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ABSTRACT

The topic of the 1997 Conference, "Competition, Innovation, and Investment in Telecommunications," reflects one of the important areas for concern in the telecommunications community. Representatives of telecommunications carriers, cable industries, consumer, academic, and regulatory bodies at the federal, state, and local levels, worked together over four days to define the difficult issues inherent in these issues and suggest practical resolution of these dilemmas. In this report, the rapporteur for the Conference records some suggestions that reflect group consensus as well as some issues in which no consensus was reached, reflecting the diverse positions held within the telecommunications industry. The following topics are highlighted in the report: barriers to investment; regulatory reform; regulatory treatment of new investment by incumbent local exchange carriers (ILECs); regulating wholesale pricing by ILECs; regulating retail pricing by ILECs; taxes and rents on telecommunications imposed by local governments; and public investment in telecommunications infrastructure. "An Essay on Competition, Innovation, and Investment in Telecommunications" (Dale N. Hatfield and David E. Gardner) and a list of conference participants are appended. Author profiles, previous publications, and a description of the Aspen Institute Communications and Society Program are also included. (AEF)

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Competition, Innovation, and Investment in Telecommunications

The Twelfth Annual Aspen Institute Conference on Telecommunications Policy

Robert M. Entman, Rapporteur

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The Aspen Institute

Competition, Innovation, and Investment in Telecommunications

A Report of
The Twelfth Annual Aspen Institute Conference
on Telecommunications Policy

by
Dr. Robert M. Entman
Rapporteur

Communications and Society Program
Charles M. Firestone
Director
Washington, DC
1998

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Foreword

The Twelfth Annual Aspen Institute Conference on Telecommunications Policy was held August 10-14, 1997 in Aspen, Colorado, over a year after the passage of the Telecommunications Act of 1996. The thrust of the Act was to promote true and effective competition in and among telecommunications service providers. Congress envisioned a vigorous, expanding system of advanced communications goods and services, an end to monopoly in telephone, cable, and other transmission and access industries, and a better civic society and economy as a result.

The sentiment of the nation as it evaluates implementation of the Act, however, is mixed. Significant progress in some areas thus far has been balanced by stalemate in others.

The topic of the 1997 Conference, "Competition, Innovation, and Investment in Telecommunications," reflects one of the important areas for concern in the telecommunications community a year after the Act. Representatives of telecommunications carriers (local exchange, long distance, and wireless), cable industries, consumer, academic, and regulatory bodies at the federal, state, and local levels, representing a broad cross-section of interests, attitudes, philosophies, and viewpoints, worked together over four days to define the difficult issues inherent in that topic and suggest practical resolution of these dilemmas.

The Conference began with a presentation by Dale Hatfield, then chief executive officer of the telecommunications consulting firm Hatfield Associates, who gave participants some background on the risks that competitive local exchange companies may see as they consider investment in the local exchange. (Hatfield's presentation was based on a paper co-authored with David Gardner and reprinted in the Appendix of this report.) Participants then turned

to a full agenda of questions concerning legitimate social goals and government regulations at the federal, state, and local levels which affect incentives to invest and, ultimately, the amount of competition that develops. Have government regulations created any unintended consequences for expanding competition? Are there changes to current regulations that would stimulate investment?

The answers to these questions have tremendous implications for the emerging networked society and the economy as a whole. Answers were often difficult and contentious. But that has become typical of these Aspen conferences, and in spite of their conflicting viewpoints, participants were able to define their differences and in some cases make constructive suggestions for improvement. Thus, in the following report, Professor Robert Entman, the rapporteur for the Conference, records some suggestions that reflect group consensus as well as some issues in which no consensus was reached, reflecting the diverse positions held within the telecommunications industry. While the report generally reflects the sense of the group, the statements made here should not be taken in any way as the views of any particular participant or participant's employer unless noted otherwise.

Probably the area of greatest significance in the report—where a partial consensus emerged—is pricing. The group struggled at length over what many saw as a disincentive for incumbent local exchange carriers to invest in new technology if they must share that technology with competitors at wholesale prices. While participants generally agreed with the concept of a sunset to current wholesale pricing and unbundling requirements, they failed to reach consensus on a specific test for when that sunset should occur.

Acknowledgments

The Aspen Institute would like to commend conference participants for their openness, constructive attitudes, and willingness to grapple with the obtuse questions presented by the current regulatory milieu. A list of conference participants follows in the Appendix. We would also like to thank Robert Entman, our rapporteur for all twelve years of the Conference, for his excellent representation of the deliberations as well as his help in develop-

ing reading materials; our research associate, Susan Oberlander, for her help in developing the conference agenda and reading materials; and Elizabeth Golder, program coordinator, for her work on conference arrangements and this report.

Finally, but very significantly, we want to thank our Conference sponsors from competing organizations whose contributions made the Aspen Institute Conference on Telecommunications Policy and this report possible. They are: Ameritech, AT&T, Bell Atlantic, Cablevision Systems, California Cable Television Association, Cox Enterprises, Intel, MCI, Nortel, NYNEX, Sprint Spectrum, TCG Teleport Telecommunications Group, and U S WEST.

Charles M. Firestone
Director, Communications and Society Program
The Aspen Institute
April 1998

Competition, Innovation, and Investment in Telecommunications

Robert M. Entman

The Aspen Institute Conference on Telecommunications Policy met in August 1997, as an atmosphere of growing frustration enveloped the industry.[1] More than a year after passage of the landmark Telecommunications Act of 1996, many observers believed little of its promise had been realized. Most significant, many felt, was the failure of local exchange telephone competition to take off. The central dilemma addressed by this year's conference was how public policy might work better to stimulate efficient investment and vigorous competition in local exchange telecommunications.

Considering this core question in no way denigrates the importance of achieving the other objectives in the Act, or of investment and competition in other market sectors. But most conference participants appeared to agree that widespread penetration of facilities-based local exchange competition will be the sine qua non, a necessary if not sufficient indicator of success for the 1996 Act.

Beyond the general agreement on the key issue, however, lay a wealth of disputed diagnoses and variegated solutions. As we shall see, disputes arose over the meaning or measurement of such terms as *facilities-based* and *competition*. Nor was the agenda entirely consensual. Some participants felt the conference should have focused as much on competition in broadband services as competition in local exchange service. With the likely

[1] Several particpants have changed employment since the Conference was held. References to participants' affiliations within the report are to the position held at the time of the Conference. See appendix for affiliations as of March 1998.

convergence of telecommunications networks toward a multimedia Internet, with cable television and telephone companies' plans to challenge each other in broadband, these attendees argued for expanding the discussion.

This report documents the debates and the suggestions that emerged from this year's energetic colloquy, with an emphasis on the local exchange market. Even more than usual, the report represents the rapporteur's distillation and interpretation of a series of conversations and working group proposals far too intricate and lengthy to publish verbatim or even to summarize usefully. Given the complexities of this first post-Act year, and the many complaints and remedies that reverberated through the working group and plenary meetings, an interpretive essay will provide the most helpful information for those seeking the essence of our deliberations. Unless cited to a particular person, none of the comments herein should be taken as embodying the views or carrying the endorsement of any specific attendee at the conference.

Barriers to Investment

The agenda for the conference grew out of the perception that imperfections in the 1996 Act and other telecommunications policies, along with serious and even crippling problems with the regulatory process, have stifled efficient investment in the industry. Participants agreed with Dale Hatfield, who, at the time of the conference, was CEO of the consulting firm Hatfield Associates, when he emphasized that simply increasing capital inflow or reaching some arbitrary absolute level of investment is not the goal. The idea is to encourage economically efficient investment, based on rational expectations for the evolution of a competitive market. Increased investment motivated by incorrect prices, for example, would hardly be desirable. On the other hand, if regulated prices or enduring artificial barriers to entry distort investment decisions, that most certainly is a matter for concern. Participants generally agreed that policy at federal, state, and local levels is having such effects. Some of the hindrances to efficient investment in some or all telecommunications market sectors mentioned are listed below. This is a list of contentions—most of the items would not be considered significant impediments by at least some participants.

