

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

UNITED STATES OF AMERICA,
Plaintiff,

v.

MICROSOFT CORPORATION,
Defendant.

Civil Action No:

DECLARATION OF
FRANKLIN M. FISHER

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I) Background

A) Qualifications

- 1) I am Professor of Economics at the Massachusetts Institute of Technology, where I have taught for more than 38 years. I am also a director of the National Bureau of Economic Research and a member of the Steering Committee of the Institute for Social and Economic Policy in the Middle East, John F. Kennedy School, Harvard University. I received my A.B. from Harvard University in 1956, and my Ph.D. in Economics from Harvard University in 1960.
- 2) I am a fellow and past president of the Econometric Society and for nine years was the editor of that society's journal, *Econometrica*. I am a member of the American Economic Association, from which I received the John Bates Clark Award; a fellow of the American Academy of Arts and Sciences; and a recipient of a John Guggenheim Fellowship.
- 3) My fields of specialization within economics are industrial organization, microeconomics, and econometrics. I am the author of 16 books and well over 100 articles. In the course of my scholarly research and my consulting work, I have studied issues of competition and monopoly in a large number of industries. I have written extensively in the area of antitrust economics. I have provided expert consultation and testimony in numerous antitrust cases and have testified at trial, in

deposition, or by affidavit in more than 40 cases in the last 10 years. These cases are listed in my curriculum vitae, which is attached as Exhibit 1.

- 4) I was for many years IBM's chief economic witness in *US v. IBM* (dismissed, 1982) and associated cases. This work is discussed in two of my books.

B) Nature of Retention

- 1) I have been asked to provide my expert economic opinion about the competitive effects of a collection of Microsoft's actions centered around its Internet browser.
- 2) I reserve the right to supplement this report with any opinions or results that I reach after further study, particularly if new or additional relevant information should become available. I also reserve the right to respond to any report or opinions that are offered by other parties to this litigation.

C) Materials and Documents Reviewed

- 1) As part of my analysis, I have considered deposition transcripts of Microsoft employees, deposition transcripts of employees of other companies in the computer industry, Microsoft agreements with third parties, Microsoft internal documents, and other related documents and information.

II) Summary of Opinions

- A) The dominance of Microsoft's (MS) Windows 9x operating system in the market for operating systems for Intel-compatible desktop personal computers is protected, among other things, by what are sometimes referred to as network effects.
- B) MS has foreseen the possibility that the dominant position of its Windows operating system will be challenged by Internet browsers that are capable of supporting applications that are operating-system independent.
- C) Microsoft has taken anti-competitive actions to exclude competition in Internet browsers in order to protect the current dominance of its Windows operating system. For example, Microsoft has entered into restrictive agreements with personal computer (PC) manufacturers that require manufacturers to accept Microsoft's Internet browser with its Windows operating system and hinder manufacturers from promoting competing browsers. Moreover, Microsoft has made exclusionary agreements with Internet Access Providers (IAPs) and Internet Content Providers (ICPs).
- D) There is a substantial probability that these anti-competitive actions will permit MS to retain its power over price in operating systems and will inhibit development of MS-independent innovations. Both would harm consumer welfare.

III) Economic Analysis and Conclusions

- A) The dominance of Microsoft's (MS) Windows 9x operating system in the market for operating systems for Intel-compatible desktop personal computers is protected, among other things, by what are sometimes referred to as network effects.
- 1) A network effect occurs when each person's benefit from using a product or technology increases with the number of other people who also use that product or technology.
 - 2) In a market characterized by network effects, it is typical for one technology eventually to become the standard, since some of the benefit of the technology is derived from others' use of it. For example, in video recorders (VCRs), the original competition between the VHS and Beta standards ended in the disappearance of the Beta machines and tapes as an increase in the number and share of VHS recorders led to fewer and fewer tapes produced in Beta format.
 - 3) Operating systems are characterized by network effects. The primary reason for this is that, generally, application software written for a specific operating system cannot run on a different operating system without extensive and costly modifications or add-ons. As a result, a given user's ability to do things such as exchanging files with others, learning more from others about the capabilities of certain applications, or capitalizing on training in a particular operating system increases with the number of others who use the same operating system as does the given user. The network effect is reinforced by the fact that software developers tend to write applications for the

most popular system, and the most innovative applications are thus available to users of the most popular system.

