as the other two.

In the end, the preferred test should focus on how consumers and the industry itself view the products. It should be a five-part test, asking: (1) Was there separate demand for the integrated items at the time of the integration? (2) Does there continue to be separate demand for the stand-alone items after the integration? (3) How do other manufacturers view the product market? (4) What was the intent of the monopolist in combining the products? and (5) Is there substantial evidence that the integration is a genuine technological advance?

If both the consumer and manufacturer elements suggest that the integration is two separate products, only overwhelming evidence that the integration is a genuine technological advance should lead the court to find that it is one product and that there has been no illegal tie-in. This last step is a protective measure; it will ensure that in the rare situation in which neither consumers nor manufacturers believe an integration is more efficient, but evidence from the product itself shows that it is, innovation will not be quashed. Evidence about the functionality of the product can also serve as a tie-breaker if the other four elements point in different directions.

VIII
APPLYING THE TEST TO *MICROSOFT*

One useful way in which to evaluate this test is to apply it to the recent Microsoft litigation. The point of this exercise is not to present a full-blown analysis of this very complicated case, but rather to provide a quick look at how a court might utilize the five-factor analysis suggested above.

First, a court would determine whether there was separate consumer demand for the two products at the time of the integration. To do so, it would determine which consumers are of concern here. Operating systems

are mostly purchased by OEMs and loaded onto computers to be sold to end-users. This is also generally true of web browsers, although some end-users will "purchase" browsers themselves by downloading them off the Internet. Are OEMs the consumers with whom we should be concerned? Their view might be important because they are generally knowledgeable about the product market. For one, they are more likely than end-users to understand the technical advantages of particular software configurations. In addition, unlike end-users, OEMs pay for the operating systems and browsers separately and therefore are probably more invested in understanding the product market than end-users.

The opinions of end-users are also important, however. Although they likely tend to have less technical knowledge, end-users actually use the products and thus probably know which ones function best. The fact that end-users do not pay directly for these products must be kept in mind, as it may lessen the value of their opinion. Conversely, the fact that they do not pay may be an advantage; if an end-user chooses Netscape over IE, the court knows that price had nothing to do with it, and that the end-user clearly views operating systems and browsers as distinct products.

Overall, while there is no harm in investigating how the OEMs view the products, it is the end-users' opinions that should be determinative. Their product choices are more likely to be based on design preference than on price or on special relationships with manufacturers. This makes end-users' opinions about the value of consumer choice versus product integration more accurate than those of OEMs.

Before moving on, it is important to consider how sophisticated the end-users are in the product market. Most end-users probably do not understand the finer points of software engineering and are not the best source to turn to for technical product evaluation. This raises the possibility that this consumer group might continue to generate separate demand for a product even when a new, integrated product is far more efficient. This is probably not the case here, however. Although most end-users do not know a great deal about computer code, the merits of browsers generally can be understood by the average home user, and that is what matters.

Having decided which consumers matter and why, the separate-demand question is easily answered here. There was clearly separate demand for browsers and operating systems at the time of the Windows and IE integration.

The second step would be to look at postintegration consumer demand. Surveys would generally be a good way to accomplish this, but they are not necessary here. An experimental test is also unnecessary. As discussed above, we are most interested in end-users, not OEMs. It is clear from Navigator's continued existence that end-users still view operating systems and browsers as separate products. Some share of the market still

buys Windows, ignores the IE icon on the desktop, and installs Navigator. This is perhaps the most probative piece of evidence that browsers and operating systems exist in different markets.

The third step would be to analyze the actions of other manufacturers. Unfortunately, there were no other major companies that were in a position to create the type of integration Microsoft developed at the time it combined Windows and IE, so this element is not very useful. Clearly Netscape believed that there were separate markets for operating systems and browsers, but this opinion can have little or no impact on the analysis.

The intent test, however, should substantially impact the analysis. There is a great deal of evidence that Microsoft intended to use the integration of IE and Windows to force Netscape out of the browser market, rather than to give consumers a better product.[307] This is clear from the fact that Microsoft bundled the two programs contractually before integrating their code.[308] Before integrating the two programs, Microsoft forced OEMs who wanted to license Windows to also license IE.[309] Clearly Microsoft could not claim any technical advantage at that point. Commingling the code was the next step in the process. When viewed as an extension of the contractual bundle, the purpose of the integration becomes clear. The fact that Microsoft viewed the bundle not as an innovation but as a business tactic demonstrates that it believed that the integration did not increase consumer welfare and that there were two separate markets for browsers and operating systems. The evidence showed that Microsoft's main goal was to leverage the Windows monopoly, not to create a product that was superior to the stand-alones.[310]

The final element of the test would be to determine whether the Windows-IE integration is a genuine technological advance. If the bundle represented a technological breakthrough, disallowing it would be counter to the spirit of the antitrust laws. Under the test there would have to be substantial evidence that this bundle is a breakthrough, and that evidence is lacking here. Nowhere in the record does any party suggest that the Windows-IE bundle has changed the software landscape, or even that the products could not operate separately. Microsoft suggests that there are efficiencies achieved by the bundle, but even if we assume they exist, they are not described as significant.[311]

This brief application of the five-part test proposed above thus shows that in the minds of the market participants, the efficiencies of the bundle

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307.	United States v. Microsoft Corp., 84 F. Supp. 2d 9, 130-31 (D.D.C 1999).

308.	United States v. Microsoft Corp., 87 F. Supp. 2d 30, 39 (D.D.C. 2000); United States v. Microsoft Corp., 84 F. Supp. 2d at 124.

309.	United States v. Microsoft Corp., 84 F. Supp. 2d at 138-39.

310.	United States v. Microsoft Corp., 87 F. Supp. 2d at 40; United States v. Microsoft Corp., 84 F. Supp. 2d at 130-31.

311.	United States v. Microsoft Corp., 87 F. Supp. 2d at 39-40.

do not outweigh the costs caused by loss of product choice in the browser market. Thus, browsers and operating systems are distinct products, and Microsoft is liable for a tying violation. This is of course the same conclusion reached by Judge Jackson, but this test provides a firmer, more detailed analysis than that provided by the Judge's cursory investigation. The use of this test also reveals that, in terms of the tying charge, under current law *Microsoft* is not a particularly difficult case; all the factors point in the same direction. In more difficult cases, the five-part test should offer a higher degree of accuracy than either of the one-factor tests currently in use.

CONCLUSION

The separate-product question is a challenging one. This analysis has shown that, between the time of *Jerrold Electronics* and Judge Jackson's opinion in *Microsoft III*, courts narrowed the separate-product proxy test to the point where it no longer serves as a useful analytical tool. This analysis has also shown that, based on precedent which includes *Jefferson Parish* itself, it is possible to design a better proxy test than the one applied by Judge Jackson in *Microsoft III*. While the test proposed here may reduce some of the difficulties involved, it cannot remove them entirely. Still, this test could provide courts with a set of factors that reflect the spirit of the antitrust laws while making it more likely that a court will reach the right result in a reasoned and persuasive manner. This is particularly important in these times in which great technological advances make the separate-product question more difficult and its solution more critical. Fresh tying issues are already being raised by Microsoft's newest operating system, Windows XP,[312] reminding us that a reliable tying rule for the technology setting is long overdue.

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312. *See* Joseph Menn, *Microsoft, Officials to Seek Mediator*, L.A. TIMES, Oct. 12, 2001, at C3; Editorial, *Slapping Microsoft's Wrist*, BUS. WK., Nov. 19, 2001, at 152.