

a national scale as has been the general practice in other countries<sup>10</sup>--provided that no qualified applicants, LECs, cellular providers, interexchange carriers or others be categorically excluded from the opportunity to obtain one. There are several considerations arguing in favor of such a decision:

31. The number of competitors in each locality. While the essence of communications service is that it enables placers of calls or transmitters of information to reach recipients over the broadest possible geographic area, the locus of competition is the locality of the subscriber or group of subscribers for whose patronage the several licensees will be expected to compete. If the Commission decides to divide the spectrum allotment five ways, there will be five competitors for each of those local subscribers, whether the permissible geographic scope of each of those competitors is local or national. This is not to say that the ways in which they compete may not differ depending upon the geographic scope of their operations; it is only to say that if, as I believe to be the case, the initial and central criterion of competition is the number of competitors, that criterion will be equally satisfied by local, regional, or national licenses.

32. There are several positive considerations arguing for making several of the licenses national in scope, all of which refer to economies of scale or scope.

33. Efficiency in the use of the spectrum. Considerations of sheer physical efficiency argue for maximizing the geographic scope of the rights to use any portion of the spectrum. As Charles Jackson demonstrates in the attached technical affidavit, this is because the larger the number of geographically separate licenses, the larger the extent of the restricted boundary zones of potential interference, where one firm's usage must be coordinated with that of others.

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<sup>10</sup> Almost all the countries we have surveyed have issued nationwide licenses, many of them explicitly for the same kind of reasons as we proceed to offer here. On the latter point, see, for example, the Report of AUSTEL, the Australian Telecommunications Regulator, on the Third Mobile License, pp. 15, 19, and its summary of practice abroad:

With the exception of the United States, most countries do not place geographic restrictions on their mobile operations.... Ibid., p. 17

34. The choice of technical standards. One powerful advantage of licensing national providers is that it would ensure the earliest possible adoption of a set of technical standards and its prompt application nationwide. Until that happens, it is difficult to envision the rapid development of an independent equipment industry exploiting what appear to be very large potential economies of scale. In view of the highly competitive character of the equipment industry, world-wide, it seems to me the advantages of an early start to our country in the exploitation of what might well prove to be an exploding global market would be very great. Conversely, the issuance of licenses in 49 or 488 regions could well lose us the opportunity for a first shot at that market.

35. Nationwide licensees would have the resources, powerful incentives to settle upon a set of standards, and the ability to implement them promptly. They would also constitute markets each large enough to induce independent equipment manufacturers to set to work designing and supplying the requisite equipment. There could, of course, be no assurance national licensees would not make mistakes in their choice of technologies and standards, but they would have every incentive to choose wisely: they would bear the costs if their choices turned out badly because competitors had made a better choice of technologies and service offerings; they would in that event quite properly have the responsibility of calculating the respective costs of remaining with their original choices or abandoning them and moving to the new technology; and all those decisions would be made and modified outside of the political process.

36. Consider, in contrast, the two alternative possibilities. One would be that the Commission would itself undertake to set the standards, as it did in the case of cellular licenses. At that time, there was essentially only one standard available--the one developed principally by AT&T; so that the Commission's decision was relatively simple and non-controversial. In the case of PCS, in contrast, the standards that the Commission proposes in its NPRM are confined to limiting interference with existing microwave systems and spillovers from one PCS license region into another. And for good reason: the number of candidate standards for selection is very large, with the possible systems varying widely, according to the attached appendix by Charles Jackson, in a large number of respects. As Jackson points out, any attempt by the FCC to choose among them

would be extraordinarily difficult, inevitably involve many years and so correspondingly delay the deployment of PCS.

37. The other course would be for the FCC to refrain from setting the standards but issue licenses each limited to one of 49 or 488 regions, leaving it to them severally and the market process to settle upon standards. It takes little imagination to visualize how messy and protracted the process would be. No one of the operators would initially represent a market large enough to justify entry on any efficient scale into the manufacture of the necessary equipment; and it would be a long and extraordinarily difficult process for a sufficient number of licensees to get together and settle upon some uniform set of specifications, involving the many dimensions and tradeoffs I have already suggested, in an environment of great uncertainty about both existing and future markets and technologies.