- 4) Network effects have increased the desirability of Microsoft's Windows 9x for consumers. Once enough users had been attracted to Windows, that very fact made Windows even more desirable to further users.
- 5) There is nothing inherently anti-competitive about this. However, network effects create high barriers to competition and entry in operating systems. This increases the risk that anti-competitive conduct by Microsoft will increase barriers even further. This will serve to entrench Microsoft's monopoly and thus significantly injure competition.

B) MS has foreseen the possibility that the dominant position of its Windows operating system will be challenged by Internet browsers that are capable of supporting applications that are operating-system independent.

- 1) The browsers produced by Netscape run on 17 different operating systems, including Windows, the Apple Macintosh operating system, and various versions of the UNIX operating system.
- 2) Applications can be developed that run on browsers and do not need to interact with the underlying operating system. For example, the same Web site page on the Internet World Wide Web can be viewed with browsers running on Windows, the Apple Macintosh operating system, or the UNIX operating system. Because applications running on the browser are not operating-system specific, the Netscape

browser could undermine the network effects that are currently enjoyed by the MS operating system. This in turn would eliminate the barrier to entry in the operating systems market created by network effects. With enough applications written to be operating-system independent, users might cease to care whether they had the same operating system as did many others.

3) Microsoft's own documents show an awareness of browsers as a serious threat to the dominance of the Windows operating system, and its executives have stated in depositions and internal documents their concern about browsers.

C) MS has taken anti-competitive actions to exclude competition in Internet browsers in order to protect the current dominance of its Windows operating system.

1) Microsoft recognizes that it can protect its dominant position in the PC operating systems market by gaining and keeping a large share of the business in browsers.

(a) If Microsoft were to exclude competition in browsers, it would not be compelled by competitive pressure to ensure that its Internet Explorer browser (IE) could run on operating systems other than Windows. Moreover, Microsoft would not be compelled by competitive pressure to support applications that are not tied to the Windows operating system.

(b) In this situation, if Microsoft decided to support only Windows-based technology, developers would have incentive to create applications that run best on Windows. Applications would be operating-system specific again, and the resulting network effect would continue to protect Microsoft's share in operating systems.

2) Microsoft has promoted the distribution and use of IE by entering into restrictive agreements with PC original equipment manufacturers (OEMs)¹. The agreements require PC manufacturers who want to preinstall Windows 98 on their machines to also preinstall Microsoft's Internet Explorer. The agreements also limit the ability of OEMs to promote other browsers.

(a) Typically, the agreements require that licensees may not modify or delete any of the product software. This prevents OEMs from removing any part of IE, including the visible means of user access to the IE software, such as the IE icon on the Windows desktop or the IE entry in the "Start" menu.²

(b) Typically, the agreements stipulate that licensees may not modify or obscure the appearance of the start-up or desktop screens. While licensees may add icons or folders on the desktop, the icons (folders) must be the same size and of similar shape as icons (folders) already on the desktop. This limits the ability of OEMs to promote other browsers by, for example, highlighting the existence of another browser with a large desktop icon or modifying the start-up sequence to give users an opportunity to make a non-IE browser their default browser or replace IE with a competing browser.

(c) Licensees are not restricted from loading other browsers on the desktop.

However, in some cases OEMs prefer to load only one browser to avoid user confusion and the resulting consumer support costs. In addition, some OEMs

¹ These comments are based on the "Microsoft Windows 98 OPK RC 0 Release Notes", February 27, 1998.

² IE is also bundled with the Windows software that Microsoft distributes through retail channels.

view the desktop as scarce real estate and are generally reluctant to preinstall more than one software title in each functional category.

