

ARTICLES

A MARKET-BASED APPROACH TO TELECOM INTERCONNECTION

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ABSTRACT

This Article offers a new solution to the problem of interconnection among telecom networks. According to the Federal Communications Commission's ("FCC") proposal, interconnection between local exchange carriers ("LECs") and long-distance carriers would be mandatory, and all charges demanded by LECs for outgoing and incoming long-distance calls would be regulated down to zero. In contrast, this Article proposes simple regulatory changes that would foster the deregulation of interconnection between long-distance carriers and LECs. Such regulatory changes would enable several market forces, revealed by the Article and neglected by the FCC and the previous literature, to keep LECs' charges for interconnection from rising above competitive levels and encourage carriers to interconnect. First, long-distance carriers should be allowed to transit long-distance calls made to one LEC's subscribers by interconnecting with the competing LEC. The Article illustrates that if LECs are forbidden from charging each other for completing each other's calls, the credible threat to use such transit will induce each LEC to

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interconnect directly with long-distance carriers and to charge them voluntarily for incoming calls no more than the competing LEC's marginal costs of transit. Moreover, future growth of cellular telephony and broadband Internet-protocol telephony is expected to strengthen this market force, especially if the FCC's current requirement that long-distance carriers average their rates is eliminated. As to the rates LECs charge long-distance carriers for long-distance calls made by the LECs' subscribers, if the Telecommunications Act of 1996's ("1996 Act") requirement that long-distance carriers equalize their rates is amended, direct competition among LECs is shown to restrain them. Even short of amending the 1996 Act, the Article shows how long-distance carriers' ability to ask one LEC to transit long-distance calls made by the competing LEC's subscribers is expected to drive these rates down to the marginal costs of transit. The Article shows how interconnection among the LECs themselves should be regulated in order to enable the proposed deregulation of interconnection between the LECs and long-distance carriers. First, interconnection among LECs themselves should be mandated. Second, LECs should not be allowed to charge each other for completing each other's calls. The Article also exposes an additional justification for not allowing LECs to charge each other for completing each other's calls: LECs might negotiate an excessive reciprocal rate for such calls to enforce an implicit commitment on the part of a new LEC entering the market to focus only on "net receivers of calls" (such as Internet service providers), leaving the rest of the market to the incumbent.

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I. INTRODUCTION

This Article offers a new solution to the problem of interconnection among telecom networks. Telecom networks interconnect with each other in various settings. As local telecom markets open up to competition,¹ competing local exchange carriers ("LECs") interconnect with one another so that subscribers of one LEC can call subscribers of a competing LEC. This may include Internet service provider ("ISP") bound calls, where the ISP's subscriber subscribes to one LEC and the ISP subscribes to a different LEC. LECs also interconnect with long-distance carriers, which enable subscribers of one LEC in one area to call subscribers of another LEC in another area. Similarly, competing cellular providers interconnect in order to enable subscribers of the various providers to call each other's cellular phones. Finally, cellular networks interconnect with LECs and

1. The Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (codified in scattered sections of 47 U.S.C.) provides that local telecom markets in the United States, previously dominated by regulated monopolies, should be open to competition.

long-distance carriers to enable local and long-distance calls between wireline subscribers and cellular subscribers.

Current regulation of interconnection among telecom carriers may be categorized into two classes: interconnection among competing local networks, and interconnection between long-distance carriers and LECs. Interconnection among competing local networks is, pursuant to the Telecommunications Act of 1996 ("1996 Act"), mandatory and requires LECs to negotiate reciprocal-compensation rates for calls made by subscribers of one LEC to subscribers of the other.² A series of Federal Communications Commission ("FCC") orders and rules regulate interconnection between long-distance carriers and LECs, as well as the rates LECs may charge long-distance carriers for long-distance calls made to or by LECs' subscribers.³

In light of the high regulatory costs involved in the FCC's methodology of gradual intervention, which constrains the rates LECs charge long-distance carriers, and in order to cope with alleged distortions in the current regulatory regime, the FCC proposed a revolutionary change to the interconnection regime.⁴ The essence of the FCC's proposal is that, absent agreement among interconnecting networks, all charges demanded by LECs for interconnection will be regulated down to zero.⁵ In other words, LECs will not be allowed to charge another network for calls flowing between the LEC and the other network, unless the other network is willing to pay.⁶ Instead, LECs will be expected to recover the costs involved in such interconnection from their subscribers. This regulation is proposed both for interconnection among competing LECs and for interconnection between LECs and long-distance carriers.

Interconnection between long-distance carriers and LECs is, therefore, characterized by extensive rate regulation and regulatory intervention. Current regulation mandates interconnection while placing a positive cap

2. Part II provides a detailed description of current regulation.

3. See discussion *infra* Part II.

4. See *In re* Developing a Unified Intercarrier Compensation Regime, 16 F.C.C.R. 9610 (Apr. 27, 2001) (notice of proposed rulemaking). The FCC's proposal is based mainly on two FCC working papers: JAY M. ATKINSON & CHRISTOPHER BARNEKOV, FCC, A COMPETITIVELY NEUTRAL APPROACH TO NETWORK INTERCONNECTION (2000); Patrick DeGraba, *Central Office Bill and Keep as a Unified Inter-Carrier Compensation Regime*, 19 YALE J. ON REG. 37 (2002).

5. This proposal will be referred to in this Article as the "bill and keep proposal," using the FCC's terminology.

6. According to DeGraba's proposal, for example, a carrier asking the LEC to complete a call made to the LEC's subscriber would be responsible for the costs of transporting the call up to the LEC's central office, while the LEC would be responsible for the costs of transporting the call from its central office to the recipient. See DeGraba, *supra* note 4, at 41.

on charges imposed by LECs on long-distance carriers. The FCC's recent bill-and-keep proposal mandates interconnection and essentially regulates these charges down to zero.⁷ Such regulatory intervention is contrary to Congress's intent in the 1996 Act of opening telecom markets to competition and allowing competition to replace regulation.⁸ We might as well have remained with the historic telecom monopolies and regulated them. This would have saved the extremely high social cost of duplicating infrastructure involved in competitive entry. The FCC proposes to impose the zero rate on unwilling LECs. This could cause various distortions and regulatory costs, which might not exist in an arrangement in which the LEC voluntarily enters into the interconnection agreement. In particular, if LECs do not expect to earn anything from long-distance carriers, the LECs' incentives to provide high-quality interconnection and technical assistance will be substantially reduced. Disputes are expected to arise over the nonprice characteristics of the interconnection relationships. These disputes will have to be resolved by the FCC and the courts.⁹

Furthermore, under the FCC's proposal, LECs would not be able to recover the costs of completing and enabling long-distance calls from long-

7. Since the FCC proposes that carriers should be able to negotiate around the zero rate, *see In re Developing a Unified Inter-carrier Compensation Regime*, 16 F.C.C.R. at 9620, long-distance carriers would pay rates higher than zero if they agreed to. Of course, this is unlikely. The ability to negotiate around the zero rate is, therefore, especially important in the case of interconnection among LECs, as discussed *infra* Part V.

8. It is widely acknowledged that in the 1996 Act, "Congress sought 'to promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers. . . .'" *U.S. West Communications, Inc. v. Serna*, No. 97-124 JP/JHG, 1999 U.S. Dist. LEXIS 21774, at *3 (D.N.M. Aug. 25, 1999). *See also Reno v. ACLU*, 521 U.S. 844, 857 (1997) (stressing that the 1996 Act's primary purpose was to reduce regulation); *Southwestern Bell Tel. Co. v. FCC*, 153 F.3d 523, 547 (8th Cir. 1998) (stressing "Congress's directive that the [FCC] replace regulation with competition to the greatest extent possible consistent with the public interest," and that competitive markets are better suited than regulatory agencies to allocate resources and services efficiently for the maximum benefit of consumers) (internal citations omitted). The FCC also repeatedly echoed the purpose of "using competition to bring about cost-based rates." *See, e.g., In re Access Charge Reform; Price Cap Performance Review for Local Exchange Carriers; Low-Volume Long-Distance Users; and Federal-State Joint Board on Universal Service*, 15 F.C.C.R. 12,962, 12,977 (May 31, 2000) (reports and orders); *In re Access Charge Reform*, CC Docket No. 96-262, 14 F.C.C.R. 14,221, 14,348 (Aug. 27, 1999) (report and order). The FCC declared a strong preference not to intervene in the marketplace, particularly with respect to competitive new entrants, unless intervention is necessary to fulfill our statutory obligation to ensure just and reasonable rates. If market forces are not operating to constrain CLEC access charges, we seek the least intrusive means possible to correct any market failures.

In re Access Charge Reform, CC Docket No. 96-262, 14 F.C.C.R. at 14,348. *See also In re Access Charge Reform*, 12 F.C.C.R. 15,982, 16,001, 16,107 (May 16, 1997) (report and order) (urging that "[r]egulation cannot replicate the complex and dynamic ways in which competition will affect the prices, service offerings, and investment decisions of both incumbent LECs and their competitors").