- Carrier certification requirements that are costly, cumbersome, and time-consuming;
- Uncertainty over whether state or federal regulators' jurisdiction applies;
- Difficulty of obtaining access to rights-of-way, buildings, and antenna sites;
- Uncertain regulatory status of the Internet;
- For incumbent local exchange carriers (ILECs), requirement of total-element long-run incremental cost (TELRIC) pricing, unbundling of service elements, and uncertainty over ability to recover embedded costs;
- Inefficient, regulation-set prices for ILECs at the retail level;
- Universal service obligations that could require ILECs to deploy any new service ubiquitously;
- Regulatory processes that create uncertainty and delay and use up resources in "gaming the process" that might otherwise be invested in telecommunications itself;
- Use of telecommunications, especially by local governments, as a source of tax revenues, and specifically, the imposition of rents or taxes by local governments that are unrelated to costs of using or maintaining rights-of-way;
- Regulatory commissions' lack of a clearly defined mission in a changed and rapidly changing environment;
- The frequent need to deal with multiple, sometimes conflicting, regulatory and judicial jurisdictions; and
- Difficulties in enforcing policies that are meant to encourage equitable interconnection agreements between ILECs and competitive local exchange carriers (CLECs).

Admittedly, this enumeration reads something like a laundry list of company complaints about regulation in general. Perhaps the implication is that most of the frustrations that industry representatives cite can diminish firms' incentives to invest, enter, and compete. The issues and potential solutions that generated the most interest and discussion were:

- Regulatory process reform;
- Regulatory treatment of ILECs' entry into new areas outside of local exchange service;
- Regulation of wholesale and retail prices charged by ILECs, specifically, enforcement and potential phaseout of TELRIC pricing and unbundling requirements, and restructuring of retail rates;
- The nature, legitimacy, and proper level of taxes and rents on telecommunications that are imposed by local governments; and
- The potential for and desirability of public investment in telecommunications infrastructure.

The remainder of the report will concentrate on these areas.

Regulatory Reform

In two different working groups and the plenary sessions, a clear consensus emerged that the current regulatory process at all levels of government needs substantial, even radical, rethinking and reform. The fast pace of change in information and communication technology drives a constantly transforming series of potential new services, along with adaptations of existing ones. The contrast between the almost geometric rate of alteration in the technology and possible applications, and a regulatory process laden with opportunities for obstruction and delay, could hardly be more marked. The costs to the economy and to social welfare are surely enormous. In the words of Eli Noam, director of Columbia University's Columbia Institute for Tele-Information, "The bottleneck isn't the local loop anymore, it's the policy process."

A number of interesting suggestions emerged for unclogging the blockage. One that engendered no dissent was to eliminate the need for CLECs to obtain certification at the federal or state level. Instead, registration should be sufficient, which will avoid the delay and associated problems of the certification process. Beyond this relatively straightforward item, however, were more complicated, less readily agreed upon options, all designed to reduce the cost and delay inherent in state regulation:

- Speedily resolving carrier-to-carrier complaints, perhaps using special "quick look" methods for provisional resolution of disputes, with due process to follow;
- Similarly expedited resolution of consumer complaints;
- Modifying the roles of Public Utility Commissions (PUCs) to act more as legislative, policy-making bodies, rather than as case-by-case adjudicators. A corollary that received considerable support is to use administrative law judges to make specific rule-applying decisions, subject to PUC approval;
- Conducting more proceedings at PUCs via paper filings rather than oral hearings; and
- Based on the FCC's unusually rapid production of rules to implement the 1996 Telecommunications Act, establishing clear deadlines and sunset provisions for appropriate PUC regulations.

The ultimate dream for some at the conference was a complete end to regulation, so that all these process reforms would become moot. Yet merely having new market entrants does not immediately eliminate the need for regulation. On the contrary, participants agreed, the burden on regulators in many respects has grown to the point that it merits the label "overload." Eli Noam suggested developing a ten-year process for total deregulation, or as close to total as feasible. "We should," he said, "be planning now how to eliminate regulation where possible and how to make regulation where needed as efficient as can be." He observed that even ten years from now, significant numbers of consumers will not enjoy competitive carriers. Those conditions will necessitate some regulatory apparatus. Moreover, there will remain the big issue of whether a given service or carrier participates in a market sufficiently competitive to merit deregulation. Participants could not agree whether having just two firms vying in local exchange markets would constitute real competition. On the other hand, everyone concurred that having resale competition only would not create a genuine competitive market. Many assented to the possible need for asymmetric regulation in the future, with ILECs subject to more extensive oversight in some

respects than CLECs. Then the question will return again to making that regulation as efficient as possible.

To reduce the scope of regulatory intervention, Noam and others suggested focusing on noncompetitive markets (such as some rural areas) in advance. As Joan Smith, commissioner on the Oregon Public Utilities Commission, observed, a critical goal for her state and others, as competition and advanced capabilities penetrate, will remain assuring that everyone, "all income groups, in rural areas and cities, 100 percent of the country," has access. If this and other goals require some regulation, we should establish a forward-looking institutional process to determine, well before the time is upon us, ways of enhancing its efficiency.

Regulatory Treatment of New Investment by ILECs

The conference devoted substantial time to the way regulation affects investment by ILECs. Investment in innovative technologies and services by these dominant local carriers can obviously provide great benefits to society. But many participants voiced concern about ILECs leveraging their market power in the traditional local exchange market to the disadvantage of competitors and consumers alike. The same worry motivated many of the provisions in the 1996 Act, including the requirement that incumbents unbundle network elements and sell them at marginal cost to competitors. The next section of this report takes up the matter of pricing the unbundled elements. In this section the focus is on the scope of the unbundling and on other aspects of regulating the ILECs' new market activities.

Henry Geller, communications fellow at The Markle Foundation, after analyzing the federal regulatory scheme's impact on investment, proposed that a separation be enacted into policy between existing and new network components installed by the ILEC. He suggested that the unbundling requirements, which are embedded within Section 251(c) of the Act, should apply only to the existing network. To further Section 706, these requirements would not apply to future advanced telecommunications capabilities created by the ILEC.

How any demarcation of new from old network investment would work in practice generated substantial discussion. Geller

suggested defining the existing network as of a certain date. Additions to facilities after that would not be made available to competitors under the Section 251 regime. As an example he cited asynchronous digital subscriber lines (ADSL), which will enable the ILEC to offer high-speed Internet access. In the current situation, he asserted, the incumbent has little incentive to bear the necessary cost to upgrade the network since it would immediately have to make the ADSL capacity available to competitors at regulated wholesale rates. For that very reason, CLECs may also have little incentive to invest in ADSL facilities, since they could procure the capacity from the incumbent without risking much capital. The Geller reform would augment the incentives of both sides to install ADSL capacity themselves. In Geller's view, this reform would put into place win-win incentives for both ILECs and CLECs. Geller further argued that governments could implement this treatment of the ILEC without any new legislation.

Although nobody quarreled with the basic idea of improving incentives for new investment by the incumbent and competitive carriers, questions arose about possible drawbacks. Geller said the ILEC could separate its operation into two parts. One would provide local loop, remaining subject to Section 251. The other would be a separate, subsidiary CLEC using its own switches or other facilities to provide advanced services, such as video distribution or enhanced Internet connections. Regulators could treat an ILEC subsidiary engaged in broadband services as they would any other CLEC.

Jonathan Sallet, chief policy counsel for MCI, suggested applying to the ILECs' activities a standard of market power. Geller maintained the ILEC has no market power in such areas as video distribution and high-speed Internet connection, where it will face competition from several competitors, especially cable. Dan Reingold, first vice president for global telecommunications research at Merrill Lynch, responded that if the incumbent carrier installs ADSL, it would indeed have market power wherever cable is not offering broadband, and that discouraging such entry by the incumbents would rob consumers of access to innovative technology and services. Robert Crandall, a senior fellow in economic studies at the Brookings Institution, sharpened the focus by

suggesting an antitrust standard rather than market power, since the former means government will look for and prevent any use of the market power to impede competition. Endorsing this idea, Commissioner Steven Wallman of the Securities and Exchange Commission said, "If the incumbent local exchange carrier has clear market power we don't want to prevent it from investing, just from using that power to advantage its new services."

