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The Microsoft Case: What Can a Dominant Firm Do to Defend Its Market Position?

Benjamin Klein

At some basic level, the government, Microsoft and the district court all agree on what Microsoft did and what economic purposes were served by Microsoft's actions. Microsoft spent hundreds of millions of dollars developing an improved version of its browser software and then marketed it aggressively, most importantly by integrating it into Windows, pricing it at zero and paying online service providers and personal computer manufacturers for distribution. All of this was aimed at increasing use of Microsoft's Internet Explorer browser technology, both by end users and software developers, to blunt Netscape's threat to the dominance by Windows of the market for personal computer operating systems.

The dominance of Windows in the market for operating systems is due in large part to its success as a software platform—that is, to the fact that a great many software developers write application programs solely for the Windows operating system. Because “porting,” or rewriting applications programs to run on other less popular operating systems, can be expensive, an “applications barrier to entry” may exist in the market for operating systems. Another firm could develop a superior operating system but not succeed in competition with Windows because of the lack of sufficient applications.

Microsoft's competitive actions were motivated by a concern that Netscape could erode this advantage of Windows. If a substantial number of Internet-related applications were developed to run on Netscape's Navigator browser software, Navigator (in combination with Java software from Sun Microsystems) could become an alternative platform. Microsoft then would face effective competition from any operating system that worked with Navigator. The fundamental policy question

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posed by Microsoft's competitive actions is determining what limits should be placed on a dominant firm's ability to compete aggressively in defending its market position.

In deciding whether Microsoft's competitive behavior was anticompetitive, little weight should be placed, in and of itself, on subjective intent. Although documents describing Microsoft's concerns may provide us with economic insights into the competitive process, Microsoft should not be guilty of anticompetitive behavior solely because its executives sent e-mails that advocated aggressive competitive responses to Netscape's potential platform challenge. As part of the normal competitive process, every established firm wishes to check competition by new entrants. In addition, little weight should be placed on whether Microsoft's actions had a detrimental effect on Netscape. All successful competitive actions that benefit consumers have a negative effect on competitors. Something more must be present before concluding that Microsoft's competitive conduct went over the line and should be categorized as anticompetitive.

The government claimed that Microsoft's competitive behavior was predatory because Microsoft could recoup the costs of engaging in the behavior only if Netscape were eliminated as a threat to Windows' platform monopoly. However, this definition of predatory behavior, first suggested by Ordover and Willig (1981), would imply that a firm with a dominant position in a natural monopoly market such as personal computer platforms could never make investments to defend its market position. Competition occurs in such markets primarily by firms bearing up-front costs in the attempt to become the industry standard on which they then expect to earn a monopoly return. It would not be beneficial to consumers to short-circuit this competitive process by imposing a legal obligation on Microsoft essentially to roll over with regard to competitive threats to its platform solely because it currently is dominant and, if successful, will continue to be dominant.

The question of what a dominant firm can do in defense of its market position is examined in what follows by analyzing the four competitive actions taken by Microsoft that significantly affected use of Internet Explorer relative to Navigator: 1) Microsoft's massive investments in browser technology; 2) Microsoft's zero pricing of Internet Explorer; 3) Microsoft's exclusive distribution contracts with Internet access providers; and 4) Microsoft's tying of Internet Explorer to Windows.¹

The government challenged all four actions as predatory and exclusionary. In contrast, the court did not find Microsoft's quality investments and zero pricing to be anticompetitive, and focused on Microsoft's exclusive distribution contracts and

¹ The court describes a number of other Microsoft acts, including: a collusive market-sharing offer made to Netscape; delay in providing technical information to Netscape; exclusive arrangements with some Internet content providers; attempts to prevent companies from developing competing middleware software; and actions taken to retard the widespread acceptance of Sun's Java implementation. Although some or all of these alleged acts may be anticompetitive, there is nearly universal agreement that they did not significantly affect Netscape's browser usage share.

tying arrangements as the key anticompetitive behaviors. Specifically, the court concluded that these behaviors led to Microsoft control of the two “most effective” distribution channels for browser software, through Internet access providers and personal computer manufacturers, thereby restricting Netscape’s ability to “compete on the merits.”² However, competition for distribution is an important part of the competitive process that, like price reductions and quality improvements, may result in significant consumer benefits. An economic analysis of Microsoft’s actions must determine if Microsoft abused this competitive process to the detriment of consumers.

