

# Policy Analysis

## MICROSOFT AND THE BROWSER WARS

### *Fit to Be Tied*

by Robert A. Levy

#### Executive Summary

Do our antitrust laws still make sense--if they ever did? That is the question we should be debating while the courts decide whether Microsoft's browser is integrated with its operating system. At the very least, antitrust law should be modified so that "tying arrangements" are no longer prohibited.

Today's software industry, where innovation proceeds at an astonishing pace, stands in stark contrast to the sterile marketplace that would emerge if government were to butcher the incentives that lead to new and improved products.

In real markets, the impetus for growth comes from vigorous exertions by producers struggling to establish market power. That power is invariably short-lived--unless government-created barriers, arising out of special-interest legislation or misguided regulations, prevent competitors from entering the market. The obvious remedy is for government to stop creating those barriers.

Despite intense competition in the information technology market, the U.S. Department of Justice persists in its crusade to force Microsoft to offer two versions of its Windows operating system--one with its Internet browser, one without--even if both are identically priced. That option, according to DOJ, would settle the current dispute.

Yet if Microsoft can dispel DOJ's concerns by offering an inferior product, at no reduction in price, which consumers will likely reject, then the government's position is quite simply unfathomable. In the end, consumers and taxpayers will foot the bill for this legal fiasco. More important, government micromanagement will chill innovation.

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## **Introduction**

America's century-old antitrust law, whatever its original rationale,<sup>1</sup> is increasingly irrelevant to our modern global information technology market. That, at least, is the rallying cry of the "techno-optimists," who claim that efforts by government to promote competition by restraining high-tech firms that acquire market power will only stifle competition. The pace of innovation is so rapid, they add, that a firm like Microsoft will simply lose its customers if it does not offer the very best products. Some analysts disagree. They concede that dynamic technology makes it tough to sustain market power. Still, consumers will want compatible equipment, which will lead them to buy whatever product other consumers are using, even if the product is inferior. Consequently, insist those analysts, there is a continuing need for aggressive antitrust enforcement in a high-tech world.<sup>2</sup>

Then there is Sen. Orrin Hatch (R-Utah), prominent among a contingent of politicians from both parties who have rediscovered the virtues of antitrust law as applied to information technology. Only two years ago, Republicans attacked the Clinton administration for trying to hobble Microsoft, the symbol of American dynamism. But now Hatch--whose home state is the headquarters of Microsoft rival, Novell, Inc.--assails the company for attempting to dominate the Internet. Explaining his turnabout, Hatch observes that "we're witnessing a historic technological revolution. Congress has to strengthen the antitrust laws from time to time, and this could be one of those times."<sup>3</sup>

The range of views extends, then, from the optimists who think that ever-changing technology obviates the need for antitrust, to middle-of-the-roaders who think that antitrust has always been and still is an important weapon in the government's arsenal, to legislative activists like Hatch who think that the new technology is yet another reason for strengthening the government's hand. That leaves just one position, the thesis of this paper: Antitrust laws were both wrong and counterproductive when they were first enacted in the late 1800s; they remain so today. As Federal Reserve Board chairman Alan Greenspan concluded more than 30 years ago, "The entire structure of antitrust statutes in this country is a jumble of economic irrationality and ignorance."<sup>4</sup>

Telecommunications and information technology has indeed brought about quantum changes in many fields, but new technology has neither extinguished nor revitalized the rationale for antitrust. That rationale was always illusory. To be sure, there are monopolies that government ought to control--the very monopolies government created in the first instance. It is government, and only government, that confers and perpetuates monopoly power by erecting and maintaining barriers to market entry, ordinarily in response to political pressures from special interests. We can hardly justify government imposition of antitrust laws on private parties when the underlying problem is government itself.

To explore those issues in a contemporary context, let us begin by tracing the latest dispute between Microsoft and the Department of Justice--its origin, its current status, and the arguments advanced by both sides. That dispute revolves around Microsoft's "tie-in" of its browser (Internet Explorer) with its operating system (Windows 95)--a tie-in that poses no greater threat to competition, in my view, than the packaging of tires with automobiles, cream with coffee, laces with shoes, even left gloves with right gloves. We will then examine the issue of market power, the law and economics of tying arrangements, and the theory of "network effects." That theory, a fresh addition to the arsenal of antitrust proponents, holds that consumers can be duped into buying mediocre or substandard products whenever those products already have a large base of users.

As we shall see, tying arrangements are often pro-competitive; network effects are at worst a transitory phenomenon; and market power, when properly evaluated, is an indispensable stimulus in extending what Senator Hatch has called our "historic technological revolution."

### **Department of Justice v. Microsoft**

Seven years ago, during the Bush administration, the Federal Trade Commission began its investigation of Microsoft's ostensible market power in the sale of operating systems for personal computers. That investigation was later co-opted by DOJ and pursued vigorously by Clinton appointee Anne Bingaman, then head of the Antitrust Division.<sup>5</sup> After an extensive inquiry, DOJ uncovered one practice it deemed worthy of challenge: Microsoft licensed its Windows software for multiyear periods on a "per processor" basis.

To help prevent software piracy, Microsoft insisted that computer makers pay a royalty to Microsoft for each computer they shipped, whether or not Windows was installed as the operating system. DOJ was not persuaded by Microsoft's contention that physical machines can more easily and reliably be counted than can intangible copies of computer software. Nor was DOJ convinced that customers might actually favor long-term contracts to guard against unpredictable price increases and other uncertainties. Instead, the controversy centered on this loaded and, ultimately, unanswerable question: Did Microsoft exploit its dominant market position by "insisting" on "unfair" licensing arrangements?

Never mind that Windows became the industry standard because PC makers thought it was a "superior" product--an assessment that surely took into account the entire array of product features, not only technical features but also ease of use, quality, price, service, and contract terms. Never mind that consumers shared that view. Never mind that there were no barriers to entry that would prevent a competitor from ousting Windows as the market leader. Those considerations, apparently, did not impress DOJ's

Antitrust Division.

Quite to the contrary, DOJ threatened costly and protracted litigation, which Microsoft opted to avoid, not surprisingly, by signing a consent decree in 1994. Effective in 1995, the decree prohibited Microsoft from using "per processor" licenses, shortened the initial term of each license from two years to one, and implemented other technical changes of presumably lesser significance--one of which, however, would become the subject of DOJ's current crusade.

Thus, after a five-year investigation costing millions of dollars, the Antitrust Division found little that could be characterized as anti-competitive. But that did not stop the government. Not only did DOJ subsequently file an antitrust suit that prompted Microsoft to cancel its planned acquisition of Intuit, manufacturer of a popular personal finance program, but the department also threatened to halt the release of Windows 95, Microsoft's upgraded operating system. Bingaman was reportedly concerned about the link between Windows 95 and the Microsoft Network, an Internet service provider intended to compete against America Online, CompuServe, and others. Whenever a user started a Windows 95 system, an MSN icon appeared; then one click of the mouse connected the user with the MSN service. That packaging, according to DOJ, gave MSN an unsporting edge over its online rivals.

As it happens, a few more mouse clicks enabled any Windows 95 user to bring up an AOL or CompuServe icon, which would appear automatically thereafter, at the same time as the MSN icon. Evidently content with its discovery that MSN's edge could be thus neutralized, the Antitrust Division abandoned its threat to block Windows 95. In retrospect, however, Bingaman's concern was just plain silly. MSN now loses an estimated \$200 million annually providing service to fewer than 3 million customers. AOL, by contrast, has 9 million subscribers and will add nearly 3 million more with its acquisition of CompuServe's consumer business.<sup>6</sup> Although rivals whined that bundling MSN software with Windows 95 would swamp competition, Microsoft's feared clout has not materialized. Whatever competitive advantage Microsoft may enjoy in the sale of operating systems, the company has been singularly ineffectual in leveraging that advantage. Customers refuse to buy a product they do not like.

That lesson, however, was completely lost on DOJ operatives. The Antitrust Division, now headed by Joel Klein, has raised the bundling issue yet again, this time objecting that Windows 95 and Internet Explorer are two separate products, not one integrated product. On that distinction turns a great deal; the 1995 consent decree that Microsoft signed forbids any tie-in between Windows 95 and a separate software product. Is the Internet Explorer a "separate" product, as Klein contends? Or are the two products "integrated," as Microsoft contends? (The consent decree provides expressly that the prohibition on tying separate software products "shall not be construed to prohibit Microsoft from developing integrated software products.") Because DOJ denies that Windows

95 and Internet Explorer are "integrated," Klein proposed to fine the company \$1 million a day until the two products are unbundled.

In its defense, Microsoft maintains that Windows 95 cannot perform several crucial tasks--like word processing, imaging, and drawing--if all Explorer files are deleted.<sup>7</sup> Moreover, states the company, the control panel, which governs such devices as modems and printers, will not work without Explorer, nor will "thousands" of other products developed by other companies for Windows machines. DOJ rejoins that Microsoft did not have to make Windows dependent on the browser and could easily have allowed computer manufacturers to "uninstall" Explorer without compromising the operating system.<sup>8</sup>

What then did the consent decree mean by explicitly sanctioning "integrated software products"? That question will probably be resolved in court. For now, federal judge Thomas Penfield Jackson has granted DOJ's request for a preliminary injunction that directs Microsoft to offer PC manufacturers the option of installing Windows 95 without Internet Explorer. While the judge declined to hold the company in contempt or impose a fine, he concluded, "The probability that Microsoft will not only continue to reinforce its operating system monopoly by its licensing practices, but might also acquire yet another monopoly in the Internet browser market, is simply too great to tolerate indefinitely until the issue is finally resolved."<sup>9</sup> Jackson appointed a "special master" to evaluate the legal and factual questions, then report back to the court. The judge will then consider whether a permanent injunction should be issued.

In its initial response to the preliminary injunction, Microsoft offered PC makers two versions of Windows 95 without the browser. One version excluded all of the browser files; as a result, it did not work. A second version dated back to 1995, before Microsoft bundled Internet Explorer with Windows; it worked but did not include more recent enhancements. Predictably, DOJ was not happy with the company's response. Accusing Microsoft of a "naked attempt to defeat the purpose of the court's order," DOJ asked once again for a contempt citation and a fine of \$1 million a day.<sup>10</sup>

Microsoft replied that its offer of a dysfunctional or an obsolete system complied with the letter of the judge's order. According to the company, "Microsoft has done precisely what the DOJ requested and what the court ordered [but] now that the DOJ understands the implications of its prior position, it wants to play by a new set of rules."<sup>11</sup> True enough, while hearings proceeded on the second contempt petition, DOJ expressed a new willingness to live with removal of Explorer's icon from the Windows desktop--an alternative that leaves most of the Explorer program on the system. And Judge Jackson signaled that he, too, would be amenable to that solution--having discovered on his own that a court employee was able to "uninstall" the browser in only 90 seconds.<sup>12</sup>

Consequently, to avoid a possible contempt citation, Microsoft agreed to comply

with the preliminary injunction by offering computer makers two new options: (1) use the Windows 95 "uninstall" function to remove the Internet Explorer icon but leave related software in the operating system, thereby making Explorer harder--but not impossible--to access, or (2) remove both the icon and most of the related software, thereby making Explorer inaccessible to the ordinary user, without impairing other features of the operating system.<sup>13</sup> Amazingly, neither the judge nor DOJ acknowledged what should have been obvious from the judge's own "uninstall" experiment: The immense power of the federal government surely need not be invoked to ameliorate a "problem" that virtually any consumer can resolve in 90 seconds.