Larry Strickling, Ameritech's vice president for public policy, seemed comfortable with this concept. He said that he could readily agree to policies that ensured ILECs would not discriminate in favor of their own CLEC affiliates or in favor of any particular technology that helps its affiliates. However, David Turetsky, vice president of law and regulatory policy at Teligent, asserted that this guarantee would not prevent the ILECs from deliberately allowing their older facilities to deteriorate, especially when wholesaling them to competitors. Even if there is no overt discrimination, the ILECs might put the bulk of their corporate energies and the best people into the new subsidiary. Strickling countered that the new entity would be buying loops from the incumbent, so the incumbent's own CLEC would actually constitute an important source of demand for high-quality local loops. Unsatisfied, Turetsky pointed to the precedent of regional Bell operating companies discriminating against long-distance companies after the divestiture of AT&T, even when the Bell companies had no stake in the long-distance market themselves. Here their incentive to discriminate would be far greater since they would be serving direct competitors. Compounding problems with the idea, Ron Binz, president of the Competition Policy Institute, predicted that the old bugaboo of joint and common costs would rear its head in any scheme to operate a truly separate subsidiary. Charles Firestone, director of the Communications and Society Program at The Aspen Institute, suggested that regulators might alleviate concerns about degradation in the ILECs' networks, and about discrimination against competitive carriers, by requiring ILECs' subsidiary CLECs to buy their local access from their parents.

There were suggestions at the conference, some veiled and some quite direct, that it might be time to consider a "Divestiture II." Such a policy must navigate between the Scylla of discourag-

ing new investment by ILECs, the largest firms in the industry, and the Charybdis of allowing them to enter and perhaps either extinguish competition or severely limit its scope. In the divestiture scenario, the ILECs might be split into two independent firms, with one providing (what is likely to remain for the foreseeable future) the bottleneck local loops, and the second competing with other CLECs to offer advanced and traditional telecommunications services. Gail Garfield Schwartz, vice president for public policy and government affairs of TCG Teleport Communications Group, suggested explicitly that the ILECs might follow the lead of the smaller incumbent local carrier, SNET, of voluntarily splitting wholesale and retail operations. The goal would be for the ILECs' retail services to operate on an equivalent footing with the CLECs. She predicted this would induce the ILECs not only to provide bottleneck facilities such as local loops in a nondiscriminatory fashion, but also to terminate all traffic without discrimination. She suggested that traffic termination might be the ultimate bottleneck function since eventually even local loops will be competitively supplied. Divestiture of the ILECs did not generate sufficiently careful attention at the conference to merit further discussion here.

Regulating Wholesale Pricing by ILECs

Ironically, given its stated goals, one of the 1996 Act's major provisions was identified as creating a serious impediment to investment by the ILECs: requirements that they provide unbundled network elements (UNEs) and price them for resale at total-element long-run incremental cost (TELRIC pricing). Most participants agreed that the so-called UNE/TELRIC mandate discourages the incumbent from making large investments in the network. If they have to share the product of new investment with their competitors at prices that regulators may set at barely compensatory levels, why would ILECs take the risk? At the same time, in some participants' view, knowing they can gain access at regulated prices to any new ILEC facilities gives CLECs less incentive to build their own. The latter point was more controversial. But as CLECs do build their own systems, there will be a smaller collection of bottleneck facilities and more reason to seek alternatives to the UNE/TELRIC regime. The two proposals that received the

most attention were (1) to end TELRIC pricing on a phased basis that would vary from place to place depending upon certain criteria, and (2) to end it by a time-certain termination. Drawing heavily upon a proposal offered by Dan Reingold of Merrill Lynch, this section discusses the two alternatives.

Reingold suggested that TELRIC pricing be phased out, in effect allowing UNE prices to reach, over time, the level where they would help compensate the ILEC for historical costs. TELRIC pricing initially offers new entrants a kick-start, enabling them to offer local service to customers faster and at lower cost than by constructing their own facilities. In this sense, new entrants can use the TELRIC prices (which some believe average 50 percent below current aggregate retail rates) to offer price-competitive services and thereby build up local customer bases prior to and during construction of their own facilities. Establishing a transition plan would provide new entrants the certain knowledge that such discounts would not last, and thus stronger incentives for investing soon in new facilities. At the same time, knowing they would be freed of TELRIC requirements once certain conditions were met, ILECs would receive encouragement to invest more in upgrading local facilities to offer innovative new technologies and services.

Reingold proposed specifically that TELRIC pricing be phased out over three years, beginning from the date that the ILEC in a particular state received FCC approval to offer long-distance service to in-region customers, that is, the date they achieved approval under Section 271 of the 1996 Act. The Act charges the FCC generally to grant Section 271 approval when the incumbent carrier faces facilities-based competition in the local exchange market (defined by the Act as having a competitor that exclusively or predominantly uses its own facilities to deliver business and residential service). The trigger date of three years after Section 271 approval was proposed in order to accommodate the differing paces at which local competition would develop across different geographical areas of the United States.

Several participants felt a more finely tuned geographic standard should be used for deciding when and where to phase out the TELRIC prices. Absent a distinction between, say, urban and rural markets within a state, some feared that the latter might be

left without competitive facilities or improved incentives for ILEC investment once the state's urban areas became competitive. Moreover, David Turetsky of Teligent argued that Congress does not believe Section 271 approval is equivalent to effective competition, since the Act provides that for at least three years after such approval the ILEC must operate separate affiliates.

For this and other reasons, some participants felt that regulators should make even finer judgments about the competitiveness of specific network elements and customer categories (large versus small business versus residential) in particular places before eliminating the TELRIC rules. Among others, Bill Kennard, at the time general counsel of the FCC, Joel Lubin, regulatory vice president of AT&T, Gail Schwartz of TCG, and Larry Strickling of Ameritech seemed to find common ground in suggesting that the issue here as elsewhere is market power. All indicated regulators could find a workable standard for judging and containing an ILEC's market power, lifting the TELRIC pricing rules only when competition sufficiently diminishes that power. Lubin suggested requiring that ILECs make new investments through a separate subsidiary that would have to act in a technology-neutral and competitor-neutral way. To minimize the incumbent's ability to leverage any market power from its essential facility, Strickling said it might be appropriate to assess whether competitors have an alternative to the incumbent local exchange carrier. Thus TELRIC pricing for local switching might end before TELRIC pricing for local loops, since alternatives for the former likely will be available well before alternatives for the latter. Indeed, some note that switches are widely available for purchase from competitive suppliers right now, allowing a nearer-term phaseout of TELRIC pricing for local switching.

The notion of a switch phase-out was not specifically addressed or opposed, but this may well have been the consequence of the discussion moving to a more general plateau. Thus, several participants countered the above ideas, arguing that requiring regulators to make such fine judgments would likely deepen the morass of legal wrangling, political gamesmanship, and government gridlock, in effect postponing the incentives for years. In their view, state-wide termination of TELRIC pricing three years

following fulfillment of the 1996 Act's competitive checklist and facilities-based provider conditions serves as a reasonable compromise. In response, the other side maintained that analysis of competitiveness by place and service would work, and even if causing some delays would mark a major improvement over the current version of gridlock. Almost everyone seemed to agree that it would be both desirable and feasible to retain some kind of regulation to set wholesale prices at incremental costs for local loop transport and termination, the segment of the network least likely to see vigorous competition in the near future.

This last agreement extended to advocates of the other major proposal, which was to set a definite date to end UNE and wholesale pricing rules, with five years being the most commonly accepted time frame. Alternatively, Noam of Columbia Institute of Tele-Information suggested that rather than enforcing termination of TELRIC pricing, the policy might apply a sunset, which would allow policy makers to renew the TELRIC regime if officials felt competitive conditions warranted.

This second alternative aroused significant opposition. Most importantly, argued Sallet of MCI, a time-certain termination creates incentives for delay by the ILEC. The ILEC would know that by staving off competition for five years it could win big, gaining freedom from TELRIC rules while undermining competition in its local market. And the ILEC might still refrain from much new investment during those five years. Moreover, several participants suggested, whatever the effect on the ILEC's incentives, TELRIC prices do not delay facilities investment by important new competitive carriers like fixed wireless and cable television. Lubin of AT&T asserted that these firms would not make investment decisions based on TELRIC rates but "on the basis of retail prices today." Even if TELRIC prices are set at 50 percent of current retail revenue, such a discount does not provide the unfair bonanza to new entrants that some might believe, in Lubin's view. Competitors have to bear high costs for marketing, customer acquisition, and customer care and service. And as Binz of the Competition Policy Institute argued, "a competitive carrier would be foolish to stake the future on permanent TELRIC pricing," since it would assume the end of that regime at some point. Given their

view that TELRIC rules do not appreciably reduce incentives for investment by CLECs, these participants felt the benefits of time-certain termination of TELRIC pricing would not be worth the risk of ILECs exploiting the situation.