Microsoft’s Investments in Browser Technology

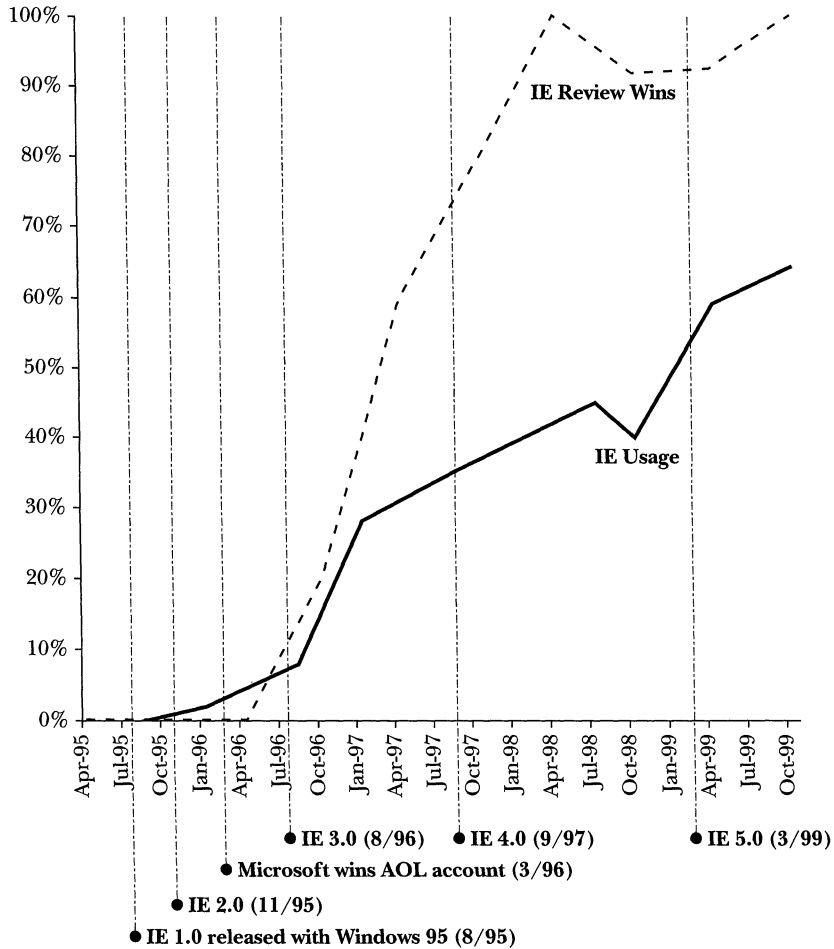
Microsoft first reacted to Netscape’s competitive threat with a massive increase in its investments in browser technology. During 1995–97, Microsoft devoted more than \$100 million per year to browser software development. These investments resulted in a significant improvement in the quality of Internet Explorer relative to Navigator. The dashed line in Figure 1 plots the change over time in the share of review “wins” by Internet Explorer in three popular independent computing magazines. This line indicates that Internet Explorer was clearly inferior to Navigator during 1995–96. It was not until August 1996, with the release of Internet Explorer 3.0, that Microsoft had a browser comparable in quality to Navigator. Approximately one year later, in September 1997, Microsoft achieved superiority in browser quality with the release of Internet Explorer 4.0.

The improvement over time in Internet Explorer’s relative quality coincides with a dramatic increase in Internet Explorer’s usage share, plotted as the solid line in Figure 1. Internet Explorer’s usage share, which was less than 10 percent before Internet Explorer 3.0 was released, grew continuously after 1996 and stood at approximately 45 percent at the time the government filed its complaint in May 1998. Internet Explorer’s share continued to grow during the trial and was about 60 percent when the trial was completed in June 1999.

The court concluded that superior browser technology could not be the cause of Internet Explorer’s usage share increase because the increase began in 1996, before Microsoft’s superior browser, Internet Explorer 4.0, was released. Internet Explorer’s share increase, the court maintained, could only be explained by Microsoft’s anticompetitive behavior. However, Internet Explorer’s usage share did not begin increasing until Microsoft had a comparable quality product available, in 1996, in spite of the fact that Internet Explorer was included in Windows and priced at zero beginning in 1995. Once Microsoft had a comparable quality product, its aggressive competition for

² Throughout the paper, the court’s legal conclusions are from Conclusions of Law (87 F.Supp. 2d 30 [2000]). Detailed references to these conclusions, as well as to the court’s *Findings of Fact* (84 F.Supp. 2d 9 [1999]), upon which I base the description of Microsoft’s behavior presented in this article, can be found in Klein (2001).

Figure 1

Trends in Internet Explorer's Share of Review Wins and Usage

Sources: IE Review Wins based on reviews in *PC Computing* (50 observations), *PC Magazine* (13 observations), *Windows Magazine* (41 observations). IE Usage from Zona Research Browser Census, 1/96, 2/96, 4/96, 8/96, 1/97, 9/97, 7/98, 10/98, 4/99, 11/99.

distribution, most importantly its success in obtaining the America Online account in March 1996, began to influence Internet Explorer's usage share significantly. This experience does not differ from the normal pattern of improved software quality preceding market share gains (Liebowitz and Margolis, 1999).

The government claimed that Microsoft's investments in improved browser technology were predatory and anticompetitive because the only way they could be justified economically was if Microsoft expected the investments to protect its monopoly Windows position by driving Netscape out of the platform market. However, bearing up-front costs in improved browser technology was a primary way

in which Microsoft and Netscape competed for platform dominance.³ Although the winner of such competition may achieve a monopoly, this competitive process resulted in significant consumer benefits. Specifically, browsers became faster, more reliable, more feature-laden, and easier to use. These obvious large consumer benefits led the court to conclude that Microsoft's investments in browser technology were not anticompetitive.

Microsoft's Pricing of Internet Explorer at Zero

Microsoft's pricing of Internet Explorer at zero was emphasized by the government at trial as predatory behavior that could only be explained by its effect on eliminating a major source of revenues for Netscape. Although Netscape always gave away a large number of free copies of its browser software, in contrast to Microsoft it was charging a significant number of its users (primarily businesses) a positive price for Navigator during 1995–97. In January 1998, shortly after Microsoft introduced Internet Explorer 4.0, Netscape succumbed to the competitive pressures and stopped charging for Navigator completely.

