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PRIVATIZATION, DEREGULATION, AND COMPETITION: LEARNING FROM THE CASES OF TELECOMMUNICATIONS IN NEW ZEALAND AND THE UNITED KINGDOM

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FOREWORD

Regulators may gain insights into the policy debate surrounding the effects of competition on prices and universal service by examining policies adopted in countries that have privatized and deregulated their state-owned telephone companies. New Zealand and the United Kingdom are two such countries that have attracted Regional Bell Holding Companies (RBHCs) into their markets.

The approaches to deregulation and privatization in these two countries markedly differ. This study examines what is to be learned.

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CHAPTER 1

INTRODUCTION AND SUMMARY

Policymakers, legislators, and regulators may gain significant insights into the policy debate surrounding the effects of competition on prices and universal service by examining policies adopted in countries that have privatized and deregulated their state-owned telephone companies. New Zealand and the United Kingdom are two such countries that have attracted the entry of Regional Bell Holding Companies (RBHCs) into their telecommunications markets. The approaches to deregulation and privatization in these two countries markedly differ. Today, New Zealand's telecommunications market has a market structure similar to that of the United States prior to divestiture in that there is one nationwide, integrated provider of toll and local exchange service, several long-distance competitors, and some local-exchange competition for large business customers. The New Zealand government is relying on its antitrust laws to mitigate the exercise of monopoly power that harms competition. The United Kingdom, on the other hand, has used line-of-business restrictions with time limits and interconnection discounts to incubate competitors of British Telecom (BT), the privatized state company. The experience in the United Kingdom is particularly instructive because it provides evidence regarding how opening and promoting competition in the local exchange market affects universal service. The United Kingdom experience is also of interest because the RBHCs have also found themselves in the awkward position of having to argue in favor of policies in the United Kingdom that they had adamantly opposed in the United States. This situation differs substantially from the situation in New Zealand where many of the issues the RBHCs face are similar to those they have faced in the United States over the past fifteen to twenty years.

One important insight gained from this report is that policymakers, legislators, and regulators have often focused too much on infrastructure issues and too little on market structure issues. Market structure refers to the number of firms in a market and their size distribution. Market structure is important in that it is a primary factor that affects the range of possible pricing and strategic behaviors that firms can pursue. By promoting entry into

cable telephony, the goals of an increased take-rate for telephony and a reduction in residental local and toll rates has been realized.

Major Findings

Local exchange competition and universal service can be compatible policy goals and relieve the regulator of having to decide what competitive outcomes might look like. In the United Kingdom, local exchange competition of cable-telephone companies in joint ventures with RBHCs have extended the penetration of telephone services households. The plan of BT to raise local exchange rates and reduce toll rates has been circumscribed by competitive market forces. Today, BT recognizes that if local exchange rates are raised, it will lose more customers to the cable-telephone companies, while foregoing the contribution to overheads and profits from the lower prices for toll. The extent to which the British-style line-of-business restriction on BT plays a role in this outcome is not clear. The line-of-business restriction was placed on BT in order to promote capital attraction for the cable-telephony operators. Some RBHCs cite the business restrictions as a positive reason for entering the United Kingdom.

Local exchange competition is compatible with maintaining quality of service. There is little evidence that competition in the local exchange market or any telephony market will result in a decline in the quality of service. Competition among rival providers will likely occur along the dimensions of quality of service, as well as service offerings and prices. Both New Zealand and the United Kingdom have experienced improvements in the quality of service since privatization because the technical and operational efficiency of the privatized firm has improved. There is limited evidence that competition helped spur these improvements further.

It is difficult, if not impossible to demonstrate that foreign investments by the RBHCs had any substantive effect on U.S. domestic investment. Several reasons for the inability to draw such conclusions are given in this report.

The RBHCs are entering foreign countries by investing in their core expertise, telecommunications services. A number of strategic motives beyond simply making money

are discussed. This entry into their core expertise reduces the risk exposure of the companies' U.S. customers because the risk of failure is greatly reduced.

The Court of Appeal of New Zealand rejected the efficient component pricing model because of the risk of integrating monopoly profits into interconnection charges. The competitive experiences in the United Kingdom re-enforces this conclusion as negoatiitations regarding interconnection charges has changed markedly since the entry of cable-telephony providers.

Table 1-1 summarizes an number of outcomes along various market dimensions as the result of policies adopted by the governments of New Zealand and the United Kingdom. In addition, the following eleven points summarize the authors' findings.

Organization of the Report

The remainder of this report is organized into five chapters. Chapter 2 presents reasons for the growth in joint ventures and foreign investments. In chapter 3, the market structures and regulatory processes in New Zealand and the United Kingdom are explained and discussed. Market structure and the extent of regulatory oversight in these countries largely determines the type of pricing and strategic behaviors that a company can and will pursue. Chapter 4 continues the theme of chapter 3 by examining the pricing issues that the governments in New Zealand and the United Kingdom have faced as the result of their privatization and deregulatory efforts. A clear and definitive relationship between market structure and the types of pricing issues that have been faced in these countries is demonstrated. In chapter 5, the performance of the telecommunications markets in New Zealand and the United Kingdom is examined in terms of profitability, quality of service, and the promotion of universal service. Finally, in chapter 6, a number of policy implications from the earlier chapters are addressed.

TABLE 1-1

COMPETITIVE COMPARISION OF RESULTS FOR NEW ZEALAND AND THE UNITED KINGDOM

Market Activity	New Zealand	United Kingdom
Residential rates	Rates increased 30 percent in real terms prior to privatization, subsequently Telecom deregulated, privatized. Telecom can not increase the real price.	Rates increased under price caps prior to 1991. 1991 cable telephony begins and this reduces ability of BT to raise the rates. Cable companies providing service for a lower price than BT.
Quality of service	Improves with deregualtion and competition in toll market.	Improves with deregulation and competition.
Business rates	Toll rates decline with competition. Local measured service introduced for business customers.	Toll rates decline with competition.
Household penetration	Decreases due to increase in exchange rates. Decrease not statistically significant.	Increasing, rivalry at local level drives firms to look for new residential customers.
Profits	High profit rate for NewZealand Telecom—23.6 percent return on euqity in 1993. Clear Communications, entrant to interexchange market, also profitable.	BT profitable under price caps; because of large profits, regualtory agency established 7.5 X factor under price caps. Cable telephony not yet profitable; penetration too low.
Toll rates	Decline due to rate rebalancing and competition in interexchange market.	Decline due to rate rebalancing and competition in interexchange market.
Cable telephony penetration	No cable telephony.	Thirty percent of cable television subscribers take service; six percent of households passed.
Toll bands	Larger price devline on high-volume routes. Convert rate schedule from three to four time periods.	Maintenance by BT of uniform nationwide rates; BT shifted from four to three time periods.
New toll entrants	Largest entrant Clear Communications (partially owned by MCI); other entrants beginning business.	For seven year period, government only allows one rival to BT. After 1991, entry restrictions lifted. AT&T, Sprint, and networks.
New cable entrants	Cable television in few markets, greater reliance onsatellite and other over the air technologies. Sectrum not scarce in this low densely populated market.	Cable companies provided exclusive franchise and government prohibits BT from selling entertainment services. Almost all entry into cable telephony financed by US and other foreign telephone companies.

Source: Authors' construct.

CHAPTER 2

REASONS FOR THE GROWTH IN JOINT VENTURES AND FOREIGN INVESTMENTS

The annual reports and 10-K filings of the RBHCs and other telecommunication companies provide clear statements of the directions that these companies are taking. These documents indicate that in the past few years, these companies have decided to focus on their core area of expertise—telecommunications. Immediately after the divestiture of the American Telephone & Telegraph Company (AT&T), these firms diversified into new lines of business, such as real estate, finance, and computer retail operations. Because these ventures largely failed to turn a profit, and because prospects for future profits were bleak, the firms have been selling off these noncore businesses.[1] Recently, the RBHCs and other telecommunications providers have been concentrating investment dollars on expanding into new telecommunications markets and improving their positions in markets in which they already have a presence.

A notable number of these companies have made substantial foreign investments, particularly in joint ventures with telecommunications, entertainment, and computer firms. Joint ventures have provided an effective tool for combining the assets of different firms in order to provide products.

In the past decade, both the academic press and the business press have given much attention to the proliferation of joint ventures in research and development intensive

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[1] Raymond Smith, Bell Atlantic, Remarks at Philadelphia Analysts Luncheon, December 2, 1992, 13; William O. Albertini, Bell Atlantic, Remarks at New York Society of Security Analysts Luncheon Meeting, October 29, 1992, 6; Bell Atlantic, Investor's Reference Guide, April 1992, 52-3; Standard and Poor's, "Credit Week," July 19, 1993, 56; Moody's Corporate Credit Report, "Bell Atlantic," March 1993, 4; NYNEX, FORM 10-K, year ended December 31, 1993, 6; NYNEX, "1993 Summary Annual Report, The Power of Communications: Keeping You in Touch with Tomorrow," 3; U S WEST, 1993 Annual Report, 5, 21; U S WEST, Inc., Security and Exchange Commission, FORM 10-K, December 31, 1993, 5; and Office of Technology Assessment, U.S. Congress, "U.S. Telecommunications Services in European Markets," 8, 87.

industries. In rapidly changing fields, such as computers, telecommunications, and pharmaceuticals, firms have established contractual relations with other companies as a way of saving on transaction costs, obtaining access to certain knowledge, and gaining strategic advantages.

According to Benjamin Gomes-Casseres, joint ventures provide transaction cost savings because firms are able to trade skills at a lower cost than would otherwise be incurred in negotiating, monitoring, and enforcing a contract. Gomes-Casseres states that joint ventures also permit firms to develop new skills, not merely trade the output of existing capabilities at low cost. The alliance allows the firms involved to quickly develop and learn new skills through cooperative behavior. Finally, according to Gomes-Casseres, an alliance can be viewed as strategic in the sense that it "help[s] a firm overcome or create marketing barriers to entry."[2]

Gomes-Casseres describes three motivations for companies to enter into joint ventures (1) transaction cost savings, (2) organizational knowledge, and (3) strategic behavior. According to Gomes-Casseres, these motivations are not mutually exclusive.[3] Accordingly, the relative importance of the various factors that motivate the RBHCs and other companies in establishing foreign joint ventures is not identified. However, the following ten factors help explain the motivations for a large share of these foreign joint ventures:

1. Competitive Synergism
2. Avoid Line of Business Restrictions
3. Legal Restrictions on Foreign Ventures
4. Learn New Markets

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[2] B. Gomes-Casseres, "Computers: Alliances and Industry Evolution," in *Beyond Free Trade*, ed. David B. Yoffie (Cambridge: Harvard Business School Press, 1993), 111-12. These market barriers can take the familiar form of government regulations that impede entry, or else they can show up as a lack of knowledge regarding the customers and the culture of a foreign country. Eugene Sekulow, Remarks at the International Telecommunication Union Regulatory Symposium 59 (October 1991).

[3] Gomes-Casseres, "Computers: Alliances and Industry Evolution," 111-12.

5. Market Growth Potential
6. Expand Customer Service Globally
7. Exporting Expertise
8. Exploit Economies of Scale and Scope
9. Imitators Follow Innovators
10. Experimenting in New Markets

Competitive Synergism

The most common explanation for joint ventures is that they allow firms to combine their particular strengths so that the value of the resulting combination is greater than the value of the sum of the parts. For example, in its 1993 Annual Report, MCI expressed the opinion that "...as telecommunications, computing and entertainment converge, no one company will have the infrastructure and skills to go it alone. Alliances with complementary companies give both companies access to capital, talent and resources that would take too long for either to develop alone quickly enough in today's fast-changing world."[4] Another example would be the partnerships established by Time Warner and U S West to take advantage of the two firms' complementary talents. U S West has experience with two-way networks, providing service to medium and large business customers, and transaction-based billing. Time Warner has expertise in obtaining, marketing, and delivering entertainment services over cable.[5]

Avoid Line of Business Restrictions

One reason for the RBHCs and other firms to invest abroad is that they are not impeded in foreign markets by the Modification of Final Judgment's Line of Business Restrictions and Congressionally imposed prohibitions on provision of entertainment services.[6]

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[4] MCI, 1993 Annual Report 18 (1994).

[5] Tom Pardun, "Opinions," *Network World,* May 2, 1994, 76.

[6] The RBHCs provide local service to approximately 80 percent of the telephone subscribers in the United States. The RBHCs were divested from AT&T in 1984 as a result

In its 1992 Annual Report, U S West stated that through its international investments, particularly in the United Kingdom, it was able to participate directly in the convergence of

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of a court-modified consent decree between the United States Department of Justice and AT&T. The Modified Final Judgment (MFJ) states that the RBHCs may not "provide interexchange telecommunications services or information services...manufacture or provide telecommunications products or customer premises equipment...; or...provide any other product or service, except exchange telecommunications and exchange access service, that is not a natural monopoly service actually regulated by tariff." *United States* v. *American Tel. & Tel. Co.*, 552 F. Supp. 131, 227-28 (D.D.C. 1982), *aff'd sub nom. Maryland* v. *United States*, 460 U.S. 1001 (1983). These constraints on the RBHCs are known as the "line of business" restrictions. In 1988, the United States District Court for the District of Columbia lifted the information service restriction. *United States v. Western Electric Company, Inc.*, 714 F. Supp. 1 (D.D.C. 1988).

The Congressional prohibitions on telephone companies providing entertainment services are discussed *infra* at 84.

Antonello Zanfei has argued that the line of business restrictions have driven the RBHCs abroad. Zanfei notes that the independent telephone companies, which do not face similar restrictions, have been less active abroad. A. Zanfei, "Collaborative Agreements and Innovation in the U.S. Telephony Industry," in *The Economics of Information Networks*, ed. C. Antonelli (New York: Elsevier Science Publishing Co., 1992), 229-51.

In the authors' opinion, the lack of line of business restrictions on the independents and the lower level of international activities by independents do not strongly support a conclusion that the line of business restrictions have driven the international investments of the RBHCs. Other large local exchange companies have been investing outside of their domestic markets. Alfred Thimm has pointed out that "BT, DBP Telekom and France Telecom have adopted the outlook and strategies of the regional Bell holding companies: keep up a rear guard fight to maintain the dwindling monopolistic position, but act aggressively in the global market to eliminate vestiges of (somebody else's) anticompetitive protection in order to share fully in the profitable, growing global market of network management, value-added services, and value-added networks." *America's Stake in European Telecommunication Policies* (Westport, Conn.: Quorum Books, 1992) 213. These three companies are operating in domestic markets where their opportunities for growth are limited relative to foreign opportunities. Furthermore, like American telecommunication companies, they are expanding abroad so they can have a presence in other countries if they are to succeed as international players. BT's foreign investments, like the RBHC's, may be influenced by line of business restrictions. Like the RBHCs, regulators have established rules that prohibit or impede BT from providing entertainment services.

For a further discussion of the international activities of these foreign telecommunications companies, see Richard L. Hudson, "European Phone Companies Reach Out for Partners: Competition, Technology Spur Scramble for International Alliances," *Wall Street Journal,* September 30, 1993, sec. B, 4 (E).

cable television and telecommunication without the domestic inregion constraints. Southwestern Bell stated in its 1992 Annual Report that in choosing international ventures, it looked for high growth potential and less restrictive regulations than exist in the United States.

Legal Restrictions on Foreign Ventures

Foreign regulatory barriers also provide American firms an incentive to enter into joint ventures. Other nations have enacted rules that discourage American firms from establishing wholly owned subsidiaries in foreign countries; but these regulatory barriers can be overcome through partnership. By pairing with European telephone companies, the Americans become subject to the same rules as other European Community corporations.[7]

Learn New Markets

Joint ventures and solo ventures abroad provide American companies an opportunity to learn about "the (foreign) market, the culture, and the players."[8] In its 1993 Annual Report, NYNEX stated that it had acquired a 23.1 percent equity stake in Orient Telecom & Technology Holdings Ltd., and this investment would enable the company to explore and develop telecommunications opportunities in the People's Republic of China.

High Growth Potential

Many foreign markets have not reached the same level of maturity as the American market. For example, the ratio of main lines per hundred inhabitants in North America is more than six times higher than the same ratio in some Asian, European, and Latin American countries. These markets have the potential to achieve higher growth rates than the domestic

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[7] James Mark Naftel, "The Natural Death of a Monopoly: Competition in EC Telecommunications Terminals Judgement," 6 *Emory Int'l L. Rev.* 449 (1992), at footnote 194.

[8] Global Forum, "How BellSouth Links the World," January 1994.

American market.[9] Southwestern Bell devoted a substantial portion of its 1993 Annual Report to a discussion of its investment, along with Grupo Carso and France Telecom, in Telefonos de Mexico (Telmex). The report noted that since 1990, Telmex's access lines increased 42 percent, to 7.6 million, and were projected to continue growing more than 10 percent a year, compared to approximately 3 percent in the United States. In its 1992 Annual Report, U S West stated that it was working with Time Warner and United International Holdings to develop cable television systems and programming in Hungary. The report noted that more than 250,000 Hungarians subscribed to the partnership's cable television services, an increase of 77 percent over 1991. AT&T noted in its 1993 Annual Report that there were only two phones for every one-hundred people in China. The report also stated that in order to meet China's goal of increasing phone service twentyfold by 2020, 15 to 17 million lines would have to be installed annually over the next twenty-seven years.

The RBHCs are also investing in European markets, especially the United Kingdom, where the voice telephone market is comparatively mature. Nevertheless, because of the potentially large market in entertainment services, as well as the opportunity to take customers away from the incumbent local exchange companies, these markets also provide high growth potential.

Expand Customer Service Globally

With the globalization of many markets, some large firms in the service and manufacturing sectors of the economy have expressed an interest in turning over the coordination of their internal global communication networks to a single network supplier. These firms want to use their internal expertise to figure out how to use telecommunications

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[9] Siemiens, "1994 International Telecom Statistics," 40; and *Wall Street Transcript,* May 16, 1994, Vol. CXXIV, No. 7, 114,313 and 114,377-380 and 114,382-384. By relying on wireless technology to satisfy the pent-up demand for telephone services in foreign countries, the RBHCs have the potential of receiving a faster payback on these investments than from dollars invested domestically in wireline technologies. "U.S. Carriers go Overseas in Search of Telecom's 'Holy Grail,'" *Telephony,* December 20, 1993, 19.

The downside to these foreign investments is the increased risk of political and economic instability in eastern European and third-world countries.

to improve their profitability rather than to actually run a private network.[10] Firms with experience in foreign markets are more likely to be selected to create and maintain these global networks. Foreign operations by RBHCs and other telecommunications providers enhance their ability to meet this demand. Several RBHCs and other telecommunications providers noted the importance of globalization to their companies in their annual reports. In its 1991 Annual Report, MCI stated that "[t]ransnational companies want one-stop shopping to eliminate the complexity of dealing with multiple vendors in the U.S. and abroad." BellSouth stated in its 1991 Annual Report that "[w]ith the globalization of markets, companies now routinely expect their telecommunications provider not only to give them excellent service in the U.S., but also to help them be competitive in other countries where they do business." AT&T stated in its 1993 Annual Report that it preferred to partner with local telecommunications operators to meet the service needs of multinational companies. Ameritech stated in its 1992 Annual Report that "...the rise of global multi-national corporations creates a need for telecommunications service firms with a worldwide presence." In addition, joint ventures are often used to facilitate access to foreign markets.[11]

Exporting Expertise

The domestic telephone companies have gained substantial expertise in how to construct and run a network. Some of this expertise takes the form of "human capital." In

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[10] Ameritech Corporation, 1993 Annual Report 5 (1994); "A Sprint-European Deal is Reported," *New York Times*, June 14, 1994, sec. D, 4 (C); Hudson, "European Phone Companies Reach Out for Partners."

Global networks are needed in part to coordinate the shipment of products between foreign affiliates. In 1989, twenty-eight percent of U.S. exports were shipments between American affiliates. Preface to *Beyond Free Trade*, ed. David B. Yoffie (Cambridge: Harvard Business School, 1993) xi.

[11] Calvin Sims, "The Baby Bells Scramble for Europe," *New York Times*, December 10, 1989, sec. 3, page 1 (C).

other cases, expertise is embodied in expert systems and software.[12] This expertise is exportable and joint ventures provide a method of "selling" this knowledge abroad.[13] NYNEX stated in its 1993 Annual Report that it would be providing sales, marketing, and customer-service support to STET Hellas Telecommunications S.A., a cellular telephone company in Greece. Similarly, Pacific Telesis stated in its 1992 Annual Report that it was able to contribute its expertise in network engineering and construction to foreign ventures. NYNEX stated in its 1992 Annual Report that its international projects provided examples of ways the company was exporting its network construction and management skills to new markets.

Exploit Economies of Scale and Scope

There are significant economies to be realized in serving a large number of customers. Tom Aust, a former staff member of the New York Public Service Commission Staff and now an investment analyst with Citibank, offers the opinion that "[b]efore their proposed merger collapsed, Southwestern Bell and Cox had expressed the view that a cable operator needs 4 to 5 million subscribers to have the scale necessary to remain viable in the future."[14] Joint ventures allow telephone companies to increase the number of customers that they serve, and thereby recover their quasi-fixed costs from a larger number of customers. In its 1991 Annual Report, AT&T stated that its alliances with multinational companies opened international markets and helped spread the cost of research and development. In its 1992

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[12] The research and development expenses associated with these expert systems and software are often large. For example, Richard Vietor and David B. Yoffie report that in addition to the $800 million to $1 billion costs incurred to develop a digital switch, manufacturers also spend approximately $200 million a year on software modifications. R. Vietor and D. Yoffie, "Telecommunications Deregulation and Globalization," in *Beyond Free Trade*, ed. David B. Yoffie, (Cambridge: Harvard Business School Press, 1993), 134-5. Firms look to international markets to share these large development and upgrade costs.

[13] Naftel, "The Natural Death of a Monopoly," at footnote 188. British Telecom, DBP Telekom (Germany), and France Telecom have also marketed their network expertise on foreign markets. Thimm, *America's Stake in European Telecommunication Policies*, 178.

[14] Thomas Aust, "The Emergence of Transmedia: Convergence of Telecommunications, Media and Technology, An Overview of Industries in Transformation" (New York: Citicorp, draft May 4, 1994).

Annual Report, U S West stated that its personal communications network (PCN) joint venture company in the United Kingdom, Unitel, and a competing provider, Mercury PCN, had entered into an agreement to share the costs of developing PCN. The annual report stated that this agreement could ultimately reduce the company's start-up and operating costs for PCN by a significant amount. By adding entertainment and information services to their voice networks, the telephone companies are hoping to achieve economies of scope.[15]

Imitators Follow Innovators

Sometimes a "herd" mentality develops in a line of business. Once one firm makes an observable move into a market, other firms may follow because they do not want to be left out of the market. To some extent, international activity may result from managers deciding to position their firms so that they are not "left out" of some mega trend.[16]

Experimenting in New Markets

International ventures provide a valuable laboratory for firms to experiment with new techniques. Just as the states are sometimes regarded as the "laboratories of democracy" under federalism, a place where innovative and just plain different approaches can be tried before being introduced at the national level, the international markets offer real world laboratories where telecommunications firms can experiment with different network architectures, market plans, and regulatory rules. In its 1992 Annual Report, U S West stated that its joint venture with Tele-Communications, Inc., in the United Kingdom was giving the company "invaluable" experience in operating combined cable television and telephone networks which could be applied in other parts of the world, including the United States.

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[15] G. Pascal Zachary, "U S West, Oracle Plan to Provide Electronic Data," *Wall Street Journal*, April 29, 1993, sec. B, 6 (E).

[16] David B. Yoffie, "Introduction: From Comparative Advantage to Regulated Competition," *Beyond Free Trade* 15.

Similarly, NYNEX stated in its 1991 Annual Report that its experience in the British market was preparing the company for the day when it could offer competitive cable television services in the United States.