Regulating Retail Pricing by ILECs

Even if all the players could settle on a way to resolve the UNE/TELRIC pricing issue—and the conference gave little reason for optimism on that score—government officials still must confront the distortions from the implicit subsidies embedded within retail prices for local service. Many participants felt competitive entry for residential local service will occur slowly, if at all, in the absence of change in the structure of retail telephone rates. It was proposed and widely agreed that policy should strive to separate retail prices from subsidies, by making the latter explicit rather than burying them in pricing formulae.

Among the specific components of rate realignment suggested at the conference:

- *Geographic deaveraging of rates within perhaps three broad density bands, encompassing urban, suburban, and rural.* Given the finite amount available in the high-cost fund, this would enable targeting of subsidies to those in the highest cost areas.
- *Bringing residential and business rates into closer calibration with each other and with the costs of service.* Rate changes would be phased in over a defined time period.
- *Making subsidies explicit and portable, so that consumers in high-cost areas could use them, after the introduction of competition, for the telecommunications services and carriers they wished.*
- *Providing rate flexibility to ILECs.* In order to prevent predatory pricing but encourage competition, a floor for ILEC rates might be set by a formula that allows rates to go down to the equivalent of TELRIC plus any explicit subsidy.
- *Finding methods to create more efficient price structures for high-usage lines, whether serving businesses or residences (e.g., for Internet access).*

Often enunciated at this and other policy conferences and enshrined within the 1996 Act, these goals have long eluded policy makers sensitive to the political fallout. And certainly political realities and other considerations dictate protection of residential customers from rate shock. But this need not preclude all local rate increases. Conference dialogue suggested that proper political leadership and forthright explanation of the benefits from competition could enhance the political feasibility of raising local service rates. A persuasive case can be made that in numerous areas competition will soon yield lower prices and innovative services to compensate for many initial rate hikes. The public does increasingly appreciate the attractions of an information superhighway, of multichannel, multimedia services, and of diverse choices for local, wireless, and long distance. Preceding efforts to enact the rate reforms listed, officials from private and public sectors alike could organize a program of education for consumers about the benefits of advanced telecommunications and the need for regulatory reform to encourage investment. This program would emphasize that investors will take greater risk and invest more in competitive local facilities and alternative technologies if regulators allow competition to drive prices (both retail and wholesale) from current levels over time. However, rate payers should receive assurance that retail price levels will remain regulated as needed to protect consumers from market power exerted through control of bottleneck facilities.

Taxes and Rents on Telecommunications Imposed by Local Governments

The topic of charges assessed by local government upon telecommunications firms generated intense discussion, especially within the working group originally charged with the task of considering the impacts of local regulation on investment. The group contributed a detailed report of its deliberations. Many of its specific points were never discussed in plenary session, nor did the working group reach internal consensus. However, this section draws heavily upon elements of the working group's draft. The working group did come close to consensus about whether locally imposed charges do in fact create barriers to investment,

with almost all agreeing they do. The working group also agreed that local charges can be imposed in ways that distort investment in telecommunications. Some did argue that taxes and rents do not constitute a demonstrable burden on investment—witness the substantial continuing new facilities expenditures by cable firms and CLECs in many markets. All assented to the proposition that local charges should be competitively neutral and should not, for example, favor cable operators over incumbent telecommunications providers or favor incumbents over competitors where the different entities engage in the same activities.

The working group provided some much needed definitional clarification. It suggested that the term *fees* refers to charges imposed to recover government costs of providing a service or regulating an activity. To be considered a fee, revenues generated thereby can be used only to recover government costs. On the other hand, the term *rents* refers to charges imposed in exchange for the right to occupy public property. These charges reflect the value to industry users of property owned by local governments on behalf of local taxpayers. The term *taxes* then covers charges imposed without any necessary relationship to any service provided or privilege granted by the local government.

There seemed wide agreement within the working group and at the larger conference that state and local governments can and should be able to recover the actual costs imposed upon them by the operation of telecommunications facilities. Cost recovery comes by definition through imposition of local fees, where these charges are designed only to recoup incremental costs created by the installation of telecommunications facilities. Fees cover both short and long term costs related to maintenance of the public rights-of-way. As to taxes, the group agreed that telecommunications businesses should be taxed in a comparable manner and at comparable rates to other businesses. This means there should be no special taxes levied upon telecommunications entities that are not assessed upon other business firms.

Rents provoked the most contention. Consensus broke down along predictable lines. Representatives of the government perspective usually defended the right of municipalities to charge rents. Firestone of The Aspen Institute pointed out that cities actu-

ally have conflicting interests. On the one hand, they are often strapped financially and must maintain or expand revenue levels. Especially attractive are those sources like telecommunications rents that are typically far less politically visible and volatile than local sales, income, or property taxes. On the other hand, cities very much desire investment in their area's telecommunications infrastructure and the concomitant benefits to their local economies and constituents. Proponents of the cities' rights to charge rents argued that local taxpayers are entitled to receive a return on their investment when firms use the public streets to generate private profit. Moreover, they maintained, governments are not the only providers of rights-of-way. Using public rights-of-way reduces the transaction costs that would be involved in negotiating to obtain rights-of-way from multiple private property owners. And as Firestone suggested, local officials have a built-in reason to avoid excessive rental charges: angry constituents' complaints if services available to other communities cannot be provided within their jurisdiction.

Most taking the firms' vantage disputed the right or desirability of governments charging rents. They observed that rents discourage precisely the deployment of new telecommunications facilities and services that should be everyone's goal. They also asserted that, as monopoly providers of access to streets, local governments can extract excess levels of payment.

Notwithstanding the wide gulf between these positions, most of the working group agreed that if rents are charged for the right to occupy public rights-of-way, comparable occupancies should be charged at comparable rates for all telecommunication providers, including cable television operators. The devilish details of implementing comparability received only brief attention. For example, "occupancy" can be ambiguous, say if a company changes from its initial menu of services or technologies to a new mix over time. Neither this element nor others were resolved. Working group members agreed that rents could be capped, though again unsurprisingly the level of the ceiling aroused debate. Some argued that Congress agreed in the Cable Act of 1984 on the fairness of cities charging 5 percent of gross revenues, a level legislators knew exceeded actual city costs. Others argued that rents should be

capped at a much lower level, such as 1 or 2 percent of gross revenues.

Two additional important matters came up regarding inequality in rents which may discourage efficient investment. One is whether non-facilities-based carriers such as resellers and wireless should, in the interest of equity, be required to pay any rents that a government imposes. The other is how to deal with situations in which ILECs don't pay rent while potential and actual CLECs do. On the first, there seemed general agreement that wireless providers should pay rents only to the extent they do use rights-of-way (for instance, in operating antennas). Resellers would more or less automatically pay rents embedded in the payments they make to the facilities-based carriers on whom they rely.

As for how to resolve apparent inequities between rents charged the ILECs and those charged other facility operators, the working group identified two alternatives for moving toward competitively neutral rental charges:

- Requiring local governments to provide access to rights-of-way free or at low cost to all providers; or,
- Requiring providers who benefit from low- or no-cost right-of-way access to increase compensation to levels commensurate with other providers.

The working group recognized that local governments and beneficiaries of low-cost access are likely to litigate disputes arising from either alternative for years. State law issues and constitutional claims may put these disputes beyond the reach of the FCC. As a result, the group suggested that a political compromise may be a more expeditious way to eliminate the inequities in rental charges which distort investment decisions.

Most of the group concurred that preempting local authority may not be the best way to resolve the problem of inequitable rents. Frank Fisher, a professor of public policy at the University of Texas at Austin, argued with particular force that municipalities' control over this matter should not be breached, absent a showing that they have abused their authority. In his view, determining rents or taxes on local carriers should remain the province of local governments. On the other hand, some argued that cities

have sometimes imposed unjustifiable charges. For example, Turetsky of Teligent said that some localities seek rents from his firm, even though its facilities are wireless and do not impact rights-of-way. The clash over local governments' taxing authority spawned the idea of having industry representatives and local government groups meet to develop a mutually acceptable solution. Michael Guido, mayor of Dearborn, Michigan, and telecommunications committee chair for the U.S. Conference of Mayors, said that the discussions at the conference left him optimistic about achieving such an entente.