Once again the government claimed that Microsoft's behavior met the Ordober and Willig (1981) standard for predatory behavior because zero pricing did not make business sense other than in terms of its anticompetitive effect on Netscape. It also claimed that Microsoft's behavior met the generally accepted legal requirement for predatory pricing—that price is set below marginal cost (Areeda and Turner, 1975). On its face the government had a problem with this position, because browser software has essentially a zero marginal production cost. Moreover, browser software can generate significant advertising revenue and e-commerce commissions by increasing traffic at the browser supplier's website. This is why search software, such as supplied by Yahoo, is competitively priced at zero and why America Online estimated in connection with its purchase of Netscape in November 1998 that it would be worth spending up to \$10 per customer in promotions and other giveaways to get a user to download Navigator from the Internet free of charge. Furthermore, giving software away for free can generate additional ancillary revenues by stimulating sales of complementary software and services. This is why "viewer" software, such as Adobe's Acrobat reader and RealNetworks' multimedia player, is often priced at zero and why Netscape originally decided in 1994 to give away large quantities of its browser software free of charge—to build a user base for its server and browser-related enterprise software (Cusumano and Yoffie, 1998, pp. 98–99).

Given these considerations, the fallback argument for the government was that a browser price of zero was predatory because Microsoft *could* have profitably priced Internet Explorer, at least in the short run, at a positive level. Therefore, Microsoft

³ This is analogous to the up-front competition for a natural monopoly discussed in Demsetz (1968).

was pricing Internet Explorer at less than marginal cost in an “opportunity cost” sense. The court rightly did not accept this “opportunity cost” standard for judging predatory pricing. It is difficult to see the virtue in an antitrust rule that would require dominant firms always to charge as much as possible in the short-run or be accused of predatory behavior. Zero pricing, like expenditures on product quality, may have been an investment by Microsoft in perpetuating its monopoly, but it clearly is part of the legitimate competitive process that benefits consumers.

Microsoft’s De Facto Exclusive Contracts with Internet Access Providers

Rather than accepting the government’s theory that Microsoft’s investments in quality and zero pricing were predatory, the district court focused on Microsoft’s alleged exclusionary actions in dominating what the court considered to be the two “most effective” channels of browser distribution, Internet access providers and personal computer manufacturers.⁴

Internet access providers typically include a web browser as part of the Internet access software they provide to their subscribers. In 1996, America Online, by far the largest Internet access provider covering nearly 40 percent of all Internet users, was looking for a new, improved replacement for its own proprietary browser to incorporate into its Internet access software. America Online informed both Microsoft and Netscape that it intended to use whatever new browser technology it chose on an exclusive basis. This made economic sense for America Online because most of its subscribers were indifferent or unaware concerning the particular browser technology used in their access software. Therefore, the exclusive would not significantly decrease demand for America Online’s service. Furthermore, the exclusive clarified what America Online was offering Microsoft or Netscape—use of the chosen browser by America Online’s entire subscriber base. Since this was extremely valuable to Microsoft and Netscape in their ongoing platform competition, the exclusive guaranteed America Online that Microsoft and Netscape would offer their most favorable terms.⁵

⁴ The government claimed that 25 percent of users obtained their browsers from their Internet access provider, and another 20 percent of users with the purchase of their personal computer. The remaining users obtained their browsers by downloading it electronically over the Internet, receiving it at work or school, or acquiring it from another software or hardware vendor (Plaintiffs’ Proposed Findings of Fact, ¶ 362.1 (iii)).

⁵ In addition to delivering all America Online subscribers, the exclusive assured the winning bidder that America Online was committing not to sell the same promotional services twice, which it could have done to some extent by collecting a per unit usage payment from both browser suppliers based on a promise of full promotional efforts. This indicates that when determining whether there is any cost-saving efficiency rationale for an exclusive arrangement, one must consider more than the classic economic rationale of preventing free riding on manufacturer investments (Marvel, 1982). Exclusives may reduce the contract costs to assure delivery of promised distributor promotional activities (Klein and Murphy, 1988, pp. 286–288).

Microsoft won the competition with Netscape for the America Online account in March 1996 by agreeing to: 1) license Internet Explorer at a zero price; 2) develop a “componentized” or modular version of Internet Explorer (that permitted America Online to customize Internet Explorer by putting its own shell and branding on the browser so that subscribers would see the America Online home page and features as their start page); and 3) include America Online in the online services folder of the Windows desktop free of charge. In effect, the nonprice terms agreed to by Microsoft amounted to Microsoft paying America Online for adoption of Internet Explorer technologies. Microsoft bore the significant development costs of componentization along with the associated loss of e-commerce revenues (since America Online subscriber traffic was moved through the AOL website rather than Microsoft’s MSN portal). In addition, Microsoft lost the revenues it could have otherwise earned if it had charged for space in the Windows online services folder.

In competing with Microsoft for the America Online account, Netscape met Microsoft’s zero price, dropping the price of Navigator to zero from the \$15 to \$20 per copy price it had previously charged Internet access providers. However, Netscape did not meet Microsoft’s other nonprice terms. Indeed, Netscape’s final offer involved plans to charge America Online for the technical work necessary to componentize Navigator and provided no additional consideration to meet Microsoft’s offer to America Online of free space in the Windows online services folder.

