1988

The Competitiveness of the U.S. Telecommunications Industry: A New York Case Study

Michael Botein
New York Law School

Alan Pearce

Recommended Citation
6 Cardozo Arts & Ent. L.J. 233 (1987-1988)

THE COMPETITIVENESS OF THE U.S. TELECOMMUNICATIONS INDUSTRY: A NEW YORK CASE STUDY

MICHAEL BOTEIN*
ALAN PEARCE**

* Professor of Law and Director of the Communications Media Center, New York Law School; B.A., 1966, Wesleyan University; J.D., 1969, Cornell University; LL.M., 1971; J.S.D., 1979, Columbia University.

** President, Information Age Economics, Washington, D.C.; B.S., 1963; M.Sc., 1968, London School of Economics; Ph.D., 1972, Indiana University.

This Article was made possible by a grant from the New York State Industrial Council. The views expressed are solely those of the authors.

The authors appreciate the comments of Matthew Botein, Barry Cole, Martin Elton, Shawky El-Towkhy, Kevin Fennell, Kristina Fischer, George Foote, John Hopley, Craig Maschal, Eli Noam, Ken Phillips, Robert Rogers and Lee Smith. Special thanks are due to Robert Mayer, Eudry Sell, Tim Wendt and Len Walczyk for their assistance in researching, editing and producing this Article.

The following is a list of some of the acronyms and abbreviations used throughout this Article:

AT&T	American Telephone & Telegraph Company
AT&T-Tech	AT&T Technologies
Bellcore	Bell Communications Research
B-ISDN	Broadband ISDN
BOC	Bell Operating Company
CGCT	Compagnie Generale de Constructions Telephoniques
CGSA	Cellular Geographic Service Area
CPE	Customer Premises Equipment
CTU	Cellular Telephone Utility
DOJ	Department of Justice
ESP	Enhanced Service Provider
FCC	Federal Communications Commission
GTE	General Telephone & Electronics
IBN	Integrated Broadband Network
IRC	International Record Carrier
ISDN	Integrated Services Digital Network
LAN	Local Area Network
LATA	Local Access and Transport Area
LEC	Local Exchange Company
MFJ	*Modification of Final Judgment*
NTIA	National Telecommunications and Information Agency
NTT	Nippon Telephone & Telegraph
NYTEL	New York Telephone Company
OCC	Other Common Carrier
ONA	Open Network Architecture
Oftel	Office of Telecommunications
PBX	Private Branch Exchange
PSC	Public Service Commission
PSL	New York Public Service Law
PTT	Postal, Telephone and Telegraph Administration
RBOC	Regional Bell Operating Company
RHC	Regional Holding Company
SIC	Standard Industrial Classification
SLC	Subscriber Line Charges
USTR	United States Trade Representative

VAN Valued Added Network
WEFA Wharton Econometric Forecasting Associates, Inc.

I. INTRODUCTION

During the last decade, telecommunications has become increasingly important in both economic and social terms. The telecommunications industry[1] accounts for a substantial portion of the nation's and New York State's production and employment. In 1985, U.S. businesses and consumers spent more than $100 billion on telecommunications services[2]—roughly 2.5% of the gross national product.[3] New York State accounted for about ten percent of the $100 billion.[4] New York's share of revenues from the telecommunications industry is large, giving it a significant stake in the industry's development.

In today's "information economy,"[5] the telecommunications industry impacts on an increasingly large number of other industries which rely upon telecommunications to transact business.[6] Due to their reliance upon computers to perform routine transactions, banks, stock brokerage houses, airlines and the like cannot operate without affordable, reliable and high-capacity telecommunications.

Since the telecommunications industry plays a key role in the nation's and New York State's economic positions in the world market, the industry's development is important for legislative policymakers. Sound policy should encourage the location of telecommunications firms within New York State. The growth of other industries, particularly in the financial services sector, depends upon high-quality, affordable telecommunications services and equipment—an industrial policy approach which Japan is pursuing actively.[7] A variety of factors impacts upon the viability of New York State's telecommunications industry.

---

[1] For the scope of the telecommunications industry, see *infra* text accompanying notes 7-9.

[2] *See* P. HUBER, THE GEODESIC NETWORK 2.3 (1987) (estimating total LEC and IC service revenues of about $102 billion in 1985).

[3] U.S. BUREAU OF CENSUS, STATISTICAL ABSTRACT OF THE UNITED STATES 413-14 (1987) (the 1985 GNP was approximately $4 trillion).

[4] *See* P. HUBER, *supra* note 2, at 1.6-1.7 (listing NYNEX alone with 1986 revenues of $10.3 billion).

[5] 1 M. PORAT, THE INFORMATION ECONOMY (1974).

[6] For example, General Motors has budgeted $500 million to upgrade its internal communications network by 1990—in addition to even larger investments in its commercial data processing and telecommunications subsidiary.

[7] *See infra* notes 200-01 and accompanying text.

To begin with, it may be useful to define "telecommunications." Despite the common use of the phrase "telecommunications industry," no easily identifiable entity exists. The "industry" at issue here comprises a large number of separate industries, ranging from equipment manufacturers to transmission service providers to software developers. These industries not only compete with each other, but also collaborate in providing services to non-telecommunication entities. For example, a transmission system is useless without a computer-based switch to route messages.

Defining the parameters of the telecommunications industry is difficult. An example is the concept of "common carriers" such as local telephone companies and long distance service providers. These firms constitute a very significant part of the telecommunications industry. Although the Federal Communications Commission ("FCC") has been regulating interstate common carriers for more than fifty years, neither it nor the courts have adequately defined common carriage.[8] Part of the problem is that the FCC's organic law is both circular and vague. The Communications Act of 1934 defines a common carrier as "any person engaged as a common carrier for hire."[9]

On the service, as opposed to manufacturing side, the telecommunications industry provides transmission capacity on a point-to-point basis. The material transmitted might be video, voice, data or a combination thereof. A transmission may originate from or terminate at a variety of different locations—as with a telephone conference call—and thus be classified as a multipoint to multi-point transmission. Point-to-point capability distinguishes *telecommunications* from *communications*. The former serves a designated set of users, the latter the public at large. To be sure, the line between telecommunications and communications is fuzzy at times. For example, some large corporations, such as Multicom, use electronic mail to send price changes, inventory availability and the like to thousands of retail stores. Although this type of system may have a larger audience than a small radio station, it falls on the telecommunications side of the line, since its transmissions are not available to the general public.

Another way of defining telecommunications service is: any

---

[8] *See, e.g.*, National Ass'n of Regulatory Util. Comm'rs v. FCC, 525 F.2d 630, 640-42 (D.C. Cir.), *cert. denied*, 425 U.S. 992 (1976).

[9] The Communications Act of 1934, 47 U.S.C. § 153(h) (1982).

type of electronic transmission other than the mass media, including radio, television and cable television. Under this definition, telecommunications services would include both common carriers and "dedicated" private facilities such as intra-corporate microwave networks.

The lines are not much clearer on the manufacturing side. Some types of equipment obviously can provide only telecommunications services, for example: terminals (ranging from telephones to keyboards); wire, cable or fiber optic transmission lines; line amplifiers; or computer-based switches for routing transmissions. But even equipment can provide only part of an end product. By itself, a computer does not provide a telecommunications service. If a modem enables it to transmit data, a computer provides part of a telecommunications service.

Other observers might describe the telecommunications industry in either broader or narrower terms. This Article's approach, however, is to deal with a relatively discrete group of firms which are necessary to provide reliable, affordable and high-capacity telecommunications services. This inevitably creates a topography on which some firms such as AT&T are involved almost exclusively in telecommunications, while others such as General Motors are involved only peripherally.

The telecommunications industry has changed dramatically over the last five years and will continue to evolve. This process inevitably will impact upon the competitiveness of the industry for the nation in general and the State in particular. Part II of this Article will give an overview of the telecommunications industry in general. Part III will then explore a variety of factors, ranging from taxation to regulation, which may affect the industry's competitiveness. Part IV will assess the industry's potential impact upon New York State. The Conclusion in Part V then suggests strategies for maximizing both the industry's growth and its contribution to New York State's economic development.

II. An Overview of the Telecommunications Industry

A. *The United States*

1. The Regulatory Environment

The telecommunications industry has been closely regulated since its inception, for two main reasons. First, its transmission components for both local and long distance service have strong natural monopoly characteristics. Like other public utilities, state regulation is necessary to insure that users do not pay more than

the competitive price. Second, many telecommunications services use over-the-air transmissions like radio and television broadcasters. Therefore, some type of central control is necessary to avoid electrical interference. Even in today's deregulatory environment, state governmental agencies retain significant control over most segments of the industry, thereby maintaining substantial leverage to implement their policies.

On the federal level, policy emanates mainly from the FCC, a body of five commissioners appointed by the President but independent of that office.[10] The FCC has legislative powers through the adoption of regulations, executive authority by the enforcement of its rules, and judicial powers in the adjudication of cases.[11] The FCC allocates frequencies and regulates all broadcasting, satellite, and other civilian uses of the electromagnetic spectrum.[12] The FCC is also in charge of *inter*state telephony—transmissions from one state to another—and activities closely affecting interstate communications. State commissions such as New York State's Public Service Commission ("PSC") regulate *intra*state telephony.

On the federal executive level, the Commerce Department's National Telecommunications and Information Agency ("NTIA") helps to coordinate the President's overall telecommunications policy. NTIA plays a role in international communications, together with the Office of the U.S. Trade Representative and the State Department, which is the lead agency in international negotiations.[13] In addition, the Antitrust Division of the Department of Justice now oversees much of the telephone industry by way of enforcing the 1982 court order which broke up AT&T.[14] The primary authority in that case was federal district court Judge Harold H. Greene. Judge Greene decides whether telephone companies and other parties are complying with the AT&T *Modification of Final Judgment* ("*MFJ*"). Judge Greene has become a major presence in telecommunications matters.[15]

Federal courts, particularly the U.S. Court of Appeals for the District of Columbia Circuit, have become a significant locus of

---

10 47 U.S.C. § 154 (Supp. 1985)

11 47 U.S.C. § 11 (1982 & Supp. 1985).

12 47 U.S.C. §§ 214, 301 (1982). For a more complete discussion of the U.S. telecommunications system, see S. BARNETT, M. BOTEIN & E. NOAM, LAW OF INTERNATIONAL TELECOMMUNICATIONS IN THE UNITED STATES 15-59 (1988).

13 *See* GOVERNMENT SERVICES ADMINISTRATION, GOVERNMENT ORGANIZATION MANUAL (1985).

14 *See infra* note 115 and accompany text.

15 *See* S. SIMON, AFTER DIVESTITURE (1985).

telecommunications policymaking.[16] The Justice Department and the Federal Trade Commission also play a role in regulating the industry's competitive behavior and structural changes,[17] primarily mergers and acquisitions, and by forcing divestitures like AT&T's.

The most important body for implementation of telecommunications policy, at least in theory, is the United States Congress. The primary legislation for U.S. telecommunications is the Communications Act of 1934, which sets out the FCC's jurisdiction over broadcasters, carriers, and manufacturers.[18] This magna carta of U.S. telecommunications policy has been amended infrequently, despite many attempts. Policymaking in light of changed circumstances has been left largely to the FCC's and the courts' discretion. Congress often wields its power indirectly, however, by giving signals to the FCC through bills, resolutions, hearings, and the budgetary process. Congress reduces an agency's budget if it does not adopt policies—a fact of life which obviously has a strong influence on an agency.[19]

This multiplicity of decision-making governmental bodies frustrates coordinated and comprehensive policy-making. But it also accomodates decentralized and ad hoc decisions, many of which are responses to specific problems rather than part of a grand design. This multiple decision-making structure has permitted a fairly rapid reorientation of U.S. telecommunications policy, without major upheavals except perhaps for the AT&T divestiture.

2. Historical Background: The AT&T Divestiture

The U.S. telecommunications industry was a simple affair for a long time. There was one telephone company, the American Telephone and Telegraph Company ("AT&T"). Despite its name, AT&T was barred from telegraphy, which was the domain of Western Union. Internationally, Western Union was excluded from the telegraph market, in favor of a handful of international record carriers.

This was a structure of stability, in which companies carefully were excluded from each other's markets. Instead of promoting

---

16 For example, the D.C. Circuit forced the FCC to allow connection of non-AT&T equipment to the local AT&T exchanges, making competition in the equipment market possible. Hush-a-Phone v. FCC, 238 F.2d 266 (D.C. Cir. 1956).

17 *See* L. SULLIVAN, ANTITRUST 751 (1977).

18 47 U.S.C. §§ 151-757 (1982).

19 *See, e.g.*, E. KRASNOW, L. LONGLEY & H. TERRY, THE POLITICS OF BROADCAST REGULATION (3d ed. 1982).

competition, federal and state regulation kept each company, particularly AT&T, from exploiting its market power. Over the past two decades, however, this traditional arrangement has exploded in a mutually reinforcing process of competitive entry and government liberalization, and has given way to a highly dynamic structure of overlapping markets. AT&T operated from 1956 to 1982 pursuant to a "*Consent Decree*" which terminated an antitrust suit brought by the Justice Department against AT&T in 1949.[20] The pre-divestiture AT&T was substantially different than today's often confusing mixture of entities. AT&T was perhaps the most vertically integrated telecommunications corporation in the world, since it provided everything from switching equipment to local service.[21]

The divestiture ended the most significant portion of AT&T's vertical integration, namely, the common ownership of the local exchange companies, equipment manufacturers, and long distance service providers. At least in theory, this removed conflicts of interest, such as local exchange companies' paying inflated prices for Western Electric equipment.[22]

The divestiture evolved in a relatively complicated procedural fashion. In 1982, AT&T settled a 1974 antitrust case under a *Modification of Final Judgment* ("*MFJ*").[23] This technically was an amendment to the 1956 *Consent Decree*. The *MFJ* required AT&T to divest its twenty-two Bell Operating Companies ("BOCs"), which now are owned by seven Regional Bell Operating Companies ("RBOCs") or Regional Holding Companies ("RHCs"). AT&T kept several key entities such as Bell Labs, Western Electric, Long Lines Division which was an entity for providing "enhanced" services and AT&T Information Services which eventually was merged into AT&T Communications. The FCC supported the judgment, but urged that the BOCs also be permitted to enter unregulated fields.

While the Justice Department was pursuing its case, the FCC was imposing structural restraints on AT&T. The FCC found it necessary during the 1970's to decide how AT&T could provide

---

[20] United States v. Western Elec. Co., No. 17-49 (D.C.N.J. filed Jan. 14, 1949).

[21] W. BOLTER, TELECOMMUNICATIONS POLICY FOR THE 1980's 174 (1984). Western Electric (now AT&T Technologies) produced both terminal and switching equipment; Long Lines Division (now AT&T Communications) provided 90% of the nation's long distance traffic; Bell Labs (the only AT&T entity to survive without a name change) did basic research, through a complex series of contracts with the other AT&T components; and 22 wholly or majority owned local telephone companies—such as the New York Telephone Company—provided local exchange service to one or more states.

[22] *See infra* note 63 and accompanying text.

[23] United States v. AT&T, 552 F. Supp. 131 (D.D.C. 1982).

data processing and other "enhanced" services. AT&T could offer only telecommunications service under the 1956 *Consent Decree*. Due to the capabilities of electronic switching and of customer demand for new services, AT&T increasingly felt pressure to offer enhanced services. At first, these services were provided through AT&T's common carrier offerings over the objections of data processing firms and were treated as communications services. The FCC addressed this dilemma in its first and then second *Computer Inquiry*.[24] The FCC developed a distinction between "basic" or communications services, and "enhanced" or software-driven services. AT&T could provide only basic services through its regulated offerings. Enhanced services had to be provided by an unregulated and "fully separated" subsidiary.[25]

Despite strenuous objections by U.S. service providers, in 1983 the FCC changed the effect of the *Computer II* "basic" and "enhanced" classifications. If a carrier provided "enhanced" rather than "basic" service, it no longer needed—and indeed, no longer could obtain—certification under Section 214 of the Communications Act.[26] Since most new carriers were providing "enhanced" services by utilizing both data processing and telecommunications, they fell within this category.

In 1985, the FCC adopted yet another set of rules in its *Computer III* proceeding.[27] The FCC did away with its separate subsidiary requirements on the grounds that they were unworkable and unnecessary. Instead, it substituted detailed accounting and record keeping rules, designed to detect cross-subsidization or other abuses.[28] Whether *Computer III*'s approach is viable remains to be seen, however, in light of the FCC's limited auditing and monitoring resources.

---

[24] CCIA v. FCC, 693 F.2d 198 (D.C. Cir. 1982) ("*Computer II*"). The reference to computers is a historical accident, since the regulatory issues first arose in the context of AT&T's using computer-operated switches for data processing as well as network management.

[25] *See* Amendment of Section 64.702, 77 F.C.C.2d 384, *continued*, 84 F.C.C.2d 50 (1980), *continued*, 88 F.C.C.2d 512 (1981), *aff'd sub nom.* CCIA v. FCC, 693 F.2d 198 (D.C. Cir. 1982).

[26] 47 U.S.C. § 214 (1982).

[27] Amendment of Section 64.702, 50 Fed. Reg. 33,581 (1985) (to be codified at 47 C.F.R. § 64) ("*Computer III*").

[28] *See* Marks & Casserly, *An Introduction to the FCC's Third Computer Inquiry*, THE COMPUTER LAWYER 1 (Oct. 1985); Wiley & Polsky, *Understanding the Computer III Inquiry*, 2 TELEMATICS 3 (Nov. 1985).

3. Current Types of Telecommunications Firms

a. Public Networks

Operation of the various U.S. telecommunications services is highly decentralized.[29] Following the AT&T divestiture, the structure of networks includes local service,[30] long distance service[31] and international carriers.[32]

---

[29] For a general discussion of decentralization, see W. BOLTER, *supra* note 21.

[30] A variety of local exchange companies ("LECs") exists. There are twenty-two Bell Operating Companies, such as the New York Telephone Company ("NYTEL"). They are organized into seven RBOCs, such as NYNEX, which owns NYTEL. The BOCs provide the bulk of local service, with more than 1,000 small independent companies serving approximately 10% of the nation's geographic area and 20% of its population. The largest independent company is General Telephone & Electronics, Inc. ("GTE"). For a list of major LECs, see Table I. Local exchange companies are restricted to service within their local access and transport areas ("LATAs"), and may not enter long distance or international communications—an *MFJ* restriction which the RHCs have contested unsuccessfully before Judge Greene. The BOCs are regulated by various bodies, primarily state commissions and the FCC.

Various other entities—sometimes known as "by-passers"—compete with LECs in providing local service through a number of technologies. *See* Noam, *The "New" Local Communications*, 6 COMPUTER L.J. 247 (1986). These technologies include:

a. Cable television;
b. Point-to-point microwave;
c. Digital Termination Service ("DTS"), a two-way point-to-point switched microwave service; *see, e.g.*, D. IRWIN, TELECOMMUNICATIONS REGULATORY MONITOR II-29 (1985);
d. Fiber optic links;
e. Infrared transmission, which does not require an FCC license; and
f. Cellular radio, primarily in the form of mobile car telephones; *see* Davis, *Making Sense of the Telecommunications Circus*, HIGH TECHNOLOGY at 22-25 (Sept. 1985).

Shared tenant services ("STS") operations are a hybrid form of local transmission, in which landlords resell local service using a private branch exchange ("PBX") and lines leased from telephone companies or other carriers.

[31] AT&T controls more than 80% of "interexchange" or "inter-LATA" service. Other common carriers ("OCCs") such as MCI, or Sprint, provide the rest.

"Resellers" of long distance service (including in part the OCCs, which often lease lines from AT&T) and many others buy long distance service at low bulk rates and resell it to smaller users.

Lessors of long-distance links include a growing number of railroads or highway authorities, which install fiber optic lines on their routes.

Domestic record carriers, primarily Western Union and RCA, provide mostly telegraph services and data transmission.

Specialized companies—including data networks and value-added networks such as Telenet and Tymnet—provide packet switching and other high-technology services.

Satellite carriers (such as RCA), often operating as common carriers, lease transponder capacity to other common carriers and private users.

See generally W. BOLTER, *supra* note 21; S. SIMON, *supra* note 15.

[32] AT&T provides the bulk of international voice service, and now also provides record service.

Other common carriers, such as MCI and Sprint, provide service to countries with whose postal, telegraph and telephone ("PTT") authorities they have agreements. In the Pacific, the Hawaiian Telephone Co. handles much of the traffic.

Comsat, the U.S. signatory to INTELSAT and INMARSAT, originally operated solely as a "carrier's carrier"—that is, it carried transmissions only from common carriers. It now can access users directly. For international civilian satellite communications (as distinguished from cable or microwave), INTELSAT was the sole link. U.S. carriers may go through either Comsat or a private carrier to access INTELSAT for international

Table I

LOCAL EXCHANGE COMPANIES

- 22 Bell Operating Companies (formed into 7 Regional Bell Operating Companies: NYNEX, Ameritech, BellSouth, Bell Atlantic, Southwestern Bell, US West, Pacific Telesis)
- Southern New England Bell
- Cincinnati Bell
- GTE
- United Telecommunications
- Continental Telephone Corporation
- Central Telephone and Utilities
- Alltel Corporation
- Rochester Telephone
- 1400 other small local telephone companies

Source: Company files, Information Age Economics, Washington, D.C.

Local, long-distance, and international networks can offer all types of telecommunications services, with restrictions which include the following:

1. Although AT&T can *carry* other companies' electronic publishing or videotex communications, it may not provide its *own* information service until 1989;[33]
2. A BOC may not provide its own information services;[34]
3. Under the Cable Communications Policy Act of 1984, local telephone companies may provide cable television service only in "rural" areas, which a cable company would find too unprofitable to enter. However, they are free to construct and "lease back" cable facilities to cable companies, as long as the local telephone

satellite service. INTELSAT now faces "bypass" from private satellite operators, such as Orion or Panamsat.

International record carriers ("IRCs") such as RCA/GE, ITT, TRT, MCI International (formerly Western Union International) also offer telegraph and telex service. The IRCs originally were restricted to international record service. These restrictions now have been abolished.

Specialized carriers and value added carriers such as Telenet use leased circuits to provide data base and related services.

Applications have been approved by the FCC for new international satellite carrier systems and for new transatlantic cable ventures. For a list of major international carriers, see Table III.

None of these new carriers can function without a link to a foreign carrier; U.S. approval is not sufficient to implement service.

See R. BRUCE, FROM COMMUNICATIONS TO TELECOMMUNICATIONS (1987).

[33] W. BOLTER, *supra* note 21, at 178.

[34] Davis, *supra* note 30, at 22.

companies do not control the systems' programming in any way;[35]

4. Since local telephone companies' rates are regulated, an expansion of their service offerings is subject to regulatory scrutiny if it affects rates;

5. For local transmission, the situation is very much in flux. Some states have instituted rules to restrict local "bypass" in favor of the local exchange telephone companies.[36] In several instances, *intra*state long-distance service entry (service between LATAs in the same state) is also restricted to entry by additional carriers under state rules. Many of these regulations are now subject to litigation.