9. *See discussion infra* Part IV.A.

distance carriers, while long-distance carriers and their customers would no doubt benefit from access to the LECs' customers. Consequently, LECs' investments in their networks will be inefficiently distorted, as they will not be able to capture even a portion of the value their network creates for long-distance carriers and their customers. In particular, new entrants into local telecom markets ("new LECs"), which might have been willing to enter local markets and expand their networks, might hesitate to do so under the FCC's proposed regime.¹⁰

This Article claims that interconnection between LECs and long-distance carriers should be deregulated. This is in sharp contrast to the FCC's current policy and its recently proposed bill-and-keep approach, both of which involve mandatory interconnection and strict regulation of the rates LECs charge long-distance carriers for interconnection. Under deregulation of interconnection between LECs and long-distance carriers, and in the absence of mandatory interconnection, the Article proposes how to regulate interconnection among the LECs themselves so that several market forces, neglected by the FCC and the previous literature, can keep LECs' charges on long-distance carriers at competitive levels and encourage carriers to interconnect and provide their subscribers with ubiquity.

First, long-distance carriers should be permitted to route calls to subscribers of one LEC ("LEC A") through interconnection with another LEC ("LEC B"), which competes with LEC A.¹¹ Such transit of calls

10. See *infra* Part IV.A. In addition, forcing interconnection for no payment could be seen as a taking without just compensation. There are opposing views in the literature as to whether such regulatory changes constitute a taking without just compensation. See, e.g., Kyle D. Logue, *Tax Transitions, Opportunistic Retroactivity, and the Benefits of Government Precommitment*, 94 MICH. L. REV. 1129, 1149 (1996) (claiming that if previous regulation was meant to induce investment, regulatory change should not be applied retroactively); J. Gregory Sidak & Daniel F. Spulber, *Deregulatory Takings and Breach of the Regulatory Contract*, 71 N.Y.U. L. REV. 851, 860-61, 863-64 (1996) (arguing that imposing a zero rate for interconnection constitutes a taking without just compensation). For views pointing to the conclusion that such regulatory transitions should not be considered takings without just compensation, see Susan Rose-Ackerman & Jim Rossi, *Disentangling Deregulatory Takings*, 86 VA. L. REV. 1435, 1440 (2000) (arguing that there should be a presumption against a taking-without-just-compensation claim where the government is acting as a policymaker as opposed to a purchaser); Louis Kaplow, *An Economic Analysis of Legal Transitions*, 99 HARV. L. REV. 509 (1986) (claiming that firms should bear the risk of regulatory change). See also Hanoch Dagan, *Takings and Distributive Justice*, 85 VA. L. REV. 741 (1999) (arguing that if LECs expect roughly countervailing regulatory (or deregulatory) benefits, even in the long-term, there will be no takings claim).

11. Such transit arrangements are common in the case of interconnection among Internet backbones. Internet backbones are fiber infrastructures that deliver data to and from the backbones' customers (who consist mainly of ISPs and end users). The Internet is composed of a "network of networks" interconnecting backbones across the globe. See MICHAEL KENDE, FCC, THE DIGITAL

would be considered a local call among competing LECs, subject to a mandatory local-interconnection regime. If LEC A attempts to charge the long-distance carrier supracompetitive rates for completing long-distance calls, LEC B would be induced to offer the long-distance carrier competitive rates for transiting long-distance calls made to LEC A's subscribers.

Although transit via LEC B allegedly involves higher costs than having LEC A complete the calls directly, it nonetheless becomes an extremely effective market force if we do not allow LECs to charge one another for completing each other's calls.¹² The long-distance carrier's credible threat to use transit would induce LEC A to interconnect directly with the long-distance carrier and voluntarily charge it no more than LEC B's marginal costs¹³ of transit. This is because, for any higher rate LEC A attempts to charge the long-distance carrier, LEC B would offer the long-distance carrier a lower rate for transiting the calls to LEC A. Since LEC A would not be allowed to charge LEC B for completing these transited calls, LEC A would be made worse off and would rather complete these calls directly, and collect the competitive rate from the long-distance carrier. Interestingly, this simple market force does not depend on new LECs possessing substantial market shares. New LECs simply need to possess the technical ability to transit all long-distance calls made to the incumbent LEC's subscribers.¹⁴

HANDSHAKE: CONNECTING INTERNET BACKBONES (2000). When, for example, a small backbone purchases transit access from a large backbone, the small backbone typically gains access to all backbones interconnected to the large backbone. *See id.* at 21; Jacques Cremer, Patrick Rey & Jean Tirole, *Connectivity in the Commercial Internet*, 48 J. INDUS. ECON. 433 (2000). Transit arrangements are also abundant in the case of international telecom. Two countries that do not have an interconnection agreement can interconnect by transiting calls through a third country. *See, e.g.*, LINDA BLAKE & JIM LANDE, FCC, TRENDS IN THE U.S. INTERNATIONAL TELECOMMUNICATIONS INDUSTRY 12 (1998). Even in the local telecom-interconnection context, such transit situations currently exist. *See, e.g., In re Developing a Unified Inter-carrier Compensation Regime*, 16 F.C.C.R. at 9634. They are not common, however, presumably because interconnection is mandated under regulated rates (so that market forces are not free to act in the above-mentioned manner) and because of LECs' ability to negotiate reciprocal rates for calls flowing among them, which makes transit an unappealing option for long-distance carriers. *See infra* Part IV.C.1.

12. Such an arrangement among LECs bears some resemblance to the FCC's recent bill-and-keep proposal, only it is limited to interconnection among the LECs and is mandatory, in contrast to the FCC's proposed default rule. *See In re Developing a Unified Inter-carrier Compensation Regime*, 16 F.C.C.R. at 9620; *infra* Part V.

13. Marginal costs are the costs of supplying the marginal unit (e.g., a marginal minute of the telephone call).

14. Even if an LEC is integrated with a long-distance carrier, the LEC's incentive to harm unaffiliated long-distance carriers becomes highly questionable due to long-distance carriers' ability to transit calls made to the LEC's subscribers via the competing LEC. For a more in-depth explanation of

This potential market force is one justification for this Article's proposed rule disallowing LECs from charging each other for completing each other's calls (including transited calls). This rule differs from the current rule, and from the rule proposed by the FCC, which allows LECs to negotiate a reciprocal rate for calls flowing among them.¹⁵ If LECs are allowed to negotiate the rates they pay each other for completing each other's calls, they might be induced to jeopardize the competitive force of transit by negotiating a high reciprocal rate. Such a reciprocal rate raises LECs' costs of transiting calls made to competitors. Accordingly, LECs could credibly charge long-distance carriers supracompetitive rates for completing calls, notwithstanding the long-distance carrier's option of asking one LEC to transit calls made to a competing LEC.

This simple market force has never been given a chance in practice. Long-distance carriers have always been obligated to interconnect with LECs for regulated interconnection rates.¹⁶ In areas where the market has been given a chance, such as interconnection among Internet backbones, the market has indeed produced satisfactory results.¹⁷

Two additional market forces strengthening the proposed market-based approach stem from the foreseeable growth of cellular technology and broadband Internet-protocol ("IP") telephony. Cellular telephony in the U.S. is developing to a degree of penetration and quality that can compete with LECs on completion of long-distance calls to recipients.¹⁸

an LEC's lack of incentive to harm long-distance carriers, see *infra* notes 70-74 and accompanying text.

15. As noted, under the FCC proposal, LECs will be able to negotiate the reciprocal rate for calls flowing among them, and a zero rate applies only if LECs cannot otherwise agree on a specified rate. *In re* Developing a Unified Intercarrier Compensation Regime, 16 F.C.C.R. at 9620.

16. *Infra* notes 77-78 and accompanying text.

17. See *In re* Developing a Unified Intercarrier Compensation Regime, 16 F.C.C.R. at 9656 ("The [Internet] backbones appear to be successfully negotiating interconnection agreements among themselves without any regulatory intervention, and we see no reason to intervene in this efficiently functioning market."); KENDE, *supra* note 11, at 21.

18. See Peter J. Howe & Ross Kerber, *Terra Lycos Adds Search Features*, BOSTON GLOBE, July 1, 2002, at C2 (discussing average cellular penetration in 44 U.S. metropolitan markets in July 2002); Lynnette Luna, *Lehman Brothers Revises Wireless Growth Estimates for the Positive*, RADIO COMMUNICATIONS REP., Sept. 13, 1999, at 10 (asserting that wireless penetration will reach 70% by 2007); *The Surveys Say*, WIRELESS TODAY, Mar. 22, 2001 (stating that U.S. cellular penetration is expected to rise above 60% by 2005 and to reach 84% by 2006). Average monthly minutes of use per subscriber are also escalating. See *The Surveys Say, supra*; *U.S. Wireless Telephone Penetration 43 Percent in 1999*, RADIO COMMUNICATIONS REP., Mar. 6, 2000, at 31 (noting that average monthly minutes of use increased more than 40 minutes per month in 1998 to 241 in 1999). The escalating growth of cellular penetration is a worldwide phenomenon. See *Networks—Wired vs. Wireless—Down to the Wire*, ROAM, Apr. 2001, at 30 (stating that, according to the EMC World Cellular Database, there were 307 million GSM subscribers around the world at the end of 1998—a figure that more than

Cellular providers are going to be willing and able, under current technologies, to distinguish between cellular calls the recipient receives at home or at the office and calls he or she receives while on the road. Thus, the premiums cellular providers may collect on completing calls when their subscribers are called on the road will not prevent cellular completion of calls from being a viable competitor to LEC completion of calls.¹⁹ Broadband IP telephony,²⁰ too, is expected to compete with the LEC and the cellular provider for completion of long-distance calls. In particular, IP telephony will be used mainly via broadband-Internet connections, which will often exist in addition to the regular phone-line connection.²¹

The market forces inherent in the future growth of cellular telephony and broadband IP telephony will be particularly effective if the costs LECs charge long-distance carriers for completing calls are passed on to long-distance callers. To this end, the Article proposes to revise the FCC's current requirement that long-distance carriers average their rates.²² As this Article shows, such de-averaging of rates is consistent with both the language and intent of the 1996 Act's requirement that long-distance carriers equalize their rates across states and geographic areas.