Summary

The annual reports of the RBHCs and other telecommunication providers clearly demonstrate that these companies have expressed many and varied reasons for entering into foreign joint ventures. The annual reports show that many companies were motivated to enter into foreign joint ventures by a desire to establish a presence in rapidly expanding overseas markets. The annual reports indicate that many of these companies perceive great potential for growth in foreign markets. Several of these companies see foreign joint ventures as an opportunity to experiment with new technologies and learn new markets. Many of these companies are conducting these foreign experiments for the express purpose of preparing to enter new domestic markets should the MFJ's line of business restrictions be lifted. Many of the RBHCs and other telecommunication providers have established foreign joint ventures as a means of meeting a growing customer demand for global services. Although individual companies have different motives for entering into foreign joint ventures, they clearly perceive a myriad of benefits accruing from these arrangements.

Many of these factors also encourage firm's to engage in joint ventures within the United States. In the Fall of 1993, Bell Atlantic announced its intention to acquire TCI, the nation's largest cable company. While the deal was eventually cancelled, the early court filings associated with the acquisition provide valuable details on the nature of the complementary firm assets. The appendix provides a summary of Bell Atlantic's argument on why it felt it needed to enter into the joint ventures.

Information That Is Transferable from Foreign Operations

Press reports, as well as the annual reports of the RBHCs, often mention that the telephone companies are active abroad in order to learn lessons that can be applied domestically. The experience in the United Kingdom of integrating telecommunications and entertainment services has provided some of the following benefits to the American telephone companies:

1. The firms have learned how to construct a network that provides both entertainment and telecommunications services. The hands-on experience serves as an important learning experience for how to use network equipment to provide integrated services. This valuable learning process could be more easily undertaken abroad because the British Government has encouraged entrants to experiment with new technology. In the United States, similar experiments would have been impeded by regulatory barriers.[17]

2. Domestic telecommunications companies have no experience in negotiating for entertainment product rights. The provision of entertainment services in the United Kingdom have provided important insights. The Companies have experienced first hand how an integrated rival and supplier can apply a prize squeeze to their operations. The primary supplier of entertainment services to the cable companies is Rubert Murdoch's BSkyB cable. BSkyB also sells satellite services directly to end users. The Cable Companies claim that BSkyB

[17] The major impediment is The Cable Act of 1984, 47 U.S.C. 533 (b) which prohibits telephone companies and their affiliates from providing video programming directly to subscribers within their telephone service area). To a lessor extent, experimentation is constrained by the FCC's and State regulatory commissions' oversight powers over the construction expenditures of the telephone companies. Regulatory oversight in the U.S. has generally not be an impediment to telephone companies construction plans. Joan Nix and David Gabel, "Regulatory Assessment of Investments in Telephone and Electric Utilities" (with Joan Nix), *Law and Policy* 15 (April 1993): 121-37.

has put the "squeeze" on them by offering discount packages to residential customers who own satellites; however, BSkyB does not offer similar discounts to the cable companies.[18] Due to the limited number of entertainment products that customers are interested in buying, this price advantage for satellite TV has the potential to seriously harm the financial prospects of the cable industry. This experience has taught the entertainment/telecommunications integrators that it is essential that they secure programming. If the entrants are unable to provide some unique programming, their potential long-term market share will be seriously harmed. In response to this threat, the cable operators have recently entered into negotiations with film studies to obtain movies for a pay-per-view station. They have also provided funding for a local news show.[19] The quest for programs that are not controlled by rivals explains partially why RBHC's were active bidders for Paramount during the past year and U S West's investment in Time Warner Entertainment Company.[20]

3. The RBHCs have learned how to package entertainment and telecommunications services. The benefit from this experience is not limited to the more obvious issue of how to bundle the pricing of the products, but also extends to how to initially sell the product to customers and how to retain their loyalty. By observing what works and what has failed in the United Kingdom, the entertainment and telecommunications integraters have learned how to formulate a business plan that may carry them through the initial construction

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[18] "Angry Cable Operators say BSkyB mini-pay prices are anti-competitive," *New Media Markets* 11, no. 14 (July 15, 1993).

[19] Credit Suisse First Boston Ltd., "The UK Cable Update—Industry Report," August 9, 1993; and "Britain Races Down the Data Superhighway," *Business Week,* September 27, 1993, 136.

[20] "Some Baby Bells may be Angling for a Role in a Paramount Deal," *New York Times,* October 1, 1993, D6; and U S WEST, Inc., Form 10-K, December 31, 1993, 4.

process, and on through to retaining customer loyalty. Some of the marketing lessons include:

a. The need to focus the product selling effort by type of customer. For professional households, the cable companies have emphasized their efficient, modern telecommunications networks. For other households, a greater emphasis is placed on selling entertainment services.[21]

b. The need to set up operational procedures that focuses on coordinating activities between engineering, sales, marketing, installation and customer service personal. By having these groups work together, the suppliers are able to minimize the disruption to the community that results from their construction work. Furthermore, the sales and marketing group have concentrated on developing presentations that teach customers how to use the new technology. This was done in order to limit customer churn.[22]

c. The concept that customer churn is also minimized by the development of a wage incentive program that discourages the sales force from using high-pressure sale tactics.[23]

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[21] *New Media Markets* 11, no. 9 (May 6, 1993): 5-7.

[22] Ibid.

[23] Ibid.

Joint Ventures and Nonregulated Activities of RBHCs

Immediately after the divestiture of AT&T, the RBHCs diversified into new lines of businesses, such as finance and real estate. More recently, the firms have concentrated their investments on their core business, telecommunications. This metamorphism was the result of a few factors, poor returns on noncore businesses, a recognition that management's time and expertise was most effectively used by concentrating on its core businesses, and the need to defend high-margin markets as the threat of entry increased.[24]

The expected payback from investments in nonregulated activities can be long. U S West has emphasized that it is investing at the early development stages of cable telephony and personal communications systems, and therefore, for the near future, "the majority of the company's portfolio... will not show positive net income or cash flow until they mature."[25] Nevertheless, in the eyes of the managers of the RBHCs, the overall prospects of the foreign investments are bright. The Congressional Office of Technology Assessment concluded that the potential returns in these markets largely explain why the RBHCs are investing abroad:

> Just after divestiture, being forbidden by the MFJ to invest in many domestic telecommunications-related areas, RBHCs made widely diversified investments beyond their line of business, including, for example, real estate development. The poor performance of these noncommunications investments strongly encouraged RBHCs to look abroad for expansion, diversification, and investment activities that would better match their corporate experience and competence. Now, however, it is likely that their European initiatives are pulled by opportunities abroad more strongly than they are pushed by regulatory limitations at home. U.S. telecommunications firms would probably not pull back from overseas ventures if MFJ restrictions were ended, as long as opportunities in foreign markets remain inviting and there is hope of wider market access. Although some industry spokesmen continue to bring up the issue of overseas investment

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[24] See references footnote 1, page 5.

[25] U S WEST, 1993 Annual Report, 14.

as a reason to end all remaining MFJ restrictions (indirectly implying that these discourage them from investment in the United States), it is unlikely that resolution of this domestic policy issue, one way or the other, would in itself have a decisive impact on the rate of overseas investment. On the other hand, the experience RBHCs are gaining overseas is likely to affect what new enterprises they pursue at home, when and if regulatory restrictions are lifted.[26]

[26] U.S. Congressional Office of Technology Assessment, "U.S. Telecommunications Services in European Markets," 8.

CHAPTER 3

GOVERNMENT POLICY AND MARKET STRUCTURE

When a country privatizes a state-owned telephone company, as New Zealand and the United Kingdom have done in the past decade, many policy choices are available to policy makers in structuring the resulting markets. The initial outcome of privatization is a privately held monopoly provider of telecommunications services. The policy presumption in New Zealand and the United Kingdom has been that this monopoly is not natural in both the toll or local exchange markets. Consequently, entry of new providers and competition was adopted as a desirable public policy goal and deregulation policies were implemented. In New Zealand, New Zealand Telecom was immediately deregulated and a policy of relying on the country's antitrust statutes was adopted. The United Kingdom adopted a policy of phasing-in a reliance on competition and a phasing-out of regulation. Each of these policies is described in this chapter and analyzed in terms of the resulting, short-term market structure.

New Zealand

The privatization of New Zealand's government-owned telephone company began in 1987 with the deregulation of terminal equipment, as codified in the Telecommunications Act of 1987. In 1988, this Act was amended to deregulate all of the remaining aspects of telecommunications services, effective April 1, 1989.[1] Geoff McCormick, a senior litigator and competition lawyer for New Zealand Telecom, attributes the move to privatization and deregulation to the stagnation in the national economy in the 1970's and the fact that the economy was heavily regulated.

In 1990, the New Zealand government sold a majority of its shares in the State telephone company to a joint venture consisting of Bell Atlantic and Ameritech. As part of the privatization process, the government decided that it would impose few regulations on the

[1] See Milton Mueller, *On the Frontier of Deregulation: Telecommunications and The Problem of Interconnecting Competing Networks*, Reason Foundation (1994) 7.

telephone company. The obligations, known as the Kiwi Share plan, required the telephone company to maintain residential flat-rate local service, to not increase the price of residential service by more than the rate of inflation, and to keep the price of rural service at a rate that does not exceed the urban residential rate.[2]

The joint venture partners were willing to accept these restrictions in exchange for the Government's commitment not to regulate other prices. The policymakers for the New Zealand government felt that the nation's telecommunications infrastructure would improve more rapidly if it substituted deregulation and competition for the traditional concerns about rates and profits.[3]

The government offered other reasons why it was sensible to forego traditional regulatory rules and administrative procedures. The country is not densely populated. It would be costly to establish a regulatory agency for so few customers. Indeed, a few years ago it was observed that the Australian regulatory agency has more employees than New Zealand's second long-distance telephone company. The government believed that the economy would benefit by not tieing up resources in administrative hearings.[4]

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[2] Based on discussion of Kiwi Share Plan as found in *Clear Communications Limited* v. *Telecom Corporation of New Zealand*, in the Court of Appeal of New Zealand, C.A. 25/93, 7.

[3] Ibid., and Mueller, "On the Frontier of Deregulation" December 13, 1993, 2; and J.R.A. Stevenson, Remarks at the International Telecommunication Union Regulatory Symposium, October 1991, 26.

[4] Ibid., 27; and Ameritech Corporation, Form 10-K for fiscal year ended December 31, 1993, 3.

New Zealand, Australia and Canada are examples of countries with comparatively low population and telephone densities per square mile, adopting telecommunication policies that opened up their markets to competition. Organization for Economic Co-Operation and Development, "The Benefits of Telecommunication Infrastructure Competition," February 21, 1994, 10. These policy decisions would appear to suggest that even markets with low densities can sustain a competitive market. While we do not rule out this possibility, there were important factors that encouraged these nations to open up their markets. In all three countries, the nations were concerned that closed markets would deny businesses assess to low-cost telecommunications and information services. In choosing where to locate their businesses, firms take into account the cost of telecommunications services. These three nations hoped that by opening up their markets, new suppliers would be able to provide services at rates that would make their nation's telecommunications infrastructures more

The Government also felt that the nation's antitrust laws could be relied on to maintain a competitive market. The Commerce Act of 1986 prohibits monopoly conduct designed to harm entrants. If an incumbent responded in a manner that was intended to unfairly harm an entrant, the new supplier had the right to seek relief and damages through antitrust litigation.[5] New Zealand Telecom was deregulated in 1989, and it was not until May 1991, that it faced it first facility based long-distance rival, Clear Communication Limited.[6] Today, duopoly still largely characterizes the New Zealand telecommunications market. The antitrust laws have been used to litigate interconnection issues (see next chapter). Economic theory would predict this litigation on purely deductive grounds. Because of the substantial market power of the incumbent, theory predicts that negotiations regarding interconnection prices and terms would

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competitive. Julianne Schultz, "Deregulation by default or design," 33, 36 (Australia); "Competition in the Provision of Public Long Distance Voice Telephone Services and Related Resale and Sharing Issues-Telecom Decision," CRTC 92-12, June 12, 1992, 11, 22-23, 32 (Canada); and Richard A. Joseph, "The Politics of Telecommunications Reform: A Comparative Study of Australia and New Zealand," University of Woollongon, Working Paper, July 1993.

[5] J.R.A. Stevenson, Remarks at the International Telecommunication Union Regulatory Symposium, 27.

The 1986 Commerce Act is set forth at 1986 New Zealand Statutes, vol. 1, no. 5, 71. Section 36 of the 1986 Commerce Act states that "'No person who has a dominant position in a market shall use the position for the purpose of -

(a) Restricting the entry of any person into that or any other market or

(b) Preventing or deterring any person from engaging in competitive conduct in that or in any other market

(c) Eliminating any person from that or any other market.'"

Clear Communications Limited v. *Telecom Corporation of New Zealand*, in the Court of Appeal of New Zealand, C.A. 25/93, 2.

As governments around the world deregulate telecommunications markets, antitrust enforcement takes on an increasingly important regulatory role. The extent to which antitrust and regulation are substitutable is a matter of intense debate and is far from settled.

[6] Clear Communication is partly owned by MCI and Bell Canada.

likely breakdown. The incumbent has few incentives for cooperating with the entrant. If the incumbent is able to raise the cost of entry, it may be able to block entry.[7]

The United Kingdom

The Telecommunications Act of 1984 both privatized British Telecom and established the Office of Telecommunications (Oftel) as the regulator of the telecommunications industry. Prior to that time, the government had not established an independent regulatory commission to monitor and control the operations of the telephone company. As with many other nations, the United Kingdom used to have one minister in charge of both running and monitoring the telephone company.[8] Oftel is a publicly funded independent agency, not a body within, or part of, a Ministry. One benefit of placing Oftel outside of a Ministry was to maintain regulatory independence.

The current British regulatory process differs from the United States procedures in that one person, the Director General, is primarily responsible for estabishing policy.[9] In the United States, decision-making power resides in commissions ranging in size from three to seven commissioners. According to the first Director General, Sir Bryan Carsberg, the British administrative process is efficient because it has the potential to reduce long administrative hearings and "it makes it easier to establish a clear policy line."[10]

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[7] See, for example, Steven C. Salop, "Strategic Entry Deterrence," *American Economic Review* 69 (May 1979): 335-338.

[8] Naftel, "The Natural Death of a Monopoly," at footnote 101.

[9] The Secretary of State and the Monopolies and Mergers Commission also play a role in setting policy. France also empowers one individual with the decision making power that is usually granted to a regulatory commission. Michael Tyler and Susan Bednarczyk, "Regulatory Institutions and Processes in Telecommunications: An International Study of Alternatives," *Telecommunications Policy*, December 1993, 671.

[10] Sir Bryan Carsberg, "Telecommunications Competition in the United Kingdom: A Regulatory Perspective," 37 N.Y.L. Sch. L. Rev. 285, at footnote 17 (1992).

Carsberg also argues the likelihood of "legislative end-run" is much lower in the United Kingdom. Since the United Kingdom has a parliamentary system, there is little separation between the executive and legislative branches. This close working relationship makes it difficult for an aggrieved party to obtain regulatory relief through special legislation.[11]

The Director General's power is also enhanced by the limited right of affected parties to judicial appeal. According to Tyler and Bednarczyk, in the United Kingdom "[a]n appeal can only be successful, very broadly speaking, if a 'reasonable man' could not possibly have made the decision the regulator has taken. Thus, an appeal could normally succeed only in extreme circumstances."[12]

The Director General is not obligated to provide a detailed explanation of how a decision was reached. Nevertheless, in Oftel's short life, the agency has concluded that the market benefits greatly from a clear pronouncement of the reasoning behind a decision. Oftel concluded that if the basis for its policy decisions are not made explicit, entrants and incumbents will find it difficult to formulate long-term strategic plans. Consequently, the agency has attempted to reduce risk and uncertainty by making its decisions "transparent" to interested parties.[13]

The British Government adopted policies intended to encourage competitive entry. Instead of creating a "level playing field," they have implemented rules that provide entrants with advantages for a limited period of time. The advantages have come in two forms—structural policies that limit the extent of potential rivalry and price discounts on interconnection. The government believes that these type of policies need to be adopted in order to provide protection from the incumbent and to overcome any scale economies that British Telecom may realize.

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[11] Ibid.

[12] "Regulatory Institutions," 673, footnote 23.

[13] Carsberg, "Telecommunications Competition in the United Kingdom," at footnote 14.

When the United Kingdom privatized British Telecom, they adopted a duopoly policy that was designed to encourage entry, especially into the long-distance market. Mercury, a subsidiary of the British firm Cable and Wireless, was provided with a license that allowed it to compete with BT. As part of the licensing process, the British Government said that it would not consider licensing additional entrants for seven years. The government provided this protection in order to encourage the capital markets to provide funding to the entrant:

> The government's idea was that if there were lots of competitors in the marketplace, they might all be weak and competition might fail. The approach, therefore, was that if we focused competition on one company—i.e., Mercury—we would have stronger competition and insure some level of success.[14]

Looking back on this barrier-to-entry, the former Director General of Oftel said that it is not possible to tell "whether [the policy] would have worked better if we had had more competitors from the beginning.[15]"

In 1991, when the Government reviewed its telecommunications policy, it decided that in order to have "real competition," the government would have to end the duopoly and let the market decide the appropriate number of rivals.[16] Subsequently, a number of firms, including MFS, a consortium of British electric companies, and Sprint, have begun construction of new networks.

During the 1991 review of the duopoly policy, the government also considered what steps could be taken to encourage competition in the residential market. Mercury had concentrated on serving the large business market, and the government wanted to see the benefits of competition extended to the residential and small and medium business markets. During the years 1984 to 1991, the cable companies were allowed to provide telephone service to residential households, but they were not allowed to use their own switching

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[14] Carsberg, "Telecommunications Competition in the United Kingdom."

[15] Ibid.

[16] Ibid.

machines. The cable companies were only allowed to provide the loop connection; all switching had to be done by Mercury or BT. BT showed little willingness to interconnect with the cable companies, and Mercury offered unfavorable terms of interconnection. In their interconnect contracts, Mercury took approximately 85 percent of the revenue; the remaining 15 percent provided little incentive for the cable companies to develop the market. The cable companies claimed that if they could install their own switches, their share of the revenue would increase and this would make residential telephony a more profitable line of business to develop.[17]

After issuing a Green Paper (the equivalent of a Proposed Rule Making in the United States), and considering the comments of a large number of interested parties, the government decided that allowing the cable industry to provide facility-based, switched, telecommunications services was the best way of stimulating competition in the residential market.[18] NYNEX and other cable companies in the United Kingdom said that their ability to offer both entertainment and telecommunications services on one network was a crucial factor in their decisions to invest in the U.K. If they had been limited to one service, they would not have made the investment.[19]

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[17] "Duopoly Rhymes with Monopoly," *The Economist*, July 7, 1990, 72. Today, due to the combination of the cable companies owning their own switches and BT's increased willingness to interconnect, the cable companies keep approximately fifty percent of the telephone revenue, a large increase from the initial fifteen percent. Alan Hindley, Jones Cable Group, interview by author, May 11, 1994.

[18] As part of the regulatory process, the government undertook an economic analysis of the cost structure of the industry. Oftel concluded that entry would provide an incentive for BT to run its operations more efficiently. Oftel concluded that this spur from rivalry could provide savings that exceeded the cost of constructing a second network. As part of its economic analysis, Oftel concluded that the largest cost associated with the construction of a second network would occur in the distribution portion of the network. Interview with Alan Bell, Jones Cable Group, May 11, 1994.

[19] John Williamson, "U.K. Cable Telephony: A Window on the Future," *Telephony*, October 5, 1992, 13; Paula Dwyer and Johnathan B. Levine, "Britain Races Ahead Down the Data Superhighway," *Business Week*, September 27, 1993, 138.

During the 1991 review of telecommunications policy, the cable industry informed the government that in order to obtain financing for its cable system, it was essential that the government prohibit BT from providing entertainment services for a fifteen year period. Unless this protection was provided, the capital markets would not provide the funds for the construction of a second wireline network. The payback period for the investments was expected to be long. The cable operators claimed that they did "not expect to begin to make a profit after interest and depreciation until five to seven years from the start of their build and cumulative pay back [was] expected to occur somewhere between twelve to fifteen years." Since the cable companies were already facing competition in the entertainment business from movie rentals, four free over-the-air broadcast channels, and satellite dishes, they felt that BT's entry into the entertainment business would severely harm their prospects. The cable industry, which is largely composed of North American local exchange and cable companies, was concerned that BT might subsidize its entertainment services with earnings from its telephone services.[20]

The British government granted the request of the cable companies to keep BT out of the residential entertainment business. In 1991 The Government decided that BT would not be able to provide entertainment services to residential customers for a period of ten years. The Government will review its policy in year 2001. The Government also indicated that it would be willing to "reconsider the position after seven years if the Director General [of Oftel] advised that removing the restriction would be likely to promote more effective competition in telecommunications."[21]

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[20] Cable Television Association, United Kingdom, "The Duopoly Review: Submission to the Department of Trade and Industry and to the Office of Telecommunications," January 11, 1991, 1-2, 4 (quote), 14; and Department of Trade and Industry, United Kingdom, "Competition and Choice: Telecommunications Policy for the 1990s," March 1991, 25.

[21] Department of Trade and Industry, United Kingdom, "Competition and Choice: Telecommunications Policy for the 1990s," 26. This Spring, BT asked the Government to reconsider the entertainment ban. The Government indicated that it was unwilling to reverse the ban before 2001. Christopher Lloyd, "BT Pushes on with Video-on-Demand," *The Sunday Times*, May15, 1994, sec. 3, 14; and interview with Alan Bell, May 16, 1994.

The policy may be reversed if the Labor Government wins the next general election.

As shown in Tables 3-1 and 3-2, a large number of firms have entered the market in the United Kingdom by jointly offering entertainment and telephony services. In Table 3-1, the American RBOCs account for three-quarters of the homes that have access to cable telephony. The column heading, homes connected, represents the number of homes connected to for entertainment or telephony; the percent of homes that use the cable network for telephony is lower by a factor of approximately one-third. Table 3-2 shows that NYNEX has entered the market on its own, while Southwestern Bell and U S West have opted to enter through joint ventures.

Before BT can provide entertainment services, it will have to obtain two licenses. Under the Telecommunications Act of 1984, they are prohibited "from conveying in their own right entertainment services to residential customers (the conveyance of signals within the network and to business customers is, however, permitted)."[22] The provision of entertainment services involves simultaneously broadcasting the same program to two or more houses.[23]

BT will also need a broadcasting license before it can provide entertainment services. The broadcasting license entitles the holder to prepare and assemble programs, "with a view to having them delivered by cable or microwave radio to people in their homes."[24]

Labour's shadow government has indicated that it favors ending the line-of-business restriction because BT's entry into the business would enhance the nation's infrastructure. Credit Suisse First Boston Ltd., "The UK Cable Update—Industry Report," August 9, 1993.

[22] Department of Trade and Industry, United Kingdom "Competition and Choice," 25.

[23] BT is allowed to provide movies-on-demand. But unlike the pay-per-view services provided by American cable companies, BT can not provide the same program simultaneously in two or more houses. It can only convey programs that are ordered by an individual customer during a time frame specified by the customer.

BT is experimenting with using asymmetric digital subscriber loop (ADSL) technology to provide movies, and other picture products. "BT Video Service is Part of New Technology Dilemma," *New Media Markets* 11, no. 25 (December 16, 1993): 10.

[24] Department of Trade and Industry, United Kingdom "Competition and Choice," 25.