Geographical service restrictions also apply. BOCs and other LECs have exclusive franchises for public switched service in their geographic areas. However, this exclusivity is being undermined de facto by various forms of bypass and shared tenant services. BOCs cannot offer long-distance or international service while AT&T cannot provide local service. GTE has provided both local and long-distance services, but must do so through separate subsidiaries.

Common carriage provides access rights to all users, including resellers which compete with a carrier. Local exchange companies must grant access to all long-distance carriers. "Equal access" i.e., equal availability of all long-distance carriers to all telephone users, was scheduled to have been provided to all long distance carriers by the middle of 1986.[37] As of this writing, not a single RHC has achieved 100% equal access, though a few are approaching it. Because of the massive financial as well as engineering burdens involved, Judge Greene has been relatively generous in granting extensions of time. NYNEX has very low equal access capability, partially because it had been relatively slow before the *MFJ* in implementing electronic, rather than mechanical, switching.

The reselling of domestic local and long distance transmis-

---

35 47 U.S.C. § 533 (Supp. III 1985).

36 "By-pass" occurs when an unregulated company provides services within a LATA without using the local exchange carrier. *See* P. HUBER, *supra* note 2, at 6.17.

37 Under equal access, customers indicate their "primary" carrier, to which domestic and international long-distance calls automatically are routed by a local exchange. A customer thus is connected directly to his or her long-distance carrier, without inputting elaborate access codes. Users still can access other common carriers, of course, by inputting their codes. Customers also can utilize private branch exchanges ("PBXs") to select a different long-distance carrier for each call according to a "least-cost-routing" computer, which chooses the least expensive carrier for each call. *See, e.g.*, S. SIMON, *supra* note 15.

Table II

LONG DISTANCE (INTEREXCHANGE) CARRIERS

1. *Terrestrial*
   AT&T Communications
   Western Union
   MCI-SBS
   US Sprint
   USTS (IT&T)
   Allnet Communications (includes Lexitel)
   National Telecommunications Network (NTN is a fiber optic network of seven regional IX carriers)
   200 plus resellers, (some of which are becoming facilities based)
2. *Satellite*
   AT&T Communications
   Western Union
   COMSAT
   RCA Americom (General Electric)
   Satellite Business Systems (IBM-MCI)
   GTE (in the process of being sold or phased out)
   Hughes (General Motors)
3. *Value Added Networks*
   Graphnet (Graphic Scanning)
   IBM IN
   Telenet (U.S. Sprint)
   TYMNET (TYMSHARE)
   RCA/GE Cylix
   Compuserve
   Autonet CSC Infonet

Source: Company files, Information Age Economics, Washington, D.C.

sion is permitted and extensive. Carriers must sell to resellers which compete with them in the retail market.[38] Resellers do not require any authorization from the FCC. They must notify the FCC only if they hold themselves out to the public generally. Where there is no such general offering e.g., one bank's reselling its surplus transmission capacity to another, no FCC filing is necessary.[39]

In the past, complex financial accounting rules arguably provided an internal subsidy from AT&T's long-distance service to the BOCs.[40] Complicated FCC tariffs also governed the access charges paid by the OCCs. After divestiture, this system was re-

[38] Recent trends include sharing satellite transponders, as well as reselling of local transmission by STS operators and privately owned public telephones. *See, e.g.*, Universal Payphone Corp., 58 Rad. Reg.2d (P & F) 76 (1985).

[39] D. IRWIN, *supra* note 30, at II-38.

[40] *See* Recovery of Equal Access and Network Reconfiguration Costs, Memorandum

Table III

MAJOR INTERNATIONAL TELECOMMUNICATIONS CARRIERS

- IT&T Worldcom (merging with Western Union)
- GE/RCA Globecom
- TRT (UNC Resources)
- MCI/WUI
- AT&T
- COMSAT
- FTC Communications
- Others planning to enter
- Some resellers and value added carriers

Source: Company files, Information Age Economics, Washington, D.C.

vamped, with equal access charges for carriers to be phased in as equal access to the BOCs was made available for the OCCs.[41] Furthermore, a new system of customer access charges, subscriber line charges ("SLCs"), partially substitutes for carrier-paid access fees. At least in theory, access fees force all long-distance carriers to compete on an equal footing, since they are not subject to different charges for use of local exchange facilities. Because of the extremely large amounts of money at issue to the carriers and the redistributional impact of access fees, SLCs have become very controversial.[42]

b. Private Networks

Over the last few years, large-volume users of data and voice transmission services have increasingly utilized private lines. These operations often totally bypass the local exchange carrier ("LEC"), by direct connections to the uplink and downlink satel-

---

Opinion and Order, 50 Fed. Reg. 50,910 (1985), *on reconsideration*, 1 FCC Rec. 434 (1986).

41 D. IRWIN, *supra* note 30, at II-13.

42 For example, the OCCs fear that by being forced to pay the same charges as AT&T—compared to roughly half as much in the past—they will lose their price advantage with consumers and thus suffer market erosion. The OCCs contend that the BOCs' provision of improved technical facilities does not justify equalization of access costs. *See generally* In the Matter of the Consolidated Application of AT&T and Bell Sys. Cos. for Authorization under Sections 214 and 310(d) of the Communications Act of 1934 for Transfers of Interstate Lines, Assignments of Radio Licenses and Other Transactions as described in the Application, Memorandum Opinion & Order and Authorization, 96 F.C.C.2d 18 (1983).

lite installations of interexchange carriers.[43]

Large corporations increasingly use private networks as a cost-effective means of moving voice and data communications. When confined to a single geographic location, these networks are known as "local area networks" ("LANs"). Since different locations can be connected by microwave or satellite, messages can be shipped long distances and even routed onto LECs' networks—the so-called "leaky PBX" ("private branch exchange") problem.[44] The OCCs' uplink and downlink facilities are regulated as interstate common carriers by the FCC. State PSCs may regulate them only to the limited extent that they provide intrastate long-distance services. A non-carrier uplink or downlink, however, is subject to no federal regulation beyond securing a license to use the radio frequency spectrum.[45] Closed user groups[46] are located conceptually somewhere between a single user's private network and a reseller's public services. Since both are almost totally deregulated, closed user groups circumvent regulations in terms of charges, access and content. No licensing is necessary, except to the extent that over-the-air transmissions are involved.[47] Liability is based on contractual provisions or general commercial law.

There is no right of access to a closed user group. However, if trade is restrained by refusing to allow a competitor to join a group deemed to be an "essential facility," traditional antitrust principles would require it to grant access.[48] That is, single-firm

---

[43] For example, a major broker in New York uses private lines to connect its Manhattan offices directly with satellite transmission facilities in New Jersey. NYTEL plays no role in linking the terminal equipment to the satellite facility, and consequently derives no revenue from the transmission. *See* Guidelines for Dominant Carriers; MTS Rates and Rate Structure Plans, Memorandum Opinion and Order, FCC 85-540 (1985).

[44] In the Matter of MTS and WATS Market Structure, Memorandum Opinion and Order, 97 F.C.C.2d 682 paras. 78-90 (1983) (with a "leaky PBX," long-distance calls enter an LEC's network as local calls, thus avoiding the carrier-paid access fees).

[45] 47 U.S.C. § 301 (1982). Satellite transmissions currently are not used for private line purposes, because of these systems' high construction and maintenance costs. This does not include use of satellites by cable television programmers which might be considered a type of private line activity. However, these private systems would not be subject to state or federal regulation as common carriers, since they do not hold themselves out to the public. They thus would be unregulated in every sense except for needing FCC licenses.

[46] Defining a closed user group is extremely slippery. No legal definition exists. There are literally thousands of electronic bulletin boards and specialized data bases, through which private and commercial users communicate with each other via computers. Users range from major banks to baseball fans. Some operate with leased lines, while others use conventional local and long-distance telephone services.

[47] 47 U.S.C. § 301 (1982).

[48] *See* United States v. Terminal R.R. Ass'n, 224 U.S. 383 (1912) (unification of virtually every traffic terminal facility in St. Louis and power to exclude non-member rail carriers is a violation of the Anti-Trust Act).

production might prove to be substantially less expensive than multi-firm production, and no users would be exposed to lower-priced and loss-free entry. In those cases, antitrust prohibitions on discrimination against competitors may apply.[49]

c. International Communications

The Communications Act of 1934 does not distinguish between domestic common carriers which provide transborder transmission services and carriers which do not. No special regulatory requirements apply to carriers with transborder as well as domestic transmission capabilities. Any communications common carrier operating within the United States is subject to state and/or federal regulation.[50]

A U.S. carrier obviously needs a foreign counterpart to distribute its signals locally. Although a variety of U.S. carriers may want to operate internationally, without foreign local and long-distance distribution they cannot provide service. Foreign administrations are wary of introducing competitive complexity into their international service. Furthermore, transactions with multiple U.S. carriers may impose extra costs.[51]

Access of foreign carriers to the United States is affected by several restrictions. First, foreign entities may not own more than twenty-five percent of U.S. local telephone companies and long distance carriers.[52] There do not appear to be any restrictions against foreign companies owning a U.S. value-added network or reseller, unless it functioned as a common carrier. Through such resale, foreign carriers could distribute their service within the United States.

Second, in order to serve U.S. customers, foreign carriers have to link up with a U.S. long-distance carrier such as AT&T and the IRCs or the OCCs. A foreign carrier also would need to

---

[49] L. SULLIVAN, ANTITRUST 125 (1977); United States v. Associated Press, 326 U.S. 1 (1945).

[50] Since they are common carriers, if U.S. carriers provide international service, they must grant access to domestic customers—including resellers. However, under most foreign administrations' current policies resellers would not be able to link up at the other end. The carrier rather than the reseller would be viewed as the authorized user. However, since neither a U.S. carrier nor a foreign administration would necessarily know whether a reseller was using a leased line, unsanctioned resale might be impossible to detect. *See supra* note 39 and accompanying text.

[51] For example, European arrangements with MCI appear to involve primarily traffic inbound from the United States. A minimum amount of inbound traffic must be generated by MCI before a foreign PTT will install outbound transmission equipment. Remarks of W. McGowan, President of MCI, before IDATE, in Montpellier, France (Oct. 23, 1984).

[52] *See* 47 U.S.C. § 310(b)(4) (1982).

deal with an LEC or a bypass operator for local distribution, unless a customer had its own satellite downlink. From the U.S. perspective, the only restrictions, except for those discussed below, are on direct links to the BOCs, due to the current prohibition against their providing long distance service.[53]

Third, the nature of foreign carriers' communications links to the U.S. also is governed by the Cable Landing License Act of 1921,[54] which goes back to 19th century agreements concerning telegraphic cable. That Act requires bilateral reciprocity for carrier access. In practice, this has led to an FCC policy of approving only "half-circuit access" for foreign carriers, in order to guarantee the other half circuit for a U.S. carrier in the reverse direction.[55] Beyond trade reciprocity, the half-circuit policy has also been utilized for technical reasons. Control of a full circuit by a foreign carrier from a country with a congested telephone system might create burdens on U.S. domestic networks. Conversely, the half-circuit arrangement gives foreign carriers an economic incentive to upgrade their domestic network capacity. Capacity differentials might not be at issue if U.S. carriers had full landing rights in a foreign country. Then, the United States might treat this as adequate reciprocity, and give a foreign carrier similar rights in the United States.

The development of overcapacity in international circuits is likely to affect U.S. international carriers' activities in the future. At present, U.S. international communications needs are rising by about fifteen percent annually. But the TAT-8 transatlantic cable, the new INTELSAT satellites, private satellites, private oceanic cable, and regional satellite projects will add more capacity than is demanded and may even create a glut. The existence of excess capacity and of marginal costs substantially below average costs may lead to price wars. In that situation some form of U.S. rate regulation or other restraint on pricing would reemerge.

4. The Equipment Market

The connection of terminal equipment to the interstate net-

---

53 *See supra* text accompanying note 36.

54 47 U.S.C. § 310(a) (1982).

55 *See, e.g.*, In the Matter of Charges in the Communications Satellite System, Memorandum Opinion and Order, 93 F.C.C.2d 701 (1983). The FCC recently has begun to relax this requirement in some cases. *See, e.g.*, In the Matter of AT&T, Memorandum Opinion and Order, 2 F.C.C. REC. 6635, para. 17 (1987) (FCC "established a more open and flexible earth station policy").

work is regulated by the Communications Act of 1934[56] and the FCC's regulations. Part 68 of the FCC's rules[57] sets minimum technical standards that equipment must meet in order to be connected to any public switched network.[58] The FCC's objective is to provide uniform interconnection standards to protect the telephone network from improper terminal equipment and wiring.

Since interconnection standards are uniform, terminal equipment users have nondiscriminatory access to the telephone network. However, equipment sellers must register their products with the FCC before marketing them.[59]

The only competition in the U.S. market for local exchange equipment has been the procurement of equipment for non-AT&T companies. This may be why other companies have been active in selling equipment to independent telephone companies. This market even included foreign suppliers such as Ericsson and Northern Telecom. On the other hand, the vast Bell system, comprising more than eighty percent of the total market, was foreclosed to other suppliers by its ties to AT&T manufacturing subsidiary, Western Electric. In addition, the *Carterfone*[60] case and subsequent liberal equipment approval policies opened up customer terminal equipment to a large variety of suppliers.[61]

The AT&T divestiture radically changed the market for local exchange equipment. By severing the link between the BOCs and AT&T, it freed the former from having to buy from Western Electric, which is now AT&T Technologies.[62]

Although most observers expected the BOCs to cling to

---

56 47 U.S.C. § 201-220 (1982 & Supp. 1985).

57 47 C.F.R. §§ 68.104-68.506 (1987).

58 47 C.F.R. §§ 68.2(a)(1)-(4) (1987).

59 47 C.F.R. § 68.200 (1987). Registration requires the disclosure of a unit's technical specifications, so that the FCC's staff can identify any possible system degradation prior to installation of the equipment. However, there is no approval process to go through.

Part 68's objectives and the registration requirements are relatively recent developments in U.S. common carrier policy. Prior to *Carterfone*, 13 F.C.C.2d 420 (1968), AT&T developed its own interconnection standards, and manufactured or bought equipment compatible with those standards. Competitive terminal equipment suppliers had no access to the telephone network, since users could connect only equipment leased from AT&T.

60 *In re* Carterfone, 13 F.C.C.2d 420 (1968).

61 *See, e.g., In re* Universal Payphone, Memorandum Opinion & Order, 58 Rad. Reg.2d (P & F) 76 (1985) (States may regulate use of payphones for intrastate and local communications but may not prohibit interstate payphone connections).

62 AT&T also marketed equipment through its fully separated subsidiary, AT&T Information Systems, a relic from prior FCC attempts to deal with AT&T's market power through separate subsidiaries. *See, e.g.*, Computers and Communications Industry Ass'n v. FCC, 693 F.2d 198 (D.C. Cir. 1982), *cert. denied*, 461 U.S. 938 (1983). In 1986, however AT&T consolidated Information Services with Communications.

AT&T as their equipment supplier, the BOCs have embraced a wide variety of non-AT&T equipment quite rapidly.[63] The BOCs are responsible to their state regulatory commissions to use the least expensive qualified supplier. If the BOCs had continued their prior "goldplating" in equipment purchases, state agencies might not have found their rate proposals to be cost-justified.

Table IV
EQUIPMENT MANUFACTURERS

1. Major Equipment Suppliers
   - AT&T Tech. (formerly Western Electric)
   - IT&T-CGE (France)
   - Nippon Electric (Japan)
   - Philips (Netherlands)
   - Stromberg-Carlson (Plessey)
   - WESCOM (Rockwell)
   - CIT-ALCATEL and Thomson CSF (France) (Part of CGE/ITT)
   - Automatic Electric (GTE) + Siemens
   - LM Ericsson (Sweden)
   - Northern Telecom (Bell Canada)
   - Siemens (Germany)
   - TRW/VIDAR
   - Plessey (Britain)
2. Microwave and/or Satellite Communications Equipment Vendors
   - Aydin
   - COMTECH
   - M/A-COM (General Motors)
   - Hughes (General Motors)
   - California Microwave
   - Farinon
   - Scientific Atlanta-Plessey
   - RCA-General Electric
3. Other
   - American Telecommunications
   - Harris
   - Platronics
   - Telesciences
   - Eastman Kodak
   - Zenith
   - Sony (Japan)
   - EMI (Britain)
   - Sharp (Japan)
   - Rockwell-Collins
   - Motorola
   - Rolm (IBM)
   - General Electric — RCA
   - E.F. Johnson (Western Union)
   - Bell and Howell
   - Thorn (Britain)
   - Sanyo (Japan)

---

[63] ComputerWorld, Mar. 14, 1984, at 63.

4. Fiber Optic Manufacturers
   - AT&T
   - IT&T
   - Val Tec (M/A-COM)
   - Corning Glass
   - Times Fiber (Insilco)
   - Fujitsu and Other Overseas Manufacturers

Source: Company files, Information Age Economics, Washington, D.C.

Network standards for equipment are coordinated for the BOCs by Bell Communications Research ("Bellcore"). Bellcore does not seem to be using this role to favor AT&T or other U.S. manufacturers. Neither the executive branch, the FCC, nor any state commission has demonstrated a desire to set standards beyond those already in place. Thus, nontariff barriers do not seem to exist for foreign manufacturers.[64]

Procurement of network equipment by LECs is governed by their obligation to state regulators to pay the lowest possible prices. Pressure is on them to keep rates low, because of the loss of subsidies from long-distance service.[65] At the same time, state agencies have not adopted "Buy American" requirements. However, as discussed in Part III of this Article,[66] foreign manufacturers have had little success in penetrating the U.S. equipment market. The ability to compare cost trends for the twenty-two BOCs also forces them to seek low-cost equipment. The goldplating of the past is unlikely to persist in today's environment.[67] Due to the AT&T divestiture, the BOCs no longer have any incentive to increase AT&T Technologies' profits, since the profits are not returned to the BOCs.

5. Technological Trends

As discussed in Part III of this Article, virtually all industrialized nations are moving towards digital telecommunications services.[68] Digital transmission can handle much larger amounts of information—video, voice or data—at much higher speeds than traditional analog systems. Accordingly, many countries have a plan to implement an "integrated services digital network" ("ISDN") within the near future.[69]

---

64 In one instance involving equipment affecting defense communications, the Defense Department allegedly used pressure to influence a carrier not to buy foreign equipment. However, the opening of the U.S. market to non-AT&T and foreign network equipment generally has been rapid. For a list of major equipment suppliers, see Table IV.

65 *See supra* note 41 and accompanying text.

66 *See infra* note 217 and accompanying text.

67 C. PHILLIPS, THE REGULATION OF PUBLIC UTILITIES 633-34 (1984).

68 *See infra* note 181 and accompanying text.

69 ISDN can carry from 2,500 to several million percent more messages than tradi-

At this point, ISDN is more a concept than a technology. Despite several years of negotiations, neither regulators nor firms have been able to agree upon more than a *pro forma* uniform set of technical standards. Although the Consultative Committee on International Telephone and Telegraph has designated 24-channel digital capacity for ISDN,[70] most observers see ISDN as ultimately developing into a broadband medium capable of transmitting video. This application is known as "Broadband ISDN" ("B-ISDN") or "Integrated Broadband Network" ("IBN").[71] Due to its potential, the introduction of ISDN has become an international political issue.[72]

Whether IBN will become economically feasible before the next millenium is unclear. IBN requires the extension of fiber optic cable into every business and residence. Since fiber is expensive to manufacture and install, the cost of a pure fiber system is staggering. Biarritz, France has the only operational fiber optic system in the world. This system allows subscribers to access data bases, order entertainment programming on a quasi-random basis, and to send video as well as audio messages.[73] Its capabilities are awesome but so is its expense.[74] The French fiber optic commitment in general and the Biarritz experiment in particular are driven by industrial rather than telecommunications policy. France is anxious to position itself as a leader in fiber optics for the eventual development of an export industry. Thus, it is willing to support activities which clearly would be uneconomical for the private sector.[75]

---

tional analog systems. In its fully developed broadband form, ISDN would provide a customer with services ranging from data to motion pictures to videoconferencing. This naturally has tremendous significance for this nation's increasingly telecommunications-dependent infrastructure. Advanced services would allow it to function and compete more effectively.

70 E. NOAM, THE POLITICS OF ISDN (draft) (1986).

71 International Networks, Sept. 15, 1987, at 1, col. 1.

72 E. NOAM, *supra* note 70.

73 Gerin, *The Biarritz Fiber Optic System*, CABLE TV LAW & FINANCE 1 (May 1986).

74 The system cost more than 50,000 francs (almost $10,000 at current exchange rates) per subscriber to install. This is roughly ten times the cost of a conventional telephone system and twenty times that of a traditional cable television operation. Confidential interview with Senior Official, France Telecom, in Paris, France (Feb. 11, 1986).

75 How far the French Government is willing to go to promote its fiber optics industry, however, remains to be seen. Although originally touted as a pure fiber system, the Paris cable television operation has been quietly revised to rely primarily upon coaxial cable, using fiber only for major trunk lines—thus bringing it in line with state-of-the-art practice for both cable and telephone systems in most other industrialized nations. *Id.*

The Japanese Government has made a similar commitment to universal ISDN service. *See infra* note 211 and accompanying text. As with the French experience, it is less than clear that this is economically viable. Even if it is, large-scale deployment of fiber optics—for small businesses or residential customers—does not seem likely before the end of the century.

Under the U.S. marketplace philosophy, of course, the government takes no position at all on ISDN other than leaving its development up to economic forces. Since private firms keep their long-range plans fairly close to their chests, it is difficult to predict ISDN's future in this country. It is noteworthy, however, that both LECs and cable systems are incorporating increasing amounts of fiber into their operations, but almost exclusively for trunk lines and large corporate users. The cable and telephone industries ultimately may converge in offering a single fiber optic service, which might be the functional equivalent of ISDN.[76]

Although currently the hottest item on most telecommunications players' plates, ISDN may not be the dominant technology of the future. For example, cellular radio might replace terrestrial networks. If mass production brought down the cost of cellular radio components, as it already has done with handsets, it ultimately might be less expensive to build cellular radios than wire-based LECs for voice and data applications. Some rural communities already have begun to do precisely this, because of their low population densities.

Planning and implementing new technologies are different exercises. Sometimes even the best-laid engineering plans fail. For example, the basic technology for cable television goes back to the late 1920's. However, the market for high-capacity systems did not mature until entrepreneurs began selling "premium" programming in the mid-1970's. Thus, it is wise to take predictions of high technology projects, such as those relating to ISDN, with a grain of salt.

B. *New York State*

1. The Regulatory Environment

The New York Public Service Law ("PSL") extends the jurisdiction of the PSC "to every telephone line" which lies in whole or in part in the State.[77] Regulation of telecommunications services was originally designed to govern the provision of telephone service by public utilities with monopoly franchises. However, the courts have extended PSC jurisdiction to cover arguably non-

---

[76] Baer, *Telephone and Cable Companies: Rivals or Partners in Video Distribution* in VIDEO MEDIA COMPETITION 187 (E. Noam ed. 1985).