This Article also proposes a market-based approach for the rates LECs charge long-distance carriers that wish to enable long-distance calls made by the LECs' subscribers. These rates are currently regulated, and the FCC has recently proposed to subject them to the most strict zero-rate

doubled to 706.8 million at the end of January 2001); *The Surveys Say*, *supra* (maintaining that the global cellular market is expected to double in size by the end of 2006).

19. According to an FCC ruling, cellular providers can collect charges for completing calls from the caller rather than the cellular recipient. *In re* Calling Party Pays Service Offering in the Commercial Mobile Radio Services, 14 F.C.C.R. 10,861 (July 7, 1999) (declaratory ruling and notice of proposed rulemaking). In the future, cellular providers are expected to stop collecting these charges from their subscribers in order to induce subscribers to disclose their cellular numbers and turn on their cellular phones.

20. IP telephony is the ability to initiate and receive telephone calls and facsimiles over IP-based data networks. IP-telephony technology transforms voice into packets of data that travel over the Internet or over special lines (such as cable infrastructure) and are then transformed back into voice. See John Williamson, *The Metamorphosis of IP Telephony*, GLOBAL TELEPHONY, June 1, 2001. A related term in the professional literature is "Voice-over IP" or "VoIP," which typically refers to IP-telephony calls that at least partially run over special lines. *Id.* Internet telephony refers to IP telephony that runs over the public Internet. *Id.* In the foreseeable future, the quality of an IP-telephony call will improve so as to be a viable substitute for a wireline call. See *infra* note 87.

21. *Infra* note 89. Even if broadband-Internet connections eventually replace the regular phone line, recipients are expected to hold on to their cellular phones for mobility purposes, and, at the same time, be connected to broadband Internet for speed. See *infra* note 93 and accompanying text. In such a case, cellular providers will compete over completion of long-distance calls with broadband-Internet providers.

22. *Infra* Part IV.C.4.

regulation. Instead of such strict regulation, this Article reveals two market forces that can effectively restrain these rates without regulatory intervention. First, this Article proposes to amend the 1996 Act's requirement that long-distance carriers charge the same rates for subscribers in different states and in different geographic areas. Under the proposed amendment to the Act, a simple market force will keep the rates LECs charge long-distance carriers for outgoing long-distance calls at competitive levels. Long-distance carriers can pass on these charges to long-distance callers, and an LEC charging excessive rates will lose subscribers to a competing LEC.

Even short of amending the statutory requirement of rate equalization, however, an additional market force can restrain these rates: A long-distance carrier should be able to interconnect with LEC B to enable long-distance calls made by LEC A's subscribers, who will call the long-distance carrier at a location in LEC B's network. Such a call is subject to the local mandatory interconnection regime. Thus, if LEC A attempts to charge supracompetitive rates for enabling these calls directly, LEC B would be induced to charge the long-distance carrier competitive rates for transiting the long-distance calls made by LEC A's subscribers. In particular, where LECs are not allowed to charge each other for completing each other's calls, this market force induces each LEC to interconnect directly with the long-distance carrier and offer to enable its long-distance calls for a rate no higher than the competing LEC's marginal costs of transit.²³ If LEC A attempts to charge a higher rate, LEC B would be induced to offer the long-distance carrier the ability to transit its outgoing long-distance calls for a lower rate, and LEC A would incur the same costs for enabling these calls while earning nothing from the long-distance carrier.²⁴

As to interconnection among competing LECs, this Article shows why mandatory interconnection is essential. Without it, incumbent LECs have strong incentives to refuse or degrade interconnection to new LECs in order to deter their entry or expansion. Furthermore, under the proposed market-based approach to interconnection with long-distance carriers, LECs might

23. Since callers might have to dial additional digits to use transit, this small inconvenience might allow an LEC to charge a somewhat higher rate for direct interconnection.

24. Interestingly, if LECs pay each other a positive-reciprocal rate for completing each other's calls, as in the current regime, each LEC's rate for enabling long-distance calls is expected to be no higher than the competing LEC's marginal costs of transit minus this reciprocal rate. For any higher rate LEC A attempts to charge, LEC B would offer to transit these calls for less, as it expects to earn the reciprocal rate from LEC A on these calls. LEC A, for its part, would then bear this reciprocal rate, in addition to its costs in enabling the call.

be induced not to interconnect in order to credibly commit not to transit long-distance calls flowing to or from the competing LEC. This would enable LECs to charge supracompetitive rates to long-distance carriers under the proposed market-based approach.

As noted, this Article proposes disallowing LECs from charging each other for completing each other's calls. As stressed above, if LECs can negotiate a reciprocal rate they pay each other for completing each other's calls, they might use that rate strategically to jeopardize the competitive force of transit under the proposed market-based approach to interconnection with long-distance carriers.

This Article also exposes additional justifications for not allowing LECs to charge each other for completing each other's calls. First, new LECs might push for excessive reciprocal rates and then attract subscribers that are "net receivers of calls," such as ISPs. Incumbent LECs might agree to these excessive reciprocal rates for their own reasons, which are detailed below. Indeed, many new LECs have been focusing mainly on ISPs. New LECs do this because, if they serve mainly net receivers of calls, and the reciprocal rate LECs pay each other for completing each other's calls is high, new LECs make more money, due to calls flowing from the incumbent LEC to the new LEC. This action by new LECs undermines the 1996 Act's aim of opening telecom markets to real competition. This behavior was one of the main driving forces behind the FCC's proposed bill-and-keep approach.²⁵ The FCC's proposal is that a default bill-and-keep rule will do, as the incumbent LEC is expected to refuse an excessive reciprocal rate if it expects the new LEC to attract mainly net receivers of calls.

This Article stresses, however, that an incumbent LEC might agree to an excessive reciprocal rate and play along with a new LEC for its own reasons. In particular, an incumbent LEC might be content to have a new LEC focus mainly on the niche of net receivers of calls, while leaving the rest of the market to the incumbent LEC. In fact, as this Article shows, allowing the incumbent and new LEC to negotiate a reciprocal rate is identical to allowing them to negotiate a market-division agreement according to which the new LEC will focus on the segment of net receivers of calls and will not compete with the incumbent over regular subscribers. In exchange, the incumbent agrees to pay the new LEC for such noncompetition through the excessive rate that the incumbent pays the new

25. See *In re* Developing a Unified Intercarrier Compensation Regime, 16 F.C.C.R. 9610, 9616 (Apr. 27, 2001) (notice of proposed rulemaking).

LEC for completing calls flowing from the incumbent to the new LEC. Interestingly, such an agreement is self-enforcing. If the new LEC starts competing successfully with the incumbent over regular subscribers, who also make calls, the new LEC will be making less from the reciprocal arrangement, as these subscribers will no longer be making calls from the incumbent to the new LEC. Conversely, the more the new LEC deviates from this tacit market-division arrangement,²⁶ the more the incumbent will pay less due to the reciprocal arrangement.

II. CURRENT REGULATION

Current regulation of interconnection among telecom carriers may be categorized into two classes: interconnection among competing local networks, and interconnection between long-distance carriers and LECs.

As to interconnection among competing local networks, section 251(b)(5) of the 1996 Act²⁷ imposes a duty on all LECs to “establish reciprocal compensation arrangements for the transport and termination of telecommunications.”²⁸ That is, competing LECs must interconnect with one another and must negotiate the terms of reciprocal compensation.²⁹ When the subscriber of one LEC calls the subscriber of another LEC, the initiating LEC pays the LEC completing the call the negotiated rate, which is the same regardless of which LEC initiated the call and which LEC completed it. Normally, compensation is in the form of a per-minute charge.³⁰

26. Another risk in allowing LECs to negotiate a reciprocal rate for completing each other's calls is that LECs might be tempted to negotiate an excessive reciprocal rate in order to boost the rates they charge their own subscribers. Economics literature to date has shown, under restrictive assumptions that depart significantly from real-life scenarios, that this would not be a problem. *Infra* Part V.B.2.