Public Investment in Telecommunications Infrastructure

A working group considered the idea of encouraging more direct government involvement in telecommunications investment, and this section relies upon their contribution. Little if any support was voiced for cities providing telecommunications facilities or services directly to citizens, but considerable backing arose for having cities more actively facilitate the development of advanced networks within their jurisdictions. The specific mechanism debated was making city-controlled or city-overseen ducts available to firms seeking to lay communications fiber or cable. The working group identified three alternatives, all to be employed at the time of major road construction or other projects that require digging up streets. One option would have cities install municipally-owned telecommunications ducts. Another would feature city-owned ducts and fiber. A third option would have cities contract with a private firm to install and operate telecommunications ducts.

The idea of encouraging any city involvement in duct ownership came under immediate attack. Sheila Mahony, senior vice president for communications and public affairs of Cablevision Systems, voiced her worry about cities forcing firms like hers to use the city-owned facilities, preventing companies from doing what they would prefer. Bruce Posey, vice president for federal relations of U S WEST, pointed out that telephony requires not just installing fiber or cable but also transformers and generators, a complication that might lead to regulatory delay. James Gattuso, vice president for policy development of Citizens for a Sound

Economy, acknowledged that a single duct installation may be more efficient than expensively, disruptively, and repeatedly digging up streets. But he argued that such efficiencies could be harnessed with a duct operated entirely by a private company using private capital. Demand might even justify competing ducts. That option would be important in Eli Noam's view. He saw the specter of monopoly in this proposal: a city controlling a single big duct would have incentives to overcharge for access, and it might develop a financial interest in prohibiting or obstructing wireless antennas that otherwise would reduce the value of the ducts. Several participants offered reassurance that city investment in ducts could work. Dale Hatfield recognized the potential drawbacks but observed, "What we have now is a mess anyway, so maybe this would at least represent an improvement." Mayor Guido reminded all of how little it costs to put in conduits when a street is opened for sewer or water lines or road widening. In his view, consumers and communities waste valuable resources when they fail to seize the opportunities often presented by routine city construction projects. Making an inexpensive duct system available to new firms could so lower the cost of market entry as to provide a very powerful stimulant to facilities investment. James Ron Cross, vice president for regulatory policy at Nortel, revealed that his firm has been discussing these sorts of plans with several cities, and some municipalities are about to announce their own telecommunications network projects. These are innovative, creative proposals to stimulate competition and lower barriers to investment, he argued. The proposal for municipalities to get involved in owning or operating telecommunications infrastructure clearly perturbed many participants. Yet the basic concept of exploiting what is essentially a positive externality arising from city operation of roads and sewer and water lines just as clearly attracted many other attendees. Firestone noted that cities would not necessarily have to go it alone in such ventures. For example, municipalities could join with neighborhood or nonprofit groups in consortia to operate the duct systems. In the notion of joint ventures between local governments and private entities, whether for-profit firms or nonprofit groups, may lie a compromise that might reassure opponents while stimulating innovation and competition.

Conclusion

Perhaps inevitably, given its broad purview, the conference stimulated an unusually wide range of ideas and controversy. This report covers only selected dimensions. One clear if unsurprising conclusion is that the Telecommunications Act of 1996 did not end or even appreciably reduce policy conflicts among key industry players. The stakes in the specifics of policy decisions remain high. Combine this with the political constraints imposed by clashing industry lobbyists and by fear of public opinion, add the unabated availability of the court system, and we have a recipe for persisting regulatory confusion and delay. The conference nonetheless pointed to a common theme: active leadership from government officials could provide some breakthroughs. Below are some key areas that could benefit from such leadership.

Almost everyone agreed on the need for regulatory process reform at the state level. Some suggested a special task force convened by the FCC in consultation with key associations of regulators and companies could produce ideas that would garner enough support to attain implementation.

Even though the issue of local taxes and rents on telecommunications firms generated heated disagreements, the cities' interests in telecommunications development—not just in revenue maximization—opens a path toward compromise. Here too, based on discussions at the conference, it appears that an initiative by government actively to seek a mutually acceptable solution could pay off.

On the other hand, the stark conflict over enforcement and potential phaseout of TELRIC pricing and unbundling requirements seems, on the surface, less amenable to negotiated compromise. It appears that many participants fear what ILECs would do without the UNE/TELRIC mandate. By contrast, the ILECs are adamant that they will not aggressively invest in new facilities under that regime. This may be a place for courageous leadership from regulators who are willing to risk antagonizing essentially every major player by coming up with a compromise that will have the virtue of moving things off dead center. Most participants appeared to agree that such a compromise is possible without new legislation by Congress. States and the FCC may have the

authority to implement creative interpretations of the 1996 Act to allow a rational phaseout of TELRIC pricing that maximizes ILECs' investment incentives while giving a reasonable window of protection for CLECs.

The conference made no real progress on the perennial problem of retail rate rebalancing. Virtually every policy analyst argues that subsidies should be generated and accounted for separately, outside of the retail price structure; that the subsidies should go only to those who need them to stay on the network; and that the spread between business and residential rates should shrink while that between urban and rural rates should grow. But most regulators and industry members believe the political opposition to this course is insurmountable. An academic observer might observe that the fear of constituent wrath in the wake of residential rate increases appears wildly exaggerated by all sides. Public reaction depends heavily on the framing of government actions. To take an example, localities and states regularly implement tax increases in the form of bond issues—tax hikes that the public voluntarily imposes on itself. People vote yes in bond referenda—and thus for tax increases—because of the context in which they are presented: we need schools, we need roads, we must prepare for the future. Yet the tax hikes required by bond issues typically dwarf any increase in phone rates likely to arise from rationalizing the retail price structure. If officials would frame the rate increases as a way of meeting future needs, they could minimize political opposition to rate increases. Recall the federal imposition of subscriber line charges in the mid-1980s. Reaction was intense but extremely short-lived, and it defies common sense to believe any members of Congress lost office because of it. There is almost certainly a lot more political space for change than most representatives of government and industry appear to think.

Without these sorts of initiatives, the dialogue at the conference supports a gloomy prediction of continued bickering, high investment in political and legal maneuvers, and delays in delivery on the promise of new telecommunications technologies and services. In the competitive global economy, that scenario truly serves nobody's long-term interests.

Appendices

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An Essay on Competition, Innovation, and Investment in Telecommunications

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Background and Purpose

For the past eleven years, The Aspen Institute Communications and Society Program has convened The Aspen Institute Conference on Telecommunications Policy in Aspen, Colorado. This paper was prepared in advance of the twelfth program, entitled "Competition, Innovation, and Investment in Telecommunications." The conference was designed to identify factors that affect investment in competitive telecommunications markets and to examine which policies at the federal, state, and local levels of government promote or create barriers to such investment. The purpose of this paper is to frame the issues and provide background for the participants in the conference on some of the major factors that encourage or discourage investment in the telecommunications field.

Introduction

By way of introduction to the balance of the paper, we would like to make three points. The first point is that we will focus almost all of our attention on factors influencing future investments in local rather than long-haul telecommunications services and facilities. This reflects our belief that the most critical issues in telecommunications policy and regulation in the United States are associated with establishing workable, economically efficient

competition at the local level. This is not to say that investment is not important in the long-haul portion of the network. It clearly is important. Rather, our focus on local facilities and services simply reflects the fact that (1) establishing facilities-based competition and overcoming the technical constraints associated with the "last mile" of the telecommunications infrastructure will require enormous investments, and (2) other than the important issues surrounding Bell operating company entry into the in-region, inter-LATA (local area telephone access) long-distance market, the policies and regulations surrounding local competition are currently the most unsettled and controversial, and are critical to the business plans of emerging competitors.

Our second point amounts to a cautionary note. As professionals working in the telecommunications field in either the public or private sectors, it is easy to fall into the trap that says that any increases in telecommunications investments are good—almost as ends in themselves. That is not necessarily true, of course. For example, if more efficient equipment or systems become available, then, from a broad societal view, disinvestment—rather than increased investment—should occur in that area. Similarly, if increased investment is a result of economic distortions that artificially favor the deployment of capital rather than labor, then society is not being well served. In short, setting aside social goals (equity considerations) for a moment, the public policy objective should be efficient investment, not investment for investment's sake.

