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**An Analysis of the Costs and Benefits of Delaying
the Release of Windows XP**

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WINDOWS XP, Microsoft's new PC operating system, is due for public release on October 25, 2001 and, in fact, will be available even sooner: some manufacturers plan to start shipping new computers with XP preinstalled in late September.¹ Various parties, however, including Senator Charles Schumer (D-NY), have urged that Microsoft delay the release.² By no coincidence, the Senate Judiciary Committee is planning to hold hearings on the competitive implications of Windows XP and related topics.³

Those calling for a delay cite features in Windows XP that they claim threaten competition in software in ways reminiscent of Microsoft's actions to protect Windows from Netscape Navigator's Internet browser in the mid-to-late 1990s. And if the analogy were accurate, their concerns should be taken seriously.

But the circumstances are quite different. Although the DC Circuit Court of Appeals recently affirmed the District Court's ruling that some of Microsoft's actions in the "browser war" violated the Sherman Antitrust Act, it drastically narrowed the set of actions deemed anticompetitive and left only one of the three counts standing. In particular, the Court of Appeals found that it was not illegal *per se* to integrate new features into Windows or to promote them vigorously. Moreover, the key ingredient in the Web browser case is missing with the features at issue in Windows XP – none is an alternative platform for applications software that could plausibly weaken the popularity of Windows as the leading PC operating system.⁴

While it is not possible to quantify the impact of delay, the evidence strongly suggests the costs would be substantial and the benefits to competition would be minimal at best. Indeed, there is good reason to believe that the release of Windows XP will increase consumer choice and provide additional competition in key software – most significantly, in instant messaging. As a result, delaying the release of Windows XP is more likely to harm competition than to increase it, because such a delay would benefit AOL Time Warner and other strong incumbents at the expense of consumers.

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It is also worth noting that the risks in failing to stop the introduction of Windows XP are modest: If I am wrong, and there are indeed competition-related benefits to modifying Windows XP, those benefits could still be obtained after the ongoing legal process in *U.S. v. Microsoft* concludes with a final set of remedies.⁵

NEW FEATURES IN WINDOWS XP

Windows XP is the successor to both Microsoft's business-oriented operating system Windows 2000 and Microsoft's consumer operating system Windows Me. It combines the greater stability of Windows 2000 with additional elements both to meet the needs of home users for easy use and to allow consumers to run older software applications. Most of the concerns about the competitive impact of Windows XP have focused on several new or enhanced features: Windows Messenger (instant messaging), Windows Media Player (multimedia playback and recording), Scanner and Camera Wizard (digital image acquisition and editing), and easier access to Microsoft's Passport service (Internet identification and authentication).

Existing instant messaging services allow individuals to exchange text messages with others connected to the same service, the largest of which are operated by AOL Time Warner, Yahoo, and Microsoft's MSN.⁶ All of the leading services are free. The new Windows Messenger software in Windows XP offers several advances, including the ability to send audio and video as well as text. In addition, Microsoft has made it possible for independent software developers to piggy-back on Windows Messenger, opening the way for software that, for example, would permit collaborative editing of complex documents over the Internet.⁷

Windows has included software for playing multimedia files for roughly a decade. The version of Windows Media Player included with Windows XP, though, offers some enhanced features including DVD playback, CD recording, and the ability to transfer video recordings to portable players.⁸

Critics have complained that Media Player XP provides more complete support for Microsoft's own media formats. That is true of Windows XP – but no truer than it was of earlier versions of Windows. Moreover, Microsoft claims that this largely reflects the unwillingness of some competitors – notably RealNetworks – to exchange technology licenses with Microsoft.⁹ Another factor affecting Microsoft's decision to enhance Media Player at the potential expense of rivals is that the owners of some competing technologies demand high fees to license their software. MP3 recording software reportedly costs \$2.50 per copy¹⁰ – a lot of money in light of the fact that the whole Windows XP package probably costs computer makers less than \$75 per copy.

The digital imaging industries have developed a new standard that allows com-

puters to detect a digital camera or other imaging device.¹¹ Software on the computer can then prompt the user to download images from the camera. Windows XP includes software that implements the standard. Once a camera is detected, the new operating system offers the user a list of programs (including both the software included in Windows XP and software installed by computer manufacturers or end users) that can organize and edit the images.