38. Finally, the issuance by the Commission of a license or licenses also for each locality or region would give it the opportunity to achieve the benefits both of nationwide standardization and preservation of a large number of centers of initiative and innovation. Even if it reserved only one license in each region or locality for a separate operator and made all the others national, it would still have at least 49 separate regional licenses in addition to the national ones.

39. International Coordination. The advantages of a nationwide scope of operations that I have already described clearly extend internationally as well. Worldwide compatibility and roaming are clearly likely to be increasingly important. Nationwide carriers would be far better able to reach the requisite agreements with foreign carriers than would a more fragmented industry composed of many small regional licensees.

40. Universality of Services, Interconnection Externalities and Marketing Considerations. Since the value of any communications system to its subscribers depends on how many others are on the same system, manifestly a nationwide licensee could offer the most valuable service, by this critical measure. This will not be a significant advantage of broad geographic coverage for the most fundamental of PCS services, voice telephony, because the PCS networks will be connected to the switched telephone networks. It is possible to imagine new services, however--perhaps innovative

forms of electronic mail and messaging--where the value of the service does depend upon the number of subscribers. Such services would probably grow faster and more evenly if offered and promoted by a nationwide carrier. This same value of interconnectibility can of course be achieved by agreement, as in the interconnection agreements among separate local exchange companies: as in the case of the uniform technical standards that would be required, however, the larger the number of geographically separated licenses to be integrated in this fashion, the more difficult it would be to achieve the requisite agreement.

41. National licensees would also have important advantages in developing new services, in developing a market for them, and in speeding their delivery to consumers.

42. They could best incur the fixed costs of the innovation process because they would have the broadest possible geographic market in which to recover them.<sup>11</sup> They could also most effectively market the new services, advertizing and promoting them and all variants subsequently developed through the national media. They could best provide portability, compatibility and roaming. And they would be able to bring to consumers the benefit of these advantages without reducing the number of competitors vying for their patronage in each local market.

43. National licensees would offer advantages from the customers' perspective as well. Any customer with a national presence (e.g., a large business or the Federal government) should value highly having a single point of contact for subscribing to PCS services. Such a customer would be interested not only in uniformity and compatibility nationwide, but also in having a single entity responsible for maintaining service and dealing with problems.

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<sup>11</sup> Economists generally would by no means agree that the advantages in innovating increase continuously with the size of the firm. On the contrary, while recognizing that size and scale of operations do confer some advantages, it is often comparatively small firms that pioneer in the innovation process; and the market structure likely to be most conducive to innovation is one characterized by a variety of firm sizes, and openness to competitive entry. At the same time, it seems undeniable that, other things being equal, the larger the market in which a firm may exploit any innovation that it develops, the greater its incentive and ability to do so.

44. Certification procedures. While recognizing that a free after-market in licenses should in principle achieve all the efficiency advantages of an auctioning system, I must admit I find it repugnant (on non-economic grounds) to distribute these extremely valuable portions of the public domain by lotteries--which would appear to be the only rapid way of doing so if there were hundreds of them to be parcelled out.

45. From this perspective, therefore, another advantage of issuing two or more national licenses would be that it would reduce the scope of that (to me) objectionable procedure and permit--indeed, almost certainly, politically demand--that the residual, national licenses be awarded through some form of comparative hearings. I am acutely aware of the objections to the use of comparative hearings--that they are time-consuming, expensive, and often arbitrary in the selections they produce. The delay that they entail in bringing valuable services to the market imposes a cost, a burden on the public.<sup>12</sup> These drawbacks will be substantially mitigated, however, by the fact that we can expect relatively few applicants for the national licenses--assuming there is a considerable application fee and that the Commission requires a showing of the financial resources necessary to build a national system. The complexity can be reduced further if the FCC adopts comparative criteria focused on financial and technical capabilities, and does not graft onto this process all the baggage historically attached to comparative hearings for broadcast licensees--undertakings of public service commitments, for example, and subsequent comparisons of the promises by the successful applicants with their performance. The successful applicants for PCS licenses will in any event have every incentive to make the best use of them without the need for any such prior commitments, provided only they are subject to effective competition. Comparative hearings represent at the least an attempt to make the awards to the applicants who will make the best use of them in the public interest, rather than distributing them by blind chance to recipients