TABLE 3-1
RBOC AND OTHER TELEPHONE COMPANY PARTICIPATION IN CABLE OPERATIONS IN THE U.K. OFFERING TELEPHONE SERVICES AS OF JANUARY 1, 1994

Investor	Homes Connected	Percentage of Total	Homes Passed	Percentage of Total
RBOCs	316,552	74.3%	1,312,563	71.9%
Non-RBOC Telephone Companies	104,181	24.4%	490,593	26.9%
Cable Operators Without Telephone Companies as Owners or Investors	5,253	1.2%	20,184	1.1%
Totals	425,986	100%	1,823,340	100%

TABLE 3-2
CABLE OPERATORS IN THE U.K. OWNED IN WHOLE OR PART BY RBOCS OFFERING TELEPHONE SERVICES AS OF JANUARY 1, 1994

Investor	Percentage Owner	Franchise	Franchise Area	Homes Connected	Homes Passed	Penetration
NYNEX	100%	NYNEX Cablecoms	Portsmouth Brighton Bromley N, NE Surrey	25,858 11,876 6,666 4,327	115,333 63,500 35,952 25,941	22.4% 18.7% 18.5% 16.3%
Southwestern Bell	75%	Southwestern Bell	Wigan Black Country North Liverpool North Liverpool Telford	11,925 20,149 13,204 16,442 7,252	58,971 100,153 56,274 62,803 30,372	
U S WEST	50%	United Artists	Croydon Merton & Sutton Kingston & Richmond	26,735 24,497 5,622 26,497 13,303 n.a.	109,334 96,625 26,628 118,277 48,663 n.a.	
U S WEST	22%	Cable London	Camden Hackney & Islington Haringey Enfield	9,584 n.a. 3,245 17,390	45,758 n.a. 18,031 57,966	
U S WEST	15.75%	Brimingham	Birmingham	56,489	150,246	
U S WEST	8.3%	General Cable	Windsor, Slough & Maidenhead Houslow Hillingdon	15,581 n.a. n.a.	91,736 n.a. n.a.	
Totals				316,552	1,312,563	

Cable telephony is not the only potential or actual entrant in the United Kingdom's local exchange market. Companies providing wireless telephony are also potential and actual entrants. As pointed out by Bell Atlantic, as well as others, entry into the local exchange market is impeded by many factors, not least of which is obtaining rights of way.[25] Potential entrants recognize that wireless technology provides a medium that partly overcomes this barrier. Since there is less of a need to deploy stationary facilities, less effort has to be spent obtaining access.

In September 1993, U S West, in a joint venture with Cable and Wireless, was the first company in the world to offer commercial PCS service.[26] The pricing of the product, marketed as Mercury One-2-One, is not priced competitively with wireline service (see Table 3-3). According to the OECD, a subscriber to Mercury One-2-One would pay three times the rate of wireline service for a basket of calls. While the price of PCS is less than analog cellular service, it is clearly not competing on the basis of price with wireline service. Like cellular telephony, mobile digital service is perceived as more of a complement than as a substitute for wireline service.[27]

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[25] Brian D. Oliver, President of Bell Atlantic Enterprises Businesses, paragraph 11 of affidavit filed in United States District Court for the District of Columbia in *United States* v. *Western Elec. Co.*, No. 82-0192, 1994 U.S. Dist. LEXIS 4039 (D.C. Dist. April 5, 1994).

[26] U S West, 1993 Annual Report 7 (1994).

[27] Organization for Economic Co-Operation and Development, United Kingdom, "The Benefits of Telecommunication Infrastructure Competition," February 21, 1994, 47; and "Phone War or a Skirmish?," *Sunday Telegraph*, September 12, 1993, 40.

Neither will satellite telephony be priced competitively with wireline service. On the low end, Loral Corporation intends to offer service at $0.65 a minute. On the high end, Motorola estimates that service will cost $3 a minute for its Iridium service. "Financing for Global Phone System is Set," *New York Times*, March 25, 1994, sec. D, 3 (C).

TABLE 3-3

UNITED KINGDOM MOBILE AND FIXED TARIFF COMPARISONS

Service	Mercury "One 2 One" PCS	Vodafone "low Call" Cellular	BT Fixed Wireline
Connection	$30.00	$45.00	$148.50
Monthly Fixed	$18.75	$22.50	$9.77
Total fixed operator charge (1)	$231.00	$279.00	$146.85
Handset Price	$167-200	$67-367	$8
Total fixed cost including handset (2)	$306.00	$309.00	$150.45
LOCAL CALL CHARGES			
Peak	$0.38	$0.75	$0.07
Off Peak	$0.00	$0.23	$0.02
NATIONAL CALL CHARGES			
Peak	$0.38	$0.75	$0.17
Off Peak	$0.15	$0.23	$0.08

Notes: Pounds converted at exchange rate of $1.5 to £1.
(1) per annum based on connection fee spread over five years.
(2) per annum based on the lowest handset price depreciated over five years.

Source: OECD, Table 27, page 46.

The cost structure of PCS may exhibit relatively higher variable and lower fixed costs than wireline service. Due to concerns about congestion, as well as concerns that the entrants would rather earn high margins on telephone service than enter into a price war with wireline services, one should not expect to see PCS priced competitively with wireline service in the near future.

Thus, the United Kingdom policies toward telecommunications has fostered entry of competitors in the long-distance, large business, residential, and wireless markets. The market structure is moving toward a workably competitive oligopoly. Several RBHCs and Bell Canada are offering cable telephony. Many, but not all, geographic franchised cable areas have two providers of telephone service, BT and the cable company, and only one provider of cable entertainment services. Cable's entertainment monopoly may not persist in the long run as the deadline for BT's line-of-business restrictions approaches. In anticipation of increased competition cable-telephony providers are expanding their geographic coverage. Technical advances in wireless communications also promises to create additional competitive pressures on local exchange services.

A Comparison of New Zealand's and the United Kingdom's Market Structure Policies

The United Kingdom has adopted a policy of using line-of-business restrictions with a specific time line to encourage and incubate competitive entry in their telecommunications markets. The rationale for this policy is to control the competitive risks an entrant may face and, consequently, facilitate capital formation by the entrant. This policy appears to be working as it has attracted the entry of RBHCs and Bell Canada into cable telephony. New Zealand, on the other hand, has privatized and largely deregulated telephone service. The policy adopted in New Zealand with regard to entry has relied on market forces to determine the potential profitability of entry. This policy has attracted two RBHCs in a joint venture that purchased the previously state-owned telephone company and Clear Communications, a joint venture that includes MCI and Bell Canada. Policymakers in New Zealand have not imposed any line-of-business restrictions on New Zealand Telecom (NZ Telecom) to protect entrants into the residential local exchange markets. However, such a policy may not be workable in New Zealand as population density differs from that in the United Kingdom.

CHAPTER 4

GOVERNMENT POLICY AND PRICING BEHAVIOR

When the United Kingdom privatized BT in 1984, the government expected that for the foreseeable future, the company would retain monopoly power in a number of markets. After considering different regulatory alternatives, the government decided to rely on price caps to constrain the pricing power of the firm.

Under the price cap regime, BT was allowed to increase its rates by no more than the value of the retail price index (analogous to our consumer price index), less an adjustment factor. For the years 1984 through 1989, the adjustment factor was set at three percent. In 1988 it was raised to 4.5 percent, and in 1990, largely due to the "sharp increase" in profits derived from international traffic, it was raised to 6.25 percent.[1] Most recently, BT and Oftel announced an agreement to raise the adjustment factor to 7.5 percent.[2]

A nontraditional mode of regulation was also implemented in New Zealand when its telephone network was privatized. As previously noted, the Kiwi Share Plan, requires the telephone company to maintain residential flat-rate local service, not to increase the price of

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[1] Oftel, United Kingdom, "The Regulation of BT's Prices: A Consultative Document Issued by the Director General of Telecommunications," January 1992, ¶ 5 and 8.

[2] Ross Tieman, "BT Bill Pegging will be Selective," *The Times*, August 12, 1992, 14. The United Kingdom's higher adjustment factor is due, in part, to the firm's low productivity relative to American firms. While the ratio of lines per employee is 112 for BT, Bell Atlantic's has 217 lines per employee. Andrew Davies, *Telecommunications and Politics: The Decentralized Alternative* (New York: Pinter Publishers, 1994) 226.

Bell Atlantic and BT are not fully comparable because of the difference in the scope of their operations. For example, unlike Bell Atlantic, BT provides nationwide service. All else equal, BT's nationwide business raises the number of employees that the firm must hire, but it does not change the number of access lines. Nevertheless, this disparity has suggested to Oftel that there are opportunities for substantial productivity gains. Sir Bryan Carsberg, "Telecommunications Competition in the United Kingdom: A Regulatory Perspective," 37 N.Y.L. Sch. L. Rev. 285 (1992).

residential service by more than the rate of inflation, and to keep the price of rural service at a rate that does not exceed the urban residential rate.[3]

Recently, New Zealand and the United Kingdom governments used different policies to provide rate protection to residential customers. Prior to privatization, the monthly residential rate in New Zealand increased approximately 30 percent in real terms, or approximately 6 dollars U.S. per month.[4] Price caps in the United Kingdom also led to substantial increases in residential rates. Between 1988-89 and 1992-93 the median residential bill for the access line, exclusive of usage, increased from U.S. $6.98 to $9.77, or approximately 40 percent.[5] While both New Zealand and the United Kingdom have seen the rates of residential service increase substantially, their responses have been dramatically different.

After NZ Telecom was privatized, the Kiwi Share plant prevented residential rates from increasing in real terms.[6] Since residential rates cannot increase any faster than the rate of inflation, the government claims that residential customers are being treated fairly. The

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[3] *Clear Communications Limited v. Telecom Corporation of New Zealand*, in the Court of Appeal of New Zealand, C.A. 25/93, 7. "Telecom may, however, develop optional tariff packages which entail local call charges for those who elect to take them, as an alternative." "Kiwi Share and Rights of Kiwi Shareholder," §11.4.2.1.

[4] Mueller, "On the Frontier of Deregulation" 14; and Maurice Williamson, "Telecommunications Reform in New Zealand," March 1993, 8.

[5] OECD Working Party on Telecommunications and Information Services Policies, United Kingdom, "Price Cap Regulations for Telecommunications: A Review of Policies and Experiences," May 20, 1994, 43. We have converted the pounds to dollars using an exchange rate of 1.5 $/£.

We focus on the residential market because this segment of the market is typically served by fewer telecommunications suppliers and therefore is more likely to be confronted with supracompetitive prices.

[6] The increase in residential rates has coincided with a decrease in toll rates.

government has decided not to promote entry into any market; instead it chose to rely on the antitrust statutes to stop the incumbent telephone company from anticompetitive conduct.[7]

In the United Kingdom, the government concluded that after BT was privatized, most of the pricing benefits from price caps and entry into the long-distance market were being realized by business customers. In order to provide residential customers with the same competitive benefits that had been realized by the business community, the government decided to adopt policies that encouraged rivalry in the residential market. In this chapter, the impact that the structural policies of the New Zealand and United Kingdom governments has had on the pricing of telecommunications services is evaluated. Rivalry in the United Kingdom provides some interesting lessons on how costs are recovered when there is rivalry in the residential market.

Recovering the Costs of Access to the Network

For a number of years, American exchange telephone companies have been telling regulatory commissions that if entry was to be permitted into the industry, there was a need to rebalance rates. The companies alleged that there was a subsidy flowing from toll to exchange service, and that if local rates were not increased, entrants would be able to cream-skim the profitable toll markets. The carriers expressed their concern that if these alleged subsidies were only imposed on the incumbent firms, equally or less efficient firms might be able to capture a large share of their high-margin markets.[8]

Around the world, as entry into the long-distance market has been approved, the incumbent firms have also claimed that there is a need to rebalance rates. As in the United States, the carriers argue that the price of exchange service is priced below the combined cost

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[7] J.R.A. Stevenson, Remarks at International Telecommunication Union, October 1991, 26-30.

[8] In another article, one of the authors has challenged the theoretical and empirical basis for the claimed toll to exchange subsidy. David Gabel, "Current Issues in the Pricing of Voice Telephone Services," (forthcoming, Fall 1994), Public Policy Institute, AARP.

of exchange usage and the local loop. Although historically, this "loss" has been covered by toll rates, the exchange carriers argue that this type of subsidy is inefficient and not sustainable in the long run.[9]

The extent to which an analyst finds that exchange service is subsidized depends crucially on how the cost of the local loop is treated. If the loop connection is seen as a cost of only local service, then one may conclude that local exchange service is subsidized.[10] While economists and other analysts have spent considerable efforts arguing over how the cost of the loop should be treated in a cost study,[11] the emerging competitive telecommunications markets do provide some indication of how access costs would be recovered in a competitive market.[12]

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[9] See, for example, Department of Trade and Industry, United Kingdom, "Competition and Choice: Telecommunications Policy for the 1990s," Appendix 2, par. 2 (London: Her Majesty's Stationery Office, March 1991).

[10] Some regulatory commissions have found that even if all of the loop cost is assigned to exchange service, exchange service is still priced above its economic costs. See, for example, New England Telephone Generic Rate Structure Investigation, New Hampshire Public Utilities Commission DR 89-010, slip opinion March 11, 1991, 42; and Maine Public Utilities Commission, Re: Investigation Into New England Telephone Company's Cost of Service and Rate Design, Docket No. 92-130, April 13, 1994, 37-8.

[11] See, for example, David Gabel and Mark Kennet, "Pricing of Telecommunication Services," *Review of Industrial Organization* 8 (1993), 1-14, and 43-8; and William E. Taylor, "Efficient Pricing of Telecommunications Services: The State of the Debate," *Review of Industrial Organization* 8 (1993), 21-38.

[12] Theoretically, access charges go to zero in a competitive market. Susan Scotchmer, "Two-Tier Pricing of Shared Facilities in a Free-Entry Equilibrium." *RAND Journal of Economics* 16, no. 4 (1985): 456, 458.

A good illustration of how competition affects access charges is the credit card industry. Many credit card companies, despite the option value of the service, do not charge an annual fee to certain customers, even though setup costs plus monthly billing surely lead to access costs. Today, because of competitive pressures, the trend in the credit card industry is to eliminate access fees. This is illustrated by CITIBANK's recent announcement that it was eliminating the annual access fee for many of its credit cards, and AT&T's entry strategy into the industry of offering a lifetime waiver of the annual access fee. Similarly, U S West has marketed a VISA card that does not have an annual fee. "At Citibank, More No Fee Credit Cards," *New York Times*, December 10, 1993, sec. D, 4 (C). See, also, Lawrence M.

As telecommunications suppliers reengineer their loops for the provision of high-speed data and video services, it has become increasingly apparent that the loop is not a cost that is being driven exclusively by the demand for exchange service. Rather the loop is an input used to provide a number of services. The deployment of a broadband network illustrates that access is not a product—it is a "kiosk" used to sell many services.

The notion of perceiving access as a 'kiosk' was indirectly suggested by a consultant for the RBHCs, Dr. Richard Emmerson, at a 1992 National Regulatory Research Institute conference on estimating the demand for telecommunications services. Dr. Emmerson was addressing the issue of why the telephone company would ever erect coin pay phone booths, since the revenue generated by consumers inserting their quarters for local calls may not cover the cost. He pointed out that even though the cost of erecting and maintaining the pay phone may not be covered by local charges, the fact that the pay phone generates usage of the phone company's other products may more than make up for the revenue shortfall from local calls. He argued that the pay station should be viewed as "kiosk"—that is the point of sale for many different products. Emmerson argued, correctly, that the profitability of the coin station should not be judged by merely considering local revenues. Instead, the profitability of the facility should be judged by a comparison of all of the costs and revenues associated with its usage. Similarly, as the local exchange market becomes increasingly competitive, telephone companies are recognizing, especially for strategic planning purposes, that the loop is also this type of "kiosk"—it makes available many telephone, information, and entertainment services. Just as it is inappropriate to assign all pay telephone station costs to local service, the cost of the dial tone line should be seen as an input to the provision of multiple services of which local exchange service is one.

Ausubel, "The Failure of Competition in the Credit Card Market," *American Economic Review,* March 1991, 50-81 for a fascinating study of how consumers seem to consistently choose cards with a low annual fee (analogous to the access charge) even when the package entails a heftier annual borrowing rate than a package with a higher access fee.

The recent marketing move by some cellular telephone companies to sell telephones for $1 illustrates that nonregulated, telecommunications suppliers perceive that stockholders' wealth may be maximized by adopting a pricing structure that recovers access costs through usage, rather than fixed charges.

The perspective of the loop as an input, rather than a product line, was adopted by an analyst of NZ Telecom.

> "[A] business area is defined as 'a logical grouping of products and/or services defined for strategic and marketing management purposes.' Business area therefore need to be based on reasonable groupings of revenue streams. The existing set moves away from this ideal only in the inclusion of local loop. Local loop is a cost element of access to local telephone service, dedicated network services, packet switching and telex.
>
> ....It is appreciated that local loop is Telecom's major area of network investment, and that it is important to make sound investment decisions. This is, however, a separate issue of the sorts of issues that the business area definitions and the resulting information flows will be addressing.
>
> In making investment decisions one must weigh-up the additional costs and benefits associated with the investment decision. On the benefits side are the additions to the revenue streams that are expected as a result of making the investment. These will come from other business areas. Having local loop as a separate business area will not help in performing this sort of analysis.[13]

A similar perspective was expressed by the RBHCs that operate in the United Kingdom. In England, the incumbent local exchange company, BT, had made pleadings in 1991 to the regulatory agency, Oftel, that exchange rates needed to be increased. BT pointed to results from its cost studies that showed that the price of exchange service was below the cost of service. BT told Oftel that due to entry into the industry, there was a need to align rates with costs. According to the telephone company, competitive market pressures required the company to raise exchange rates and lower long-distance and international rates.[14]

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[13] "Network Services: A Consistent Model for Service Definition, and Policy, Tariff and Cost Analysis," August 3, 1989, New Zealand Telecom Discussion Paper, quoted in Nina Cornell, "Brief of Direct Evidence of Nina W. Cornell," paragraph 74, filed in *Clear Communications* v. *New Zealand Telecom.*

[14] Oftel, United Kingdom, "The Regulation of BT's Prices: A Consultative Document issued by the Director General of Telecommunications," January 1992, ¶ 138.

BT's position was disputed by the Cable Television Association of the United Kingdom. The Cable Association represented the interest of the cable companies that expressed a desire to provide an alternative source for telephone service to the residential market. Companies such as NYNEX and Pacific Telephone were interested in using their cable franchises to provide both entertainment and telecommunications services.[15] The Cable Television Association argued, contrary to the contention of the local exchange company, that "The argument that the cost of [access to] the network has to be borne [exclusively] by [exchange service] is seriously flawed ..."[16]

After reviewing the pleadings of the BT, the Cable Television Association, and other interested parties, the British Government concluded in 1991 that due to entry into the local exchange market, there was a need to realign rates. The Government provided the incumbent with the latitude to raise its exchange rates and lower toll rates. The need to realign rates was justified by the pressures of competitive market forces.[17] In 1991, the British Government also passed rules designed to encourage entry into the residential market. In the next section of this chapter, the effect of competitive pressures in constraining BT's ability to raise residential exchange rates is discussed.

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[15] As of January 1, 1994, seventy-two percent of cable telephony subscribers in the United Kingdom were served by cable operators owned in whole or part by NYNEX, U S West, or Southwestern Bell. "Roll Call," June 27, 1994.

[16] Cable Television Association, United Kingdom, "The Duopoly Review: Submission to the Department of Trade and Industry and to the Office of Telecommunications," January 11, 1991, 22, par. 2.23,

France Telecom was a pioneer in the provision of information services to the general public. The telephone company made available to the public dumb computer terminals at no cost. The firm believed that the payback in its free access facilities, called Minitel, would come through the selling of information services. France Telecom does the billing for the information providers. The firm perceives that its ownership and billing functions in Minitel is similar to a newspaper "'kiosk.'" Alfred L. Thimm, *America's Stake in European Telecommunication Policies*, (Westport, Conn.: Quorum Books, 1992) 137.

[17] Department of Trade and Industry, United Kingdom, "Competition and Choice: Telecommunications Policy for the 1990s," March 1991 ¶6.3 and 6.9; and Oftel, United Kingdom, "The Regulation of BT's Prices: A Consultative Document issued by the Director General of Telecommunications," January 1992.

The Pricing of Residential Services With Rivalry

Through price caps, Oftel provided BT with the option of increasing its exchange rates.[18] The Oftel found that the available cost data and demand estimates provided convincing evidence that there was a need to realign rates. The Director General cautioned that an increase in the price of the access rate may not be sustainable in a competitive market: "[I]t might be a profitable strategy to allow customers to join the network at prices below the incremental costs of providing access if profits on the calls they made would offset the losses..."[19] This section examines how entry by the cable companies affected the pricing of exchange service.[20]

The success of the cable companies is largely attributable to their lower prices and higher quality service. As shown on Table 4-1, the entrants, Telewest and Cablecorp, provided service at lower installation and monthly fixed fees, and in most cases, lower usage rates.[21]

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[18] It remains an option because under the British price caps process, BT can raise and lower prices within limited ranges. Chris Doyle points out that even prior to rivalry, BT did not raise its residential exchange rates as quickly as permitted under price caps: "BT offered to restrict increases to its rental charges to RPI+2 at the time of privatization. The Secretary of State welcomed this and it was expected to last seven years. BT failed to exploit fully the increases it could have obtained over the period 1984-89." Doyle/Gabel, October 17, 1994.

[19] Oftel, United Kingdom "The Regulation of BT's Prices" paragraph 118 and 122.

[20] Mobile telephony has lower customer specific fixed and higher variable costs than wireline services. The entrants can potentially offer local service at a lower fixed monthly rate.

[21] Organization for Economic Co-Operation and Development, United Kingdom, "The Benefits of Telecommunication Infrastructure Competition," February 21, 1994, 39. Based on 1.5 pound to 1 to dollar exchange rate. Value-added-tax not included. The value added tax is 17.5%. This raises, for example, the price of BT residential service by $1.71 (or £1.14). The data reported on page 75 includes the value-added-tax.

While not shown on this table, some cable telephone companies have provided free installation. Ibid., 37.

TABLE 4-1

RESIDENTIAL TELEPHONE CHARGES: UNITED KINGDOM, 1993
(Dollars)

	BT Residential	BT Supportline	Telewest Residential (without Cable-TV) (3)	Cable Corp. Residential (without Cable-TV)
Fixed Charges				
Installation	209.04	209.04	38.30	26.25
Monthly fixed fee (access line charge)	9.77	4.88	9.71	8.73
Total Per annum (1)	158.99	100.31	124.11	110.01
Call Charges (dollars per minute)				
Local				
Rate 1	0.07	note 2	0.06	0.06
Rate 2	0.05		0.05	0.05
Rate 3	0.02		0.03	0.02
Toll				
Up to 56 km Rate 1	0.14		0.14	0.14
Rate 2	0.10		0.10	0.10
Rate 3	0.05		0.05	0.04
Over 56 km on low-cost routes Rate 1 (note 4)	0.16		0.15	0.16
Rate 2	0.12		0.12	0.12
Rate 3	0.08		0.07	0.06

TABLE 4-1

RESIDENTIAL TELEPHONE CHARGES: UNITED KINGDOM, 1993
(Dollars)

	BT Residential	BT Supportline	Telewest Residential (without Cable-TV) (3)	Cable Corp. Residential (without Cable-TV)
Over 56 km on high-cost routes Rate 1	0.20		0.15	0.16
Rate 2	0.15		0.12	0.12
Rate 3	0.10		0.07	0.06

Notes:
(1) "With cost of installation spread over five years.
(2) Supportline customers receive 30 free call units every [3 months]. Thereafter they are charged at [23.78 cents] per unit until 150 units have been reached. Calls made after this mark are charged at normal rates. The length of a call varies according to the time day and distance. At peak times a local call unit is equal to 57.5 seconds and at off peak times 220 seconds.
(3) For a customer taking Telewest's cable television service, monthly fixed charges would be [$8.3]..., with a total per annum cost of [$107.21]..."
(4) The BT tariff includes a lower rate "for calls made in either direction between towns and cities" identified in the National Dial Code book. The cities are identified in the tariff as "low-cost routes."

Source: UK-BT t-Guide Data Tariffs.