From the skirmishing over the preliminary injunction, it seems that Microsoft intends to play political and legal hardball. The company might have avoided much of the confusion over interpretation of the injunction by seeking clarification from the court. But Microsoft decided, apparently, that it had no interest in or responsibility for coaching the government on how to inhibit its business practices--and certainly no desire to have bureaucrats design its software. One spokesman acknowledged that the company's hard-line approach might be risky, might be pilloried by the press, and might be lambasted by some denizens of Silicon Valley. But Microsoft decisionmakers evidently believe that the long-term health of the software industry justifies their aggressive stance.<sup>14</sup> Or they might just believe that DOJ's bullying attitude and tactics need to be resisted as "un-American."

Thus, Microsoft has appealed the preliminary injunction, contending not only that the judge engaged in extra-judicial fact-finding but also that he treated the case as an antitrust infraction rather than a contempt petition for violating the 1995 consent decree. According to Microsoft, by expanding the case beyond the scope of the government's complaint, Judge Jackson denied the company adequate notice and an opportunity to defend itself.<sup>15</sup>

In addition, Microsoft has objected to the appointment of Harvard University law professor Lawrence Lessig as special master, claiming that his mandate is too broad, that Microsoft should have been allowed to review the qualifications of candidates for the job, and that Lessig is biased in favor of a rival company, Netscape.<sup>16</sup> Judge Jackson dismissed those objections as "trivial" and "defamatory," and the company appealed that decision as well.<sup>17</sup> Meanwhile, Lessig will not be allowed to continue his work until the appellate court can examine his role more carefully.<sup>18</sup>

Microsoft's real concern, however, may be with Jackson's extension of the injunction to apply to "any successor version" of Windows 95. Microsoft insists that its new operating system, Windows 98, scheduled for release by the middle of 1998, will have a browser that is totally integrated--that is, the browser and the operating system will be technically and functionally interdependent. Some industry observers think the company will have to alter its plans. Others argue--more persuasively in my view--that the new system will qualify under the exception in the decree for "integrated software products."

A former DOJ official put it this way: "The prohibition is against tying, not against selling a different operating system."<sup>19</sup>

Still, satisfying the consent decree is one thing, complying with the antitrust laws quite another. Klein has warned that DOJ intends "an active and continuing investigation into several Microsoft business practices," including the company's stake in new video technology and its recent investment in Apple Computer.<sup>20</sup> The government may also challenge Microsoft's contracts with Internet service providers if they give preferential treatment to Internet Explorer, and DOJ lawyers are "poring over hundreds of contracts Microsoft struck in the past two years with major providers of information or entertainment on the Internet."<sup>21</sup>

Why the frenzy of antitrust activity after three years of relative peace? Reporters for the Wall Street Journal speculate that Microsoft, "by its effort to defer compliance and its aggressive--some say arrogant--posturing in the case, has committed what is widely seen as a colossal public relations blunder, angering . . . the antitrust regulators."<sup>22</sup> If that is the explanation for DOJ's fulminations, the department is doubtless more of a menace than Microsoft. When public policy is rooted in the petulance of government officials, we are all at risk. Microsoft has an obligation to its shareholders and an absolute right under the law to defend itself vigorously, no matter how testy the reaction of DOJ attorneys. How refreshing, in a world of corporate capitulation to government threats, that the company, so far, has exhibited some backbone.

Those are some of the larger, longer range issues-- substantive, procedural, and political. Before discussing them in greater detail, however, it may be well to explain a few essentials in the current dispute about software. Here then is a bare-bones framework for grasping the technical questions that are likely to arise as the Microsoft litigation winds its way through the legal system.<sup>23</sup>

The term "software" includes applications programs (like games and word processors) and systems programs (like Windows and Java), which control the computer's hardware and provide a platform on which to run the applications.<sup>24</sup> Each type of program includes "enabling files," which support both systems and applications tasks. Operating systems like Windows also come with mini-applications, called "applets," which provide basic functionality without requiring the installation of full-blown applications. For instance, calculators and simple text editors are applets; they are neither wholly integrated nor sold as separate applications.

Internet Explorer is more than a bunch of enabling files and more than an applet. It is an intricate, elaborately embellished Web browser, capable of standing alone; in fact, it was originally sold by Microsoft as a full-featured, independent application. Nevertheless, contends Microsoft, similar products, also tied to Windows, have survived government scrutiny. MSN, for example, is a full-featured, independent application, yet

DOJ ultimately allowed it to be packaged with Windows as a joint product.

Apparently, DOJ's new rule--unsupported by economic analysis--is that products initially distributed in separate boxes must be permanently distributed in separate boxes. It is as if air conditioning, once sold as an option to be installed later on cars, must be forever so sold. If that indeed is the current doctrine, observes legal scholar Peter Huber, it would force Microsoft and other companies to upgrade their products infrequently, by whole rewrites, rather than more often by add-on improvements. Furthermore, notes Huber,

Almost every new feature added [to Windows] was sold by some other vendor in a separate box first. Modem drivers (Hayes' Smartcom, \$155 in 1988); memory management (a Quarterdeck product, \$79 in 1991); CD-ROM drivers (Corel's SCSI, \$99 in 1993); drive compression; fax utilities; disk defragmenters. . . . All of these, and countless other now-standard features, once came in separate packages. Most of them originally cost more than the whole of Windows costs today.<sup>25</sup>

Microsoft also argues that DOJ knew of plans to package Internet Explorer and Windows even before Microsoft signed the 1995 decree. Now two years later, according to the company, the government inexplicably contends that Microsoft will be violating the decree merely by doing precisely what it told DOJ it was going to do.

For its part, DOJ denies that it was aware of Microsoft's intent to integrate a browser with its operating system. As proof, the department cites intracompany e-mail from a Microsoft executive stating in June 1994 that the company did not then plan to include Mosaic, a browser that Microsoft had licensed, with Windows 95. Another e-mail message described a browser as "stuff you need to obtain from 3d parties."<sup>26</sup> A third message, from a Microsoft senior vice president in December 1996, suggested that executives were still debating at that time whether to combine the two products.<sup>27</sup>

The company counters that DOJ's own prior statements reflect its understanding of what the parties meant by "integrated." During the debate over the 1995 consent decree, a graphics company complained about Microsoft's plan to incorporate 3-D technology into Windows. DOJ rejected the complaint with the explanation that "incorporating new features into the operating system is what Microsoft has done for 14 years." That statement, says the company, indicates that DOJ condoned the same behavior it is now asking the court to halt.<sup>28</sup>

More important, insists Microsoft, two products can be "integrated" even if they are not technically interdependent. The products need not function only in combination, nor be marketed only as a package. To be characterized as "integrated," they just need to be combined in a manner that creates synergism--a whole that is better than the sum of its



parts. According to Microsoft, that characterization applies no less to the current product package than it did in the 1980s when operating systems first included software that allowed interaction with hard disk drives, or later when operating systems began supporting local area networks.

Today, fax modems and electronic mail--once available only as separate products--are essential ingredients of an operating system. Any system without those functions would be incomplete. And in an environment where the shibboleth is "Internet access," browser software is no less essential. That is why IBM and Sun Microsystems, like Microsoft, have packaged browsers with their operating systems. That is also why IBM, Hewlett-Packard, Compaq, and other computer manufacturers have bundled both Internet Explorer and its principal competitor, Netscape Navigator, with Windows 95. Indeed, to assure Internet users maximum flexibility, Netscape has itself tied a wide range of other software products--for example, e-mail, security systems, and graphics--to its browser. Such decisions, argues Microsoft with unassailable logic, are better left to computer companies than to government lawyers.

### **Microsoft's Market Power**

Whether Microsoft's browser is integrated with or separate from its operating system is perhaps more easily resolved by semanticists than economists. But that question is peripheral to the larger battle. Over the longer term, constraints on the company's behavior will arise under established antitrust law, not the consent decree. That was the implication of Judge Jackson's December 1997 opinion. He did not limit his inquiry to the functional seam between the browser and the operating system, as Microsoft had asked. Instead, he inquired whether the browser was marketed separately and whether it had separate consumer demand. Those are antitrust criteria.<sup>29</sup> Thus, the foundational questions are, at one level, does Microsoft exercise its market power in an anti-competitive manner and, more broadly, do the antitrust laws, with their prohibition of tying arrangements, make any sense?

A principal objective of those laws is to foreclose arrangements that "restrain" trade and harm consumers. But trade is not restrained just because a consumer agrees to pay a price for Windows that exceeds some lower price that he would have preferred. Nor is aggregate trade diminished when Netscape does less business and Microsoft does more. Moreover, there is no harm when a computer maker packages Internet Explorer with Windows in response to consumer demand. In fact, few manufacturers could risk offering a PC without Internet Explorer. If they did, rival manufacturers might be tempted to entice customers by bundling Explorer free of charge.<sup>30</sup> That is probably why Micron Technologies announced that it would not remove the Microsoft browser even if a customer wanted it removed.<sup>31</sup>

Some analysts predict that DOJ's temporary success in court will embolden PC

makers to demand compensation from Microsoft in return for installing its browser. In all likelihood, those analysts are wrong. Indeed, major manufacturers--including Compaq, Hewlett-Packard, Dell, and Packard Bell NEC--have already indicated that they will continue installing Internet Explorer. "PC makers don't appear interested in having a choice," reports the Wall Street Journal.<sup>32</sup>

Nonetheless, Attorney General Janet Reno declared that "[f]orcing PC manufacturers to take one Microsoft product as a condition of buying a monopoly product like Windows 95 is not only a violation of the court order, it's plain wrong."<sup>33</sup> The attorney general does not tell us how she has determined that Windows is a monopoly product--about which more in a moment--or why the company's behavior is plain wrong, or precisely who has suffered as a result. Surely consumers are no worse off. They are getting browser software--often the Netscape Navigator as well as Internet Explorer--at no extra cost.

And because high-tech giants like Microsoft and Intel have aggressively introduced new and better products, consumers can now purchase for about \$2,800 a PC with a Pentium II microprocessor and Windows 95 software that can carry out 600 million instructions per second. Ten years ago, by comparison, mainframe computers were 1/6th as fast and cost more than \$1 million per installation. Not even the supercomputers of the early 1980s, which cost upwards of \$10 million, could match the power of a Pentium II today.<sup>34</sup>

Maybe Attorney General Reno was concerned about the impact on Microsoft's competitors when she bemoaned the company's "plain wrong" conduct. If so, she conflates preserving competition, the asserted rationale for our antitrust laws, with protecting competitors, which all too frequently entails companies attempting to procure through the political process what they have been unable to achieve in the marketplace.