The third (and related) point concerns governmental actions to encourage investments to achieve social goals. In a market-oriented economy, decisions on the deployment of capital and other resources are made on a decentralized basis in response to prices set by supply and demand in the marketplace. While such decentralized decision making encourages the efficient use of these resources, it can result in certain low-income groups or groups living in high-cost, rural, or insular areas not having access to telecommunications facilities and services that are deemed to be in the public interest. This typically leads, as it has in the telecommunications field, to various forms of government intervention to assure that such groups have access to some basic level of ser-

vice. This intervention can be in the form of explicit subsidies or through implicit subsidies inherent in requirements, for example, that a provider offer service in both low-cost and high-cost areas at averaged rates. The focus of this paper is not on the merits of such intervention, but, rather, more simply on the incentives or barriers that they create for telecommunications investment.

Overview of the Investment Decision

The decision whether or not to participate in a particular investment is relatively straightforward to model at the conceptual level. A potential investor will invest in a project when the return on invested capital (ROIC) is sufficient to compensate the investor for the time value of money and the risk associated with the investment relative to other opportunities. The time value of money reflects the fact that a dollar received today is worth more than a dollar received a year from now. Risk, of course, refers to the investor's exposure to loss of assets or income. Increased riskiness infers a greater likelihood that a particular outcome (e.g., a particular ROIC) will not be achieved.

One common method of evaluating investments that takes into account the time value of money and the risk is known as the discounted cash flow (DCF) approach. In the DCF approach, the current value of the investment is assumed to be the future expected cash flow discounted at a rate that reflects the riskiness of the cash flow. If the current value of the investment computed using the DCF approach is equal to or greater than the amount to be invested, then the investor will have incentive to make the investment. If it does not, the investor will be deterred from making the investment. In today's economy, an investor might expect an ROIC for a long-term, essentially risk-free investment (e.g., a government guaranteed bond) of, say, 6 percent and an ROIC of 30–40 percent or even more for a highly risky equity investment in a start-up firm. Thus, the attractiveness of a particular investment is increased by (1) increasing the cash flow or by accelerating when the cash flow is received, and/or (2) reducing the risk.

Investments across Regions, Countries, States, and Localities[1]

Background

From the description in the previous section it is apparent that, absent any controls on the flow of capital, investors will seek out those regions, countries, states, and localities where the expected ROIC is greatest compared to the associated risk. Investments may flow to particular regions or countries of the world because of large pent-up demand for telecommunications services, rapid economic growth, growing per-capita income, favorable developments within a particular regional trade group, and a host of similar reasons. Individual countries may further encourage direct investment through, for example, favorable tax treatment, tariff-free zones, and educational support.[2]

Balanced against these favorable indications for investment in a particular country may be a host of other broadly defined and sometimes overlapping risks. For example, the author of a book[3] concentrating on assessing political risk sets forth the following categories:

- *Business risk:* Negative variation in operating income resulting from market and nonmarket risks;
- *Financial risk:* Negative variations in income available for profit remittances and debt-service payments outside the country, that is, transfer risks such as foreign exchange controls and other repatriation restrictions; and
- *Catastrophic risk:* Termination of business by direct government actions such as expropriation, nationalization, confiscation, or forced divestment.

Facilities-based telecommunications investments are especially vulnerable to political risk. This is because a large amount of fixed, nonfungible assets are typically involved—investments (e.g., investments in labor to install an outside plant) that cannot be easily removed in the event of political instability.

Other authors distinguish between "macro-" and "micro-" political risks.[4] In this categorization, macro-risks refer to general political events and government actions that tend to be broad and pervasive and, as such, affect all foreign investments or busi-

ness operations. Macro-risks include, for example, a revolution or armed civil strife. Micro-risks, on the other hand, are those actions or events that selectively affect certain fields of investment or business activities, e.g., telecommunications.

In relation to indirect investment, a recent special section in a financial publication was devoted to risks in global investing. In one article entitled "Rating the Risk," the stock markets of various countries were ranked in terms of "market risk (including things like volatility and currency fluctuations); investment opportunity (the range of investment vehicles each country offers and the ease with which foreign investors can buy them); the quantity and quality of information on the country's markets; investor protection, such as the quality of securities regulation and the treatment of minority stockholders; and the 'headache factor,' including administrative details such as custody, settlement, and taxes."[5]

Certainly the United States ranks well in terms of low macro-risks of the types described above and in terms of the risks associated with indirect inward investment. Thus, the focus of the balance of this paper will be on political risks that fall into the micro-risk category. That is, we will focus primarily on telecommunications industry-specific policies and regulations as they impact suppliers of local telecommunications facilities and services. The paper looks very briefly at micro-risks induced by uncertainties in the policy and regulatory processes themselves at federal, state, and local levels of government, addresses the risks faced by competitive local exchange carriers (CLECs) and incumbent local exchange carriers (ILECs), respectively. Because of the importance of establishing workable, economically efficient competition at the local level, our major emphasis will be on the risks faced by CLECs.

Generic Forms of Micro-Risk

In the material immediately above, we defined micro-risk as those governmental actions or events that selectively affect certain fields of investment or business activities, e.g., telecommunications. A major component of micro-risk in telecommunications in the United States is the policy and regulatory risk created by federal, state, and local regulatory action or inaction. Regulatory risk is decreased when actions taken by the regulatory agencies are

open and transparent, consistent, and predictable. At the most basic level, openness and transparency refers to the ability of stakeholders to participate in and challenge decisions and actions taken by the government. Consistency and predictability are associated with policies and regulations that are neither arbitrary nor capricious, and reflect fairness, balance, and objectivity. These attributes of openness and transparency, consistency, and predictability are important for the stability of the industry and, most importantly, they allow a sound basis for long-term planning and investment. Another desirable attribute of government regulation is that the regulations not be unnecessarily intrusive (e.g., in economic terms, the minimum necessary to correct for marketplace failures).

Balanced against these desirable attributes are the costs and delays associated with the regulatory process itself. Unfortunately, but inevitably, there are usually trade-offs between openness and transparency, consistency, and predictability on the one hand and speed of decision making on the other. As is often said, no decision is actually a decision, in that delay has its own set of consequences. One of those consequences is that it may discourage investment by reducing the predicted ROIC because of the time value of money. For this reason, participants in the conference may want to consider these generic forms of micro-risk in their deliberations.

Risks Faced by Competitive Local Exchange Carriers

Although we were generally familiar with the risks that CLECs face in entering the local telecommunications market, we decided to analyze the risks in a somewhat more formalized, methodical way by examining documents filed by the emerging competitors before the Securities and Exchange Commission (SEC).[6] We started out our examination by first identifying CLECs that are required to file, and in fact have filed, documents (e.g., S-4s or 10-Ks) with the SEC.[7] The list of companies that we identified is shown in Table 1. We then downloaded the pertinent sections of the various documents filed by each of the identified companies from the SEC's World Wide Web site. Next, we briefly reviewed the downloaded sections dealing with risk and we found a significant degree of consistency among them. Building upon this consisten-

cy, we broke the risks down into six broad categories: legal and regulatory risk, financing risk, strategic and operational risk, technological risk, market condition competitive risk, and critical dependence risk. We then examined each document in depth in order to prepare the analysis that follows.

TABLE 1

SEC Filings Examined

Brooks Fiber Properties Incorporated (S-4)
GST Telecommunications Inc. (S-3/A and 10K)
ICG Holdings Inc. (S-4/A)
Intermedia Communications of Florida Inc. (S-4/A)
McLeodUSA Inc. (S-4/A)
Teleport Communications Group (10-K405)
WinStar Communications Inc. (S-4/A)
Associated Group Inc. (10-K405)
American Communications Services Inc. (10-KSB)

Legal and Regulatory Risk: More than most industries, the legal and regulatory environment has significant impact on the fate of competitors in the provision of local telecommunications services. In general, legislation, regulatory proceedings and actions, and court decisions at the federal, state, and local levels of government make up the legal and regulatory environment. In addition, negotiation and, when necessary, arbitration between entities add to the legal environment. Less important in this instance, perhaps, is the risk associated with applying for and defending patents, trademarks, and copyright protection associated with a CLEC's systems and services.