27. 47 U.S.C. § 251(b)(5) (2000). The requirement similarly applies to interconnection between LECs and cellular providers. See *U.S. West Communications, Inc. v. Pub. Serv. Comm'n of Utah*, 75 F. Supp. 2d 1284, 1286 (D. Utah 1999); *U.S. West Communications, Inc. v. Serna*, No. 97-124 JP/JHG, 1999 U.S. Dist. LEXIS 21774, at *1 (D.N.M. Aug. 25, 1999); *U.S. West Communications, Inc. v. Minn. Pub. Utils. Comm'n*, 55 F. Supp. 2d 968, 968 (D. Minn. 1999); *In re Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, 11 F.C.C.R. 15,499 (Aug. 8, 1996) (report and order). A few small and rural LECs are exempt from the reciprocal-compensation requirement. See 47 U.S.C. § 251(f); *Ind. Bell Tel. Co. v. Smithville Tel. Co.*, 31 F. Supp. 2d 628, 631-32 (S.D. Ind. 1998).

28. Termination of a call means completing the call to the recipient.

29. At any time in the negotiations over the terms of reciprocal compensation, a party may ask a state commission to participate as a mediator. 47 U.S.C. § 252(a)(2). Furthermore, if no agreement is reached, the Act provides for compulsory arbitration of unresolved issues. See, e.g., *Ill. Bell Tel. Co. v. Worldcom Techs., Inc.*, 179 F.3d 566, 568 (7th Cir. 1999).

30. Under a recent FCC order, calls made to ISPs are treated differently. See *In re Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*; Inter-

Interconnection between long-distance carriers and local carriers is regulated differently. The former monopoly LECs must interconnect with long-distance carriers, and long-distance carriers must interconnect with the former monopoly LECs and pay them regulated rates for completing or enabling long-distance calls made to or by the LECs' subscribers.³¹ Under the most recent FCC order,³² with regard to interstate calls,³³ the large LECs—whose interconnection charges are subject to price-caps imposed by the FCC³⁴—are given the option of either charging reduced rates within the following five years, as set in the FCC order, or subjecting themselves to price-caps based on “forward looking” cost measures.³⁵

The rest of the former monopoly LECs are subject to more lenient regulation of the interconnection costs they charge long-distance carriers. They may set these rates according to their “rate of return.” “Rate of return” measures enable these rates to be well above competitive levels because they take into account the historic costs incurred by the LEC to establish the network's infrastructure, as well as a prescribed profit.³⁶

Interconnection charges long-distance carriers pay LECs for *intrastate* long-distance calls are regulated by state commissions and are not subject

Carrier Compensation for ISP-Bound Traffic, 16 F.C.C.R. 9151 (Apr. 27, 2001) (order on remand and report and order); *infra* Part V.B.1.

31. *In re* Developing a Unified Intercarrier Compensation Regime, 16 F.C.C.R. 9610 (Apr. 27, 2001) (notice of proposed rulemaking).

32. *In re* Access Charge Reform; Price Cap Performance Review for Local Exchange Carriers; Low-Volume Long Distance Users; Federal-State Joint Board on Universal Service, 15 F.C.C.R. 12,962 (May 31, 2000) (reports and orders).

33. The FCC is authorized to regulate only interstate interconnection charges. Long-distance intrastate interconnection charges are regulated by the states.

34. For a detailed description of the regulatory treatment of the price-caps, see *In re* Access Charge Reform; Price Cap Performance Review for Local Exchange Carriers; Low-Volume Long Distance Users; Federal-State Joint Board on Universal Service, 15 F.C.C.R. at 13,014–32.

35. Forward-looking costs refer to expected future costs incurred by the LEC's operation in the market, rather than historic “sunk costs” used to establish the network. These costs conventionally include not only the variable costs of handling calls, but also fixed costs of expected expansion and improvement of the network. *Alenco Communications, Inc. v. FCC*, 201 F.3d 608, 615–16 (5th Cir. 2000). Historically, LECs' interconnection charges were purposely set at rates well above cost in order to subsidize local calls and to compensate LECs for their obligation to set an infrastructure sufficient to serve everyone in the local area, as well as subscribers in remote areas. *In re* Developing a Unified Intercarrier Compensation Regime, 16 F.C.C.R. at 9623. The 1996 Act, however, held that this obligation to provide universal service would be funded through explicit funds collected from carriers, and that implicit subsidies inherent in interconnection charges would be gradually eliminated. 47 U.S.C. § 254 (d)–(e) (2000).

36. *In re* Access Charge Reform; Price Cap Performance Review for Local Exchange Carriers; Low-Volume Long Distance Users; Federal-State Joint Board on Universal Service, 15 F.C.C.R. at 12,968.

to the FCC's actions.³⁷ Some states enable these charges to be well above competitive levels in order to implicitly subsidize local rates or the extension of the networks' reach to remote areas.³⁸ On the other hand, many states mirror the FCC's rules regarding such charges and apply them to intrastate long-distance interconnection as well.³⁹

The new entrants into local telecom markets—the new LECs—are, under a recent FCC order,⁴⁰ subject to limited rate regulation of the rates they charge long-distance carriers for completing and enabling long-distance calls made to or by the new LECs' subscribers. According to this order, if new LECs charge at or below a certain benchmark level, long-distance carriers must interconnect with them; whereas if new LECs charge above this level, long-distance carriers are no longer obligated to interconnect with them.⁴¹

III. THE FCC'S PROPOSAL

The FCC recently proposed a revolutionary change to the interconnection regime.⁴² According to the FCC's proposal, unless otherwise agreed to by the interconnecting carriers, LECs will not be

37. *Cf. In re* Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Inter-Carrier Compensation for ISP-Bound Traffic, 16 F.C.C.R. 9151, 9188 (Apr. 27, 2001) (order on remand and report and order) (exercising the commission's jurisdiction over ISP Internet-bound traffic because of its interstate component). *See, e.g., Price Caps Standard Form of Telco Regulation in 70% of States*, COMMUNICATIONS DAILY, Sept. 8, 1999 (describing various state regulatory schemes).

38. *See, e.g., In re* Access Charge Reform; Price Cap Performance Review for Local Exchange Carriers; Low-Volume Long Distance Users; Federal-State Joint Board on Universal Service, 15 F.C.C.R. at 13,040 (explaining how implicit subsidies of the interstate variety evolved).

39. *See, e.g., AT&T Communications of Ohio, Inc. v. Pub. Utils. Comm'n of Ohio*, 728 N.E.2d 371, 373 (Ohio 2000); *Wis. State Tel. Ass'n v. Pub. Serv. Comm'n of Wis.*, 549 N.W.2d 278, 280 (Wis. Ct. App. 1996); *Publ. Util. Comm'n of Tex. v. AT&T Communications of the Southwest*, 777 S.W.2d 363, 378 (Tex. 1989); *In re* Access Charge Reform; Price Cap Performance Review for Local Exchange Carriers; Low-Volume Long Distance Users; Federal-State Joint Board on Universal Service, 15 F.C.C.R. at 12,996.

40. *In re* Access Charge Reform; Reform of Access Charges Imposed by Competitive Local Exchange Carriers, 16 F.C.C.R. 9923 (Apr. 27, 2001) (report and order and further notice of proposed rulemaking).

41. The order provides for an exemption for rural new LECs, which may impose higher charges on long-distance carriers. *Id.* at 9975. Other than the provisions of *In re* Access Charge Reform; Reform of Access Charges Imposed by Competitive Local Exchange Carriers, new LECs are generally unregulated. *See In re* Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Inter-Carrier Compensation for ISP-Bound Traffic, 16 F.C.C.R. at 9188; *In re* Access Charge Reform; Price Cap Performance Review for Local Exchange Carriers; Low-Volume Long Distance Users; Federal-State Joint Board on Universal Service, 15 F.C.C.R. at 13,005.

42. *See In re* Developing a Unified Inter-carrier Compensation Regime, 16 F.C.C.R. 9610 (Apr. 27, 2001) (notice of proposed rulemaking).

allowed to charge other carriers for completing or enabling calls made to or by the LECs' subscribers. Instead, LECs will be expected to recover the costs of doing so from their own subscribers. This regulation is proposed for both the case of interconnection among competing LECs and the case of interconnection between LECs and long-distance carriers.

IV. LONG-DISTANCE CARRIER/LEC INTERCONNECTION

The preceding parts reveal how interconnection between long-distance carriers and LECs is characterized by extensive rate regulation and regulatory intervention. Both under current regulation and under the FCC's proposed bill-and-keep regime, interconnection is mandated, and the rates LECs may charge long-distance carriers are strictly regulated. Current regulation mandates interconnection while placing a positive cap on these charges. The FCC's bill-and-keep proposal mandates interconnection while regulating these charges down to zero.

A. THE UNDESIRABILITY OF REGULATING INTERCONNECTION

Such regulatory intervention is extremely costly. To be sure, prescribing a regulated rate (including the proposed regulated rate of zero) involves lower regulatory costs than firm-specific cost-studies establishing a rate for every LEC. Under current regulation, assuming the bill-and-keep proposal will not be adopted, the FCC remains unwilling to prescribe rates without giving carriers the opportunity to show that their costs exceed those rates.⁴³ Such a showing demands cost-studies for every individual LEC. Furthermore, as technology changes and networks renew their facilities, LECs that wish to challenge the prescribed rates may need to conduct new cost-studies.