[77] N.Y. PUB. SERV. LAW § 5(1)(d) (McKinney 1955). Section 2(18) defines a "telephone line" as "[c]onduits, ducts, poles, wires, cables, cross-arms, receivers, transmitters, instruments, machines, appliances and all devices, real estate, easements, apparatus, property and routes used, operated or owned by any telephone corporation to facilitate the business of affording telephonic communication." *Id.* at § 2(18).

telephone companies.[78]

2. Background

Since the early 1980's, the PSC's rules have differentiated firms by the amount of their market power and the ultimate benefit they provide to consumers. As the extent of competition in specific markets became evident, the PSC gradually relaxed its regulatory oversight. The PSC has permitted competition in intrastate inter-LATA service through resale of LEC transmission services. It also has authorized point-to-point data services, shared tenant services and resale of telephone company services in the local exchange market. Where competitors have no monopoly power, the PSC has subjected the firms to a "streamlined" form of regulation. Resellers and the OCCs are exempt from a number of PSC requirements.[79]

Perhaps the most significant PSC response to the competitive telecommunications environment has been its adjustments to rate regulation. In Case 27946,[80] the PSC determined that it was in the public interest to permit resale rates to fluctuate freely between the maximum and minimum tariff rates. Virtually all resellers and OCCs have been authorized to use these flexible tariffs.[81]

The PSC also issued a major ruling on "bypass" in October, 1985.[82] The PSC found that while future growth was difficult to measure precisely, "growth will occur, and unless actions are taken to moderate that growth, it is likely to be substantial."[83]

---

78 People *ex rel.* Pub. Serv. Comm'n of New York v. New York Tel. Co., 175 Misc. 128, 22 N.Y.S.2d 837 (Sup. Ct. Albany County), *aff'd*, 262 A.D. 440, 29 N.Y.S.2d 513 (3d Dep't), *aff'd*, 287 N.Y. 803, 40 N.E.2d 1020 (1940) (extending PSC rate jurisdiction to a hotel providing telephone service for hire and profit).

Exempted from PSC oversight are businesses that do not operate "telephonic communication" for profit. N.Y. PUB. SERV. LAW § 2(17) (McKinney 1955). While the statute provides no definition of "telephonic communication," any firm that sells a telecommunications service for profit is potentially subject to the PSC's jurisdiction of the PSC.

79 The more significant of these include: filing of annual and quarterly reports; retention of records; filing of construction budgets; filings of suspensions and discontinuances and the use of a Uniform System of Accounts. Memorandum from Communications Division to The Commission, *Telecommunications Competition in New York State* app. 2 (Oct. 16, 1986).

80 Addition of New Section 648.2, Case 27946 (N.Y. Pub. Serv. Comm'n Feb. 27, 1986).

81 Landline telephone companies are expected to use floor revenue requirements for services flexibly priced in determining minimum rates. This exception reflects the potential for cross-subsidization of competitive rates by basic telephone services.

82 Bypass Local Exchange or Toll Networks, Case 28710, slip op. (N.Y. Pub. Serv. Comm'n Oct. 3, 1985).

83 *Id.* at 38.

The PSC concluded that "the growth of bypass not only will diminish the contribution now realized from toll and private line services, but will also decrease traditional exchange revenues and lead to an idling of existing plants. Accordingly, there is real concern about the effect of bypass on exchange telephone companies."[84]

In order to prevent firms from engaging in "uneconomic bypass" by subsidizing it from other revenues, the PSC required service providers to show that their rates were based upon fair allocations of costs. This applied to rates where the bypass services made common use of equipment, real estate or overhead used in other activities subject to rate regulation.

On October 22, 1986, the PSC began a formal proceeding to consider competitive developments in the inter-LATA, private line and cellular telecommunications markets in New York State.[85] The PSC observed that each of these markets was exhibiting increasingly competitive characteristics, and noted the substantial expansion in the number of competitive firms.

The PSC now acknowledges that where regulated "landline exchange telephone companies are providing competitive services," the less stringent restrictions on their competitors "are becoming increasingly difficult to apply."[86] It noted the limited competition in providing local telephone service. The PSC indicated that while it was not prepared to deregulate basic exchange telephone service, it would consider: the reasonableness of existing policies; whether any other local telephone services should be opened up to competition; and whether any form of deregulation of local exchange carriers was warranted.[87] At the time this Article was written, these proceedings were in hearings to determine the nature and extent of competition in each market.

3. The New York State Telecommunications Industry

The continuing growth of New York State's financial services sector has made information processing and transmission operations important to the region's economic infrastructure.[88] These

---

84 *Id.* at 39.

85 Regulation Policies for Competition, Case 29469, slip op. (N.Y. Pub. Serv. Comm'n Oct. 22, 1986).

86 *Id.* at 2.

87 *Id.* at 5.

88 The State's heavy dependence on telecommunications services and products derives largely from the number of national and international information-intensive industries that operate within its borders. Of New York's 10 largest private employers, 9 are major users of advanced communication technologies. New York is the headquarters of

firms' reliance on private and public communication facilities can be equated to traditional industries' dependence on petroleum, roads, and rail or sea transportation. New York State's future economic development is linked closely to the availability of new communication services for a growing number of sophisticated users.

Large information-intensive users will evaluate their requirements for reliability, control, security and cost against the technological and financial alternatives available to them. Many of these firms have expanded their in-house telecommunications staffs to manage an increasingly competitive post-divestiture environment. Their telecommunications professionals evaluate competitive offerings, and often design or operate sophisticated telecommunications facilities.

Large users also generate disproportionate revenues for LECs. This revenue concentration makes the regulated local companies especially vulnerable to bypass. In New York, New York Telephone Company's ("NYTEL's") largest 200 business customers (excluding interexchange carriers) accounted for approximately thirty-five percent of its revenues in 1986.[89]

Furthermore, the revenues tend to be concentrated geographically in the larger cities. The effect of this concentration is that competitors to local exchange carriers have built transmission systems to handle high volume traffic from a limited number of major customers located in a relatively small geographic area.[90]

At first, new technological options existed for only large users, but now they are also available to mid-size users. This group routinely makes "buy or lease" evaluations about products. As the market for large users matures and as cost efficiencies are integrated into smaller turnkey systems, competition will extend beyond large customers to smaller mid-sized users.

4. Firms Operating In New York State

National telecommunications services likewise exhibit competitive characteristics in the New York marketplace. At the end

---

13 of the nation's 50 largest banks, 10 of the 50 largest diversified financial service firms, 8 of the 50 largest insurance companies, and 3 of the largest television networks. In New York, almost two-thirds of private sector employment (over 4,680,000 jobs) are concentrated in these information intensive industries. This compares with a national employment figure of 56%. *Id.* at 1 (Pre-hearing Submission of the New York State Department of Commerce).

89 *Id.* at 6 (testimony of Dr. Joseph S. Kraemer for New York Telephone Co.).

90 *Id.*

of 1986, the PSC had certified eleven interexchange carriers, ten cellular telephone utilities ("CTUs"), twenty-one resellers of cellular telephone service, and forty-six resellers of telecommunications services for intrastate operations. The largest and most significant player in the State's telecommunications market is NYTEL.[91]

---

[91] New York Telephone's parent company, NYNEX, is involved in a number of non-LEC activities, as indicated below. Its subsidiaries include the following:

1. New England Telephone and Telegraph Company;
2. New York Telephone Company;
3. Empire City Subway Company;
4. NYNEX Business Information Systems Company. Through 94 NYNEX Business Centers and a direct sales force, this entity markets a wide range of telecommunications, information and other business products;
5. NYNEX Credit Company. NYNEX Credit provides a range of financial services to customers of other NYNEX subsidiaries. NYNEX Credit offers leases, installment sales and other financing for products and services provided by NYNEX Business Systems, NYNEX Mobile and other NYNEX companies. NYNEX Credit also offers financial services outside of its affiliated group;
6. NYNEX Development Company. This entity plans, develops and initially manages selected new business opportunities, including international business ventures. Four information systems and software units (two of which are wholly owned subsidiaries of NYNEX) provide professional services, standard and custom software, communications applications, training and systems integration services. These entities are:
   a. The DATA Group Corporation offers fully-integrated field service management systems for a variety of computers—from micros to mainframes—under the FIELDWATCH aegis;
   b. NYNEX International Company does international business development, with offices in Hong Kong and Geneva;
   c. Telco Research Corporation provides comprehensive telecommunications management systems;
   d. NYNEX Computer Services Company markets custom software development and public access video information systems;
7. NYNEX Government Affairs Company;
8. NYNEX Information Resources Company began publishing telephone directories outside of NYNEX territory (i.e., Fairfield County, Connecticut, northern New Jersey) in 1987. It also publishes specialized products such as a combined White Pages/Yellow Pages College Directory for the University of Massachusetts at Amherst and a NYNEX Boaters Directory;
9. United Publishers Corporation is an independent directory publisher in Southern California;
10. NYNEX Material Enterprises Company undertakes procurement support services for NYNEX and its subsidiaries, including product evaluation, contracting, purchasing, materials management and disposition, warehousing, transportation and equipment repairs. The telephone subsidiaries perform some procurement services on their own;
11. NYNEX Mobile Communications Company. Through its operating subsidiaries (NYNEX Mobile Leasing Company, NYNEX Mobile Technical Services Company, NYNEX Mobile Products Company, NYNEX Mobile Communications Retail Company, and NYNEX Paging Company), this entity provides a variety of mobile telecommunications services and products, throughout the northeastern U.S. It serves the Federal Communications Commission and several states' PUCs;
12. NYNEX Properties Company manages real property for NYNEX and certain subsidiaries, serves as a broker for acquisitions and dispositions of NYNEX properties, and invests in real estate in the northeastern U.S.;
13. The BIS Group, Limited is a London-based firm which provides computer software and marketing services to major corporations (especially in the financial services sector) in 12 countries in Europe, North America and the Pacific;

Although NYTEL is the State's dominant telecommunications provider, a number of other firms have established niches for themselves. The following is a partial listing of other major telecommunications suppliers and their services.

a. Local Service

New York State is divided into seven LATAs: New York City Metropolitan; Rochester; Poughkeepsie; Albany-Glens Falls; Syracuse-Utica; Binghamton-Elmira; and Buffalo. Forty-one local exchange companies with revenues in excess of $7 billion conduct business annually in the State. NYTEL is the largest local exchange carrier in New York State, with operating revenues twenty-eight times greater than that of the second largest local carrier—Rochester Telephone.[92] Local exchange companies mainly provide local and inter-LATA voice and data telephony services within their franchised LATAs.

The LEC market includes distribution facilities which can be replaced or duplicated only at considerable cost. This "bottleneck" assures limited competition for local access and usage. But the availability of competitive options in some of these markets is increasing.[93]

Local exchange company customers have options other than the LEC in at least four product markets. These markets are: (1) Centrex; (2) Intra-LATA private line; (3) Special access; and (4) Intra-LATA switched services. Competition in each of these categories may come from several sources. User-owned facilities are supplied by an increasing number of hardware and software vendors.[94]

---

14. CNR Partners is a joint venture with Citicorp and GE. It will carry out market research in interactive electronic services, such as home banking;

15. PATA is a joint venture (50%) with Cable and Wireless PLC in the U.K. for the construction of a transatlantic optical cable. The venture will focus on servicing the international communications needs of multinational corporations headquartered in New York and Boston. The venture has secured approval from the FCC, and requires a waiver from a Judge Greene.

92 For a list of local exchange carriers, see Table V.

93 For a list of competitive options in telecommunications services, see Table VI.

94 Some examples of these systems are the following:

Private Microwave and Radio Systems. Microwave requires "line-of-sight" between the transmitter and the receiver and is used for short-haul voice and data transmissions. Private microwave use for intra-LATA applications is increasing. Frequency congestion in urban areas and weather-related disruptions, however, have set limits on its proliferation;

Guided Systems. These systems include copper wire, coaxial cable and fiber optics. Guided systems confine transmissions to narrow physical paths as opposed to "unguided" systems, which utilize over-the-air transmissions. Guided systems on public or private property naturally require right-of-way authorizations; and

Optical Systems. These systems are currently limited to less than one mile, with sys-

Table V

NEW YORK STATE LOCAL CARRIERS OPERATING REVENUES

(rounded to nearest $000)

Company	1983	1984	1985
New York	$7,054,541	$6,401,514	$6,633,947
Rochester	213,330	228,053	238,282
Continental	117,176	129,063	140,889
ALLTEL	36,914	39,474	42,997
Highland	21,210	23,219	25,480
Taconic	8,330	8,610	9,448
Warwick Valley	6,541	7,665	8,356
Chautaqua & Erie	4,466	4,662	5,471
Ogden	4,732	4,958	5,427
Sylvan Lake	3,921	4,250	5,110
Dunkirk & Fredonia	3,163	3,652	4,147
Seneca-Gorham	2,782	3,004	3,442
Empire	2,875	3,182	3,434
Champlain	2,266	3,017	3,170
Deposit	2,483	2,834	3,028
AuSable Valley	2,384	2,464	2,880
Middleburgh	1,967	2,266	2,651
Trumansburgh	2,088	2,499	2,413
State	2,165	2,286	2,352
Delhi	1,912	2,097	2,239
Berkshire	1,594	1,674	1,869
Ontario	1,427	1,718	1,816
Chazy & Westport	1,388	1,559	1,633
Port Byron	1,135	1,267	1,586
Vernon	1,118	1,167	1,481
Newport	1,106	1,346	1,477
Margaretville	988	1,170	1,446
Oneida County	1,177	1,288	1,354
Addison	1,246	1,253	1,307
Germantown	950	1,033	1,230
Township	939	1,121	1,102
Edwards	801	784	1,076
Nicholville	704	808	866
Hancock	703	851	877
Citizens of Hammond	531	579	712
Pattersonville	729	880	711
Crown Point	461	494	533
Cassadaga	404	463	482
Clymer	449	460	450
Fishers Island	313	340	400
Oriskany Falls	226	260	249
Total	$7,513,654	$6,899,293	$7,167,900

Source: Coopers & Lybrand, Inc., *State Policy and the Telecommunications Economy in New York* forthcoming.

---

tem costs comparable to microwave systems. Since the FCC does not regulate atmospheric optical systems, they may be implemented without licensing delays.

b. Interexchange Carriers

Suppliers of long distance or toll services use their own underlying network of facilities, and are "facility based interexchange carriers." Companies in this market compete in providing inter-LATA toll and private line services. They also compete with local exchange companies in the area of intra-LATA toll services.[95]

Although substantial competition appears to be emerging in the business long-distance market, AT&T Communications of New York, Inc. and existing LECs continue to retain the largest share of the intrastate inter-LATA and intra-LATA residential toll markets.[96]

c. Third Party Providers of Local Transport Services

For high volume users, primarily in New York City, alternative local transport suppliers compete with similar high capacity offerings of the local exchange company. Manhattan Cable Television Company provides non-entertainment data transmission services to large institutional users in Manhattan. U.S. Cablevision Corporation recently applied for a PSC certificate "to operate a private communications system to interconnect the buildings of a single corporate communications user within the State of New York."[97] Similarly, Teleport Communications, Inc. operates a fiber optic system and competes with NYTEL for certain services—primarily high-capacity special access and intra-LATA private lines.

d. Resellers

The major New York State resellers include suppliers of long distance and cellular services. An example of a reseller is a VAN carrier that "lease[s] basic private line circuits from other common carriers, attach computers or other devices to those circuits . . . and then resell[s] the new service to the public."[98] These firms generally compete with facility-based interexchange carriers, mobile communications companies and LECs.[99]

---

[95] For a list of intrastate inter-LATA carriers, see Table VII.

[96] Regulation Policies for Competition, Case 29469, slip op. at 21 (N.Y. Pub. Serv. Comm'n Oct. 22, 1986) (testimony of Dr. Joseph S. Kraemer for New York Telephone Co.).

[97] Letter from U.S. Cablevision to J. Kelliher, Secretary, PSC (Feb. 19, 1987).

[98] Wiley, *The End of Monopoly: Regulatory Change and the Promotion of Competition*, in DISCONNECTING BELL: THE IMPACT OF THE AT&T DIVESTURE 35 (H. Shooshan ed. 1984).

[99] Long distance resellers provide basic message toll service ("MTS") at rates below

Table VI
TELECOMMUNICATIONS SERVICES

	Extent of Options Available	Examples of Options: NY Telephone Services
Exchange Business	Not Competivitive	N.A.
Switched Access	Not Competitive Except When Concentrated to Special Access Lines	N.A.
Centrex	Options Available	CPE Vendors -AT&T -IBM/ROLM -Northern Telecom -Siemens -Ericsson -Harris -NEC -GTE -Toshiba
IntraLATA Private Line	Options Available	Customer Owned -Fiber Optics -Microwave -Coaxial Cable -Infrared Third Party Providers -Teleport -LOCATE -Manhattan Cable -Eastern Microwave -WANG Communications
Special Access	Options Available	Interexchange Carriers Third Party Providers (see Private Line) Customer Owned (see Private Line)
InterLATA Switched	Options Available	Interexchange Carriers Resellers

Source: Regulation Policies for Competition Case 29469 (N.Y. Pub. Serv. Comm'n Oct. 22, 1986) (testimony of Dr. Joseph S. Kraemer, New York Telephone Company).

AT&T's and the OCCs'. The resellers and OCCs now pay carrier access charges equal to those paid by AT&T. Consequently, long distance rates which once were discounted as much as 50% over comparable AT&T services are now more modestly discounted, in the 3% to 10% range.

Table VII

INTRASTATE INTER-LATA CARRIERS

(number of states in which the carrier connects with local telephone networks)

- ALLNET Communications Services, Inc. (31)
- ARGO Communications Corporation (1)
- AT&T Communications (48)
- A.C. Teleconnect d/b/a Alternative Communications (1)
- Call USA (1)
- GTE Sprint Communications (45)
- MCI Telecommunications Corporation (44)
- NC (Pace) Tel and Data Communications (1)
- Northland Telephone Systems, Ltd. (1)
- RCI Corporation (4)
- Satellite Business Systems (20)
- Taconic Long Distance Service Corp. (1)
- TDX Systems, Inc. (12)
- Telemarketing Communications, Inc. (4)
- Telesphere Network, Inc. (3)
- Tenex Communications Corporation (2)
- United States Transmission Systems, Inc. (34)
- United Telecom (27)
- Western Union Telegraph Company (26)

Source: Coopers & Lybrand, Inc., *State Policy and the Telecommunications Economy in New York* forthcoming.

e. Cellular Radio

Entry into the cellular market is regulated by the FCC. To establish competition in this market, the FCC has authorized two carriers to operate in each Cellular Geographic Service Area ("CGSA"). New York State currently has two carriers operating in its five largest CGSAs.

Cellular resellers purchase cellular service at bulk discount rates and resell it to their own customers.[100] The CGSAs exhibit strong competitive characteristics. Cellular firms are attempting to develop large customer bases, both directly and indirectly through resellers, to support their considerable investments in introducing and promoting the use of cellular service. Technical difficulties in New York City, however, could limit further service

[100] In New York, the PSC has certified 21 resellers of cellular service, most of which operate in the New York City metropolitan area.

growth. It is unlikely that cellular service will become as well established in the near future in metropolitan areas as traditional basic exchange service.

III. Factors in the Development of New York State's Telecommunications Industry

Having reviewed the general business and regulatory environment of the national, international, and New York State telecommunications industries, it is possible to analyze the present status and future development of New York State's telecommunications industry. This Part begins by evaluating the factors relevant to a firm's decision to locate in the State. This Part will also explore possible responses by in-State firms to impending changes in the regulatory environment, compare U.S. market conditions with those of other countries, and evaluate the ability of foreign firms to penetrate the U.S. market and vice versa.

Due to its impact on both business and employment, a firm's decision to locate in or vacate from the State naturally attracts substantial concern. This analysis begins with two contrasting examples of location decisions.

A. *Two Case Studies of Location Decisions*

A lot of mysticism surrounds large corporations' decisions to locate or relocate. Observers maintain that the deciding factor is anything from tax rates to a CEO's residence. There do not appear to be any definitive answers. Nevertheless, a brief overview of two rather different corporate location decisions (AT&T in New Jersey and the Teleport in New York) may shed some light on this issue in the telecommunications industry.

1. AT&T

In the 1970's, AT&T began to move substantial portions of its subsidiaries' and corporate headquarters (what is now AT&T-Communications) AT&T-Technologies, and ultimately AT&T-Corporate, from New York City to Northern New Jersey. Its decision to vacate Manhattan involved a variety of factors, some economic and some intangible.

The decision clearly was not based upon "New Jersey's superior telecommunications facilities." In fact, AT&T considered New Jersey's relatively unsophisticated telecommunications sys-

tem a definite drawback.[101] Nor did economic factors predominate. Both corporate and personal income taxes were "major but not deciding factors" particularly to the extent that New Jersey's lower personal income and other taxes allowed AT&T to pay its employees less. A factor of similar importance was the relatively greater availability and lower cost of housing, as compared to New York City. This also reduced AT&T's wage costs. But a factor of at least equal importance was "quality of life," including elements such as a suburban environment and a nearby airport.

In short, there does not seem to have been any one predominating factor. And, though economic issues clearly were important, they were not outcome-determinative.

2. The Teleport

At about the same time that AT&T was beating a hasty retreat from New York to New Jersey, an interestingly disparate group of public and private sector entities was busy creating a new provider of both local and long distance service—the Teleport. The Teleport has several different technological components and business functions. The Teleport is a satellite park on Staten Island consisting of about twenty earth stations using virtually all communications satellites.[102] Staten Island apparently was chosen largely because it was the closest site to Manhattan which was relatively free of the electrical interference which plagues the rest of New York City.[103] The site at Staten Island includes not only satellite earth stations, but also a 100 acre office park and office space for satellite users.[104] Finally, and perhaps most significantly, the Teleport operates a 150-mile fiber optic link with six nodes.[105] This high capacity transmission network has a loop throughout Manhattan's business district as well as connections with locations in Queens, Brooklyn, and New Jersey.[106]

The fiber optic link enables the Teleport to provide end-to-

---

101 Confidential interview with a Senior Official of AT&T in New York City (Sept. 1, 1987).

102 M. MOSS, TELECOMMUNICATIONS AND THE FUTURE OF CITIES 4 (1985).

103 M. MOSS, THE TELECOMMUNICATIONS INFRASTRUCTURE IN THE CITY OF NEW YORK 12 (1985).

104 *Id.*

105 The Teleport has been much quicker to use fiber optics than traditional companies such as AT&T. *See generally* P. HUBER, *supra* note 2, at 3.2.