In accepting Microsoft’s superior terms, America Online agreed to integrate Internet Explorer into the Internet access software provided to its subscribers and not to promote any other browser for two years.⁶ America Online guaranteed that a minimum of 85 percent of new subscribers would use Internet Explorer technology during the term of the contract. Since new subscribers that knew they wanted to receive Navigator with their Internet access software very likely amounted to less than 15 percent of all new subscribers, this exclusive promotion agreement did not prevent any subscribers that preferred Navigator from specifically requesting and receiving it at the time that they obtained their subscription from America Online. The agreement can be thought of as exclusive in the sense that America Online sold Microsoft all of its “shelf space,” with Navigator retrieved “out of storage” only when a customer specifically asked for it. Microsoft made similar exclusive promotion agreements with most other large Internet access providers.⁷

⁶ The original America Online-Microsoft contract expired during the trial and was renewed and extended to January 1, 2001. If Microsoft attempted to increase the price of Internet Explorer, after the expiration of the contract, say by charging America Online for its listing in the Windows online services file, America Online could easily move its browser technology to Netscape, which it purchased for more than \$4 billion in November 1998. Such an action would dramatically increase Navigator’s usage share.

⁷ Microsoft’s contractual arrangements with the other online services—AT&T, CompuServe (owned by America Online), and Prodigy—were similar to the America Online agreement. In addition, Microsoft entered into similar agreements with a number of Internet service providers (who do not provide significant proprietary content and services in addition to Internet access, as do the online services). These agreements required Internet service providers listed on the Microsoft referral server to make Internet Explorer their “preferred browser” and to ship a minimum percentage of copies to their new

Microsoft's exclusive promotion contracts with Internet access providers did not foreclose Netscape's ability to promote and distribute Navigator in other channels, most importantly by free downloading over the Internet. Indeed, Navigator's installed base continued to increase, from 15 million in 1996 to 33 million in December 1998. However, as Figure 1 indicates, Microsoft's contracts with Internet access providers contributed to a dramatic decline in Navigator's usage share. This led the court to conclude that Microsoft's contracts with Internet access providers were exclusionary because they hindered Netscape's ability to "compete on the merits."

Given the large economies of scale in platform supply, Microsoft's exclusive distribution contracts with the major Internet access providers may have effectively eliminated Netscape as a credible platform competitor for Windows. However, if competition between Microsoft and Netscape for Internet access provider distribution is open, the compensation received by Internet access providers will equal the present discounted value of any future profit expected to be earned on achieving a platform monopoly. In this case, Internet access providers will be forced by competition to pass this compensation (including the saved payments they would otherwise have had to make to Microsoft for valuable space in the Windows online services folder) on to their subscribers in the form of lower access fees or improved services. In this sense, there is no fundamental economic difference between Microsoft and Netscape "competing on the merits" directly for consumer acceptance with browser price reductions or quality improvements and Microsoft and Netscape "competing on the merits" indirectly for consumer acceptance with promotional payments to Internet access providers for distribution.

Competition for exclusive distribution may appear to be inefficient because it reduces the variety of products available to consumers. However, if the exclusive were inefficient, in the sense that reduced variety significantly reduced the Internet access provider's demand without any offsetting cost savings, the exclusive would not survive in open competition. The crucial economic question is whether competition for distribution is truly open, in the sense that no competitor bidding for distribution has a significant advantage over any other competitor, or whether the bidding process does not take place "on the merits," so that equally or more efficient firms are driven out of the market.⁸

There are two distinct scenarios in which competition for distribution may not take place fully "on the merits" and, therefore, lead to the anticompetitive result of insufficient distribution compensation. One scenario is described in Rasmusen, Ramseyer and Wiley (1991), where individual distributors do not take account in

subscribers. Microsoft unilaterally dropped these restrictions on Internet service providers, but not those on America Online and the other online services, a month or so before the government filed its case.

⁸ This question is sometimes formulated in terms of whether the conduct raises rivals' costs (Krattenmaker and Salop, 1986). However, anticompetitive conduct requires more than merely an increase in rivals' costs of competing, since this also occurs when a competitor decreases price or increases quality. The conduct must disrupt the open competitive process in some way.

their demand for compensation of the change that occurs in the market equilibrium when a sufficient number of distributors agree to exclusivity. If there are sufficient economies of scale, the commitment to exclusivity by a large enough number of distributors for a long enough period of time will drive rival firms out of the market. Once distributors expect a firm is likely to succeed in driving out its rivals, distributors will rush to sign the exclusive to avoid being among the remaining uncommitted distributors who will be charged a monopoly price. If Microsoft created such expectations, Internet access providers would choose Microsoft over Netscape even if Netscape offered them superior terms.

This possible disruption of the competitive bidding process for distribution does not apply to Microsoft's exclusive promotion contracts with Internet access providers. Once Microsoft signed a sufficient number of exclusive Internet access provider contracts, it may have made it likely that Microsoft would maintain the platform dominance of Windows, but Microsoft's competitive actions were extremely unlikely to drive Netscape out of the browser software business. In particular, the very significant network effects and economies of scale in the platform market are largely absent in the browser market. Therefore, Internet access providers could reasonably assume that both browser suppliers would co-exist, certainly for a longer period than the term of the exclusive promotion contracts Microsoft was negotiating. As a consequence, there would not be a rush by Internet access providers to sign up with Microsoft to avoid a future monopoly browser price. This is consistent with the evidence that Microsoft won the competition for browser distribution by Internet access providers not by offering less than Netscape, but by offering substantially more than Netscape.

Netscape may have offered Internet access providers substantially less than Microsoft because it did not recognize the fundamental economic reality of platform competition—the necessity to make payments to Internet access providers to get them to adopt a particular browser technology. The lack of sufficient Netscape promotional efforts is suggested in America Online's due diligence investigation in connection with its 1998 purchase of Netscape and the fact that Netscape generally made relatively low marketing expenditures. Perhaps Netscape thought in early 1996, when competition for the America Online and other Internet access provider accounts was occurring, that it still had a sufficiently superior product and, therefore, did not have to meet the full price Microsoft was paying Internet access providers to use Internet Explorer.