(d) If Microsoft were a small company with a small share of operating systems, these types of provisions would be harmless. Given Microsoft's actual dominance, these types of provisions are anti-competitive. They inhibit PC manufacturers from preinstalling and promoting competing browsers. Their purpose and effect are to weaken Microsoft's browser competition in order to protect Microsoft's business in operating systems.³

3) Microsoft has also promoted IE by striking deals with Internet Access Providers (IAPs) in order to protect Microsoft's business in operating systems.⁴ In general these agreements state that Microsoft will provide users with access to IAP services from the desktop, and in return, IAPs agree not only that they will promote IE, but also that they will not promote other browsers.⁵ Typically, some of the more restrictive provisions include:

(a) requirements that 75% or more of the IAP software shipments include IE as the only browser;

³ Microsoft's bundling of IE with the Windows software it distributes through retail channels is a similar effort to weaken Microsoft's browser competition in order to protect Microsoft's dominance in operating systems.

⁴ These comments are based on a review of the four On-line Service Provider agreements and six Internet Service Provider (ISP) agreements. All of the agreements limit the shipment of non-IE browsers. The restrictions on downloading and promoting third party browsers that are listed here more closely reflect the wording of the ISP agreements, but On-line Service Providers are also limited in their ability to download and promote third party browsers.

⁵ ISPs typically pay a referral fee to Microsoft for new members who access their services from the Windows desktop.

- (b) limitations on IAP links to use or download third-party browsers on the IAP home Web page or any other Internet access service Web page offered by the IAP;
- (c) limitations on expressing or implying that an alternate browser is available, including limitations on displaying any logo for a non-IE Web browser on the IAP home Web page or any other Internet access service Web page offered by the IAP.
- (d) Again, given Microsoft's position in operating systems, these provisions are anti-competitive. Their purpose and effect are to reduce the ability of competing browser manufacturers to distribute and promote their browsers through leading IAPs. Regardless of whether such provisions would be anti-competitive in themselves if put in place by a company with a small share of operating systems, they are certainly anti-competitive when Microsoft uses them to protect its dominant position in operating systems.
- 4) Microsoft has promoted the use of IE by striking deals with Internet Content Providers (ICPs) for its Channel Bar.⁶ ICPs value the opportunity to have a channel on the Microsoft desktop, because it encourages users to visit the ICPs' Web sites, which in turn increases the ICPs' ability to promote their own products and to sell advertising space on their Web pages. Typically, the general nature of the agreements is that, in return for a prominent position on Microsoft's Channel Bar, ICPs agree not only that they will promote IE, but also that they will not promote or

⁶ These comments are based on a review of ten Internet Content Provider agreements.

distribute competing browsers. Some of the more restrictive provisions typically included in the agreements are as follows:

- (a) An ICP must agree to promote IE and no other browser⁷ as the browser software of choice for specified Web sites.
- (b) An ICP must not distribute any other browser besides IE as an integral part of any channel client for use on Windows and Macintosh platforms.
- (c) ICPs and their affiliates may not compensate a company that produces other browsers for carrying or promoting the ICPs' content or logos.
- (d) Again, given Microsoft's position in operating systems, these provisions are anti-competitive, because they are designed to preserve Microsoft's large share of business in operating systems by hindering competition from other browsers. Thus, for example, the provision that prevents ICPs from compensating a company that produces other browsers for carrying or promoting the ICPs' content or logos can have no other purpose than to damage those browser owners. It is not a profit-maximizing act by Microsoft independent of its effect of weakening the competition.

- 5) If Microsoft's IE browser and Windows operating system are superior products, then competition will lead OEMs, IAPs, ICPs, and customers to choose them, and Microsoft need not artificially influence those choices. But Microsoft is marketing IE in such a way as to make the choice between browsers a foregone conclusion, which

in turn would allow Microsoft to protect the current dominance of the Windows operating system.⁸ This situation can never make consumers better off than they would be with unfettered competition, and it is likely to make consumers worse off.

D) There is a substantial probability that these anti-competitive actions will permit MS to retain its power over price in operating systems and will inhibit development of MS-independent innovations. Both would harm consumer welfare.