The OECD uses a "basket" of calls for comparing rates between different nations and companies. For business customers, the rate is composed of the installation cost discounted over five years, the monthly fixed charge, and 2,817 calls "made at different times of the day/week, over different distances, for different durations." The same method is used to construct a "basket" for residential customers, except for the use of a fewer number of calls, 898. Table 4-2 provides the OECD price comparison for Telewest, BT, and the OECD average.[22]

[22] Ibid., Table 22, 40. The OECD has presented the data using U.S. dollars purchase power parity. The OECD did not provide the business basket for Cable Corporation.

TABLE 4-2
PRICE COMPARISON BETWEEN BRITISH AND OECD BUSINESS AND RESIDENTIAL BASKET OF SERVICES: 1993

	Fixed Charge	Usage Charge	Total Charge
Business User Charge			
BT	249.94	702.44	952.38
Telewest	210.08	538.87	793.95
OECD average	203.45	813.79	1017.27
Residential User Charge			
BT	199.9	199.54	399.44
Telewest	156.06	196.16	352.22
Cable Corp.	142.22	175.13	317.35
OECD average	153.02	229.53	382.55

Source: Authors' construct.

After the information was collected by the OECD for Tables 4-1 and 4-2, BT lowered its installation price to $150, a $60 reduction, and eliminated its peak rate surcharge (Rate 1) that had been applied to calls made between 9:00 A.M. to 1:00 P.M. Today, there are just two rate periods—the standard rate and the off-peak. Along with these rate changes, BT also introduced a "Friends of the Family" discount program and reduced its weekend rates. The lowering of the installation price resulted from a combination of pressure put on BT by Oftel to lower the rate and the recognition that the cable companies were viable in the local market.[23]

[23] "Phone Bills set to tumble as BT scraps 'peak rate' Price Cut will save customers £350m," *The Independent,* January 24, 1994, 4. In June 1993 BT offered a special rate where local calls of more than four minutes were charged at up to a fifty percent discount. Oftel objected to the rate because in some cases the retail rate was less than the interconnection price. This price squeeze caused the cable companies great concern. "Oftel Raps BT over special offers after cable complaints," *New Media Markets* 11, no. 13 (July 1, 1993).

BT sells local service only on a measured rate basis. The cable companies' decision to offer flat-rate service between cable subscribers is putting further pressure on BT's residential rates. Introducing free intrasystem calls makes good business sense because customers prefer flat-rate service and the cost of a call that originates and terminates on the same switch is trivial relative to the cost of an interoffice call.[24] As pointed out by the marketing director of one cable company, flat-rate calling provides a lot of good-will among customers and serves as a "good word-of-mouth advertising for cable. Subscribers should encourage their families and friends within the franchise area to sign up for cable."[25]

The entrant's ability to offer service at a lower price than the incumbents calls into question BT's claim that residential services are subsidized. The entrants, unincumbered by price regulation, are providing access to the network at lower rates. In part, the lower rates may reflect lower costs and the need to sell service at a price discount in order to compensate for the lack of number portability. But lower costs does not explain why the entrants would offer a lower fixed monthly rate. For years, telephone companies in the United States and elsewhere have argued that customers' welfare would be increased if they paid higher fixed and lower variable charges. The cable telephone companies could have, but chose not to, enter the market with much higher access fees and lower usage fees. Their pricing strategy reflects the tendency observed in many industries for entry to drive down customer access fees (see page 38, footnote 12).

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[24] Joan Nix and David Gabel, "AT&T's Strategic Response to Competition: Why Not Preempt Entry?" *Journal of Economic History*, June 1993; and David Gabel, "Deregulation: Should the Local Telephone Market be Next?" 24 *New Eng. L. Rev.*, 39-61 (1989).

[25] "More Operators will go for free calls, but fight against BT will focus on new products," *New Media Markets* 12, no. 2 (January 27, 1994): 10-12.

Pricing of Interconnection and the Impact on Investments

Rivalry also tends to affect the terms of interconnection. This section examines how rivalry has affected the pricing of interconnection between cable and telephone companies. As previously noted, prior to 1991, the cable companies were only able to interconnect with Mercury and the interexchange company obtained approximately 85 percent of the voice traffic revenue that originated on the cable systems. Mercury's decision to demand a large share of the interconnection revenues during the duopoly era and the entrant's response to this position should provide a lesson to local exchange companies as they negotiate interconnection agreements. While Mercury's decision to leave the cable companies with little profit increased the interexchange carrier's short-run profits, it provided a spur to the cable companies to become more self-sufficient. Unable to obtain a satisfactory interconnection agreement with either Mercury or BT, the cable companies had an added incentive to build their own switched network.[26]

Even if Mercury adopted a more cooperative position with the cable companies, the entrants already had an incentive to deploy their own switches. The cable companies wanted to have greater control over the quality of service and the introduction of service. Nevertheless, Mercury's position spurred the cable companies to go it alone and this may result in a lowering of Mercury's long-term profits. The cable companies can now use their switches not to only interconnect to Mercury's and BT's networks, but also to tie into other networks.[27] If the cable companies received more favorable interconnection terms from

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[26] Alan Hindley, interview by author, May 11, 1994.

[27] Sprint and Energis are in the process of constructing networks in the United Kingdom. These firms will provide facility competition to Mercury and will provide the cable companies with an alternate way of routing interexchange calls. *Network World*, April 11, 1994; and "Electricity Firms Make a Threatening Connection," *The Independent*, November 10, 1993, 33. At least four other firms, including AT&T, have been granted licenses to construct interexchange facilities. Richard L. Hudson, "Sprint, Five Other Phone Companies Receive Licenses to Expand in Britain," *Wall Street Journal*, April 7, 1994, sec. A, 10 (E); and Edmund L. Andrews, "AT&T Wins a License in Britain," *New York Times,* July 9, 1994, 37 (C).

Mercury, there likely would have been a higher probability of a mutually beneficial, long-term relationship.

The Pricing of Interconnection as a Means To Affect Market Structure

United Kingdom

Oftel used the pricing of interconnection to encourage entry into the industry. The agency concluded that entry required a firm to invest a lot of capital, and because of a new firm's initial small market share, the entrant would have comparatively high unit costs. Unless assistance was provided, the Director General of Oftel was concerned that the entrant would not reach "first base."[28]

Oftel preferred that Mercury, the first entrant into the market, and BT reach a private agreement on the terms of interconnection. But when the parties were unable to obtain a

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The cable companies have purchased switching machines from a few different vendors (e.g. Nokia, Northern Telecom and GPT). In selecting the manufacturer a paramount concern of the entrants is to purchase from a vendor that will provide a product line that will allow the cable companies to differentiate their product from those of BT. General Cable has selected Finish equipment manufacturer Nokia because of is strong position in the multimedia market. *New Media Markets* 11, no. 13 (July 1, 1993): 6.

NYNEX delayed its purchase of switching equipment until a critical mass of customers was obtained. The Company did not believe that it was economical to provide service through a switch with less than 20,000 customers. Other suppliers claim that the break even point is 10,000 customers. Ibid.

The need for critical mass for telephony has played a role in the recent mergers and acquisitions in the United States cable industry. John Tinker, an analyst with Furman Selz Inc., stated that the Time Warner and Newhouse consolidation would raise the probability of the cable companies entering the telephony market. For successful entry, "...a company needs large clusters of subscribers to let it amortize the high fixed costs of building a telephone system and marketing it." Geraldine Fabrikant, "Time Warner and Newhouse Form a Joint Cable Operation," *New York Times,* September 13, 1994, sec. D, 1 (C).

[28] Sir Bryan Carsberg, "Telecommunications Competition in the United Kingdom: a Regulatory Perspective," 37 N.Y.L. Sch. L. Rev. 285 (1992) at footnote 14 (quote); and Oftel, "Interconnection Charges and Explanatory Document," (1993), ¶31 and 32.

satisfactory agreement, Mercury appealed to the government for assistance.[29] Oftel decided to provide Mercury, and later the cable companies, with temporary discounts. In crafting the interconnection pricing policy, the agency used economic modeling to determine at what point it was no longer necessary to provide the entrants with the markdown. If Mercury, or another entrant, had less than ten percent of the market, the firm would not have to make a payment that helped cover the cost of the local loop (access deficit charge). If a rival of BT achieved 25 percent or more of a specific market, such as international calls, the entrant would have to pay the same implicit access deficit charge on the traffic that was built into BT's tariffs. For intermediate market shares, an abatement from the full access deficit charge may be ordered by Oftel. The extent of the discount is based on the ability of the entrant to "demonstrate that it was offering broadly based competition and faced market entry disadvantages." The agency said that it would look most favorably on those new competitors that provide service to the residential market.[30]

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[29] Many nations have followed the same course, telling the entrant that they should try reach a private agreement with the incumbent. In almost all cases, the entrants and the incumbent have been unable to reach an agreement and the government had to settle the pricing issue. Dawson Walker and Jonathan Solomon, "The Interconnection Imperative, *'E pluribus unum'" Telecommunications Policy* (May/June 1993), 257-280.

One particularly intriguing interconnection pricing proposal was made by Nicholas Mearing-Smith, the executive director of NYNEX's United Kingdom cable operations. Instead of relying on costs to set rates, Mearing-Smith proposed that the revenue be allocated based on some agreed proportions. He suggested that on a local call that originated on the cable system, and terminated on the incumbent's network, "'The cable operator would take the top 20 percent [of the revenue] because he has originated the call and has to bear the cost of the billing. The remaining 80 percent could then be split 50/50 between BT on the one hand and the cable operator...on the other.'" "Operators Ask Oftel to Protect their Margins," *New Media Markets* 10, no. 6 (March 26, 1992): 4.

[30] Carsberg, "Telecommunications Competition in the United Kingdom"; Oftel, United Kingdom, "Interconnection Charges and Explanatory Document," (1993), 5-8, and Annex C; and Oftel, United Kingdom, "The Regulation of BT's Prices: A Consultative Document issued by the Director General of Telecommunications, January 1992," ¶150 (quote). The discount provided to entrants is also limited by BT's license. "Condition 13.5.A.5 (a) (ii) of BT's license requires it to receive a full ADC [access deficit charge], implicitly from its own customers or explicitly from interconnecting operators on at least 85 percent of the market." Oftel, United Kingdom, "Interconnection Charges and Explanatory Document," (1993), ¶ 38.

In setting these market share limits, Oftel was mindful that the FCC had provided discounts to new interexchange suppliers in the 1970s and 1980s but was having trouble eliminating the price breaks. Oftel wanted the price discount to have a well-defined terminal point because by establishing all rules at the outset, it would be easier for the firms to engage in long-range planning.

The discount was applied to the "access deficit charge." An entrant that interconnects with BT must make use of the incumbents local network. BT's historical, fully distributed cost studies showed that the "access" service category was operating at a deficit. The deficit was due to the fixed monthly customer connection charge being less than the embedded cost of providing access.[31] Oftel required that in principle, all users of switched services should help cover the short-fall. The access deficit charge is a positive function of the distance of the call; the charge on a short-haul toll call is greater than the charge for a local call, but less than for a long-distance toll call. The access deficit charge reflects the imputed contribution being earned by BT when it carries the traffic.[32]

New Zealand

New Zealand has taken a less active role in promoting competition. The government adopted a hands-off policy towards the telecommunications market structure. Instead of promoting entry, the New Zealand government chose to let competitive market forces decide the extent to which there should be multiple suppliers. The government's role in the telecommunications market has largely been limited to policing the industry to make sure that the incumbent does not use its market power to unfairly impede entry. As discussed below,

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Therefore if BT's total market share, in contrast with a sub-market like international calls, falls below 85 percent, the connecting firms no longer receive a discount.

[31] Mark Armstrong and Chris Doyle, "Social Obligations and Access Pricing: Telecommunications and Railways in the UK," 5, Working Paper, University of Cambridge, March 14, 1994.

[32] Armstrong and Doyle point out that the access deficit charge increases with distance because BT's long-distance services make a larger contribution per minute than short-distance calls. Ibid., 11-12; and Oftel, "Interconnection Charges and Explanatory Documents," (1993).

the "hands-off" policy is less effective than the British policy in promoting competitive market outcomes.

As noted earlier, NZ Telecom was deregulated in 1987, and it was not until May 1991 that it faced its first facility based long-distance rival, Clear Communication.[33] Prior to the acquisition of NZ Telecom by the joint venture, NZ Telecom lowered its long-distance rates 35-50 percent, raised the residential flat-rate by 33 percent, and converted local business service from flat to measured rates. When Clear entered the market, further toll price reductions were implemented.[34]

Toll price reductions were not uniform. As shown on Table 4-3, the rate reductions were larger on routes between densely populated cities. Approximately 40 percent of New Zealand's population is to be found in the greater Auckland and Wellington areas. Clear is well positioned to compete on this route since it owns fiber optic cables that connect these localities.[35]

In addition to the toll rate reductions, the number of toll rate bands increased from three to four. The day rate was broken into two periods; a peak morning rate and an afternoon rate. In the United Kingdom, BT recently did the reversed—it eliminated the peak morning surcharge.

Customers also benefited from a reduction in the billing period. In 1988, anticipating competition, Telecom relaxed the minimum charge time for a domestic call from three minutes to one minute, with subsequent time periods still rounded up until the next full

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[33] Clear Communication is owned by MCI, International Television New Zealand, Bell Canada Enterprises, and New Zealand Rail. Maurice Williamson, "Telecommunications Reform in New Zealand," March 1993, 5.

[34] Milton Mueller, "On the Frontier of deregulation: New Zealand Telecommunications and the problem of interconnecting competing networks," December 13, 1993, 11.

[35] Maurice Williamson, "Telecommunications Reform in New Zealand," March 1993, 6. Between April 1993 and April 1994, national and international toll prices fell approximately an additional 15 percent. Geoff McCormick, Telecom New Zealand, to David Gabel, September 16, 1994.

TABLE 4-3

DEAVERAGING OF TOLL RATES

Auckland to Wellington: Rates Per Minute
(U.S. Dollars)

June 1987		February 1993	
Peak	.86	Morning	.46
Night	.75	Afternoon	.37
Off Peak	.28	Economy	.28
		Night	.14

Hamilton to Invercargill

Peak	.86	Morning	.64
Night	.75	Afternoon	.50
Off Peak	.28	Economy	.37
		Night	.19

Note: New Zealand dollars converted to U.S. dollars at NZ/US ratio of $0.6. The 1987 data reflects the rate per minute, even though there was a three minute minimum charge in 1987.

Source: Maurice Williamson, "Telecommunications Reform in New Zealand," March 1993, 9.

minute. In 1991, Clear Communications introduced six-second rounding for customer calls exceeding one minute. In 1992, NZ Telecom responded with one-second rounding for calls exceeding one minute, and this was immediately matched by Clear Communications, which also extended the practice to international calls. NZ Telecom adopted the same practice for

international calls. One second rounding was estimated to slice 8 percent off the cost of a typical phone call.[36]

Despite NZ Telecom's price reductions, Clear was able to obtain a large share of the long-distance market. Eighteen months after beginning operations, Clear achieved approximately 15 percent of the market.[37] Nevertheless, its financial success is dependent on the terms of interconnection. Since the incumbent provided ubiquitous service and controlled almost all the access lines, Clear had to negotiate with NZ Telecom for interconnection practices and operating standards. NZ Telecom argued that Clear should buy interconnection at retail, rather than wholesale rates. Under pressure from the government, a temporary agreement was reached. But when a more permanent agreement was attempted, one that would include the terms for interconnecting local calls, no agreement could be reached. When the negotiations broke down, Clear took NZ Telecom to court. Clear argued that the terms of interconnection offered by NZ Telecom impeded competition and therefore violated the antitrust laws.[38]

NZ Telecom argued in court that the pricing of interconnection should be based on efficient component pricing (ECP). NZ Telecom's expert witnesses, American economists William Baumol and Robert Willig, argued that the price of interconnection should be composed of two parts. The first part is the direct per unit incremental cost of providing interconnection. These costs are the more obvious costs of interconnection, out-of-pocket expenses. The second component of ECP is the opportunity cost of interconnection. When Clear carried a toll message, NZ Telecom was foregoing a profit that it would normally have earned.

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[36] Maurice Williamson, "Telecommunications Reform in New Zealand," March 1993, 9. This pugnacious price response by Telecom is consistent with its announced strategy "to compete aggressively on price." Mueller, "On the Frontier of Deregulation," 12.

[37] Ibid.

[38] Ibid., 11-16.

Baumol and Willig argued that an owner-manager of a firm should consider the opportunity cost of his/her time. The cost of running a business is not limited to out-of-pocket expenses. If the owner was not running the firm, they could be employed in another line of business. Hence, there is an opportunity cost associated with their time and this expense should not be ignored when the economics of the firm are considered.[39]
New Zealand's Appeals Court rejected efficient component pricing because of the possibility that NZ Telecom might be earning monopoly profits. The court was willing to accept the notion of Clear making a contribution to NZ Telecom if the money was used to satisfy the goal of universal service, but lacking this evidence, there was the threat that the foregone profits were monopoly profits. The Court did not want to see the pricing of interconnection used to protect any monopoly profits that might be built into NZ Telecom's rates.[40]

The Court's findings are consistent with Baumol's writings on the pricing of interconnection. Baumol has argued that in order to insure that a local exchange carrier is not earning any monopoly profits, a showing must be made that the revenues collected by the carrier, or any other dominant firm, is below their stand-alone cost of production.[41] The stand-alone cost is the maximum amount of money that could be collected from a service in a competitive market and Baumol and Sidak believe that competitive market outcomes should be used as the guiding light for formulating policy:

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[39] William J. Baumol and J. Gregory Sidak, *Toward Competition in Local Telephony* (Cambridge: MIT Press, 1994), chapter 7. In the United States, a similar methodology has been proposed by the interexchange carriers. They argue that the LECs prices should be set above the incremental cost of production. The IXCs contend that the incremental cost should include an imputation for the foregone profit that would be obtained if an interexchange carrier handled the traffic. See, for example, Testimony of Frederick R. Warren-Boulton on behalf of AT&T, in Indiana Bell Telephone, Cause No. 39705, Indiana Utility Regulatory Commission, April 19, 1994.

[40] *Clear Communications Limited* v. *Telecom Corporation of New Zealand*, in the Court of Appeal of New Zealand, C.A. 25/93, 46.

[41] Baumol and Sidak, *Toward Competition in Local Telephony,* 81, 108, and 140-41.

> The regulator should study the courses of behavior that a competitive market imposes. The regulator then should impose such behavior upon the regulated firm in markets where competition is inadequate to protect the public interest-for example, by requiring the firm to set prices as it would have been forced to do by market pressures if competition had been effective. This principle requires a study of how firms would behave in the given technological and other circumstances if the competitive pressures generated by fully unimpeded and costless entry and exit, contrary to fact, were to prevail.[42]

Until competitive forces are sufficiently strong to wipe-out any monopoly profits that might be built into the prices of the local exchange companies, there is a need to undertake cost studies. The New Zealand Court's finding that the price of interconnection should allow NZ Telecom to earn only a competitive rate of return, requires that participants in interconnection negotiations and litigated proceedings measure the stand-alone cost of production. If a provider received revenue that exceeded its stand-alone cost of production, a competitor could enter the market and provide service for a lower price.[43]

Neither party was satisfied with the decision of the New Zealand Appeal Court and therefore both parties appealed the case to the Privy Council of London, England.[44] Clear requested that the Council award damages, and NZ Telecom sought a finding that efficient component pricing was not in violation of the New Zealand antitrust statute. On October 19, 1994 the Council rejected Clear's request for damages and sustained NZ Telecom's use of efficient component pricing. The Council concluded that the issue of monopoly level pricing should be addressed in some other forum. The Council ruled that NZ Telecom's pricing

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[42] Baumol and Sidak, *Toward Competition in Local Telephony,* 28.

[43] David Gabel, working with Mark Kennet, developed software that can be used to estimate the stand-alone cost of production. The software has been distributed for free to the State regulatory commissions. See "Estimating the Cost Structure of the Local Telephone Exchange Network." (with Mark Kennet), Monograph Published by the National Regulatory Research Institute, Ohio State University, 91-16.

[44] Whereas New Zealand is a former colony of the United Kingdom, aggrieved parties have the right to appeal to the Privy Council.

levels were not in violation of the anti-trust laws as long as the contribution charges built into NZ Telecom's retail rates were no lower than the amount Clear was being asked to make:

> It follows that the risk of monopoly rents has no bearing upon the question whether the application of the Baumol-Willig Rule [efficient component pricing] prevents competition in the contested area. If both [original emphasis] Telecom and Clear are charging their customers the same amount in the area in which they are not competitors [i.e., where NZ Telecom has a monopoly]...this does not have any effect on their relative competitiveness in the area in which they compete..."[45]

The Privy Council added that if Clear was dissatisfied with the level of contributions being requested by NZ Telecom, the firm could request the government to regulate the price of interconnection.[46] Clear subsequently requested that the government establish cost-based rates for interconnection.[47]

Conclusion

After more than three years of negotiations and court battles, the terms of interconnection in New Zealand remain unsettled. Competition for local service is hindered by the lack of an interconnection agreement and permanent interconnection rates for long-distance access have yet to be resolved. These disputes hinder Clear, or any entrant, from developing its business, and consequently it hinders the development of competition. By contrast, the decision by the United Kingdom to promote entry provided immediate benefits to exchange rate payers. The contrasting outcomes in New Zealand and the United Kingdom suggest that Oftel's policies were more effective than antitrust laws in promoting competition

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[45] *Telecom Corporation of New Zealand Limited* v. *Clear Communications Limited,* Privy Council, October 19, 1994, slip op., 27.

[46] Ibid., 28. The Court added that a regulatory commission was in a superior position to judge the extent to which interconnection rates were set at supra-competitive levels. *Ibid.*

[47] "NZ's Clear Calls on Government to Act in Dispute," *Financial Report*, October 21, 1994.

in the residential market. Nevertheless, the New Zealand policy of deregulation should not be considered unsuccessful. New Zealand achieved impressive price reductions in the toll market. Furthermore, because of New Zealand's comparatively small population and low population density, the British policy of promoting rival wireline networks could not easily have been applied in the former colony.

The developments in the two markets provided three interesting insights regarding market hypothesis that were frequently proffered in the United States. Telephone companies claimed that residential service is being subsidized and that in a competitive market, fixed, monthly exchange rates would increase. This same conjecture was made in the United Kingdom, and recent developments there show that entry will relieve the pressure to raise residential rates. In densely populated markets, cable companies are anxious to provide telecommunications services at lower rates than the allegedly subsidized regulated rates of the incumbents. In the next chapter, it is shown that this rivalry helped raise the take-rate of homes in the United Kingdom. On the other hand, in low-density markets, such as New Zealand, there is a lower likelihood that competitive policy can be used to promote universal service. Because of the fixed costs of setting up a network, it is less likely that there will be rivalry in markets like New Zealand. Therefore, in low-density markets there is a greater need to provide rate protection to residential customers.

The second crucial insight is that entry can lead to a break-down of uniform toll rates. Clear has concentrated on serving New Zealand's larger markets. As shown on Table 4-3, NZ Telecom has opted to focus its price reductions on high-volume routes. While some analysts in the United States argued that route specific rates are unlikely to be employed here because customers prefer the simplicity of uniform rates, the New Zealand experiment suggests that an unregulated dominant carrier is likely to end uniform toll pricing. To the extent that the higher price on low-density routes reflects differences in the cost-of-service, this may not be an unhealthy development. On the other hand, it raises the spectre that through price discrimination, the dominant carrier will injure entrants. In competitive markets, one would expect to see less efficient firms being driven out of the market. Therefore, it is an empirical issue of the extent to which the price reductions on dense routes should be characterized as predatory or competitive market response. This is an area that

requires close monitoring; at the start of the twentieth century AT&T used its profits from monopoly markets to drive out of business an equally efficient provider of long-distance service.[48]

The third insight is that absent regulatory barriers to entry, entry is more likely in the long-distance than the exchange market. New Zealand has opened up both its exchange and interexchange markets. While cellular systems do provide an alternative means for making an exchange call in New Zealand, these systems are widely recognized as a complement rather than as a substitute for wireline exchange service. At this time, no cable company is providing wireline exchange telecommunications services. On the other hand, Clear Communication is providing facility based competition in the long-distance market. The existence of competition in the long-distance, but not the exchange market is contrary to the claims made by Huber, Kellog and Thorne in their report *The Geodesic Network II: 1993 Report on Competition in the Telephone Industry.* These authors claimed that there was no longer a natural monopoly in the exchange market, but because of the economies of scale that can be realized with fiber optic cables, the long-distance market was "'naturally monopolistic.'" Because of these economies of scale, Huber, Kellog and Thorne claim that MCI and Sprint would not survive if not for regulation:

> The long-distance market today contains three facilities-based carriers, additional regional carriers, and hundreds of tiny resellers. Yet AT&T could wipe them all out in very short order, and would do so quickly enough if political regulatory, and antitrust inhibitions were ever swept aside. Competition is an illusion...[49]

The New Zealand Government correctly predicted five years ago that economies of scale and sunk costs were a larger barrier to entry in the local exchange market:

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[48] David Gabel, "Competition in a Network Industry: The Telephone Industry, 1894-1910," *Journal of Economic History*, September 1994.