Alternatively, Netscape may have failed to compete more aggressively because it knew that Microsoft always would be willing to pay more than it would for Internet access provider distribution. This is the second scenario by which competition for distribution may not occur entirely "on the merits." Under this scenario an incumbent such as Microsoft may have a significant advantage over entrants in competing for distribution because if Microsoft wins the competition, it maintains its platform monopoly. On the other hand, if Netscape wins the competition for distribution, it means that the platform market would operate for some time under duopoly conditions, until the Windows platform (in established, non-Internet

related applications) depreciated fully. Therefore, Microsoft has a greater economic incentive to make the investments necessary to obtain distribution.⁹

This advantage of incumbency is not determinative. If there are efficiencies associated with an entrant's new technology, the incumbent has to make investments in the new technology to remain competitive. In spite of its control of Windows, Microsoft had to make investments in browser technology to maintain its dominant platform position. While the incumbent has the incentive to make larger, more rapid investments because of its larger potential payoff, Microsoft's experience in failing to extend its platform dominance to handheld and wireless devices indicates that an incumbent may still lose this competitive battle if its responses are delayed or inadequate. This possibility is what encourages entrants to challenge incumbent monopolists notwithstanding the fact that the incumbent may have more to gain in the competitive battle. It is also why we should not adopt rules that artificially restrain this competitive process.

The government did not present either of these scenarios when claiming that competition between Microsoft and Netscape for distribution was not "on the merits." Instead, it maintained that Microsoft obtained distribution by engaging in predatory overcompensation of Internet access providers. As with all forms of predatory behavior, such as the government's claims with regard to Microsoft's alleged predatory price and quality competition, the concern is that Microsoft's actions may have produced short-term benefits for consumers, but also imposed larger longer-term costs on consumers. In particular, Microsoft's alleged short-term overpayment for browser distribution may have led Netscape to give up the battle for the personal computer platform business sooner than otherwise and created an aggressive competitor reputation for Microsoft that deterred the entry of other potential platform rivals in the future.

However, the government's only evidence that Microsoft paid "too much" to obtain Internet Explorer usage by Internet access providers is, once again, the inappropriate comparison of the large costs to Microsoft of winning the accounts with the very small, if nonexistent, direct financial benefits Microsoft received from increased Internet Explorer usage. The indirect benefits of increased future Windows sales associated with the preservation of the Windows platform are, by definition, categorized as the anticompetitive motivation for the claimed overcompensation.

⁹ This is similar to models of entry deterrence, where an incumbent firm that has already borne the required sunk fixed costs will not exit immediately in response to new firm entry (Salop, 1979). Granitz and Klein (1996, pp. 35–36) provide an example of this when documenting Rockefeller's success in maintaining Standard Oil's monopoly over petroleum transportation in the face of the development of new long-distance pipeline technology. If the entrants into petroleum transportation had won the competitive battle, railroad transportation would have remained as a competitive substitute until the railroads' petroleum-specific assets depreciated, depressing the price of petroleum transportation in the interim. In contrast to Microsoft, it is important to recognize that Standard achieved its original monopoly over petroleum transportation anticompetitively (by establishing and enforcing a railroad cartel) and protected its monopoly not solely by making larger, more rapid investments in the new pipeline technology, but also by acquiring the competing pipeline entrant.

The effective negative price Microsoft charged to Internet access providers for Internet Explorer means that this Microsoft behavior met the necessary legal condition for predatory pricing that price is less than marginal cost. However, the equilibrium competitive price in this circumstance was clearly negative. Paying for distribution is analytically identical to Microsoft making investments in improved browser quality and is exactly what one would expect as part of open competition for platform dominance. As long as Microsoft is not taking advantage of its incumbent monopoly position, we should be reluctant to short circuit this competitive process that clearly benefits consumers with claims of predatory behavior. This is especially the case here, where Netscape never effectively competed for Internet access provider distribution by pricing Navigator at the competitive negative level.

Whatever the reason Netscape failed to compete more actively with Microsoft for the Internet access provider accounts, Microsoft's success did not rely on the exercise of any market power advantage it possessed over Internet access providers by virtue of its ownership of Windows. While Microsoft offered America Online and other Internet access providers free space in the Windows online services folder, this space was not costless for Microsoft to provide; it was just the currency used by Microsoft to partially pay for Internet Explorer usage. Although space in the online services folder certainly was valuable to Internet access providers, the space was not an indispensable input that Internet access providers had to obtain to remain in business.¹⁰ Rather than possessing a competitive advantage over Netscape in bidding for the Internet access provider accounts, Microsoft succeeded merely because it offered them, and therefore their subscribers, a better deal.

Microsoft's Tying of Internet Explorer to Windows

In contrast to the competition for browser distribution by Internet access providers, where Microsoft and Netscape were competing on an equal footing, Microsoft possessed an inherent advantage over Netscape in competing for browser distribution through personal computer manufacturers. Since personal computer manufacturers had to license Windows to remain in business, Microsoft could foreclose Netscape from the personal computer distribution channel by tying Internet Explorer exclusively to Windows and, in this way, drive Netscape out of the platform market.¹¹ However, this potential anticompetitive effect of tying is not

¹⁰ In fact, Microsoft overcame its initial reluctance to provide America Online with space on the Windows desktop after it recognized that America Online was already obtaining prominent desktop space by purchasing it directly from computer manufacturers.

