Policy Study No. 177
May 1994

ON THE FRONTIER OF DEREGULATION: New Zealand Telecommunications and the Problem of Interconnecting Competing Networks

by
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EXECUTIVE SUMMARY

Telecommunications is undergoing a revolution. Despite the apparent revolution in industry structure, the public policy questions raised by the new developments have changed little. The debate revolves around the same two fundamental issues that have haunted the industry since well before the AT&T divestiture.

- First, to what extent can market competition replace regulation as the arbiter of telecommunications service markets?

- Second, how does one define "competition" and "monopoly power" in a marketplace as complex as communications? Whether cable-telco mergers will result in a wide-open rivalry or create frightening mega-monopolies is a policy debate that will resound throughout the 1990s.

The biggest problem facing regulators in the new competitive environment has been to adjudicate and coordinate interconnection relationships among competing systems. In most nations, including the United States, these issues have been, or are being, resolved via processes in which regulators have tried to enforce parity between large incumbents and their smaller rivals. One exception to this is New Zealand. There policymakers have attempted to resolve these matters via market transactions alone, relying on open entry and the threat of litiqation under an antitrust law.

The assumption behind most equal-access policies is that, without regulation, inequalities between the incumbents and new entrants constitute a fatal obstacle to effective competition in telecommunications markets. However, the New Zealand experience indicates otherwise. Despite the obvious inequalities in the interconnection agreement, national and international toll competition have functioned at least as successfully as in countries with policies that promote or protect competitors.

Nonetheless, the New Zealand experience regarding interconnection does confirm that an incumbent with virtually universal coverage has nothing to gain from interconnection with a start-up rival in its own territory. New Zealand Telecom had no commercial incentive to arrive at an agreement and possessed all of the ultimate negotiating power.

The cleanest way to rectify this incentive problem—in New Zealand and elsewhere—is through structural reforms—creation of a marketplace in which existing access connections are not under the exclusive control of a single firm—rather than through regulatory oversight. In the case of New Zealand Telecom, this would mean breaking it up into three or four separate companies. Each unit would be based in different territories, but would be authorized to enter

all service and equipment markets in the other territories. *This is not an American-style divestiture*, which was based on artificial distinctions between local and long-distance markets that could only be maintained by arbitrary territorial divisions and legal barriers between various telecom service markets. What is proposed here is the creation of fully integrated telecommunication companies based in separate territories.

A structural adjustment is probably the only way to eliminate the incentive problem in interconnection negotiations. Each divested unit would control some, but not all, of the access required to serve the market. Each would be dependent upon the others to provide universal access. Each would therefore have a real incentive to engage in interconnection negotiations and conclude fair and reasonable terms and conditions. The resulting agreements could be used as templates for other competitors.

Policymakers should attempt to create structures which permit competition to emerge, and then stand back and let the players play. Structural reforms such as divestitute or, less radically, free resale and arbitrage would allow many of the benefits of competitive processes to be set in motion, without branding incumbents as criminally anticompetitive.

The New Zealand experience shows that telecommunications competition is not as fragile as many believe. A new entrant there competed vigorously in the long-distance market despite the inequalities and barriers built into its interconnection agreement.

The growth of wireless alternatives and the convergence of cable television and telephone markets both serve to increase the potential for competition. Most importantly, in the United States, the breakup of AT&T into separate local and long-distance segments and the creation of regional companies capable of entering each other's territories mean that there are a number of powerful businesses capable of bypassing the local exchange. Thus, the monopoly power of local telephone companies in the United States is significantly smaller than in New Zealand. If competition can survive and rates can remain reasonable in New Zealand, where only the most rudimentary forms of oversight exist, the United States, with its multiple layers of voluminous state and federal regulations and antitrust law may be engaged in regulatory overkill in the name of advancing competition.

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I. INTRODUCTION

Americans cannot avoid being aware of some kind of a revolution in the business and technology of telecommunications. Even if they have never laid their hands on the futuristic products and services of the information age, they are inundated by its verbal byproducts: “information superhighways,” “telecommuting,” “video-on-demand,” “virtual reality,” and so on. It is clear that American consumers are going to be confronted by a bewildering variety of new telecommunications services and technologies, and that many businesses, large and small, are engaged in a mad scramble to offer them. What is not so clear is the role government should play in regulating and controlling the players.

The United States broke up the world's largest telephone company in 1984 in order to free the potentially competitive long-distance market from the “natural” monopoly that everyone assumed still existed in local telephone service. Despite the new competition, both AT&T and the divested Regional Holding Companies (RHCs) were still heavily regulated. Indeed, the RHCs' “bottleneck” monopoly on local telephone service was used to justify new restrictions on their activities, including prohibitions on entering long distance and information services, and on equipment manufacturing.

Only ten years later, competition has begun to break through the protective barriers surrounding local service. A variety of wireless alternatives to the local telephone company are poised for development. The FCC's licensing scheme for “personal communications service,” for example, will authorize up to seven competitors in each local market. America's two largest long distance companies have begun to assault the so-called “bottleneck.” Last year AT&T merged with one of the nation's largest cellular companies, positioning itself to more easily bypass local telephone companies. A few months later, MCI vowed to “wage war” on the Baby Bells' franchise territories by spending $2 billion to build its own local fiber networks in 20 cities. These incursions into local access followed the initiatives of smaller companies, such as the Teleport Communications Group and Metropolitan Fiber, which have been building alternative fiber networks targeted at business users for several years.

These developments by themselves raise doubts about the presumption that local telecommunications is a natural monopoly. But the RHCs themselves are engaged in a growing number of competitive activities. These alleged repositories of monopoly status are refusing to act like complacent utilities. Citing the growing competition they face, they are fighting for and sometimes winning deregulation of their rates. Legislation to allow them to re-enter long-distance service is before Congress. Most interestingly, they are positioning themselves to enter the markets of cable television companies. The marriage of telephone and cable TV companies not only would thrust the telephone company into mass media markets, but would bring the RHCs into each other's territory, creating the potential for head-to-head competition in traditional telecommunication markets as well.[1] The failed Bell Atlantic-TCI merger was only the largest and most dramatic in a series of alliances between the RHCs and cable system operators. Unlike the competitive local access providers, who reach only business customers, cable systems cover residential areas as well, and thus are capable of providing a comprehensive alternative to the telephone monopoly. By the same token, telephone companies may be able to provide an alternative to cable franchises.

Despite the apparent revolution in industry structure, the public policy questions raised by the new developments have changed little. The debate revolves around the same two fundamental issues that have haunted the industry since well before the AT&T divestiture.

- First, to what extent can market competition replace regulation as the arbiter of telecommunications service markets?

[1] There are two motives for these alliances. One is the technological convergence of video and telephone transmission. Broadband networks can carry high-speed data and video as well as voice signals. Conversely, cable systems can be upgraded to switch telephone calls and offer interactive video services as well as one-way TV. The other motive is that the cable TV infrastructure provides yet another pathway to the customer.

Should the government still control rates, monitor service, and draw boundaries between markets as it has done in the past? Or is regulation both futile and reactionary in an environment increasingly defined by market competition?

- Second, and more fundamentally, how does one define “competition” and “monopoly power” in a marketplace as complex as communications?

Whether cable-telco mergers would result in a wide-open rivalry or create frightening mega-monopolies is a policy debate that will resound throughout the 1990s.

In evaluating these policy options, it is useful to examine the experiences of other countries. While there are many examples of telecommunications industries which are strictly controlled and monopolistic, it is not easy to find evidence of what would happen if regulators and market entry restrictions were eliminated altogether. One country, New Zealand, has chosen to untie these policy knots the Gordian way. Beginning in 1987, New Zealand practically abolished regulation and threw open all its telecommunications markets to free competition. This paper assesses that unusual and radical experiment. The New Zealand deregulation constituted a bold leap, but it was of necessity a leap in the dark. How did the experiment work, and what can it tell us about our own transition to a competitive telecommunications industry?

II. THE SIGNIFICANCE OF INTERCONNECTION IN TELECOMMUNICATIONS POLICY

New Zealand is unique because it attempted to leap directly into an open, deregulated marketplace for telecommunications. There are no legal restrictions on entry and very few regulations placed upon the incumbent. Most significantly for this paper, interconnection of competing networks is being handled within a radically different institutional and legal context.

No regulatory agency with the power to define, enforce, or mediate an interconnection agreement was created. These facts make New Zealand's experience with telecommunications deregulation and competition highly interesting because, as the analysis below explains, interconnection is probably the single most critical issue in the new telecommunications marketplace.

When networks compete for customers, they can do so in one of two ways. One alternative is to go it alone; i.e., to attract users on a stand-alone basis. The global computer network known as the Internet, for example, has grown up independently of the public telephone network. Although it is not (yet) a commercial entity, it has grown so large that many commercial e-mail or information services are beginning to utilize it, and it is also beginning to divert significant amounts of traffic that might otherwise have gone through the public telephone network.

Stand-alone competitors are the exception, however. Most new technologies and services must establish access to the existing public telecommunications network in order to be viable. Competing long distance companies such as MCI and Sprint, for example, exchange telephone calls with both the local exchange companies and the long distance networks of their competitors. Cellular telephone service, to cite another example, provides an alternative to the wireline telephone service, but few would subscribe to cellular service if they could not also use their cellular phones to call people on the wireline network.

The biggest problem facing regulators in the new environment has been to adjudicate and coordinate interconnection relationships among competing systems. The issue of interconnection opens a veritable Pandora's box of issues in competition policy, pricing, and standardization. In most nations these issues have been, or are being, resolved via regulatory processes. The New Zealand experiment, on the other hand, provides evidence of what would happen if these issues were resolved via market transactions alone.

A. The Economics of Interconnection

The interconnection problem has its roots in three basic economic characteristics of networks. The first, and most fundamental, is that two-way telecommunication networks do not provide a single service, but are collections of many different services. This is the problem of heterogeneous output. Second, the value of a telecommunication network to its users generally increases as the number of outputs increases. This is commonly known as the network externality, but could also be described as the existence of significant complementarities between the multiple outputs of the network which create demand-side economies of scope. Third, telecommunications network markets, like information markets, suffer from an appropriability problem. Those who obtain access at one point of the network are able to resell access to all parts of the network, making it difficult for large-scope networks to appropriate the value of their scope.