Microsoft chief Bill Gates poses this analogous question: Would DOJ require the New York Times to eliminate its business section in order to protect the Wall Street Journal?<sup>35</sup> Why should the answer to that question be any different if the Times were to sell its business section separately, or if the Times sold 90 percent of the newspapers in New York? Our antitrust laws were not intended to prop up competitors but "to ensure that consumers benefit from the widespread availability of goods and services at fair prices."<sup>36</sup>

Even if competitor protection were a legitimate objective of the law, there is no justification for the government's intervention in the browser wars. Yes, Netscape's share of the market has dropped from more than 90 percent<sup>37</sup> to roughly 60 percent<sup>38</sup>; but the company's browser is still the market leader, and its 1997 sales--in the face of a massive marketing effort by Microsoft--are expected to increase sharply over 1996, despite large fourth-quarter losses.<sup>39</sup> Rather than badgering Microsoft, DOJ ought to be thanking the

company for challenging Netscape's "near monopoly" in the sale of browsers; and consumers should be grateful to Microsoft for provoking Netscape to reduce its price.<sup>40</sup>

It is not just in the browser market that Microsoft is battling. The company's so-called monopoly in the sale of operating systems has come under intense pressure as well. Rivals have joined forces in an attempt to oust Windows as the industry standard. IBM, Netscape, Novell, Oracle, and Sun Microsystems, in a collaborative venture that somehow has eluded DOJ scrutiny, are reported to be "cooperating"--but apparently not "conspiring"--in three new areas of technology: Java software, developed by Sun, that can be transported from computer to computer without major incompatibilities; a low-cost network computer<sup>41</sup> pushed by Oracle; and a programming technique known as Corba for building Lego-like blocks of software.<sup>42</sup>

Perhaps most intriguing, hardware giant Intel, with more than 85 percent of the market for PC microchips, is developing a low-cost alternative to personal computers that will use operating systems from IBM, Novell, Oracle, and others, in addition to Microsoft. And Microsoft, underscoring that its interests are not always aligned with those of Intel, has proposed several PC alternatives, some of which do not require the Intel chip.<sup>43</sup> One Washington Post reporter sizes up the situation like this:

[T]he high-technology world is on the brink of changes as profound as when the personal computer first emerged. . . . [T]he era of a single, dominant device is fading. . . . A smorgasbord of new devices--ranging from inexpensive hand-held machines to "network computers" to digital television--is appearing on the horizon. And Intel and Microsoft appear to be headed in different directions in their efforts to exploit these technologies.<sup>44</sup>

Thus, the two behemoths may find themselves butting heads--countervailing powers of the type that makes short shrift of a would-be industry czar. Microsoft's competitive advantage is likely a fleeting phenomenon. The company may now enjoy a 90 percent share of the operating system market; but entry into that market is unrestricted, and the technology is so dynamic that market dominance is probably not sustainable.

Furthermore, economists differ about what constitutes the "relevant market" for determining Microsoft's share. If the market is construed expansively as, say, "information technology," then Microsoft accounts for only 1 percent of the industry's \$1.1 trillion in revenues. If the boundaries are more narrowly drawn to embrace only "software products," Microsoft has less than a 4 percent share. Indeed, IBM's 1996 software sales of \$13 billion exceeded Microsoft's \$11 billion<sup>45</sup>; 13 companies had 1996 annual revenues of \$1 billion or more<sup>46</sup>; and the top 20 producers (including Microsoft) controlled just 42 percent of the market.<sup>47</sup>

Admittedly, in the context of antitrust law Microsoft's "relevant market" is not so

sweeping as "information technology" or "software products." The Supreme Court has defined the term to cover "products that have reasonable interchangeability for the purposes for which they are produced."<sup>48</sup> Still, if "software products" are confined to those operating systems that are reasonable substitutes for Windows--that is, systems that run hand-held personal computers, portable and desktop PCs, and mainframes--Microsoft's market share is a mere 13 percent.<sup>49</sup>

Only if the relevant market is constricted to PC operating systems can Microsoft be said to dominate. And that definition, too, is somewhat equivocal. Browsers will soon, or may already, replace many of the functions served by operating systems. That appears to be the view held by Netscape, for example, whose general counsel maintains that Microsoft's tying arrangement is anti-competitive "because the browser threatens the operating system."<sup>50</sup>

Microsoft's aggressive quest for browser customers suggests that it shares Netscape's assessment. In any event, the potential for competition between browsers and operating systems reflects the ephemeral nature of market dominance in a high-tech world. Whether broadly or narrowly construed, Microsoft's relevant market requires invention and enterprise; it is an environment in which a single fresh idea can have enormous repercussions.

One such idea, initiated by Netscape, was to give away its browser, thereby spawning a generation of surfers on the World Wide Web. Now it is Microsoft, following Netscape's lead, that is packaging its browser at no additional charge. Not even the Antitrust Division has suggested that Netscape should be able to offer a free browser while Microsoft should not. Instead, Microsoft has been accused not of "predatory pricing"<sup>51</sup> but of denying consumers a choice. DOJ's complaint, in short, is that Microsoft forces consumers to take Internet Explorer--at a price of zero!

Astonishingly, DOJ concedes that Microsoft could fully comply with the consent decree by offering PC manufacturers two versions of Windows 95--one with and one without Internet Explorer--even if both versions were identically priced.<sup>52</sup> Naturally, few if any manufacturers or customers would prefer the stripped system. Yet that option, according to DOJ, would settle the current dispute. It is all quite remarkable; DOJ's stance is unfathomable. Essentially, DOJ is bent on forcing Microsoft to offer PC makers an inferior product. And consumers and taxpayers will foot the bill.

### **The "Problem" of Market Power**

We turn now to a pair of economic questions with implications reaching far beyond the Microsoft case, even as they illuminate the real issues of that case. First, assuming that Microsoft has substantial market power, are there untoward consequences if

that power is exercised? That in turn leads to a second question, discussed in the next section: Do tying arrangements allow a company to leverage its power in a manner that reduces aggregate welfare? Put another way, does the prohibition of tying arrangements increase the availability of goods and services, thus making us, on balance, better off?

Under "perfect competition," products are homogeneous, no single firm has a significant effect on the market, each firm takes the price as given, and each is able to sell all it can produce at that price, but not at a higher price. Any consumer who might have been willing to pay more secures a benefit, or surplus, equal to the difference between the value that he subjectively assigns to the product and the lower price that he actually pays.

When a firm acquires market power by differentiating its product, it becomes a price maker. As such, the firm can select the price it will charge, subject to expanding or contracting sales as prospective purchasers respond to the chosen price. Imperfect information usually prevents the firm from discriminating among its customers. That is, the firm rarely knows enough about consumer demand to be able to charge each customer a price that corresponds to the customer's subjective valuation of the good or service offered. Moreover, a customer granted a lower price might find it profitable to resell the product in competition with the original supplier.

Because the firm is typically unable to discriminate, if it decides to reduce the price of a product, all buyers of that product will be affected--including those who would have paid more. Accordingly, marginal revenues (i.e., the increase in total revenues when one additional unit is sold) will decline at a steeper rate than price. Of course, the firm will produce only to the point where its marginal revenue equals its marginal cost; additional production would reduce the firm's profits. At that point, because price is higher than marginal revenue, the consumer will pay more and the seller will produce less than under "perfect competition." Effectively, some of the consumer surplus is expropriated by the producer through the higher price, and some is lost through the reduced quantity sold. The portion thus lost represents a reduction in aggregate welfare; it is, in theory, the economic cost of market power.

But what if that power results from a technological or other entrepreneurial innovation? And what if the innovation would not have materialized absent the incentives that market power affords? Under those conditions, the quantity sold might actually be greater than if there were no such power. When the increase attributable to innovation exceeds the decrease attributable to market power, output will rise--notwithstanding the conventional wisdom that market power necessarily diminishes aggregate wealth. Thus, the proper standard of comparison is not the economist's utopian vision of what might have transpired had the same products been sold in a perfectly competitive environment. Instead, we must compare actual output against what would have occurred if anti-monopoly laws had eliminated the incentives that elicit new and improved products.

Professor Stephen C. Littlechild of the University of Birmingham, U.K., illustrates this point by describing a businessman who charges a high price for a new product he has invented; the businessman prefers to maximize profits even though he will sell fewer units.

It is true that he is restricting output compared to what he could produce, or compared to what would be produced if all his rivals shared his insight. But they do not share his insight; this is not the relevant alternative. . . .

[T]he relevant alternative to his action is no product at all. It would therefore be inappropriate to characterise his action as generating a social loss.

. . . On the contrary, his action generates a social gain.<sup>53</sup>

Arguing from a somewhat different perspective, F. A. Hayek noted long ago that in a dynamic marketplace--the marketplace of the real world--sellers are continuously seeking to carve out mini-monopolies; thus, disequilibrium is the perpetual state as profit incentives unleash entrepreneurial exertions that drive the economy forward.<sup>54</sup> By contrast, in a static environment (i.e., the perfect competition paradigm), no market participant can obtain a deal that is not obtained, at the same time, by countless others. There is simply no competition remaining under "perfect competition."

Even when one or more producers have market power, as long as there are no barriers to entry, there will be ongoing opportunities for businesspeople to make speculative decisions, some of which will bear fruit. The result is spontaneous ordering--seemingly chaotic, yet fed by, and responsive to, a continuing flow of information embedded in changing market prices. Thus, the market is a process of discovery rather than a method of producing specifically intended outcomes. If the market were to reach full equilibrium, the actions of market participants would be wholly determined by surrounding circumstances, just as they are in a planned economy, leaving no room for imaginative, entrepreneurial vision. In a nutshell, perfect competition is antithetical to innovation.<sup>55</sup>

For that reason, market power (even private monopoly) is not by itself a condition sufficient to invoke the antitrust laws.<sup>56</sup> "Predatory" or "exclusionary" conduct must also be present. Despite the professed ill effects of such conduct, market power creates the opportunity for extraordinary profits, however transitory, which stimulate risk taking, propel technology, and raise productivity. Should government, acting under the banner of antitrust, shackle that creativity and initiative, consumers will ultimately pay the price.

To be sure, a seller with market power will occasionally engage in "predatory" or "exclusionary" tactics intended to restrict competition. If that seller has a better product, he may succeed. Otherwise, the success of such tactics over time will depend on government-created and government-sustained barriers to entry--the outgrowth, more often than not, of special-interest legislation that should never have been permitted in the

first place.

To cite one recent example, it is more than a little ironic that an administration so devoted to eradicating alleged barriers in the browser market stands today accused of denying a casino license to the Chippewa Indians because rival tribes promised hundreds of thousands of dollars in political contributions in return for sheltering their own casinos from competition.<sup>57</sup> If those allegations are true, we certainly do not need antitrust laws to put a stop to that sort of chicanery. The "market power" of the rival tribes is a function, plain and simple, of impermissible government action.

Regrettably, pundits and policymakers alike too frequently mischaracterize legitimate business dealings as anti-competitive conduct. For one such mischaracterization, let us look at tying arrangements--the antitrust infraction that the Microsoft consent decree was intended to proscribe. Tying arrangements are neither predatory nor exclusionary; instead, they protect against software piracy, facilitate lawful price discrimination, and may even expand aggregate output. Their impact is vertical rather than horizontal; that is, they are bargains between sellers and buyers, not collusion between competitors.

### Tying Arrangements

#### Legal Background

A tying arrangement is "an agreement by a party to sell one product but only on the condition that the buyer also purchases a different (or tied) product."<sup>58</sup> While that definition seems straightforward, it has nonetheless generated considerable controversy among lawyers and economists--probably because of the murky provisions of the Sherman Act and the Clayton Act, each of which ostensibly justifies federal challenges to tie-ins. The Sherman Act provides, in part, that "[e]very contract, combination, . . . or conspiracy in restraint of trade or commerce among the several States, or with foreign nations is declared to be illegal."<sup>59</sup> Section 3 of the Clayton Act is more concrete, but it covers a tie-in only if the buyer is required to purchase the tied product and to abstain from purchasing a competitive product.

It shall be unlawful . . . to lease or make a sale or contract for sale of goods . . . for use, consumption, or resale . . . on the condition, agreement, or understanding that the lessee or purchaser thereof shall not use or deal in the goods . . . of a competitor . . . where the effect . . . may be to substantially lessen competition or tend to create a monopoly in any line of commerce.<sup>60</sup>

Four years after passage of the Clayton Act in 1914, the Supreme Court examined whether a tying arrangement might be used unlawfully to enlarge the scope of market power. In United Shoe Machinery Corp. v. United States,<sup>61</sup> a single company controlled over 95 percent of the shoe machinery market and refused to lease its equipment unless the lessee also bought supplies. Because of that tie-in, prospective competitors in the supplies market either had to produce their own machinery--an unlikely scenario, given United's dominant market position--or be denied access to 95 percent of the customer base. Accordingly, concluded the Court, the arrangement unlawfully insulated United from new entrants in the tied product market.