Even if the FCC's bill-and-keep proposal is adopted and an undisputable zero rate prescribed, regulatory intervention would continue to be extremely costly. First, regulatory intervention is contrary to Congress's intent in the 1996 Act of opening telecom markets to competition and reducing regulatory intervention to the lowest possible

43. See *In re* Access Charge Reform; Price Cap Performance Review for Local Exchange Carriers; Low-Volume Long Distance Users; Federal-State Joint Board on Universal Service, 15 F.C.C.R. at 12,984. This regulatory cost applies to the case of new LECs as well, since new LECs that wish to mandate interconnection of long-distance carriers for rates above a certain benchmark can prove the appropriateness of their rates by submitting a study exhibiting their costs. See *In re* Access Charge Reform; Reform of Access Charges Imposed by Competitive Local Exchange Carriers, 16 F.C.C.R. at 9951.

level.⁴⁴ What is the point of opening local markets to competition and having new LECs duplicate extremely costly infrastructure if extensive regulatory intervention is still required? We might as well have remained with LECs that do not face competition, saved the costs of duplicating infrastructure, and prescribed their rates. After all, rate prescription can be used not only to regulate interconnection, but also to regulate the rates monopolistic LECs charge their own subscribers.

Furthermore, although prescribing a rate of zero saves the regulatory costs involved in individual cost-studies for each LEC, it involves other substantial regulatory costs and distortions. Interconnection relationships between LECs and long-distance carriers involve an array of nonprice factors related to the quality of interconnection, technical standards, and repair services. If LECs can charge nothing from long-distance carriers, as the FCC proposes, the LECs' incentives to provide long-distance carriers with high-quality interconnection and technical assistance will be substantially reduced.⁴⁵

The FCC's bill-and-keep proposal has not yet been adopted; however, even to date, several disputes between long-distance carriers and LECs have arisen over these nonprice factors. In the order executing AT&T's divestiture into separate LECs and a separate long-distance carrier, these LECs were ordered to provide all long-distance carriers with "equal access." "Equal access" has been defined as that which is equal in type, quality, and price to the access that LECs provide AT&T and its affiliates.⁴⁶ Section 251(g) of the 1996 Act preserved these equal-access obligations, subject to the FCC's authority to modify them.⁴⁷ One

44. *Supra* note 8.

45. It could be claimed that LECs would want to give quality interconnection to long-distance carriers because, otherwise, the LECs' own subscribers would suffer from low-quality long-distance calls they make and receive. This may or may not be true. We cannot be certain whether this factor alone would induce LECs to grant quality interconnection, despite the fact that LECs are forced to interconnect for a zero rate. The virtue of the market-based approach presented in this Article is that LECs will voluntarily grant long-distance carriers quality interconnection for competitive rates, with no need for regulatory intervention.

46. *United States v. AT&T Co.*, 552 F. Supp. 131, 227 (D.D.C. 1982), *aff'd sub nom. Maryland v. United States*, 460 U.S. 1001 (1983).

47. According to 47 U.S.C. § 251(g):

On and after [the date of enactment of the Telecommunications Act of 1996], each local exchange carrier, to the extent that it provides wireline services, shall provide exchange access, information access, and exchange services for such access to interexchange carriers and information service providers in accordance with the same equal access and nondiscriminatory interconnection restrictions and obligations . . . that apply to such carrier on the date immediately preceding [the date of enactment of the Telecommunications Act of 1996], under any court order, consent decree, or regulation, order, or policy of the Commission, until such restrictions and obligations are explicitly superseded by regulations prescribed by the Commission [after such date of enactment].

important feature of these obligations is the LECs' obligation to enable callers to use the long-distance carrier they presubscribe to by dialing only a "1" before the recipient's number, and to choose a different long-distance carrier by dialing a five- or seven-digit access code.⁴⁸ Several disputes arose regarding the interpretation of this obligation.⁴⁹

These obligations also include the technical quality of interconnection that LECs are supposed to provide long-distance carriers.⁵⁰ In particular, long-distance carriers require service and technical standards from LECs in connection with "the provision of network control signaling, answer supervision, automatic calling number identification, carrier access codes, directory services, testing and maintenance of facilities and the provision of information necessary to bill customers."⁵¹ The types of problems associated with the quality of interconnection might be related, among other things, to the clearness and volume of transmission, echo, high static, noise, postdial delay, failed call attempts characterized by fast busy tones, calls left "high and dry" because no connection is made after all digits have been correctly dialed, blocked calls caused by translation errors in the LEC's switches, or the LEC mistakenly routing a long-distance call to the wrong long-distance carrier.⁵²

LECs and long-distance carriers might also have conflicting interests as to the points in the LEC's network in which they physically interconnect. For example, the LEC might prefer that the long-distance carrier take its own infrastructure and wires to a point closest to the LEC's

48. See, e.g., *In re* Investigation of Access and Divestiture Related Tariffs, 101 F.C.C.2d 911, 928 (1985) (memorandum opinion and order).

49. See, e.g., *In re* Allnet Communication Servs., Inc. v. Cincinnati Bell Tel. Co., 11 F.C.C.R. 8519, 8524 (July 16, 1996) (memorandum opinion and order on reconsideration) (dismissing a long-distance carrier's claim that the defendant LECs' obligations to give callers access to their presubscribed long-distance carrier by dialing only a "1" included interstate calls within the LECs' calling area).

50. See, e.g., *United States v. W. Elec. Co.*, 569 F. Supp. 1057, 1107-08 (D.D.C. 1983) (holding that LECs' obligations include the obligation that interconnection with long-distance carriers will be of the same technical quality, and the obligation that they will use the same kinds of facilities regardless of whether the long-distance call is within or outside the LECs' calling area). See *In re* Inquiry into Policies to be Followed in the Authorization of Common Carrier Facilities to Provide Telecommunications Service off the Island of Puerto Rico, 8 F.C.C.R. 63 (Dec. 31, 1992) (memorandum opinion and order) (holding that the need to dial additional digits in order to access a long-distance carrier does not necessarily render the LEC's service to be of inferior quality, thereby justifying lower interconnection rates).

51. *AT&T*, 552 F. Supp. at 228.

52. See *In re* Investigation into the Quality of Equal Access Services, 1986 FCC LEXIS 3378, at *12-17, *65-66 (May 23, 1986) (memorandum opinion and order).

subscribers, while the long-distance carrier might prefer to interconnect with the LEC at a point further away from the LEC's subscribers.⁵³

Interestingly, the FCC has hesitated in the past to intervene in disputes between long-distance carriers and LECs regarding the quality of interconnection because, as the FCC put it:

[W]e expect that the LECs will continue to cooperate with all the IXCs to solve these problems because the LECs have several basic, self-interested incentives to provide high quality service. The greater the amount of traffic the LECs carry, the more they will receive from the IXCs in access charge revenues. . . . Given these incentives, the LECs are likely to respond quickly to complaints from the [IXCs] that they are receiving degraded service.⁵⁴

Indeed, once LECs are forced to interconnect with long-distance carriers without receiving any payment from long-distance carriers in return, we should expect problems related to the quality of interconnection to be exacerbated significantly. LECs may no longer have the above-mentioned incentives to voluntarily cooperate with long-distance carriers to resolve these problems. This is expected to result in regulatory costs. First, long-distance carriers' complaints to the FCC, FCC intervention, and complex litigation will become abundant. Litigation is complex in these instances because it is often difficult to define whether the problem stems from the long-distance carrier's own network or from the LEC's network. Second, the FCC will be compelled to further specify complex and comprehensive standards regarding the quality of interconnection, and it would have to monitor and enforce these standards on an ongoing basis. As the technology utilized by the interconnecting networks changes, these standards will have to be changed accordingly.

These costs would be avoided under the proposed market-based approach to long-distance interconnection. Under this approach, LECs would enter interconnection agreements with long-distance carriers voluntarily and for their own benefit. Accordingly, while the market forces described below⁵⁵ would keep interconnection rates at competitive levels, LECs would be induced to provide long-distance carriers with high-quality interconnection, with no need for regulatory intervention.

An additional cost of the FCC's proposed bill-and-keep approach to long-distance interconnection concerns the threat that such a regime would

53. *See id.* at *45.

54. *Id.* at *31.

55. *Infra* Part IV.C-D.

deter entry and expansion of new LECs, and efficient investment by incumbent LECs in their networks. As we will see, under the proposed market-based approach, LECs could recover from the long-distance carriers at least a portion of their marginal costs of providing long-distance carriers with interconnection. This revenue would be added to the revenue LECs could collect from their own subscribers on account of the fact that the LEC's subscribers also benefit from receiving and making long-distance calls. Under the FCC's proposed bill-and-keep approach to long-distance interconnection, on the other hand, LECs, including new LECs, would have to settle for collecting revenue from their own subscribers.⁵⁶

The more the LECs could capture the value that investments in their network generate, the more efficient LECs' investment decisions would be. The FCC's proposal, therefore, might deter efficient investment decisions because it allows LECs to recover less of the value generated by these investments. In particular, it might deter new LECs from investing in entry, establishing infrastructure, and expanding their networks' coverage. These investment incentives would be stronger under the proposed market-based approach. In the case of new LECs, such investment incentives are important for an additional reason: They raise the prospects of viable competition between incumbent LECs and new LECs, thereby enabling deregulation and competitive pricing for the LECs' consumers in the long run.