- 1) Internet browsers that are capable of supporting applications that are operating-system independent are a potential substitute for Windows. If Microsoft minimizes competition from other browsers and chooses to support only Windows-based technology, then consumers will perceive few alternatives to the Windows operating system. As a result, Microsoft could raise the price of its operating system with little fear of losing customers.
- 2) Microsoft's anti-competitive actions are aimed at hindering the success of non-IE browsers, but they are likely to send a message to all software developers: Microsoft will impede any innovation that threatens the dominance of Windows. This will lessen developers' incentives to develop non-Windows based innovations. As a result, the range of software products consumers can choose from will be limited. Narrowed choice and slowed technological progress can never improve the welfare of consumers and are likely to decrease it. If Windows is truly a superior product, it will

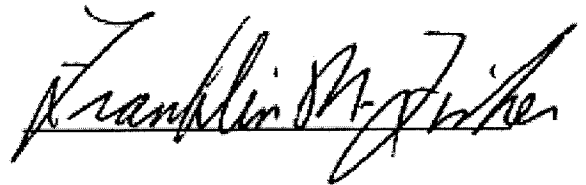
⁷ "Other browsers" refer to the top two most widely used browsers, exclusive of IE.

⁸ I understand that Microsoft has recently issued a statement to IAPs in the Referral Server and ICPs waiving some of the restrictions in their agreements.

succeed on its merits. The actions Microsoft is taking will prevent that from being necessary.

IV) I have reviewed Professor Sibley's affidavit and I am in agreement with its contents.

I declare under penalty of perjury that the foregoing is true and correct. Executed on May 12, 1998, in Cambridge, Massachusetts.

A handwritten signature in black ink, reading "Franklin M. Fisher". The signature is written in a cursive style with a horizontal line underneath the name.

FRANKLIN M. FISHER

EXHIBIT 1

FRANKLIN M. FISHER — Professor of Economics, MIT

Ph.D. Harvard University, 1960
M.A. Harvard University, 1957
A.B. Harvard University, 1956 (Summa Cum Laude)

Ph.D. Dissertation: *A Priori Information and Time Series Analysis*

FELLOWSHIPS, SCHOLARSHIPS, AND PROFESSIONAL HONORS

- Detur Prize, 1953.
- John Harvard Scholarship, 1953–1954, 1954–1955.
- Social Science Research Council Undergraduate Research Stipend, 1953.
- Harvard College Scholarship, 1955–1956.
- Phi Beta Kappa, 1955.
- Rodgers Fellowship, 1956–1957.
- Austin Fellowship, 1956–1957.
- Junior Fellow of the Society of Fellows, Harvard University, 1957–1959.
- Fellow of the Econometric Society, 1963–present.
- Irving Fisher Lecturer at Econometric Society Meetings, Amsterdam, September 1968.
- Operations Research Society of America Prize for best paper dealing with a military subject published in *Operations Research*, 1967.
- Fellow of American Academy of Arts and Sciences, 1969–present.
- Council Member of the Econometric Society, 1972–1976.
- John Bates Clark Award, American Economic Association, 1973.
- F. W. Paish Lecturer, Association of University Teachers of Economics, Sheffield, England, April 1975.
- David Kinley Lecturer, University of Illinois, 1978.
- Vice President of the Econometric Society, 1977–1978.
- President of the Econometric Society, 1979.
- Fellowship, John Simon Guggenheim Foundation, 1981–1982.
- Erskine Fellow, University of Canterbury, Summer 1983.

- National Academy of Sciences, Distinguished Scholar Exchange Program: Visitor to Huazhong University of Science and Technology, The People's Republic of China, 1984.
- Invited Lecturer, Australasian Meetings of the Econometric Society, 1987.
- Taft Lecturer, University of Cincinnati, 1992.