[49] p.1.11 (quote), and 2.80.

> 'Elements of natural monopoly are most evident in the provision of local services for residential and business consumers. Economies of scale and scope act as a barrier to facilities-based entry because there is insufficient traffic to justify the sunk investment, which is primarily cables in the ground.'[50]

If interexchange suppliers can survive in New Zealand's unregulated market, it is incorrect to ascribe the prolonged life of MCI and Sprint to regulatory fiat. Furthermore, the lack of facility based entry in the exchange market by cable companies in New Zealand, and only entry through regulatory protection in the United Kingdom, suggests that the exchange market is still far from being competitive or contestable.

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[50] Ministry of Commerce, *Guarantee of Access to Essential Facilities*, Discussion Paper, Wellington, New Zealand, December 1989, 11, quoted in Carl Blanchard, *Telecommunications Regulation in New Zealand: How Effective is 'light-handed' regulation?*", *Telecommunications Policy* 18, no. 2 (1994): 155.

CHAPTER 5

GOVERNMENT POLICY AND PERFORMANCE

In the previous two chapters, the market structure and pricing behaviors resulting from privatization and deregulatory policies in New Zealand and the United Kingdom were presented and analyzed. The situations in the two countries differ markedly. In this chapter, the effects of these policies on penetration rates, profitability, and quality of service are presented and discussed.

Performance in New Zealand

Consumers of telecommunications services in New Zealand appear to be better off than they were before privatization, despite the lack of alternative local exchange suppliers and unsatisfactory interconnection arrangements. Both NZ Telecom and Clear Communications are showing a profit and Clear has made substantial gains in market share for both national and international toll calling. The telecommunication market in New Zealand also appears to continue to attract entry of new competitors. However, the reasons for these results are somewhat subtle. As the Chairman of the Commerce Commission wrote in 1992:

> In the absence of competition (the best regulator of all), the gap is filled by self-regulation... [NZ] Telecom is the *de facto* regulator. Telecom owns or controls the key factors and so Telecom makes the rules and other parties in the industry, by and large, play by them.[1]

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[1] S. M. Lojkine, "The New Zealand Experience," *Telecommunications Policy*, (December 1992): 776. The view that Telecom NZ has become the effective regulator of the industry has also been expressed by BellSouth's Managing Director in New Zealand, Keith Davis:

> 'Government adopted the policy, which it still maintains, that the best form of regulation in telecommunications is competition. It was believed that monopoly minus regulation would equal competition. In fact, monopoly minus

NZ Telecom is extremely profitable for its shareholders. The New Zealand Ministry of Commerce estimates that the rate of return on average shareholder funds was 23.6 percent as of the year ending March 1994, which is up from 17.8 percent for the year ending March 1993.[2] The reasons for these dramatic returns to stockholders are not altogether clear from the information that is available to the authors, but the following reasons are offered. First and foremost, the NZ Telecom staff was reduced by 50 percent as of March 1994 with plans for further reductions.[3] The network has been updated with more than 97 percent of the access lines connected to digital switches.[4] These efficiency improvements could result in a considerable savings in operating costs. On the revenue side, the reasons are less clear. Clear, despite the unsatisfactory terms of interconnection, has been able to achieve a substantial share of the interexchange market. Telecom New Zealand's profitability may be partially tied to its interconnection charges.

Clear Communications has operated in New Zealand for approximately three years and showed a profit in 1994. Clear's market share in the national toll market is approximately 19 percent and 23.5 percent in the international toll market.[5] However, Clear's performance should not be surprising and may be largely a function of NZ Telecom's profitability and price structure. Economic theory suggests that entry occurs as long as there are above-normal profits to be earned. This appears to be the case in New Zealand. Since 1991, the following companies have entered BellSouth (NZ) Limited (entered June 1991), TelePacific Networks

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regulation equals regulation by monopoly.' *"New Boys on the Block,"* D-46, quoted in Carl Blanchard, *Telecommunications Regulation in New Zealand: How Effective is 'light-handed' regulation?"*, *Telecommunications Policy* 18, no. 2 (1994): 159.

[2] New Zealand. Ministry of Commerce, Communications Division, *Telecommunications Reform in New Zealand: 1987-1994* (Wellington, NZ.: Ministry of Commerce, September 20, 1994).

[3] Ibid., 5.

[4] Ibid., 4.

[5] *Op Cit*, footnote 2.

Limited (entered March 1992), Transpower Networks Limited (entered August 1992), New Zealand Rail Limited (entered March 1993), and Synet Communications Limited (entered May 1993).[6] There are also resellers. The extent of direct competition offered by these entrants to date is not clear from the information provided. For instance, BellSouth (NZ) Limited provides cellular services in New Zealand. What is clear is that the New Zealand telecommunications market has been profitable and promises to be profitable in the future.

The Ministry of Commerce estimates that since 1987 residential rentals (the price of local residential exchange service) increased by 29 percent in real terms, real toll charges fell 37 percent, and leased lines for selected digital services declined by 58 percent. The Ministry concludes that overall (local and toll) residential ratepayers are better off because the Statistics Department computes that overall telecommunications charges fell by 15 percent, in real terms, since 1987.[7] Recall also that residential rates were restructured prior to privatization and acquisition of NZ Telecom by the joint venture partners. Since the acquisition, the Kiwi Share Plan has limited increases in residential rates to no more than the rate of inflation. Dr. S. M. Lojkine, the Chairman of the Commerce Commission, cites the existence of the Kiwi Share Plan as one of the primary obstacles to the development of competition as prices and profits fail to encourage potential entrants to act. Other primary obstacles he cites are interconnection, numbering/directory access, points of interconnection, access codes, interconnection fees, bundling, and availability/price of dedicated services.[8] Many of these issues were addressed in the United States since the divestiture of AT&T. New Zealand has yet to address many of them and may not address them absent a regulatory structure similar to the United States regulatory structure.

One major benefit of privatization in New Zealand is the quality of service. While competition in the local market in New Zealand is not intensive as in the United Kingdom, their experience under price caps is still instructive. Under price caps, the percent of

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[6] Ibid., 9.

[7] *Op Cit*, footnote 1, 773.

[8] Ibid, 775.

residential connection orders completed by the end of the second business day following application increased from 88 percent in March 1991 to 98 percent in May and September of 1993. More recently, the number dropped to 92 percent. Telecom claimed that this was because of a severe storm that caused damage in the South Island.[9]

Other performance indicators, reported on Table 5-1, suggest that the quality-of-service is either holding steady or improving. To some extent, the data in the last column have to be treated with caution. The March 1994 data that appears in brackets are estimates because of a change in Telecom's computer system. Also, the data are impacted by the storm that was mentioned previously. Finally, NZ Telecom claims that the deterioration in the quality of directory assistance is due to an unexpected surge in directory assistance calls.

TABLE 5-1
SERVICE QUALITY PERFORMANCE BY NZ TELECOM

Half year up to-	Mar-91	Sep-91	Mar-92	Sep-92	Mar-93	Sep-93	Mar-94
Directory assistance calls, average time to answer, seconds	17	18.2	16.6	11.1	14.9	11.7	20.3
Directory assistance calls, handling time, seconds	34	35.2	35.5	35.5	34.9	31.3	34.2
Written residential billing inquiries per 1000 residential bills	5.1	3.1	3	3	3.1	3.5	(6.9) Note 1
Working days to clear residential billing inquiry	9.2	5.4	3.3	3.5	3.1	3.4	(3) Note 1
Availability of SPC exchange services (%) Note 2	99.997	99.997	99.998	99.999	99.997	99.998	99.998
Availability of electronic payphones (%)	97.1	97.7	98.1	98.1	98.5	99.1	98.7

Note 1: Results not available because of billing computer systems merger, results in brackets are Telecom's estimates.
Note 2: SPC is Stored Program Control.
Source: Telecommunications Reform in New Zealand

[9] New Zealand Ministry of Commerce, "Telecommunications Reform," 16.

Notwithstanding these caveats, the data viewed as a whole suggest a general trend of improvement, but still a need for constant government monitoring. The Government recently concluded that since Telecom was privatized and deregulated, there has been a noticeable improvement in the "range of service, service standard and overall efficiency" of operations.[10]

Table 5-2 summarizes penetration rates for New Zealand from 1985 to 1994. The information is collected through the Household Expenditure and Income Survey (HEIS). The data indicate that despite the 30 percent increase in the real price of local exchange service, there was no decline in the level of penetration in New Zealand.

TABLE 5-2

PENETRATION RATES FOR NEW ZEALAND FROM 1985 TO 1994

Year	Penetration (%)	Number of Households in Survey	Total Number of Households in New Zealand	Margin of Error
1985	94.20	3,567	1,026,500	2
1986	94.40	3,439	1,022,250	2
1987	95.10	3,501	1,044,250	3
1988	95.20	4,401	1,046,400	5
1989	95.70	3,435	1,091,400	5
1990	94.90	3,348	1,106,000	5
1991	93.90	2,934	1,080,600	4
1992	93.60	3,017	1,102,900	4
1993	93.50	4,683	1,128,000	3
1994	93.90	3,102	1,131,900	3

Note: The data indicate that despite the 30% increase in the real price of local exchange service, there has been no decline in the level of penetration in New Zealand.

Source: Tim Maloney, University of Aukland (Aukland, New Zealand).

[10] Ibid., 18.

Performance in the United Kingdom

Cable telephony has rapidly become an important force in the United Kingdom. By midyear 1993, the cable companies were signing up 15,000 new residential customers per month, only 10,000 less than the more ubiquitous incumbent, BT.[11] (See table 5-3.)

The cable companies have succeeded in obtaining a take rate on telephony that greatly exceeded the rates forecasted in their business plans. Table 5-3 contains information about take rates for cable telephony in the United Kingdom. While they initially forecasted that 5 percent of the cable television subscribers would also order telephone service, the take rate has been closer to 30 percent. This 30 percent take rate is a conditional probability--conditional on a customer taking cable television service. As a percentage of the residential households passed, the cable companies have been able to get approximately 6 percent of the customers to subscribe to their service.

The growth-rate of the industry has been high (see Figure 5-1).[12] If the market expansion of cable telephony in the United Kingdom is following the traditional S-curve for a product-life cycle, the data indicate that it is in the rapid growth introductory phase of the life cycle. As the cable companies add more programming choices to their entertainment packages, and as the country emerges from its recession of the past few years, the firms hope to increase the take rate on cable television services. According to Credit Suisse First Boston, the take rate on cable television must increase to 30 percent in order to just break even and must reach 40 percent in order for the investors to be compensated for their investments.[13] In the United States, approximately 60 percent of the households obtain entertainment services

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[11] United Kingdom Organization for Economic Co-Operation and Development, *The Benefits of Telecommunication Infrastructure Competition* (London: Organization for Economic Co-Operation and Development, February 21, 1994), 36-37.

[12] *New Media Markets,* "54,600 Telephone Lines Installed in Last Quarter," *New Media Markets* 11, no. 23 (November 4, 1993): 7.

[13] Credit Suisse First Boston Ltd., "The UK Cable Update—Industry Report," August 9, 1993.

Figure 5-1
Growth in Cable-Telephony Subscribers by Quarter from 1991 to 1993

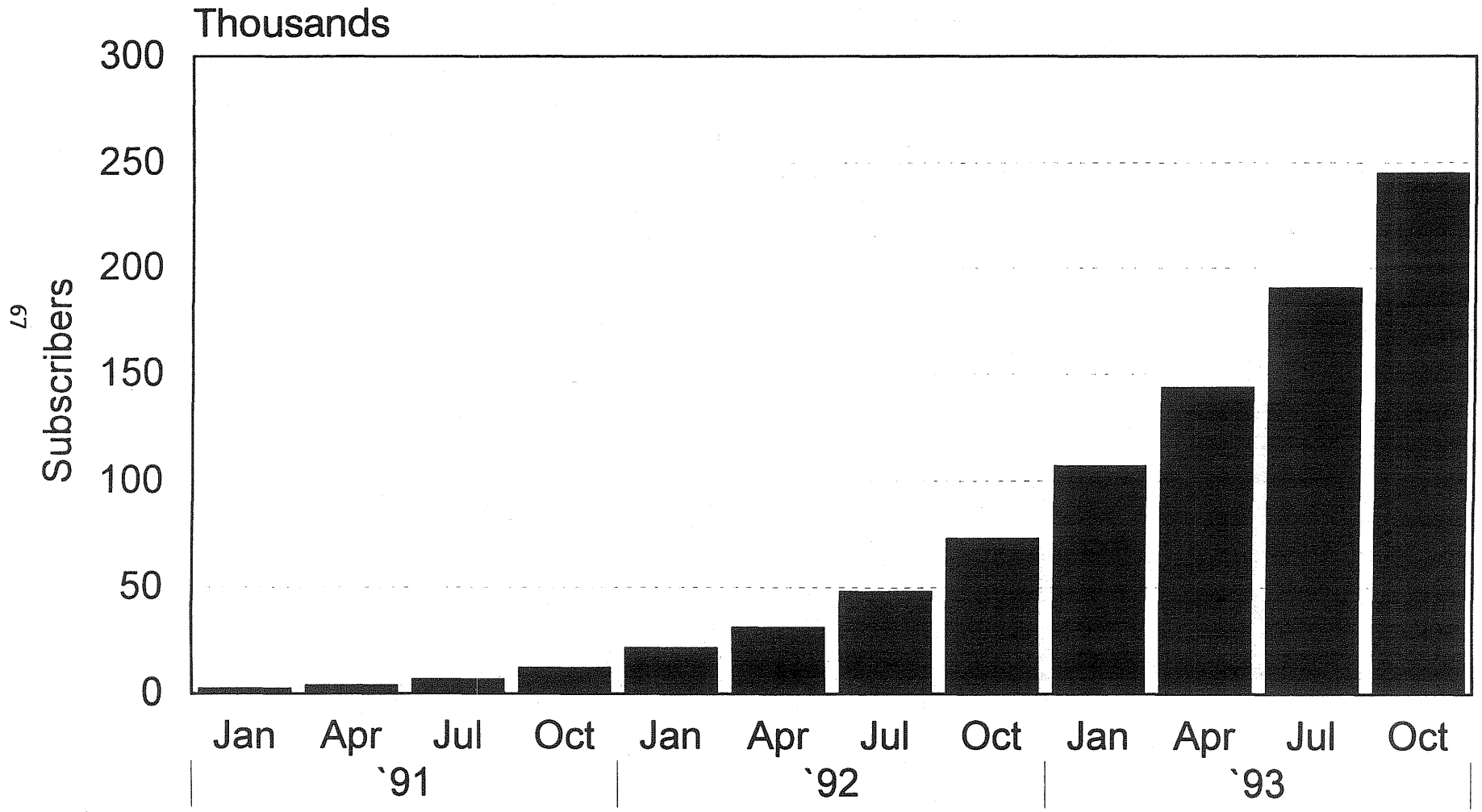

TABLE 5-3

TAKE RATE ON TELEPHONE SERVICE OVER CABLE SYSTEM (1)

	April 1993	June 1993
Homes passed (released for marketing) (2)	2,094,631	2,224,093
Homes physically passed	2,299,178	2,484,093
Subscribers	454,678	464,997
Cable Penetration	21.70%	20.91%
Installed telephone lines	140,865	170,178
Business lines	19,146	21,037
Residential lines	121,719	149,141
Telephone take rate among cable subscribers	30.98%	36.60%
Telephone take rate as a percent of homes passed	5.29%	6.00%

Notes:

(1) *New Media Markets* 11, no. 13 (July 1, 1993): 10.

(2) Marketing does not begin immediately after a household is passed by a cable. Before the cable companies attempt to sell service in a town for the first time, they wait until that have passed a sufficiently large percentage of the homes. The cable companies do not want to advertise that service is available until most homes are passed. Therefore the number of homes released for marketing is less than the number of homes passed.

Source: Authors' construct.

through the cable network.[14] The cable industry in the United Kingdom expects to achieve a 40 to 50 percent penetration for cable television in the next ten years.[15] If it is assumed that the take rate on cable telephony at those households remains at 30 percent, the cable companies should end-up with approximately 15 percent of the residential telephone market.[16]

The cable companies may be able to raise the take rate on cable telephony as customers become more familiar with their services, as number portability becomes available, and as they begin to introduce telecommunications products or pricing packages that are not available through BT. Since the cable companies have only been offering telephone services for approximately eighteen months, they are still in the early stages of developing new products and pricing strategies. On the other hand, as the cable companies increase their share of the residential telephone market, the likelihood increases that BT will reduce its residential prices. The price reductions could counter balance some of the other favorable trends for the cable-telephone operators.

Oligopoly theory provides no unambiguous insights on the extent to which the rivalry between a dominant firm like BT, and an entrant, such as the cable companies, will lead to competitive pricing. Without any clear guidance from economic theory, some understanding

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[14] John Williamson, "U.K. Cable Telephony: A Window on the Future," *Telephony,* supplement, October 5, 1992, 6.

[15] United Kingdom Cable Television Association, *The Duopoly Review: Submission to the Department of Trade and Industry and to the Office of Telecommunications* (London: Cable Television Association, January 11, 1991), 8-9.

[16] If fifty percent of the households take cable television, and thirty percent of the subscribers take cable telephony, 50% * 30% = 15% of the British households will take service from the cable companies. Credit Suisse First Boston forecasted that BT's share of the residential market will fall, at a minimum, two to three percent over the remainder of the decade. Credit Suisse First Boston Ltd., "The UK Cable Update" (see footnote 15).

There are approximately 22.5 million homes in the United Kingdom. Two thirds of these homes (15 million) fall within the franchise territory of cable companies. The Cable Television Association is forecasting that by year 2000, 12 of the 15 million homes in the United Kingdom will be passed by cable. Of the 12 million passed homes, the Cable Television Association expects to serve 6.12 million of these households. Ibid. The report does not indicate the percent of the 6.12 that the Association believes will have telephone service.

of the likely behavior of firms in a tight oligopoly may be gleaned by looking at the American interexchange industry.[17] One dominant firm, AT&T, has a market share of approximately 65 percent, and competes against two midsized rivals, Sprint and MCI. Furthermore, there are a large number of resellers who compete with these firms. According to the RBHCs, the interexchange industry is a cozy oligopoly with few signs of competitive pricing. Some studies suggest that the price reductions that have occurred in the interexchange market are largely the result of the FCC ordering the recovering of nontraffic sensitive costs through fixed customer line charges.[18] The interexchange carriers counter that competitive pricing is the norm and the price reductions are also the result of intensive price competition between the carriers.[19] In short, the record at this point is ambiguous. One can only conclude that if the cable companies do obtain a market share of 15 percent, this will not guarantee that rates are driven down to competitive levels.

Oftel has expressed its pleasure with the progress being made by the cable companies. The former Director General pointed out that the entrants are not only taking away customers from BT, but are also bringing new customers onto the network.[20] In a monopoly

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[17] Rivalry in the United Kingdom and the United States is in different markets. In the United Kingdom, BT and cable telephony are competing in the exchange, toll and other markets. In the United States, AT&T, MCI and Sprint are only competing in the interexchange market. Due to this fundamental difference, the nature of rivalry may be substantially different.

[18] Kenneth G. Robinson, "AT&T, MCI, Spring: Cozy Competitors," *New York Times,* May 22, 1994, Sec. D, 11; William Taylor and Lester Taylor, "Postdivestiture Long-Distance Competition in the United States," *American Economic Review Papers and Proceedings* 83 (May 1993): 185-190.

[19] Robert E. Hall, "Long Distance: Public Benefits from Increased Competition," *Applied Economics Partners*, October 1993.

[20] Sir Bryan Carsberg, remarks at International Telecommunications Union Forum, (October 7-10, 1991).

While competition at the exchange level is most sharp in the United Kingdom, other nations have a longer record of permitting competition in other telecommunication markets, especially toll service and terminal equipment. Wherever competition has been introduced, the incumbent has argued that rivalry would reduce its ability to provide "subsidies" to residential customers and, as a result, universal service would suffer, The Development

environment, telephone companies spend little effort seeking new residential customers.[21] Rivalry has the potential to raise the rate of penetration because entrants are combing neighborhoods with solicitors, who are going door to door looking for customers.[22]

Somewhere between 7 and 15 percent of the cable companies telephony customers were not previously obtaining service from BT. Many of the customers were unable to get service from BT because they failed BT's financial screening test. The cable companies apply less stringent terms to applicants and this has led to approval of applications that were turned down by BT. The cable companies realize that some of these customers have a higher than average likelihood of default on their payments and therefore have taken steps to limit their exposure. For the high-risk customers, the cable companies do not allow the customers to place outgoing toll calls until after they have built up their credit rating.[23]

Oftel's pleasure with the success of the cable companies in signing up new customers is not surprising. As in the United States, the regulatory commission is committed to the

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Committee for Information Computer and Communications Policy of the Organization for Economic Co-Operation and Development (OECD) recently concluded that "there is no evidence that universal service has been impaired by market liberalization." For OECD countries "that have liberalized telecommunication markets, access to the telephone has steadily increased." "The Benefits of Telecommunication Infrastructure Competition," February 24, 1994, 2 (first quote), 14 (second quote).

[21] The British experience is similar to the history of the first one hundred years of telephony in America. When the Bell System had a monopoly, the firm did little to solicit business from new customers. But during the competitive era of 1893 to 1910, Bell, and its rivals went door to door looking for customers. As a leading official of AT&T noted at the time, competition forced his firm to "go after the business," Letters from Allen to Fish, (May 16, 1906) (on file with the American Telephone and Telegraph Corporate Archives). Once Bell regained control of the market, the firm essentially eliminated its efforts to sign-up new residential customers.

Also see David Gabel and David Weiman, "Historical Perspectives on Interconnection Between Competing Local Exchange Companies," *AARP* (Washington, D.C.: Public Policy Institute, AARP, 1994) for a detailed account of the marketing and pricing policies adopted by competitive exchange companies at the turn of the century.

[22] Dominic Reed and Richard Feasey, interview by author, May 17, 1994.

[23] Ibid.

extension and preservation of universal service. The agency is proud of the increase in the rate of household telephone penetration since the nation privatized BT. Recently, Oftel took a few administrative steps that were intended to further increase the rate of penetration. The agency encouraged BT to lower its connection fee from $209 to $148.50. Furthermore, it encouraged the firm to introduce a budget rate plan for low-usage customers.[24]

Ultimately the agency would rather see the competitive market raise the take rate. BT's first rival, Mercury, focused its marketing effort on the large business market. In retrospect, this is not surprising because of the high margins in the long-distance business and because the entrant received its financing from the nation's most important business center, the City of London. The City of London was displeased with the service provided by BT and hoped that Mercury's entry would provide users with the same benefits by competition provided the business community in the United States. While Mercury did build an interexchange network that connected together many of the nation's cities, the entrant spent little effort soliciting business from the residential community.[25]

In late 1990, Oftel reviewed the progress made under its duopoly plan (only allowing one entrant, Mercury, to compete with BT for voice services). Many parties told Oftel that while the business community had benefited from Mercury's presence, few gains had been realized by the residential community.[26] Recall that in recognition that the Government had to provide incentives to entrants to develop the residential market, the British Government permitted the cable companies to provide telephone service, and to have a monopoly on wireline entertainment services for approximately a decade.