B. WHAT IS THE RATIONALE FOR REGULATING RATES LECs CHARGE FOR COMPLETING LONG-DISTANCE CALLS?

The well-cited rationale for regulating the rates LECs charge long-distance carriers for completing long-distance calls made to the LECs' subscribers⁵⁷ is that completion of such calls is an essential service that the caller and his or her long-distance carrier seek and which can be provided only by the recipient's LEC (assuming the recipient subscribes to only one LEC).⁵⁸ The FCC's premise is that this enables the LEC, absent rate regulation, to charge long-distance carriers excessive rates for completing the call.⁵⁹ Furthermore, it is alleged that even when the LEC faces competition in the local market, it still possesses a monopoly over the

56. See *In re* Developing a Unified Inter-carrier Compensation Regime, 16 F.C.C.R. 9610, 9615 (Apr. 27, 2001) (notice of proposed rulemaking).

57. The rates charged by LECs for long-distance calls made by the LECs' subscribers are treated in Part IV.D, *infra*.

58. See *In re* Developing a Unified Inter-carrier Compensation Regime, 16 F.C.C.R. at 9616-17.

59. See *id*.

completion of calls to its subscribers, again enabling excessive charges absent regulatory intervention.

C. COMPETITIVE PRESSURES ON LECs' RATES FOR COMPLETING LONG-DISTANCE CALLS

In sharp contrast to the FCC's current policy and its recently proposed bill-and-keep approach, both of which involve mandatory interconnection and strict regulation of the rates LECs charge long-distance carriers for completing long-distance calls, this Article proposes that interconnection between LECs and long-distance carriers should be deregulated. The justifications for this claim will be discussed in the following subsections.

1. Using Competing LECs to Transit Long-Distance Calls

Long-distance carriers should be permitted to route calls to subscribers of LEC A through interconnection with LEC B, which competes with LEC A. LEC B will transit the call to LEC A's subscribers through the local-interconnection arrangement between LECs A and B, as illustrated in Figure 1 below.⁶⁰ As will be discussed later on, this Article proposes that incumbent LECs still be obligated to interconnect with competitive LECs and vice versa, and it further proposes that they not be allowed to charge each other for completing each other's calls.⁶¹ A long-distance carrier's ability to route calls to LEC A's subscribers through LEC B will cause LEC A and LEC B to become competitors over completing calls to LEC A's subscribers. In particular, if LEC A attempts to charge the long-distance carrier supracompetitive rates for completing long-distance calls made to LEC A's subscribers, LEC B will be induced to offer the long-distance carrier a better deal to transit the calls to LEC A's subscribers.⁶² This will pressure LEC A to cut the rates it charges the long-distance carrier as well.⁶³

60. For examples of transit arrangements in other contexts, see *supra* note 11.

61. See *infra* Part V.

62. LECs should be forbidden from making a commitment to competing LECs that they will not transit such calls. In fact, it is unnecessary to draft such a special prohibition. A commitment not to transit such calls should be considered an antitrust offense. It is an overt commitment among competitors not to compete over completing long-distance calls, which should be seen, in this context, as a violation of the Sherman Act, 15 U.S.C. § 1 (1994) (prohibiting agreements that restrain trade).

63. As will be demonstrated in Part IV.C.3, *infra*, IP telephony is expected, in the foreseeable future, to become a viable alternative to regular telephony. IP-telephony providers should also be able to route IP-telephony calls made to LEC A's subscribers via LEC B. Under the proposed market-based approach, if an IP-telephony provider wishes to interconnect directly with LEC A, LEC A will be free to charge the IP-telephony provider for access to LEC A's subscribers. Currently, ISPs, as enhanced-service providers, enjoy a regulatory exemption from paying LECs for access to the LECs' subscribers.

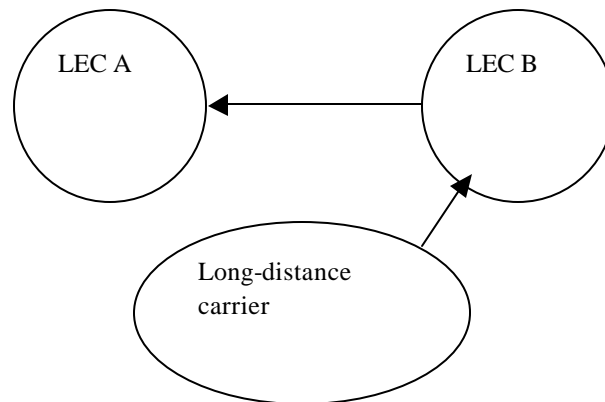


Figure 1. Transit of incoming calls

As will be demonstrated below, this market force proves to be extremely effective in constraining the rates LECs charge for completing long-distance calls, despite the fact that reaching LEC A through LEC B is, in a sense, less efficient than interconnecting directly with LEC A. Nevertheless, the long-distance carrier's credible threat to use such transit induces LEC A to interconnect directly with the long-distance carrier for rates equal to LEC B's marginal costs of transit. This can be demonstrated with a simple example. When the long-distance carrier interconnects directly with LEC A, LEC A incurs the marginal costs per minute of completing the long-distance calls to LEC A's subscribers. I will call this marginal cost per minute "completion."⁶⁴ When the long-distance carrier, instead, interconnects with LEC B, which transits to LEC A calls made to LEC A's subscribers, LEC B incurs the marginal cost per minute of transiting the calls to the point where LECs A and B interconnect. I will term this marginal cost per minute "transit." As mentioned above, I propose that LEC A not be allowed to charge LEC B for completing calls

See In re Developing a Unified Inter-carrier Compensation Regime, 16 F.C.C.R. at 9623; *In re* Amendments of Part 69 of the Commission's Rules Relating to Enhanced Service Providers, 3 F.C.C.R. 2631, 2633 (Apr. 27, 1988) (order); *In re* MTS & WATS Market Structure, 97 F.C.C.2d 682, 715 (1983) (memorandum opinion and order). Under the proposed market-based approach, this exemption would be cancelled. The same market force discussed in the text, however, would cause LEC A's charges to IP-telephony providers to be competitive. For simplicity of exposition, IP-telephony providers will be discussed below as ordinary long-distance carriers.

64. Completion includes the marginal costs the LEC incurs in transmitting the calls from the point of interconnection to the recipients.

coming from LEC B, regardless of the fact that they first originated from the long-distance carrier. Thus, LEC B incurs *only* these marginal costs of transit per minute. As to LEC A, it would have to incur the same marginal costs per minute of completing these transited calls (equal to “completion”), just as when the long-distance carrier interconnects with LEC A directly.

Suppose now that LEC A attempts to charge the long-distance carrier a supracompetitive price per minute of “completion” + “profit” for direct interconnection. LEC B, however, would be induced to offer the long-distance carrier a lower price for transiting these calls (say, “completion” + “profit” – 0.25 cents per minute), under which the long-distance carrier would prefer not to interconnect directly with LEC A. LEC B would be induced to offer this price-cut because it could make a profit on granting such transit, as long as it receives a price higher than its marginal costs in granting transit. LEC A, however, would then offer an even lower price since it would rather interconnect with the long-distance carrier directly and receive, say, “completion” + “profit” – 0.50 cents per minute, than receive nothing and still incur a cost of completion per minute to complete these same calls after they were transited by LEC B.⁶⁵ This sort of price-cutting will drive down the rate paid by the long-distance carrier for completion of its long-distance calls.

At which price will this price war stop? It turns out that it will stop at LEC B’s marginal cost of transit. To see why, suppose LEC A attempts to charge the long-distance carrier a price per minute of “transit” + “profit,” which is higher than LEC B’s marginal cost of transit. Such a price, too, is not sustainable. LEC B would be induced to offer a lower price, of, for example, “transit” + “profit” – 0.25 cents, and make a profit on such transit. Both LECs would continue price-cutting until the price equals transit. LEC B would not go below transit because then it would lose from offering transit services (it would incur costs of transit per minute and receive less). LEC A would be willing to receive a price of transit per minute and interconnect directly with the long-distance carrier because it knows that if it refuses to do so, LEC B would offer transit services to the long-distance carrier (for the price of transit per minute)⁶⁶ and LEC A would still have to

65. LEC A could perhaps recover some revenue from its own subscribers for completing calls made to them, but it could do so whether or not it interconnected directly with the long-distance carrier. Therefore, the ability to charge its own subscribers for incoming calls should not change LEC A’s decision as to whether to interconnect with the long-distance carrier and how much to charge it.

66. More precisely, LEC B would be willing to transit the long-distance carrier’s calls for a rate slightly above (but very close to) the marginal costs of transit in order to make positive profits.

bear costs of completion per minute (due to these transited calls), while it would receive nothing from the long-distance carrier (that is, LEC A would rather interconnect and receive transit while bearing the cost of completion per minute than just bear the cost of completion per minute).

Accordingly, due to the long-distance carrier's credible threat to use LEC B's transit services, LEC A is expected to interconnect directly with the long-distance carrier and complete its calls for the modest rate of transit per minute. Analogous reasoning implies that LEC B would directly interconnect with the long-distance carrier for a per-minute rate of no more than LEC A's marginal cost of transit to LEC B. If LEC B attempts to charge a higher rate, the long-distance carrier would rather purchase transit from LEC A, which would route the calls to LEC B for a rate per minute that would be driven as low as LEC A's marginal costs of transit. In such a case, LEC B would receive nothing from either LEC A or the long-distance carrier for these calls, while it would have to bear the costs of completing these transited calls to its subscribers.