Understandably, the CLECs represented in the SEC filings discuss the Telecommunications Act of 1996 (the Act) in a very favorable way in terms of its striking down the legal barriers to entering the local telecommunication market. In other words, they note that it eliminates the risk of an outright denial of the regulatory permissions (e.g., a certificate of public convenience and necessity) traditionally required to enter the local telecommunica-

tions market. On the other hand, they point to possible adverse effects that may stem from the greater pricing flexibility, relaxed regulatory oversight, and other regulatory relief that may be granted to the ILECs as a result of the increased potential for competition under the Act. For example, they express apprehension about substantial volume and/or term discount pricing by the ILECs. They also express concern about possible delays in state certification proceedings and, in particular, in the tariffing requirements of state regulators and the possibility of costly challenges to those tariffs by customers and competitors.

Likewise, the CLECs point with favor at the Act requirements that the ILECs provide access to unbundled network elements that comprise the ILECs' local telecommunications infrastructure. They also praise the Federal Communications Commission's (FCC's) efforts to implement the local competition portions of the Act in terms of requiring the ILECs to provide local loops, switches, collocation, intercompany trunks, and interfaces to operations support systems (OSS). However, they express concerns about the ILECs' compliance with those requirements and their adherence to the letter of their interconnection agreements. Hence, they describe the possible risks they face in obtaining services comparable to those provided by the ILEC in terms of installation times, repair response time, billing, and other administrative functions.

Most of the SEC materials that we examined were filed prior to the decision by the U.S. Court of Appeals for the Eighth Circuit concerning the FCC's interconnection order of August 1996. The Eighth Circuit decision invalidated portions of the FCC order that (1) set forth guidelines for the amounts the ILECs can charge CLECs for access to their networks, and (2) dealt with the agency's "pick and choose" rules. Moreover, because certain CLECs were able to negotiate interconnection agreements without going to arbitration, their reactions to the decision will vary. Thus, because of the timing of the decision and differing impacts, it was not possible to assess how the CLECs view this recent decision based upon these materials. However, based upon their comments regarding the earlier stay issued by the Court, some CLECs expressed strong concerns about (1) the resulting uncertainty about the rules governing pricing, and other terms and conditions

associated with interconnection and (2) with the possibility of more difficult and protracted negotiations. They expressed concern about possible "sharp" changes in business conditions as a result of interconnection pricing and they also noted the possibility of having to contribute to a universal service fund at the state or federal level. They also expressed some apprehension about a possible slowing of competitive initiatives in general.

Similarly, while the CLECs point with favor to the Act's requirements that (1) local governmental entities treat telecommunications carriers in a competitively neutral, nondiscriminatory manner and (2) utilities (including the ILECs) afford CLECs access to their poles, conduits, and rights-of-way at reasonable rates on nondiscriminatory terms and conditions, they express concern about their own ability to maintain their existing franchises, permits, and access rights and to obtain new ones as required to implement their business plans. While some of these concerns may amount to little more than "boilerplate," the reported difficulties that certain personal communication service (PCS) and other wireless service providers have had with state and local moratoriums on base station antenna siting and zoning applications for wireless telecom facilities indicate at least some problems in this area. Some CLECs also mentioned uncertainties associated with municipally imposed license or franchise fees.

To summarize, it is clear from the CLEC filings that the Act has significantly reduced the uncertainty associated with entering the local telecommunications market. It did so by striking down legal and regulatory restrictions on entry. On the other hand, the perception—if not the reality—is that there still remains a substantial amount of legal and regulatory risk associated with the successful implementation of the legislation.

Financing Risk: Competing in the facilities-based local telecommunications market places tremendous strain on the capital resources of even the most financially sound entities. Before offering services and generating significant cash flow, CLECs must typically devote large amounts of capital toward building up an infrastructure. The large, initial negative cash flow exacerbates the difficulties in achieving an adequate rate of return because of the time value of money in the DCF analysis

described earlier. Moreover, if fiberoptic or coaxial cable facilities are involved, the investment cannot be easily redeployed if demand does not develop as expected. That is, the costs are "sunk" both figuratively and literally.

In addition, not only are there large start-up capital requirements, but geographic expansion typically leads to a continuing need for large capital infusions. This means that, even if the initial start-up capital is raised, the company may fail because of the inability to raise subsequent rounds of investment. This inability may stem from a general tightening of the capital markets, difficulties encountered by other companies with similar business plans, or by failures to achieve initial forecasts in terms of customer acceptance and cash flow. The difficulties that some of the PCS providers have had in raising additional funding are examples of this phenomenon. That is, *initial* investments are jeopardized by the potential difficulties in arranging *succeeding* rounds of investment. In short, the large initial and recurring investments associated with constructing and expanding a basic infrastructure increase the risk associated with becoming a facilities-based local telecommunications provider.

Although not mentioned in any detail in any of the materials we reviewed, there are existing statutory restrictions on foreign ownership of communications service providers utilizing radio frequencies. The FCC also has the authority to impose restrictions on foreign ownership of communications service providers not utilizing radio frequencies. These restrictions or potential restrictions may increase the financing risk by denying competitors access to capital resources outside the United States.

Strategic and Operational Risk: This category includes the risks associated with choosing which customer groups to target (e.g., residential or business and, within the business group, large or small companies), which geographic markets to target, and which combinations of facilities and services to offer to those customers in the selected geographic areas. Another important strategic risk is associated with choosing the right technology. Because of the importance of technological risk, it is treated in a separate category of its own below.

This category also includes the operational risks associated with actually implementing the chosen strategy. According to the materials reviewed, these operational risks stem from such things as (1) the competitor's limited history of operations, (2) inexperienced management teams, (3) uncertainty over the performance of joint ventures and other forms of alliances with other companies, (4) the possible difficulties associated with securing distribution channels, (5) the ability to recognize and negotiate favorable agreements (e.g., for interconnection with the ILEC or for access to rights-of-way), (6) the ability to make favorable acquisitions to support a "growth by acquisition" strategy, (7) the ability to deal successfully with rapid expansion, and (8) the ability to resist hostile takeovers.

Wired and wireless providers also point to specific operational risks associated with their particular choice of technology. For example, one of the microwave radio-based providers points to the risks associated with successfully negotiating agreements to allow it to install antennas on the roofs of buildings where its customers or potential customers are located. It also points out that physical obstructions (natural or man-made) can make it difficult or raise the cost of serving certain customers. On the other hand, new entrants relying upon wired technology (e.g., fiberoptic cables) point to the risks associated with successfully negotiating agreements for rights-of-way or easements and in gaining physical access to certain premises.

These strategic and operational risks vary from business plan to business plan. To the extent that they are present in a given business plan, they reduce the attractiveness of that new entrant to investors.

Technological Risk: There are various ways of entering the local telecommunications market. A company can enter (1) as a reseller of an ILEC's services, (2) by constructing its own stand-alone network, (3) by utilizing unbundled network elements (UNEs) of the ILEC's network, or (4) by some combination of the above. In constructing its own facilities-based network, the new entrant can choose to use wired or wireless technology. Within these two broad categories, there are further choices as well. For example, within the wireless category, there is a choice between licensed

and unlicensed services/equipment, among various network architectures (e.g., microcellular or macrocellular), and among various access technologies such as Frequency Division Multiple Access, Time Division Multiple Access, or Code Division Multiple Access.

These choices create several levels of technological risk. First, the new entrant can simply choose the wrong technology. This risk of choosing the wrong technology is enhanced by the fact that, for a variety of reasons, the best technology does not always succeed in the marketplace in the long term. Stated another way, the right choice on technological grounds can turn out to be the wrong choice for other reasons that are largely beyond the control of the new entrant. This means, for example, that a new entrant's chosen technology can become an "orphan" so that, in the extreme, the supplier stops providing it. Or it can mean the supplier no longer supports the technology or only supports it minimally.[8] Even if the technology achieves limited success in the marketplace (i.e., it is adopted by other entrants), the new entrant can still be disadvantaged by the equipment suppliers' inability to achieve significant economies of scale. Second, even when the new entrant and potential investors are confident that a correct choice of technology has been made on fundamental engineering grounds, there are often delays in successfully implementing the technology on a widespread basis in the field. Some of the difficulties that commercial mobile radio service providers have had with digital systems are illustrative of these types of delays.

Technological risk is also exacerbated by the rapid technological changes that are characteristic of the telecommunications field. In other words, a correct choice of technology today may prove to be wrong tomorrow. Thus investors will expect a higher rate of return because of these technological risks.