106 Request of NYNEX Corporation for a Waiver to Provide International Telecommunications to and from the United States, Civ. No. 82-0192, at 33 (D.D.C. May 1, 1987).

end connections, bypassing New York Telephone's public switched network.[107] As would be expected by the Teleport network's cost as well as capacity, most of its customers are large institutions with a substantial amount of inter-LATA traffic and their own PBXs. Some of its clients include Dow Jones, Bankers Trust, Citicorp, Private Satellite Network, Satellite Business Systems, GTE, General Electric, IBM, ABC, Group W Broadcasting, and Cap Cities/ABC.[108]

The Teleport has a diverse set of backers. Originally the brainchild of the Port Authority of New York and New Jersey, its site is leased from the City of New York.[109] In turn, the Port Authority has responsibility for constructing and maintaining the office space. The actual operation of the whole system rests with Teleport Communications, Inc., a corporation owned ninety-five percent by Merrill Lynch and five percent by Western Union.[110]

Although the Teleport serves locations in New Jersey as well as in New York, the focus of its operations, and presumably its revenues and jobs, is clearly on New York. This result initially seems anomolous, in light of the fact that the Port Authority is the creation of both New York and New Jersey, with legal and political obligations to both states. But, from the very beginning the Port Authority wanted a location in New York.

As might be expected, the ultimate decision to locate the Teleport on Staten Island was the product of a considerable amount of horse trading.[111] Both the public and private sector participants recognized from the beginning that corporate taxes, individual income taxes, and electric power would be less costly in New Jersey than in New York. The Port Authority initially designated a study of more than thirty sites in both New York and New Jersey. However, when interference studies showed that Staten Island was acceptable, the Port Authority suspended its analysis of other sites, including those in New Jersey. It apparently had two reasons. First, New York City and the Port Authority already had made tentative plans to locate an industrial park for automobile production on Staten Island. Since these plans

---

107 New York Telephone seems somewhat less than upset about the prospect of bypass, and NYNEX in fact has attempted to turn the situation to its advantage by arguing that the Teleport's bypass shows that New York Telephone lacks monopoly power in the LEC market. *Id.* at 33-34.

108 M. Moss, *supra* note 102, at 4; M. Moss, *supra* note 103, at 12.

109 This very well may have been a concession to the City which originally indicated that it would oppose the project if it did not receive some share of its revenues.

110 M. Moss, *supra* note 103, at 4.

111 Confidential interview with Senior Official, Teleport in New York City (Aug. 9, 1987).

had fallen through, both the City and the Port Authority were anxious to find another use for the property. Second, because the City already owned the Staten Island property, locating the Teleport there involved no land acquisition costs. Apparently, there never was any question that suitably interference-free sites also existed in New Jersey. U.S. Sprint later located satellite earth stations in Franklin, New Jersey, and Gateway National set up a small satellite park in Carteret, New Jersey.

The City and the Port Authority also attempted to cushion the impact of New York's higher tax rates and electricity costs. First, the City granted tax abatements to the private sector entities. Under these tax abatements, the private sector entities would pay no real property or rental taxes for eighteen years, and then would have the taxes phased in at the rate of twenty percent per year over an additional period of five years. Since the useful life of a satellite is between seven and ten years and communications technology has been changing at an increasingly rapid rate, the private sector participants may have questioned whether they would need the Teleport after the beginning of the next millennium, thus giving them favorable tax treatment for the life of the project. Second, because the City and the Port Authority were public entities, they had access to electrical power from the New York State Power Authority, at rates basically competitive with those applicable in New Jersey.[112]

There is no available information as to two key issues: (1) the comparative economic benefits for New York and New Jersey; and (2) the relative costs to the private sector participants of locating in New York as opposed to New Jersey. An answer to the first question may be impossible, since it depends to a large extent on how many private sector entities would have located in New Jersey, as opposed to New York, in the event that *neither* State offered facilities like the Teleport. Most of the private sector participants already had their main offices in New York State. However, many of them also were actively considering a move to New Jersey, because of its more favorable economics.

Any answer to the second question starts from the assumption that New Jersey offered more favorable economics than New

---

[112] Naturally, the choice of Staten Island did not go unnoticed in New Jersey, whose Governor was quick to protest. In response, the Port Authority developed several projects to benefit New Jersey. First, it agreed to extend the fiber optic network to Newark, which was in the midst of an economic revitalization plan. The link also serves parts of New Jersey as far south as Princeton. Second, it promised to establish a Legal Center in Newark and to create the Elizabeth Industrial Park in Elizabeth, New Jersey.

York, even with the City's tax abatements and inexpensive electric power.[113] Moreover, a number of other private entities made precisely the opposite decision and moved from New York to New Jersey. The bottom line seems to have been that both public and private sector participants wanted geographical proximity to financial services firms in New York City. This consideration overrode purely economic concerns. The creation and survival of the Teleport indicates that proximity of state-of-the-art telecommunications technology to major users sometimes is as important as bottom-line economics.

B. *Effect of Federal Regulatory Policy*

As was discussed in Part II, recent federal policy changes have developed before both the courts, through the *MFJ*, and the FCC, in its *Computer Inquiry* decisions.[114] To recapitulate briefly, the *MFJ* forced AT&T to divest itself of the Regional Bell Holding Companies, which own the local Bell Operating Companies.[115] Both tracking and anticipating the *MFJ*, the FCC's *Computer Inquiry* decisions restricted both AT&T and the BOCs from entering the expanding market for "enhanced services."[116]

1. The *MFJ*

Judge Greene recently completed his first triennial review of the *MFJ* and of requests for modifications from virtually every segment of the telecommunications industry. Taking the lead role on the government side, the Department of Justice ("DOJ") made sweeping recommendations for elimination or relaxation of various *MFJ* provisions—most significantly, restrictions on long-distance transmission, enhanced services, and equipment manufacturing.

First, as to long-distance transmission, the DOJ recommended allowing the RBOCs to offer inter-LATA services only after a thorough case-by-case review by Judge Greene and the DOJ. This would essentially prevent the RBOCs from offering interexchange services in the short term, i.e., 1988-1990, unless an existing OCC experienced serious financial problems, attempted to sell to an RBOC, and the OCC and RBOC received

---

[113] Other factors ranging from executives' life styles to cultivating goodwill from a major city probably played a role in the private participants' decisions as well.

[114] *See supra* note 10-28 and accompanying text.

[115] *See supra* note 23 and accompanying text. The *MFJ* is administered by District Court Judge Harold H. Greene, who had presided over the litigation leading up to it.

[116] *See supra* note 25 and accompanying text.

permission from Judge Greene to merge. This scenario is not outlandish since both MCI and US Sprint have recently experienced financial problems.

Second, the RBOCs could have offered information services under the DOJ's proposal, if they met certain conditions such as:

i. The BOCs' facilities were available to competing information providers. This recommendation linked the DOJ proposal with FCC policy in *Computer III*;

ii. The costs of providing the services clearly protected the competition. Yet again, this linked DOJ and FCC policy;

iii. Competition would have been protected by regulatory agencies such as the FCC and state PSCs and by DOJ monitoring;

iv. Joint ventures would have been permitted, subject to FCC and DOJ approval;

v. There would have been no joint venturing among the RBOCs, which would compete for information services; and

vi. There also would have been no joint venturing between the RBOCs and AT&T since this would bring back the old Bell System.

Third, the DOJ would have allowed the RBOCs to enter the telecommunications equipment manufacturing business provided that:

i. There was a clear demonstration of costs and the like in order to protect competition;

ii. There were no business links to AT&T, including joint ventures;

iii. There were no business links to other RBOCs, including joint ventures;

iv. The *MFJ*'s competitive equipment procurement processes were protected against self-dealing and the like. The FCC and DOJ would monitor the BOCs' equipment purchases, service and equipment transactions among telephone companies;

v. Any acquisitions and mergers would be reviewed by the FCC and DOJ to gauge their possible anti-competitive impact; and

vi. There would be continued DOJ and FCC surveillance.

Judge Greene received both written and oral arguments during the Spring and Summer of 1987. He released a lengthy decision on September 10, 1987.[117]

Judge Greene rejected almost all of the RBOCs' requests. First, he prohibited the RBOCs from competing in the long-distance market with AT&T and the OCCs, because the RBOCs still

[117] United States v. Western Elec. Co., 673 F. Supp. 525 (D.D.C. 1987).

had control over "bottleneck" local exchange facilities.[118] The RBOCs cannot even offer inter-LATA cellular and mobile services, despite the fact that AT&T supported the removal of this restriction. Judge Greene feared that the BOCs would connect their cellular operations to their local networks to provide long distance service.[119]

Second, the RBOCs still may not enter the equipment manufacturing industry.[120] Assisted by the DOJ and others, Judge Greene will have to define equipment manufacturing. Most recently, Judge Greene confirmed that research and development ("R&D") constituted manufacturing. In passing on requests from several RBOCs, Judge Greene held that the manufacturing clause included R&D for reasons of policy and plain language interpretation.[121] He reasoned that the RBOCs would gain an anti-competitive advantage over equipment manufacturers, since the RBOC's manufacturers would receive new technological developments before their competitors. He also suggested that the RBOC's regulated status might allow them to cross-subsidize R&D which is otherwise prohibitively expensive.[122] Judge Greene has complicated this matter by already allowing the RBOCs to develop software, as well as to market, install and maintain customer premises equipment ("CPE").[123] All of these activities are integral parts of the equipment manufacturing process.

Third, the RBOCs may not offer their own information services. The precise meaning of this restriction is unclear, but Judge Greene apparently wants to prevent the RBOCs from owning data bases, which are the key to providing information services.[124] The RBOCs may provide transmission facilities for information services, the "ingredients" of which will be set by Judge Greene following a public hearing.[125] But the RBOCs may not offer electronic Yellow Pages, because of the dangers posed to newspapers' classified advertising revenues. Judge Greene believes that there would be grave first amendment problems if the RBOCs could present the equivalent of electronic classified ad-

---

118 *Id.* at 537.
119 *Id.* at 543.
120 *Id.* at 557.
121 United States v. Western Elec. Co., 673 F. Supp. 525 (D.D.C. 1987).
122 *Id.* at 64-65.
123 United States v. Western Elec. Co., 552 F. Supp. 131, 191 (D.D.C. 1983).
124 United States v. Western Elec. Co., 673 F. Supp. 525, 585-86 (D.D.C. 1987).
125 *Id.* at 594-97.

vertising.[126] Nevertheless, the RBOCs may offer electronic white pages.

Fourth, the RBOCs need not secure waivers in order to enter non-telecommunications businesses.[127] The court abolished the original restrictions on the RBOCs' nontelecommunications business activities; namely, establishment of separate subsidiaries, ten percent revenue limitations, restrictions on debt-financing, and DOJ monitoring.

Unfortunately for the future of the telecommunications industry, Judge Greene's decision raises as many issues as it attempts to solve. Some of these problems could have been avoided.

2. Information Services

There is vigorous disagreement over the definition of information or enhanced services. Since Judge Greene excluded the BOCs from providing information services content, the definitional issue will loom large in the future.

The FCC attempted to define enhanced services as part of its *Computer II* policy. The same definition was incorporated into *Computer III*, although it became largely irrelevant with the abolition of the separate subsidiary requirement.[128] Under FCC policy, a service is "enhanced" if it fulfills one or more of the following criteria:

i. The format, content, code or protocol of the message is changed;
ii. Subscribers can interact with stored information; and
iii. The content is restructured.[129]

The *MFJ*'s definition of an information service is a capability of "generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information which may be conveyed via telephone communications. . . ."[130]

Judge Greene apparently believes that information services are essentially equivalent to enhanced services under *Computer II* and *Computer III*. The FCC disagrees, on the ground that the *MFJ* does not cover services which employ computer processing applications that act on the format, content, code, protocol or similar aspects of the subscriber's transmitted information.

---

126 *Id.* at 585-87, 595-96.
127 *Id.* at 597-99.
128 In the Matter of TeleSTAR, Inc., 2 F.C.C. REC. 10, paras. 14-30 (1987).
129 FCC Misc. Rules Relating to Common Carriers, 47 C.F.R. § 64.702 (1987).
130 United States v. AT&T, 552 F. Supp. 131, 229 (D.D.C. 1982).

Furthermore, the FCC wants the BOCs to market their own information/enhanced services competitively. Indeed, the FCC developed the concept of open network architecture ("ONA") in *Computer III* precisely for this reason. ONA is a regulatory concept for developing equal access to local exchanges for a wide array of information services. ONA will replace the separate subsidiary requirement for the BOCs, which can develop their own information services while still providing transmission capabilities for other information service providers.[131]

A wide array of possibilities are promised including:

i. Messaging services, most of which are already available in one form or another on a limited basis such as electronic mail, message storage, voice storage;

ii. Information and access services, some of which already are available such as business, credit, informational, commodities, securities, and news services;

iii. Transactional services, which are just emerging. These are apparently being held back because of the exclusion of the BOCs and AT&T and also because the network must be upgraded. These services include electronic banking and shopping, along with access to a vast array of data bases for research and business; and

iv. Monitoring and management services, which are almost totally non-existent at present. These include services such as electrical usage monitoring or load management, "smart houses," and a wide array of futuristic services that depend upon the upgrading of LECs from copper wire to fiber optics.

Only one existing enhanced service is truly integrated into the LEC network. This is protocol conversion, which permits the BOCs to connect one type of network with another type of network. For example, protocol conversion can interconnect incompatible computer networks via the public switched network through software in the central office switch.

3. Information Facilities

Judge Greene currently is trying to determine the "ingredients" of an information facilities network. The FCC has already attempted to perform this as part of its *Computer III* proceeding.[132] Essentially the answer is upgrading the current network. Then the question becomes what cost is acceptable. The public

---

131 *TeleSTAR*, 2 F.C.C. REC. 10, para. 31.

132 *See supra* note 28 and accompanying text.

switched network can be upgraded gradually, so that fiber slowly replaces traditional copper wire. Currently, the BOCs have approximately $50 billion invested in copper wire. It will cost them as much or more to bring broadband fiber optics to every home and office. The problem is generating the revenues to justify the huge investment, while simultaneously abandoning the existing copper.

Since the BOCs currently may not offer information services, their lack of enthusiasm for upgrading their networks is understandable. Nonetheless, the FCC plans to push ahead with its *Computer III* and ONA policy next year regardless of Judge Greene. The BOCs thus must upgrade their networks. However, the FCC so far has refused to tackle the question of who will pay for this upgrade.[133]

4. Equipment Manufacturing

Equipment manufacturing has always been, and apparently will remain, a controversial policy issue. Judge Greene is still struggling to define "manufacturing" after his most recent opinion.[134]

Since the AT&T divestiture, the BOCs have been limited to the marketing, installation, and maintenance of CPE. They may not manufacture CPE or other telecommunications equipment.[135] The BOCs maintain that AT&T Technologies, still their major supplier of telecommunications equipment, has deliberately created a technological bottleneck to prevent the BOCs from upgrading their networks. AT&T's equipment offerings allegedly are designed to help AT&T's business strategies while limiting the BOCs' opportunities. The BOCs say that they are almost totally dependent upon AT&T, or at best on one or two other manufacturers.

5. Future Policy Scenarios

There appears to be little prospect of short term relief for the RBOCs. Judge Greene is still in the process of defining information services content, information services transmission ingredients and equipment manufacturing. He probably will fail to develop satisfactory definitions, like others before him.

Since the RBOCs apparently believe that they will get little

---

[133] *TeleSTAR*, 2 F.C.C. REC. 10, paras. 142-43.

[134] United States v. Western Elec. Co., 675 F. Supp. 55 (D.D.C. 1987). *See* text accompanying note 121.

[135] United States v. Western Elec. Co., 552 F. Supp. 131, 227 (D.D.C. 1983).

relief from Judge Greene, they must appeal his decisions to the District of Columbia Circuit Court of Appeals and perhaps ultimately to the United States Supreme Court. The RBOCs will also attempt to get legislative relief, if they continue to lose in the courts.

This latter strategy probably will be unsuccessful in the short term. Congress recently demonstrated little inclination to get behind legislation abolishing the line of business restrictions. The last bill failed miserably because of bi-partisan opposition.[136] Since the Democrats control the Senate in 1988, there is even less support for the RBOCs. There is also skepticism within the House about the RBOCs' plans. Thus, the RBOCs face an uphill battle in Congress. Moreover, they have never been an effective lobbying force on Capitol Hill. They traditionally have been outmaneuvered by long-distance carriers (including AT&T), equipment manufacturers, newspaper publishers, the broadcast and cable industries and others.

FCC regulation will also continue. The RBOCs will get little, if any, relief from the FCC over the next three years. In addition, the RBOCs will have to implement *Computer III*, even though they have little if any incentive to develop ONA.

The RBOCs must play by the existing rules of the game and demonstrate their good corporate citizenship. One of their major mistakes over the past four years was refusing to accept the rigors of FCC regulation and the *MFJ*. Judge Greene himself has noted the RBOCs' double standard—arguing before him that they are rigorously regulated, while obtaining deregulation from the FCC and state regulatory agencies.

The *MFJ* probably will be abolished at some time during the 1990's, perhaps shortly after the second triennial *MFJ* report, currently due on January 1, 1990. Even so, the existing FCC and state regulatory structures will continue to limit the RBOCs' business ambitions. In addition, the DOJ will carefully investigate any RBOC attempt to acquire another telecommunications entity, information services company or manufacturer.

C. *NYNEX's, AT&T's and the OCCs' Business Strategies*

1. NYNEX

NYNEX has been ambitious from the moment of its independence in January, 1984. Its diversification strategies have fo-

---

[136] H.R. 2030, 100th Cong., 1st Sess. (1987).

cused on technological development, software, shared tenant service, directories, publishing, cellular radio, and international business. With relief from the *MFJ's* line-of-business restrictions, NYNEX might begin to diversify into information services, including electronic publishing, advertising, federal government contracting, selective equipment manufacturing, and selective long-distance services.

At this point in time, it is difficult to predict the directions in which NYNEX might go, particularly since the company understandably is keeping its cards close to its chest. Nevertheless its recent activities, outlined in Part II of this Article,[137] give some clues as to its plans.

a. Advertising, Print Media, and Directory Publishing

United States advertising revenues were more than $100 billion in 1986, of which the print media garnered approximately $50 billion. Information services are a rapidly growing segment of this market. Data base access, electronic publishing, voice storage, electronic mail, and alarm services currently are an $8 billion annual market. All seven RBOCs have been aggressive in directory publishing and Yellow Pages. NYNEX has been active in both Connecticut and New Jersey. The Yellow Pages alone generates about $8 billion annually in advertising. NYNEX is well poised to enter the publishing field more broadly, and apparently has interests going beyond directories.[138]

b. Computers and Software

There is intense competition in both the hardware and software marketplaces. The market is currently dominated by IBM, with competition from UNISYS, DEC and Apple. AT&T has also entered the field. Among the RBOCs, NYNEX, Bell Atlantic, and Pacific Telesis are likely to be the most aggressive.

The issue arises as to why the RBOCs would enter this highly competitive field, that has been dominated by IBM for decades. The RBOCs need visibility in office automation, which is a natural extension of telecommunications. In addition, software is essential for both computer and telecommunications equipment marketing. So far, NYNEX has taken tentative steps in this direction by creating custom software through its Computer

137 *See supra* notes 90-96 and accompanying text.
138 *Id.*

Services Company.[139] Whether it would leap into the intensely competitive consumer market is unclear.

c. Financial Services

Equipment leasing had revenues of $90 billion in 1986. The major entities in this market are GE Credit, Westinghouse Credit, and Greyhound Leasing. Nonetheless, the RBOCs see this as a potential market and some of them, most notably Ameritech, Bell Atlantic, Pacific Telesis, and US West, have entered it. NYNEX Credit Company currently offers financial services to customers of other NYNEX subsidiaries.[140] Equipment manufacturers fear that leasing and financial services are closely related to equipment manufacturing and could be used anti-competitively by the RBOCs. If the equipment manufacturing prohibition is lifted, NYNEX may enter the financial services and leasing business on a much broader scale.

d. Real Estate

In 1988, construction exceeds market demand in real estate. The RBOCs' competitors fear that the RBOCs' real estate activities would include selling tenants telecommunications services and equipment. NYNEX currently is not involved in this market, except for its own internal real estate needs.[141]

e. International Business

Along with other RBOCs, NYNEX has made a vigorous entry into the field of the international telecommunications business. It already has substantial offices and activities abroad. By far its most ambitious venture is its recent acquisition of a fifty percent share in a fiber optic transatlantic cable, in a joint venture with Cable & Wireless, a British firm.[142]

The RBOCs generally have a strong reputation in network design, facilities upgrades, engineering management, and technical training. They can use these skills to sell publishing, equipment and services. Nonetheless, the RBOCs have major competitors overseas, including British Telecom, Nippon Telephone & Telegraph ("NTT"), the Bundespost, and other national telecommunications entities with close ties to both the

139 *Id.*
140 *Id.*
141 *Id.*
142 *Id.*

government and private telecommunications service users. NYNEX's increased activity abroad suggests that it sees this as a major growth area. Although this naturally moves some economic resources out of New York State, it simultaneously creates new revenues and jobs within the State. Since foreign postal, telephone and telegraph administrations ("PTTs") dominate local exchange service in their countries, NYNEX's only presence abroad would be in receiving and marketing its services.

f. Equipment Manufacturing

The telecommunications equipment market has become intensely competitive since the AT&T divestiture. The U.S. market is the largest in the world, accounting for $32 billion in sales per year. NYNEX consistently has expressed its desire to enter the equipment manufacturing business, without specifying the segments on which it would concentrate.

To a certain extent, NYNEX may merely plan to manufacture equipment which it cannot procure from the market.[143] After all, manufacturing is a capital-intensive and competitive field. If NYNEX were to concentrate on customized items, for itself and/or a small number of other LECs, it presumably would generate little revenue and few jobs within New York State.

g. Long-Distance Telecommunications Services

Currently, the long-distance services business is dominated by AT&T. NYNEX is permitted to offer intrastate inter-LATA toll services, a $15 billion national market, but confronts serious competition throughout most of its territory from AT&T and the OCCs. The interstate inter-LATA toll market, which should produce $26 billion nationally in 1988, is closed to NYNEX. But NYNEX has expressed a desire to enter this market, at least on a selective basis, ever since the company became independent in 1984. NYNEX wants the flexibility to offer any and all long-distance services, in order to be a complete end-to-end telecommunications service company. Its main concern here apparently is to offer "one-stop-shopping" for existing customers.[144] For example, it could supply both switching and intrastate inter-LATA service to a building. Whether NYNEX has the capital or the de-

---

[143] Confidential interview with a Senior Official of New York Telephone Company, in New York City (Aug. 24, 1987).

[144] *Id.*

sire to build a national network seems questionable, however, in light of the OCCs' currently bleak condition.

In general, the RBOCs have made somewhat different choices in choosing new markets to enter, subject to the *MFJ*. Ameritech, Bell South, and Southwestern Bell have been active in publishing. Ameritech, Pacific Telesis, and NYNEX have been active in international service. Bell South and Southwestern Bell have been active in cellular radio. Ameritech has been active in computers. There does not appear to be any clear pattern in terms of the RBOCs' diversification strategies under the *MFJ*. Thus, there is little reason to predict any greater uniformity if the *MFJ* is modified.