Windows XP also provides software that makes it more convenient to send digital image files to commercial services for printing or other processing. The display of image processors will include those companies that have reached agreements with Microsoft, as well as other companies that have agreements with individual computer manufacturers. Computer users are also free to add to their own lists.

Passport is Microsoft's system for identifying and authenticating users of Web services. Once a user creates a "Passport," a Web site that subscribes to Microsoft's proprietary service can identify a visitor without requiring the visitor to reenter the information. For basic services, the only information required by Passport is an email address. For more extensive services, users must supply additional information (such as credit-card numbers). Passport is a stand-alone service. However, owners of Windows XP can instruct their computers to log them on to the Passport system automatically.

In addition to raising concerns about the potential anti-competitive effect of these new features, critics of Microsoft have complained that Windows XP drops an earlier feature – Microsoft's Java Virtual Machine software for running small applications written in the Java programming language. But this decision can only be understood in the context of Microsoft's ongoing legal battles with Sun Microsystems, the owner of Java.

Sun earlier sued Microsoft for adding Windows-specific features to its Java Virtual Machine, and for failing to support some of Sun's own additions. Under the settlement reached early in 2001, Microsoft is not allowed to update its JVM – although it is still allowed to distribute its existing JVM, which conforms to four-year old specifications that Sun pronounced "outdated."¹² Microsoft subsequently decided that its aging JVM would not be part of the standard Windows XP package. Computer makers apparently remain free to preinstall it (several major ones have announced they will). And, Microsoft says it will guide buyers of Windows XP who do not receive a JVM to a Microsoft Web site for downloading and installation.¹³

MISTAKEN ANALOGIES TO THE INTERNET EXPLORER CASE

In essence, critics argue, integration of new features into the popular operating system would confer such a huge competitive advantage that Microsoft would win, even if its

software is inferior to rivals'. Unless Microsoft is stopped, they say, it will repeat the strategy it followed with Web browsers, crushing the competition and solidifying its operating system monopoly.

But the analogies to the Internet Explorer case are misleading in two important ways.¹⁴ First, the one antitrust count on which Microsoft currently stands liable is “monopoly maintenance,” and that finding rests entirely on the judge’s decision that Netscape’s Web browser represented a plausible (albeit nascent) threat to Microsoft’s competitive position in PC operating systems. By contrast, the products put at a competitive disadvantage by Windows XP do not have the potential to threaten the Windows operating system monopoly.¹⁵

Second, the Court of Appeals did *not* find it illegal on its face to add features to Windows at no extra charge. Over the years, Microsoft and other operating system makers (including Apple and IBM) have added numerous new features to their operating systems, almost always at no separate charge. If that were all Microsoft had done to promote Internet Explorer, the company would not have been found in violation of the antitrust laws. The Court of Appeals decided that Microsoft only crossed the line when it restricted the ability of third parties (such as Internet service providers) to promote and distribute the competing Netscape browser. The restrictions were found anticompetitive because Netscape represented a threat to Windows.

Unlike Web browsers, RealPlayer (the leading media player, produced by RealNetworks) is not a candidate to become a general-purpose platform for software applications. And whatever its fears about competition from Microsoft’s digital imaging software, no one expects Kodak’s software to become a platform for, say, word processing or spreadsheet software.

Similarly, AOL’s instant messaging service has not been promoted as a platform for other software. If AOL Time Warner were to mount a platform challenge to Windows, the more plausible foundation would be the consumer software and the large network of servers that provide online content and services to the 33 million subscribers to its online services, AOL and CompuServe.

THE COSTS OF DELAY

Delaying Windows XP would impose costs on consumers and on many businesses in computer-related industries. Consider first the PC manufacturers.

Along with the high-technology sector generally, the PC industry is in a slump. Retail sales of PCs are down 20 percent from a year ago,¹⁶ despite efforts to spur sales by slashing prices.¹⁷ And most of the large PC manufacturers have responded by cutting their workforces.¹⁸

In this gloomy environment, many companies are hoping that the release of Windows XP will spur sales, not only of new computers (which many users would need to take advantage of the new operating system's features) but also of ancillary hardware and software. An analyst for the NPD Intellect marketing data service commented that, "I think everyone has pretty much written off back to school and is focusing on [Windows] XP and Christmas for a real opportunity to get back to normal."¹⁹ The president of the CompUSA chain of computer stores calls the release of XP "the single most important event in the industry and for our stores this year."²⁰