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<sup>12</sup> The Commission employed comparative hearings in the top 30 cellular markets. The rules then in effect required these applicants to file their direct case with their application; they also set tight time deadlines. See 89 FCC 2nd p 103. These streamlined procedures would seem to be good models, to the extent the Commission employs comparative hearings in assigning PCS licenses.

who can be counted on then to pocket the proceeds of their successful gambles by turning around and selling them to more worthy applicants.

Balancing the advantages of national licenses with the benefits of competition and dispersion

46. The foregoing list of reasons for issuing national PCS licenses constitutes in my judgement a formidable list also of the competitive superiorities of national over local operations. It therefore raises the specter of the national licensees--and all the more so if there is only one--quickly achieving market dominance precisely because they are more efficient.

47. The solution to this possible dilemma, it seems clear, is not to deny subscribers or the development of the industry the benefits that a national licensee can bring, but to issue more than one such license and to be receptive to local licensees of forming geographic alliances enabling them to compete effectively, if indeed these advantages prove overwhelming.

48. For the same reasons, it would clearly be unacceptable if any potential service providers--LECs, cellular providers, cable systems or inter-exchange carriers--were categorically excluded from the opportunity to hold or participate in the holding of a national license. Any such exclusion could on the one side, by handicapping the excluded service provider in competing with the national licensee, inefficiently distort the competition between them and, on the other, deny the public of the benefits of integration--that is to say, of the special contributions that one or another of these telecommunications companies would almost certainly be in a position to make to exploit the possibilities of PCS.

49. Is there any respect, however, in which an industry composed entirely of regional or local licensees, each confined to its own locality, might be superior to the 51 or 490 that would be created by two national and either 49 or 488 regional licenses, even though in both cases there would be five competitors per market?

50. First, an industry constituted entirely of local or regional licensees would undeniably have a larger absolute number of independent sources of initiative and innovation, but each likely, on average, to be far less competent to innovate.

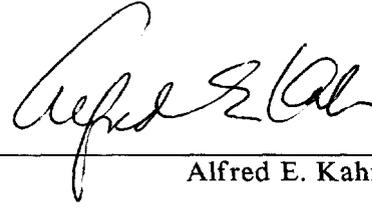
51. Second, when the same competitors--the hypothesized two national licensees--meet one another in market after market, they may exhibit some hesitation to compete vigorously with one another--for licensee A to cut rates in market X, for example, in competition with licensee B, in recognition of the possibility that B, in turn, may inflict the same treatment on it in market Z. Some observers claim to have discovered some such tendency resulting from what they refer to as multi-market presence in the airline industry;<sup>13</sup> and I have made a similar observation about the chemical industries.<sup>14</sup>

52. I cannot deny this possible tendency, but suggest it is far outweighed by the advantages of geographic integration that I have already cited, and would in any event be severely circumscribed by the enormous difficulties of enforcing that kind of quasi-collusive behavior in a new industry, with an extraordinarily rapidly developing technology and the likelihood of a burgeoning variety of changing services, and in circumstances in which there would also be, in each market, regional or local competitors, subject to no such reasons for restraint.

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<sup>13</sup> William N. Evans and Ionnis N. Kessides, "Living by the 'Golden Rule': Multimarket Contact in the U.S. Airline Industry," Ms., 1992; E. Han Kim and Vijay Sengal, "Mergers and Market Power: Evidence from the Airline Industry, Ms., Nov. 12, 1991, pp. 27-28.

<sup>14</sup> "The Chemical Industries," in Walter Adams, ed., The Structure of American Industry, New York: Macmillan, 1948, pp. 208-209.

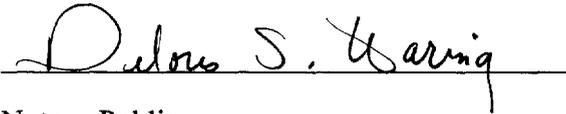


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Alfred E. Kahn

Subscribed and sworn to before me

this 6 day of November 1992.