¹¹ This is analogous to the Whinston (1990) theory of anticompetitive tying, where a firm with market power in a tying good can drive rival suppliers of a tied good out of business and thereby collect a monopoly price on tied good sales made to consumers not purchasing the firm's tying good. Applying Whinston's theory to the Microsoft case, it is not the future monopoly price of browser software purchased by consumers that do not currently use Windows that motivates Microsoft. Instead, the tie

present in the two Microsoft tying arrangements condemned by the court—Microsoft’s technological integration of Internet Explorer in Windows and its contractual prohibition on removal of the Internet Explorer icon from the Windows desktop.

With regard to the technological tie of Internet Explorer to Windows, the court found that Microsoft designed Windows so that Internet Explorer could not easily be removed without substantially degrading the operation of Windows.¹² Although Microsoft credibly claimed that there were efficiencies of integrating browser technology into the operating system, the court responded that these efficiencies did not require Microsoft to make it unnecessarily difficult for users to unbundle Internet Explorer from Windows. According to the court, Microsoft’s design actually reduced operating system performance by decreasing run speed and increasing the possibility of bugs and viruses for those (relatively few) consumers and businesses that did not want their computers to possess browsing capability. Therefore, the court concluded that Microsoft’s particular integrated design had no economic rationale other than placing Netscape at a competitive disadvantage.

Regardless of whether the court’s legal standard for computer software design is upheld,¹³ it must be recognized in evaluating the potential anticompetitive effects of Microsoft’s integrated design of Windows that the design was nonexclusive. The economic significance of this can be appreciated by comparing Microsoft’s technological integration of Internet Explorer in Windows with the classic case of technological tying instituted by IBM, where IBM designed the interface for its mainframe computers so that only its peripherals would work with its computers.¹⁴ As a result, IBM foreclosed competing peripheral manufacturers from supplying products to IBM mainframe users, who accounted for a large share of all

decreases usage of Navigator below the critical level necessary for it to become a future competitor to Windows in the platform market, permitting Microsoft to earn future monopoly profits on its tying good, Windows. This extension of the Whinston model is developed in Carlton and Waldman (2000). What is unclear about such Whinston-type tying analysis is why buyers (personal computer manufacturers in this case) do not fully adjust downward their demand price for Windows to take account of the opportunity cost imposed by the tie of not being able to sell their “shelf space” to rival browser suppliers. One possible answer, based on the Rasmusen, Ramseyer and Wiley (1991) analysis, is that by using its market power in Windows together with a tying arrangement, Microsoft obtains exclusive commitments from buyers in the tied good market more cheaply than if it had to purchase the exclusives in open competition because expectations are created among buyers that Microsoft is likely to succeed in driving out rival platform suppliers.

¹² This describes the design of Windows 98. Internet Explorer was not as fully integrated into Windows 95, and Microsoft also contractually prohibited personal computer manufacturers from distributing Windows 95 without Internet Explorer.

¹³ A previous Appeals Court ruling interpreting an earlier Microsoft consent decree held that judges should not oversee software product design and “second-guess” the claimed benefits of a firm’s integration decisions as long as there are any plausible efficiency advantages associated with the integration. See *United States v. Microsoft Corp.* (147 F.3d 935, 950 [D.C. Cir. 1998]).

¹⁴ See *California Computer Products v. IBM* (613 F.2d 727 [9th Cir. 1979]) and *In re IBM Peripheral EDP Devices Antitrust Litigation* (481 F. Supp. 965 [N.D. Cal. 1979]).

mainframe users. In contrast, Microsoft implemented its technological integration of Internet Explorer in Windows so that Navigator worked with Windows.¹⁵

Even with nonexclusive integration, a firm with market power may achieve a significant advantage over its competitors because the integrated product is paid for in the package price. Therefore, consumers that desire the competitively supplied version of the tied product must pay extra to obtain it. But in this case, there is no extra cost to a computer manufacturer of purchasing a second browser because the price of Navigator was zero. The only additional costs to a computer manufacturer wishing to load Navigator on its machines are the trivial costs associated with extra hard disk space and the possibility of increased customer support expenditures from consumer confusion.

However, the only examples of Microsoft “forcing” personal computer manufacturers that preferred Navigator to accept Internet Explorer as part of Windows do not deal with Microsoft’s refusal to give computer manufacturers the option of licensing a browserless version of Windows. Instead, they deal with Microsoft’s refusal to let personal computer manufacturers remove the Internet Explorer icon from the Windows desktop. This is the contractual requirement that the court found amounted to an illegal tie of Internet Explorer to Windows.¹⁶

This tie is best illustrated by the 1996 dispute between Microsoft and Compaq. The dispute originated in the 1995 promotion and distribution agreement entered into by America Online and Compaq, whereby Compaq agreed to feature America Online exclusively on its computers in return for a per machine payment by America Online. Pursuant to this agreement, in early 1996 Compaq began to ship its Presario personal computers with the Internet Explorer and MSN icons removed from the desktops. In response, Microsoft informed Compaq that it was in violation of its Windows license and, in May 1996, threatened to terminate the license and no longer provide Windows to Compaq if the Microsoft icons were not restored. Compaq complied with Microsoft’s demand and renegotiated its America Online agreement.