Heterogeneous output. The existence of heterogeneous output is fundamental to the analysis of telecom markets. A household or business subscriber to an established telephone network is acquiring access to millions of other users who have also joined the system. A user who dials a telephone number is telling the system to set up a specific communication path between him/herself and another user. From an economic point of view, each individual connection between users is a separate and distinct output or service.[2]

It follows that adding users to a network increases its scope, not its scale. This apparently simple observation has radical consequences. Most formal economic analysis of industrial organization applies to firms which produce a single, homogeneous output. In telecom networks, on the other hand, each pairwise connection represents a different market, and the number of markets involved is enormous. Although the network is technically integrated, the markets served are discrete. How, then, to analyze competition and the competitive process?

Demand-side economies of scope. The problem is complicated further by the presence of network externalities. The value of a telecommunication network to its users generally increases as more users join it. A telephone network that connects only two people is of very limited utility. Adding users increases its value.

Economists typically treat this as an "externality," because the decision whether or not to join a network affects the value of the network to other users and not just the person making the decision. For the purposes of this paper, however, it is more important to note that connecting additional users to the network adds complementary goods, allowing existing users to achieve demand-side economies of scope. That is, connecting additional users allows existing users to enlarge the number of people they can call (thus adding utility) without any additional investment in terminal equipment or another service subscription. The alternative would be two or more unconnected systems, which would require expenditures on duplicate equipment and/or service subscriptions for users who wanted to reach everyone.

The heterogeneity of a network's output, when coupled with network externalities, plays a decisive role in shaping the competitive process. A telephone monopoly came about in the United States around 1920 not because of supply-

[2] This becomes obvious when the issue of substitution is considered. If a telecom network connects users A, B, and C, and A represents a home, B represents an office, and C a grocery store, it is clear that providing a connection between A and B is not a substitute for a connection between A and C. The user at A will demand connections to B at different times and for different reasons than connections to C. Connections from A to B and from A to C could in principle be provided by completely separate facilities. It is only the economies that can be achieved by joining them together that results in a single network. The radical heterogeneity of a telephone company's output is recognized by Gerald Brock (1986) and in the New Zealand testimony of Nina Cornell (1991) and developed most explicitly in Mueller (1988). While other economists have recognized this property they almost always proceed to ignore it because, as one economist friend of mine remarked, "it makes the problem [of interconnection pricing] intractable." This recalls the joke about the person who was seen looking for the keys he had lost beneath a lamppost on a dark street. When asked whether he thought he had dropped the keys there he said, "no, but the light is better here." A very recent exception is Economides and White (1993), who base their analysis upon the observation that all the components of a network are separate but complementary "goods."

side economies of scale, but because of demand-side economies of scope. Twenty-five years of competition between separate networks resulted in the fragmentation of users into two separate telephone systems. Eventually, users demanded convergence on a single system. The pressures toward monopoly came from the desire of users to achieve demand-side scope economies through consolidation of local exchanges.[3] Readers familiar with the standards/network externality literature will recognize this as a typical outcome of "standards" competition. On the other hand, there is no evidence that consolidation of telephone systems resulted in significant supply-side economies of scale or scope.

Once a single system exists and, as in most economically developed societies, connects the bulk of the population, the network externality gives the incumbent telephone companies enormous market power. Without interconnection to the established network, the value of start-up networks is extremely limited, because they can offer only a small number of connections to their customers. Part of the problem is that the capital requirements of duplicating the scope of the incumbent are prohibitive. Even if that were not a problem, however, a new entrant would be economically unattractive to most users unless everyone switched to the new network at once, because the competitor's customers would have to maintain subscriptions to both systems in order to maintain access to all other users, thus sacrificing economies of scope. Economists who have studied network externality phenomena refer to this as the problem of "inertia" or "lock-in."[4] In short, established networks have market power simply by virtue of the fact that they are established, and not because they offer better service or lower prices. For this reason, a network with a large established scope has no incentive to interconnect voluntarily with smaller competing networks.

The American economist Gerald Brock characterizes the incentives to interconnect as follows:

> Competitors of equal size have a strong incentive to interconnect. Interconnection increases the value of the service offered by each company because it can provide communication with more people than without interconnection.... If existing companies are of unequal size, interconnection provides maximum efficiency, but benefits the smaller members more than the larger. Thus, it is likely to be withheld if the larger company is attempting to monopolize the market. If instead of geographical separation, the smaller company's customers are also served by the larger company, the larger company has no incentive to provide interconnection. It gains no enhanced value from interconnection, because it could serve all the customers by itself that it could serve with interconnection. Thus, it is unlikely to provide connecting privileges except under legal constraint.[5]

It is possible to exaggerate the inertial power of the network externality, however. The fact that the telecom network consists of a huge collection of markets and not one market means that it is possible for subsets of users with specialized needs and/or a high concentration of traffic among themselves to economically migrate to alternative networks. Historically, new networks offering a distinctively new technology or type of service have been able to succeed without interconnection to the incumbent. The case of the Internet, cited above, is an example of this. Also, when large segments of the market remain undeveloped or unserved, it is possible for newcomers to enter and survive without interconnection, even when the incumbent is much larger.

A historical study of Bell's competition with independent telephone companies in the early 1900s, for example, showed that Bell's refusal to connect with its competitors was a completely ineffective barrier to entry, even though

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[3] This argument is supported in Milton L. Mueller, "Universal Service in Telephone History: A Reconstruction," *Telecommunications Policy* 17:5 (July 1993).

[4] Joseph Farrell and Garth Saloner, "Competition, Compatibility, and Standards: The Economics of Horses, Penguins, and Lemmings," in Gabel, Ed., *Product Standardization and Competitive Strategy* (New York: North-Holland, 1987); Paul A. David "Clio and the Economics of QWERTY," *American Economic Review* 75:2 (May 1985), pp. 332–337.

[5] Gerald W. Brock, *The Telecommunications Industry: The Dynamics of Market Structure* (Cambridge, Mass: Harvard University Press, 1981), p. 19.

Bell was initially much larger than its rivals.[6] Indeed, in newly developing markets, such as computer networks or computer equipment, competition between separate and incompatible networks or technologies has had many positive effects.[7] Moreover, compatibility and interconnection in these industries is evolving gradually through market transactions, without much government intervention. This is because no single company enjoys a commanding control of the entire market.

Appropriability. A final word about *appropriability*. The existence of multiple outputs and demand-side economies of scope complicates the problem of determining what price one network should charge a competitor for access to its network. A telecommunication network that enlarges its scope makes itself more valuable to users. Indeed, a "universal" or ubiquitous communication infrastructure is recognized by nearly all societies as being of immense social and economic value. However, a competitor who interconnects with a universal network offers only a partial substitute for the existing network. By interconnecting with the incumbent, the competitor obtains access to all routes and all users, but does not have to face the costs and risks of creating the entire network. The competitor is thus able to appropriate some of the economic value of the other network's scope. A large-scope network thus faces an appropriability problem.

The phenomenon is quite similar in form to the problem of intellectual property. A person who obtains access to valuable information is technically able to appropriate some of the value of the information by duplicating it and reselling it to others. In information markets, laws and pricing regimes discriminate between those who are final consumers of the service or information, and those who intend to resell. In telecommunications service markets, the appropriability problem leads to concerns about the ability of an incumbent to maintain universal service when subjected to competition. The fear is that interconnection will allow competitors to enter only the low-cost components of the network and leave the high-cost segments to the incumbent.

What then should the incumbent charge a competitor for interconnection? Economists typically take one of two approaches. One view, based more on regulatory practice than on theory, holds that competing networks should be charged only the incremental costs incurred by the incumbent in supplying interconnection. In essence, this position holds that there should be no distinction between competitors and users; both should benefit from the same demand-side economies of scope. Some even argue explicitly that interconnection pricing should be low enough to assist new entry for a short period of time.[8] In this approach, pricing principles are subordinate to a pro-competitive regulatory policy. This policy is based on the hope that society as a whole will gain because the competitive pressures created will spur the incumbent onto more efficient service and greater innovation, even though the pricing of interconnection may be less than its real market value. Implicitly, this position denies that there is any appropriability problem, although many of its advocates recognize the potential for deterioration of universal service. They address this problem by proposing taxes or subsidies, shared by incumbent and newcomer alike, to support service in high-cost areas.[9]

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6 Milton L. Mueller, "Interconnection Policy and Network Economics," Columbia Institute for Tele-Information, Working Paper Series #344 (1989).

7 IBM-Apple competition, for example. Alternate standards for LANs, third-generation cellular telephone equipment (TDMA vs. CDMA). In digital technologies, standards competition is the rule rather than the exception, and few would argue that uniform standards should be imposed. These represent, however, newly developing markets which allow room for newcomers to establish a critical mass of users.

8 Neu Werner and Karl-Heinz Neumann, "Interconnection Agreements in Telecommunications," Wissenschaftliches Institut fur Kommunikationsdienste (WIK), Diskussionsbeitrag Nr. 106, April 1993.

9 Eli M. Noam, "NetTrans Accounts: Reforming the Financial Support System for Universal Service in Telecommunications," paper presented at Universal Service in the New Electronic Environment, Washington D.C., October 15, 1993. Joint sponsors: Benton Foundation and Columbia Institute for Tele-Information.

The other view, which has been worked out most explicitly by William Baumol, says that the competitor should be charged the incremental costs of establishing interconnection plus the opportunity costs of the incumbent incurred by supplying access to a competitor.[10] This viewpoint recognizes the need for some kind of distinction between the prices offered end users and prices offered resellers or competitors, but does not explicitly raise the issue of appropriability. The Baumol proposal plays an important role in the New Zealand story, and will be discussed at greater length in section 4.