Over the next three decades, courts scrutinized various tying arrangements by applying a so-called rule of reason. Under that standard, to assess whether a tie-in was anti-competitive, courts weighed "the facts peculiar to the business to which the restraint is applied; its condition before and after the restraint was imposed; the nature of the restraint and its effect, actual or probable."<sup>62</sup> Then in 1947 a supplemental rule emerged in International Salt Co. v. United States,<sup>63</sup> purporting to set forth a brighter line. Tying arrangements would be deemed per se illegal if three conditions were met: (1) there must be two distinct products, with the seller conditioning the sale of one on the purchase of the other; (2) the seller must have market power in the tying product; and (3) there must be an effect on a "not insubstantial" volume of commerce in the tied product. Absent any of those conditions, the courts would continue to apply a rule of reason test.

The new standard was aimed at providing both DOJ and private companies with more precise guidelines, thus discouraging flagrant misbehavior and increasing the predictability of dispute resolution. Another objective was judicial economy. As the Court put it, tying arrangements meeting the threshold conditions

are conclusively presumed to be unreasonable and therefore illegal without elaborate inquiry as to the precise harm they have caused or the business excuse for their use. This principle of per se unreasonableness . . . avoids the necessity for an incredibly complicated and prolonged economic investigation into the entire history of the industry involved, as well as related industries.

. . .<sup>64</sup>

More recently, in 1984, the Court attempted to clarify its per se standard, observing that two products will be considered as one--thus not per se illegal--if there is insufficient demand for the tied good to offer it separately from the tying good.<sup>65</sup>

Notwithstanding the purported brighter line rule, court pronouncements have been inconsistent, leaving much uncertainty about whether in any particular instance an actionable tying arrangement exists. Thus, the Supreme Court allowed a newspaper to require that advertisers simultaneously purchase space in both the morning and evening editions:



the dual editions were considered one advertising vehicle.<sup>66</sup> On the other hand, the Fifth Circuit treated automobiles and their air-conditioning units as two distinct products<sup>67</sup>; and the Ninth Circuit followed suit, disallowing a tie-in between a computer and its operating system.<sup>68</sup>

For an insight into what the Supreme Court's current view may be, consider a 1992 case involving Eastman Kodak.<sup>69</sup> Kodak had a practice of refusing to sell replacement parts for its copying equipment to independent service firms, which made it nearly impossible for those firms to compete with Kodak in servicing its equipment. Except for customers who repaired their own machines, Kodak said that if you wanted parts (the tying product) you had to purchase service (the tied product).

No party disputed Kodak's assertion that the copying equipment market was competitive. Kodak contended that interbrand competition in that market would automatically discipline intrabrand competition in the vertical markets for parts and service; that is, Kodak would not be able to force unwilling customers to purchase parts and service if the customers could easily select a different supplier of equipment. Undoubtedly, if Kodak's equipment had been the tying product, with parts and service as the tied products, the arrangement would have passed muster under the Court's per se rule because of healthy competition in the tying market. Taking note of that, Justice Antonin Scalia, joined in dissent by Justices Sandra Day O'Connor and Clarence Thomas, questioned why Kodak should be blameless if all three products were tied but not if parts and service alone were tied.

The majority disagreed and sent the case back to the lower court for additional evidence. Justice Harry Blackmun remarked, first, that Kodak controlled nearly 100 percent of the parts market for its copiers. Second, he suggested that Kodak's customers might find themselves locked into higher-than-expected prices for service: either the customers might not have obtained adequate information when they purchased the equipment, or the postpurchase cost to switch equipment might be exceedingly burdensome. Blackmun rejected the hypothesis that prospective buyers evaluate equipment, parts, and service as a package and that any lock-in would self-correct if Kodak sought to sell new customers, or resell existing customers, a noncompetitive package. He also rejected Justice Scalia's argument that consumers are to some extent locked in whenever they make large investments in durable goods--an event, Scalia observed, that "regularly crops up in smoothly functioning, even perfectly competitive, markets" without implicating the antitrust laws.<sup>70</sup>

### **The Case against per Se Illegality**

Against the background of the Kodak and Microsoft cases, each of which provides a useful framework for evaluating tying arrangements, let us examine the principal

arguments for making such arrangements illegal. Courts, ignoring most economists, have proffered three interrelated reasons to invalidate tie-ins: (1) customer coercion, (2) leverage theory, and (3) creation of barriers to entry in the tied product market. Most courts have relied on leverage theory: the potential to garner power in the tied product market by extending existing power in the tying product market. I will argue, to the contrary, that neither leverage theory nor customer coercion is a proper ground to hold a tie-in unlawful. Only the creation of barriers to entry, in narrowly defined situations, may justify government intervention--invariably to counteract prior government intervention that produced anti-competitive effects in the first place.

Customer Coercion. Proponents of per se illegality maintain that tying arrangements are inherently coercive. Supposedly, they force consumers to purchase a tied product that, at best, the consumer would prefer to buy from someone else and, at worst, the consumer does not want at all. But economists routinely dismiss customer coercion as a legitimate basis for opposing a tie-in.<sup>71</sup> They do not see voluntary contractual bargains as coercive, except in exigent circumstances--for example, a dying man, wandering in the desert, driven to negotiate with the region's sole supplier of water. Practically speaking, the product in which market power is presumed to exist is rarely if ever an essential good. Accordingly, the customer who is opposed to buying the tied product can simply decline to transact.

That is what Apple discovered in the 1980s when it refused to license its operating system. In effect, Apple conditioned the sale of its operating system on the purchase of an Apple computer. Unhappily for the company, too many customers decided that they did not want the tied package, and Apple's fortunes plummeted.

Similarly, a prospective purchaser of Kodak copying equipment was not compelled to buy parts and services from Kodak because, as a threshold matter, he need not have purchased the equipment itself. Only after buying the equipment would a customer be constrained to use Kodak parts, in which market the company had a virtual monopoly. But that customer--typically a business, not an inexperienced individual--should certainly have known that and taken it into account before making a purchase. To be sure, once purchases were made, Kodak's tying arrangement locked most purchasers into using the company for both service and parts. But no one forced the purchase. The customer had numerous options for copying equipment but elected Kodak despite the tie-in, which he either overlooked or thought unimportant. Whatever the purpose of antitrust law, it should not be to protect customers from unwise purchases; nor should antitrust policy presume that buyers are incapable of looking after their own interests.

The Microsoft case is different in one significant respect. Whereas Kodak had little market power in copying equipment, Microsoft has substantial market power in PC operating systems. Does that mean, therefore, that a PC buyer is coerced into purchasing Microsoft's browser? Of course not. First, no one is required to own a personal

computer; millions of Americans do not. But even if PCs were essential and everyone had to own one, producers would no doubt seek to expand sales by installing multiple computers in each home or business. Competition for those follow-on, discretionary purchases would restrain any attempt to "coerce" first-time buyers.

Second, the corollary of Microsoft's 90 percent share of the operating system market is that 1 customer in 10 does not use Windows. Alternatives are available--MacOS, Unix, and OS/2, to name a few--and more are on the horizon.

Third, network computing technology, with its reliance on the Internet for software applications, will radically diminish the importance of the operating system. When it comes to PC software, market power is likely to be here today, gone tomorrow.

Fourth, even if a Windows customer is "forced" to accept the free Internet Explorer, he is not obligated to use it. Netscape and other browsers are readily available, and Microsoft imposes no restrictions on their purchase or use. A customer who so wishes is perfectly free to acquire Netscape's Navigator, which can also be obtained at no cost.

If that customer buys the bundled Microsoft product anyway, he has tacitly agreed to pay more for Windows than would a customer who assigns a value to Explorer greater than zero. Indeed, many tying arrangements are just an implicit price hike for the tying product. A \$200 price for Windows plus a useless (to the customer) Explorer is not different in any material respect than a \$200 price for Windows alone. Clearly, if there were no tie-in, but Microsoft raised the price of Windows without the browser from \$150 to \$200, DOJ would have no cause to object. Why should it react differently if Microsoft sweetens the deal by including another product that at least some customers want?

Leverage. A second objection to tying arrangements--not entirely unrelated to the "customer coercion" theory--is that tie-ins permit a company with market power in the tying product to extend that power and capture super-competitive profits from the tied product. Did not Kodak, for example, using leverage from its virtual monopoly in parts, reap extraordinary profits by requiring customers to purchase high-priced service in order to obtain parts? Perhaps so, said the Supreme Court, citing that possibility as one reason not to approve Kodak's tying arrangement. But is it really feasible for a producer with market power to use leverage as a means of enlarging the scope of its power? Many commentators and economists think not,<sup>72</sup> and Justice O'Connor, concurring in the Jefferson Parish case, seems to agree:

[T]he existence of a tied product normally does not increase the profit that the seller with market power can extract from sales of the tying product. A seller with a monopoly on flour, for example, cannot increase the profit it can extract from flour consumers simply by forcing them to buy sugar

along with their flour.<sup>73</sup>

To explore Justice O'Connor's hypothesis, which may sound counterintuitive, consider this illustration: Mr. P produces a highly desirable product that he will sell for \$1,000. In an attempt to extend his market power, he requires his customer, Mr. C, to purchase a worthless tied product for an additional \$100. Assume further that the tied product is pure profit to P (i.e., his costs are zero) and pure loss to C (i.e., the product has zero value for use or resale). At first blush, those facts suggest that market power may have been impermissibly "exploited."

Note, however, that the \$1,100 package price for the two products is precisely the same whether P chooses to allocate the proceeds entirely to the tying product or instead allocate \$1,000 to the tying product and \$100 to the tied product. In either case, C has two choices. He can accept the offer, which indicates that he values the tying product at \$1,100 or more; or he can reject the offer, which indicates that he values the tying product at less than \$1,100. Those two options are identical--with or without the tie-in. Since P is indisputably entitled to charge whatever he wishes for the single product (subject only to C's willingness to pay), there is no additional cost to C as a consequence of P's decision to include the tied product as part of the arrangement.

Now let us modify the illustration so that it corresponds more closely to Microsoft's tie-in of Windows and Internet Explorer. Suppose Microsoft offers Windows with its bundled browser for \$200 and refuses to sell Windows separately. C thinks that the Internet Explorer is worth about \$25--less than Microsoft's \$50 stand-alone price. At a price of \$50, C would rather buy the comparably priced Netscape browser. What are the various tradeoffs?

If C accepts the bundled product at \$200, it means that he values Windows alone at \$175 or more (i.e., the \$200 package price minus the \$25 value that he assigns to the Explorer). If C declines Microsoft's offer, it means that he values Windows alone at less than \$175. Naturally, C's preference would be to buy Microsoft's operating system for \$150 (i.e., the \$200 package price less Microsoft's quoted price of \$50 for its Explorer), then purchase Netscape separately for \$50. But that is not an option because it is not an offer Microsoft is willing to make. Why then should Microsoft be forced by the Antitrust Division to make it an option? This is a simple marketing decision by Microsoft. Given that decision, C, having valued Explorer at \$25, needs now to decide only whether the operating system is worth an additional \$175.