This simple example also helps justify a rule that LECs A and B may not charge each other for completing each other's calls (regardless of the fact that they may be transited calls). Suppose we were to allow LECs to negotiate reciprocal charges that they can charge each other, as is the regime prevailing today,⁶⁷ and as would be possible even under the recent FCC proposal.⁶⁸ In such a case, LECs A and B might be induced to negotiate a high, above-cost reciprocal rate for completing each other's calls in order to jeopardize the competitive force of transit and earn more profits at the expense of long-distance carriers and their consumers. This is because a high reciprocal rate raises an LEC's costs of transiting long-distance calls to the other LEC. Each LEC would have to incur not only its costs of transit, but also the high reciprocal rate it has to pay the other LEC for completing the call.

To illustrate, let us define the rate per minute that LECs A and B negotiate for completing each other's calls as "reciprocal." LEC A, for example, could credibly charge the long-distance carrier that directly interconnects with it not only transit per minute (which is LEC B's marginal cost of routing calls made to LEC A up to the LECs' point of interconnection), but rather "transit" + "reciprocal" per minute (where

67. The regime was described in Part II, *supra*.

68. Recall that the FCC proposes to apply a zero rate for completing calls only as a default rule. *In re* Developing a Unified Inter-carrier Compensation Regime, 16 F.C.C.R. at 9623. Thus, under the FCC's proposal, LECs will be allowed to negotiate a positive-reciprocal rate that they will pay each other for completing each other's calls.

reciprocal is the negotiated rate LEC B must pay LEC A per minute). These are LEC B's total costs involved in such transit. LEC B not only has to route the transited calls to its point of interconnection with LEC A, but also pay LEC A reciprocal per minute for completing these calls. LEC B would not be able to offer the long-distance carrier a better deal than "transit" + "reciprocal" per minute for transiting calls made to LEC A's subscribers because any lower rate would make LEC B lose on such transit. Similar reasoning implies that LEC B, too, would be able to charge the long-distance carrier that directly interconnects with it a high rate per minute of reciprocal plus LEC A's marginal cost of transit. The higher LECs A and B negotiate reciprocal to be, the more they can credibly charge from the long-distance carrier, notwithstanding the competitive force of transit. If LECs A and B were to pay each other a zero reciprocal rate for completing each other's calls, then the problem would be solved. As shown above, they would be able to charge the long-distance carrier no more than their competitor's marginal costs of transit.⁶⁹

The question of whether the rate of transit per minute covers all of an LEC's marginal costs of completing long-distance calls depends on whether these costs (that we labeled "completion") are greater or smaller than transit. Normally, the marginal costs of transit will be slightly smaller than the marginal costs of completing long-distance calls. Transit involves routing all calls together through wires that connect the LECs. Call completion, on the other hand, involves a similar action of routing incoming calls together through wires that connect between the point of interconnection and the appropriate switch located in the LEC's network. In addition, call completion involves using this switch to route each call to its final recipient. Accordingly, the market force explored here is so strong that it induces LECs to settle for a rate slightly smaller than their marginal costs.⁷⁰ An LEC is willing to receive a rate smaller than its marginal costs from the long-distance carrier because, if it refuses, it would have to incur the same marginal costs to complete the transited calls without receiving even this modest rate. This would induce the LEC to become more efficient in order to bring its marginal costs of completing calls closer to the marginal cost of transit.

69. It may seem possible that the fear of such a high reciprocal rate might be alleviated when LECs compete with each other with regard to fixed fees they charge, but this proves to be the case only under restrictive assumptions, discussed in Part V.B.3, *infra*.

70. To be sure, once an LEC's infrastructure is in place, its marginal costs of completing calls are extremely small. Accordingly, the difference between these marginal costs and the marginal costs of transit are slight.

Additionally, the LEC can charge its own subscribers (who also benefit from receiving long-distance calls) for these calls, so that it could break even or even make a modest profit on completion of long-distance calls. If viable competition exists among LECs, we need not fear that these charges will be excessive because excessive charges would push subscribers to the competing LEC. On the other hand, due to the costs to consumers of switching LECs, and the fact that LECs' services are not identical in the eyes of consumers, LECs could make a modest profit on the rates they charge their own subscribers.

Note that rates for completing long-distance calls will be pushed down to the marginal cost of transit regardless of LECs' corresponding market shares. In particular, LEC B, in the above-mentioned example, could be a new LEC with a very small market share, and LEC A could be a dominant incumbent LEC. As long as LEC B has infrastructure capable of transiting long-distance calls made to LEC A's subscribers (namely, wires connected to LEC A that can carry enough telecom traffic), LEC A will directly interconnect with the long-distance carrier and charge it no more than LEC B's marginal costs of such transit. Hence, even in local markets where the incumbent LEC still enjoys dominance, we need not wait until the new LEC grows to possess a market share similar to the incumbent's in order to deregulate LECs' interconnection with long-distance carriers.

What if one of the LECs (for example, LEC A) is integrated with a long-distance carrier and would like to charge a competing long-distance carrier excessive rates for completing its calls in order to grant its long-distance affiliate a competitive advantage? This fear, too, would be alleviated, with no need for regulatory intervention, due to the long-distance carrier's ability to transit calls made to LEC A via LEC B. As in the previous example, LEC A would be forced to charge the long-distance carrier no more than LEC B's marginal costs of transit (a rate equal to what is termed "transit" above). If LEC A attempts to charge a price above transit ("transit" + "profit"), LEC B would transit the long-distance calls to LEC A for a lower price (say, "transit" + "profit" - 0.10 cents). How would LEC A respond? Economists Janusz Ordover, Steven Salop, and Garth Saloner analyzed a similar question.⁷¹ If we apply their model to the situation before us, LEC A would not want to undercut LEC B because having to pay LEC B "transit" + "profit" - 0.10 cents, rather than only

71. See Janusz A. Ordover, Garth Saloner & Steven C. Salop, *Equilibrium Vertical Foreclosure*, 80 AM. ECON. REV. 127, 127-31 (1990).

transit, *raises the costs* of the long-distance carrier in a way that grants LEC A's affiliated long-distance carrier a competitive advantage.⁷²

Ordover, Salop, and Saloner's conjecture that LEC A is able to commit credibly not to undercut LEC B was sharply criticized in later literature, however. Oliver Hart and Jean Tirole, as well as David Reiffen, stress that such a commitment on the part of LEC A usually is not credible.⁷³ In particular, LEC A would be induced to offer the long-distance carrier a small discount, say, a rate of "transit" + "profit" - 0.15 cents. This would raise LEC A's revenue and sacrifice LEC A's affiliated long-distance carrier only slightly, as the competing long-distance carrier's costs are still raised by "profit" - 0.15 cents; but price-cutting would not stop at that. LEC B would offer to transit the calls to LEC A for "transit" + "profit" - 0.20 cents. LEC A would be tempted to grant a small discount, say, of another 0.5 cents, gain all the business of completing the unaffiliated long-distance carrier's calls, and sacrifice its strategy of raising the unaffiliated long-distance carrier's costs by only another 0.5 cents. This would go on, as Reiffen shows, until LEC A charges the unaffiliated long-distance carrier the same rate it would have charged but for LEC A's affiliation with a competing long-distance carrier.⁷⁴

Of course, the literature that claims that LEC A would be able to harm unaffiliated long-distance carriers and the literature that claims otherwise are limited to the assumptions underlying the particular economic models used. The point made here is that the theory that LEC A would be able to harm the unaffiliated long-distance carrier is subject to serious criticism. Moreover, harm to nonintegrated competitors by integrated competitors in markets with only a few firms is a concern properly dealt with by antitrust law and principles.⁷⁵ It does not warrant rate regulation of LECs' interconnection arrangements with long-distance carriers.

72. See *id.* at 131-39.

73. See Oliver Hart & Jean Tirole, *Vertical Integration and Market Foreclosure*, 1990 BROOKINGS PAPERS ON ECON. ACTIVITY: MICROECONOMICS 205, 205; David Reiffen, *Equilibrium Vertical Foreclosure: Comment*, 82 AM. ECON. REV. 694, 694 (1992).

74. See Reiffen, *supra* note 73, at 694.

75. See, e.g., Michael H. Riordan & Steven C. Salop, *Evaluating Vertical Mergers: A Post-Chicago Approach*, 63 ANTITRUST L.J. 513 (1995); Daniel L. Rubinfeld & Hal J. Singer, *Open Access to Broadband Networks: A Case Study of the AOL/Time Warner Merger*, 16 BERKELEY TECH. L.J. 631 (2001) (discussing anticompetitive threats of a vertically integrated AOL-Time Warner). The main antitrust bulwark against harm to unintegrated rivals is vertical-merger policy. If an LEC and a long-distance carrier seek to merge, antitrust authorities or the FCC should take into account incentives to harm unaffiliated rivals when assessing the merger. Mergers are often upheld subject to consent decrees in which the integrated firm commits not to discriminate against unaffiliated competitors. See, e.g., *United States v. Tele-Communications, Inc.*, No. 94-0948, 1994 U.S. Dist. LEXIS 20983 (D.D.C.