B. The Interconnection Problem Defined

The reason why interconnection of competing networks has emerged as the critical issue in telecommunications policy can now be defined more explicitly. In developed countries with high penetration, new, competing telecommunications networks will require access to the incumbent's users if they are to compete successfully in any but the most peripheral markets. Such interconnection will not, however, come about as a product of a voluntary negotiation, because in most cases the incumbent has nothing to gain and a lot to lose from providing access to its competitors. Thus, if interconnection is to take place at all, it must be compelled. Because the transaction is a product of compulsion rather than the market, regulators must be the ultimate price-setters. The problems with regulatory price-setting are manifold. There is no consensus on the theoretical basis for deriving interconnection prices, and even if there were, the high political stakes would make an objective decision difficult.[11] The absence of clear guidelines notwithstanding, the price of interconnection is the single most important factor affecting the economic viability of the new competitors, and in the long term, probably the incumbent as well.

But it is more than simply a problem of pricing. In most cases, new carriers are demanding forms of access that simply were not offered commercially before. Thus, in order to deal with the problem of interconnection, regulators have reached deeply into the technical structure of the network in order to redefine service offerings in a way that facilitates competition. Equal access, Open Network Architecture (ONA), new numbering plans, and other forms of technical regulation have emerged as a result. Open Network Architecture is the Federal Communications Commission's attempt to "unbundle" local telephone service into a set of "basic service elements" that users and competitors can assemble to their own specifications. It is the rough equivalent of a law requiring all stereo systems to be sold as components rather than as integrated systems. In effect, regulators are attempting to create an intermediate market for telecommunications services by fiat.

There is much more at stake here than the viability of new competitors, important as that is. How regulators handle the interconnection problem is vital to the future of all telecommunication users, large and small, and to the future of the existing public carriers. The introduction of competition via interconnection unleashes powerful centrifugal forces in the telecom marketplace. Incumbent monopoly networks generally rely on average prices set to sustain the network as a whole. Competitors typically attack only a few of the routes and services, forcing the incumbent to break apart the many components of the network and price them separately.

Thus, interconnecting competitors to the public network not only raises concerns about the maintenance of universal service, it also leads to pressures to "unbundle" the technical components of the network and to price them separately as well. Since the telecommunication infrastructure is characterized by joint and common costs, and since

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[10] William J. Baumol, *Deregulation and Residual Regulation of Local Telephone Service* (Washington, D.C.: American Enterprise Institute, March 3, 1993). See also "Brief of Evidence: Economic Principles for Evaluation of the Issues Raised by Clear Communications Ltd. on Interconnection with Telecom Corporation of New Zealand Ltd.," by William J. Baumol and Robert D. Willig.

[11] As Martin Cave wrote: "interconnection prices are the main regulatory battleground [in the development of competition in telecommunications], and all aspects of the process are subject to high inputs of advocacy from interested parties. The scope for this increases because there is no general agreement about the basic principles which should underlie interconnection prices if economic efficiency is to be achieved, let alone about the finer points such as the structure of interconnect pricing and the degree of averaging upon which it should be based." Cave, Martin, "Interconnection, Separate Accounting, and the Development of Competition in U.K. Telecommunications," Institute of Economic Affairs Lectures on Regulation, 1993.

the network consists of so many different outputs to "unbundle," the process of deaveraging rates and unbundling services raises extremely complicated issues in cost accounting and rate regulation.

As noted before, the complexity of the interconnection problem has prompted most countries to intensify and expand regulation of the telecommunications industry. New Zealand's attempt to dispense with regulation in this area is unique. As such, it provides an opportunity to observe what happens when interconnection and competition are left to evolve without regulatory intervention. Even if the policy adopted by this regulatory maverick proves to be a complete failure, the results are interesting as a social experiment.

III. NEW ZEALAND'S EXPERIMENT IN DEREGULATED TELECOMMUNICATIONS

Before 1987, New Zealand's telecommunications industry was a traditional PTT; that is, a state-owned monopoly administered by the New Zealand Post Office. The Post Office enjoyed a statutory monopoly with vertical control over terminal equipment, local exchange service, and national and international long-distance service. In 1987, the government restructured the post office, dividing telecommunications, postal, and banking services into three separate state enterprises. A new Telecommunications Act, passed the same year, opened terminal equipment to competition. An amendment passed in 1988 ended the statutory monopoly on all remaining aspects of telecommunications services, effective April 1, 1989. In 1990, the government sold a majority of the shares in the Telecom Corporation of New Zealand to a partnership of the American telephone companies Bell Atlantic and Ameritech. Thus, within a span of only three and a half years, telecommunications in New Zealand have been corporatized, liberalized, almost completely rate-deregulated, subjected to open entry, and privatized.

The only major constraints remaining on the Telecom Corporation of New Zealand (Telecom) are the so-called Kiwi Share obligations (KSOs), which were imposed at the time of privatization. The KSOs commit Telecom to continue offering flat-rate residential telephone service,[12] prevent it from withdrawing service from remote areas, and prevent it from increasing residential rates faster than the rate of inflation unless Telecom's profits are adversely affected. All other rates are unregulated. Disclosure regulations require Telecom to publish information about its prices, special discounts, and financial data in the New Zealand Gazette. Other than that, the only restraint on Telecom is the Commerce Act 1986, which is New Zealand's version of an antitrust law. The Commerce Act, which applies to all industries, specifically prohibits a dominant firm from acting uncompetitively, bars misuse of a dominant position in the market, and prohibits business acquisitions which create or strengthen dominance.

A. New Zealand Law and Policy on Interconnection of Network Operators

As noted, New Zealand prepared for the introduction of competition primarily by removing all legal and regulatory barriers to entry. Telecom has no statutory protection from competition, and anyone in New Zealand can register as a network operator. There are no special regulations regarding the interconnection of new network operators to the Telecom public network and there is no industry-specific regulatory body. Instead, interconnection arrangements are supposed to be governed by the law of contract. Terms and conditions are negotiated between Telecom and the other parties on a case-by-case basis.

There are still special constraints on Telecom's behavior, however, pertaining to interconnection.

The New Zealand government realized that because of Telecom's dominant position in the market for telephone services and the difficulty of duplicating the scope of its network, new competitors would have to rely on Telecom

[12] "Flat rate" service means local service that is not usage-sensitive. In 1990 Telecom changed its local business rates to a usage-sensitive charging, in which businesses pay NZ$ .03 per minute for a local call. Residential users are exempt from such a pricing scheme.

for access to telephone users, particularly at the local level. In order to prevent Telecom from stifling competition by withholding access to its facilities, the Ministry of Commerce obtained in June 1988 a public commitment from Telecom to interconnect its facilities to competitors on "fair and reasonable terms."[13] Telecom is also subject to the Commerce Act 1986, a law intended to prevent anti-competitive conduct. New Zealand courts have applied the "essential facility" doctrine in the context of the Commerce Act to hold that facilities which cannot be practically duplicated by competitors must be shared on fair terms by those who possess them whenever such sharing is feasible. Some case law regarding this doctrine exists, but its application to telephone interconnection pricing lacks any precedent. The meaning of "fair" prices and "feasible" sharing can only be determined on a case-by-case basis.

Thus, while the general law of contract provides the basis for interconnection negotiations, there is a *de facto* legal obligation to interconnect. There is, however, no regulatory agency to specify or mediate the terms of interconnection and no precise precedent in case law. In the absence of a regulator, litigation under the Commerce Act provides the only recourse in cases of irreconcilable disagreements. The policy was summarized by the New Zealand Minister of Communications in this way:

> This government's policy is to set the regulatory framework for interconnection, but not to involve the Government or its departments in direct negotiations. Leave that to the interconnecting parties.... And if they can't reach an agreement on particular points, they can take their differences to Court where the Commerce Act and general competition law will be their adjudicator.[14]

B. Telecom's Template Interconnection Contract

In line with its undertaking promising interconnection on fair and reasonable terms, Telecom held a series of industry briefings starting in June 1988 to vet its proposed interconnection arrangements. A standardized interconnection guidebook with specific arrangements proposed was published in July 1989.[15]

In essence, Telecom's interconnection proposals used numbering prefixes to distinguish between Telecom and non-Telecom networks and required interconnecters to pay the standard retail charges for local and toll usage. Alternate local networks (e.g., cellular telephone systems) would be given 02XX access codes, and competing long-distance networks were given 05XX access codes.[16] The scheme also identified 17 points of interconnection (POIs) in Telecom's network where new long-distance operators could establish trunk-side connections to Telecom's switches.

Telecom's proposed interconnection scheme envisioned an arm's-length relationship between the established public network and its new rivals. Relative to the approach established by regulators in other developed countries, its terms and conditions were unfavorable to entrants.

Telecom retained full control of the numbering plan. Users of alternate networks had to dial four additional digits. Whereas competitors in the United States and Australia pay what is in effect a discounted "wholesale" rate (based on incremental costs only) set by regulators for their usage of the public network, Telecom's competitors would pay the same usage rate as any individual business line user. Furthermore, its technical specifications for local

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[13] Telecom's Interconnection Guidebook cites a "written undertaking" between Telecom and the government promising to provide interconnection to competitors on "fair terms and conditions." "Interconnection," Corporate Policy Department, Telecom Corporation of New Zealand Ltd., Issue 1: July 1989, Part 1, p. 3.

[14] Maurice Williamson, Minister of Commerce, TUANZ 91 Conference Proceedings, September 1991, p. 16, Auckland: Telecommunications Users Association of New Zealand.

[15] "Interconnection," Telecom Corporation of New Zealand Ltd., see note 13 above.

[16] That is, to obtain access to a competing long-distance company, its customer would have to dial, e.g., "0520" before dialing the desired party's number.

interconnection were based on the assumption that the switches of its competitors would be small, private branch exchanges rather than full-fledged commercial telephone switches.