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Notary Public

My Commission Expires 6/30/94

DOLORIS S. HARING  
Notary Public, State of New York  
No. 4766345  
Qualified in Tompkins County  
Commission Expires June 30, 1994



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Professor Kahn was appointed by President Carter to serve as Advisor to the President on Inflation and as Chairman of the Council on Wage and Price Stability.

At the time of his appointment, Professor Kahn was serving as Chairman of the Civil Aeronautics Board. He previously served as Chairman of the New York Public Service Commission.

Professor Kahn received his Bachelor's and Master's degrees from New York University and a Doctorate in Economics from Yale University. Following service in the Army, he served as Chairman of the Department of Economics at Ripon College, Wisconsin. He moved to the Department of Economics at Cornell University, where he remained until he took leave to assume the Chairmanship of the New York Public Service Commission. During his tenure at Cornell, Professor Kahn served as Chairman of the Department of Economics, Robert Julius Thorne Professor of Political Economy, member of the Board of Trustees of the University and Dean of the College of Arts and Sciences.

Throughout his career, Professor Kahn has served on a variety of public and private boards and commissions including: the Attorney General's National Committee to Study the Antitrust Laws; the senior staff of the President's Council of Economic Advisors; the Economic Advisory Council of American Telephone & Telegraph Company; the National Academy of Sciences Advisory Review Committee on Sulfur Dioxide Emissions; the Environmental Advisory Committee of the Federal Energy Administration; the Public Advisory Board of the Electric Power Research Institute; the Board of Directors of the New York State Energy Research and Development Authority; the Executive Committee of the National Association of Regulatory Utility Commissioners; the National Commission for Review of Antitrust Laws and Procedures; the New York State Council on Fiscal and Economic Priorities; the Governor of New York's Fact-Finding Panel on Long Island Lighting Company's Nuclear Power Plant at Shoreham, L.I.; the Governor of New York's Advisory Committee on Public Power for Long Island; the National Governing Board of Common Cause; and, in 1990, as Chairman of the International Institute for Applied Systems Analysis Advisory Committee on Price Reform and Competition in the USSR. He served as Advisor to New York Governor Carey on communications policy and was Vice President of the American Economic Association.

He has received L.L.D. honorary degrees from Colby College, Ripon College, Northwestern University, the University of Massachusetts and Colgate University, and an honorary D.H.L. from the State University of New York, Albany; he also received the Distinguished Transportation Research Award of the Transportation Board Forum, The Alumni Achievement Award of New York University, the award of the American Economic Association's Transportation and Public Utilities Group for Outstanding Contributions to Scholarship, The Henry Edward Salzberg Honorary Award from Syracuse University for

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Outstanding Achievement in the Field of Transportation, and the Burton Gordon Feldman Award for Distinguished Public Service from Brandeis University; and was elected to membership in the American Academy of Arts and Sciences. He is a regular commentator on PBS's "The Nightly Business Report."

He has testified before many U.S. Senate and House Committees, the Federal Power Commission, the Federal Energy Regulatory Commission and numerous state regulatory bodies.

Professor Kahn's publications include *Great Britain in the World Economy*; *Fair Competition: The Law and Economics of Antitrust Policy* (co-authored); *Integration and Competition in the Petroleum Industry* (co-authored); and *The Economics of Regulation*. He has written numerous articles which have appeared in *The American Economic Review*, *The Quarterly Journal of Economics*, *The Journal of Political Economy*, *Harvard Law Review*, *Yale Journal on Regulation*, *Yale Law Journal*, *Fortune*, *The Antitrust Bulletin* and *The Economist*, among others.