Although PC manufacturers cannot yet ship new machines with XP preinstalled, they are taking pains to assure computer purchasers that their hardware can be upgraded to Windows XP. Systems from Dell, Gateway, Compaq, and others come with labels attesting that they are "XP Ready." And for several months, major vendors have sold new computers with coupons that will allow consumers to upgrade at very low cost (\$20 in the case of Dell).²¹

Manufacturers are taking these steps for fear that consumers otherwise would put off buying new computer systems. One analyst, Rob Enderle with Giga Information Group Inc., estimates that a delay to XP that prevents shipments for this holiday season would have an overall market impact on PC makers and others in the computer industry of anywhere from \$4.5 billion to \$9 billion in lost revenues for hardware, software, and PC accessories.²²

Windows XP may also spur the purchase of software and non-computer hardware. As an article in the online edition of the *Washington Post* put it, "many companies believe it will inspire people to buy all sorts of other digital gizmos and software – and help revive the slumping technology sector."²³ New digital cameras, for example, incorporate the new industry standard technology. But camera buyers will not be able to take advantage of advanced features until they upgrade their PC operating systems.²⁴ Thus, there is positive feedback: new cameras make Windows XP more useful, and vice versa.

Independent software vendors have also based their development plans on Windows XP. Symantec and Computer Associates, which make security software and other utilities, have both developed new versions to work with Windows XP. For other types of software, older versions will work with the new system, but new versions are being developed to take advantage of the features in Windows XP. Adobe Systems, for one, is planning to lever sales to its introduction. "By unifying the various Windows platforms," the company says, "Microsoft is making it easier for Adobe to deliver award-winning Windows-based applications."²⁵

Consumers who want the new features and better performance of Windows XP are, of course, the major beneficiaries of its release and, hence, would be likely to suf-

fer the greatest costs from its delay. In principle, those costs could be measured in terms of lost consumer value – the difference between what consumers would be willing to pay for new features and what they actually pay. Unfortunately, there are no data available from which to estimate the potential consumer gain. At least two factors, however, suggest that it is likely to be substantial.

First, computer manufacturers believe that many consumers care enough about the additional benefits from Windows XP to delay purchase of a new machine. Thus, as noted above, manufacturers have taken pains to assure consumers who buy computers now that the hardware will handle Windows XP and that they can get the upgrade at a low price. Second, computer manufacturers believe that once Windows XP becomes available, it will stimulate sales of the more powerful machines needed to take advantage of those new features.

Thus far I have focused on the costs of a delay anticipated well in advance by market participants, who can modify their plans accordingly. At this point, however, any delay would occur *after* many market participants have made commitments on the expectation that Windows XP would be released as scheduled. Product development and marketing plans have been made on that basis and some consumers have presumably made decisions in anticipation of the Windows XP release, too. Thus, the closer to the scheduled date that a delay occurs, the fewer the opportunities to modify plans in response, and the higher the cost.

For example, a PC manufacturer may have formulated advertising campaigns around Windows XP and the holiday season; if the release is now delayed, those advertisements may have to be revised or simply discarded. PC manufacturers have also based the configurations of new computers on features in Windows XP and they have reduced inventory of computers with older operating systems.²⁶

Similarly, consumers would find their choices narrowed by the last-minute nature of the delay. For example, suppose a consumer were planning to purchase a computer in July, but decided to wait three months to get it with XP preinstalled. Further suppose that in mid-September, Microsoft is forced by the government to delay the release until January. Had the user known in July that the release would be that late, she might well have bought a new computer then. Instead, she is again faced with waiting another three months or buying a system in September and incurring the cost and inconvenience of installing Windows XP later. If the delay catches retailers short of PC systems with non-XP software, the consumer may have only one option: wait the three months.

EFFECTS ON COMPETITION FROM DELAYING WINDOWS XP: BENEFITS OR COSTS?

It is hard to see how a delay would increase competition or benefit consumers. Indeed, it seems more likely that a delay would *reduce* competition in the relevant software segments. The most vocal critics of Windows XP, it should be noted, are well-entrenched incumbents in those segments.