If the *MFJ*'s restrictions were lifted, NYNEX would probably enter the markets in international service, publishing, and software. Even if these obviously conclusory assumptions are correct, it is impossible to estimate the scale of NYNEX's entry and hence the effect upon New York State's economy and job market. Although all of these markets can be served from the State, there is no reason to believe that NYNEX necessarily would do so. Like AT&T,[145] NYNEX might decide to locate some or all of its new activities in a low-cost state or nation, perhaps quite distant from the Northeast. Thus, it seems fair to assume that a relaxation of the *MFJ*'s prohibitions would encourage NYNEX to enter new markets, in turn increasing its level of revenues and number of employees. However, there is certainly no guarantee that all of these benefits would accrue to New York State.

Moreover, the likelihood that NYNEX would not enter the equipment manufacturing market in any large-scale fashion is significant for New York State. The market for high-end central office switches, fiber optics, and network control units has expanded dramatically in the wake of the industry's movement towards digital transmission.[146] None of this activity has located in New York perhaps because of its high costs. Indeed, the State's only major equipment manufacturer is Corning Glass, whose share of the fiber optics market is likely to decrease in the future.[147] Even if the *MFJ*'s prohibition of manufacturing were lifted, the State probably would receive little benefit in terms of

---

145 *See infra* note 281 and accompanying text.
146 *See infra* note 233 and accompanying text.
147 *See infra* note 253 and accompanying text.

either revenues or jobs unless it were able to create substantial economic incentives to locate in New York.

2. AT&T

AT&T has several major strategies. First, it wants to protect its dominance in long-distance telecommunications services. Since the divestiture, AT&T has lost its local exchange monopoly as well as much of its grip on the equipment industry. It therefore is determined to protect its last stronghold—long-distance service.[148] To do this, AT&T must eliminate its subsidies to local exchange companies, including the BOCs, and the subsidies or discounts enjoyed by its major competitors, e.g., MCI, Sprint, ALLNET and Western Union. With the increasingly rapid implementation of subscriber line charges, much of this has already shifted to consumers.[149] AT&T Communications pays approximately $20 billion annually in local access charges to the LECs, which is roughly twenty-five percent of most LECs' revenues. AT&T intends to reduce this sum substantially, perhaps endangering the viability of many LECs.

Since divestiture and the implementation of the FCC's access charge plan, AT&T has been forced by the FCC to reduce its prices. This is causing significant business problems for AT&T's competitors. Clearly, AT&T does not want to force its competitors out of business, since this would counter its main argument for deregulation. The FCC may allow AT&T to maintain its existing prices to protect its competitors, while increasing its profits by reducing its costs.

Second, AT&T is seeking to de-average its prices wherever possible. For this strategy, AT&T needs the approval of regulatory authorities. In the past, the FCC has refused to permit AT&T to de-average prices, largely because of Congressional objections. However, it recently proposed substituting an overall "price cap" for "core" services. De-averaging essentially would permit AT&T to lower prices on high-density routes with low costs, while increasing prices on low-density routes with higher costs. Price averaging has been a traditional concept in the telecommunications industry, in order to maintain uniformity of service and to prevent price discrimination.

Third, AT&T has a real interest in keeping the regulatory wraps on the BOCs and major independent telephone compa-

---

148 *See supra* note 23 and accompanying text.
149 *See supra* note 41 and accompanying text.

nies. These entities are not only potential competitors, but also provide valuable access services to originate and terminate AT&T's long-distance services. Thus, AT&T actively opposes the RBOCs' attempts to relax the *MFJ*'s restrictions.

Finally, AT&T is attempting to reduce its workforce in order to streamline its operations and maintain its competitive edge in the future. AT&T has already reduced its workforce from approximately 370,000 at the time of divestiture to fewer than 270,000 in 1988. There are rumors of further reductions. Most of these reductions have fallen on the equipment rather than the service side.

AT&T still remains the dominant firm in the U.S. long-distance market. It has also considerable power in a wide range of equipment markets, particularly central office and transmission units. Its dominance is well established, and is being solidified by its business and regulatory strategies.

3. The OCCs

All of the OCCs have one strategy in common; surviving the intense competition from AT&T since the divestiture. In the past four years, MCI had to allow IBM to take a large stock position in it. Sprint resulted from a joint venture of United Telecommunications and GTE. The venture took a $1.4 billion after-tax write down in 1986, showing that excess capacity exists in the long-distance network.

Two other OCCs, ALLNET and Lexitel, have merged, and together control only one percent of the long-haul market. Western Union is in serious financial trouble, and may merge with ITT Worldcom, ITT's recently sold international telecommunications services arm. Finally, USTS, ITT's long-distance subsidiary, is said to be losing money and might close down or be sold. Indeed, ITT appears to be getting out of the telecommunications business, since it has already sold its central office equipment manufacturing interests to CGCT, the major French equipment manufacturer.

In order to survive, the OCCs must make sure that AT&T does not continue to reduce its long-distance prices. Since the divestiture, the FCC has forced AT&T to reduce its long-distance rates by as much as twenty percent, or $4 billion. The OCCs find reductions of this magnitude difficult to match, and are experiencing serious business difficulties. Meanwhile, rates for local service have increased by nearly thirty-five percent. A typical tel-

ephone bill has increased by about twenty-five percent.[150]

Since their financial problems could threaten their long-term viability, the OCCs have developed two major strategies. First, they and AT&T are attempting to keep the RBOCs out of long-distance service. The last thing that OCCs want at this stage is seven new major competitors in the long-distance field.

Second, the OCCs support AT&T in abolishing rate-of-return regulation. The OCCs hope that lifting the rate-of-return burden from AT&T and replacing it with price cap regulation will stabilize AT&T's prices. This could represent salvation for the OCCs, since under price cap regulation AT&T would not be subject to further rate reductions by the FCC.

In order to survive in the short-term, the OCCs must: (1) keep the RBOCs out of the long-distance services market; and (2) win deregulation for AT&T. The first objective is a near certainty, since the DOJ and Judge Greene appear reluctant to permit the RBOCs to enter the long-distance market. However, this opposition could change if AT&T's major competitors, MCI and Sprint, run into serious financial problems that they believe can be solved only by an RBOC's investment or outright purchase. An alliance among the RBOCs wishing to purchase the OCCs and the OCCs is a possibility. With the support of Congress, this alliance would certainly receive favorable scrutiny from both the DOJ and Judge Greene.

The second objective, AT&T's relief from rate-of-return regulation, appears to be problematical from today's perspective. It could be achievable in the medium to longer term—four to seven years. There is much Congressional opposition to relief for AT&T. Any meaningful deregulation might have to wait at least until after the Presidential election in 1988.

AT&T and the OCCs thus find themselves in a curious alignment of interests. Although AT&T and the OCCs are ostensibly competitors, both want to keep the RBOCs out of the long-distance market. The OCCs are in the somewhat anomolous position of seeking de-averaging for AT&T. Thus, AT&T can charge higher rates than the OCCs and create a price umbrella under which they can survive. To the extent that this situation keeps prices high, consumers obviously suffer.

4. Implications

This situation has fairly clear implications for New York

---

[150] P. HUBER, *supra* note 2, at 2.3.

State's economy and job market. The outcome of the AT&T/OCC competition would have comparatively little impact upon State firms, except for marginal differences in long-distance service costs. Since neither AT&T nor the OCCs have a major corporate presence in the State, their economic health is largely irrelevant to the State's economy and job market.

On the other hand, relaxation of the *MFJ's* restrictions on NYNEX might benefit the State in several ways. There is certainly no guarantee that NYNEX would conduct all or part of its expanded activities within New York State. Any expansion is likely to increase NYNEX's activities within the State. If a roll of the dice is required, the odds are that the State would benefit more from supporting NYNEX than AT&T or the OCCs.

D. *Taxation*

Taxes account for a substantial portion of any firm's costs, and thus impact heavily upon decisions as to where to locate a facility. Indeed, as in AT&T's move to New Jersey,[151] the type and level of taxation is one of several often outcome-determinative factors. Therefore, a quick analysis of potential New York State taxes may be useful.

New York has one of the nation's highest levels of state corporate income taxation. In addition, both New York State and New York City have relatively high personal income taxes, which lead to higher labor costs.[152]

Even beyond its general tax structure, the State has an often bewildering set of narrowly focused taxes, which increase the cost of doing business for a telecommunications firm. These taxes impact more severely upon service providers than upon hardware suppliers. Service providers are subject to several rather arcane taxes which do not apply to hardware manufacturers.

First, and perhaps most anomolously, most types of telecommunications equipment are subject to *real property* taxes in New York, although they clearly are personal property for all other legal purposes.[153] In 1987, the New York State legislature

---

[151] *See supra* note 101 and accompanying text.

[152] NEW YORK STATE LEGISLATIVE COMMISSION ON THE MODERNIZATION AND SIMPLIFICATION OF TAX ADMINISTRATION AND THE TAX LAW, WHO PAYS NEW YORK TAXES? 57-64 (1985).

[153] Although it is not totally unheard of to tax telecommunications equipment, the usual approach is to include it in a state's personal property tax if it has one. This is the method utilized in California.

amended the Real Property Tax Law to expand the definition of "telecommunications equipment" to include:

> [E]quipment used to provide transmission or switching of electromagnetic voice, video and data signals between different entities separated by air, street or other public domain, and related equipment necessary to the operation of such equipment or the modification of such signals required by such equipment, and lines, wires, poles, supports and enclosures for electrical conductors . . . .[154]

The Real Property Tax Law specifically exempts most PBXs, security system equipment, and equipment used in broadcasting or similar mass media activities. The tax applies to some forms of customer premises equipment, and to virtually all LEC central office equipment.

The tax may have resulted indirectly from the AT&T divestiture. Switches used jointly by AT&T and NYNEX apparently were shifted to AT&T in order to avoid the New York State excise tax. AT&T did no business in the State, and thus was not subject to the excise tax. The real property tax may have operated in NYNEX's favor, since its Centrex equipment is not subject to the tax. This scenario effectively shifted taxes from NYNEX to its competition.[155]

The yield from the tax has not been substantial. In fiscal year 1984, taxation of central office equipment yielded 1.47%, and taxation of customer premises equipment .60% of all local real property taxes.[156] In terms of absolute dollars, the new taxes contributed $231,092,067 to a grand total of $11,165,686,826 in State-wide real property taxes.[157] Not surprisingly, the lion's share of the revenues went to New York City.[158]

In its 1987 report on the tax, the Temporary State Commission on the Real Property Tax found that "the administration of the tax was inadequate in most assessing units in the State and . . . the 1985 legislation failed to create the equitable single 'level playing field' within the telecommunications industry envisioned by the 1985 legislation."[159] The Temporary Commission thus recommended repealing the tax by phasing it out proportionately over the next four years, in order to avoid any unexpected revenue shortfalls for local

---

154 N.Y. REAL PROP. TAX LAW § 102(12)(i) (McKinney Supp. 1988).

155 Confidential interview with a Member of the Committee of Corporate Telecommunications Users, in New York City (Oct. 27, 1987).

156 TEMPORARY STATE COMMISSION ON THE REAL PROPERTY TAX, TAXATION OF EQUIPMENT OF THE TELECOMMUNICATIONS INDUSTRY (POST 1985) 27 (1987).

157 *Id.* at 29.

158 *Id.* at 30.

159 *Id.* at iii.

governments primarily New York City. The New York State Legislature repealed the legislation in the summer of 1987, with the phase-out provision.

Telecommunications service providers also must collect sales and use taxes on any transmission or other services rendered within the State. They need not collect taxes, however, on *inter*state transmissions or other services.[160] In most cases, the distinction between intra and interstate services is fairly clear. LECs' services are generally intrastate, except to the extent that a LATA extends into another state such as NYTEL's limited service to southern Connecticut. Similarly, it is relatively easy to segregate *intra*state inter-LATA traffic served by NYTEL and *inter*state inter-LATA traffic carried by AT&T and the OCCs. With the advent of new technologies and service providers, however, allocation of revenues may become somewhat more difficult. For example, the increased use of packet switching for data transmission poses some complexities. A transmission may originate and terminate in New York State only after traveling the breadth of the country. Indeed, the New York State Tax Commission has found such a transmission to be *intra*state, despite the fact that its path was not wholly within New York.[161]

Similarly, enhanced service providers might be required to collect a sales tax for the use of data bases, voice mailboxes, and the like. The State Tax Law includes a "transfer of title or possession" within its definition of a sale.[162] In turn, the State Tax Commission defines a transfer of possession as a consumer's "right to use, or control or direct the use of, tangible personal property."[163] Although the Tax Commission does not seem to have taken a position on the issue, a user's control over a data base might require a service provider to collect a sales tax.[164]

---

160 N.Y. TAX LAW § 1115(a) (McKinney 1987).

161 Matter of the Petition of the Western Union Telegraph Company, New York State Tax Commission, TSB-H-83 (57)S (Mar. 14, 1983) (the Commission held that a service which enabled a subscriber-broker to transmit telegraphic messages originating and terminating in New York, but passing a computer complex in New Jersey, was subject to the sales tax on *intra*state telegraphy).

162 N.Y. TAX LAW § 1101(b)(5) (McKinney 1987).

163 N.Y. COMP. CODES R & REGS. tit. 20, § 526.7(e)(4)(iii) (1987).

164 *Id.* at § 526.7(e)(5), example 13 (1987) (emphasis added) would treat the following transaction as non-taxable:

> A corporation contracts with a computer center to use the computer on the center's premises for 10 hours weekly. The corporation provides its own materials and the *computer center provides and directs the operator*. During the 10-hour period, no one else may use the machine. In this case, there is no transfer of possession to the corporation as it has no control over the operation of the computer.

Since virtually all state-of-the-art data bases provide direct access to their computers—

Finally, telecommunications service providers may be subject to a "utility tax" in addition to all other taxes. This tax applies to all "persons . . . who sell[] telephony or telegraphy."[165] Like the sales tax, the utility tax applies only to *intra*state activities. Moreover, the tax basically is designed to impact on traditional common carriers, not firms which originate or process information. The New York Court of Appeals has held that the statute did not apply to a corporation which transmitted stock market information to subscribers over leased telephone and telegraph lines.[166] The court noted that a telegraph company was just a conduit for its customers' messages, while the data base operator was the originator as well as transmitter of the information.[167]

For all practical purposes, the utility tax may be most relevant to service providers within New York City, where many are located. To the extent that a firm pays utility taxes, they are offset against New York City's unincorporated business tax.[168] The result may be a wash between utility and unincorporated business taxes.

Therefore, a telecommunication service provider in New York may be subject to a wide variety and high level of taxes. In addition to normal corporate or unincorporated business income taxes, it must potentially withhold sales or use taxes, pay a real property tax on its equipment, and pay the utility tax. Although the vagaries of each state's tax laws make it beyond the scope of this Article to provide exact comparisons to other states' taxation schemes, the absolute level of New York State's taxation indicates that taxation may be a real deterrent to entry by telecommunications service firms. Thus, the State may need to consider tax reform or tax rebates in order to attract telecommunications firms.

E. *Other Regulatory and Economic Systems—A Comparison*

Having analyzed the current status of the U.S. business and regulatory system, it may be useful to contrast it briefly with other countries' institutional frameworks. Currently in a hands-

---

which is one of their selling points—the "operator" would be removed from the Tax Commission's example, thus arguably making access to a data base a taxable event and requiring the service provider to collect a tax.

165 N.Y. TAX LAW § 186-a (McKinney 1986).

166 Quotron Systems, Inc. v. Gallman, 39 N.Y.2d 428, 348 N.E.2d 604, 384 N.Y.S.2d 147 (1976).

167 It should also be noted that New York City has a similar tax on "telegraphic service," which is defined as "any service requiring the use of electric or telegraph wires, equipment or device, instruments or any other means employed or employable in the transmission of messages, signals, alarms, notices, news, pictures, music or information of any kind." NEW YORK CITY ADMINISTRATIVE CODE § 11-1101(9) (1987).

168 NEW YORK CITY ADMINISTRATIVE CODE § 11-503 (1987).

off marketplace modality, the U.S. telecommunications system has traditionally put implementation of telecommunications policy into private hands subject to relatively close governmental scrutiny. The cornerstone of this approach has been FCC regulation.

The FCC traditionally did not allow a firm to undertake any new activity without prior FCC approval. A common carrier had to secure a certificate of public convenience and necessity before offering a service or charging a new price.[169] Although the certification requirement still exists in theory for AT&T, in practice it is largely a formality. The FCC seems anxious to move to a system of "price caps" rather than rate-of-return regulation.[170] Similarly, a manufacturer may not market a new piece of equipment without having received prior FCC "type approval," which is basically a determination that the unit will work properly with the existing public switched network.[171] This requirement is likely to remain in place, since service providers want protection against electical and other interference. Finally, a carrier may not use over-the-air transmissions without securing a license from the FCC.[172] This limitation is probably immune to change, because of the need for an orderly allocation of frequencies.

This type of environment is unique to the United States, Canada, and to a lesser extent, the United Kingdom. The most common model in other countries is almost a mirror image; a legally imposed monopoly, administered by a government postal, telephone, and telegraph administration ("PTT"). These entities commonly provide all telecommunications services.

To a certain extent, PTTs resemble the pre-divestiture AT&T imposed by government fiat rather than government acquiesence (some cynics would argue that there was little difference between the two, in light of AT&T's close relationship with the FCC). Foreign observers often confuse the concept of "deregulation" with that of "privatization," and draw faulty conclusions from the post-divestiture U.S. experience. For example, there is a common European perception that privatization inevitably leads to higher rates, thus ignoring the effect of the FCC's access charges.[173]

---

169 47 U.S.C. § 214 (1982).

170 *See supra* text following note 147.

171 47 C.F.R. Part 68 (1987).

172 47 U.S.C. § 301 (1982).

173 Meeting with Special Committee on Telecommunications, French Senate, in New York City (Mar. 20, 1987).

Although a detailed analysis of foreign telecommunications regulation and economics is beyond the scope of this Article,[174] a brief overview of the telecommunications markets and policies in a few other countries may be useful. Table VIII gives an idea of the foreign market's size, by presenting data on eight industrialized nations. As in the U.S., the movement to increasingly sophisticated central office switching, network control, and transmission has required extensive purchases of new equipment.[175]

Table VIII

Telecommunications Equipment Expenditures

Country	1978	1983	Average Annual Increase
	($000,000)		
West Germany	4,990	6,901	6.7%
Japan	3,483	4,988	7.4
France	2,234	3,120	6.9
U.K.	1,442	3,019	15.9
Italy	1,103	1,471	5.9
Canada	920	1,224	5.9
Netherlands	455	541	3.5
Sweden	227	321	7.2
Subtotal	14,857	21,589	7.8
All Other	9,904	14,392	7.8
Total	24,761	35,981	7.8

Source: United States International Trade Commission, *Changes in the U.S. Telecommunications Industry and the Impact on U.S. Telecommunications Firms* 38 (1984).

U.S. companies increasingly need to compete in these markets. The United Kingdom, West Germany, and Japan reflect different styles of regulation and degrees of privatization but with the same result: almost total exclusion of U.S. companies from both the hardware and service markets.

1. The United Kingdom

The United Kingdom probably has the most privatized telecommunications industry outside North America. In 1981, Parliament passed the British Telecommunications Act, which

---

174 For an excellent and extremely detailed study of this topic, see E. NOAM, THE EUROPEAN TELECOMMUNICATIONS EXPERIENCE (forthcoming 1988).

175 P. HUBER, *supra* note 2, at 1.10 n.10.

abolished the Post Office's prior monopoly over all telecommunications services.[176] In 1984, the Government sold slightly more than a majority interest in British Telecom to the public.[177] At virtually the same time, the Government authorized a second telecommunications entity, Mercury, to compete with British Telecom.[178]

To date, Mercury has played a rather limited role. Although authorized to offer both long-distance and LEC services, it has largely limited itself to providing long-distance service, often by means of fiber optics, and has focussed mainly upon private line service to large corporate users. Given the natural monopoly characteristics of LEC service, Mercury probably will not penetrate the local exchange market to any significant extent. Thus, it may end up playing a role very similar to that of the OCCs in the United States. At the same time, smaller companies have entered the LEC market through dedicated lines, cellular radio, and private microwave. Like LECs in the U.S., British Telecom thus faces some "bypass" of its local public switched networks.

British Telecom may have attempted to delay new entry of both services such as cellular and equipment such as consumer premises equipment. For example, British Telecom charged fifty pounds to install a second jack, and prohibited consumers from doing their own installations. This practice was eventually prohibited in 1986.[179]

International calls traditionally have been less expensive from the U.K than from many other EEC countries. Transatlantic calls from the U.K. to the U.S. are about half the price of similar calls from France or Germany. An interesting "gray market" thus has developed in the U.K. for transatlantic traffic. Firms in other EEC nations first route their calls to the U.K. and then make the less expensive transatlantic hop from there—a practice of which the PTTs are fully aware but unable to identify or control.[180]

As in other countries, the process of converting to digital switching and transmission has tremendously increased the

---

176 UNITED STATES INTERNATIONAL TRADE COMMISSION, CHANGES IN THE U.S. TELECOMMUNICATIONS INDUSTRY AND THE IMPACT ON U.S. TELECOMMUNICATIONS TRADE 69 (1984) [hereinafter TRADE COMMISSION].

177 OFFICE OF TECHNOLOGY ASSESSMENT, INTERNATIONAL COMPETITION IN SERVICES 174 (1987) [hereinafter TECHNOLOGY ASSESSMENT].

178 TRADE COMMISSION, *supra* note 176, at 70.

179 E. NOAM, THE BRITISH TELECOM EQUIPMENT INDUSTRY 7-8 (draft 1987).

180 Confidential interview with a Senior Official of the West German Bundespost, in Malente, Germany (Feb. 14, 1986).

U.K.'s demand for telecommunications hardware. The market jumped from $1.4 billion in 1978 to $3.0 billion in 1983 (an average of about sixteen percent annually) and is expected to continue expanding at that rate for the near future.[181] This obviously makes the U.K. market attractive to U.S. hardware manufacturers but U.S. firms have had difficulty in penetrating even the relatively competitive U.K. market.

The leading hardware manufacturers in the U.K. are GEC and Plessey. They produce a wide range of switching, transmission, and network control equipment. Both GEC and Plessey have been active in seeking out joint venture arrangements in the United States and elsewhere. Other significant U.K. manufacturers include Thorn-EMI (in partnership with Ericsson for switches) and Standard Telephone and Cable (undersea cable and fiber optics).[182]

The advent of privatization has brought with it a need to regulate the newly created private sector. In 1984, the Government created the Office of Telecommunications ("Oftel"), with broad powers over rates and services, but unlike the FCC, with no jurisdiction over mass media. To date, Oftel has been relatively inactive, perhaps because its low staffing level (less than one hundred people[183]) has limited its capabilities. Oftel has received criticism from consumer and public interest groups. Due to the rather negative U.S. experience with rate-of-return regulation, Oftel has eschewed that approach in favor of tying monopoly prices, mostly British Telecom's, to the rate of inflation. This is a similar approach to the FCC's proposed "price cap."[184] Whether Oftel will become more active in the future is difficult to predict.