The cable companies responded to this opportunity. The progress made in attracting new customers not only provides support for the British Government's view that universal

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[24] Alan Bell, interview by author, May 15, 1994. The high rate for connection is designed to recover the cost of hooking-up a new customer.

[25] Andrew Davies, *Telecommunications and Politics: The Decentralized Alternative* (New York: Pinter Publishers, 1994), 167-68.

[26] The Duopoly Review, Submissions to the Department of Trade and Industry and to the Office of Telecommunications, January 1991, Oftel Library.

service and competition are compatible goals, but it also improves the long-run prospects of the cable industry. If the cable industry did not develop the cable telephony market, it would be harder for the government to rationalize the entertainment line-of-business restriction imposed on BT. The cable operators are well aware that the Government's decision to exclude BT from providing entertainment services for a decade, and to not license a third wireline carrier, is dependent on the cable carriers developing the residential and the small and medium sized business markets.[27] Since the entrants are seeking out new customers, it is easier for the government to continue its policy of allowing the cable companies to develop a second wireline network.

Oftel has taken other steps to help the nation achieve its goal of universal service. Oftel encouraged BT to sell services at uniform rates around the nation.[28] Unlike in the United States, the incumbent has not exhibited a strong desire to deaverage its rates.[29] One of BT's primary marketing advantages is that it can provide service throughout the nation. This is important to large customers that operate offices in different cities. By covering the entire nation, BT offers end-users uniform operating procedures, as well as pricing. Just as multinational corporations have sought suppliers that can operate networks in different countries, domestic firms seek suppliers that can sell services in all markets of a nation. If BT was to deaverage its rates, it would complicate the buying process for large customers. The buyers would have to spend effort finding out what BT's prices are in each market. This searching effect would eliminate the convenience of buying service from the ubiquitous incumbent. This convenience is important from a marketing and customer service standpoint;

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[27] Cable Television Association, "The Duopoly Review: Submission to the Department of Trade and Industry and to the Office of Telecommunications," January 11, 1991, 1.

[28] Sir Bryan Carsberg, "Telecommunications Competition in the United Kingdom: a Regulatory Perspective," 37 N.Y.L. Sch. L. Rev. 285 (1992). Carsberg points out that regulators in the United Kingdom are likely to oppose efforts of BT to deaverage: "The present political realities of life in Britain are such that no regulator will push for deaveraging pricing until technology makes it inevitable." Ibid.

[29] United Kingdom Department of Trade and Industry, "Competition and Choice: Telecommunications Policy for the 1990s," March 1991, ¶6.13.

to date the cable companies have spent little effort attempting to sell to large businesses, in part, because they could not offer national accounts.[30] The cable companies only provide service in their franchise territory, and to date, providing national services through a rate bureau is still in the formative stages.[31]

Concerns were raised in the United States and abroad that rivalry will only occur in more densely populated markets. At this juncture, the data from the United Kingdom provides some support for this concern. The development of cable telephony has been weaker in peripheral Northern regions than in the rest of the nation.[32] While regional penetration data should be watched to insure that noncore markets have access to a modern telecommunications infrastructure, the industry is young and therefore it is difficult to reach conclusions regarding the extent of segmentation that will occur in the long run. The initial uneven development partly reflects the fact that businesses invest first in those markets that have the highest and fastest payback. Core markets have more intensive users of telecommunications services and therefore suppliers naturally target these markets first.

The cable companies have been able to attract customers by offering price discounts, quality service, marketing themselves as a local company "more attuned and better equipped to attend to local requirements,"[33] and by offering some innovative pricing packages.

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[30] Dominic Reed and Richard Feasey, interview by author, May 17, 1994; and Alan Bell, interview by author, May 15, 1994. Alan Bell, Oftel's Chief Economist, argues that there are some positive efficiency properties associated with the requirement that BT sell services at the same rate around the nation. In order to match the rates of entrants, BT must improve the efficiency of its operations. If they were allowed to selectively reduce prices, there would be less of an incentive to improve efficiency. Markets could be maintained through price discrimination rather than improved operating efficiencies.

[31] In London, the cable companies have taken steps to link their networks together. Nationally, less progress has been made to link together the different cable systems both physically and in terms of marketing services.

[32] James Cornford and Andrew Gillespie, "Cable Systems, Telephony and Local Economic Development in the UK," *Telecommunications Policy,* November 1993, 596-98.

[33] Credit Suisse First Boston Ltd., "The UK Cable Update."

By packaging cable and telephone service together, the cable companies claim that they have been able to induce customers to buy services. The firms hope that customers will use the savings obtained from cable telephony to purchase cable television services.[34] Some cable companies have provided a discount to customers who take both telephone and entertainment services. In 1993, the Birmingham franchise of Comcast, which is partially owned by U S West, had a monthly connection fee of £6.50, £1 ($1.50) less than BT. For those customers that only took telephone service, the charge was £9 per month. While the pricing plan was designed to encourage customers to take both services, it had the undesired effect of discouraging customers who only wanted telephone service. Consequently, Comcast said that it planned to lower the fixed monthly fee for telephone service to only £7.[35]

For the United Kingdom as a whole, cable companies that offered both telephone and entertainment services, had a higher take rate than those providers that marketed only entertainment. Several operators claim that this is because cable telephony helps them "get in the door" and attract customers for entertainment services. The cable companies have found that the offering of telephony increases the likelihood that a customer from a higher socioeconomic group will take television service.[36]

The data are too preliminary at this point to conclude if the positive correlation between take rate on entertainment services and marketing telephone service is spurious, or reflects important demand complementarities.[37]

The cable companies do not expect to start earning a profit on their total investments for approximately seven years (see page 28). The entrants claim that their telephone

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[34] *Business Week*, September 27, 1993, 136.

[35] "What Makes Birmingham Tick?," *New Media Markets* 11, no. 9 (May 6, 1993).

[36] "How Newer Franchises do Better," *New Media Markets* 11, no. 13 (July 1, 1993): 8.

[37] *New Media Markets* points out that their "analysis does show the telephony franchises doing better than others; a penetration level of 24 per cent against 21.2 percent for those which do not offer telephony. But this is more likely to be a factor of telephony being introduced in the already better-performing franchises." "So Why Are Some UK Franchises Doing Better than Others?" *New Media Markets* 11, no. 5 (March 11, 1993): 6.

operations are a sound addition to their entertainment products. They claim that adding telephony has raised their capital costs by 20 percent while doubling their revenue.[38] Cornford and Gillespie estimated that in the United Kingdom, cable telephony raises capital costs by 28 percent but increases revenues around 91 percent.[39] While one cannot say that these same margins will be earned by American cable companies that provide telecommunications services in the United States, the data are suggestive that there are substantial potential profits in the exchange telecommunications market for cable companies.

Regulators and policymakers have expressed concerns that price caps may create incentives that will harm the quality of network services. As suppliers strive to decrease their costs, they may reduce the reliability and general quality of service. Because of this threat, regulatory commissions in the United States have issued orders requiring no reduction in the quality of service under price caps.[40]

As shown in Table 5-4, the United Kingdom experienced a notable increase in service quality under price caps. These gains in service quality were achieved during an era when BT faced competition in the large business customer market. In the United Kingdom, as well as the United States, entrants advertised their ability to provide business customers a second path to the public switched network and advertised that these routes increased network reliability. Rivalry in the business market spurred incumbent telephone companies to improve the quality of their service.

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[38] Dominic Reed and Richard Feasey, interview by author, May 17, 1994.

[39] Cornford and Gillespie, "Cable Systems, Telephony and Local Economic Development in the UK," 594. Furthermore telephony increases the entrants profitability because it has a lower churn rate than cable television. This reduces the risk associated with the investment. Maurice Estabrooks, interview by author, July 7, 1994.

[40] National Regulatory Research Institute, "An Analysis of Selected Aspects of Ohio Bell Telephone's Application for Alternative Regulation: Price Caps, Service Classifications and Infrastructure Commitments," February 1994, 65.

TABLE 5-4 BRITISH TELECOM'S QUALITY OF SERVICE (1)		
Network Reliability	1985/86	1991/92
Local Calls Failed %	1.7	0.3
Toll Calls Failed %	4.1	0.5
Fault Repair		
Fault Cleared Within 2 Working Days	87.1	99.0
Installation		
Business Orders Completed in 6 Working Days %	60.8	75.2
Residential Orders Completed in 8 Working Days %	59.4	83.2
Operator Services		
Operator Calls Answered in 15 Secs %	85.6	90.4

Note:

(1) OFTEL, "The Regulation of BT's Prices," Green Paper, January 1992, Table 7. BT has agreed to provide Oftel with quality-of-service indicators every six months. This data is supplemented by special studies that are undertaken by the agency. Sir Bryan Carsberg, Remarks at the International Telecommunications Regulatory Symposium, October 7-10, 1991, 23.

Source: Author's construct.

Since 1992, BT has had to confront actual and potential entrants in the residential market. There are strong indicators that this rivalry will lead to further improvements in the quality of service. The cable companies are succeeding in convincing a large number of customers to replace BT service with cable telephony. While price is a primary attraction of cable telephony, the entrants have also emphasized that providing high-quality service is a crucial part of their short- and long-term strategy of expanding their market share. For a number of years BT was perceived as providing poor service, and in the short-run the entrants are able to take advantage of customer's lingering resentment associated with this track

record.[41] In the long run, the cable companies expect BT to match their low prices and, therefore, the entrants must provide a more modern network in order to obtain and sustain profitable operations.[42]

These competitive losses spurred BT to undertake a "win back" campaign that emphasizes the high quality of service available on the incumbents network. According to BT, a number of customers returned to the incumbent because of their dissatisfaction with the quality of cable telephony.[43]

The importance of providing quality service to residential customers in a competitive market is not an anomaly of the British market. At the turn of the century in the United States, the rival Bell and the independent networks fought for market share largely by racing to develop high-quality networks.[44] Today, the local exchange companies in the United States have a reputation for providing higher quality service than eable companies and this provides the telephone companies with an important marketing advantage.[45]

Based on the United Kingdom and New Zealand's track record with price caps, as well as because of their and the U.S.'s competitive record, little or no diminution in the quality of service is expected as increasing reliance is placed on price caps and competition to regulate the market.

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[41] Credit Suisse First Boston Ltd., "The UK Cable Update; "More Operators Will Go for Free Calls, but Fight Against BT Will Focus on New Products," *New Media Markets* 13, no. 2 (January 27, 1994): 11; and United Kingdom Cable Television Association, "The Duopoly Review: Submission to the Department of Trade and Industry and to the Office of Telecommunications," January 11, 1991, 2.

[42] *New Media Markets* 11, no. 13 (July 1, 1993): 6.

[43] "BT 'winning back' cable customers," *New Media Markets* 11, no. 25 (December 16, 1993): 1.

[44] David Gabel, "Competition in a Network Industry: The Telephone Industry, 1894-1910," *Journal of Economic History*, September 1994, 543-572.

[45] Economics and Technology, Inc., and Hatfield Associates, Inc., *The Enduring Local Bottleneck: Monopoly Power and the Local Exchange Carriers,* (1994), chapter four.

There may be roadbumps along the way. For example, the Staff of the Colorado Public Service Commission recently reported that U S West may have violated the Commission's quality-of-service rules while operating under an alternative form of regulation. A recent report card published by the Commission, showed that U S West "scored a negative 34.42 on its quality-of-service measurements for 1993 under AFOR plan. The range for the quality-of-service score was minus 100 (worst) to plus 100 (best)." The Staff of the Commission also reported that it has received an increasing number of customer complaints.[46] The development in Colorado, a state that has adopted an alternative regulatory framework, points out the need for regulatory commissions to continue to monitor indicators of quality-of-service. Nevertheless, the problems in the U S West territory appear to be as likely to occur in traditional rate-base regulation jurisdictions, as well as in those with alterative forms of regulation.[47] Therefore, the Colorado problems are not unique to a price cap environment.

Nevertheless, in order to protect the assets of their stockholders, competitive pressures, along with the utilities' general interest in having a good public image, will compel the telephone companies to maintain and improve their quality of service.

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[46] Colorado Public Utilities Commission, *Connections* (Colorado Public Utilities Commission, September 1994), 1, 3.

[47] Idaho Staff Comments in Case No. USW-S-94-3, "In the Matter of the Evaluation of U S WEST Communications' Revenue Sharing Plan for the First Five Years of Operation," August 4, 1994, 14.

CHAPTER 6

FURTHER LESSONS FOR POLICYMAKERS IN THE UNITED STATES

With Senate Bill S1822 not passing in 1994, legislators, regulators, and policymakers have time to reflect on the debate involving a major rewrite of the Telecommunications Act of 1934. Much of the debate focused on two outcomes of adopting competitive policies—infrastructure and universal service. At the heart of the infrastructure push is the national information superhighway and the variety and convenience of electronic information, entertainment, and communications applications that it promises. The universal service issue is multifaceted. The alleged need to realign rates for local service and the potential deaveraging of long-distance and urban/rural rates is seen to threaten the current penetration of telephone services. Moreover, there seems to be a question of developing a society of information "have" and "have nots"; everyone wants an "off" and "on" ramp. The experience of the United Kingdom provides some insights for policymakers regarding the outcome of adopting competitive policies and encouraging entry into the local, residential, and small business markets.

In a relatively short period of time, both New Zealand and the United Kingdom privatized their previously state-owned telephone companies and adopted policies intended to encourage competition. As we have seen, however, the processes and procedures used to implement these goals differ substantially between New Zealand and the United Kingdom. While privatization and deregulation has led to increased technical efficiency, New Zealand, today, has a market structure similar to the United States during the period from 1970 to divestiture. The pricing policies and market power of NZ Telecom has already led to an antitrust suit over interconnection issues. In essence, a twenty-some year-old American debate on the pricing of interconnection has been exported by the RBHCs and MCI to New Zealand.

The United Kingdom, on the other hand, adopted a policy of using line-of-business restrictions with specific time limits and discounted interconnection pricing. These policies attracted the entry of RBHCs into cable telephony and resulted in a market structure of

regionalized duopoly for telephone service. While not competitive in the textbook sense, the rivalry of BT and the cable telephony providers constitutes some short range *prima facia* evidence of the effect of local exchange competition on rates and penetration. The RBHCs are finding that their traditional arguments for line-of-business restrictions, the pricing of interconnection, and rate realignment may need rethinking. This is particularly true when BT has full authority from Oftel to realign rates in a manner consistent with the Efficient Component Pricing Model. Furthermore, penetration of telephone service has increased in the United Kingdom. The remainder of this chapter examines the applicability of the United Kingdom's approach to introducing competition in the local exchange market to the United States and other issues of importance.

The transferability of policies among or between nations depends on how many similarities and differences exist. For instance, both New Zealand and the United Kingdom had government-owned and -operated telephone companies that were privatized. In the United States, the private ownership of telephone companies and their regulation sets the historical background. This raises a number of interesting possibilities, such as whether the British style line-of-business restrictions with their explicit time limits (BT cannot provide entertainment services for fifteen years) would be acceptable in the United States as policy to promote competition.

Another important question regards infrastructure policies. In the United States, there has been far too much attention paid to infrastructure and not enough to market structure. In a rush to deploy the national information superhighway, policymakers have focused on technical efficiency, technology, and products. The record from the United Kingdom suggest that improvements in the telecommunication infrastructure can be achieved by promoting entry into residential and small business markets. In the United States, this can be done by ending regulatory prohibitions against local competition, and perhaps, maintaining the entertainment line-of-business restrictions for a few years.[1] Rivalry in the local exchange

[1] Since the cable companies already pass 94 percent of American households, there is less need for line-of-business restrictions than existed in the United Kingdom in 1991.

market is likely to provide the most effective means for connecting households to the information superhighway. Attention is now turned to these policies and others.

Comparison of the U.S. and the British Line of Business Restrictions

At first blush it sounds paradoxical that RBHCs, because of a concern that BT would subsidize entertainment services, were advocating the type of line-of-businesses restriction they so adamantly oppose in the United States. But before this type of comparison is made, there is a need to stress an important difference between the American and British markets. In the United Kingdom, the cable industry is new and its network covers a limited area. In order to provide entertainment and/or telephone services, entrants have to raise the capital for constructing their network. Once their network is constructed, the cable industry said that they would no longer oppose BT's entry into the entertainment market. They did not ask that the government prohibit entry until they received a certain market share; instead they sought a sufficient window of opportunity, fifteen years, to build a network.

Providing protection for an infant industry is not unlike the cable policy adopted by the Federal Communications Commission (FCC). In 1970, the FCC was concerned that the telephone companies might act in a predatory manner towards the fledgling cable industry and decided to prohibit them from "'engag[ing] in the furnishing of CATV service to the viewing public in [their] telephone service areas' and from 'provid[ing] channels of communications or pole line, conduit space or other rental arrangements' to any affiliated entity for the furnishing of such service.'"[2] According to the U.S. Court of Appeals, the FCC established these constraints because of a fear that the telephone companies would use their control over poles and underground conduit to hinder the cable companies. Congress addressed this concern in

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[2] Code of Federal Regulations, 47 C.F.R. 64.601 cited in *The Chesapeake and Potomac Telephone Company of Virginia et al.,* v. *United States of America, et al. and National Cable Television Association, Inc.,* U.S. Court of Appeals, 4th District, Nos. 93-2340, 93-2341, slip op.

1978 when it empowered the FCC and the States to regulate the rates and terms and conditions of pole access.[3]

As part of the 1984 Cable Act, Congress shifted the prohibition from the FCC's ban on cable service (transmission) to a ban on video programming. According to the Court, the legislative record does not make clear "precisely what interests Congress intended ...to serve through the ban on programming."[4] Congress defined video programming as "programming provided by, or generally considered comparable to programming provided by, a television broadcast station."[5] Recently the U.S. Court of Appeals found that the video programming prohibition was unconstitutional because "it prohibits a telephone company from providing video programming of its own selection within its own service area over its own facilities to its most natural audience its local customer in a manner that preserves the telephone company's editorial control." While the Court suggested that it may be constitutional to restrict video transmission, the video programming restriction violates telephone companies' First Amendment rights.[6] The case will likely be appealed to the Supreme Court.

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[3] Federal Pole Attachment Act of 1978, codified at Title 47 United States Code, Section 224, cited in *The Chesapeake and Potomac Telephone Company of Virginia et al.*, v. *United States of America, et al. and National Cable Television Association, Inc.*, U.S. Court of Appeals, 4th District, Nos. 93-2340, 93-2341, slip op.

[4] Ibid.

[5] 47 U.S.C. 522(19), cited in Ibid.

[6] Ibid. The British line-of-business restrictions are unlikely to be challenged in court partly because the United Kingdom does not have a constitution.

Other nation's impose similar line of business restrictions on their telephone companies. For example, "Bell Canada is currently prohibited from obtaining a broadcasting license. This prohibition stems from Section 7 of the Bell Canada Act which states as follows: 'Neither the Company nor any person controlled by the Company shall directly or indirectly hold a broadcasting license or operate a broadcasting undertaking within the meaning of the Broadcasting Act.'" Section 8 of the Bell Canada Act limits the company to the status of a common carrier. The telephone company is not allowed to control or influence information. The Canadian Radio-Television and Telecommunications Commission has also prohibited the telephone company from renting to cable companies the local head end of the cable system, amplifiers and drops. Furthermore, the telephone companies cannot share capacity on telephone company owned coaxial cable with a cable company. Bell Canada,

Today, the FCC is less inclined to provide protection to the cable industry. In 1970, when the FCC banned the telephone companies from providing cable service, cable television systems passed approximately 9 percent of all households. Today, their networks run by 94 percent of the households.[7] According to the U.S. Court of Appeals, since the wires are in place, the telephone companies can no longer deny the cable operators access to right of ways to households. The cable industry in the United States has reached the level of development that the entrants in the United Kingdom seek before there is unrestricted competition.

The FCC is now interested in promoting competition between the cable and telephone companies. In 1992, the Commission recommended that Congress repeal the video programming prohibition, "The Commission concluded that removing the ban would 'increas[e] competition in the video marketplace, spur[] the investment necessary to deploy an advanced infrastructure, and increas[e] the diversity of services made available to the public.'"[8]

Despite the wide-spread availability of cable in the United States, the cable industry may have a difficult time competing with the telephone industry. Due to the consolidations and acquisitions of the past decade, the American cable industry is highly leveraged.[9] Table 6-1 contains the percentage of long- and short-term debt for two cable companies and three RBHCs. As one can see, these cable companies are leveraged at least as much as the RBHCs. However, the RBHCs have a comparatively favorable cash position and this may provide the companies with an important advantage as the two industries race to build

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"Comments," submitted to Dept. of Communications, Canada Gazette Notice DGTP-09-89, Local Distribution Telecommunication Networks, May 2, 1990, 24-25, and 30 (quote), 33-34. The Canadian Radio-Television and Telecommunictions Commission has recently adopted policies that will make it easier for telephone companies to provide entertainment services.

[7] *Chesapeake and Potomac Telephone Company of Virginia et al.*, v. *United States*, 830 F. Supp. 909, U.S. Court of Appeals, 4th District, Nos. 93-2340, 93-2341, slip op.

[8] Ibid, citing FCC "Video Dialtone Order," 7 FCC Rcd at 5847-51 (quote at page 5847).

[9] *Wall Street Transcript*, May 16, 1994; and John Malone, President, Telecommunications, Inc., Senate Judiciary Committee, Antitrust, Monopoly, and Business Rights Subcommittee Hearing, 1993 (no date), Topic: Mega-mergers, 6.

TABLE 6-1

DEBT AS A PERCENT OF TOTAL CAPITALIZATION

Sector/Company	EBITDA/Interest	Total Debt/Market Capitalization
Telecom:		
MCI	12.5%	16.9%
McCaw	1.7	49.3
Southwestern Bell Corp.	1.8	27.5
Computer:		
Apple (1)	49.6%	28.3%
Microsoft (2)	NA	NA
Cable:		
TCI	2.5%	61.2%
Cable/Media:		
Viacom	3.5%	41.2%

Notes:
(1) Fiscal year ended 9/24/93.
(2) Fiscal year ended 6/30/93.
NA = Not available or applicable.

Source: Thomas Aust, "The Emergence of Transmedia—The Convergence of Telecommunications, Media and Technology: An Overview of Industries in Transformation," *The High-Grade Investor* (New York: Citicorp, May 19, 1994), 32.

two-way broadband networks. If cable companies cannot sufficiently protect their markets, there may be substantial reorganization occurring in the future as competition develops. On the other hand, some engineering economic studies suggest that it will be less expensive for a cable firm to introduce telephone service than for a telephone company to add entertainment services to its network. Regardless, the authors suggest that telephone companies should not be kept out of the cable business because the latter industry is highly leveraged. Much of this

borrowing is the result of speculation and policymakers should not provide protection for these speculators.[10] For instance, Southwestern Bell's debt as a percentage of market capitalization is 27.5 percent, MCI's is 16.9 percent, and TCI's is 61.2 percent.[11] What policymakers should focus on is geographic markets and incentives to promote entry.

Infrastructure Policy in the United Kingdom

In formulating its telecommunications policy, the British Government tried to adopt policies that encouraged competition and were neutral on the question of the type of technology used by carriers. The decision to be neutral on the issue of choice of technology reflects, in part, mistakes made earlier by the government in trying to encourage certain engineering practices in the cable industry. These rules delayed the development of cable service.[12] Furthermore, the government's telecommunications policy is in line with the philosophy of the Conservative Party to forsake government planning and instead rely on the market to decide the method and magnitude of infrastructure investments.