Market Condition Competitive Risk: This category of risk includes both the risks associated with the performance of the domestic economy as a whole and the specific conditions encountered in the local telecommunications market. All companies face the risks associated with the former—e.g., the risk of a recession—so they will not be dealt with further here. In terms of the specific conditions associated with the local telecommunica-

tions market, the companies, in their SEC filings, emphasize the volatility of the market in terms of the demand for their products or services. They also point to the risks associated with their own marketing and branding strategies in such an environment. They typically stress the risk posed by the presence of entrenched competitors and, in particular, the ILECs. They often note that the ILECs have significant advantages in terms of having (1) established, ubiquitous, or nearly ubiquitous infrastructures, (2) long-standing relationships with customers, (3) financial, technical, and marketing resources substantially greater than their own, (4) the ability to subsidize competitive services with revenues from a variety of other business activities, and (5) familiarity with the regulatory process as well as established, long-standing relationships with the regulators. They also note the presence of other CLECs pursuing similar strategies in the markets they have chosen to enter.

Critical Dependence Risk: In their SEC filings, most of the companies mentioned risks associated with certain key relationships. Included under this category are dependence on key personnel, often executives and members of their technical staff; dependence on a few large customers for a significant portion of product/service demand; reliance on a few key suppliers for the execution of their business plan, including reliance upon equipment vendors as described under the category of technological risk; and dependence on various billing, customer service, and other essential systems.

Risks Faced by Incumbent Local Exchange Carriers

As noted earlier, we have focused most of our attention on the risk faced by the CLECs because of the importance of establishing workable, economically efficient competition at the local level. However, the ILECs also face risks that may deter them from making economically efficient investments in the local telecommunications infrastructure. These include some of the same ones faced by the CLECs (e.g., risks created by rapid technological change). Under traditional rate of return regulation, as a long as an ILEC's rate of return was greater than the firm's cost of capital, there was an incentive to overinvest. In terms of a highly risky service, at least, this incentive to overinvest was tempered by the possibility

that the regulator would disallow an investment on the basis that it was imprudent. The shift to price cap regulation at the federal level and in many states diminishes the incentive to overinvest. This stems from the fact that in price cap regulation, prices are decoupled from short-term profits, giving the regulated firm added incentives to employ capital efficiently.[9] In addition, some states have linked their shift to earnings sharing or price cap regulation to commitments by the ILECs to increase their network investments and hasten the deployment of modern technology. The impact of these regulatory reforms on local infrastructure investment is an area of controversy that conference participants may want to address.

While no attempt will be made here to develop a comprehensive list, several specific legal and regulatory risks faced by the ILECs standout. First, while the CLECs are understandably concerned about the risks associated with the ILECs prematurely gaining greater pricing flexibility, relaxed regulatory oversight, and other regulatory relief, the ILECs have the opposite concern. Namely, they are concerned that they will not be able to respond promptly and fairly to increasing competition due to regulatory restrictions. Second, the Bell operating companies face uncertainty as to when they will be able to enter the in-region, inter-LATA long-distance market. Third, they have recently argued that they face legal and regulatory risks because of the uncertainty over the FCC's rules governing the separation of regulated and nonregulated service costs for integrated networks, and the uncertainty in the provision of video services due to court appeals of the FCC's open video system rules. Fourth, and more generally, they have expressed concern about the increased risk associated with greater competition and the unbundling requirements that allow selected portions of their networks to be accessed and used by competitors. They have argued that these requirements may make them reluctant to invest in innovative technology.

Summary and Closing Observations

In this paper, we have reviewed some of the major factors that influence investment in telecommunications across regions, countries, states, and localities. We reviewed the fundamentals of the

investment decision and then focused on the risks associated with investing in a particular country. We distinguished between "macro-" and "micro-" political risks and then focused our attention on micro-risks associated with uncertainties in the policy and regulatory processes themselves at the federal, state, and local levels of government. In terms of the micro-risk, we emphasized the importance of openness and transparency, consistency, and predictability in creating a stable investment climate. We also noted the inevitable trade-off of those attributes with the speed of decision making and the effects that delays have on the attractiveness of an investment opportunity.

We then focused attention on the risks faced by CLECs in entering the local telecommunications market. We focused our attention there because of the importance of CLEC investment in creating workable, economically efficient competition at the local level as envisioned in the Telecommunications Act of 1996. Using various CLEC filings before the SEC as a starting point in our analysis, we identified six broad categories of risk: legal and regulatory risk, financing risk, strategic and operational risk, technological risk, market condition risk, and critical dependence risk. Based upon our review of those risks and the risks faced by the ILECs, we would offer two observations in advance of the conference.

First, given the impact of the legal and regulatory environment on the fate of competition in the local telecommunications market, the importance of openness and transparency, consistency, and predictability in the legal and regulatory processes and the associated values of fairness, balance, and objectivity in reducing risk and encouraging investment cannot be denied. Given this importance, participants in the conference may want to address what additional steps, if any, can be taken to achieve these goals and objectives for the legal and regulatory processes while balancing the necessity of a swift decision making process.

Second, some of the remaining (nonlegal and nonregulatory) risks pose difficult issues of public policy. Many of these issues are associated with potential government actions that fall outside the legal and regulatory category. For example, the government can reduce technological risk by conducting research on advanced innovative telecommunications systems and by sup-

porting demonstration or pilot projects. But this raises questions of budgetary constraints and of the government's ability to choose wisely from among competing projects absent the discipline of the marketplace. The government can also reduce the technological and operational risks by setting standards, but what standard should the government choose? What risks are raised by the government making such a choice? The government can also reduce technological and financing risk by specifying technologically advanced requirements to meet its own internal telecommunications needs and then entering into long-term contracts with providers to meet those requirements. But, in doing so, how can the government avoid favoring one technology over another or one competitor over another? Some direct intervention and investment of the types suggested here may be justified by the classic public goods argument for government support of the nation's infrastructure. However, the conference participants may want to consider how much support is realistic given overall budgetary constraints and how the public can be assured that more good than harm will result, given the practical difficulties mentioned herein.

Notes

1. Parts of this section rely upon the work of one of the author's graduate students at the University of Colorado at Boulder. See Jeffery A. Johnson, "A Methodology for Assessing Regulatory Risk in the Telecommunications Sector," unpublished thesis, 1996.

2. Direct foreign investments are defined as active investments made directly in companies as opposed to commercial loans, indirect purchase of shares purely for financial investment, etc. See *Implementing Reforms in the Telecommunications Sector: Lessons from Experience,* Bjorn Wellenius, Peter A. Stern, eds.: The World Bank, 1994, p. 694.

3. Ting, Winlee, *Multinational Risk Assessment and Management,* New York: Quorum Books, 1988, p. 8.

4. In defining micro-risks and macro-risks, we are relying upon the work of Stefan Robock and Jeffery Simon as described in Winlee Ting, op. cit.

5. *The Wall Street Journal,* special section on Global Investing, June 26, 1997.

6. We recognize that attorneys advising clients on the securities laws may urge them to be very conservative in terms of not omitting even small risks. Nevertheless, we believe that the uncertainties identified in the filings can serve as a reasonable starting point for an analysis of the risks facing the CLECs.

7. We started our list of CLECs with an analysis prepared by Communications Capital Partners of San Francisco.

8. The resulting reliance on a single supplier is also addressed under the category of Critical Dependence Risk.

9. In actual practice, of course, price cap regulation typically retains elements of rate of return regulation. Thus, as actually implemented, price cap regulation may not completely deter overinvestment.

Conference Participants

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Jonathan Chambers	*Vice President, External Affairs and Associate General Counsel* Sprint Spectrum, L.P.
Robert Crandall	*Senior Fellow in Economic Studies* The Brookings Institution
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Previous Publications of The Aspen Institute Conference on Telecommunications Policy

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Competition at the Local Loop: Policies and Implications. The report of the seventh annual Aspen Institute Conference on Telecommunications Policy, August 16-20, 1992.

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Topics addressed by the Program vary as issues and the policy environment evolve, but each project seeks to achieve a better understanding of the societal impact of the communications and information infrastructures, to foster a more informed and participatory environment for communications policymaking, or to promote the use of communications for global understanding. In recent years, the Communications and Society Program has chosen to focus with special interest on the issues of electronic democracy, lifelong learning and technology, electronic commerce, the future of advertising, and the role of the media in democratic society.

The Program also coordinates all of the activities of the Institute for Information Studies, a joint program with Nortel, and engages in other domestic and international Aspen Institute initiatives related to communications and information technology and policy.

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