Thus, the U.K. has attempted to pursue the same general goal as the U.S.: fostering competition in services. In doing so, it has had to overcome the additional obstruction of privatizing a public monopoly. Whether sufficient economic forces exist to create a truly competitive market is still unclear. After all, the FCC and DOJ were in the somewhat easier position of reacting to, rather than creating, market forces. The disadvantage of the British approach is that it ultimately may require significant governmental intervention to make a market. The advantage is that it potentially provides an opportunity to structure the market, unlike the current hands-off U.S. deregulatory philosophy. So

---

181 TRADE COMMISSION, *supra* note 176, at 39.
182 E. NOAM, *supra* note 179, at 17-18.
183 *Id.* at 4-9.
184 *See supra* note 23 and accompanying text.

far, Oftel has not made significant use of its potential powers. However, unlike the FCC, it has not abrogated them.

2. West Germany

The market is considerably tighter in West Germany. The Bundespost, West Germany's PTT, has a complete monopoly over all types of electronic communications. Although there has been occasional discussion of privatization, the Bundespost has made it clear that it will fight any such move tooth and nail.[185] In 1985, the Bundesrat appointed a special study commission under the direction of Professor Eberhard Witte to study privatization ("Witte Commission"). The potential market is large, since in 1978-1983, total West German telecommunications equipment rose from $5.0 billion to $6.9 billion.[186]

The Witte Commission recently released proposals for relatively wide-ranging changes in the Bundespost's status, some of which are reminiscent of U.S. initiatives to spur competition with AT&T. Under the Commission's proposal, the Bundespost would retain its monopoly over both long distance and local switched network service.[187] But private companies would be able to compete with the Bundespost in selling equipment, installing CPE, and providing low-speed data transmission via satellite. Users could connect any type of CPE to the network, as long as it met technical standards promulgated by an "independent authority"[188]—a procedure apparently similar to the FCC's type approval.[189] Like the BOCs, the Bundespost would be prohibited from manufacturing CPE, but would be free to sell private firms' products.[190] Finally, there would be a review of the restrictions every three years[191]—just as under the *MFJ*.[192] Whether the Government will implement all or part of the Witte Commission's recommendations remains to be seen but the report goes a long way towards breaking up the Bundespost's traditional monolithic posture.

The Bundespost's monopoly status naturally generates sub-

---

185 TECHNOLOGY ASSESSMENT, *supra* note 177, at 172.

186 TRADE COMMISSION, *supra* note 176, at 40.

187 GOVERNMENT COMMISSION FOR TELECOMMUNICATIONS, REPORT: RESTRUCTURING OF THE TELECOMMUNICATIONS SYSTEM IN THE FEDERAL REPUBLIC OF GERMANY, SUMMARIZED RESULT 10 (1987) [hereinafter WITTE].

188 *Id.* at 14.

189 *See supra* note 58 and accompanying text.

190 WITTE, *supra* note 187, at 14.

191 *Id.* at 10.

192 *See supra* note 116 and accompanying text.

stantial income. In 1980, its revenues were $55.4 billion.[193] The Bundespost very deliberately builds in a subsidy from telephone to postal rates, apparently on the assumption that mail is a more vital service than telephony.[194] This results not only in a relatively small number of telephones per capita, but also in the international service gray market.[195] It may also explain the Bundespost's recent low rating in a survey by the European Association of Information Services, which characterized Germany as "a bad place to get to."[196]

Although Germany is in the process of modernizing its telecommunications system, its equipment market is virtually closed to foreign suppliers. In order for a bid to be considered, a manufacturer must be a member of the Central Association of the Electrical Industry. This requirement largely excludes bids from foreign manufacturers. Additionally, when the Bundespost uses a competitive bidding system, domestic manufacturers sometimes apparently rig the process.[197]

By far the dominant hardware manufacturer in West Germany is Siemens. The major suppliers of switching equipment are Siemens with forty percent of the market, SEL with thirty percent, DeTeWe with fourteen percent, and T&N with ten percent.[198] As part of the Bundespost's almost total reliance on domestic manufacturers, it requires all suppliers to cross-license each other, so that it is not dependent upon any one manufacturer. These licenses are not always available to foreign manufacturers, thus making it difficult to meet the Bundespost's technical specifications.

Thus, West Germany exemplifies a 180 degree difference in policy from the United States. Although this approach obviously accomplishes some clearly defined social goals such as inexpensive postal rates, it does so at the expense of telecommunications users by "goldplating" the plant.[199] This naturally presents potential barriers to new types of service providers, most particularly information providers. If the Bundespost has made a considered decision to benefit postal users over enhanced service customers, its approach makes perfectly good sense. Whether the Bundespost has engaged in this exercise is unclear.

---

193 E. NOAM, THE BUNDESPOST 1 (draft 1987).
194 *See id.* at 5.
195 *See supra* note 180 and accompanying text.
196 CommunicationsWeek, Aug. 17, 1987, at 18.
197 E. NOAM, GERMANY: EQUIPMENT AND SERVICE PRACTICES 2-3 (draft 1987).
198 *Id.* at 6.
199 E. NOAM, *supra* note 197, at 2.

3. Japan

The Japanese market theoretically is more open than the West German, but has provided few opportunities for foreign companies. Like the U.K., Japan has followed a policy of privatization. In 1984, the Diet privatized its PTT, Nippon Telephone and Telegraph ("NTT"), and authorized the sale of forty-nine percent of its shares to the public.[200] The Diet also created a complex two-part regulatory scheme, which distinguishes between carriers and enhanced service providers. Carriers may compete with NTT in providing either local or long distance service. No foreign ownership of these "Class I" companies is allowed.[201] By contrast, up to twenty-five percent of a U.S. carrier may be held by a foreign entity.[202] In theory, the situation is somewhat similar to the emergence of the OCCs and local bypass in the United States. However, NTT's past dominance gives little indication that it will face significant competition in either the long distance or local markets.[203] So far, most "Class I" companies have focussed on providing dedicated trunk lines for large corporate users, with which they are often affiliated, along high-density routes. They also "collaborate" in setting rates.[204]

The "Class II" companies offer enhanced services such as "valued added networks" ("VANs"). These companies may use NTT, Class I networks, or their own facilities. Some high-technology Class II companies are regulated only slightly, but may not have any foreign ownership. Other Class II entities are regulated more closely, but may have foreign ownership.[205] A large number of VAN's have developed recently.[206]

Japan thus has attempted to promote the growth of information service providers as a domestic industry. Indeed, Japan already may have the world's largest amount of VAN activity.[207] There are presently about 300 active VANs in Japan, with revenues of $3.5 billion per year. Many of them supply fairly conventional services like in-house data processing to the trading

---

200 TECHNOLOGY ASSESSMENT, *supra* note 177, at 173.

201 C. JOHNSON, MITI, MPT, AND THE TELECOM WARS: HOW JAPAN MAKES POLICY FOR HIGH TECHNOLOGY 52 (1987).

202 47 U.S.C. § 310(b) (1982).

203 In Japan, as well as the U.S., existing LECs presumably have greater economies of scale and scope than new entrants. *See* P. HUBER, *supra* note 2, at 2.20.

204 Telephone interview with Michael Borrus, Berkeley Roundtable on International Economy (Aug. 25, 1987).

205 C. JOHNSON, *supra* note 201, at 52-53.

206 Telephony, Sept. 28, 1987, at 155, col. 2.

207 P. HUBER, *supra* note 2, at 5.28.

companies with which they are affiliated.[208]

Japan has put a significant emphasis upon encouraging the development of new information service providers. This may result in less competition for NTT in both the local and long-distance markets. Some observers believe that this will result in faster development of enhanced services.[209] Such development would be significant for the Japanese economy, in light of its traditionally slow development of software. The present Japanese position may represent a middle ground between the U.S.'s competitive and West Germany's monopoly approaches.[210]

The Japanese Government plans to extend ISDN to every business and residence by the end of the century.[211] It is thus far more oriented towards serving small users than the U.S.[212] or, for that matter, most other nations. In effect, the Government is betting roughly $100 billion that creating an ISDN environment will generate information services.[213] This approach assumes that hardware will drive the market. At the same time, the Government is investing large amounts in improving the traditionally weak Japanese R&D program.[214]

The Japanese Government's aggressive intervention in both R&D and universal ISDN service is almost the mirror image of the U.S.'s new-found marketplace approach. Interestingly enough, this represents partial role reversals for both countries. In the past, the U.S. indirectly funded massive telecommunications research by allowing huge subsidies to flow to Bell Labs. Both the FCC and the state regulatory agencies made universal service a *de facto* if not *de jure* requirement, by keeping local rates artificially low. While the U.S. was abandoning or modifying these policies, Japan adopted or enhanced them.

This somewhat ironic mutual *volte-face* naturally raises a question as to whether Japan will benefit from the aggressive governmental intervention now discredited in the United States, or whether the U.S. is wiser in leaving these roles to the private sector. At this point, both countries are only a few years into their respective experiments, making any type of long-term analysis speculative at best. Moreover, the economic and cultural dif-

---

208 Borrus interview, *supra* note 204.

209 M. BORRUS, CREATING ADVANTAGE IN TELECOMMUNICATIONS: THE IMPACT OF U.S. AND JAPANESE REGULATORY AND TRADE POLICIES ON U.S. COMPETITIVENESS 10-11 (1987).

210 *Id.* at 17.

211 *Id.* at 11.

212 *Id.* at 12-13.

213 TRADE COMMISSION, *supra* note 176, at 119 n.114.

214 *See* C. JOHNSON, *supra* note 201.

ferences between the two countries make comparisons difficult. For example, the only even remotely close analogue to the Japanese trading companies may have been the pre-divestiture AT&T.

Nevertheless, it only seems fair to assume that the market usually drives technology rather than vice versa. Although not necessarily true at all times and for all countries, this lesson certainly has been true for decades in the U.S.'s experience with new technologies. The U.S. economic landscape is littered with elegant engineering solutions to nonexistent problems such as direct broadcast satellites, videotex, and videodiscs. Although the U.S.'s total reliance on marketplace forces may represent too hasty a jump from one extreme to another, some movement in that direction may be appropriate.

Finally, the U.K., West Germany and Japan all exclude U.S. equipment and service providers to a significant extent, but in different ways. The U.K. simply has an informal "Buy British" policy. West Germany has a legalized cartel in the form of its Central Association. Japan either prohibits foreign ownership or restricts entry to its markets. As noted at the beginning of this Section, the potential foreign market is huge. As discussed in the next Section, however, the U.S. telecommunications industry is unlikely to penetrate the foreign equipment market absent a radical change in current policies.

The extent to which New York State can affect this situation is unclear. Under federal law, the State presumably could not initiate unilateral retaliation against foreign imports aside from refusing to buy them itself. It might be able to have its presence felt, however, at the State Department and on Capitol Hill.

F. *Foreign Competition in the U.S.*

1. Telecommunications Equipment

According to Alfred C. Sikes, Assistant Secretary of Commerce for Communications and Information, the AT&T divestiture has resulted in a worsening U.S. trade deficit. Many observers would hotly dispute this proposition, noting U.S. companies' high wage rates, costly taxes, and delay in producing digital equipment. Since the divestiture, the U.S. has confronted a growing trade imbalance in telecommunications equipment sales. Before divestiture, the U.S. was a net exporter of such equipment. According to Mr. Sikes, in 1986 the U.S. exported $2 billion worth of telecommunications equipment, but imported

$4 billion.[215]

The U.S. Department of Commerce's data indicated that shipments by the U.S. telecommunications equipment industry increased steadily from 1972 to 1983 at an annual growth rate of five percent, adjusted for inflation.[216] Although more than 500 firms produce telephone and telegraph equipment for the U.S. market, four companies dominated the market at divestiture. These firms, including domestic and foreign manufacturers,[217] and their 1982 estimated market shares appear in Table IX. Since January 1, 1984, the dynamics of the U.S. telecommunications equipment industry have changed dramatically. AT&T Technologies ("ATT-Tech") has rapidly lost its market share to Northern Telecom and other foreign manufacturers.

Table IX

Leading U.S. Telecommunications Equipment Producers

Firm	1982 Market Share
Western Electric	68.4
GTE	11.0
Northern Telecom	7.9
ITT	3.0
Total	90.3

Source: Company files, Information Age Economics, Washington, D.C.

The National Telecommunications and Information Administration ("NTIA") reported that foreign based telecommunications firms which manufacture here, chiefly Northern Telecom, have a significant share of the U.S. market. According to a recent NTIA report, Northern Telecom had twenty-five percent of the 1985 digital lines placed in service worldwide. The report further claimed that "Northern Telecom Inc., a subsidiary of Bell Canada Enterprises, and AT&T are the principal suppliers of all categories of switching equipment to the Bell companies today." Northern Telecom had 19.1 percent of the U.S. market for PBXs in 1985. Northern Telecom also has extensive facilities in the U.S. The company employs more than 20,000 people in the

---

215 Speech by Alfred C. Sikes, at USTIA, World Bank Seminar, in Washington, D.C. (Dec. 16, 1986).

216 GOVERNMENT PRINTING OFFICE, U.S. INDUSTRIAL OUTLOOK, 1984.

217 HIGH TECHNOLOGY INDUSTRIES: PROFILES AND OUTLOOKS—THE TELECOMMUNICATIONS INDUSTRY (1986).

U.S.[218] As discussed below,[219] there is an increasing trend towards joint ventures between U.S. and foreign firms, as well as towards foreign firms locating at least some manufacturing capability in the U.S. Table X lists the U.S. facilities of foreign firms.

Today, East Asian suppliers, particularly in Japan, Taiwan, Korea, and Hong Kong, are the major providers of CPE, as distinguished from switches and network control equipment. For example, NEC Corporation, an $8 billion a year Japan-based electronics firm, increased its sales in North America from $450 million in 1983 to nearly $800 million in 1984, and is currently selling an estimated $1 billion worth of equipment in the U.S. annually. Meanwhile, AT&T, GTE, ITT, Rolm and other U.S. suppliers of customer premises equipment have lost significant market shares to Canadian, Western European and Asian suppliers. For example, MITEL, a Canadian company recently acquired by British Telecom, captured 10.2 percent of the U.S. PBX market in 1984, followed by NEC with 6.9 percent, Ericsson with 2.9 percent, Fujitsu with 2.1 percent, and OKI with 1.6 percent.

According to projections by Arthur Andersen and Co., foreign competition will be a significant factor in the U.S. telephone market, with foreign manufacturers gaining a twenty-eight percent market share by 1990. AT&T-Tech's (formerly Western Electric) market share was about eighty percent in 1980, but will be only thirty-seven percent by 1990. PBXs and key telephone systems will also be controlled by foreign manufacturers. Nonetheless, ATT-Tech will continue to have the largest part of the PBX manufacturing market by 1990, with a thirty-eight percent share. ATT-Tech also leads in key telephone systems with a thirty-nine percent share. Although Motorola will continue to dominate the mobile communications equipment market with a thirty-seven percent share by 1990, this is down from its fifty to sixty percent share in the early 1980s. Table XI presents an overview of foreign firms' U.S. market shares.

A Bell South analysis maintains that while U.S. trade generally has suffered over the last four to five years, trade problems in telecommunications equipment have been especially acute. Between 1982 and 1985, trade balance (i.e., exports minus imports) in telephone equipment declined from +1.5 to -6.9 percent of total U.S. shipments. During this same period the total trade bal-

---

218 *See generally* NTIA, TRADE REPORT (Feb. 4, 1987).
219 *See infra* note 264 and accompanying text.

Table X

FOREIGN-OWNED U.S. MANUFACTURING FACILITIES

Firm	Location	Equipment Manufactured
CANADIAN		
Northern Telecom	Santa Clara, CA	Digital PBX
	Richardson, TX	Digital PBX
	N.C. (4 locations)	Digital CO
	W. Palm Beach, FL	
	Atlanta, GA	telephone sets
	Concord, NH	terminals
	Morristown, NJ	computers
	Morton Grove, IL	test equipment
	Nashville, TN	transmission eq.
	San Diego, CA	components
	Minnetonka, MN	
JAPANESE		
Alcoa-NEC Communications	Sidney, OH	Satellite TV receiving sys.
ASTRONET	Lake Mary, FL	Cellular mobile communications equipment
Fujitsu-America, Inc.	Richardson, TX	Cellular mobile, fiber optic, multiplex and microwave equip.
IMC Magnetics	Westbury, NY	Fans/blowers for communications equipment
Iwatsu-America	Carlstadt, NJ	Key telephone systems
Matsushita Communications	Franklyn Park, IL	Cellular mobile communications equipment
NEC-America	Hawthorne, CA	Cellular mobile and mobile paging equipment
	Hillsboro, OR	Fiber optic
	Dallas, TX	PBX
NEC-Info. Systems	Boxborough, MA	Computers, peripherals
IKI-America	Norcross, GA	PBX, Cellular
Sumitoma Elec.	Research Tri., NC	Fiber optic cable

Note: Aloca-NEC Communications Corp. is a joint venture of NEC (49%) and Alcoa (51%); ASTRONET is a joint venture of Mitsubishi Electric (59%) and the U.K.'s Plessey, Corp. (51%); IMC Magnetics is owned by Minebea Co.

Source: Company files, Information Age Economics, Washington, D.C. (Northern Telecom, Northern Business Information, Japan Economic Institute).

ance in all goods and services fell from -0.04 to -2.6 percent of GNP. Bell South estimates further that the loss of business to foreign manufacturers has reduced employment opportunities in the U.S. communications equipment industry by at least 15,000 jobs in the five years.[220]

---

220 *See* R. BLAU, IMPACT OF THE AT&T DIVESTURE DECREE ON U.S. TRADE AND EMPLOYMENT IN COMMUNICATIONS EQUIPMENT MARKETS (Sept. 1986) (report of Bell South Corp.).

Table XI

FOREIGN FIRMS' U.S. MARKET SHARES

U.S. System Market Shares, 1985

Firm	Share
AT&T	24.7
TIE	16.4
ITT	8.3
Toshiba	7.6
Matsushita	7.1
Iwatsu	5.9
Vodavi	4.9
NEC	3.9
Others	21.3

U.S. PBX MARKET SHARE, 1985

Firm	Share
AT&T	25.1
Northern Telecom	19.1
Rolm	15.0
Mitel (BT)	8.2
NEC	7.6
GTE	4.0
Siemens	3.8
Others	17.2

Foreign Based U.S. Market Competitors

Japanese	European	Canadian
NEC	Alcatel-CGE	Northern Telecom
Fujitsu	Siemens	
Hitachi	Ericsson	
OKI	Plessy/Stromberg-Carlson	
Toshiba	Phillips	
Iwatsu	Mitel (BTL)	
Matshushita		
Sumitomo		
Uniden		

BOCs' Equipment Procurement from AT&T Technologies

Year	Share
1982	92.0
1983	80.0
1984	71.8
1985	64.2
1986	57.6

BOCs' Network Equipment Procurement from Foreign Based Firms

A. Switching

Year	Share
1983	6
1984	18
1985	29

B. Fiber

1983	35
1984	23
1985	40

C. Transmission

1983	5
1984	3
1985	40

Source: Company files, Information Age Economics, Washington, D.C.

Then-FCC Chairman Mark Fowler wrote a letter to the seven RBOCs and to GTE, asking them "how much money the companies have spent and plan to spend buying telephone switching gear from Siemens."[221] In his letter, Fowler expressed "an increasing concern about fair and reciprocal treatment of U.S. telecommunications equipment manufacturers and service providers."[222] The letter followed reports that AT&T was "negotiating what it called a 'significant equipment sales deal' "[223] in France, but that the West German government wanted the business to go to a German company. "[A]t issue [was] an agreement for a joint venture of AT&T and N.V. Philips of the Netherlands to obtain 16 percent of the digital switching equipment business of the state-owned French telephone system, Cie Generale d'Electricite (CGE). In return, AT&T-Philips [would] buy microwave transmission equipment from the French company,"[224] which currently is acquiring a major portion of ITT's manufacturing business.

The FCC stated that it would analyze other countries' activities as to four objectives: open entry; nondiscrimination; technological innovation; and international comity. The FCC asked parties to comment on the nature and extent of entry barriers and discriminatory treatment in international telecommunications, as well as measures to promote open entry, nondiscrimination and technological innovation. The FCC acknowledged that the U.S. government was increasingly concerned that U.S. telecommunications service providers and equipment manufacturers did not have a fair opportunity to compete in many foreign markets.[225] Needless to say, the FCC's policy initiative dovetails with the thrust of the omnibus trade bill, H.R.3.[226]

2. Research & Development and Market Size

R&D is clearly important to a nation's long term economic interests, as Japan has decided.[227] It reduces production costs, increases productivity, induces demand for new products or services, and generally promotes economic growth. R&D plays a crit-

---

221 The Washington Post, Oct. 22, 1986, at G-1, col. 3.
222 *Id.*
223 *Id.*
224 *Id.* at G-5, col. 1.
225 *See* FCC Proposes International Telecommunications Model in CC Docket 86-494, DC-721 (released Dec. 23, 1986).
226 H.R. 3, 100th Cong., 2d Sess. (1987). *See also* S. 390, 100th Cong., 2d Sess. (1987).
227 *See infra* note 214 and accompanying text.

ical role in shaping the structure and performance of domestic and international markets, especially those that are subject to rapid technological change.

Peter Drucker has noted that "[a]n established company which in an age demanding innovation is not capable of innovating is doomed to decline and extinction."[228] Telecommunications and information service firms are no exceptions. As a result of the AT&T divestiture, Bell Labs faces the most radical change in its history and its mission. The Bell System breakup, which deprived Bell Labs of its financial base in the operating companies, surely tips the balance toward Bell Labs becoming ATT-Tech's R&D department. It is hardly coincidental that one of the first organizational changes AT&T made after the breakup of the Bell System on January 1, 1984 was to put Bell Labs into the same organizational group as Western Electric (ATT-Tech) and to subordinate it to the same management.

Nevertheless, Bell Labs suffered little decrease in funding after the divestiture. Its budgets for 1984 and 1985 were only a few percent below those for 1982 and 1983.[229] Moreover, the slack may have been made up by Bellcore, whose budget was almost half that of Bell Labs in 1984 and 1985.[230] Perhaps most significantly, Bell Labs was issued more patents and its researchers published almost as many papers in 1984 and 1985 as before.[231]

The *MFJ's* restrictions on the BOCs' providing information services and manufacturing equipment may make it difficult for an RBOC to develop commercial innovations in telecommunications equipment or information services. The RBOCs have only limited incentives to conduct R&D in these areas, because they have no realistic opportunity of recovering R&D costs. Interestingly enough, NYNEX seems to be bucking this trend. It plans to establish a 350-person R&D organization by 1990.[232]

AT&T and IBM, the BOCs' two principal competitors, spent nearly $5.7 billion on R&D in 1985—nearly twelve percent of the total U.S. industrial R&D. By comparison, the RBOCs collectively committed almost $1 billion to R&D, mostly for jointly funded projects conducted through Bellcore. These differences

---

228 *See* P. DRUCKER, MANAGEMENT: TASKS AND RESPONSIBILITIES, PRACTICES 786 (1974).

229 M. NOLL, BELL SYSTEM R&D ACTIVITIES: THE IMPACT OF DIVESTITURE, TELECOMMUNICATIONS POLICY 161, 169 (June 1987).

230 *Id.* at 176.