Senator Schumer acknowledged that his concerns were largely motivated by complaints from two companies headquartered in New York State, AOL Time Warner and Kodak.²⁷ Both companies are leaders in market segments affected by features in Windows XP. Kodak's complaints have been limited to features related to digital images, where Kodak is a major player.^{28,29} AOL Time Warner, for its part, sees Windows XP as competing in several areas:

- Windows messenger would increase competitive pressure on AOL Time Warner's AIM and ICQ services, which together account for over two-thirds of the estimated time people spend using instant messaging.³⁰
- Windows Media Player competes not only with AOL Time Warner's own Winamp player, but also with the market leader, RealPlayer from RealNetworks, which is the exclusive outside provider of this software to AOL members.³¹
- Microsoft's Passport service, which is easier to utilize through Windows XP, competes with efforts by AOL Time Warner and its various partners to establish online "wallets" and related services for which other online vendors pay fees.
- The new features in XP associated with digital imaging make it easier for consumers to use a wide variety of photo processing services, thus competing with the "You've Got Pictures" service – an exclusive arrangement between AOL Time Warner and Kodak.³²

In addition, AOL Time Warner competes with Microsoft in two other major segments: online services (where AOL Time Warner's services have 33 million members to MSN's 6.5 million) and Web browsers (where Netscape Navigator, owned by AOL Time Warner since March 1999, is now a distant second to Microsoft's Internet Explorer in terms of use).

The new features in Windows XP thus give consumers additional choices; they do not diminish existing ones. For example, no one disputes that AOL Time Warner's AIM and ICQ instant messaging will work just as well on Windows XP as on older versions of Windows, as will RealPlayer and Kodak's digital imaging software. If consumers choose to use the features in Windows, it will be because they prefer those features to the alternatives – not because the alternatives are no longer easily available.

Note, too, that even if one believed Windows XP's new features would have long-

run negative impacts on competition in operating systems or software platforms, it doesn't follow that delaying the release of Windows XP would yield significant benefits.

The courts could still decide that the disputed features in Windows XP somehow affected competition in platforms. In that case, Microsoft might be required to give computer manufacturers greater flexibility to make it more difficult for consumers to obtain access to some features built into Windows XP, and to allow them to promote competitors' products or services exclusively. For example, a computer maker might be allowed to remove Microsoft's "wizard" for choosing photo processors and instead to strike a deal with AOL and Kodak to promote their "You've Got Pictures" service exclusively. Leaving aside the question of how the courts could arrive at that judgment, delaying the release of Windows XP would not make such a remedy any easier to impose.

There are myriad ironies in the criticism of Microsoft's decision to make installation of its Java Virtual Machine (JVM) optional. First, it comes from many of the same critics who complain that Microsoft's decisions to *add* features to Windows XP are anticompetitive. Second, the government argued in the Internet Explorer case that Microsoft should have given computer manufacturers precisely the option that it has now offered them with the JVM: the feature is available at no charge, but it does not have to be included when Windows is installed before the shipment of a new computer. Last but hardly least, the strongest criticism about Microsoft's treatment of the JVM in Windows XP has come from Sun, which sued Microsoft to prevent further development of a Java environment optimized to run on Windows – and, as a condition of settlement, forbade updating Microsoft's JVM.

One might imagine circumstances in which weak incumbent producers of software would be irreversibly damaged by the release of Windows XP. But the relevant incumbents are hardly in danger of being destroyed by Windows XP. In fact, Microsoft is not now a dominant competitor in any of the areas of controversy.

Equally important, it is not clear that incorporation in Windows XP would give Microsoft a major edge in these segments. For instance, instant messaging seems a more natural fit with Internet service access (like AOL's) than it does with a desktop operating system.

RAISING RIVALS' COSTS THROUGH THE POLITICAL PROCESS

Many of the current accusations come from Microsoft's competitors.³³ These companies have an incentive to raise Microsoft's cost of doing business so they can increase their own profits. As George Bittlingmayer and Tom Hazlett observed during earlier attacks on Microsoft, "clearly some of Microsoft's competitors have an economic

interest in government action. This possibility is recognized in the ‘raising rivals costs’ literature and in work that emphasizes the use of antitrust to constrain competitors’ strategies.”³⁴ The current attacks fit this description. Consider first what AOL stands to gain by delaying Windows XP. As noted above, AOL competes with Microsoft in many segments including instant messaging, Internet access and services, browsers, media players, Internet recognition/authentication technology, and digital image processing. As the leader in instant messaging and online services, AOL has attempted to protect its dominant position by limiting consumer choice through exclusive deals with computer makers. For example, AOL negotiated with Compaq for the right to place an AOL icon on the Windows XP desktop of new Compaq PCs, relegating the MSN icon to a place on the less visible Start Menu.³⁵ AOL reached a similar deal with Compaq back in 1995, when it secured Compaq’s agreement to remove the MSN icon from the Windows desktop.³⁶