**EDUCATION:**

YALE UNIVERSITY  
Ph.D., Economics, 1942

UNIVERSITY OF MISSOURI  
Graduate Study, 1937-1938

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M.A., Economics, 1937  
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**EMPLOYMENT:**

1961-1974            NATIONAL ECONOMIC RESEARCH ASSOCIATES, INC.  
1980-                Special Consultant

1947-1989            CORNELL UNIVERSITY  
Assistant Professor; Associate Professor; Robert Julius Thorne Professor of Economics;  
Robert Julius Thorne Professor of Political Economy, Emeritus, 1989-; Chairman,  
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Spring 1989            NEW YORK UNIVERSITY SCHOOL OF LAW  
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1978-1980            UNITED STATES GOVERNMENT  
1978-1980            Advisor on Inflation to President Carter  
1977-1978            Chairman, Council on Wage and Price Stability  
1955-1957            Chairman, Civil Aeronautics Board  
1943                    Senior Staff, Council of Economic Advisors to the President  
1943                    U.S. Army, Private  
1943                    War Production Board

1942 Associate Economist, International Economics Unit, Bureau of Foreign and Domestic  
Commerce, Department of Commerce

1941-1942 Associate Economist, Antitrust Division, U.S. Department of Justice

1974-1977  
NEW YORK STATE PUBLIC SERVICE COMMISSION  
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1940,  
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Staff Economist

1945-1947  
RIPON COLLEGE  
Assistant Professor, Chairman, Department of Economics

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Research Economist

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COMMISSION ON PALESTINE SURVEYS  
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UNIVERSITY OF MISSOURI  
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**CONSULTANCIES AND PROFESSIONAL ACTIVITIES:**

1992 New Zealand Telecom on the progress of competition in New Zealand  
telecommunications

1992 Rochester Telephone Company on corporate restructuring and deregulation

1992 Russian Government on economic reform

1991 British Mercury on terms of competition with British Telecom

1988-1990 Attorneys General, New York and Pennsylvania, on airline mergers

1985 Attorney General, State of Illinois, on Illinois Bell rates

1981-1984 City of Long Beach, California, the Coca-Cola Company and American Airlines on  
antitrust litigation

1981- Economic commentary, Nightly Business Report (PBS)

1980-1982 Advisor to Governor Carey on Telecommunications Policy

1968 Ford Foundation

1966 National Commission on Food Marketing

1965,1974 Federal Trade Commission

1963-1964 Antitrust Division, Department of Justice

1960-1961 U.S. Department of Agriculture

1957-1961 Boni Watkins, Jason & Co.

See also the list of testimony below.

**MEMBERSHIPS:**

1991-	Board of Editors, <i>Review of Industrial Organization</i>
1990-91	Chairman, International Institute for Applied Systems Analysis Advisory Committee on Price Reform and Competition in the USSR
1986	Governor Cuomo's Advisory Panel on public power for Long Island
1983-89	Governor Cuomo's Fact-finding Panel on Long Island Lighting Company's Nuclear Power Plant at Shoreham, L.I.
1983-90	New York State Council on Fiscal and Economic Priorities
1982-	<i>The American Heritage Dictionary</i> Usage Panel
1982-1985	Governing Board, Common Cause
1980-1986	Director, New York Airlines
1978-1979	National Commission for the Review of Antitrust Laws and Procedures
1975-1977	Project Committee, Electric Utility Rate Design Study, Electric Power Research Institute
1974-1975	National Academy of Science Review Commission on Sulfur Oxide Emissions
1974-1977	Public Advisory Board, Electric Power Research Institute
1974-1977	Environmental Advisory Committee, Federal Energy Administration
1974-1977	Executive Committee, National Association of Regulatory Utility Commissioners, and Chairman, Committee on Electric Energy
1968-1974	Economic Advisory Board, American Telephone & Telegraph Corporation
1965-1967	Economic Advisory Committee, U.S. Chamber of Commerce
1967-1969	Chairman, Tompkins County Economic Opportunity Corporation
1964-1969	Board of Trustees, Cornell University
1961-1964	Board of Editors, <i>American Economic Review</i>
1953-1955	Attorney General's National Committee to Study the Antitrust Laws