Telecom's justification for this arrangement focused on how an access code-based differentiation of networks promoted true competition in a variety of ways. Specifically, Telecom argued that access codes: 1) allow users to access easily a large number of competing networks; 2) promote informed choice by making it easy for customers to identify the service operator used and to relate the type of service received to specific carriers; and 3) facilitate switching and processing of calls by multiple networks. By the same token, a transparent or integrated numbering scheme diminished true competition among networks by: 1) requiring networks to have the same local calling area; 2) requiring the price of calls within a network to be the same as the price for calls between networks; and 3) requiring ancillary services such as directory information to be provided jointly and in a nondifferentiated way.[17] As the government did not intervene at this point,Telecom's template became the starting point for all future negotiations.

C. Interconnection and Competition in National and International Markets

As the law opening up network services to competitive entry went into effect in 1989, a total of seven groups of potential competitors began jockeying for position.[18] In the summer of 1990, two of the largest competitors, the Bell Canada-Television New Zealand partnership and the MCI-Todd Corporation-New Zealand Rail group, merged to form Clear Communications. Due to its backing by well-financed and technically experienced North American and domestic firms, Clear's formation led to the withdrawal of all other large telecom interests.
In an important conjunction of events, Clear entered into interconnection negotiations with Telecom in mid-1990, just as Telecom was seeking government approval for its privatization deal. The government was unwilling to sign off on Telecom's privatization unless an interconnection agreement paving the way for workable competition had been made. As Clear was the only remaining competitor seeking interconnection and Telecom needed an agreement, Clear's bargaining power was enhanced.

On August 24, 1990, Clear and Telecom signed a Memorandum of Understanding setting out the broad outlines of an interconnection agreement. Only a few weeks later, the government sold its Telecom shares to a consortium led by the American firms Bell Atlantic and Ameritech. A final toll bypass interconnection agreement between Clear and Telecom was concluded March 4, 1991.[19] By May 1991, the Clear network was up and running.

Analysis of the Clear-Telecom Interconnection Agreement. Clear's negotiations with Telecom produced several significant concessions from Telecom's template interconnection proposal. The final agreement fell somewhere between the “arms-length” relationship originally proposed by Telecom and the equal-access arrangements characteristic of the United States and Australia, although it was closer to the former than to the latter. It is important

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[17] Extracted from “Telecom's Justification of Existing Arrangements,” New Zealand Ministry of Commerce, Communications Division, *Telecommunications Numbering in New Zealand: An Issues Paper*, Second Report (Wellington, NZ: November 1992), p. 21–22.

[18] One was a partnership of Bell Canada and Television New Zealand (TVNZ). TVNZ has an existing microwave network that could be used for toll bypass. Another was a partnership of the American long- distance carrier MCI, the New Zealand Investment firm Todd Corporation, and New Zealand Rail. New Zealand Rail had its own fiber network and rights of ways. A third was the British firm Cable and Wireless. The fourth was a small Australian firm called Telpac which hoped to use satellite circuits to bypass Telecom's toll network. Telecom New Zealand hoped to sign an interconnection agreement with one of the weaker organizations in order to establish a precedent that could be imposed upon the others. Telpac was chosen for this role. Although Telecom succeeded in signing an agreement with Telpac, the company was unable to actually start its business.

[19] Animosity developed between Clear and Telecom in the six months between the Memorandum of Agreement and the final conclusion of an interconnection agreement. Clear spokespersons charge that once the privatization had been approved, Telecom began delaying a final agreement by throwing in tough new conditions. Personal interview with Neil Tuckwell, January 1993.

to specify the exact nature of the agreement in order to aid in the later analysis of how competition has functioned in New Zealand.

Points of Interconnection (POIs). Clear's toll interconnection agreement used 15 of the POIs designated by Telecom, which allowed it to be accessed by 85 percent of New Zealand telephone users. Wherever Clear does not have a POI, it must complete telephone calls by routing them over Telecom's toll network and pay the regular retail charges for long-distance service from the POI to the called telephone.

Access Codes. Clear customers must dial a four-digit access code to use its network. Clear was assigned the 050X number group. 0500 and 0501 are the respective codes for Clear's national and international services. The 0508 code is Clear's toll-free service. The agreement promised to eliminate these special codes and automatically route calls from Clear customers to Clear's network when the new network's share of the national toll market exceeded 9 percent. (In fact, Clear exceeded the 9 percent share so rapidly that Telecom was unprepared to offer noncode access when this threshold was passed. As of February 1993, Clear customers were still dialing 050X to get into the network. Clear initiated litigation to force Telecom to provide noncode access, unresolved at the time of this writing.)

The numbering distinction between Clear and Telecom was also extended to toll-free long-distance numbers. Long-established in the United States, toll-free service has only recently been developed in New Zealand, using the 0800 numbering block. Telecom considers the 0800 number group to be a branded product. It therefore refused to make 0800 numbers available to competitors without special payments to compensate it for marketing the idea. Unwilling to accept this deal, Clear began marketing its own toll free service using 0508. For technical reasons, Clear's 0508 toll-free service is not a full substitute for 0800 and is not universally available.

Interconnection Fees. Telecom's stated policy was that network operators would be charged the same usage fees as any other business customer for local and toll transport. Clear's negotiators won a small concession of 6 percent off the standard rates. Also, Clear was not required to pay for the provision of the Automatic Number Identification (ANI) function. ANI is an internal function of the network that identifies and stores the number of the calling party.

Billing Name and Address Information. Billing Name and Address (BNA) information is used by network operators to identify and bill customers who make calls through their network. As a matter of policy, Telecom refused to supply BNA to Clear or any other competing network operator. Clear has created a customer database from its own application forms and bills its customers directly.

International Facilities. Clear and Telecom were unable to negotiate a satisfactory resale agreement for international facilities. Consequently, Clear was forced to acquire international satellite and cable circuits independently.

The list above makes for a sharp contrast with interconnection arrangements based on the principle of equal access. The new competitor is more difficult to access, and in numbering, international facilities, and billing, the competitive carrier had to develop its own practices and facilities rather than relying on a nondiscriminatory service offering from the established network.

In addition to this, Telecom has engaged in practices that would be considered prima facie anticompetitive in other legal and regulatory environments. For example, Telecom is allowed to bundle together toll service, local access services, and customer equipment sales and offer substantial discounts on the resulting package to larger users. Large users are not infrequently offered discounts of more than the 6 percent offered to Clear on Telecom's standard toll and international charges.

Nevertheless, Clear achieved a much better deal than preoffered in Telecom's original template agreement. It reduced its usage and ANI payments and was given a promise of noncode access in the near future. The movement toward noncode access indicated that Clear's understanding of its future role in the telecommunications service marketplace was more in line with the equal-access models of regulated countries than with Telecom's “arm's length” model.

The final agreement adhered consistently to neither model but represented a compromise between the two. This compromise made it possible for both parties to come to an agreement while still retaining their own particular view of the proper approach to interconnection. This conflict of visions ultimately came to a head in the impasse over local interconnection, which is discussed below.

Results of Toll Competition in New Zealand. The assumption behind most pro-competitive, equal-access policies is that the kind of inequalities listed above constitute a fatal obstacle to effective competition in telecommunications markets. But do they really? The following data indicate that despite the obvious inequalities in the interconnection agreement, national and international toll competition in New Zealand has functioned at least as successfully as competition in countries with policies that promote or protect competitors.

Telecom had four years, from the beginning of the deregulation process on April 1, 1987, to the beginning of Clear operations in May 1991, to prepare for the coming of competition. Telecom had inherited from the New Zealand Post Office massive subsidies from toll calls to local service estimated at NZ$400 million per year. From 1988 to 1990 the new management moved to rationalize Telecom's price structure by rebalancing its tariffs. Long-distance usage rates were cut by 35–50 percent. Monthly rentals for residential local telephone service were increased by NZ$10 per month or 33 percent. Usage-sensitive pricing for local calls was instituted for business users of local telephone service.[20]

Despite Telecom's impressive prior efforts to rationalize its rates, the advent of competition quickly produced additional price reductions and service improvements. Moreover, Clear gained market share at a pace faster than anyone had expected.

Pricing Changes in National and International Toll Service. Competition produced significant changes in the level and structure of national toll rates. Initially, Clear maintained its national toll tariffs at 10 percent below Telecom's. Clear also billed for calls at six-second increments, whereas Telecom's billing increment for long distance calls had been one minute. (Even without a change in the rate, reduction of the billing increment to one second can produce a price reduction of 5 to 8 percent.) Both initiatives were countered by Telecom. After eighteen months of competition, both carriers were billing at one-second increments after the first minute, and both were positioning themselves as the low cost provider. Both carriers also introduced volume discount plans for residences and businesses. For Clear, volume discounts started at 6 percent and went up to 20 percent. Telecom's volume discount plan went from 8 percent for small users to 14 percent for larger users. Clear also instituted discounts for prompt payment of 1 to 2 percent. Taken together, small users experienced a reduction of at least 14 percent, and large users a reduction of 20 to 25 percent, because of the Telecom-Clear rivalry.

In international services, Clear undercut Telecom's prices by 30 percent on every route except for Australia. Clear's entry forced Telecom to reduce its rates by 3 to 8 percent. Both carriers introduced volume discount plans for international services, ranging from 3 to 6 percent for Telecom and from 2 to 10 percent for Clear. Clear is investing NZ$20 million to develop its own international facilities, half of which will go to a cable to Australia. This will intensify price competition in New Zealand's most important international route.

Unlike British Telecom, AT&T, and Japan's NTT, Telecom New Zealand did not maintain a price umbrella for its competitors and position itself as the high-quality service. It announced its intention to compete aggressively on price and matched Clear's price cuts all the way. By early 1993, there was little difference between Clear and Telecom prices.

[20] John Crook, corporate director Sales and Marketing, Telecom Corporation of New Zealand, "Telecommunication Operations in the World's Most Open Market," presentation at the Inter Comm. Conference, Vancouver, Canada, 22–26 October, 1990.

Clear's market share. A consultancy report on liberalization of telecommunications prepared for the New Zealand government in 1988 projected that a new competitor would gain slightly less than 2000 customers and a market share of a few percentage points after one year.[21] In fact, by December 1991, only seven months after beginning operations, Clear had about 30,000 customers and had already reached the 9-percent market-share threshold that was supposed to lead to noncode access.