Delaying Windows XP shields AOL’s AIM and ICQ messaging services from competition with Microsoft’s much-improved Windows messenger software, giving AOL and its partners (notably Sun) more time to develop and improve their own software to meet the demands of poorly served business users. In digital imaging and processing, delay shields the “You’ve Got Pictures” service that AOL and Kodak offer. Delaying Windows XP may also reduce the use of Passport, giving AOL and its partners (including Sun and Amazon) less competition for their own services. By the same token, delaying Windows XP would also give Sun more time to ready its JVM for installation on Windows XP-equipped PCs.

AOL has tried this tactic of lobbying the government to raise a rival’s costs before. In 1995, AOL warned that if Microsoft were allowed to include an icon for its MSN online service on the Windows desktop, it would quickly dominate Internet access.³⁷ The government investigated, but did not file for an injunction to delay the release of Windows 95.³⁸

Windows 95 was released with MSN on the desktop. Nonetheless, Microsoft did not crush AOL. Instead, AOL grew more dominant, absorbing rival CompuServe along the way. Currently, Microsoft’s MSN service has only one-fifth as many subscribers as AOL despite MSN’s presence on the Windows desktop for the last six years.

Even if they do not succeed in delaying the release of Windows XP, AOL Time Warner, Kodak, Sun, and other competitors of Microsoft stand to benefit from the controversy. It creates adverse publicity for Microsoft and adds to the pressure on government to demand tough remedies in the ongoing litigation. Competitors presumably also hope that it will make Microsoft a less vigorous competitor. A tamer Microsoft would be good for its rivals, but it is hardly likely to lower prices or speed innovation.

The current threat to delay Windows XP appears more a case of special interest

pleading than of concern for consumers. It is more plausibly a means for Microsoft's rivals to raise its costs of doing business than a way to promote competition in the long term.

If successful, such tactics would have the unfortunate side effect of encouraging activity in the "political" – as opposed to economic – marketplace. If AOL and Kodak can deter competition by enlisting government on their side, more companies will be tempted to take this route. Instead of competing on quality or prices, corporations will yield to the temptation of competing with campaign contributions. Instead of funding R&D, companies will invest more in lobbyists.

CONCLUSION

Windows XP offers consumers several new or improved features. In each of the disputed areas the features increase consumer choice. While it is not possible to quantify the costs of delaying the resulting benefits, the evidence strongly suggests they are substantial. On the other side of the equation, the benefits to competition from delaying Windows XP appear small at best. To the contrary, delaying Windows XP seems more likely to reduce competition than to increase it. The only certain beneficiaries would be AOL Time Warner, Kodak and other strong incumbents.

Equally important, allowing Microsoft to release Windows XP does not put competition at risk. If Windows XP is found to be a potential hindrance to competition, little would be lost by imposing any needed changes after its release. First, the areas of contention are limited and do not affect all Windows users. Second, the changes would most likely involve *removing* a Microsoft feature (say, by allowing PC makers or end-users to uninstall Microsoft software through the Add/Remove Utility program), not by adding a competitor's software. Finally, in the short time it will take to reach a remedies decision in the pending DOJ case, it is highly unlikely that Windows XP will dramatically alter the state of competition.

In the end, the evidence leans heavily towards supporting the timely release of Windows XP. The only parties that clearly stand to gain from a delay are Microsoft's rivals – rivals that have the resources to remain competitive in a rapidly changing technological environment.