Such tie-ins occur in the marketplace in infinite variety every day: toys with batteries, suit jackets with matching pants, cable TV with a basic package of channels, and on and on. Some sellers have substantial market power in the tying product; some do not. But in each case, sellers and buyers simply weigh the tradeoffs from their own perspectives before reaching agreement. Whatever those tradeoffs, tying arrangements

neither diminish nor enlarge the scope of market power. The essence of that power is to facilitate pricing at a level that will generate profits exceeding competitive norms. When a second product is tied in, consumers will evaluate the price of the combined products with respect to their aggregate worth. If the consumer accepts the package, and if the tied product is priced above its competitive value, that simply indicates that the tying product is priced correspondingly below what the consumer would otherwise have paid. The pricing allocations are mere bookkeeping.

Yet even if Microsoft had a true private monopoly in the tying product--100 percent of the market for operating systems--and even if Netscape's browser could be used only in a Windows environment, Microsoft should still not be compelled to unbundle its browser and sell it separately. The company can refuse to sell Windows altogether, of course, no matter how badly that decision harms consumers or Netscape. So why should it be precluded from selling Windows conditionally--an alternative that, in this case, is more beneficial to consumers and Netscape both?

In reality, Microsoft does not have a true monopoly in operating systems, nor is Netscape's browser limited to a Windows environment. To prohibit Microsoft's tying arrangement in a competitive market--when there would be no basis for doing so even in a monopolistic market--makes no sense whatever.

Barriers to Entry. Tie-ins are also opposed on the ground that they create barriers to entry to the market for the tied product. In Kodak, the defendant controlled nearly the entire market for parts (the tying product) and refused to sell those parts without service (the tied product), except to customers who repaired their own equipment. How, then, could a prospective entrant compete in the service market without access to parts? Similarly, how could Netscape, or any other browser manufacturer, compete against Microsoft, which packages Internet Explorer as part of an operating system that is sold to 90 percent of the users who might be interested in buying a browser? Kodak's and Microsoft's tying arrangements, it would seem, shield the two companies from new entrants in the tied product market.

In fact, there are four options that remain open to potential entrants. First, if the would-be competitor is a lower cost producer of the tied product, it might be able to sell its product to the tying company.<sup>74</sup> For example, Microsoft might elect to buy, then resell, Netscape's browser. Kodak might choose to contract for service from an independent firm, then provide the lower cost service to its customers. That would increase Kodak's profits; the new entrant would have a market for its service; and the customer would be no worse off. Naturally, if the prospective market entrant is a higher cost producer, then the tying arrangement is socially desirable; it discourages the would-be competitor from wasting resources in an ill-advised venture.<sup>75</sup>

Second, if Kodak decided to gouge its "locked-in" customers by charging an

outrageous price for parts and service, an opportunity might arise for independent service firms to reverse engineer Kodak parts. That is not as far-fetched as one might think; Kodak did not manufacture most of its own parts but purchased them from other companies. The more dispersed a technology, the harder it is to protect against reverse engineering.

Third, competitors in the tied market could continue to offer their product, notwithstanding that the customer is paying for an equivalent product under the tying arrangement. That strategy works as long as the customer perceives the competitive product to be sufficiently better than the tie-in to justify the incremental cost. Prior to Netscape's recent announcement that it would be giving away its browser, the company had succeeded in convincing enough buyers to pay incrementally, despite Microsoft's tie-in.

Fourth, service organizations could contract with competitors of Kodak, much as Netscape could (and does) contract with competitors of Microsoft. That approach might eventually weaken the tying company's underlying market power. Indeed, it is power by the tying company in the tying market that is the purported problem. The tie-in itself is but a derivative concern.

To illustrate that final point, if Microsoft were to have a true monopoly in operating systems, it could ordinarily exploit that monopoly equally well with or without a tie-in. Even without a tie-in, the company could still price Windows at a super-competitive level, limited only by customer appraisal of the product's worth. Assume that Microsoft thereafter bundled Windows with Internet Explorer. The company could increase its price, but only by an amount equal to the competitive value of Explorer, no more. The browser would command precisely the same incremental price that it would command if sold separately in a competitive market. That is exactly what is now happening in the browser wars; Microsoft's tie-in adds nothing to its market power.

Hypothetically, a tying arrangement might expand the scope of a company's market power if all of these criteria were satisfied: (1) there were no suppliers in the tied market to establish a competitive price; (2) the tie-in created barriers to entry in that market, exacerbated by high costs or long lead times for entry or exit; and (3) the methods outlined above to circumvent those barriers were impracticable because of the tying company's overwhelming and persistent power in the tying market. In that limited case, the question is whether the government should intervene to reduce the tying company's power or make the tying arrangement illegal. In my view, the answer is still no, except under narrowly and carefully defined conditions.

The third of the three criteria is key: Without extraordinary power in the tying market--the quintessential ingredient of a sustainable tie-in--competition for the tying product will automatically discipline the tying arrangement. Only when that competition is

somehow barred can a tie-in expand the scope of the tying company's power. In our largely--but not wholly--free-enterprise system, true barriers to competition come in two varieties.<sup>76</sup>

First, barriers can arise out of special-interest legislation or--which frequently amounts to the same thing--a misconceived regulatory regimen that protects existing producers from potential competition. When cable companies, electric utilities, and telephone companies are issued "certificates of public convenience and necessity" or their equivalent, monopolists are born and nurtured at public expense. When government offers tax benefits, subsidies, insurance, or loans to specific businesses, or erects trade barriers designed to protect a U.S. firm from foreign competition, the effect is frequently to foster the same sort of anti-competitive environment that the antitrust laws were meant to foreclose.

The obvious answer--which has little to do with the antitrust laws and nothing to do with tying arrangements--is for politicians to stop doing those things.<sup>77</sup> If the government does not take that sensible step, and if there is no actual or potential competition in the tied market, then the government should consider interceding to prevent a politically favored company from using a tying arrangement to exploit its government-conferred market power.

A second and quite different barrier to entry, likewise created by government, arises from the application of patent (and copyright) laws. The temporary market power that flows from those laws is the incentive that helps drive research and development. That incentive is available to all firms that meet prescribed standards for a patentable product. Thus, the laws--as distinct from the patents themselves--do not benefit a specified company. By contrast, special-interest legislation benefits particular firms, named or otherwise identifiable within the provisions of the law itself. For those privileged firms, which did not earn their competitive advantage in the marketplace, some tie-ins should be disallowed. But in the intellectual property context, where the grant of market power is a premium designed to encourage creativity, the crux of the matter is not whether a tying arrangement is good or bad but just how much incentive is necessary and proper to promote invention and innovation.

Some would argue that when a tying product is patent protected, government should intervene to prohibit the tie-in if above-normal profits in the tied product market are thought to constitute excessive compensation for the research and development that patents are intended to reward. But that would mean government regulation of profits on everything from patented drugs to machinery to you name it--a horrifying prospect worth avoiding at all cost.

Realistically, not even a patent can exclude competition from a modern, capitalist economy. Almost all patented products have close substitutes that are unprotected.

Consumer preferences change. Technological obsolescence is always looming on the horizon. And every patent is term limited.<sup>78</sup> The benefit in that rare instance in which public policy might be well served by prohibiting a tie-in is undeniably outweighed by the legal cost of identifying offending cases, the economic cost of false positives, the burden of oppressive regulation, and the uncertainty introduced by not having a bright line rule that says tie-ins are lawful.

In sum, government in a free society must honor and enforce private contracts unless they can be shown to violate rights. Because heavy-handed regulation has an immense potential for mischief, and because opponents of tying arrangements have made no showing that such arrangements are coercive or otherwise harmful, they should be legal. Our existing standard--per se illegality if threshold conditions are met, backed up by a rule of reason otherwise--is misguided and destructive. Strictly speaking, therefore, it should not be necessary to set out the affirmative case for tie-ins. Nonetheless, there is a strong case to be made.

### **The Case for Legalized Tie-Ins**

Most economists recognize not only that tying arrangements are not anti-competitive but that they have pro-competitive effects as well, even when not intended that way. First, if the tying and tied products are functionally related, there may be cost savings through economies of joint production or distribution. Second, if the tied product is integral to the operational efficiency of the tying product, or if the tying product is sensitive to the quality of the tied product, there are obvious performance advantages in avoiding inferior substitutes--especially when it is difficult for the consumer to determine whether operating problems are due to low-quality inputs.<sup>79</sup>

Third, in the software industry, tie-ins are particularly important insofar as they afford some protection against unauthorized copying of software and related intangible products. Although Microsoft has a property right in the software it creates--perhaps secured by copyright--as a practical matter, the company can enforce its right only against entities that openly and visibly distribute pirated copies. When an individual makes a copy of Windows or Internet Explorer for a friend, there is not much that Microsoft can do about it. But if Microsoft can convince a PC maker to package Windows with each computer sold, then any consumer who wants that PC and also wants Windows will have to pay for both; copying will save no money. The inclusion of the operating system makes the computer more valuable, and the higher price for the bundled product reimburses Microsoft for its software.<sup>80</sup> That process can be extended, of course, to encompass a second piece of software tied to the first--Internet Explorer tied to Windows 95, for example.

Fourth, tying arrangements provide a means by which a seller can engage in lawful



price discrimination,<sup>81</sup> which in turn can raise the level of economic output. When a price-making seller is considering a price reduction but lacks sufficient information to identify those buyers who would continue to pay more than the contemplated lower price, the seller has two choices: either extend the price concession to all buyers, which may lower his potential profits, or make no such price concession, which forgoes additional sales to price-sensitive customers. Under the second scenario, the volume of production will be lower and prices higher than in a perfectly competitive environment. Lower output represents the economic cost of market power.

But production need not decline if the firm is able to discriminate among its customers, charging each a different price in accordance with his subjective valuation--that is, his willingness to pay. Since price discrimination can lead to more transactions and expanded output, any device that promotes such discrimination will have desirable economic effects, as long as the cost of the device does not exceed the gains from increased output. That, in essence, is what tying arrangements are all about. By facilitating three tools of price discrimination--metering, risk sharing, and optimal product bundling--tie-ins are a low-cost method of differentiating one customer's subjective valuation from another's.

Metering. Let us assume that Kodak's copying equipment were sold under a tying arrangement that required the customer to purchase ink, paper, and supplies from Kodak. The customer who intended to use the equipment regularly would be willing to pay more for the machine than the customer who intended to use it infrequently. But Kodak might find it prohibitively expensive to obtain sufficient information about each customer's intended volume of use. Instead, the company could charge a low price for its machine--a price that most prospective users (low and high volume) are willing to pay. Then, in order to meter usage, Kodak could tie the purchase of high-priced supplies to the purchase of the machine. As larger users acquire more supplies, the company collects a premium, without pricing its machine out of reach of smaller users.<sup>82</sup>

Risk Sharing. Suppose further that Kodak desires to lease its equipment to high-risk start-up ventures. The company does not know which of its potential lessees will be successful; but it does have a reasonable expectation that some portion will ultimately succeed. Risk sharing enables Kodak to charge a low enough lease fee to encourage all of the start-ups to participate. In order to extract higher payments from those that succeed, Kodak can tie in a variable input like paper and supplies. The lessee, if unsuccessful, will pay only the low lease fee on the copying equipment. Successful lessees will use more of the variable input, thus paying higher overall fees. Risk is pooled, with Kodak counting on the law of averages to ensure adequate total revenues.<sup>83</sup> At the same time, Kodak is providing its customers with an alternate means of financing. Instead of fixed lease obligations, the customer can substitute a variable stream of payments proportional to usage.

Optimal Product Bundling. Neither risk sharing nor metering applies in Microsoft's case because the tied product, the browser, is not used in variable quantity with each operating system. But a third method of price discrimination, optimal product bundling,<sup>84</sup> may well apply. Consider two goods, Windows 95 and Internet Explorer, and two customers, X and Y. Suppose the values of the two goods to the two customers are as shown in Table 1.