Clear's market share of national toll calls climbed to 16 percent by the end of 1992[22] and had stabilized at around 18 percent by the middle of 1993. Clear's share of international traffic varies by route, but was confirmed to be greater than its share of national tolls (i.e., greater than 18 percent) on the United States, United Kingdom, Singapore, Hong Kong, and Japan routes.[23]

Impact on Telecom Usage and Revenues. Competition put a significant dent in Telecom's revenues. In the final quarter of 1992, as the price war between Clear and Telecom raged, Telecom's national long-distance calling volumes increased by 10 percent over the previous year and was up 4.4 percent over the nine-month period ending December 1992. Telecom's national toll revenues in the nine months ending December 1992, however, dropped NZ$57.5 million (14 percent). when compared to the same period in 1991. According to Telecom, international outgoing minutes also increased by an unspecified amount, but revenue decreased by NZ$25.5 million (7 percent). Although Telecom attained record profit levels, the growth in profitability came from a combination of revenue growth in businesses still untouched by competition, such as cellular telephony and local service and from steady reductions in its labor force. Telecom's rapid erosion of market share and revenue in national toll encouraged it to take a tougher stance in its negotiations over local interconnection.

The success of the New Zealand regime in the national toll market is significant, but the significance is limited by the following considerations. Relative to the problems posed at the local level, long-distance interconnection and competition is fairly simple to implement technically. There are long-standing precedents in the United States, United Kingdom, and Japan. The combination of a technological revolution in long-distance transmission and a century-old tradition of averaged pricing has left the price and incremental cost of long-distance service so far apart that it would be difficult for any reasonably efficient new business *not* to undercut the prices of the monopoly on a few main routes after obtaining universal access to all users via the established network.

The United States, Japan, and Australia have all taken very different approaches to the pricing of long-distance interconnection (many elements of which are completely unjustifiable in economic terms), yet in each case, the effects of long-distance competition have been similar: a fairly rapid bidding down of prices and the achievement of a significant market share by the new entrants.

D. Clashes over Local Interconnection

Competitors have also begun to enter the local service market. BellSouth has established a digital cellular telephone network to contest Telecom's formerly exclusive control of the cellular market, and Clear Communications has attempted to establish a Centrex-type service to compete with Telecom in the supply of business local exchange service. In both cases, negotiations have been protracted. Whereas BellSouth recently concluded its interconnection agreement, Clear and Telecom were unable to reach acceptable terms for local interconnection, resulting in litigation which was not resolved until December 1993.

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21 "Competition in Telecommunications Networks," Touche-Ross report for New Zealand Department of Trade and Industry, 1987.

22 Interview with Neil Tuckwell, Clear Communications, Auckland, January 1993.

23 *Ibid.*

The BellSouth-Telecom Interconnection Agreement. Telecom's cellular telephone subsidiary was, until recently, the only company offering mobile telephone service in New Zealand. Telecom Cellular's monopoly has been one of the brightest spots in its financial picture. During the 1992 year, revenues grew at a rate of 24 percent and the number of cellular users grew by 38 percent. At the beginning of 1993 there were approximately 92,500 cellular customers in New Zealand, or about 2.7 percent of the population.

BellSouth successfully bid on the frequency band set aside for cellular service in 1990 and announced its intention to offer digital service using the European GSM standard. In February 1992 it entered into negotiations with Telecom for interconnection. By July 1, 1993, the BellSouth system was up and running.

Although at the time of this writing BellSouth's interconnect agreement with Telecom was not yet officially signed, some basic features of the agreement are known. As was the case in negotiations with Clear, Telecom refused to release its customer database (BNA information) to BellSouth. When calls pass from the Telecom network into the BellSouth network, Telecom buys airtime from BellSouth for the call and bills its own customers. Unlike Clear, BellSouth also was required to pay for ANI information for each call that goes into the Telecom network. BellSouth felt that this requirement was unfair because ANI information is a standard part of the switching and signalling system, and no extra costs are required to supply it to BellSouth. BellSouth did not get any discounts off of the regular Telecom charges for terminating local calls. In fact, they pay a premium.

BellSouth claims that it is "not satisfied" with the outcome of the negotiations, and that the results will be a "major handicap in our ability to compete."[24] BellSouth claims that price competition is not possible in the market because Telecom controls its costs. With the new competitor operational only two months, however, it is too early to determine empirically the effectiveness of competition in the cellular market. At present, BellSouth claims to have "several hundred" users on its network. What is perhaps more significant is that an agreement was reached without resort to the courts.

The Clear-Telecom Dispute over Local Interconnection. It was apparent from August 1990, when the first Memorandum of Understanding (MOU) between Clear and Telecom was signed, that Clear intended to enter local as well as long distance service. The issue of local interconnection, however, was temporarily set aside so that the parties could reach an agreement on the less complicated issue of toll bypass. When the issue was taken up again in March 1991, Clear and Telecom found, after six months of negotiations, that they could not agree on fundamental issues pertaining to numbering and access pricing. The breakdown of negotiations led to a severe test of the viability of the whole New Zealand approach to telecom liberalization. Under New Zealand's system of nonregulation, Clear and Telecom's dispute had to be taken to court and tried on competition policy grounds. Specifically, Clear set out to prove that Telecom's behavior was an attempt to squash competition and hence was in breach of Section 36 of the Commerce Act. Both litigants acquired some of the best economists money can buy; hence the court record provides a comprehensive exegesis of the economic issues posed by interconnection and competition in telecommunications.[25]

The Basis of the Clear-Telecom Dispute. The MOU signed by Clear and Telecom on August 24, 1990 contained certain broad conditions pertaining to local interconnection. Since local interconnection was not included in the toll bypass agreement, a revised Memorandum of Understanding (RMOU) was signed March 4, 1991 in order to preserve and restate the two parties' intention to enter into a local agreement. The terms for interconnection proposed

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[24] Keith Davis, Managing Director, BellSouth NZ Ltd., fax to author, 20 September, 1993.

[25] See, "Brief of Evidence of Nina W. Cornell"; William J. Baumol and Robert D. Willig, "Brief of Evidence: Economic Principles for Evaluation of the Issues Raised by Clear Communications Ltd. on Interconnection with Telecom Corporation of New Zealand Ltd." ; Alfred E. Kahn "An Economic Evaluation of the Issues Relating to the Terms of Interconnection Provided to Clear Communications by Telecom New Zealand" ; Jeffrey H. Rohlfs, "Economic Issues in Clear vs. Telecom (Before the High Court)." See also the High Court decision of December 22, 1992.

in the RMOU were essentially the same as those contained in Telecom's template interconnection proposal.[26] As such, they were acceptable to Telecom but not to Clear.

Clear's alternative proposal, made March 13, 1991, was driven by the objective of total transparency between the two networks, and thus differed markedly from the RMOU. Clear wanted to be allocated complete blocks of unused NXX-XXXX numbers from the national numbering plan. These ordinary numbers, rather than a special access code, would be used to call Clear customers from the Telecom network, and vice-versa: Clear customers would perceive no difference between calling other Clear customers or Telecom customers. Each network would bill its own customers at its own rates and retain all revenue. No payment for terminating calls from the other network would be imposed by either party. This latter condition Clear perceived to be essential to the economic viability of its service.

Telecom disagreed with this proposal on two essential points.[27] First, transparent numbering arrangements were unacceptable to it because of its strong belief that real competition required product differentiation. Consumers should know which network they were using and the price and service associated with it; the access code conveyed this information. Telecom also believed that it was entitled to be paid for terminating calls from the Clear network. Handling such calls, it argued, incurred much the same costs as handling any other telephone call.[28] In addition to these direct responses to Clear's proposal, Telecom began to introduce a new issue into the negotiations. It expressed concern about the additional costs imposed upon it by its Kiwi share commitments and the competitive handicap this represented. Thus, it began to broach the idea of an "access levy" which would increase interconnection charges to gain a contribution from competitors to its subsidy to rural and residential subscribers.

With these two positions staked out, negotiations stalled. Relations between the parties broke down entirely in July-August 1991, when Clear attempted to purchase Telecom's DDI service in order to meet a contractual obligation to provide local service to a government department in Wellington. (DDI stands for "direct dialing in" and refers to connections between the telephone company and a business private branch exchange that allow extensions on the PBX to be dialed directly by outside parties.) Telecom refused to supply the service, fearing that DDI resale would allow Clear to achieve effective interconnection without using an access code or paying an access levy, thus pre-empting negotiations. Clear's inability to meet its service commitment, made many months before when it had hoped that negotiations would be concluded early, was a severe embarrassment.[29] It filed a lawsuit charging Telecom with violating Section 36 of the Commerce Act at that time.

Economic Theory to the Rescue? Convinced of the need for expert advice on the appropriate principles for access pricing and the defense of its access levy, Telecom engaged the American economists William Baumol, Robert Willig, Alfred Kahn, and Jeffrey Rohlfs in November of 1991. The positions advanced by Kahn and Rohlfs, on the one hand, and Baumol and Willig on the other, differed in certain respects, but both supported Telecom's claim that its interconnect prices could legitimately include a contribution to network overhead in addition to incremental cost.

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[26] Telecom would offer Clear line-side interconnection comparable to DDI service with 2Mbit DTI links, as if Clear were a PBX. Calls into the Telecom network from the Clear network would be billed at the standard Telecom business usage rates. Telecom would also bill its customers who called into the Clear network at standard rates. No extra charges would be imposed on calls between the two networks. Telecom customers who called into the Clear network would have to first dial an access code.

[27] Max Saunders, Corporate Policy Manager, Telecom Corporation of New Zealand Ltd., letter to Clear Communications Ltd. of 19 March, 1991, cited in High Court decision, pp. 30–36.

[28] Furthermore, if Clear charged it for terminating calls from Telecom customers, it would bill its own customers an extra amount to make up the difference. (This, of course, was anathema to Clear as it would give Telecom customers a strong disincentive to call Clear users and thus would penalize users who switched to Clear).