Like the United States, Britain had a public debate over the advisability of installing fiber to the home. The former Director General of Oftel, Sir Bryan Carsberg, decided that:

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[10] American cable companies have also exhibited a reluctance to enter the telephony market because they have wanted to avoid being subject to additional regulations. Tom Aust and Doug Conn, interview by author, May 5, 1994.

[11] Thomas Aust, "The Emergence of Transmedia, The Convergence of Telecommunication, Media, and Technology: An Overview of Industries in Transformation," *The High-Grade Investor* (New York: Citicorp, May 19, 1994), 32, from figure 13.

[12] Initially, the British government established incentives for cable operators to use the more expensive switched star system, rather than the tree-and-branch system which is predominant in the U.S. By compelling the operators to use the more costly architecture, development of cable telephony was delayed. "U.K. Cable Telephony: A Window on the Future," *Telephony,* October 5, 1992, 7.

> One should not adopt that as an objective [because] it might turn out that optical fiber was not the right way to go, and one ought to give radio its chance. The adoption of an objective to establish optical fiber would have made it hard for radio to enter the market...Given the time spans involved and the prospect for reducing prices, the world's capital markets are ultimately capable of handling that [decision] for most markets.[13]

This approach to infrastructure might be considered in the United States as legislators and policymakers seem fixed on deploying the national information infrastructure rather than debating feasible market structures regardless of its consequence on infrastructure. If such an infrastructure is in demand and technically feasible, competition in the local exchange market for residential and small businesses will likely deliver it. For large business customers, existing and enhanced competition in other markets will likely lead to accelerated deployment of desirable infrastructure.

Figures 6-1 through 6-5 show the architecture that cable companies are using or plan to use to provide both entertainment and telecommunications services. While the schematics are self-explanatory, three points merit special notice.

1. In the United Kingdom, cable companies are using separate fiber pairs for entertainment and voice services. The entertainment services are transmitted out of the central office in an analog format, while telephony is sent as digital signals.[14]

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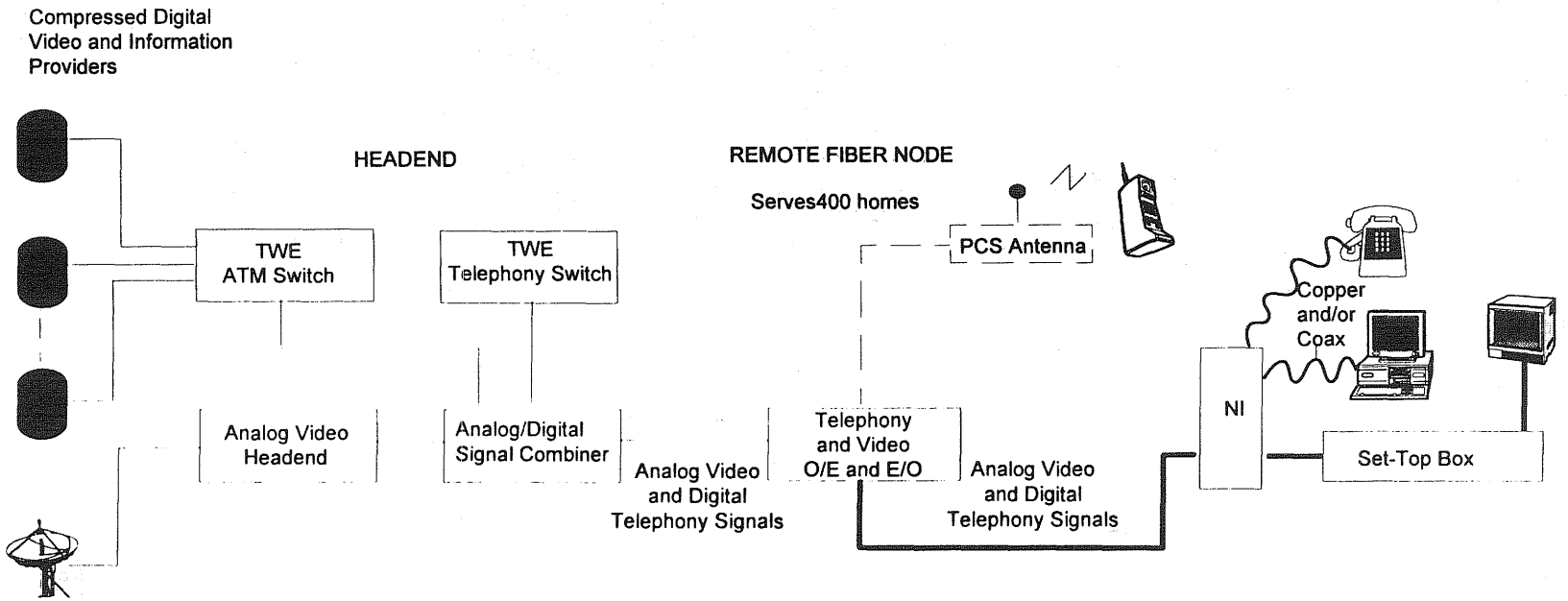
[13] Sir Bryan Carsberg, "Telecommunications Competition in the United Kingdom: A Regulatory Perspective," 37 *New York Law School Law Review* 285 (1992).

[14] This can be seen in the Telewest schematic where the company points out that the fiber between the central office and remote fiber node carries analog video and digital telephony signals.

TIME WARNER ENTERTAINMENT



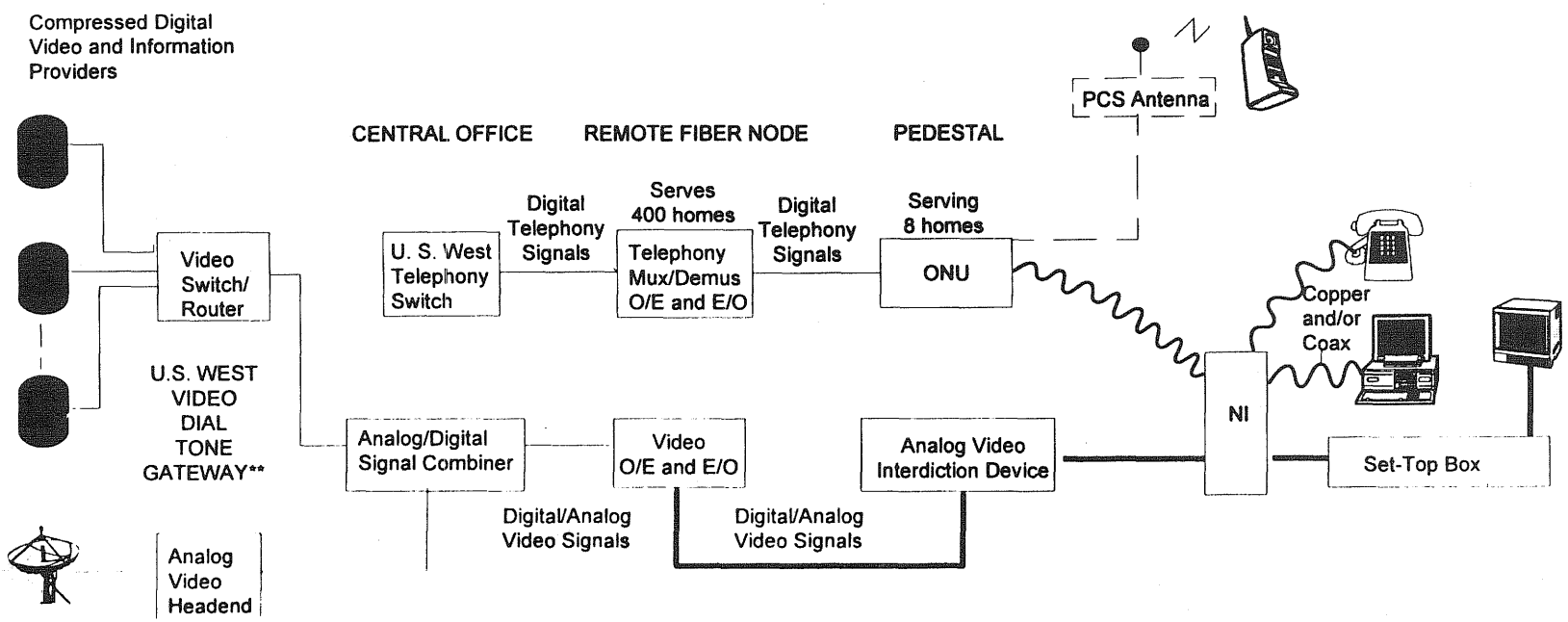
Legend
O/E: Optical to electrical conversion
E/O: Electrical to optical conversion
ONU: Optical network unit for converting technology signals (O/E and E/O) and for mux//demux
Mux/Demux: Aggregates (multiplexes)/separates (demultiplexes) telephony signal
NI: Network Interface

Fiber optic cable
Coaxial Cable
Copper Cable
Fiber. Coaxial or Copper Cable

Satellite Dish

Source: U.S. West Factbook

U.S. WEST COMMUNICATIONS



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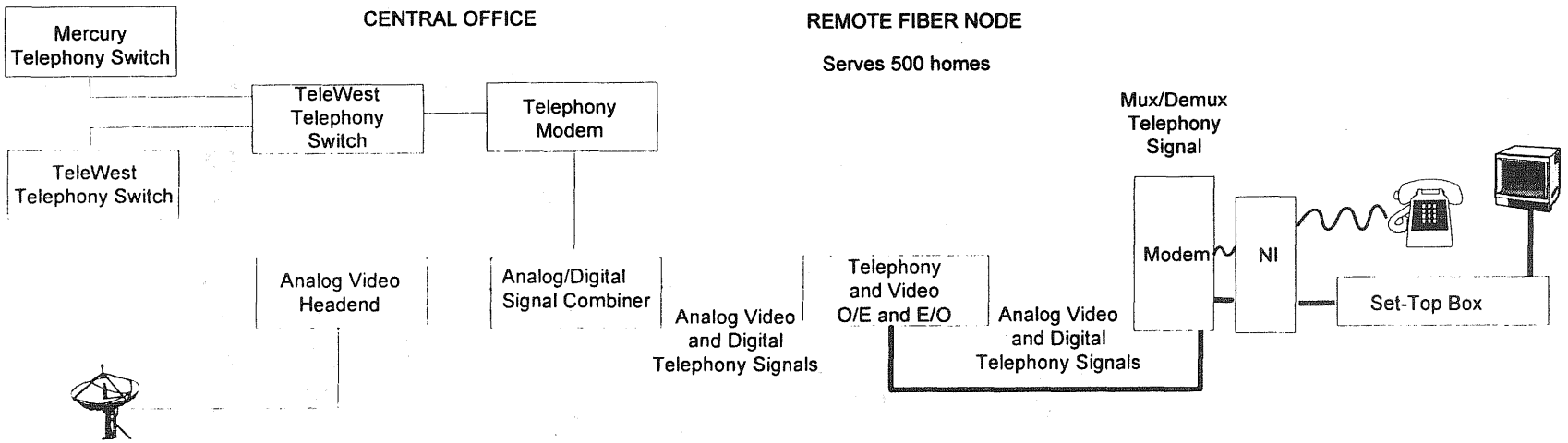
Mux/Demux: Aggregates (multiplexes)/separates (demultiplexes) telephony signal
NI: Network Interface

Fiber optic cable
Coaxial Cable
Copper Cable
Fiber. Coaxial or Copper Cable

Satellite Dish

Source: U.S. West Factbook

TELEWEST COMMUNICATIONS



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NI: Network Interface

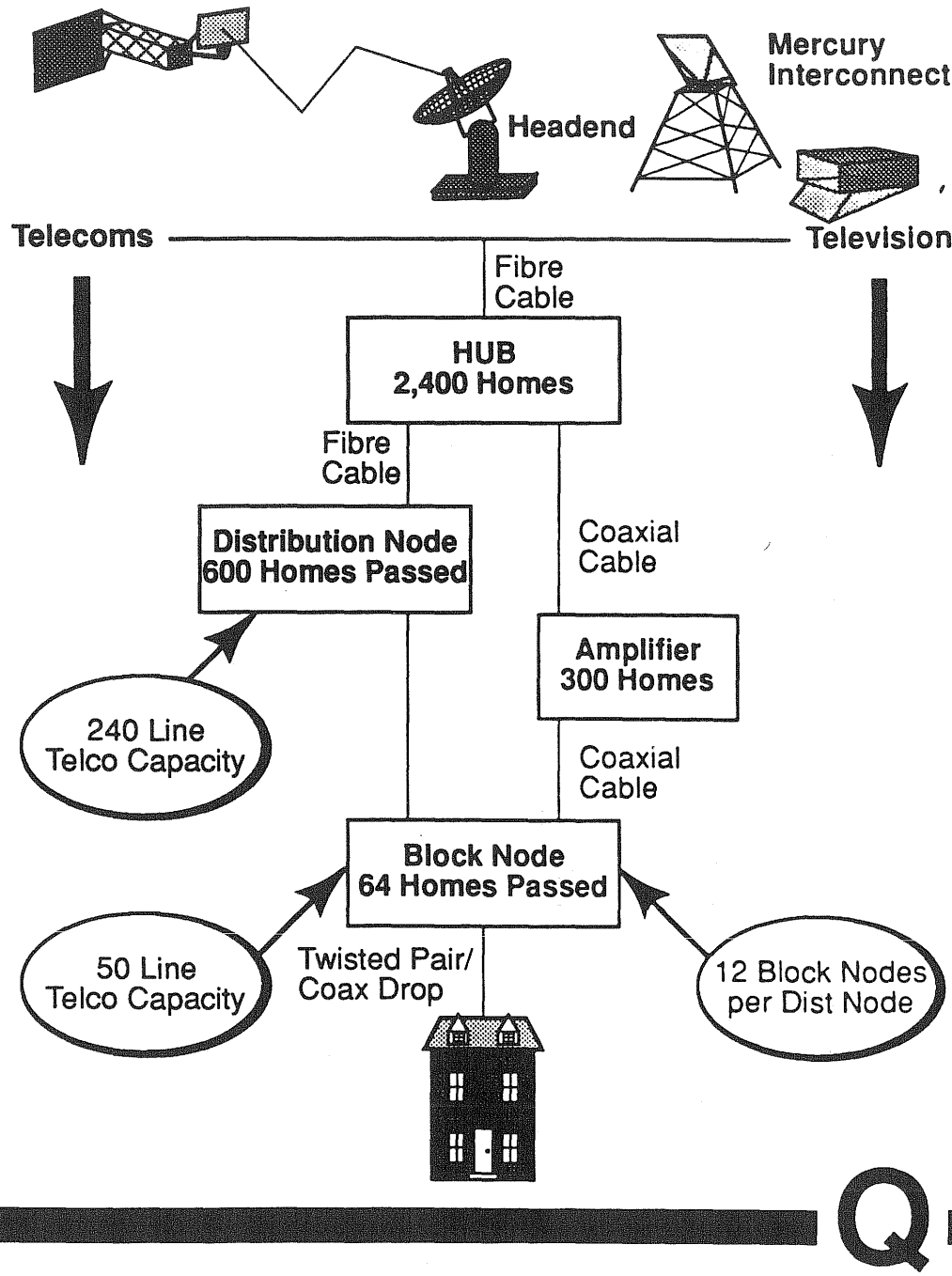
Fiber optic cable
Coaxial Cable
Copper Cable
Fiber. Coaxial or Copper Cable

Satellite Dish

Source: U.S. West Factbook

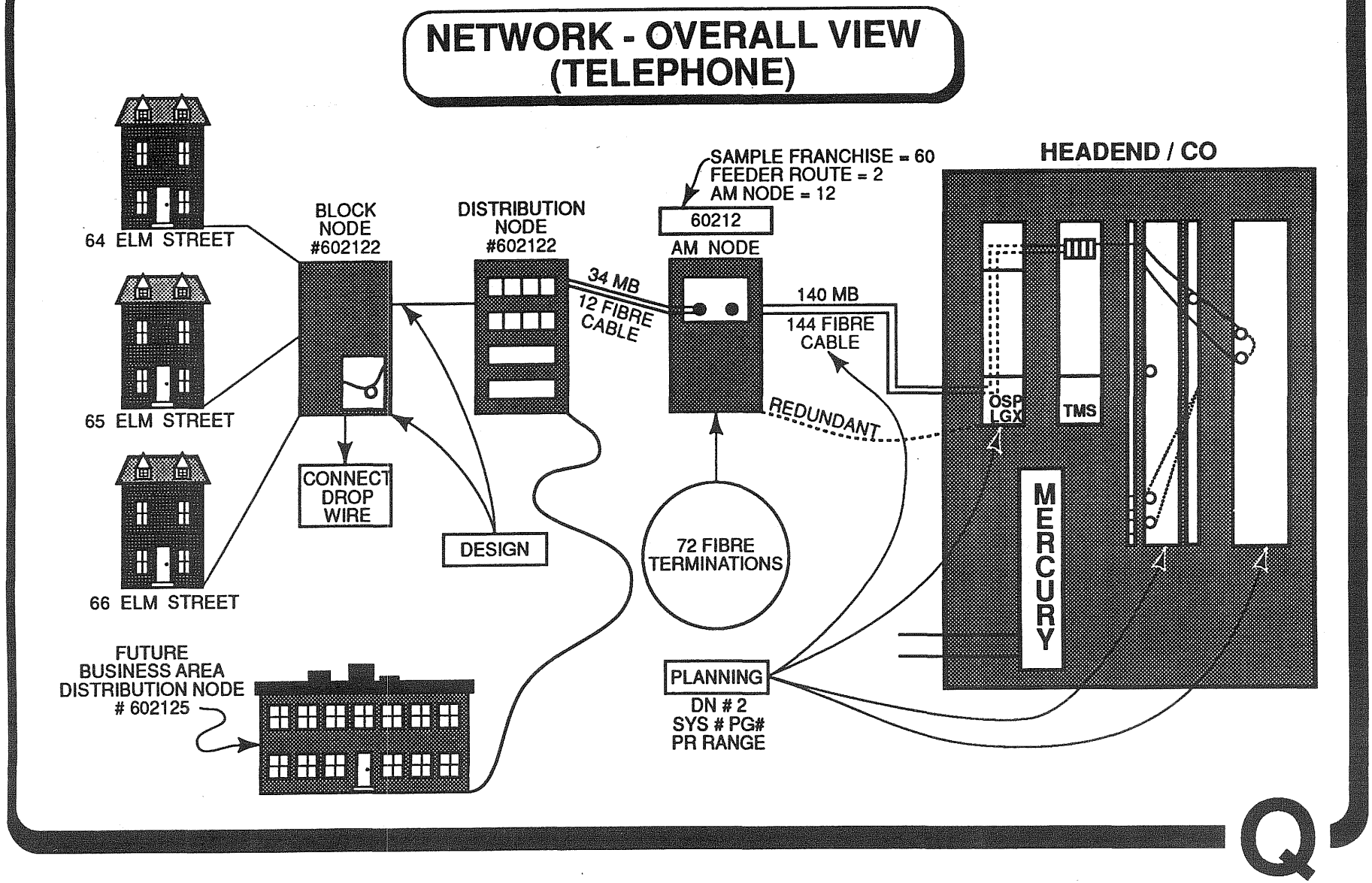
NYNEX CableComms

Cable Television / Telephone Network



D2/114-30 Dwg 2

NYNEX CableComms



The carriers hope to eventually convert the television signals from the analog to digital format. Once this transformation is made, it may be possible to use one multiplexer for both video and telephony.

2. There is also a lack of integration between the remote node and the home. Copper and coaxial links are used respectively for telephone and television service.[15] The suppliers are in the experimental stage of using coaxial for both services. Integrating both services onto coaxial is especially important for the older cable franchises in the United Kingdom. When franchises were constructed in the early and mid-1980s, the suppliers did not envision providing telephone service. Consequently there is only a coaxial drop into some households. In order to avoid the expense of installing a copper link, the cable companies hope that they will be able to develop a technology that allows them to provide voice services over coaxial cable.

3. Telephone engineers break the service territory of a central office into discrete regions, called serving areas. Since the early 1970s, serving areas have been the basic building block used to determine the most economical choice of facilities.[16] A serving area typically includes 350 to 600 subscribers. Feeder plant connects the service area to the central office. In turn, a distribution plant connects the feeder plant to the subscriber. The connection between the distribution and feeder plant is made at a remote node, or serving area interface.

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[15] The same cable contains both the coaxial and copper wires. Dominic Reed, interview by author, July 25, 1994.

[16] Bell Telephone Laboratories, *Telecommunications Transmission Engineering: Networks and Services* (2nd edition), 40-44; and John Freidenfelds, *Capacity Expansion: Analysis of Simple Models with Applications* (New York: North Holland, 1981), 238.

In the early 1980s, telephony companies made plans to combine two to four, and up to five serving areas into one carrier serving area. The combination was driven by the cost savings that could be achieved by having the serving areas share the site cost of the remote node. By placing the nodes together, the cost of site preparation, including the cost of common electronics, could be spread across a larger number of customers.[17]

Assuming that each serving area has 500 customers, and that three are combined into one carrier serving area, 1,500 customers would obtain service through one remote node. As shown on Figures 6-1 and 6-5, U S West has approximately 500 customers sharing the remote node. NYNEX allows for up to 600 customers sharing the multiplexer that is closest to their households. The reduction in the number of customers in the remote node is a potential diseconomy of scope between entertainment and telecommunications services because it will reduce the economies of sharing the common costs of the remote node.[18] On the other hand, economies will be realized by sharing the cost of the feeder fiber cable.

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[17] Thomas P. Byrne, Ron Coburn, Henry C. Mazzoni, Gregg W. Aughenbaugh, and Jeffrey L. Duffany, "Positioning the Subscriber Loop Network for Digital Services," *IEEE Transactions on Communications* 30, no. 9 (September 1982): 2006-2010.

[18] The reduction may not be due to diseconomies of scope between voice and entertainment services. The values of 500 and 600 customers per node may reflect low customer density and the desire to have unloaded lines. Under the carrier serving area design standards, customers served by 26 or 24 gauge wire have to be within 9,000 or 12,000 feet of the remote node respectively.

The reduction in customers per remote node may also be due to congestion problems in the conduit. Note that in the NYNEX schematic a fiber cable goes to a hub that serves 2400 homes. Beyond this point, a coaxial cable carries television to a block node and a fibre cable carries telecoms to a distribution node. At the hub, the speed of the fiber is slowed down from 140 to 34 mb. NYNEX does not go straight to copper at the hub because of the lack of available conduit. In order to minimize the need for conduit space, the company stays with fiber until it reaches a point closer to the customer. Dominic Reed, interview by author, July 25, 1994.

While the telephone and cable companies share a vision of using one cable to provide both entertainment and telecommunications services, the figures also indicate that the changes required to their networks for obtaining this capability will likely differ. The cable companies already provide broadband services, but their networks were not built for two-way services. Time-Warner indicated that it may provide voice services through a wireless drop from the pedestal.[19] Telephone companies will have to install facilities that will permit them to provide broadband services (e.g. ADSL, fiber, and ATM switches).

The Impact of Foreign Investment on the Domestic Infrastructure

Federal and State officials, as well as many other interested observers of the telecommunications industry, raised the question of the link between the foreign activities of American telephone companies and their domestic investments. Two interrelated questions were raised regarding the financing of the foreign investment of American telephone companies:

1. Is there evidence that growing overseas investments by regulated U.S. telecommunications operators are resulting in a significant decline in domestic investment, either in modernizing of physical facilities or in research and development?[20]

2. Are costs associated with the foreign operations of American telephone companies being subsidized by captive domestic ratepayers?

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[19] See U S WEST Fact Book, and *Telephony,* October 5, 1992, 6.

[20] U.S. Congress, Office of Technology Assessment, *U.S. Telecommunications Services in European Markets*, OTA-TCT-548 (Washington, DC: U.S. Government Printing Office, August 1993), 182.

These two questions are addressed in the remainder of this chapter. The answer to the first question is no and in order to answer the second question the authors recommend that regulatory commissions may want to continue to monitor the allocation of foreign activities between regulated and nonregulated activities.