Table 1  
Value of Goods

Customer	W95	IE	Total
X	\$150	\$40	\$190
Y	\$125	\$50	\$175

Given low marginal costs of production, the profit-maximizing prices of the two goods, if sold separately, will be \$125 for Windows 95 and \$40 for Internet Explorer. Both X and Y will buy; Microsoft's revenue will be \$165 x 2, or \$330; and consumer surplus will be \$35 (i.e., \$25 for X, who values the two products at \$190, and \$10 for Y, who values them at \$175). But what if Microsoft offers the products as a tied package, priced at \$175? Again, both customers will buy; but revenue will increase by \$20 to \$350, and consumer surplus will decline by \$20 to \$15. Ten dollars of surplus will have been transferred from X to Microsoft and an equal amount will have been transferred from Y.

Of course, consumers have no vested right to surplus; they have a right only to refrain from buying if the purchase price exceeds their estimate of the product's worth. Otherwise we would have the Antitrust Division threatening litigation every time a producer raised its prices. The real issue, then, is whether the aggregate level of economic activity--that is, the volume of output--has declined. If so, the tie-in reduces economic efficiency. But if aggregate transactions have increased--the earmark of a more efficient economy--then fewer consumers are forgoing purchases of goods that they want.

Moreover, if Microsoft can collect a larger share of the surplus, it will probably produce more. That is, the company's output will likely be higher at a price of \$175 for its tied package than \$165 for two separate products. Here is why: As Microsoft expands output to serve more customers, its marginal costs will rise--not the modest production cost associated with another copy of the software, but the marketing cost that can escalate rapidly as potential customers become harder to identify and sell to. Obviously, if there is no decline in the number of units sold, then the higher the price for each sale, the higher

the marginal revenue. When that happens, more money is available for marketing and more units can be produced and sold before marginal profits turn negative. In our hypothetical example, because neither customer will decline to pay the bundled price of \$175, total output will increase.

Indeed, more customers may want the package at \$175 than want the two separate products at \$165 (i.e., \$125 for Windows and \$40 for Explorer). If the two products are sold separately, then no one who values Windows at less than \$125 or Explorer at less than \$40 will buy both. But if the products are packaged for \$175, a customer who values Windows at, say, \$120 will still buy as long as he values Explorer at \$55 or more. Similarly, a customer who values Explorer at only \$20 will still buy as long as he values Windows at \$155 or more.

Thus, by paving the way for price discrimination--whether by product bundling, metering, or risk sharing--tying arrangements produce concrete economic benefits. Output expands, losses attributable to market power are thereby reduced, and aggregate wealth increases. From that perspective alone, tie-ins should be legalized.

### **Network Effects**

That brings us, finally, to a relatively recent rationale purporting to support an activist antitrust agenda: the theory of network effects. Spawned by the computer revolution, the theory holds that competitors can be excluded from high-tech markets when customers, concerned about compatibility with other users, are seduced by a "first mover"--that is, a producer with an early or commanding market lead--into purchasing an inferior good. More generally, the term "network effect" (or "network externality") refers to the change in perceived value of a product that is caused by a change in the number of people who use it: as more people use the product, the theory says, the more its value rises, to the detriment of would-be competitors.

When prior acceptance of a product affects its perceived value, the theory continues, consumers' actions can become "path dependent"--meaning that a consumer can be locked in to an "objectively" second-rate product, despite known alternatives that are superior. Simultaneously, producers benefit from "increasing returns to scale"--due not to declining production costs but to higher revenues as the product becomes more valuable to each new consumer.<sup>85</sup>

In the Microsoft context, the claim is that customers cannot escape from the software path that Microsoft has been able to dictate because of its self-reinforcing market dominance. Before asking whether that claim is true, let us note that the history of Microsoft's ascendancy is inconveniently inconsistent with the theory of network effects.

Recall that Windows was not the first operating system; it was layered on top of a DOS platform, partly in response to the competitive threat posed by Apple. IBM adopted Microsoft's version of DOS in the early 1980s; but Apple's MacOS system, introduced in 1985, was thought by many to be functionally superior and easier to use. At that time, consumers considering a switch to Windows faced high switching costs. They were using either an incompatible MacOS system or an MS-DOS system with a totally different structure and work environment. Notwithstanding those costs--one aspect of network effects--consumers ultimately embraced Windows because they liked it.<sup>86</sup> They rationally predicted that many other consumers would feel the same. Intelligent buyers make such forecasts all the time, precisely to avoid locking themselves into incompatible products.<sup>87</sup>

No doubt, high-tech companies try hard to exploit network effects. That was surely Apple's intent when it offered its computers to schools at little or no charge--in an unsuccessful attempt to "lock" future consumers into Apple technology. Netscape employed much the same strategy with its early decision to give away its browser. Looking back, it is clear that consumers were not inveigled by either scheme. Nor were consumers prepared to anoint WordPerfect as ruler in perpetuity of word processing, or Novell as permanent king of network operating systems, or Lotus as spreadsheet leader forever, merely because usage of those products was ubiquitous.

On the other hand, consumers are usually the beneficiaries when software developers capitalize on network effects. Globally, millions of programmers have created thousands of compatible products--thanks in part to the standardized platform that Windows affords. The perverse outcome if DOJ forces Microsoft to offer customers dual versions of Windows--one with an integrated browser, one without--could well be higher prices and fewer product improvements. Consumers pay if computer manufacturers and software designers, faced with devising products that must interact with multiple operating systems, incur higher costs simply to ensure that Microsoft's competitors in the browser market are protected from Microsoft.

Fortunately for PC users, incompatibilities rapidly disappear in a high-tech world. That is exactly the process now unfolding in the personal computer industry with the development of transportable programming languages, like Java, and the adoption of the Internet's open architecture by makers of network computers. Sellers have an enormous incentive to dislodge the market leader when "increasing returns" and "path dependence" give birth to super-competitive profits. Rivals will advertise, reduce prices, offer bonus programs, and try a host of other marketing devices to persuade consumers to switch.

Naturally, not all consumers will be convinced, even if their original purchases turned out, in retrospect, to have been ill-advised. More often than not, the regretted transactions had little to do with path dependence and everything to do with imperfect information at the time of purchase. Consumers do make mistakes, but those same consumers unquestionably know far more than does a government bureaucrat about what

goods and services they want to buy. Before too eagerly substituting DOJ's political power for Microsoft's market power, we should carefully consider the consequences.

The very thought that the Antitrust Division might be entrusted with determining whether a consenting buyer, supposedly swayed by network effects, acquired an inferior product should be unsettling to anyone who values liberty. Economists James Buchanan and Gordon Tullock, in their pioneering work on the theory of public choice,<sup>88</sup> remind us that self-interest drives the actions of public officials no less than those of private entrepreneurs. In the private sector, however, markets discipline self-interest, channeling it in ways that promote the general good. No corresponding discipline exists in the public sector, where political power reigns and the abuse of that power is pervasive.

Recall, for example, that President Richard M. Nixon, when he wanted to browbeat the three major TV networks, used the threat of an antitrust suit as a sword of Damocles, hoping thereby to extort more favorable media coverage. In a conversation tape-recorded in 1971, but only recently released, Nixon told White House aide Chuck Colson, "Our gain is more important than the economic gain. We don't give a goddamn about the economic gain. Our game here is solely political. . . . As far as screwing them [the networks], I'm very glad to do it."<sup>89</sup> Yet in another conversation recorded that same year, indicating how political antitrust enforcement can be, Nixon said, "[T]here is not going to be any more antitrust actions as long as I am in this chair . . . goddamn it. We're going to stop it."<sup>90</sup>

Given Nixon's shifting predilections, the public was mostly unaware, until now, that politics, not economics, underlay DOJ's intimidation of ABC, CBS, and NBC--all innocent of any antitrust wrongs. If such invidious behavior were limited to one administration, that would be bad enough. But former New York Times and Newsweek reporter David Burnham warns that presidents from Kennedy through Clinton have routinely demanded that DOJ bend the law.<sup>91</sup> We can only guess the number of occasions on which an overzealous or malevolent public official misused the power of the antitrust laws to terrorize a private business.

Still, proponents of antitrust enforcement assert that the possibility of government venality is outweighed by the iniquity of private monopoly power. That dubious proposition, even if it were true in some isolated context, has no credibility at all when applied to the software industry. There, notes Microsoft, productive capacity is infinite--not subject to ownership by anyone.<sup>92</sup> Unlike oil, utilities, railroads, and other capital-intensive ventures, software is based not on physical equipment but on ideas--human intellect, which economist Julian Simon has called the "ultimate resource."<sup>93</sup> No company can monopolize ideas.

The history of information technology in general, and software in particular, shows that better products prevail; manufacturers of those products are able to overcome any

initial reluctance of customers to switch. Indeed, in major consuming companies the number of individual users is frequently large enough that the choice of technology is not governed by considerations of interfirm compatibility. And even smaller consumers, presumably "locked in" by high switching costs, may take matters into their own hands by entering into joint purchase agreements with other consumers to acquire a superior product.

Even more basic, by purchasing particular goods and services, consumers reveal their preferences in the marketplace. Yet advocates of network effects seem to believe that revealed preferences are not a reliable indicator of the products that "best" serve a consumer's needs. Instead, they would have us believe that there are objective measures that can tell us which products are technically "superior," a consumer's actual choices notwithstanding. If objective and subjective outcomes differ, they imply, the consumer must not have been truly free to choose--perhaps because he was locked in by a need for compatible products.

The problem with that argument, of course, is its presumption of an "objective" measure of quality--and its equally presumptuous dismissal of actual consumer preferences. It leads directly to government paternalism, to the idea that an elite group of government officials knows our interests better than we do--and can regulate affairs to satisfy those interests better than the market does.<sup>94</sup>

When we permit government to make such assessments, and we allow those assessments to trump the subjective choices of consumers, we are well on the road to tyranny. In the process, we will have reduced the mechanism by which a purchaser selects the goods he prefers to a formalistic appraisal centering on technical features alone--notwithstanding that products are also desired for their quality, price, service, convenience, and a host of other subjective variables.

None of this is to dismiss the essential premise of the network effects theory. Consumers of high-tech products undoubtedly do consider compatibility in their purchasing decisions. But it is not the only thing they consider. And because high-tech markets are incredibly dynamic, compatibility is assuredly not static--a view evidently shared by Nobel laureate Kenneth Arrow. While warning that we must be vigilant in maintaining open markets, Arrow nonetheless states,

The history of market shares in PC application software has been marked by great volatility. Although first-mover advantages and increasing returns are important, there are many examples to show that such advantages are far from permanent. As examples, consider the fates of Wordstar, Apple Computer, and IBM itself. All were once dominant in critical PC-related product markets; yet each has experienced rapid loss of market shares.<sup>95</sup>

Today, Microsoft's commanding lead in PC operating systems is threatened on two main fronts. First, Sun's Java technology purports to offer a standardized, platform-independent environment for software developers. In a pre-Java world, a new operating system might have been hampered by a paucity of applications programs and a reluctance on the part of developers to depart from a Windows setting. But Java, when fully operational, promises an environment in which applications can be run both on stand-alone PCs and across the Internet without compatibility problems. Second, Netscape's browser may soon offer Internet users a means by which they can overlay and eventually replace major parts of Windows. The browser's Web-based user interface could become the principal working environment for creating new applications.