Notes

- ¹ Press Release, “Windows XP: 115 Days Until Launch,” Microsoft Corporation, July 2, 2001, available at <<http://www.microsoft.com/presspass/press/2001/jul01/07-02ReleaseCandidatePR.asp>> (Downloaded August 22, 2001); Steven Musil, “The Week in Review: XP Coming Early?,” *CNet News*, August 11, 2001, available at <http://news.cnet.com/news/0-1003-200-6840338.html> (Downloaded August 22, 2001).
- ² The European Commission also announced that it has issued a statement of objections challenging the “illegal tying” of Microsoft’s Media Player to Windows. However, the Commission has stated that Windows XP is not part of its investigation and that it will not seek an injunction while the investigation is ongoing. Press Release, “Commission initiates additional proceedings against Microsoft,” European Commission IP/01/1232, August 30, 2001; “EU Widens Microsoft Investigation,” *CNet News*, August 30, 2001, available at <http://news.cnet.com/news/0-1003-200-7010913.html> (Downloaded August 31, 2001).
- ³ Press Release, Office of Senator Patrick Leahy, July 24, 2001, available at <<http://www.senate.gov/~leahy/press/200107/072401.html>> (Downloaded August 22, 2001); Letter from Charles E. Schumer to Steve Ballmer, CEO, Microsoft, July 24, 2001.
- ⁴ It is also important to note that the Appeals Court opinion focused on the nature of the threat that Netscape Navigator posed. That is, Web browsers could develop into “middleware,” software that runs as a middle layer on top of the operating system and to which independent software developers could write applications software. I am unaware of any arguments being made by current competitors of Windows XP along this line. See *United States v. Microsoft Corp.*, No. 00-5212, United States Court of Appeals for the District of Columbia, Opinion, June 28, 2001, available at <<http://ecfp.cadc.uscourts.gov/MS-Docs/1720/0.pdf>> (Downloaded August 22, 2001).
- ⁵ If the court decides that the new operating system should be modified to promote competition, the changes will likely affect only a small portion of the software – those aspects related to instant messaging, digital image editing and processing, and media players. Thus, an after-release “patch” to Windows XP to fix any determined competitive shortcomings would represent only a modest inconvenience to consumers, but a delay of the October release would likely generate substantial consumer harm.
- ⁶ In late 1999, Microsoft and operators of several other instant messaging services figured out how to let their users communicate with those in the largest system,

AOL Instant Messenger. AOL responded by modifying its system on a daily basis to prevent such interconnection (Jim Hu, "AOL Rivals put Instant Messaging Wars on FCC Radar," *CNet News*, September 13, 2000, available at <http://news.cnet.com/news/0-1005-200-2768596.html> (Downloaded August 22, 2001)). As a condition of its merger with Time Warner, AOL is required to permit interoperability before it can introduce enhanced features to its system, but it had not done so as of late July 2001 (Memorandum Opinion and Order, In the Matter of Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations by Time Warner Inc. and America Online, Inc., Transferors, to AOL Time Warner Inc., Transferee, CS Docket No. 00-30, FCC 01-12, ¶ 327 (rel. Jan. 22, 2001), available at <http://www.fcc.gov/Bureaus/Cable/Orders/2001/fcc01012.pdf> (Downloaded August 22, 2001); Letter from Steven Teplitz, AOL Time Warner, to Magalie Roman Salas, FCC, July 23, 2001, available at <http://www.fcc.gov/csb/aolim1.pdf> (Downloaded August 22, 2001)).

⁷ Windows XP allows users to share a software application so that colleagues in different cities, say, can edit a document together in real time. In addition, the new Windows Messenger allow users to run applications on their computers from remote locations, for example, using a laptop connected to the Internet to run an application on the home desktop computer.

⁸ <http://www.microsoft.com/windowsxp/home/guide/featurecomp.asp>.

⁹ Press Release, "Windows Media Poised to Become Universal Format for Digital Audio," Microsoft Corporation, March 14, 2000, available at <http://www.microsoft.com/presspass/press/2000/Mar00/RealNetworksPR.asp> (Downloaded August 22, 2001); Letter from Jack Krumholtz, Microsoft, to Senator Charles Schumer, July 24, 2001, available at http://www.microsoft.com/FREEDOMTOINNOVATE/info/ms_schumer_response.asp (Downloaded August 27, 2001).

¹⁰ Ted Bridis, "Tech Giants out to Ambush MP3," *WSJ Interactive Edition*, April 12, 2001, available at <http://www.zdnet.com/zdnn/stories/news/0,4586,2707267,00.html> (Downloaded August 22, 2001).

¹¹ The picture transfer protocol (PTP) was developed by the Photographic Imaging Manufacturers Association (PIMA) to "enable... digital cameras to talk to computers, printers, and other devices using a common language." Microsoft and Kodak were leaders in developing the standard, but numerous other companies participated (including Agilent Technologies, Apple Computer, FlashPoint Technology, Hewlett-Packard, Polaroid, Qestra Consulting, and Zing (FotoNation)). "New Standard Makes Connecting Digital Cameras Easy," PIMA, August 22, 2000, available at <http://www.pima.net/News/ptp.htm> (Downloaded August 24, 2001).