**HONORS AND AWARDS:**

Mar 1989	Burton Gordon Feldman Award for Distinguished Public Service, Gordon Public Policy Center, Brandeis University
Feb 1989	Distinguished Service Award, Public Utility Research Center, University of Florida
Nov 1988	International Film and TV Festival of New York, Bronze Medal presented to The Nightly Business Report/WPBT2 for Editorial/Opinion Series written by Alfred E. Kahn
Apr 1986	Harry E. Salzberg 1986 Honorary Medallion for outstanding achievement in the field of transportation
Oct 1984	Distinguished Transportation Research Award of the Transportation Research Forum
1981-1982	Vice President, American Economic Association
1978	Richard T. Ely lecturer, American Economic Association, 1978
1978	Rejection Scroll, International Association of Professional Bureaucrats
May 1985	State University of New York (Albany), DHL (Hon.)
May 1983	Colgate University, LL.D. (Hon.)
June 1982	Northwestern University, LL.D. (Hon.)
May 1980	Ripon College, LL.D. (Hon.)
May 1979	University of Massachusetts, LL.D. (Hon.)
May 1978	Colby College, LL.D. (Hon.)
1977-	Fellow of the American Academy of Arts and Sciences
1976	Distinguished Alumni Award, New York University
1976	American Economic Association, Section on Public Utilities and Transportation, citation for distinguished contributions
1954-1955	Fulbright Fellowship, Italy
1935-	Phi Beta Kappa

1939-1940          Yale-Brookings Fellow

**BOOKS:**

*The Economics of Regulation*, 2 volumes, John Wiley, 1970 and 1971. Reprinted by The MIT Press, 1988, with a new "Introduction: A Postscript, Seventeen Years After," pp. xv-xxxvii.

*Integration and Competition in the Petroleum Industry*, (with Melvin G. DeChazeau), Petroleum Monograph Series, Volume 3 (Yale University Press, 1959). Reprinted in 1971.

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*Great Britain in the World Economy* (Columbia University Press, 1946). Reprinted in 1968.

**MAJOR ARTICLES:**

"Market Power Issues in Deregulated Industries," in *Antitrust Law Journal*, Vol. 60, Issue 3, American Bar Association, 1992, pp. 857-866.

"An Economically Rational Approach to Least-Cost Planning," in the *Electricity Journal*, Vol. 4, Number 5, June 1991, pp. 11-20.

"Least cost planning generally and DSM in particular," in *Resources and Energy* 14 (1992), Elsevier Science Publishers, North-Holland, pp. 177-185.

"Price Deregulation, Corporatization and Competition" (with M.J. Peck), in *What is to be Done? Proposals for the Soviet Transition to the Market*, M.J. Peck and T.J. Richardson, eds., New Haven: Yale University Press, 1991.

"Thinking About Predation--A Personal Diary," in *Review of Industrial Organization*, Vol. 6, The Netherlands: Kluwer Academic Publishers, 1991, pp. 137-146.

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"The Future of Local Telephone Service: Technology and Public Policy," Fishman Davidson Center for the Study of the Service Sector, The Wharton School of the University of Pennsylvania, Discussion Paper #22, June 1987. Reprinted in *Toward The Year 2000*, ITT Key Issues Lecture Series, 1986, (New York: ITT Corp. 1987), pp. 86-99.

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"A Critique of Proposed Changes," *The Future of Electrical Energy: A Regional Perspective of an Industry in Transition*, Sidney Saltzman and Richard E. Schuler (eds.), Praeger Publishers, New York, 1986, pp. 340-347.

"The Tyranny of Small Decisions and the Perils of Big Ones," in *Allocation, Ethics, and Innovation in Research and Public Policy*, National Symposium on Science and Technology, Cornell University, Washington, D.C., May, 20, 1986.

"The Theory and Application of Regulation," *Antitrust Law Journal*, Spring Meeting Issue, 1986, Volume 55, Issue 1, pp. 177-184, from ABA Antitrust Section Annual Meeting.

"Transportation Deregulation...And All That," Honorary Salzberg Memorial Lecture, Syracuse University School of Management, Syracuse, New York, April 1986. Reprinted, revised, in *Economic Development Quarterly*, May 1987, Volume 1, Number 2, pp. 91-99.

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"On Changing the Consumer Price Index, A Comment," *Journal of Policy Analysis and Management*, Vol. 1 (Summer 1982), pp. 512-15.

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"The New Merger Wave," *N/E/R/A Topics*, National Economic Research Associates, December 1981.

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