231 *Id.* at 166.

232 *Id.* at 177.

exist in spite of the fact that AT&T's and IBM's total combined sales and after tax income are not substantially greater than the BOC's—$85 billion versus $63 billion in sales; $8.1 billion versus $7.5 billion in after tax profits.[233]

There is a direct relationship between R&D expenditures and the size of the markets needed in order to justify these expenditures. Today's central office switches are powerful digital computers. They not only cost less to operate, but also have valuable new capabilities. According to various estimates, they cost $1 billion to develop and several hundred million dollars annually to update.[234] This is at least part of the Europeans' justification for protected national monopolies, which back development of individual systems for each country or alternatively joint development among manufacturers. Edward M. Richardson, Senior Analyst at Dataquest UK has stated that "Japan spent $2 billion to develop its central office switches. The Americans spent almost $4 billion (combining AT&T, Northern Telecom, and GTE). The Europeans, collectively, have spent about $7 billion on some half-dozen different systems for a market of roughly equivalent size."[235]

3. Telecommunications Service Providers

So far, there are relatively few foreign competitors in the U.S. domestic telecommunications service industry. This segment of the industry is still dominated by AT&T with more than eighty percent of the long-distance market, and by the seven RBOCs in local exchange services.

Most competitors have focused on the long-distance market. MCI claims to have approximately 10.0 percent of the market, Sprint 6.7 percent, with a group of others (Western Union, Allnet, USTS, MidAmerican, TDX) sharing the rest of the market. Some of these participants are "niche players" since they only perform certain services or tailor-make services for particular corporate customers.

Despite the encouragement of competition in the long-distance field, the market is still dominated by AT&T. Local exchange service is dominated by the RBOCs, with independent

---

233 D. MARKEY & R. BLAU, R&D AND THE AT&T CONSENT DECREE: ARE WE SHOOTING THE NATION IN ITS ECONOMIC FOOT? (Fall 1986) (sponsored by the Bell South Corporation).

234 The Financial Times, July 2, 1986, at 18 (NEXIS).

235 *Id.*

telephone companies serving some regions of the country.[236]

4. Information Service Providers

Foreign firms have made few inroads in the information services field, although *Computer III* may encourage them to enter. This is not to say that there is no foreign participation in the information services field. For example, British Telecom is offering at least one information service via NYNEX's facilities in New York City, and Reuters has a successful financial information service.[237] But the U.S. information industry generally is dominated by U.S. providers, some with heavy links to New York State such as Dun & Bradstreet, the New York Times, Dow Jones, Time, Inc., McGraw-Hill, ABC, CBS, and NBC.

Table XII
LEADING INFORMATION SERVICE PROVIDERS

Company	Info. Revs.	% of Total Co. News	Information Type
Reuters	$505m	80	Securities, News
Dun & Bradstreet	325m	12	Credit, Bus. Info.
Quotron	187m	91	Securities
Mead	154m	6	Legal, Ins.
Telerate	149m	100	Securities
McGraw-Hill	120m	8	Financial Info.
Dow Jones	100m	10	Securities, Bus. Info.

Source: Company files, Information Age Economics, Washington, D.C.

G. *U.S. Competition Abroad*

With the movement towards upgrading telecommunications services through digital switching and transmission, there naturally has been a worldwide increase in the demand for hardware and associated software. For example, the French market for telecommunications equipment was $3.7 billion in 1985, and is expected to rise to $6.1 billion in 1989.[238] At the same time, only small portions of these markets are open to U.S. manufacturers.

There is only a small international market in services, aside

---

236 *See supra* note 29 and accompanying text.
237 *See infra* note 240 and accompanying text.
238 9 BUSINESS AMERICA 20 (Oct. 27, 1986).

from transmission services.[239] Enhanced services do not travel well, because of technological protocols, language and culture. Only a few foreign firms are making a concerted effort to sell data base services in the United States.[240] As a result, this discussion will focus primarily on the hardware market.

The relevant equipment product market comprises relatively high-end network and terminal equipment such as central office switches, network control equipment and business terminals. As discussed below in Part IV,[241] labor rates in other, predominently Asian, countries make U.S. manufacturers non-competitive for consumer markets such as handsets. Indeed, there presently are only two U.S.-based handset manufacturers (Northern Telecom and Comdial) and both serve high-end business users.[242] As shown by Table XIV, wages in Asian countries are substantially lower than in the U.S., making relatively low-end equipment very inexpensive to manufacture there. Even recent currency fluctuations will probably not radically change this imbalance.

In most countries aside from the United States, the United Kingdom, and Canada, virtually all telecommunication services are provided by governmentally-owned PTT authorities. Since these are public entities, they are not subject to the anti-discrimination clauses of GATT.[243] European PTTs thus are perfectly free to, and commonly do, exclude or decline to buy foreign products.

One of the ironies of the international marketplace is that foreign manufacturers often use U.S. technology and components—particularly fiber optics—to manufacture their own products for export. For example, French manufacturers commonly use U.S. components in telecommunications and other electronic products for export.[244]

Perhaps the most dramatic confrontation between a U.S. telecommunications company and the French Government was the Government's recent decision to sell its second largest telecommunications equipment manufacturer, Compagnie Generale de Constructions Telephoniques ("CGCT"), to a Swedish-led

---

239 *See supra* note 50 and accompanying text.

240 CommunicationsWeek, Aug. 31, 1987, at 6.

241 *See infra* notes 312-26 and accompanying text.

242 Stowsky, *infra* note 308, at 54-55.

243 U.S. DEPARTMENT OF COMMERCE, INTERNATIONAL TRADE ADMINISTRATION, U.S. DIGITAL CENTRAL OFFICE SWITCH INDUSTRY 45 (1986).

244 BUSINESS AMERICA, *supra* note 238. For example, in 1984, U.S. manufacturers provided 27.3% of French telecommunications component parts. 9 BUSINESS AMERICA 3 (Feb. 3, 1986).

consortium, rather than to an AT&T-Philips joint venture.[245] Malcom Baldrige, then U.S. Secretary of Commerce, criticized the decision, stating that:

> France has foregone a unique opportunity to improve cooperation between our two countries in telecommunications. This decision was very important to the U.S. because the CGCT sale presented the opportunity to participate in the European telecommunications market.
>
> . . . .
>
> . . . This loss of opportunity is particularly regrettable in view of the fact that the U.S. telecommunications market is open to foreign suppliers and investors.[246]

The French Government's decision should have come as no surprise, however, given its traditional preference for French, or at least European, control of industry in general, and telecommunications in particular. For example, the French Government reacted with almost total indifference to the FCC's January 1987 proposal to withhold "type approval" certification from manufacturers whose governments banned U.S. products.[247]

Unfortunately for U.S. suppliers, the French scenario is fairly typical of Europe and Japan today. As discussed above,[248] most European and Asian markets are effectively closed to U.S. manufacturers. The Bundespost has undertaken an ambitious project of converting to digital switching and transmission, but has excluded most U.S. manufacturers.[249] The Swedish Telecommunications Authority also has adopted de facto exclusion of U.S. products, choosing to rely upon domestic supply from L.M. Ericsson.[250] At least in theory, the situation in Japan should be somewhat different, since in late 1984 and early 1985 the Japanese Diet ended NTT's monopoly status and allowed entry by entities similar to OCCs.[251] In fact, exclusion still seems to be the operative approach.

Indeed, even in relatively open and privatized markets such as the United Kingdom, U.S. manufacturers often operate at a significant disadvantage. For example, the British Office of Telecommunications recently adopted streamlined type approval procedures for

---

245 52 ANTITRUST & TRADE REG. REP. 832-33 (1987).

246 *Id.* at 832.

247 Confidential interview with a Senior Official of France Telecom, in New York City (Mar. 16, 1987).

248 *See supra* note 243 and accompanying text.

249 U.S. DEPARTMENT OF COMMERCE, *supra* note 243, at 51.

250 *Id.* at 53-54.

251 *Id.* at 57-58. As with many European PTTs, however, both NTT and newly created private companies have a de facto "buy Japanese" attitude.

most types of customer premises equipment, but did not extend them to PBXs[252]—a market in which Northern Telecom and AT&T are dominant.

A New York State company, Corning Glass, has had particular difficulities in marketing its products abroad. Even though Corning holds basic patents on fiber optic technology, it was prevented from selling its fiber optic products in Japan. In the end, its only way of entering the Japanese market was to license patents to its Japanese competitors.[253] This contrasts with its twenty-three percent share of the U.S. market (second only to AT&T).[254] Even this very limited penetration will not last long, however, since Corning's patents expire by the end of this decade.[255]

To be sure, U.S. hardware manufacturers occasionally have penetrated foreign markets to a small extent. Most sales have been relatively small and often have occurred through U.S. subsidiaries abroad. For example, AT&T has sold approximately $50 million of central office switches to British Telecom, but only in conjunction with Philips.[256] Southwestern Bell has been able to market a few CPE products in the British market, which recently deregulated CPE.[257] And, the Digital Switch Corporation sold $10 to $20 million worth of switching equipment to Daini-DenDen, Inc.[258] As one industry observer has noted:

> I think the cost of penetration is going to be high; it already has been high for Europeans and Japanese coming here. The cost of penetration going abroad for North American companies is going to be high. In the end, if the world is growing at two percent, how in that kind of overall growth is anyone going to gain a greater market share by playing these games, is very much an unanswered question. I would think, most likely, all it's going to do in the end is everyone is going to compete around the world and they will probably will earn less money and the market will be less than they otherwise would have been.[259]

At the same time, however, foreign firms have found it difficult to penetrate the U.S. market for high-end equipment—most com-

---

252 CommunicationsWeek, June 15, 1987, at 14.

253 U.S. DEPARTMENT OF COMMERCE, INTERNATIONAL TRADE ADMINISTRATION, A COMPETITIVE ASSESSMENT OF THE U.S. FIBER OPTICS INDUSTRY 47 (1984).

254 P. HUBER, *supra* note 2, at 14.6.

255 *Id.* at 4.1.

256 Telephony, Jan. 27, 1986, at 68, col. 3.

257 Telephony, June 15, 1987, at 28, col. 3.

258 Telephony, Sept. 16, 1986, at 13, col. 1.

259 CommunicationsWeek, July 27, 1987, at C14.

monly, central office switches and network control equipment.[260] Thus, there is a kind of Mexican standoff between U.S. and foreign telecommunications equipment manufacturers. This is not true for Northern Telecom which virtually has become a U.S. firm by locating a large part of its manufacturing capacity in this country.[261] As one commentator has noted:

> So it's probably incrementally more attractive and somewhat more likely that several or at least a couple non-North American vendors will be able to entice some portion of that buying community [North American telecommunications service providers] to get a piece of that 50 percent world market that is represented here than it is likely that one of our vendors can penetrate a market which is a single buyer off in the postal telephone and telegraph authority and has the decided preference for buying if not local then European or Asian.[262]

Precisely because of all manufacturers' difficulties in penetrating high-end foreign markets, an increasingly common trend is for local and foreign manufacturers to form joint ventures to market foreign goods locally. U.S. manufacturers have taken this approach in Europe, and both European and Asian companies have more recently pursued the same tack in the United States.

This trend has given rise to fears that the BOCs would form unholy alliances with foreign equipment vendors, if the *MFJ* were modified to allow them to enter manufacturing which Judge Greene seems to have no inclination to do.[263] BOCs might be natural partners for foreign manufacturers, since the BOCs not only control their own very large equipment needs, but also lack the substantial R&D necessary to enter the high-end equipment market.[264] Indeed, Judge Greene endorsed this assessment and indicated that this scenario would be contrary to the public interest. He noted that:

> Among its many other undesirable consequences, such a development would further reduce competition in this country, if only because the combination of foreign capital and the Regional Company monopoly position with a captive market amounting to some seventy percent of the total market will prove fatal to whatever independent or smaller producers still survived. Another likely consequence would be a strong detri-

---

260 *See supra* note 217 and accompanying text.
261 *See supra* note 218 and accompanying text.
262 CommunicationsWeek, July 27, 1987, at C14.
263 United States v. Western Elec. Co., 673 F. Supp. 525 (D.D.C. 1987). *See* text accompanying note 121.
264 P. HUBER, *supra* note 2, at 14.15-14.17.

> mental effect on the international competitiveness of the American telecommunications industry and the employment opportunities of American workers.[265]

Judge Greene's reasoning seems somewhat questionable, since most high-end equipment manufacturing must take place relatively close to customers, thus resulting in little or no impact on employment. Moreover, similar arrangements have won praise in the automobile industry.

Given this trend towards foreign companies' joint ventures with U.S. equipment manufacturers, Northern Telecom's role in the United States is unique. Unlike other foreign manufacturers, Northern Telecom has achieved large-scale penetration of the U.S. high-end equipment market (second only to AT&T-Tech in most product lines).[266] Moreover, Northern Telecom has formed few joint ventures with U.S. entities except for purposes of marketing,[267] and manufactures in the U.S. virtually all equipment sold in this country.[268]

Although Northern Telecom is a Canadian corporation,[269] it seems to have pursued an active policy of "going native" in the United States. Almost half of its total work force is located in the U.S.,[270] and its shares are traded on the New York Stock Exchange.[271] Its U.S. employment figures are relatively consistent with U.S. earnings, which account for sixty-five percent of its gross revenues.[272] Northern Telecom has plants in California, Florida, Georgia, Michigan, Minnesota, New Hampshire, New Jersey, Tennessee, and Texas.[273]

Unlike European and Japanese firms, Northern Telecom may have been able to penetrate the U.S. market because it recognized the need for a local presence in selling and servicing high-end telecommunications equipment. One indication of this strategy is its creation of a "university" in Raleigh, North Carolina to train LEC

---

265 United States v. Western Elec. Co., 673 F. Supp. 525, 562 (D.D.C. 1987) (footnote omitted).

266 *See supra* note 218 and accompanying text.

267 Northern markets its products extensively through BOCs and other LECs, and has sold part of its sales organization directly to subsidiaries of Centel and Pacific Telesis. Northern Telecom Ltd., Form 10-K, at 7 (Dec. 31, 1987).

268 Northern Telecom Ltd., 1986 Annual Report, at 5. Confidential interview with a Senior Official of Northern Telecom Ltd., in Washington, D.C. (Sept. 29, 1987).

269 Bell Canada Enterprises Inc., which has substantial holdings in Canadian Telecommunications common carriers, owns 52.3% of Northern Telecom's stock. Northern Telecom Ltd., Form 10-K, at 1 (Dec. 31, 1986).

270 *Id.* at 10.

271 *Id.* at 1.

272 Northern Telecom Ltd., 1986 Annual Report, at 5.

273 Northern Telecom Ltd., Background Information 1-3 (1987).

employees in servicing its equipment.[274] Another, and equally plausible reason for its success may be its early development of a digital central office switch.

Equally interesting is the status of Northern Telecom's employees. In Canada, ninety-eight percent of its workers are union members, while in the U.S., only five percent are union members.[275] One possible inference is that Northern Telecom deliberately has located its plants in "right-to-work"[276] states, in order to be free of unions and pay low wages. Northern Telecom claims that it pays as much as or more than union rates and that it prefers non-union workers only to obviate "management" problems.[277] Northern Telecom's U.S. employees have initiated and won five decertification proceeds in the last decade. A union won only one representation election during the same period.[278]

Whether Northern Telecom's penetration of the U.S. market results from a local presence, early development of a digital switch, low-cost labor or a combination of these factors is unclear. Its almost anomalous success in the U.S. suggests that other foreign equipment manufacturers can and will learn from it.

Moreover, a foreign manufacturer's goal may not just be to enter the U.S. market, but also to acquire U.S. technology. As one observer has commented, "[t]he ultimate aim of many Japanese companies in partnerships with U.S. and European firms is to extract a partner's skills and technology, then reduce the Western partner to a dependent status, or simply break away and compete against the former partner."[279] Other and more compelling reasons exist for creating joint ventures. Due to most PTTs' protectionist attitudes, some type of partnership may be the only way to enter a market. And, as discussed above,[280] marketing of some telecommunications hardware—particularly central office switches—requires a manufacturer to have facilities relatively close to its customers.

---

274 Northern Telecom Ltd., 1986 Annual Report, at 13; Confidential interview with a Senior Official of Northern Telecom Ltd., in New York City (Sept. 29, 1987).

275 Northern Telecom Ltd., Form 10-K, at 10 (Dec. 31, 1986).

276 "Right-to-work" states are states which have passed a statute or constitutional provision which prohibits any person from being "denied an opportunity to obtain or retain employment because he is or is not a member of a labor organization." 51 C.J.S. *Labor Relations* § 10 (1967). If this right is not provided for under state law, an employer is free to condition employment on membership or non-membership in such an organization. *Id.*

277 Confidential interview with a Senior Official of Northern Telecom, in New York City (Sept. 29, 1987).

278 Confidential interview with a Senior Official of Northern Telecom, in New York City (Oct. 20, 1987).

279 Beauchamp, *Use a Long Spoon*, FORBES, Dec. 15, 1986, at 122.

280 *See supra* note 218 and accompanying text.

Again, no statistical information seems to exist, but a few recent examples may be useful. AT&T and Philips recently formed a joint venture with a Spanish telecommunications equipment firm to take over Marconi Espana S.A., which manufactures cable and switching equipment.[281] Honeywell and NEC formed a joint venture to acquire the Groupe Bull in France.[282] Perhaps the most ambitious effort along these lines has been NYNEX's joint venture with Cable & Wireless to construct a transatlantic fiber optic cable.[283] Under this arrangement—recently approved by the FCC[284]—NYNEX will acquire the stock of Private Transatlantic Telecommunications System, Inc. (once known as Tel-Optik, Ltd.), a British firm which previously had entered into a joint venture with Cable & Wireless. The joint venture plans to construct a "Market Link" facility, consisting of two transatlantic fiber optic cables. The first will become operational in 1989 and the second in 1992. Cable & Wireless will handle European marketing and operations, while NYNEX will be responsible for the United States end.[285]

It is interesting to note some smaller-scale examples also. Lynch Communications Systems, Inc. has a joint venture with two Chinese manufacturers to produce network telecommunications equipment in China.[286] United Technologies and AEG-Telefunken created a joint venture to manufacture semiconductors and related electronics.[287] AT&T is a partner with Ricoh in a joint venture created to manufacture and distribute AT&T key telephone systems in Japan.[288]

To the limited extent that it exists, the service side has seen the same trend towards joint ventures, for similar political and economic reasons. Again, no real statistical information exists, but a few examples may be useful. AT&T has joined a consortium of several major Japanese companies in offering value added network services.[289] McDonnell Douglas and British Telecom have formed an entity to offer data transmission in the U.K.[290] Siemens and GTE

---

281 CommunicationsWeek, June 22, 1987, at 12.

282 New York Times, May 19, 1987, at D1, col. 3.

283 Request of NYNEX Corporation for a Waiver to Provide International Telecommunications to and from the United States, Civ. No. 82-0192 (D.D.C. May 1, 1987).

284 CommunicationsWeek, April 27, 1987, at 36.

285 It may be of more than passing interest that both cables originally were to be landed in New Jersey, but that NYNEX now has proposed to land the first cable in New York at Lido Beach on Long Island. *Id.* at 6.

286 Telephony, Oct. 28, 1985, at 77-78, col. 3.

287 Telephony, Oct. 25, 1982, at 23, col. 2.

288 Telephony, Aug. 19, 1985, at 77, col. 1.

289 Telephony, July 22, 1985, at 13, col. 1.

290 Telephony, Dec. 23, 1985, at 26, col. 1.

created a joint venture to offer data transmission services in Europe, Asia and the United States.[291]

As with the foreign penetration of the U.S. market, the overall picture is highly mixed. In terms of high-end products, U.S. companies have achieved only very limited sales abroad. To a certain extent, this is due to the same marketing limitations which foreign companies face in the United States. But foreign, particularly Asian, firms have been much more successful in penetrating the low-end U.S. market.

Only in the last year has Congress even begun to deal with the exclusion of U.S. manufacturers from foreign markets.[292] The legislation would require the United States Trade Representative ("USTR") to identify countries which discriminated against U.S. telecommunications equipment manufacturers in terms of not just outright trade barriers, but also of actual patterns of trade. If the USTR found evidence of discrimination, it would notify Congress, which could adopt trade sanctions.

The effect of the legislation is somewhat difficult to gauge. Many U.S. observers view it as being too little and too late, particularly because of its probably inexorable delays in implementation. Whether or not the legislation passes, it seems unlikely to bring a quick legal fix for U.S. telecommunications equipment manufacturers.

Both formal and informal policies in virtually all foreign countries put U.S. firms at a distinct disadvantage. Whether these trade barriers will lift in the forseeable future is difficult to project, since the U.S. Government has only begun to take action against foreign trade barriers. There seems to be enough nontrade problems, however, to make the near-term prospects of substantial U.S. sales abroad rather dim.

New York State cannot initiate any unilateral action. However, it might include support for trade legislation on its federal lobbying agenda.

IV. Effect of the Telecommunications Industry's Development on the State

As discussed in Part III of this Article, a wide variety of diverse and unrelated considerations impact upon the competitiveness of New York State's telecommunications industry. With these factors in mind, it may be useful to consider the effect of

---

[291] Telephony, July 28, 1986, at 26, col. 1.
[292] H.R. 3, 100th Cong., 2d Sess. (1987); S. 390, 100th Cong., 2d Sess. (1987).

telecommunications upon the State's economy and job market. The results of this analysis may inform any decisions as to what, if any, actions the State should pursue in its treatment of the telecommunications industry.

A. *Cost and Availability of Services*

As discussed in Part II,[293] New York State has a wide variety of telecommunications services. Some are offered by NYTEL; others by new vendors. A detailed discussion of these services' prices and availability would be of little use. However, significant policy questions arise as to these services' availability in terms of both cost and geographic location.

As any consumer knows, the cost of basic telecommunications equipment varies tremendously. Handsets range in price from a few dollars on the street to thousands of dollars for office automation terminals. Naturally enough, large business users have access to the most sophisticated equipment as well as services.[294]

In the abstract, this is nothing more than healthy capitalism and poses no problem. To the extent that high costs prevent some people from having even basic telephone service, issues of "universal service" arise. Although never articulated as a legal requirement, both regulators and LECs generally have assumed that all citizens have a vaguely defined "entitlement" to basic telephone service on inexpensive terms.[295] Traditionally, this has not been a major problem since local exchange service has been relatively inexpensive. A vast majority of U.S. households have telephones. However, the last few years have witnessed substantial increases in the cost of basic telephone service for two reasons: (1) the capital cost of conversion to digital service despite long-run savings; and (2) the redistributive effect of the FCC's access charges.[296] As a result, for the first time an increasing number of households lack telephone service. In New York State, 65,000 households presently have no service and the number is expected to double or triple in the near future.[297] It

---

293 *See supra* note 77 and accompanying text.

294 *See supra* note 89 and accompanying text.