[29] The government department was the Ministry of Commerce. Due to the dispute between Telecom and Clear, the Ministry ultimately had to be served by Telecom under a special arrangement with Clear. Telecom's refusal to deal in this particular instance was ruled a violation of the Commerce Act by the High Court, and this decision was upheld on Appeal.

Over the course of the next eight months, Telecom made Baumol and Willig's "efficient component pricing rule" the basis for its proposed interconnection rates.

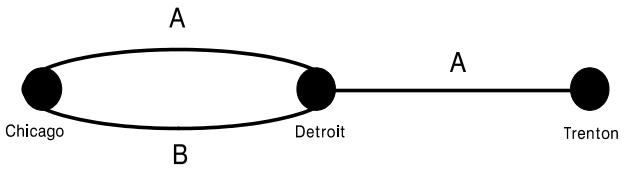
Baumol and Willig's "efficient component pricing rule" is based on the following reasoning. Telecommunications service involves the production of two (or more) service components. The incumbent firm is an integrated provider of both components. The competing firm can produce one component by itself (connections to its own customers) but must buy the second component (connections to all other customers) from the incumbent in order to be able to offer the final product (ubiquitous telephone service) to consumers. The problem, then, is to define an efficient price for the second component. In Baumol's proposed pricing methodology, an efficient price permits competitive entry only by firms that are more efficient than the incumbent at the production of the first component, while fully compensating the incumbent for the supply of the second component.

How much should the integrated firm charge to compensate itself for the supply of the second component to a competitor? According to Baumol-Willig, the firm should charge enough to recover all incremental costs created by serving the competitor, plus the opportunity cost created by the loss of business to the competitor. In other words, the charges should be enough to make the integrated firm indifferent as to whether the final product is supplied by itself or by a combination of its own services and a competitors' services.

The neat logic behind this pricing method can be illustrated by reference to Figure 1. Two railroad lines (A and B) serve Detroit and Trenton, but only one (A) goes from Detroit to Chicago as well. If railroad B wants to offer through railroad service from Trenton to Chicago, it must buy the Detroit-Chicago part of the service from its competitor, railroad A. Baumol observes that in a competitive market, railroad A will sell the Detroit-Chicago service to competitor C only if the price paid by C compensates it for both the incremental cost of supplying service from Detroit to Chicago, and the opportunity cost incurred by not providing the through-service itself. In the example shown in Figure 1, A charges $10 for Trenton-Chicago service, and this price yields a contribution of $4 to its overhead and profits. Thus, A will charge B its incremental costs of supplying Detroit-Chicago service ($3), plus $4 for its opportunity cost. The interconnection price is set at precisely that level which makes A indifferent whether service on the Trenton-Detroit segment is provided by it or by another firm. Baumol goes on to demonstrate that this method allows B to compete with A in the provision of through-service only if its incremental costs are lower than A's in the service segment it provides.

Figure 1

Illustration of the Baumol-Willig "efficient component pricing" rule



A's price for through service (P), Chicago-Trenton:	$10
A's incremental cost, Chicago-Detroit:	$ 3
A's incremental cost, Detroit-Trenton:	$ 3
A's total incremental cost (IC), Chicago-Trenton service	$ 6
A's opportunity cost (P-IC)	$ 4

By June 1992 Telecom had formulated its final bargaining position. It dropped the demand that Clear customers be accessed via a special numbering code, and proposed to give Clear all 90X numbers in each local calling area. Calls to the Clear network would be differentiated by the use of a distinct dial tone. Telecom still demanded to be paid for terminating calls from the Clear network. Telecom proposed that it be paid its standard business usage rates less that

part of its cost saved by Clear carrying the call part of the way. Clear's payments for access to the Telecom network would be the equivalent of a monthly line rental at business rates less any saving in its average incremental cost created by Clear's local loop facilities. Using Baumol and Willig's economic principles and the calculations performed by an accountant, Telecom prepared an "access levy" table specifying the rates Clear would pay for access to and usage of the Telecom network.

The High Court decision. The High Court released its decision in December 1992. Although it ruled that Telecom had violated section 36 of the Commerce Act in a number of minor ways, the primary thrust of its decision was that the economic principles advanced by Telecom's economic experts provided an appropriate basis for resolution of the interconnection dispute. In other words, the Court gave its stamp of approval to the Baumol-Willig charging scheme. The court was convinced that the Baumol-Willig framework provided the proper principles for interconnect pricing, and all that remained was to develop specific charges based on those principles.

Clear Communications, however, did not agree. It took the decision to the Court of Appeal. The Communications Division of the Ministry of Commerce was also unhappy with the model, because it was convinced that local competition could not develop under the Baumol-Willig framework. Moreover, the toll interconnect agreement between Clear and Telecom expires in 1995 and must be renegotiated. An application of the Baumol-Willig framework would result in toll interconnect charges less favorable than those already in place. Some economists in the Ministry of Commerce doubt whether toll competition would survive under such circumstances.

The Court of Appeal Decision. One year later, the High Court decision was reversed by the Court of Appeal. That Court ruled that "taken together as a package, Telecom's terms for interconnection were more onerous than could have been insisted upon in a fully competitive market," and that "Telecom meant to deny Clear access to the market until it could secure conditions which would result in a competitive disadvantage."[30] The Appeals Court rejected the Baumol pricing methodology as "obviously anti-competitive,"[31] for reasons which closely parallel the analysis developed at length in section 4.

The Appeals Court explicitly stated that it had no authority to impose an interconnection agreement or pricing methodology upon the parties. The Court did, however, give the companies a small amount of guidance in formulating a future agreement. It did not support Telecom's attempt to make Clear share in the burdens of the Kiwi Share obligation. It did, however, rule that Telecom's interconnection charges could legitimately reflect the direct benefits of connections to residential subscribers and the costs of generating those benefits. With this proviso, it sent the parties "back to the drawing board," admonishing them that another failure to reach an agreement should be resolved via arbitration, or the parties might have to face "direct Government regulation."[32]

Further Appeals. Surprisingly, neither Telecom nor Clear was willing to accept this judgment. Both appealed the Appeals Court decision to the Privy Council. Clear wanted the Court to award it damages. Telecom objected to the decision's interpretation of the Commerce Act. The Privy Council will meet in mid-June 1994 and will make a decision within a couple of months. As of this writing there is still no competition in wireline business local service in New Zealand.

IV. NEW ZEALAND'S TELECOMMUNICATIONS POLICY FRAMEWORK: ANALYSIS AND CRITIQUE

30 Judgment of Gault J., In the Court of Appeal of New Zealand C.A. 25/93, pp. 39–40.

31 Judgment of Cooke P., In the Court of Appeal of New Zealand C.A. 25/93, p. 5.

32 Judgment of Gault J., see note 30, pp. 47–50.

In critiquing New Zealand's telecommunications policy framework, three points are noteworthy:

- First, New Zealand's attempt to deregulate interconnection arrangements has encountered serious problems because there is no basis for a market transaction between the incumbent and its competitors. The enormous economic inertia created by the incumbent's prior control of the entire market for customer access gives it no commercial incentive to bargain. Given this fact, deregulation of interconnection negotiations makes little sense.

- Second, the Baumol-Willig pricing methodology does not solve the problem unless New Zealand is willing to engage in comprehensive regulation of rates and service--an unattractive option.

- Third, the failure of deregulated interconnection is not a failure of deregulation per se, but a failure to create the proper conditions for the operation of a free market.

The incumbent's excessive power is best addressed through a structural solution; specifically, divestiture of Telecom. By creating smaller incumbent firms, firms that do not possess a near-total monopoly of existing access connections, New Zealand can create the basis for deregulated, commercial interconnection negotiations.

A. Interconnection Incentives

Although it publicly voiced its demand that interconnection must be supplied, the New Zealand government provided neither Telecom nor its competitors with a specific definition of what constituted “fair and reasonable” terms. Nor is it immediately and unambiguously apparent what are the interconnection policy implications of a general competition law. New Zealand's regime can thus be described as one of requiring interconnection but deregulating the process by which an interconnection agreement is made. This is not a viable solution to the interconnection problem; it is a recipe for conflict and confusion.

The New Zealand experience tends to confirm Brock's characterization of the incentives of networks regarding interconnection.[33] Given the powerful forces of convergence on a single network created by demand-side economies of scope, an incumbent with virtually universal coverage has nothing to gain from interconnection with a start-up rival in its own territory. Telecom thus had no commercial incentive to arrive at an agreement and possessed all of the ultimate negotiating power. A refusal to come to any agreement was an outcome acceptable to it but disastrous to its potential competitors. A situation of dependence rather than of mutual gains from trade prevailed.

Evidence of the lack of a true basis for market transactions regarding interconnection is not hard to come by. Telecom itself has explicitly stated that it has no truly commercial motivation for interconnecting with competitors. It does so only to fulfill its commitment to the government and to avoid regulation.[34] It is clear that government pressure in the form of a need for approval of its privatization deal played a key role in the rapid conclusion of the Clear-Telecom toll interconnect agreement. Afterwards, Telecom was able to propose highly unfavorable pricing terms and impose long delays on those seeking interconnection for competitive purposes. In the one case when

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[33] Brock, see note 5.

[34] When asked by the author what commercial benefits it received from providing interconnection to its rivals, the following reply was received: “The compelling reason to provide interconnection on `fair and reasonable' terms was and continues to be the preservation of the deregulated environment in New Zealand. [In regulated environments,] rules are established to confer benefits on one or more competitors at the expense of one or more other competitors. The previous `monopoly' telephone company usually ends up on the `expense' side of things.... Accordingly, this is the main `commercial' benefit for Telecom to provide interconnection to competing networks.” R. Steven Rudd, General Manager, Carrier Relations Strategy, Telecom Corporation of New Zealand, to M. Mueller, 18 Feb., 1993.

Telecom's terms were accepted (BellSouth, which lacked any alternative after it spent millions of dollars to acquire radio spectrum),[35] the prospect for price competition has been severely curtailed in the relevant markets.