The Historical Relationship

As is widely recognized, the telecommunications industry has undergone a radical transformation in the past two decades. The divestiture of AT&T, the introduction of equal access on long-distance calls, and the increased interest on the part of the carriers to market high-speed data and entertainment services, have caused the local exchange companies to spend billions of dollars re-engineering their networks.

The investment cycle for different technologies can be either compact or spread out over a large number of years. Due to an FCC order that 800 number portability be available in 1993, the LECs rapidly deployed system signalling seven (SS7) throughout their networks. On the other hand, public policy has had little impact on the replacement of copper with fiber feeder facilities.

The payback period for fiber in the feeder is likely slower than for new intelligence in the network and therefore modernization has and will be slower in the loop segment of the network. The deployment schedules of fiber in the loop and SS7 illustrate two problems with comparing American infrastructure investments with those of foreign companies. First, even if a higher level of investment is observed in one nation, it does not follow that this is a superior path. Even if an operating company and a utility commission agree to a certain deployment schedule, the installation of the new facilities ultimately may not turn out to be in society's best interests. Therefore, when either an increase or a decrease in the level of investment is observed, there is no unambiguous criteria for evaluating the value to society of the expenditures.

The fiber/SS7 deployment schedules also illustrate that the level of observed investment is a function of the existing infrastructure. Digital switches were deployed in the United States for over a decade but only in the past few years have the Northern Telecom

trunking modules been configured for out-of-band (SS7) signalling. The incremental cost of introducing SS7 was greater at older switches where the digital trunk modules had to be replaced by newer digital trunk controllers. At newer switches, that already have digital trunk controllers, the level of modernization expenditures would appear to be relatively low, despite the fact that the dollars spent provided the same capabilities as available on switches that had to undertake the more expensive upgrade. Therefore, looking at dollars spent on modernization can be misleading. The same SS7 capabilities exist today at old and newer digital switches, but the dollars spent were greater on the older switches.

There are other data problems associated with international comparisons. These include, but are not limited to the following:

1. An observed decline in investment could reflect a decline in the price of inputs rather than a decrease in the quantity of inputs. For example, the price of fiber and electronic equipment has declined in the past decade. Since the American equipment market is more competitive than most other nations, all else being equal, the United States is likely to experience a more rapid decrease in the investment per line.

2. Conceptually there is the need to distinguish between growth and modernization expenditures. Some nation's have started off with a lower penetration rate and therefore their investment per capita may be higher because they are starting with a lowered installed base. The catch-up period may cause other nation's to invest more per capita, while simultaneously modernization expenses may be higher in the United States.

3. Although the prior paragraph emphasized the need to focus on modernization expenditures, rather than expenditures per capita or per installed access line, there is no uniform criteria used by the different nations for distinguishing modernization from growth investments. Furthermore, since many investments are undertaken to satisfy both increased demand for existing services, as well as

to improve existing and introduce new products, in practice it is hard to disentangle growth from modernization investments.

4. Accounting conventions vary across nations. For example, while some nation's capitalize labor expenditures on equipment installations, others expense this cost. Some government-owned telephone companies do not report depreciation as an expense.[21]

5. Compared to most nations, the United States relies to a greater degree on placing intelligence in customer premises equipment. Investment and R&D expenditures for this terminal equipment is unlikely to show up on the books of the regulated American companies. For those countries that place more intelligence in the central network, or in terminal equipment that is marketed by the regulated carrier, their regulated carrier will have a higher level of investment than American telephone companies. The higher investment levels by the foreign telephone company may be misleading because of America's choice of dispersing the intelligence to customer premise equipment that is not recorded on the books of its regulated telephone companies.[22]

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[21] Dimitri Ypsilanti, interview by author, May 19, 1994.

[22] U.S. Congress, Office of Technology Assessment, *U.S. Telecommunications Services in European Markets*, OTA-TCT-548 (Washington, DC: U.S. Government Printing Office, August 1993), ch. 9.

Dispersed intelligence has some clear benefits. The Minitel System gave the French an early lead in providing users access to information services. The telephone company distributed free, dumb terminals to users in order to encourage participation. Today, the French system is comparatively antiquated because of the low transmission speed, 1200 baud, and the lack of intelligent customer terminals. In the United States, where we rely more on distributed intelligence, introduction of new software that improves the quality of programming is simplified because the software can be loaded onto user's personal computers.

Reviewing the record in France, Andrew Davies concluded that France Telecom's effort to coordinate the deployment of technology through its organization "seemed ill-suited to a period when the thrust of telecommunications technology was towards service and network diversification, reflecting the increasing differentiation of customer needs..." Andrew

6. Cross-country differences in investments also arise because of variations in the intensity of usage. Usage per line varies widely across countries. As a first approximation, it is fair to conjecture that the higher the level of usage, the greater the potential for the marketing of telecommunications services. But some caution needs to be exercised. For example, while flat-rate service is the predominant pricing structure for residential service in the United States, many other countries only offer service on a measured basis. The nonzero price reduces the level of usage and therefore cross-country differences partly reflects variations in pricing structure, rather than differences in the taste for telecommunications services.

In light of these and other data problems, and because users argue that the United States system is second to none, the Congressional Office of Technology Assessment expressed its reluctance to accept arguments that the United States is lagging behind European networks. In a recent report to Congress, the Office concluded that:

> The argument that the U.S. telecommunications infrastructure is in perilous decline cannot be supported on the basis of publicly available information...U.S. companies operating in Europe attest to the general superiority of U.S. telecommunications and information services...[23]

The Office added that there remains in the U.S. a strong focus on modernization and "[t]he evidence is inconclusive at best as to whether industry investment in infrastructure and R&D has significantly declined in the short period (about 5 years) of [RBHC] overseas expansion, or even whether it has declined as a result of divestiture, several years earlier (although this appears more likely)."[24]

Davies, *Telecommunications and Politics: The Decentralized Alternative,* (New York: Pinter Publishers, 1994), 221.

[23] Office of Technology Assessment, *U.S. Telecommunications Services in Europe*, 198.

[24] Ibid., 198.

Prospective Trends

Prospectively, the foreign activities of the local exchange companies will not distract from their domestic investments. When the LECs encountered entry in their business markets from firms like Teleport and MFS, they responded by improving the quality of their products and by lowering their price.[25] The LECs rapidly accelerated the deployment of robust, fiber optic networks and improved the efficiency of their operations.

The RBHCs experiences in the United Kingdom have taught them that cable entry into the residential telephone business can be profitable. In order to protect their multi-billion dollar investments in the residential, domestic voice market, as well as to use the telecommunications market as a lever into entertainment and interactive markets, the LECs may be expected to continue to modernize the portions of the network that are used to serve the residential community. The RBHCs are well aware that 94 percent of American households are passed by cable, and that this second wire has the potential to provide the same services as their own telecommunications network. In order to protect and expand their home market, the RBHCs likely will continue to modernize their network. The RBHCs accelerated their modernization investments when confronted with entry in their business markets, and a similar defensive response in the residential market can be expected.

Allocation of Costs Between Unregulated Foreign Operations and Regulated Domestic Operations

In a number of jurisdictions, interested parties have raised the spectre of monopoly domestic rate payers subsidizing the foreign and other unregulated operations of domestic local exchange companies. This could occur through, for example, allocating an inappropriate amount of administrative expenses to the regulated entity, or the nonregulated subsidiary

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[25] Richard Tomlinson, "Impact of Local Competition on Network Quality" (New York: Columbia Institute for Information Studies, Columbia University, April 23, 1993).

failing to provide adequate compensation to the regulated entity for the use of scarce resources.[26]

The FCC could be playing an active role in monitoring the allocation of costs between domestic and international subsidiaries of the holding companies. Nevertheless, the agency appears to be giving little attention to this area. First, the auditing staff of the FCC does not have the resources to monitor adequately the allocation of costs between regulated and nonregulated subsidiaries of the local exchange companies.[27] Second, the Federal Government believes that the American telecommunications industry is perhaps the most efficient in the world and therefore believes that it is capable of effectively competing in world markets. There is a disinclination to impose administrative hurdles that would hinder the firms ability to earn export dollars. This is part of a world-wide trend of nations to redefine their central policy goals. William Melody points out that throughout the world, national policymakers have moved away from concentrating on such public interest issues as universal service and restricting monopolistic pricing practices. Today, the governments focus is more on the role

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[26] See, for example, Dona M, Burney, "A Financial Analysis of the Bell Telephone Regional Holding Companies," in *Proceedings of the Eighth NARUC Biennial Regulatory Information Conference* (Columbus, OH: The National Regulatory Research Institute, September 9-11, 1992); Dona M, Burney, "The Financial Cross-Subsidization of the Bell RHCs," paper delivered at the Thirty-Sixth International Atlantic Economic Conference, October 7-10, 1993; "Report on the International Investment Activities of the Bell Companies," Summer 1991, presented to the NARUC Communications Committee Meeting, prepared by Sam Loudenslager and Nick Singh Gumer; California Public Utilities Commission, Division of Ratepayer Advocates, "Report on the Research and Development, Joint Ventures, and Strategic Alliances of Pacific Bell and Pacific Telesis Company," Oct. 30, 1990, Application 85-01-34; Economics and Technology, "Patterns of Investment by the Regional Bell Holding Companies," May 1993; and "Prefiled Direct Testimony of Yvette Smiley Smith," in Chesapeake and Potomac Telephone Company, District of Columbia Public Service Commission, Case No. 926, July 30, 1993.

[27] The General Accounting Office recently found that the RBHCs misallocate $300m in costs to regulated operations. "U.S. RBOC Improper Cost Shifts go Undetected--GAO," *Reuters*, February 11, 1993.

firms are taking in earning profits, creating jobs, and making a positive contribution to the nation's balance of payments.[28]

In one study, the U.S. General Accounting Office concluded that in 1993 the RBHCs misallocated $300m in expenses to regulated operations in their domestic market. The FCC, due to inadequate staffing and regulatory objectives that put a low priority on the threat of cross-subsidizations, has been slow to respond to the threat of local exchange companies misallocating costs between regulated and nonregulated activities. Some states responded by undertaking joint audits.[29]

Conclusion

Throughout the world, there is an increased interest in substituting competition for regulation. Ironically though, at the first stages of this transformation, there is a need for increased government oversight. In the United Kingdom, Canada, and the United States, the governments have imposed line-of-business restrictions on the incumbent telephone companies. These restriction were placed in order to provide a climate that was conducive to entry. As pointed out by Seth Blumenfield, President of MCI International, "The irony is that, in order to have competition, and all the benefits that result from it, you must also continue some level of regulation."[30]

Furthermore, for the foreseeable future, actual or potential entry will not eliminate the need for commissions to study the cost structure of the industry. The events in New Zealand illustrate the need for a government agency to act as an arbitrator that settles disputes between the incumbent and entrants. In order to judge the reasonableness of the rates, the New

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[28] William Melody, "Dealing with Global Networks," in *Global Telecommunication Networks: Strategic Considerations*, eds. George Muskens and Jacob Ruppelaar (Boston: Kluwer Academic Publishers, 1988), 67.

[29] See, for example, Schumaker & Company, "Regulatory Impact Review of U S West Advanced Technologies, Inc. for the Three-State Steering Committee," NRRI 92-18.

[30] Remarks of Seth D. Blumenfeld at the Sixth World Telecommunication Forum, Regulatory Symposium, October 9-11, 1991, 15.

Zealand high court ruled that monopoly profits had to be removed from the price of interconnection. In order to distinguish between monopoly and competitive prices, some reference must be made to costs.[31] A regulatory commission, unlike a court, has the expertise to carry out these functions. State PUCs were established at the start of this century, in part, because of the recognition that policy making would be more effective if the decision making power was embodied in an expert commission, rather than a judge or a legislative committee.[32]

The need for impartial expertise to resolve disputes between suppliers will extend the life of regulatory commissions and will limit the extent to which antitrust statutes can be relied on to control the behavior of the incumbent telephone companies. Furthermore, internationally courts have exhibited a reluctance to establish the price for interconnection. The Courts recognize that the setting of a price is not a one time activity and therefore there is need to constantly monitor the appropriateness of the price. Therefore, the Courts have expressed a preference that this issue be handled by regulators.[33]

As the telephone market becomes increasingly competitive, the incumbent telephone companies will have a strong incentive to protect their markets. The local exchange companies are unlikely to let their service standards slip, or to lag in the modernization of their networks. If the LECs let their network quality slip, it will provide a marketing opportunity to the cable companies. The telephone companies have a powerful incentive to maintain superior service.

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[31] Domestically, there has been a clear need for regulatory commissions to set cost and pricing standards. As in New Zealand, regulatory commissions have had to arbitrate the price and mode of interconnection. Also, some local exchange companies have submitted competitive bids at rates below their cost of production. Their competitors have asked regulators to enforce rules that prohibit monopoly services from subsidizing competitive ventures. *City Signal* v. *Michigan Bell Telephone,* 144 PUR 60.

[32] See, for example, John R. Commons to Robert La Follette, 1-6, undated report located in the January 1905 papers of Robert La Follette, Wisconsin State Historical Society.

[33] Carl Blanchard, "Telecommunications Regulation in New Zealand: How Effective is 'light-handed' regulation?", *Telecommunications Policy* 18, no. 2 (1994): 160.

Finally the authors emphasize, and the United Kingdom experience suggests, that legislators and policymakers may have focused too much on infrastructure issues and paid too little attention to market structure issues. Ubiquitous and real competition is the best regulator of pricing and other strategic behaviors that vex regulators today. The United Kingdom demonstrated that the realignment of rates to eliminate purported subsidies may not be a competitive imperative but instead a monopolist's response to competition in selected markets. The United Kingdom is the only country in the world that can produce this kind of *prima facie* evidence. Whether it is a legitimate long-term response will only be known with time. What the United Kingdom experience does not demonstrate directly is the effect of competition on the urban/rural realignment of rates. However, policies that create incentives to achieve a workably competitive market structure, even in rural areas, may render this alleged threat to universal service moot. Stated succiently, competition may well be compatible with universal service. The challenge is not to create and/or maintain perceived subsidies but to envision and implement policies that promote and insure competition. Infrastructure will be a by-product of this policy approach.

APPENDIX A

THE PROPOSED ACQUISITION OF TCI BY BELL ATLANTIC

THE PROPOSED ACQUISITION OF TCI BY BELL ATLANTIC

The ten reasons for joint ventures and foreign investments provide a general overview of the factors that are influencing the RBOCs to invest in non-regulated activities. In the Fall of 1993, Bell Atlantic announced its intention to acquire TCI, the nation's largest cable company. In this section we list some of the specific complementary assets that Bell Atlantic and TCI believed they could offer each through a merger. While this was not a joint venture, the economic factors are equally applicable to joint ventures.

When Bell Atlantic announced it intent to acquire TCI, the nation's largest cable company, the telephone company was confronted with many regulatory hurdles. One of the impediments was the Modified Final Judgement line of business restriction on the transport of interLATA traffic. TCI has a private network that is used to transmit programs, and this information crosses LATA borders. In January 1994, Bell Atlantic petitioned the Federal District Court of the District of Columbia for a line of business waiver for this activity. Bell argued that the acquisition would makes both the telecommunications and entertainment markets more competitive because of the firms' complementary assets.

Bell Atlantic argued that the acquisition would make the nation's telecommunications markets more competitive because the telephone company's expertise could be used to expedite the delivery of telecommunications services through TCI's entertainment network. Brian D. Oliver, the President of Bell Atlantic Enterprises, in an affidavit to the Court, identified the factors that impinged on the provision of telecommunications services over entertainment networks. Bell Atlantic would provide TCI with expertise on how to design and run a telecommunications system. This knowledge could not otherwise be easily obtained by TCI and therefore the newly acquired knowledge would improve TCI's ability to sell telecommunications services.

Affidavit of Brian D. Oliver, Bell Atlantic Enterprises, submitted in Western Electric Col. and AT&T, Civ. No. 82-0192, D.D.C., January 1994, paragraphs 8 and 9.

8. Cable networks, designed to deliver video programming on a community-wide broadcast basis, typically are based on a "tree and branch" architecture: a predominantly one-way, broadband system for distributing analog programming to subscribers over coaxial cable. The cable architecture is well suited for community-wide television signal distribution, but is very limited in its return-signal capabilities. Absent modifications, cable architecture is poorly suited to provide switched, two-way telephone services to individual customers.

9. In addition to this fundamental architectural problem, cable systems lack a number of other capabilities for providing local telephone service:

a. Most fundamentally, cable systems lack the sophisticated switching systems necessary to route telephone traffic on a call-by-call basis among subscribers or between subscribers and other carriers.

b. Cable systems also lack the specialized billing systems needed to handle multiple services and large volummes of individually metered transactions.

c. The provision of local telephone services also requires specialized Operations Support Systems to handle facilities Provisioning, administration and maintenance, traffic management, service evaluation, and the planning and engineering associated with switched services. While customers might tolerate loss of television service for several hours or more, they demand virtually fault-free telephone service.

d. The provision of local telephone services also requires a series of technical and economic arrangements for the routing of telephone traffic between and among local cable systems, the incumbent local telephone service provider, wireless systems and long distance carriers.

e. Finally, cable companies typically do not have the radio engineering skills needed to provide telephone services using wireless technology.

Oliver's comments were largely limited to the pending TCI acquisition by Bell Company.[1] Other testimony filed by Bell Atlantic advanced the proposition that the same economies in organizational knowledge explain in large part the joint ventures of the RBOCs and cable companies in the United Kingdom. Gary Becker, a Nobel laureate, argued that the "'complementarities' [between TCI and Bell Atlantic] in the human capital skills and knowledge" apply equally to the RBOC's cable activities in the United Kingdom: "Such complementarities explain why NYNEX..., U S West (with TCI) and Southwestern Bell (with Cox Cable) now provide local telephone exchange services in conjunction with cable TV services in the United Kingdom to a rapidly growing number of households."[2]

Bell Atlantic also identified how its Mid-Atlantic regions would be strengthened through the merger. Alfred Kahn and William Taylor argued that TCI would provide important knowledge regarding the marketing and provision of entertainment services.

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[1] In testimony before Congress, TCI President John Malone pointed out that there were other advantages to the acquisition. His firm was "highly leveraged," and by selling the firm to Bell Atlantic, it would be easier for the firm to raise the capital that was needed for expansion. Malone also said that Bell Atlantic would provide TCI with important "political skills" to help it navigate through State and Federal regulatory hurdles. Senate Judiciary Committee, Antitrust, Monopoly, and Business Rights Subcommittee Hearing: Mega-Mergers (1993).

[2] Affidavit of Gary S. Becker, submitted in Western Electric Col. and AT&T, Civ. No. 82-0192, D.D.C., January 1994, paragraph 16.

Affidavit of Alfred E. Kahn and William E. Taylor, in US v. Western Electric and AT&T, Civ. No. 82-0192, D.D.C., January 1994, paragraph 20.

[W]ithin Bell Atlantic's telephone service areas, the merger will add TCI's expertise and resources in the provision of video programming (but not its present cable plant) to assist Bell Atlantic in upgrading its present plant to be capable of delivering video and other broadband services. It is frequently the case that companies undertaking a new, risky venture feel they can minimize the risks as well as save on transactions costs, and thereby increase the likelihood of success, if they can themselves provide some proportion of the requisite inputs and thereby assure themselves a stable, source of high-quality supply: the manufacturers of television sets—and now HDTV receivers--venturing also into the offer of programming, the pioneers in the production of motion pictures investing also in their distribution and exhibition, companies exploring for oil in remote areas investing also in pipelines and tankers. Moreover, in the present instance, Bell Atlantic has the additional motivation stemming from the fact that many of the in-region cable companies with which it seeks to compete are themselves already vertically integrated into programming. The result, undeniably, will be to strengthen Bell Atlantic's competitive challenge to the incumbent cable companies within its region.

We have included portions of the affidavits of Oliver, Kahn, and Taylor because their statements provide specific examples of the benefits of joint ventures. These affidavits are a poignant reminder that while public utilities are often characterized as industries with high capital/labor ratios, their asset base is also composed of specialized managerial skills that are not easily replicated. Furthermore, Bell Atlantic's filing illustrates that the telecommunications market is far from being contestable. While we believe that competitive market forces can be relied in the long-run to constrain the market power of the local exchange companies, in the near-term the LECs command over the residential market will remain intact.

The Ability of Firms to Solve Administrative Coordination Problems

Despite the symbiotic potential of the Bell Atlantic/TCI deal, in February 1994 the deal was called off. Publicly the firms claimed that the Federal Communications decision to reduce the price of cable services made the initial terms unacceptable.

Other factors clearly entered into the break-up of the acquisition. One impediment was the handling of TCI's Teleport properties. Teleport is likely to play a large role in linking together the two-way telecommunications networks of the cable companies. Bell Atlantic would presumably have used Teleport's facilities outside of the Mid-Atlantic region to link together its TCI properties, as well as for interconnection with other telecommunications carriers. But Teleport's properties in the Mid-Atlantic region would be used by other cable companies to take away telecommunications business from Bell Atlantic. Because of the nation's anti-trust laws, it is unlikely that the Department of Justice or the District Court of the District of Columbia would have allowed Bell Atlantic to own a share of TCI's Mid-Atlantic properties. While a possible solution was to have Bell Atlantic spin-off its Teleport Mid-Atlantic investments, this would have been an administrative nightmare. Bell Atlantic would have had to recluse itself from all Teleport decisions that affected its Mid-Atlantic operations.[3]

A second impediment to the merger was the contrasting management styles and the risk aversion of the firms stockholders. TCI is often referred to by analysts as a "cowboy," that is a firm that takes risks and does not operate with a lot of administrative rules. Bell Atlantic, on the other hand, is perceived as a firm whose management, as well as its stockholders, are comparatively risk averse.[4]

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[3] Susan Bednarcyzk, interview by author, March 4, 1994.

[4] Bell Atlantic's chairman, Raymond Smith, is perceived as a visionary who is willing to take large risks. But at this juncture, he has had a limited impact on the willingness of other employees to take risks. Furthermore, stockholders of Bell Atlantic put a higher priority on dividends than the more growth oriented shareholders of TCI. The acquisition of TCI would have required Bell to float a large amount of debt and this would have likely interfered with Bell's ability to maintain or increase its dividends in the near future.

Overcoming conflicts in administrative style and goals is a major impediment to joint ventures and mergers.[5] Vietor and Yoffie point out that firms that have attempted to merge computer and telecommunications operations have met with repeated failures:

> [F]irms that try to capitalize on scale and scope economies (defined broadly) beyond the boundaries of their industries have an administrative task so difficult as to undermine their effectiveness. Every firm that has tried to integrate computers and telecommunications, ranging from IBM to Ericsson, has failed at least in part because of the administrative problems of bringing together such diverse technologies.[6]

The authors add that the track record is much better for firms that have focused on achieving economies of scope in telecommunications.[7] While the record of joint ventures between entertainment and telecommunications companies is rather limited, the cancellation of the Bell Atlantic/TCI, and Southwestern Bell/Cox deals are suggestive that domestically, convergence is more likely to come through a telephone company expanding on its own into entertainment services, or a cable company marketing telecommunications services, rather than through joint ventures.

The prospects for merging the expertise of the cable and telephone companies appear to be greatest where a new venture is started by the partners and, because of the newness of the operations, there are fewer ingrained practices and habits among the employees. For example, in the United Kingdom, Telewest was formed by U S West and TCI. These two firms have been able to combine their respective expertise in such areas as marketing, billing, procedures and technical knowledge of telecommunications and entertainment networks.

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[5] Because of conflicts over objectives, as well as differences in language, culture, and physical separateness, about fifty percent of joint partnerships fail. "The Baby Bells Scramble for Europe," *New York Times*, December 10, 1989, sec. 3, page 1; and Antonello Zanfei, "Collaborative Agreements and Innovation in the US Telephony Industry," *The Economics of Information Networks*, ed. by C. Antonelli, 242.

[6] "Telecommunications: Deregulation and Globalization," 184-85.

[7] Ibid., 185.