Contrary to popular accounts of this dispute, Microsoft did not demand that Compaq remove the Navigator icon from its desktops. In contrast to a usual tying

¹⁵ The court did find that Microsoft briefly withheld from Netscape in 1995 Windows-related technical information that caused delays in Netscape’s release of its Windows 95 browser. Other than this incident, Microsoft always provided Netscape with the technical information necessary for Navigator to work with Windows. The court proposed that in the future Microsoft be required to publish this technical information so that it would be freely available to competitors and its release not subject to Microsoft’s discretion.

¹⁶ Therefore, if this contractual tying were prohibited, as the court proposed with its requirement that personal computer manufacturers be permitted to reconfigure the initial Windows screen freely, the court’s proposed remedy for technological tying, that Microsoft license a version of Windows without browser code, is economically unnecessary. The court’s further proposed requirement that the browserless version of Windows be sold at a discount based on the percentage reduction in the number of bytes of code in Windows when Internet Explorer functionality is removed makes no economic sense. It arbitrarily assumes that the value of software is related to the physical amount of code and ignores the fact that both Microsoft and Netscape are willing to pay users for adopting their browser—that is, that the Windows price should be *higher* when Internet Explorer is removed.

arrangement, Microsoft did not contractually require personal computer manufacturers to use Internet Explorer as their exclusive browser. Under the terms of Microsoft's Windows license, Compaq could have continued to install Navigator and, if it so wished, even could have made Navigator the default browser on all Compaq machines, so that Navigator would be set as the browser automatically used when individuals clicked on hyperlinks in other applications. Microsoft only insisted that, under the terms of its Windows license, computer manufacturers such as Compaq could not remove the Internet Explorer icon from their desktops.

The dispute between Compaq and Microsoft should be viewed as a battle over property rights to the personal computer desktop. Microsoft never challenged the fact that Compaq possessed the right to sell preferred desktop placement to firms such as America Online. However, it claimed that, under its existing Windows licensing agreement, Compaq could not remove Microsoft's icons and, hence, sell *exclusive* desktop space to America Online. While most of the initial screen (with room for up to 40 additional icons) remained available for Compaq to sell to others, Microsoft believed that it had acquired property rights to some space on the desktops of Compaq machines as part of its original Windows license.

The disagreement between Microsoft and Compaq can be thought of as a licensing dispute regarding whether an additional side payment had to be made by Microsoft in order to keep its icons on the Compaq desktop, or whether the existing Windows license already covered desktop placement. Once this element of the contract was clarified going forward, Microsoft would find it profitable to "buy" desktop rights for its icons from personal computer manufacturers in the form of a lower price for Windows. The profit-maximizing price of Windows is lower if Microsoft retains control of some of the Windows desktop because personal computer manufacturers are willing to pay less for Windows when they are giving up some of their valuable desktop space as part of the license. Alternatively, computer manufacturers that do not remove the Internet Explorer icon are providing something of value to Microsoft—the ready means to access Internet Explorer from the desktop—for which Microsoft will find in its interest to compensate them. This compensation for personal computer manufacturer "shelf space" in the form of a lower Windows price will be passed on to personal computer buyers by competing personal computer manufacturers.

The narrow question is whether Microsoft was engaging in anticompetitive behavior when it did not give personal computer manufacturers the choice of paying a reasonably higher Windows price in return for the option to remove the Microsoft icons from the Windows desktop. Microsoft claimed that it did not offer personal computer manufacturers this choice because it would have disturbed the uniform "Windows Experience" of consumers. But computer manufacturers are permitted to modify the Windows boot sequence in many different ways and the initial Windows screen is far from standardized, either across personal computer manufacturers or over time for any given manufacturer. However, granting the weakness of the Microsoft argument, it still seems unlikely that Microsoft's refusal to allow personal computer manufacturers to delete the Internet Explorer icon had

any significant anticompetitive effect. The restraint was nonexclusive and did not prevent Netscape from being able to distribute Navigator along with the Navigator icon on personal computer desktops.

While the two ties of concern to the court did not prevent Netscape from effectively competing for and obtaining distribution of Navigator through personal computer manufacturers, a third type of “tie” may have substantially hindered Netscape’s ability to compete—Microsoft’s offer to personal computer manufacturers of marketing funds and Windows discounts in return for their promotion of Internet Explorer.¹⁷ Microsoft never demanded that a computer manufacturer remove Navigator or the Navigator icon from the Windows desktop as a condition for licensing Windows. However, Microsoft did reduce the royalty price of Windows to personal computer manufacturers that set Internet Explorer as the initial default browser on their computers or who displayed Internet Explorer’s logo and links to Microsoft’s Internet Explorer update page on their computer manufacturer’s home pages. Microsoft also entered one explicit exclusive Internet Explorer promotion contract, with Compaq in February 1997, which involved a payment to Compaq based on the number of users that signed up for Internet access using a Compaq personal computer.

Were these Windows discounts for promotion of Internet Explorer large enough so that Microsoft’s pricing in effect amounted to de facto exclusive distribution arrangements that personal computer manufacturers could not economically refuse? In late 1998, Navigator was included on about 22 percent of personal computer manufacturer shipments. This indicates that, although Netscape was not foreclosed entirely from the personal computer manufacturer channel, a very large fraction of personal computers were shipped exclusively with Internet Explorer. In addition to Windows discounts, this may have been the result of Internet Explorer’s superior quality or, once again, the possibility that Netscape did not recognize the necessity to engage in aggressive promotional activity. However, the court testimony with regard to the magnitude of Microsoft’s promotional discounts to personal computer manufacturers is under seal and, therefore, not available to allow me to reach a conclusion.