More serious, perhaps, is the discrimination experienced by competitors attempting to enter the local market. Each negotiation is treated as a separate case, allowing Telecom to bring to bear the full weight of its monopoly power. Apparently, no competitors are allowed to benefit from precedents. This makes it longer and more costly for competitors to bring service to the market and makes it virtually impossible for them to do so on a timely and predictable basis. Even more harsh, by world standards, is the inability of competitors to order and resell Telecom service offerings that are available to regular customers. Clear Communications, for example, was not allowed to resell Telecom's DDI service and has experienced difficulties in obtaining leased circuits from Telecom.

This should not be taken as an indictment of Telecom. For Telecom, deregulated but obligated interconnection created a contradictory mandate. It was expected to act like a commercially motivated, competitive firm, yet it was forbidden from doing what any commercially motivated, competitive firm would do if it were in its shoes, namely, refuse to interconnect altogether. Reliance on the Commerce Act of 1986 did not provide much help. Interconnection prices are obviously the decisive factor affecting the viability of competition in the market. But ultimately, Baumol and Willig are right about the basis for interconnection pricing in a market environment.

In providing service to a partial competitor, a rational market actor will attempt to recoup its opportunity costs, not merely its incremental costs. The problem is that in a monopolistic environment, Telecom's opportunity costs are extremely high; they may even approach infinity. Any pricing scheme that allows a competitor to survive may lead to future losses of market share and lower profit margins. Furthermore, because the relevant market has never been competitive, Telecom's opportunity costs include monopoly profits, cross-subsidies, and inefficiencies. In seeking to impose high interconnection costs and some of the Kiwi Share obligations upon its competitors, Telecom was simply attempting to recoup its true opportunity costs. Thus, application of a competition law cannot resolve the dilemma. A rational, profit-motivated deregulated market actor in Telecom's position cannot help but act in an anti-competitive fashion.

B. Critique of the Baumol-Willig Pricing Rule

In the absence of commercially negotiated interconnection, the Baumol-Willig pricing rule was adopted by Telecom and later validated by the High Court as the proper basis for interconnection rates. The Appeals Court overruled the Baumol-Willig methodology, but it remains on the agenda in the United States and other countries. Whatever its merits as theory, the Baumol-Willig rule does not provide a solution to the interconnection problem in cases where start-up firms are faced with an incumbent that controls all the market. The Baumol-Willig rule is in essence a description of how a perfectly competitive or contestable market would operate, not a strategy for moving from a monopolistic market to a competitive one.

The critique of the method is based on three arguments. First, the rule can be applied only if the provider of interconnection is offering the final product at a rate established in a competitive market. Second, application of the rule in noncompetitive conditions requires substantial government regulation. Third, the transition from monopoly to competition requires unbundling the components of telecom service in new ways, and the rule does not address the pricing problems posed by this.

The final product price. The methodology operates under a crucial constraint: it can be applied only if the provider of interconnection is offering the final product at a rate established in a competitive market. If the final product price is set by a monopoly, then the firm's "opportunity costs" also include monopoly profits and inefficiencies due to its monopoly status. Baumol's testimony makes this constraint quite clear. The price of the final product (in his

[35] BellSouth participated in New Zealand's auctions for cellular telephone spectrum and was the winning bidder on the so-called TACS B spectrum. It paid NZ$25 million for the band.

example, through railroad service) is "deemed competitive," and the rule "cannot be used to deal with any overpricing of the final product that is alleged to be present."[36]

By working backwards from the assumption of a competitive price, the method assumes away the very crux of the problem, namely that current prices are set by a monopoly and are probably not efficient. The seriousness of this flaw can be clarified by returning to the railroad example in Figure 1. Suppose that railroad A is the only carrier able to offer through service from Chicago to Trenton, and competitors are able to duplicate its lines only on the Detroit to Trenton segment. If so, A may charge $15 or $20 instead of $10 for through service. The extra $5 or $10 may represent either monopoly profits, or inefficiency on the part of A, or a combination of both.

Despite the illegitimate origin of these charges, A's opportunity cost of providing service to a competitor rises all the same. Hence, B's price for interconnection also rises.

In effect, under monopoly conditions the Baumol-Willig pricing rule gives the incumbent a property right to its monopoly profits and fully compensates it for its own inefficiency. This argument was the decisive one in the Appeals Court's rejection of the Baumol-Willig methodology.

Need for Regulation. In his New Zealand testimony, Baumol recognized these problems but contended that they could be addressed through regulatory oversight of the incumbent firm's costs and prices.[37] This leads to the second criticism of the Baumol-Willig method: its application requires thoroughgoing regulation of the incumbent. This can be considered a negative for two reasons. First, there is no regulatory agency in New Zealand, so it is inappropriate to adopt a pricing methodology that requires one. Second, and more important, regulatory attempts to define and monitor costs in a multiproduct environment have been a source of continuing controversy and delay. A pricing rule which depends upon such information does not make much progress toward rational prices, but merely shifts the battle from private negotiations to the regulatory arena.

This conclusion is supported by regulatory experience in the United States. When competition in the private line market first began in the 1960s, AT&T slashed its prices for large users with its Telpak tariff. Later, Bell reduced rates for large users of switched long distance by introducing WATS service. AT&T's competitors claimed that the new rates were predatory and not cost-justified. AT&T claimed that the tariffs retained the business of large users and thus helped to sustain the public network. It took the FCC eight years of proceedings and cost studies to make a decision that the Telpak rates were not cost-justified. In the case of WATS service, the FCC initiated a proceeding and studied the issue for more than six years, but never actually ruled whether the tariff was discriminatory or predatory. Similar problems have been encountered in the attempts to set rates for the basic service elements of ONA. The fatal flaw in these regulatory approaches is that in a telecommunications network, different services share components of the same infrastructure. Ultimately, identifying the "cost" of any one service depends upon how these joint and common costs are attributed.

Economic theory tells us there is no correct way to allocate common costs. Two different but equally plausible assumptions about cost allocation will produce strikingly different cost results for various services. The FCC has moved toward a reliance on competition and new regulatory techniques such as price caps and incentive regulation

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[36] Baumol brief of evidence, p. 37, see note 25.

[37] The monopoly profits critique drawn above was made by Clear Communications and its consultants during the litigation. Baumol's response was that while the efficient component pricing rule was the proper basis for interconnection pricing, it "does not cure AIDS or baldness [and] it does not eliminate business cycles," and thus should not be expected to deal with monopoly profits and monopoly inefficiencies. Such problems, he said, should be taken care of through "other means," which in this context could only mean regulatory oversight. The response was colorful but irresponsible. Baumol's rule was being adopted in New Zealand in a context in which there clearly was *no regulation*; indeed, the implementation of the ECP rule by the court was supposed to function as an alternative to regulation.

in order to move away from what came to be seen as increasingly futile attempts to link specific costs to specific services.[38]

All of the above assumes, of course, that regulators really are interested in making rates conform to real costs. All too often, however, regulatory rate setting is guided by more political concerns. It is well known that the access prices paid by U.S. long-distance carriers did not reflect easily identifiable differences in the cost of serving different carriers, for example, because the FCC, under pressure from lobbyists and politicians, wanted to make it easier for smaller carriers to survive in the marketplace. U.S. experience also suggests that competing carriers can delay the new service introductions and price changes of their competitors by raising a hue and cry about cross-subsidization and predatory pricing, whether or not such charges are justified.

The "uniform spread" principle of access pricing advanced by Alfred Kahn suffers from the same problem. Kahn's approach is based on the requirement that the incumbent charge competitors what it charges itself for interconnection. In theory, such a methodology avoids the monopoly profits problems raised by the Baumol-Willig rule but still requires extensive regulatory oversight of the incumbent's costs.[39] Both approaches simply shift the grounds of debate from the prices themselves to the identification of costs.

Unbundling. Another fundamental problem with both Baumol-Willig's and Kahn's method is that many of the services to be priced are not traded in a market yet. With respect to Kahn's argument, incumbents don't really "charge themselves" for the interconnection services they "supply to themselves." In a monopoly network, interconnection is not a service supplied on the market.

That is precisely why there is an interconnection problem. Frequently there is not even an established definition of the services required by an entrant. Equal access and ONA, for example, were created by regulatory mandate. Both the Kahn and the Baumol-Willig methods assume that the components to be priced are already well-defined and traded in a market.[40] In the case of the railroad, for example, Chicago-Detroit service is already a separate, clearly defined service with its own identifiable incremental costs, separable from those associated with Detroit-Trenton service. This is not the case with many of the telecommunication interconnection services.
The following would be a more appropriate analogy: There are two railroads, A and B, whose lines don't intersect. Railroad B wants to interconnect its track with A's switching center in Detroit and run its own trains on A's Detroit-Chicago track. While the principle of defining opportunity costs still holds, it is no simple matter to determine what the opportunity costs are when new forms of access are created. In addition to the costs of constructing access facilities that connect A's lines with B's and the opportunity costs associated with B's use of A's track, additional administrative costs, such as signaling and coordination problems, will be created. The incumbent A is not simply selling a pre-existing service to B. It is engaging in forms of administrative coordination which are not, as yet, sold on the market to others.

C. Structural Solutions

The heart of the interconnection problem lies in the asymmetric incentives to deal on the part of the incumbent and new entrants. The cleanest way to rectify this problem is to create a marketplace in which existing access

[38] Gerald Faulhaber (1987) and Brock (1981) document how the American FCC unsuccessfully struggled with the costing methodologies during the private line/WATs rate controversies of the 1960s and 1970s. Faulhaber, Gerald, *Telecommunications in Turmoil: Technology and Public Policy*, Cambridge, Mass: Ballinger, 1987.

[39] The success of Kahn's approach depends entirely upon accurate identification of three economic data: 1) Telecom's actual marginal costs of supplying access to itself; 2) the actual contribution or cross-subsidy made by local business access to residential service; and 3) the amount saved by Clear doing part of the work.

[40] The difference between an internal transaction which is arranged by a firm's hierarchy and an external transaction conducted across a market is fundamental to industrial organization theory, and one wonders how economists of this caliber can base their pricing methodologies on premises which seem to ignore that distinction.

connections are not under the exclusive control of a single firm. Specifically, Telecom could be broken up into three or four separate companies. Each unit would be based in different territories and control the former Telecom's facilities in those territories, but would be authorized to enter all service and equipment markets in the other territories. It should be stressed that an American-style divestiture is not being proposed here.