295 M. NADEL, THE CHANGING MISSION OF TELECOMMUNICATIONS REGULATORS AT THE STATE LEVEL 5-8 (1986). For an excellent survey of "lifeline" programs, see L. JOHNSON, TELEPHONE ASSISTANCE PROGRAMS FOR LOW-INCOME HOUSEHOLDS, A PRELIMINARY ASSESSMENT (1988).

296 *See supra* note 37 and accompanying text.

297 Confidential interview with a Senior Official of the Public Service Commission, in New York City (Aug. 15, 1987).

may be necessary to adopt new measures ranging from taxes to "universal service funds" in order to provide universal service. It has been estimated that a guarantee of universal service might currently cost no more than $7 to $10 million per year.[298] The State PSC's recent proposal to make low-cost service available to recipients of public relief is a dramatic first step towards guaranteeing universal service.[299]

Some services simply will not be available because of customers' locations. As the Teleport demonstrated, running a fiber optic network through a dense business district makes eminently good sense despite the high fixed cost.[300] However, providing high-bandwidth transmission to sparsely populated areas obviously makes no economic sense for an entrepreneur and would require precisely the type of cross-subsidy which federal and state regulators have attempted to eliminate for the last decade. As a result, governmental authorities face difficult decisions as to requiring LECs and other service providers to extend high-end service outside of dense urban areas. A "pay as you go" approach for consumers may make sense in many situations, but is not likely to be politically popular. Thus, the U.S. position stands in stark contrast to the Japanese Government's commitment to provide ISDN service to all subscribers.[301]

For both cost and location reasons, some residential and business telephone customers thus will receive better service than others. On the cost front, the dichotomy naturally is in terms of economic status. On the geographic front, however, it largely represents the upstate/downstate split which traditionally has characterized State politics. Neither dichotomy will be easy for legislators or regulators to resolve.

B. *Potential Impact of Increased Telecommunications Revenues on the New York State Economy*

It is difficult to predict whether the State will experience substantial entry of new firms or expansion of existing firms.[302] For a variety of reasons, growth probably will come on the service rather than on the hardware side. New York's relatively high wages and taxes have not attracted telecommunications hardware

---

298 *Id.*

299 New York Times, Aug. 21, 1987, at A1, col. 1.

300 *See supra* note 105 and accompanying text.

301 *See supra* note 211 and accompanying text.

302 *See supra* note 151 and accompanying text.

manufacturers.[303] On the other hand, if the State continues to become an "information hub" or a "gateway" because of its many financial services or related firms, it will naturally require an ever-increasing amount of telecommunications services from established service providers such as AT&T, the OCCs, New York Telephone and new firms like the Teleport.

The State's economy naturally would benefit directly from increased telecommunications service revenues. In addition, new revenues always have a "multiplier" or "trickle-down" effect on other industries. As seen in the Teleport case study,[304] the availability of high-capacity data transmission may encourage non-telecommunications firms to locate in the State, thus creating yet more new jobs.

Any estimate of the multiplier effect naturally is extremely speculative, but some type of effect exists. Wharton Econometric Forecasting Associates, Inc. ("WEFA") prepared a study on New York State in early 1987 on behalf of the New York Telephone Company.[305] Although the study is highly professional, its purpose was to support NYTEL's argument that deregulation of subscriber rates would benefit the State and its citizens by increasing both revenues and jobs. The study is presumably less than totally disinterested. Nevertheless, its analysis of the multiplier effect is interesting.

WEFA estimates a multiplier effect of 1.9.[306] This leads WEFA to conclude that a ten percent decrease in telecommunications rates would result in increased direct revenues of $10.3 billion and increased indirect revenues of $9.1 billion.[307]

There naturally are substantial quibbles with WEFA's results as well as methodology. For example, telecommunications services have become increasingly automated. This creates a very real possibility that the actual number of jobs may stay relatively constant despite an increase in the dollar volume of telecommunications services.[308]

A second study was prepared internally by NYTEL in early 1987, and reached somewhat similar results. The NYTEL study

---

303 *See supra* note 152 and accompanying text.

304 *See supra* note 102 and accompanying text.

305 WHARTON ECONOMETRIC FORECASTING ASSOCIATES, INC., DEREGULATING TELECOMMUNICATIONS: ECONOMIC IMPACTS ON NEW YORK STATE (1987).

306 *Id.* at 14.

307 *Id.* at 29.

308 Stowsky, *The Domestic Employment Effects of International Trade and Telecommunications Equipment* 27 in TRADING FOR JOBS: THE EMPLOYMENT EFFECTS OF INTERNATIONAL TRADE (1987).

found that a five percent increase in high tech industries' output would create an income multiplier of 1.88, an employment multiplier of 1.56, and an output multiplier of 1.54.[309]

This type of econometric modeling does not lend itself to certainty. Whether the proper multiplier is 1.54 or 1.90, an increase in telecommunications service revenues clearly would have a substantial impact upon the State's economy and job market.

The internal NYTEL study also estimated the amount of telecommunications services used by each of 104 Standard Industrial Classification ("SIC") "industry sectors" within the State, as a percentage of their total expenses. Table XIII lists the top twenty industry sectors in terms of their demand for telecommunications services.[310]

As would be expected with any study using the very broad SIC definitions, the data do not pinpoint particular industries. Nevertheless, the fact that several financial services sectors such as banks, brokers and investors are among the most intensive users of telecommunications services confirms intuitive expectations that the State's financial services firms make the heaviest use of telecommunications services. Usage by "business services" is also high, since that category comprises pure service firms such as lawyers, doctors and accountants. If these firms continue to expand, they will need increasingly large amounts and sophisticated types of telecommunications services. In turn, higher revenues from providing telecommunications services to them will have both a direct and multiplier effect upon the State's economy and job market.

Thus, a chicken-and-egg situation exists with the State's telecommunications service providers and users. The financial services sectors will make escalating demands for telecommunications services. Telecommunications service providers presumably will market larger amounts and more sophisticated types of services.

The key question here is whether demand and supply will increase in concert. The current U.S. laissez-faire philosophy would contemplate a hands-off approach on the theory that the marketplace will respond to new needs. However, an industrial policy approach such as Japan's[311] would dictate governmental

309 NEW YORK TELEPHONE COMPANY, REGIONAL FORECASTING SYSTEM (draft 1987).
310 *Id.*
311 *See supra* note 207 and accompanying text.

supervision or at least encouragement of telecommunications service providers to insure that they are capable of serving financial services firms. The State can spur the development of telecommunications services and the location of service providers within the State in a number of ways. Whether or how it chooses to do so is a policy question.

C. *Labor Issues*

With the increasing amount of automation on both the hardware and services sides, such as the use of computers for switching and network control functions, the total number of employees necessary for the telecommunications industry has declined steadily. This decrease is most dramatic on the hardware side for several reasons. First, the number of employees necessary to produce most types of telecommunications equipment has declined. For example, an old-fashioned crossbar switch required 3,250 employees to produce, a more modern analog switch required 1,250 and a state-of-the-art digital switch requires 120.[312] This is reflected in the fact that total telecommunications equipment manufacturing employment increased ten percent between 1984 and 1985 but more than half of the 53,000-job increase involved engineers and technicians.[313] Thus, total telecommunications industry employment may stay relatively stable or even increase somewhat, but probably at the cost of traditional blue collar jobs.

Another reason for this result simply is the higher level of wages in the U.S., and, for that matter, most of Europe, as compared to a number of Asian countries. As Table XIV indicates, wages in North America are the highest in the world.

The combination of automation, wage levels, and other factors makes it virtually impossible for U.S. manufacturers to compete with foreign firms, particularly in Asia, in the production of low-end equipment, such as telephone handsets.[314] Perhaps the most dramatic example of this phenomenon was AT&T's recent layoff of 1,877 workers in Shreveport, Louisiana and its transfer of handset manufacturing operations to Singapore.[315] It is thus hardly surprising that only two companies currently manfacture handsets in the United States and that both companies are ori-

---

312 Stowsky, *supra* note 308, at 25.
313 *Id.*
314 Stowsky, *supra* note 308, at 45.
315 *Id.* at 31.
316 *Id.* at 45-46.

Table XIII

SELECTED INDUSTRIES' TELECOMMUNICATIONS USE

Industry Sector	Percent of Budget Spent on Telecommunications
Business Services	6.469
Transportation Services	3.082
Finance	2.646
Hotels and Other Lodging Places	2.326
Communication	1.998
Wholesale Trade	1.886
Education & Nonprofit	1.740
Insurance	1.494
Printing & Publishing	1.340
Lumber, Hardware, Farm Equipment	1.292
General Merchandise Stores	1.292
Food Stores	1.292
Automotive Dealers	1.292
Gasoline Service Stations	1.292
Apparel & Accessory Stores	1.292
Furniture Stores	1.292
Miscellaneous Retail Stores	1.292
Automotive Repairs	1.219
Medical Services	1.070
Amusement & Recreation	1.052
Air Transportation	1.049
Real Estate	0.224

Source: Company files, New York Telephone Company, New York, N.Y.

ented exclusively toward the high-end business market.[316]

The picture is somewhat different on the high-end equipment side such as fiber optics, central office switches, network control equipment, key telephone systems and business telephone terminals. As indicated above,[317] fewer and fewer employees are required to manufacture sophisticated equipment. However, increasing amounts of sophisticated equipment, primarily fiber optics, central office switches and network control equipment, are necessary as the United States converts to digital telecommunications. Moreover, many of these items, particularly central office switches, which can cost $10 to $20 million apiece, must be tailored to each user's specifications. This highly com-

317 *See supra* note 312 and accompanying text.

Table XIV

HOURLY WAGES FOR EMPLOYEES IN TELECOMMUNICATIONS EQUIPMENT MANUFACTURING

Country	Wage
United States	$11.90
Canada	10.20
Belgium	9.89
West Germany	9.87
The Netherlands	9.55
Sweden	8.58
France	7.78
Italy	7.63
United Kingdom	5.89
Japan	5.54
Taiwan	1.31
South Korea	1.29

Source: U.S. Department of Commerce, International Trade Administration, *A Competitive Assessment of the U.S. Digital Central Office Switch Industry* 79 (1986). These figures do not reflect either changes in currency exchange rates or the fact that in most foreign countries, benefits are paid by the government rather than the corporate entities thereby increasing the amounts set out.

plex equipment, which is the equivalent of a supercomputer, requires constant monitoring, maintenance and adjustment in order to function efficiently. As a result, manufacturers must locate relatively close to potential customers in order to acquire their business. This naturally puts foreign firms at a significant disadvantage[318] unless they locate a plant in the U.S. or enter into some type of joint venture.[319]

In terms of high-end equipment, there has been a move towards custom production, tailored to a buyer's particular needs.[320] This type of production requires more managers and engineers than in the past, but fewer skilled production workers,[321] which again cuts into the traditional role of blue collar workers. There is a declining demand for workers with skills to build or maintain traditional switches and an increasing need for engineers and managers.

Much less data exists with which to analyze the service side of the industry than the hardware side. On the one hand, the

318 Stowsky, *supra* note 308, at 48.
319 *See supra* note 269 and accompanying text.
320 Stowsky, *supra* note 308, at 6.
321 *Id.* at 27.

demand for additional lines presumably generates employment in terms of both installation and maintenance. The demand for maintenance depends upon the number of consumers who elect to lease rather than buy and service their CPE. The trends are not yet clear, particularly with regard to business users. However, modern telecommunications equipment requires less day-to-day supervision than older equipment. An old-fashioned crossbar required thirty to forty people to maintain it while a computerized digital switch may need only two or three.[322]

On the other hand, the labor picture does not end with the telecommunications industry. Increased revenues in the telecommunications industry have a multiplier effect upon other industries.[323] It is difficult to determine the exact impact of this effect. The WEFA study[324] uses a multiplier effect of 1.9 to predict that a ten percent decrease in telecommunications service prices would create 32,777 new jobs by 1989 and 67,543 new jobs by 1995 in New York State.[325] One possible scenario is that the number of jobs within the telecommunications industry will remain relatively stable or even increase during the foreseeable future, but with fewer skilled jobs and more jobs in both the supervisory and unskilled categories.

These developments would have relatively little impact on New York State, since most job changes and losses will come in the hardware rather than in the service portion of the industry. Aside from Corning Glass, whose share of the fiber optics market is declining steadily,[326] New York State basically has no telecommunications hardware industry. In terms of employment, the State may face a future in which hardware jobs are almost irrelevant, the number of service jobs remains stable or increases slightly and telecommunications revenues have a substantial multiplier effect on the economy.

V. Conclusion

Many factors impact upon the nation's and the State's telecommunications industry. Having identified most of the relevant considerations, the final question is whether and to what extent the State can plan and control the industry's future development.

In defining the State's role, vis-a-vis the industry, it is impor-

322 Technology Assessment, *supra* note 177, at 244.
323 *See supra* note 306 and accompanying text.
324 Wharton Econometric Forecasting Associates, *supra* note 305.
325 *Id.* at 33.
326 *See supra* note 253 and accompanying text.

tant to note that government generally has two major planning goals. The State's traditional objective has been to implement *telecommunications policy*, primarily through the PSC and the courts.[327] This task generally has centered upon insuring reasonable rates and adequate service. Whatever other goals the State may attempt to implement, the PSC presumably will continue to enforce its traditional mandate. The types of firms and service may change, but not the underlying policy of consumer protection.

On the other hand, the State might also play a new and affirmative role in terms of *industrial policy*.[328] Namely, it could shape the industry to improve the State's general economic welfare. There are at least two possible industrial policy goals. First, the government might attempt to encourage telecommunications firms to locate within the State in order to increase overall revenues and employment. Telecommunications firms not only affect the State's economy directly, but also have a "multiplier" effect in terms of both income and jobs.[329] To this extent, a telecommunications firm is no different from any other type of business.

Also, the State might try to develop the telecommunications industry in order to benefit the State's general economic infrastructure. For example, sophisticated transmission networks encourage information-intensive firms, such as in the financial services sector, to locate facilities within a state. This approach naturally has a far greater multiplier effect than just attracting another factory to a state. However, it is also much more challenging and requires a state to take much more creative and affirmative steps than under traditional industrial development policies.

In considering this second leg of industrial policy, it is important to keep in mind that manufacturing and transmission firms respond to different incentives. Telecommunications manufacturers, including enhanced service providers ("ESPs") for purposes of this analysis, are concerned primarily with bottom-line questions of taxes, wages, and the like. Transmission networks have somewhat captive customers, but they may not make the long-term investments necessary to serve a state's economic

---

[327] *See supra* note 77 and accompanying text.

[328] For a thorough discussion of state-level options in industrial policy, see McGahey, *State Economic Development Policy: Strategic Approaches for the Future*, 15 N.Y.U. REV. L. & SOC. CHANGE 43 (1986-87).

[329] *See supra* note 305 and accompanying text.

infrastructure without the promise of long-term profits. It is thus useful to consider the manufacturing and transmission segments of the industry separately.

Some observers believe that an economic system must have both manufacturing and transmission firms in order to be viable.[330] This proposition is less than self-evident so long as transmission networks have access to a competitive equipment market with reasonably priced equipment. Since the high-end market in the United States is intensely and increasingly competitive, it may be more important to attract transmission networks than equipment manufacturers to the State. Once again, the multiplier effect from transmission services seems to be much higher than that from manufacturing.[331]

Unlike transmission networks, equipment manufacturers need not co-locate with their customers. To be sure, some degree of proximity, within the same nation or region, is necessary for them to service their high-end equipment. Precisely because of this factor, foreign manufacturers have experienced extreme difficulties in penetrating the U.S. market, except through joint ventures with domestic firms.[332]

At the same time, U.S. manufacturers have been largely unable to exploit the export market, because of most other countries' explicit or implicit barriers to U.S. products.[333] One method of improving the general competitive posture of U.S. manufacturers would be to open up the world market. So far, however, the Administration has shown little inclination to put real pressure on foreign governments. Congressional attempts to move this process along have seen little success.[334] One item on a state government's agenda might be supporting the industry's general clamour for action on the export front. Although it could throw little weight onto the foreign policy scales, a state's pressure presumably would have some impact.

The chief domestic restraint on new entry into manufacturing has been the *MFJ* prohibition on manufacturing by the seven RBOCs.[335] Allowing the RBOCs to manufacture equipment nat-

---

330 M. BORRUS, *supra* note 209, at 1.

331 *See supra* note 305 and accompanying text.

332 *See supra* note 279 and accompanying text.

333 *See supra* note 251 and accompanying text. Interestingly enough, a recent study found that state officials were more concerned than business or academic leaders with the impact of trade issues. NATIONAL GOVERNORS' ASS'N CENTER FOR POLICY RESEARCH & THE CONFERENCE BOARD, THE ROLE OF SCIENCE AND TECHNOLOGY IN ECONOMIC COMPETIVENESS 45-47 (1987).

334 *See supra* note 225 and accompanying text.

335 *See supra* note 120 and accompanying text.

urally would increase the total number of manufacturing firms, but it might not increase the total size of the equipment pie. This consideration is particularly significant for the State, since NYNEX is the largest RBOC, and potentially one of the most substantial entrants. Another strategy for a state might be urging Judge Greene to ease the ban on manufacturing, either at the 1990 triennial review or by way of a separate waiver proceeding before then. It seems unlikely that a state's intervention would be outcome-determinative by itself, but it might carry more weight than a corporate entity's self-interest.

Two obvious caveats are in order. First, repeal of the manufacturing prohibition would not guarantee that an RBOC would set up shop within a particular state. A state's support would need to be conditioned on an RBOC's guarantee to locate a minimum amount of its manufacturing capacity within the state.

Second, an RBOC might go into the manufacturing business by means of a joint venture with a foreign firm. The RBOC itself would be a guaranteed market—almost the size of the French or German national market. In turn, the foreign firm could provide the multi-billion dollar R&D work necessary to design high-end telecommunications equipment. Indeed, Judge Greene found this type of partnership inevitable and viewed it as a reason for retaining the manufacturing ban.[336] It is somewhat less than self-evident that an RBOC-foreign firm joint venture harms the public interest. Although some of its profits obviously would flow abroad, a partnership presumably would keep employment and related benefits in the United States. In this respect, it would merely follow the pattern in the automotive industry, which has been generally acclaimed. Moreover, it would seem preferable to off-shore manufacturing by U.S. companies, such as AT&T's shift of handset manufacturing to Singapore.

On a more specific level, manufacturers face real economic disincentives in New York State—high taxes and wages.[337] The State might alleviate the problem by granting tax abatements for equipment manufacturers, as New York City did for the Teleport.[338] Tax relief might include immunity from both corporate income and real property levies. Similarly, the Public Service Commission might structure attractive tariffs for intrastate transmission services, to induce manufacturers to locate within the

---

336 *See supra* note 265 and accompanying text.
337 *See supra* note 152 and accompanying text.
338 *See supra* notes 110-12 and accompanying text.

State. The State could also create an authority with power to issue bonds, in order to offer below-market financing. Whether any or all of these approaches would overcome the State's traditional high-cost status is unclear. A further study of manufacturing firms' costs in New York State as compared to other states would be necessary to reach any reliable conclusions.

Since enhanced service providers also do not need to operate close to their customers, similar considerations apply to their location decisions. In this context, the *MFJ*'s ban on RBOCs' offering enhanced services[339] is relevant. Judge Greene was slightly more sympathetic to the RBOCs in this respect, by allowing them to provide at least "gateway" services for videotex offerings.[340] Since the RBOCs are natural entrants into the enhanced services market, one strategy might be for a state to support its local RBOC's attempt to eliminate the ESP restrictions either at the next triennial *MFJ* review or by a waiver request. This approach naturally requires an initial determination that an RBOC is more likely than new ESP entrants to develop this market and thus to create revenues as well as jobs. This conclusion is by no means clear at present. As with support for an RBOC's attempt to enter the manufacturing business, state support naturally would need to be conditioned upon an RBOC's guarantee of locating significant ESP facilities within the state. Unlike the situation with equipment manufacturing, there would be little prospect of RBOC-foreign firm joint ventures. Due to differences in technology, language, and culture, few foreign firms have had any success in selling enhanced services in the United States.[341] And, as noted above,[342] the danger of RBOC-foreign firm partnerships generally seems overblown.

The considerations in developing transmission services are far different. Location decisions are almost totally irrelevant, since networks, particularly LECs, obviously must base significant amounts of plant within a state in order to serve customers there. A certain amount of discretion may exist in terms of situating the costly switches necessary for interexchange service. For example, an RBOC may be able to locate some central office switches and network control equipment in an adjacent state with attractive tax or other policies. In a large state like New York,

---

339 *See supra* note 124 and accompanying text.

340 *See supra* note 131 and accompanying text.

341 *See supra* note 237-40 and accompanying text.

342 *See supra* note 340 and accompanying text.

however, these oppportunities are limited because of the large amounts of switching capacity necessary to serve urban areas.

Since LECs and other transmission networks are unable or unlikely to flee the jurisdiction, an important state policy is to encourage them to provide the sophisticated, high-capacity networks necessary to promote the economic infrastructure's growth—particularly in the financial services sector. On this point, federal policy is closely aligned with state interests. The FCC is attempting to force the RBOCs to implement high-capacity networks, through its requirement of ONA, which enables the LEC to accommodate virtually any type of enhanced service.[343]

This goal is significant in New York State due to its heavy concentration of information dependent businesses. Moreover, NYNEX may be particularly well positioned to build sophisticated networks, since it traditionally lagged behind the other RBOCs in implementing electronic switching.[344] Unlike other RBOCs, it can leapfrog directly into digital switching, avoiding the interim stage of non-digital electronic switching.

At present, the RBOCs are less than delighted with the advent of ONA and sophisticated networks. From the RBOCs' point of view, these developments represent huge current costs, whose future profits are unclear. Therefore, the RBOCs have attempted to delay implementation of ONA.[345]

There are both carrot and stick methods of encouraging the RBOCs to expedite implementation of sophisticated networks. A state might take an active advocacy role on ONA before the FCC and the courts—not a move to be received favorably by the RBOCs. On its own, a state could create incentives for an RBOC to create high-capacity networks. Tax abatements naturally would ease the pain of major capital investments. Since state governments generally are major customers, long-term commitments to use a minimum amount of transmission capacity would allow RBOCs to make firm financial plans. Another possibility is for a PSC to give an RBOC favorable rate base treatment of capital costs through accelerated depreciation. This approach has some risky political consequences, since it would increase customers' rates. Finally, as with equipment manufacturers, the availability of below-market loans would make the process more palatable.[346]

---

343 *See supra* note 131 and accompanying text.
344 *See supra* note 95 and accompanying text.
345 *See supra* note 133 and accompanying text.
346 *See supra* note 154 and accompanying text.

A state's concerns in developing the industry's manufacturing and transmission segments are quite different. On the manufacturing side, a state's industrial policy is presumably the same as in developing any other business, namely, the creation of revenues and jobs. On the transmission side, however, the paramount consideration is the networks' ability to encourage the growth of a state's economic infrastructure.

There are no sure solutions for achieving either of these goals. The above examples suggest alternatives. One conclusion is clear: if the State is to reach any of these results, it must be more creative and affirmative than it has been in the past. It may be time to apply industrial policy to the telecommunications industry in order to facilitate economic growth.