POSITIONS

- Teaching Fellow, Harvard University, 1956–1957.
- Junior Fellow of the Society of Fellows, Harvard University, 1957–1959.
- Assistant Professor of Economics, University of Chicago, 1959–1960.
- Assistant Professor of Economics, Massachusetts Institute of Technology, 1960–1962.
- Associate Professor of Economics, Massachusetts Institute of Technology, 1962–1965.
- Professor of Economics, Massachusetts Institute of Technology, 1965–present.
- National Science Foundation Postdoctoral Fellow, Econometric Institute, Netherlands School of Economics, 1962–1963.
- Ford Foundation Faculty Research Fellow in Economics, London School of Economics and Hebrew University, 1966–1967.
- Visiting Professor of Economics, Hebrew University, 1967, 1973, 1985.
- Visiting Professor of Economics, Tel Aviv University, 1973, 1977–present.
- Member, National Academy of Sciences Panel on the Effects of Deterrence and Incapacitation, 1975–1978.
- Visiting Professor, Harvard University, Economics Department, 1981–1982.
- Consultant and Director, Charles River Associates Incorporated, 1967–present.
- Research Associate, National Bureau of Economic Research, April 1980–1989.
- Member, National Research Council, Panel of Sentencing Research, 1981–1982.
- Consultant, various law firms, 1964–present.
- Director, National Bureau of Economic Research, 1989–present.
- Steering Committee, Institute for Social and Economic Policy in the Middle East, John F. Kennedy School, Harvard University, 1990–present. Chairman of Water Project, 1991–present.

PROFESSIONAL SOCIETIES

- American Economic Association
- Econometric Society: Program Chair, Winter Meetings, 1964; Council, 1972–1976; Vice President, 1977–1978; President, 1979.

EDITORSHIPS

- Associate Editor, *Journal of the American Statistical Association*, 1965–1968.
- American Editor, *Review of Economic Studies*, 1965–1968.
- Editor, *Econometrica*, 1968–1977.

PUBLIC SERVICE AND CHARITABLE POSITIONS

- Member, Board of Governors, Tel Aviv University, 1976–1992; American Friends of Tel Aviv University, 1976–1985; Honorary Board, American Friends of Tel Aviv University, 1985–present.
- Chairman, Faculty Advisory Cabinet, United Jewish Appeal, 1975–1977.
- Board of Trustees, Combined Jewish Philanthropies, 1975–present (Board of Managers, 1978–1992; Campaign Chair, Harvard and MIT, 1975; Academic Team, 1976–1977; Co-Chair, Lexington, 1975; Associate Chair, Metropolitan Division, 1979–1980).
- Board of Trustees, Temple Isaiah, Lexington, 1971–1974; 1976–1979.
- Commissioner, B'nai B'rith Hillel Foundations, 1977.
- Board of Trustees, Beth Israel Hospital, Boston, 1979–present.
- Vice President, Hillel Council of Greater Boston, 1981–1986.
- Board Member, MIT Hillel, 1980–1985.
- Board Member, New Israel Fund, 1984–present.
- Treasurer, New Israel Fund, 1984–present.
- Board Member, Boston Friends of Peace Now, 1983–1992.
- President, Boston Friends of Peace Now, 1985–1987.
- Chair, American Friends of Peace Now, 1985–1989.
- Treasurer, Americans for Peace Now, 1989–1991.
- President, American Jewish Congress, New England Region, 1993–1995.

- President, New Israel Fund, 1996–present.

PUBLICATIONS

Books

A Priori Information and Time Series Analysis: Essays in Economic Theory and Measurement. Amsterdam: North-Holland Publishing Co., 1962.

A Study in Econometrics: The Demand for Electricity in the United States. With Carl Kaysen. Amsterdam: North-Holland Publishing Co., 1962.

Essays on the Structure of Social Science Models. With Albert Ando and Herbert A. Simon. Cambridge, MA: MIT Press, 1963.

Supply and Costs in the United States Petroleum Industry: Two Econometric Studies. Baltimore: Johns Hopkins Press, 1964.

The Identification Problem in Econometrics. New York: McGraw-Hill Book Co., 1966; Huntington: Robert Krieger Publishing Co., 1976.

The Economic Theory of Price Indices. With Karl Shell. New York: Academic Press, 1972.

Folded, Spindled, and Mutilated: Economic Analysis and US v. IBM. With John J. McGowan and Joen E. Greenwood. Cambridge, MA: MIT Press, 1983.

IBM and the US Computer Industry: An Economic History. With J. McKie and R. J. Mancke. New York: Praeger, 1983.