Together with low-cost network computers, Java and Netscape jeopardize Microsoft's control over PC desktops and over software development. Thus network effects, while they may slow competition over the short run, are not an effective barrier to longer term competition, nor, therefore, are they a valid excuse for government intervention in high-tech markets.

That assessment is even more compelling when we grasp the following realities: First, the barriers to entry that government should properly eradicate are those that government itself has created. Second, our economy suffers enormous damage when production is deterred by unnecessary regulation. Third, the right of a free citizen to enter into voluntary contractual arrangements cannot be squared with antitrust meddling. Fourth, we must not condone pernicious assaults by government on our nation's most innovative companies. Insofar as the antitrust laws are used to impose restraints through litigation against successful competitors, those laws sanction an indirect, anti-competitive subsidy to less successful firms. They are no different in principle than taxing winners in order to subsidize losers.

Industry consultant James F. Moore reminds us that leading information companies focus on how to solve important problems for consumers. The key is to build integrated systems, linking together what less creative firms look upon as separate technological elements. Companies like Microsoft understand that processors, software, keyboards, and video monitors can, in Moore's words, "be integrated into an appliance that people could use to improve their lives--an everyday tool for everyone."<sup>96</sup> It would be perverse indeed if government overreacted to putative network effects, or relied on groundless objections to tying arrangements, to assail companies that have been responsible for such extraordinary advances. As Alan Greenspan bluntly warned,

Whatever damage the antitrust laws may have done to our economy, whatever distortions of the structure of the nation's capital they may have created, these are less disastrous than the fact that the effective purpose, the hidden intent, and the actual practice of the antitrust laws in the United States have led to the condemnation of the productive and efficient

members of our society because they are productive and efficient.<sup>97</sup>

### **Conclusion**

On the surface, the most recent attack against Microsoft revolves around the definition of "integrated" as that term is used in the 1995 consent decree signed by the company and DOJ. That decree, however, is of little lasting import: the soon-to-be-released update of Microsoft's operating system, Windows 98, will include a browser that is "fully" integrated. Accordingly, no matter how the court rules on the current dispute, the new system should qualify under the exception in the decree that allows Microsoft to develop "integrated software products."

But that will not necessarily take Microsoft off the hook, for Judge Jackson has suggested that the company could still be culpable under established antitrust law. The ongoing issues, then, are more basic and far weightier. They are, first, whether the government has any useful role to play in protecting American consumers against tying arrangements and, second, whether antitrust intervention is at all necessary to preserve competitive markets.

A tying arrangement allows a seller to discriminate among buyers on the basis of their willingness to pay. The effect may be to transfer some portion of consumer surplus to the producer, but that transfer does not, in itself, diminish aggregate welfare. A seller's ability to engage in price discrimination frequently increases overall output--the standard by which economic efficiency is measured. Further, tie-ins enable producers of intangible products like software to guard against piracy. By arranging for Windows to be bundled with a computer, then tying its browser to Windows, Microsoft obtains some protection against unauthorized copying of two software products. Moreover, tie-ins facilitate quality control and may even generate cost savings when products are jointly produced or distributed.

Given those considerable benefits, tying arrangements should be legal. The consumer need not enter into such an arrangement; by voluntarily purchasing a package of products, one of which he may not have wanted, he implicitly agrees to a price increase on the other product. He evaluates tied products with regard to their aggregate worth; price allocations are mere bookkeeping. From the selling company's perspective, if it has market power, it may try to extend the scope of that power by using a tying arrangement; but those attempts usually fail. A seller can enlarge its power only if shielded by effective barriers to entry in the tying market--barriers that are almost always transitory unless they are initiated and maintained by government and thus reversible at the source without prohibiting tie-ins.

More generally, DOJ intervention to safeguard competition is rarely if ever



justified. Absent government-sponsored barriers, free markets are sufficiently dynamic to ensure that market power cannot long subsist. In striving to build even a temporary power base, market participants engage in an intensely competitive process that fuels and expands the economy. Resourceful entrepreneurs struggling to carve out market niches provide the propulsion for growth. Nowhere is that more evident than in the computer software industry, where competition and innovation are extraordinarily vigorous.

From 1987 through 1994, U.S. software companies grew at seven times the rate of the economy as a whole; those companies currently provide 600,000 jobs.<sup>98</sup> If automobile and aerospace technology had exploded at the same pace as information technology, a new car would cost about \$2 and go 600 miles on a thimble of gas, boasts Microsoft, and you could buy a Boeing 747 for the price of a pizza.<sup>99</sup> Indeed, the cost of computing was 10 thousand times higher in 1975 than in 1994, according to World Bank and International Monetary Fund data. Meanwhile, Microsoft does nothing to prevent IBM, Netscape, Oracle, Sun Microsystems, and countless other companies from developing products that could displace Windows 95 and Internet Explorer. In fact, those companies are aggressively pursuing that very course of action.

Despite that record of dynamism and progress, DOJ officials persist in the delusion and conceit that they can fine-tune the markets. Yet we will benefit no more today from their pursuit of Microsoft than we did not long ago from DOJ's 13-year trust-busting crusade against IBM. Writer Virginia Postrel described that debacle: "Millions of dollars were transferred from the taxpayers and stockholders to lawyers and expert witnesses. . . . The suit was a complete waste. Whatever quasi-monopoly IBM had was broken not by government enforcers but by obscure innovators, working on computer visions neither IBM nor the Justice Department's legion of lawyers had imagined."<sup>100</sup> If anything, today's computer technology is more dynamic than ever, and today's dominant product could easily be tomorrow's relic.

If DOJ prevails in its attack against Microsoft, we will have sanctioned government scrutiny of any company that integrates previously distinct technologies, and we will have politicized competition by enlisting the public sector in pursuit of private, parochial interests.<sup>101</sup> Our recourse as responsible citizens--and as consumers most directly affected by the hubris of federal bureaucrats--is to insist that the Antitrust Division make better use of its employees' time and taxpayers' money. We must remember that the alternative to big companies is not small companies but big government--the most formidable and coercive monopoly of all.

### **Notes**

1. For persuasive arguments against the very premises of antitrust law, see D. T. Armentano, Antitrust and Monopoly

(Oakland, Calif.: Independent Institute, 1990); D. T. Armen-  
tano, "Time to Repeal Antitrust Regulation?" Antitrust  
Bulletin 35 (Summer 1990): 311-28; Fred S. McChesney, "Law's  
Honour Lost: The Plight of Antitrust," Antitrust Bulletin 31  
(Summer 1986): 359-83; William J. Baumol and Janusz A.  
Ordovery, "Use of Antitrust to Subvert Competition," Journal  
of Law and Economics 28 (1985): 247-65; Thomas J. DiLorenzo,  
"The Origins of Antitrust: An Interest-Group Perspective,"  
International Review of Law and Economics 5 (1985): 73-90;  
and Thomas J. DiLorenzo and Jack C. High, "Antitrust and  
Competition, Historically Considered," Economic Inquiry 26  
(July 1988): 423-34. For arguments against antitrust based  
largely on efficiency or utilitarian grounds, see Robert H.  
Bork, The Antitrust Paradox: A Policy at War with Itself  
(New York: Basic Books, 1978). For a critique of the "rob-  
ber-baron" thesis, which led to antitrust in the first  
place, see Burton W. Folsom Jr., The Myth of the Robber  
Barons (Herndon, Va.: Young America's Foundation, 1996).

2. See Alan Murray, "Antitrust Isn't Obsolete in an Era of  
High-Tech," Wall Street Journal, November 10, 1997, p. A1.

3. Quoted in John R. Wilke, "Senate Internet Panel to  
Probe Microsoft's Power," Wall Street Journal, November 3,  
1997, p. B2.

4. Alan Greenspan, "Antitrust," in Ayn Rand, Capitalism:  
The Unknown Ideal (New York: New American Library, 1967),  
p. 70.

5. See Janusz A. Ordovery, "Bingaman's Antitrust Era,"  
Regulation (Spring 1997): 21.

6. See Don Clark, "How Microsoft Lost Cloak of Invincibil-  
ity While Getting On-Line," Wall Street Journal, November 5,  
1997, p. A1.

7. Rajiv Chandrasekaran, "Microsoft Calls Browser Vital to  
Windows 95," Washington Post, December 5, 1997, p. A16.

8. Ibid.

9. United States v. Microsoft Corp., Civil Action 94-1564  
(D.D.C. Dec. 11, 1997). On a related matter, Judge Jackson  
upheld Microsoft's right to require contractually that  
computer makers notify Microsoft when disclosing information  
to the government about the company's products or practices.  
The judge found no evidence that Microsoft used the contrac-

tual provision to prevent businesses from complaining to government regulators.

10. David Lawsky, "Government Seeks to Hold Microsoft in 'Civil Contempt,'" Reuters, December 7, 1997.

11. Quoted in Michael Schroeder, "Microsoft Says Older Software Follows Order," Wall Street Journal, December 24, 1997, p. B8.

12. David Lawsky, "Microsoft Must Explain Browser Position," Reuters, December 20, 1997. Microsoft has filed a formal objection to Judge Jackson's out-of-court uninstall demonstration, claiming that it occurred "without prior notice to counsel and without participation by the parties." See David Lawsky, "Microsoft Attacks on Judge 'Risky,' Experts Say," Reuters, December 24, 1997.

13. Rajiv Chandrasekaran, "Microsoft to Allow Browser Blocking," Washington Post, January 23, 1998, p. G1.

14. See Russ Mitchell, "From Two Different Planets: The Culture Clash between Microsoft and the Justice Department," U.S. News & World Report, January 12, 1998, p. 44.

15. "Microsoft Appeals Preliminary Injunction," PRNewswire, December 15, 1997.

16. David Bank and Michael Schroeder, "Microsoft Corp. Seeks to Oust 'Special Master,'" Wall Street Journal, January 6, 1998, p. B4. Bank and Schroeder report that, in a series of e-mails to a Netscape attorney, Lessig complained about the difficulty of installing Internet Explorer. He wrote, "OK, this is making me really angry, and Charlie Nesson [also a Harvard law school professor] thinks we should file a lawsuit." Lessig also used the phrase "sold my soul" in describing his decision to install a Microsoft product so that he would qualify to enter a contest.

17. Rajiv Chandrasekaran, "Microsoft Appeals Judge's Decision," Washington Post, January 17, 1998, p. D2.

18. Rajiv Chandrasekaran and Elizabeth Corcoran, "Ruling Halts 'Master' in Microsoft Case," Washington Post, February 3, 1998, p. D1.

19. Elizabeth Corcoran and Rajiv Chandrasekaran, "For Microsoft, Separation Anxiety?" Washington Post, December

13, 1997, p. F1, quoting Joe Sims, a former DOJ official who is now a lawyer in private practice.

20. David Bank and John R. Wilke, "Microsoft and Justice End a Skirmish, Yet War Could Escalate," Wall Street Journal, January 23, 1998, p. A1.

21. Ibid.

22. Ibid.

23. Oral argument on Microsoft's appeal of the preliminary injunction will be held on April 21 in the U.S. Court of Appeals for the District of Columbia Circuit.

24. See Walter S. Mossberg, "Knowing the ABCs of the Anti-trust Case against Microsoft," Wall Street Journal, October 30, 1997, p. B1.

25. Peter Huber, "Reno Rewrites Your Operating System," Forbes, December 1, 1997.

26. Rajiv Chandrasekaran, "Justice Counters Microsoft Claims," Washington Post, November 21, 1997, p. G4.

27. John R. Wilke, "Microsoft Internal E-Mail Bolsters Case against Software Maker, U.S. Contends," Wall Street Journal, November 21, 1997, p. B20.