- ¹² *Sun Microsystems v. Microsoft Corp.*, No. C 97-20884 RMW (PVT) ENE, United States District Court, Northern District of California, Settlement Agreement and Mutual Limited Release, January 23, 2001, available at <http://java.sun.com/lawsuit/settlement.pdf> (Downloaded August 24, 2001); Press Release, “Sun and Microsoft Settle Lawsuit; Settlement Protects Integrity of Java Platform,” Sun Microsystems, January 23, 2001, available at <http://java.sun.com/pr/2001/01/pr010123-01.html> (Downloaded August 24, 2001).
- ¹³ “An Open Letter Regarding Windows XP and Java Support,” Microsoft Corporation, available at <http://www.microsoft.com/java/issues/openletter.htm> (Downloaded August 24, 2001).
- ¹⁴ For a more detailed examination of this issue, see Ronald Cass and Albert L. Nichols, *Windows XP: New Features Worry Competitors, but Would They Harm Consumers?*, August 13, 2001, National Economic Research Associates, Cambridge, MA.
- ¹⁵ I have reviewed the trade literature and found no arguments along these lines in regard to the new or improved features included in Windows XP.
- ¹⁶ Figures from NPD Intellect Inc., a research company specializing in retail analysis, cited by Gary McWilliams, “PC Sales Are Falling as Buyers Suffer From Upgrade Fatigue,” *The Wall Street Journal*, August 24, 2001.
- ¹⁷ John G. Spooner, “PC Makers Offer Rebates to Jumpstart Sales,” *ZDNet News*, August 23, 2001, available at <http://www.zdnet.com/zdnn/stories/news/0,4586,2807152,00.html?chkpt=zdnnp1tp01> (Downloaded August 23, 2001).
- ¹⁸ Larry Dignan, “HP Cuts 6,000 Jobs, Sees Slow Recovery,” *ZDNet News*, July 26, 2001, available at <http://www.zdnet.com/zdnn/stories/news/0,4586,5094756,00.html> (Downloaded August 22, 2001); Richard Shim, “IBM Cuts 150 Jobs From PC Division,” *ZDNet News*, July 11, 2001, available at <http://www.zdnet.com/zdnn/stories/news/0,4586,5093995,00.html> (Downloaded August 22, 2001); Ian Fried, “Compaq: Sales to Fall, More Lay-offs Loom,” *ZDNet News*, July 10, 2001, available at <http://www.zdnet.com/zdnn/stories/news/0,4586,5093952,00.html> (Downloaded August 22, 2001); Joe Wilcox, “Latest to Fall: Dell Lays Off 1,700 Workers,” *ZDNet News*, February 15, 2001, available at <http://www.zdnet.com/zdnn/stories/news/0,4586,2686547,00.html> (Downloaded August 22, 2001); Ian Fried, “Gateway to cut up to 25 percent of staff,” *ZDNet News*, August 28, 2001, available at <http://www.zdnet.com/zdnn/stories/news/0,4586,5096306,00.html> (Downloaded August 31, 2001).
- ¹⁹ John G. Spooner, “PC Makers Offer Rebates to Jumpstart Sales,” *ZDNet News*, August 23, 2001, available at <http://www.zdnet.com/zdnn/stories/news/0,4586,2807152,00.html?chkpt=zdnnp1tp01>, downloaded August 23, 2001.
- ²⁰ Ariana Eunjung Cha, “For Now, Rivals See Microsoft as Savior,” *Washingtonpost.com*,

July 29, 2001, available at <<http://www.washtech.com/news/software/11532-1.html>> (Downloaded August 22, 2001).

²¹ See, e.g., www.dell.com.

²² Patrick Thibodeau, "Critics Aim Volley at Windows XP," *Computerworld news*, available at http://www.computerworld.com/cwi/story/0,1199,NAV47_STO62669,00.html (Downloaded August 22, 2001).

²³ Ariana Eunjung Cha, "For Now, Rivals See Microsoft as Savior," *Washingtonpost.com*, July 29, 2001, available at <http://www.washtech.com/news/software/11532-1.html> (Downloaded August 22, 2001).