Disequilibrium Foundations of Equilibrium Economics. New York: Cambridge University Press, 1983.

Antitrust and Regulation: Essays in Memory of John J. McGowan. Editor. Cambridge, MA: MIT Press, 1985.

Der Anti-Trust-Fall US gegen IBM (German edition of *Folded, Spindled, and Mutilated*). Translated by C. C. von Weizsacker. Tübingen: J.C.B. Mohr, 1985.

Wei Guan Jing Ji Xue (Lectures on Microeconomics). Wu Han University Press, 1988.

Industrial Organization, Economics, and the Law (collected works, Volume I). J. Monz (ed.). Hemel-Hempstead: Harvester-Wheatsheaf, 1990; and Cambridge, MA: MIT Press, 1991.

Econometrics: Essays in Theory and Applications, (collected works, Volume II). J. Monz (ed.). Hemel-Hempstead: Harvester-Wheatsheaf, 1991; and Cambridge, MA: MIT Press, 1992.

Aggregation: Aggregate Production Functions and Related Topics (collected works, Volume III). J. Monz (ed.). Hemel-Hempstead: Harvester-Wheatsheaf, 1992; and Cambridge, MA: MIT Press, 1993.

The Economic Analysis of Production Price Indexes. With Karl Shell. Cambridge University Press, 1997.

Topics in Theoretical and Applied Economics: Collected Papers of Franklin M. Fisher (working title). Cambridge University Press. Forthcoming.

“Standing Up to Be Counted: Issues in the Statistical Adjustment of the Census.” With Brian Palmer. Cambridge University Press. Forthcoming.

“Estimating the Effects of Display Bias in Computer Reservation Systems.” With Kevin Neels. Cambridge University Press. Forthcoming.

Articles and Comments

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“Income Distribution, Value Judgments, and Welfare: A Correction.” With Peter B. Kenen. *Quarterly Journal of Economics* 71, No. 2 (May 1957): 322–324.

“Negro-White Savings Differentials and the Modigliani-Brumberg Hypothesis.” With Robert Brown. *Review of Economics and Statistics* 40, No. 1 (February 1958): 79–81.

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“On the Existence and Linearity of Perfect Predictors in ‘Contents Analysis.’” *MULL* (March 1960).

“On the Analysis of History and the Interdependence of the Social Sciences.” *Philosophy of Science* 27, No. 2 (April 1960): 147–158.

“The Stability of the Cournot Oligopoly Solution: The Effects of Speeds of Adjustment and Increasing Marginal Costs.” *Review of Economic Studies* 28, No. 1 (February 1961): 125–135.

“How Income Ought to be Distributed: Paradox Lost.” With J. Rothenberg. *Journal of Political Economy* 69, No. 2 (April 1961): 162–180.

“On the Cost of Approximate Specification in Simultaneous Equation Estimation.” *Econometrica* 29, No. 2 (April 1961): 139–170. Reprinted in *Essays on the Structure of Social Science Models* and elsewhere.

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“Identifiability Criteria in Nonlinear Systems: A Further Note.” *Econometrica* 33, No. 1 (January 1965).

“The Choice of Instrumental Variables in the Estimation of Economy-Wide Econometric Models.” *International Economic Review* 6, No. 3 (September 1965): 245–274. Reprinted in H. M. Blalock, Jr. (ed.), *Causal Models in the Social Sciences*, 2nd Edition (New York: Aldine Publishing Company, 1985).

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Econometrique dans la Formulation de Plans de Developpement,” Pontifical Academy of Sciences, Vatican City (1965), pp. 385–447.

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“Restrictions on the Reduced Form and the Rank and Order Conditions.” *International Economic Review* 7, No. 1 (January 1966): 77–82.

“Community Antenna Television Systems and the Regulation of Television Broadcasting.” Papers and Proceedings, *American Economic Review* 56, No. 2 (May 1966): 320–329.

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“Reenlistments in the US Navy: A Cost Effectiveness Study.” With A. S. Morton. *American Economic Review* 57, No. 3 (May 1967): 32–38.

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