28. John R. Wilke, "Microsoft, Justice Department Square Off in Court," Wall Street Journal, December 8, 1997, p. B6.

29. See Jefferson Parish Hospital District No. 2 v. Hyde, 466 U.S. 2, 21-22 (1984).

30. See D. T. Armentano, "Curb Law, Not Microsoft," Journal of Commerce, November 19, 1997.

31. Corcoran and Chandrasekaran.

32. Don Clark, "Microsoft Is Unlikely to Be Hurt by Ruling," Wall Street Journal, December 15, 1997, p. B8.

33. Quoted in "Microsoft under Attack, but Who Is It Hurting?" USA Today, October 23, 1997.

34. See Elizabeth Corcoran, "Speaking Out on Microsoft, Monopolies," Washington Post, October 26, 1997, p. H1.

35. Bill Gates, "Why the Justice Department Is Wrong," Wall Street Journal, November 10, 1997, p. A22.

36. Ibid.

37. Bank and Wilke.

38. "Microsoft under Attack, but Who Is It Hurting?"

39. "Netscape Communications Sees Losses for 4th Quarter, Full Year," Nasdaq, January 5, 1998. Excluding nonrecurring charges, Netscape expects to report profits for 1997, but at a lower level than in 1996. Revenues for 1997 are expected to increase by 54 percent, however.

40. On January 22, 1998, Netscape announced that it would resume making its browser available free of charge. Moreover, the company plans to release the program "source code" to encourage product improvements by third-party software developers. See Don Clark, "Netscape to Share Browser Program Code," Wall Street Journal, January 23, 1998, p. B6.

41. "Network computers" have been touted as the ultimate replacement for PCs. In a network computing environment, software applications reside on, and are accessible from, the Internet, which substitutes for the PC's hard disk. To those who contend that technological progress will come from making PCs easier to use and less costly, advocates of network computers respond that the complexity and cost of a PC is not necessary when the objective is simply to communicate. They cite the telephone as an example of a system in which the bulk of the complexity and cost is in the infrastructure, not in the telephone itself.

42. See Elizabeth Corcoran, "Rivals Unite to Combat Microsoft," Washington Post, November 16, 1997, p. A1.

43. Dean Takahashi, "Intel, Confronting New Market, Develops Own Design for Low-Cost PC Alternative," Wall Street Journal, December 3, 1997, p. B4.

44. Elizabeth Corcoran, "Is Intel's Partnership with Microsoft Waning?" Washington Post, December 4, 1997, p. E1.

45. See Microsoft's "Open Letter to Ralph Nader Appraising the Nader Conference," PRNewswire, November 13, 1997.

46. Colleen Frye, "What a Web Year," Software Magazine, July 1997.
47. Worldwide Software Review and Forecast (Framingham, Mass.: International Data Corp., 1997).
48. United States v. E.I. du Pont de Nemours & Co., 351 U.S. 377, 404 (1956).
49. Worldwide Software Review and Forecast.
50. "Microsoft Rivals Say Browser War Is Really about Windows," CNN Interactive, October 20, 1997.
51. Prices are deemed to be "predatory" only if they are fixed (a) at a level below marginal cost, (b) in the realistic expectation of driving competitors out of the market, and (c) with the goal of raising prices afterward to recoup prior losses. Microsoft contends that what appears to be a zero price for its browser is not predatory. First, according to the company, the marginal cost of Internet Explorer is nearly zero. Second, the price of the combined product more than covers aggregate costs. Third, Netscape is the market leader, strongly allied with companies like Sun and Oracle; it is therefore implausible that Netscape could be ousted from the browser business even if Explorer were given away. Fourth, Netscape also prices below cost by allowing computer users to run Navigator without charge. To date, DOJ has not accused Microsoft of predatory pricing.
52. David Bank, "Why Software and Antitrust Law Make an Uneasy Mix," Wall Street Journal, October 22, 1997, p. B1.
53. Stephen C. Littlechild, "Misleading Calculations of the Social Cost of Monopoly Power," Economic Journal 91 (June 1981): 358 (emphasis in original).
54. F. A. Hayek, "The Meaning of Competition," in Individualism and Economic Order (Chicago: University of Chicago Press, 1948), pp. 94-106.
55. Israel M. Kirzner, "The Market as a Discovery Process," in Discovery, Capitalism, and Distributive Justice (Oxford: Basil Blackwell, 1989), pp. 72-96.
56. See, for example, United States v. Grinnell Corp., 384 U.S. 563, 570-71 (1966) ("The offense of monopoly under § 2 of the Sherman Act has two elements: (1) the possession of

monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident").

57. See Jerry Seper, "Babbitt Must Testify on Casino Licensing," Washington Times, December 17, 1997, p. A-4.

58. Northern Pacific Railway v. United States, 356 U.S. 1, 5 (1958).

59. Sherman Act of 1890, 15 U.S.C. § 1.

60. Clayton Act of 1914, 15 U.S.C. § 14.

61. United Shoe Machinery Corp. v. United States, 247 U.S. 32 (1918).

62. Chicago Board of Trade v. United States, 246 U.S. 231, 238 (1918).

63. International Salt Co. v. United States, 332 U.S. 392 (1947).

64. Northern Pacific Railway at 5.

65. Jefferson Parish at 21-22.

66. Times-Picayune Publishing Co. v. United States, 345 U.S. 594 (1953).

67. Heattransfer Corp. v. Volkswagenwerk, A.G., 553 F.2d 964 (5th Cir. 1977), cert. denied, 434 U.S. 1087 (1978).

68. Digidyne Corp. v. Data General Corp., 734 F.2d 1336 (9th Cir. 1984), cert. denied, 105 S. Ct. 3534 (1985).

69. Eastman Kodak Co. v. Image Technical Services, Inc., 504 U.S. 451 (1992).

70. *Ibid.* at 497 (Scalia, J., dissenting).

71. See, for example, Roger D. Blair and Jeffrey Finci, "The Individual Coercion Doctrine and Tying Arrangements: An Economic Analysis," Florida State University Law Review 10 (1983): 531-68.

72. See, for example, Philip Areeda, Antitrust Analysis, 3d ed. (New York: Aspen Law & Business, 1981), p. 735; Richard N. Pearson, "Tying Arrangements and Antitrust Policy," Northwestern University Law Review 60 (1976): 632-34; D. T. Armentano, The Myths of Antitrust (New Rochelle, N.J.: Arlington House, 1972), pp. 199-203; and Richard S. Markovits, "Tie-Ins, Reciprocity and the Leverage Theory Part II: Tie-Ins, Leverage, and the American Antitrust Laws," Yale Law Journal 80 (1970): 292-93.

73. Jefferson Parish at 26.

74. See Henry N. Butler et al., "The Futility of Antitrust Attacks on Tie-In Sales: An Economic and Legal Analysis," Hastings Law Journal 36 (1984): 181.

75. See Bork, p. 310.

76. Defenders of the antitrust laws argue that collusion among firms operating on the same level of the product distribution chain (e.g., two or more competing manufacturers) is a third source of barriers to entry. Those so-called horizontal restraints are, of course, already prohibited by antitrust law, and the underlying collusive agreements are not enforceable. Because horizontal collusion is a subject that is beyond the scope of this paper, I note only that such arrangements cannot endure in a free market. One would be hard-pressed to identify a single monopoly of more than fleeting significance that arose from collusive conduct. Experience teaches that cartels do not hold; once prices exceed market levels, the temptation to break the agreement becomes all but irresistible. In that rare case in which collusion is surreptitious, and camouflaged by public pronouncements to the contrary, which consumers rely upon, government action might conceivably be justified--but the justification is closer to anti-fraud than to antitrust.

77. For an analysis of targeted government largesse, see Stephen Moore and Dean Stansel, "How Corporate Welfare Won: Clinton and Congress Retreat from Cutting Business Subsidies," Cato Institute Policy Analysis no. 254, May 15, 1996.

78. Competition would be further intensified if patent laws, like copyright laws, permitted an otherwise infringing product to be marketed without infringement, provided the product was independently created.



79. See IBM v. United States, 298 U.S. 131, 139 (1936) (use of punch cards not meeting IBM specifications "causes inaccuracies in the functioning of the [collators], serious in their consequences and difficult to trace to their source, with consequent injury to the reputation of the machines").

80. See David Friedman, Hidden Order: The Economics of Everyday Life (New York: HarperCollins, 1996), pp. 263-64.

81. Some forms of price discrimination--not those addressed herein--are prohibited by the 1936 Robinson-Patman Act, 15 U.S.C. § 13. Broadly speaking, the intent of the act was to protect small retailers from "unfair" competition by the larger chain stores that paid less at wholesale for the same merchandise. The act prohibits price discrimination that might have an anti-competitive effect--unless justified by cost differentials or undertaken to match prices offered by competing producers.

82. Many companies meter usage by installing copy counters or similar gadgets. One author has remarked that it is "bizarre to attack price discrimination when the firm uses tying but not when it employs revolution counters or the endless variety of alternative devices." William F. Baxter, "The Viability of Vertical Restraints Doctrine," California Law Review 75 (1987): 938.

83. Keith K. Wollenberg, "An Economic Analysis of Tie-In Sales: Re-Examining the Leverage Theory," Stanford Law Review 39 (1987): 755-56.

84. *Ibid.*, pp. 751-52.

85. See W. Brian Arthur, Increasing Returns and Path Dependence in the Economy (Ann Arbor: University of Michigan Press, 1994); and Paul Krugman, Peddling Prosperity: Economic Sense and Nonsense in the Age of Diminished Expectations (New York: W. W. Norton, 1994), chap. 9, "The Economics of QWERTY."

86. See Stan Liebowitz and Stephen E. Margolis, "Don't Handcuff Technology," Upside, September 1995, pp. 64-73. "[E]arlier versions of Windows were quite unsuccessful. Microsoft was able to wean customers away from DOS only when Windows 3.0 was able to demonstrate a clear superiority" (p. 72).

87. See Stan Liebowitz and Stephen E. Margolis, "Policy and Path Dependence from QWERTY to Windows 95," Regulation, no. 3 (1995): 33-41.

88. James M. Buchanan and Gordon Tullock, The Calculus of Consent (Ann Arbor: University of Michigan Press, 1962).

89. Quoted in Walter Pincus and George Lardner Jr., "Nixon Hoped Antitrust Threat Would Sway Network Coverage," Washington Post, December 1, 1997, p. A1.

90. Quoted in Declan McCullagh, "In God We Antitrust," Netly News, January 9, 1998.

91. David Burnham, Above the Law: Secret Deals, Political Fixes, and Other Misadventures of the U.S. Department of Justice (New York: Scribner, 1996).

92. "Competition in the Software Industry," Microsoft white paper, January 1998, p. 7.

93. Julian L. Simon, The Ultimate Resource 2 (Princeton, N.J.: Princeton University Press, 1996).

94. See F. A. Hayek, The Fatal Conceit: The Errors of Socialism, vol 1 of The Collected Works of F. A. Hayek (Chicago: University of Chicago Press, 1989).

95. Kenneth J. Arrow, Declaration in support of Microsoft Consent Decree, January 17, 1995.

96. James F. Moore, "U.S. v. Microsoft: The Bigger Question," New York Times, January 25, 1998, p. 12-BU.

97. Greenspan, p. 71 (emphasis in original).

98. See Microsoft's "Open Letter to Ralph Nader Appraising the Nader Conference."

99. Ibid.

100. Virginia I. Postrel, "Creative Insecurity: The Complicated Truth behind the Rise of Microsoft," Reason (January 1998): 6.

101. See Moore.

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