²⁴ The PTP was released in August 2000 and also exists in Windows Me.

²⁵ Shantanu Narayen, executive vice president of worldwide product marketing and development at Adobe Systems Inc.; quote available online at <http://www.microsoft.com/presspass/press/2001/may01/05-09XPLaunchPR.asp> (Downloaded August 22, 2001).

²⁶ A recent article noted, "With PC makers already trimming inventories of existing models for Windows XP's anticipated launch, a delay could leave some manufacturers with periods of no stock on the shelves during the holidays." Joe Wilcox, "Antitrust: Win XP Threatened with Delay," *ZDNet News*, July 24, 2001, available at <http://www.zdnet.com/zdnn/stories/news/0,4586,5094621,00.html> (Downloaded July 27, 2001).

²⁷ Letter from Charles E. Schumer to Steve Ballmer, CEO, Microsoft, July 24, 2001.

²⁸ Sony is the market share leader with only 20 percent. Olympus is second with 16 percent; Kodak and HP are tied for third with 11 percent each. Richard Shim, "Digital Camera Market Focused on Growth," *CNet News*, August 21, 2001, available at http://news.cnet.com/news/0-1006-200-6935583.html?tag=mn_hd (Downloaded August 22, 2001).

²⁹ Kodak and Microsoft have settled their substantive disputes concerning digital imaging in Windows XP. See Press Release, "Kodak Welcomes Microsoft's Changes to Digital Photography Features in Windows XP Operating System," Eastman Kodak Co., August 13, 2001, available at <http://www.kodak.com/US/en/corp/pressReleases/pr20010813-01.shtml>. (Downloaded September 5, 2001).

³⁰ Computed by combining home and work data from Media Metrix, "SoftUsage Home Quarter 1 Report Communications & Multimedia," March 2001 and "SoftUsage Work Quarter 1 Report Communications & Multimedia," March 2001.

³¹ Press Release, "RealSystem 8 Will Enable AOL's More Than 23 Million Members to Seamlessly Enjoy Integrated Audio and Video Experiences," America Online, July 13, 2000, available at http://media.aoltimewarner.com/media/cb_press_view.cfm?release_num=40100465 (Downloaded August 24, 2001).

- ³² Press Release, “America Online and Kodak Announce ‘You’ve Got Pictures!’” Eastman Kodak Co., May 19, 1998, available at <http://www.kodak.com/US/en/corp/pressReleases/pr19980519-01.shtml> (Downloaded August 27, 2001).
- ³³ Aside from direct lobbying from competitors such as AOL and Kodak, many of Microsoft’s largest rivals, including AOL, Oracle, and Sun have formed and fund an association called ProComp, which lobbies against various Microsoft products and initiatives.
- ³⁴ Bittlingmayer, George, and Thomas Hazlett, “DOS Kapital: Has antitrust action against Microsoft created value in the computer industry?” *Journal of Financial Economics* 55 (2000) 329-359; p. 350. Internal citations omitted. For an example of the literature on using antitrust to constrain competitors’ actions, see William Baumol and Janusz Ordoover, “Use of Antitrust to Subvert Competition,” *Journal of Law and Economics*, 28, 247-266 (1985).
- ³⁵ Joseph Menn and Edmund Sanders, “Microsoft’s Conflict With AOL Intensifies,” *Los Angeles Times*, August 6, 2001. If PC manufacturers choose to place competitor’s icons on the Windows desktop, Microsoft intends to require the inclusion of some of its icons as well. Joe Wilcox, “Windows Media Player Icon On XP-Must List,” *CNet News*, August 8, 2001, available at <http://news.cnet.com/news/0-1003-200-6819622.html> (Downloaded August 27, 2001).
- ³⁶ *United States v. Microsoft Corp.*, Nos. 98-1232, 98-1233 (TPJ), United States District Court for the District of Columbia, Findings of Fact, December 5, 1999, ¶¶ 205-206, available at <http://www.usdoj.gov/atr/cases/f3800/msjudge.pdf> (Downloaded August 27, 2001).
- ³⁷ James Coates, “New Fight for Microsoft,” *Chicago Tribune*, June 10, 1995.
- ³⁸ Stuart J. Johnston and Gary H. Anthes, “Survey: Microsoft Network Not Such a Big Threat,” *Computerworld*, August 14, 1995.