The court provides one indirect estimate of how much of Compaq’s relatively favorable price for Windows was compensation for Compaq’s adoption of Internet Explorer exclusivity. The court describes a January 1999 advertising credit of \$700,000 that Netscape paid to Compaq to have Navigator distributed on Compaq’s Presario computers. To the court, this payment was evidence of the anticompetitive disadvantage Netscape faced in the personal computer channel. However, this amounted to only about 18 cents for each copy of Navigator Compaq distributed. Surely a more reasonable interpretation is that, in spite of Microsoft’s arrange-

¹⁷ The court considered these promotional arrangements to be exclusionary, but it did not describe them as tying contracts. However, because the compensation provided to personal computer manufacturers was related to Microsoft’s licensing terms for Windows, it may be analytically useful to include these arrangements under the tying category.

ments, distributing a competing browser through computer manufacturers was not particularly expensive. Because Netscape negotiated its distribution agreement with Compaq during the height of the trial, Microsoft may not have reacted as it normally would have to the Netscape-Compaq deal, either by insisting on its exclusive or by adjusting the Windows price upwards to reflect the loss of its exclusive. But this evidence indicates that, at least at this point in time, Netscape had the ability to obtain distribution through personal computer manufacturers at a reasonable cost.¹⁸

Conclusion

The guiding economic principle in deciding whether behavior by a dominant firm involves “competition on the merits” is whether the behavior benefits consumers or produces efficiencies. When the benefits to consumers from Microsoft’s competitive actions were obvious, as it was for its investments in improved browser quality and its zero pricing, the court did not find the behavior to be anticompetitive. This conclusion was reached in spite of the fact that Microsoft’s pricing and quality investments clearly contributed to the maintenance of its position as the dominant personal computer platform.

This illustrates that the legal standard for predatory conduct involves more than a determination of whether the costs to the firm of its conduct are likely to be recouped in future monopoly profits. Although this is a reasonable necessary condition and, therefore, useful screening device for anticompetitive behavior, it is not a sufficient condition. This is especially clear in the economic circumstances of the Microsoft case, where a platform monopoly is likely to exist in any event and where “competition on the merits” highly beneficial to consumers can be expected to result in the creation or maintenance of market power.

An additional necessary condition for predatory behavior that price be less than marginal cost also is unlikely to be determinative when considering up-front expenditures on product quality improvements or on promotional payments for distribution. A crucial condition for anticompetitive behavior in such cases is that the competitive process is not open. In particular, we should be concerned only if a dominant firm abuses its market power in a way that places rivals at a significant competitive disadvantage without any reasonable business justification. Only under these circumstances can more efficient rivals be driven out of the market and consumers not receive the full benefits of competition for dominance.

The only Microsoft conduct analyzed in this paper that may fit this criteria for anticompetitive behavior are the actions Microsoft took in obtaining browser distribution through personal computer manufacturers. There are no apparent efficiency justifications for the specific way Microsoft technologically integrated

¹⁸ It also indicates that the government’s claim of significant increased service costs associated with consumer confusion when computer manufacturers distribute two browsers cannot be correct.

Internet Explorer in Windows or insisted that the Internet Explorer icon remain on the Windows desktop. However, these nonexclusive forms of tying only trivially increased Netscape's costs of obtaining distribution through computer manufacturers and did not prevent Netscape from being able to "compete on the merits." Whether these nonexclusionary design and marketing decisions should be condemned, in spite of the absence of significant anticompetitive effects, because of Microsoft's market power is a central antitrust question that must be answered in this case.

Microsoft's Windows price discounts granted in return for personal computer manufacturer promotion of Internet Explorer, on the other hand, may have involved an anticompetitive abuse of Microsoft's market power. If the discounts were so large that, as a practical matter, many personal computer manufacturers had no economic choice but to distribute Internet Explorer exclusively, Netscape was placed at a significant competitive disadvantage and consumers may not have received the full benefits of the competitive process. However, the court's proposed structural remedy of breaking up Microsoft into separate operating system and application companies is a major overreaction to this potential problem.¹⁹

It is important to recognize that the primary effect of Microsoft's aggressive competitive behavior in protecting its Windows platform was a large, unambiguous gain in consumer welfare. Microsoft's behavior prevented Netscape from achieving its original vision of becoming a competitive platform to Windows for Internet applications, a result the court recognizes was unlikely even in the absence of Microsoft's claimed anticompetitive behavior. But as a consequence of Microsoft's actions, consumers experienced significant improvements in browser software quality, lower browser prices and the indirect benefits of large promotional payments made to browser distributors. Imposing the drastic remedy of divestiture as a way to discourage this competitive behavior would be throwing out the baby with the bathwater.

¹⁹ The court's interim requirement that Microsoft set uniform, "nondiscriminatory" Windows prices to all personal computer manufacturers is a more reasonable solution. However, uniform pricing, if rigidly enforced, would unnecessarily restrain the ability of Microsoft to compete for personal computer manufacturer distribution, to the detriment of consumers. For example, it would prevent Microsoft from promoting Internet Explorer even in the relatively unrestrictive, nonexclusive way of offering a lower Windows price to personal computer manufacturers that do not remove the Internet Explorer icon. But an alternative rule that would permit Microsoft to set "reasonable" Windows price differentials for different levels of personal computer manufacturer promotional efforts would obligate the court to undertake the difficult task of detailed microregulation of software prices.

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