The AT&T divestiture was based on an artificial distinction between “local” and “long distance” markets which could only be maintained by arbitrary territorial divisions and legal barriers between various telecom service markets. What is proposed here is the creation of fully integrated telecommunication companies based in separate territories.

A structural adjustment is probably the only way to eliminate the incentive problem in interconnection negotiations. Each divested unit would control some, but not all, of the access required to serve the market. Each would be dependent upon the others to provide universal access. Each would therefore have a real incentive to engage in interconnection negotiations and conclude “fair and reasonable” terms and conditions. The resulting agreements could be used as templates for other competitors.

One of the primary premises for adopting such a policy is that ultimately, market prices emerge from voluntary transactions. If proper access prices cannot be set without reference to opportunity costs, opportunity costs in turn cannot be determined by regulation and accounting cost studies, no matter how sound the theories they are based upon. Only voluntary exchanges can reflect actual calculations of value among the interested parties. A divestiture would create a more equalized set of market players, thus paving the way for a transaction-driven approach to interconnection pricing.

A structural approach may require some intervention in the technical structure of the network, but, relative to regulation, leaves the market more flexibility from which can emerge decisions about the appropriate level of technical unbundling. The past decade of experience with the computer equipment and networking industries indicates that highly differentiated levels of compatibility and interconnection will emerge from market transactions once the industry is competitive and certain basic standards have been developed. This experience reinforces the desirability of a structural solution relative to a regulatory one. The problem here revolves around what should be considered the “basic standards” required to set the stage for competition. Certainly the numbering plan appears to possess certain public goods qualities and is a prime candidate for control by a public or quasi-public organization. On the other hand, numbering represents the basic user interface and as such is an area ripe for innovation and competition. If control of numbering is removed from the telephone company, care should be taken that a public, standardized numbering plan does not pre-empt the possibility of new interfaces being developed and that it does not eliminate the competitive advantages to be derived from innovation in this area. A comprehensive discussion of this issue is outside the scope of this paper.

Divestiture obviously raises complex and possibly costly transitional issues: how to divide up assets, how to prevent collusion among the divested companies, etc. But these are temporary problems which can be attacked in a focused, goal-oriented way. The prospect of imposing regulation on Telecom, on the other hand, is open-ended and could continue indefinitely. A regional divestiture of Telecom could not be much more complex and difficult than New Zealand's original divestiture of Telecom from the Post Office.

V. IMPLICATIONS FOR THE UNITED STATES AND OTHER COUNTRIES

New Zealand's experiment with deregulated competition in telecommunications offers no simple and unambiguous lessons. It does, however, make for an instructive contrast with other countries, particularly the United States. In making the transition from monopoly to competition, the United States has tried very hard to enforce parity between large incumbents and their smaller rivals. In the name of fostering new competition, regulators have taken over the whole domain of network interconnection. In the process, they have been quick to impose asymmetrical burdens and

restraints on those firms perceived to be in a "dominant" market position. Often regulators deliberately tip the scales in favor of new entrants.

In contrast, New Zealand made the transition to competition by relying on open entry and the threat of litigation under an antitrust law—nothing more. It did not even impose regulatory control in the one area where theory clearly indicates that the market can be expected to fail, namely interconnection of a universal incumbent with a geographically overlapping newcomer.

There is no doubt that New Zealand's system left the incumbent in a much stronger position than in the American system, and that the incumbent has used that power to effectively curb competitive entry in the cellular and local business telephone service markets. What can be made of this contrast?

A. Delay Not the Major Issue

The most obvious response is to point to the delay caused by litigation (two and a half years and counting) and jump to the conclusion that the system failed. Such a conclusion is unjustified, however. Although the delay undoubtedly was damaging to the cause of competition, no one can know for sure whether the presence of an industry-specific regulatory agency would have expedited matters. In the United States, the United Kingdom, and Japan, controversies pertaining to interconnection and tariffs have dragged on for comparable periods or longer.[41] Only Australia has moved faster. Its regulatory agency specified interconnection terms and conditions for long-distance competition before a competitor was licensed—and the terms are so favorable to the new entrant as to be essentially a form of industrial policy intended to guarantee its success. There is no doubt that a government regulator with a clearly defined industrial policy objective can resolve issues more quickly than the courts. Whether such a system produces the socially and economically optimal results most of the time is open to debate. A dictatorship can make quicker decisions than a democracy, but few of us would prefer to live under one.

At any rate, except for the United Kingdom, none of the liberalizing countries has progressed much beyond New Zealand in establishing a stable regime for competition in switched local telephone service. Thus, the terms and conditions of interconnection have been and will continue to be a source of debate, regulatory proceedings, and probably litigation in all liberalizing countries. It is possible (though for reasons discussed below, not likely) that future negotiations in New Zealand will proceed more quickly once the final Privy Council ruling demarcates what kinds of behavior are not permitted.

B. Antitrust Law an Inadequate Remedy

As U.S. cable and telephone companies begin to both merge and compete, and the boundaries between the local and long-distance markets begin to erode, the issue of what constitutes "competition" and "monopoly power" becomes central to telecommunications policymaking. The deepest lesson to be drawn from the New Zealand experience is that antitrust law and the economic theory associated with it cannot be relied upon to settle the most fundamental policy issues arising from the emergence of competition in the telecommunications sector. New Zealand has heard testimony from some of the world's most eminent industrial organization economists and has been through two court decisions. Yet, the question whether Telecom was behaving in a manner inconsistent with the Commerce Act is unresolved. More importantly, the practical and theoretical situation seems to preclude any compelling resolution of the question.

As noted above, access pricing in a competitive market ultimately must be based on opportunity costs. Yet, Telecom's monopoly status short-circuits the application of any opportunity cost-based pricing regime. For their part, partisans of new entrants argue that any pricing regime that does not allow a new entrant to survive is "anti-competitive." This begs the question whether the new entrants are unable to survive because the incumbent is anti-

[41] For a systematic comparison of interconnection arrangements and proceedings in various countries, see Neu and Neumann, 1993, see note 8 above.

competitive or simply because the newcomers are not efficient. Competition policy tends to degenerate into scholastic debates about how firms would act if they were in a competitive market or, even worse, about the firm's "intent" in taking certain action. The problem with this approach is that a competitive market for interconnection has never existed in modern times, so no one really knows what kind of behavior and pricing would result from it. Indeed, because of the heterogeneity of the industry's output, it is not even clear how a fully competitive telecom service market would be defined.

The New Zealand experience suggests that rather than relying upon legal and theoretical definitions of competition or anticompetitive behavior, policymakers should attempt to create structures which permit competition to emerge, and then stand back and let the players play. Structural reforms such as divestiture or, less radically, free resale and arbitrage would allow many of the benefits of competitive processes to be set in motion, without branding the incumbents as criminally "anticompetitive."

C. Competition Is More Robust Than We Think

There are some significant positive aspects of the New Zealand experiment. Effective competition has developed in a number of markets in New Zealand, despite the enormous advantages of the dominant firm. In the national and international toll markets, the price reductions and service improvements achieved in New Zealand match or surpass those achieved by regulated countries such as Australia, the United States, Japan, and the United Kingdom. Services whose value are not dependent upon interconnection negotiations with Telecom, such as local and national private-line services, paging, and customer-premises equipment, are highly competitive.

Further, the pressures of "potential" competition have spurred Telecom into major efficiency improvements and some price reductions in still-monopolized markets such as business usage rates. Had Telecom been broken up prior to deregulation, as this paper recommends, the barriers to competition would have been weakened further, and many of the obvious impediments to the growth of competition could have been avoided.

One important point to emerge from the U.S.-New Zealand contrast, then, is that competition in telecommunications is not as fragile as many believe it to be. The most interesting evidence for this comes from the vigor with which Clear competed in the long-distance market despite the inequalities and barriers built into its interconnection agreement. Code-based access did not prevent Clear from competing effectively, nor did the absence of billing name and address information and other forms of administrative cooperation from the incumbent. Indeed, there is a great deal of merit in Telecom's argument that full transparency of competing networks can diminish true competition by undermining product differentiation, incentives for innovation, and consumer knowledge of what product they are consuming. This is an instructive lesson for American and European regulators obsessed with the concept of equal access.

Another example of the robustness of competition comes from Telecom's practice of bundling together discounts on long-distance telephone service with equipment contracts. In the United States, this would be instantly ruled illegal by state regulators or federal antitrust authorities. Yet competition in New Zealand's CPE market thrives despite Telecom's "unfair" bundling practices.[42]

All of this has interesting implications for the United States and indeed for the future of competition policy in telecommunications, generally. Telecom's attempts to thwart competition have met with limited success in New Zealand, where it started with a near-total monopoly and very little regulatory oversight. In the United States, incumbent telephone companies are in a much less dominant position. To begin with, the market is big enough to sustain many more players. The growth of wireless alternatives and the convergence of cable television and

[42] New Zealand Commerce Commission, *Telecommunications Industry Inquiry Report* (Wellington, NZCC, 23 June 1992), p. 32. Although the Commerce Commission contends that competition in CPE markets is "hindered" by the existence of Telecom's bundling practices, it characterizes the CPE sector as "competitive" and notes that "there are a number of suppliers for each segment with a wide range of products and prices available to customers." (p. 61).

telephone markets both serve to increase the potential for competition. Most importantly, the breakup of AT&T into separate local and long-distance segments and the creation of RHCs capable of entering each other's territory means that there are a number of powerful businesses capable of bypassing the local exchange. All of the above conditions indicate that the monopoly power of local telephone companies in the United States is significantly smaller than in New Zealand. If competition can survive and rates can remain reasonable in New Zealand, where only the most rudimentary forms of oversight exist, it is possible that the United States, with its multiple layers of voluminous state and federal regulations and antitrust law, is engaged in regulatory overkill?

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