Taking account of the fixed costs⁷⁶ an LEC and a long-distance carrier incur to physically interconnect their networks introduces another implication. If these fixed costs are large enough, and the long-distance carrier did not yet directly interconnect with the LECs, a long-distance carrier might prefer directly interconnecting with only one of the LECs (for example, the LEC with which physical interconnection is the least costly) and using it to transit long-distance calls made to the other LEC, so as not to duplicate these fixed costs by interconnecting with both LECs. This LEC might be able to charge the long-distance carrier on account of these savings. Normally, such a charge is expected to take the form of a fixed payment (that does not change as a function of the number or length of long-distance calls), as the costs saved are also fixed. A profit-maximizing long-distance carrier, therefore, will not pass this fixed charge on to consumers. Furthermore, LECs are expected to compete over who will be the one interconnecting with the long-distance carrier. As such, they are also expected to undercut each other with respect to what they collect from the long-distance carrier on account of the costs of physical interconnection.

The simple market force stemming from long-distance carriers' ability to transit calls made to one LEC via the competing LEC has never been given a chance in practice. Long-distance carriers have always been obligated to interconnect with LECs under the LECs' regulated rates.⁷⁷ Mandatory interconnection under regulated rates, for the most part,⁷⁸ continues today, and will continue under the FCC's proposed bill-and-keep

Aug. 19, 1994); *In re* Time Warner, Inc., 123 F.T.C. 171 (1997); *In re* Silicon Graphics, Inc., No. 951-0064, 1995 F.T.C. LEXIS 159 (June 13, 1995). Expansion of an LEC into the long-distance market, or vice versa, could be similarly scrutinized by the FCC. It would probably be undesirable to approve the vertical integration of two competing LECs with long-distance carriers. In such a case, both might have incentives to refuse interconnection with a third long-distance carrier, despite the fact that this would make them less attractive to their own consumers.

76. Fixed costs are costs that do not change as a function of the number or length of long-distance calls.

77. See *In re* Access Charge Reform; Reform of Access Charges Imposed by Competitive Local Exchange Carriers, 16 F.C.C.R. 9923, 9925 (Apr. 27, 2001) (report and order and further notice of proposed rulemaking).

78. As noted above, the FCC recently relieved long-distance carriers from interconnecting with new LECs charging rates above a certain threshold. *Id.* This is indeed a small step toward a market-based approach. It is far from the comprehensive market-based approach advocated here, however, because it continues mandatory interconnection when rates are at or below the benchmark prescribed by the FCC. Thus, it continues the tradition of rate regulation (the requirement that the regulator determine the appropriate benchmark), as well as the regulatory mandate for interconnection when the benchmark rates apply. Furthermore, as noted, the FCC invites new LECs that claim their costs are above the benchmark to present a cost-study demonstrating this. *Id.* at 9951. Costly regulation will therefore remain intact.

regime. Furthermore, as noted, interconnection among competing LECs is governed today not by a mandatory zero-rate regime, as assumed above, but mainly by the reciprocal-compensation regime, where LECs negotiate a reciprocal rate per minute that they pay each other for completing each other's calls. As shown above, LECs might negotiate an excessive reciprocal rate in a way that jeopardizes the power of transit to push down the rates for completing long-distance calls. Accordingly, even if long-distance carriers had been free to refuse direct interconnection with one LEC and prefer transit via the competing LEC, the ability to use such transit would not have restrained these rates effectively.

2. Calling the Recipient's Cellular Phone as a Competitive Option

Another market force that is expected to bring down the rates LECs charge long-distance carriers for completing long-distance calls made to the LECs' subscribers is the ability to call the recipient's cellular phone. Cellular telephony in the U.S. is developing to a degree of penetration and quality that can compete with LECs on completing long-distance calls.⁷⁹ If the long-distance carrier were to pass the LECs' charges for completing the call on to the long-distance caller,⁸⁰ and these charges are supracompetitive, the caller would be induced to call the recipient's cellular phone.⁸¹ Competition over completion of these calls is expected to develop between the recipients' cellular providers and their LECs.

To be sure, cellular providers might charge higher rates than LECs due to their inherent advantage of making their subscribers accessible while on the road. In fact, when the recipient is on the road, the cellular provider does not face competition from the recipient's LEC in completing the call. If cellular providers do not distinguish between charges for completing calls when the recipient is on the road and when the recipient is near a wireline phone (e.g., at home or at the office), cellular rates for completing calls are expected to be higher than LEC rates, making cellular completion of calls an unattractive substitute for wireline completion of calls. Under current cellular technologies, however, cellular providers will be able to distinguish between calls the recipient receives on the road and calls he or she receives at certain destinations where wireline phones known to the

79. *Supra* note 18.

80. As will be shown in Part IV.C.4, *infra*, long-distance carriers may pass on such charges to the caller, notwithstanding their obligation to equalize their rates under the 1996 Act.

81. Part IV.C.5, *infra*, demonstrates how the market is expected to induce LECs and cellular providers to provide callers with sufficient information regarding their rates for completing long-distance calls.

caller are typically available.⁸² Given this technological capability, cellular providers will have an incentive to charge less for completion of calls when the recipient is at home or at the office than when he or she is on the road. This is because, if cellular rates for completion of calls are to be uniform and excessive, and the long-distance caller is to bear them, his or her preference may well be to call the recipient first at home or at the office, and the cellular provider would lose revenue to the LEC. On the other hand, if the cellular provider charges competitive rates for completing calls that find the recipient at home or at the office, it can snatch business from the LEC.⁸³ Where competition for completing calls is not available, it would continue to enjoy premiums on calls the recipient receives on the road.⁸⁴

One might be concerned with the fact that many cellular providers charge their subscribers for calls they receive. It could be alleged that this induces cellular subscribers to switch off their phones or withhold their cellular numbers, thus making cellular completion of calls a poor

82. See Hiawatha Bray, *Something to Watch over You: Your Cellphone Is a Homing Beacon and Soon It Will Be Tracking Your Every Move*, BOSTON GLOBE, Jan. 22, 2001, at C1 ("Cellphone companies will soon deploy new systems that will identify a caller's location to within a few hundred feet."); Susan Glairon, *Boulder, Colo.-Based Maker of Software for Wireless Networks Plans Expansion*, DAILY CAMERA, Oct. 12, 2000 (reporting that cellular providers offer lower rates for cellular calls from home than from the road). As Drew Esson explained in *Location, Location, Location*, WIRELESS REV., Aug. 31, 1999:

Location-sensitive rate plans base tariffs on individual subscriber locations. When the subscriber is in or near his home, for example, you adjust his rates to compete with landline rates. When in a car, at the airport or at a shopping mall, he pays higher rates that reflect the added benefits of mobility. This strategy allows you to offer subscribers preferential rates when users are in a limited number of geographic locations.

83. Currently, cellular providers do not seem to distinguish between call *completion* rates charged when the recipient is near a wireline phone and those charged when he or she is on the road. In contrast, cellular providers often distinguish between rates cellular subscribers pay for calls they *make* when they are near a wireline phone and when they are on the road. The reason seems to be that, currently, charges paid by long-distance carriers to cellular providers are seldom passed on to the long-distance caller. As Part IV.C.4 illustrates, however, such passing on of charges should be enabled. It is consistent with the 1996 Act's mandate that long-distance carriers equalize their subscribers' rates. Furthermore, the FCC has recently issued a statement facilitating such passing on of cellular charges to the caller. See *In re Calling Party Pays Service Offering in the Commercial Mobile Radio Services*, 14 F.C.C.R. 10,861 (July 7, 1999) (declaratory ruling and notice of proposed rulemaking).

84. When the recipient is on the road, the recipient's cellular provider probably holds a monopoly over completion of calls to the recipient. As the FCC has refrained from intervening in rates charged by cellular providers for completion of long-distance calls to date, however, the FCC may well continue exercising such forbearance. Moreover, in the long run, it might be good policy to enable cellular providers to collect premiums for such calls in order to further stimulate cellular penetration and make cellular a more viable competitor to wireline. See Julian Wright, *Access Pricing Under Competition: An Application to Cellular Networks*, 50 J. INDUS. ECON. 289 (2002).

alternative to LEC completion of calls.⁸⁵ As noted, however, the FCC recently issued a ruling facilitating a change in cellular providers' practice of charging cellular recipients for calls they receive.⁸⁶ According to the FCC's ruling, cellular providers will be able to charge callers, and not recipients, for completion of calls to the recipients' cellular phones. When cellular penetration and quality reaches a state where cellular completion of calls is a viable substitute for LEC completion, we should expect cellular providers to prefer not to charge cellular recipients for calls they receive. This will induce cellular subscribers to switch on their cellular phones and disclose their cellular numbers. In turn, it will enable cellular providers to snatch revenue from the LECs.

3. Calling the Recipient's Broadband-Internet Telephone Connection as a Competitive Option

Another technology that will probably compete with the LEC and cellular provider for access to recipients is IP telephony via broadband Internet. In the foreseeable future, two notable factors are expected to make IP telephony a viable competitor for telephone access to the recipient. First, the quality of an IP-telephony call will improve so as to be a viable substitute for a wireline call.⁸⁷ Second, IP telephony will often be

85. See *In re* Developing a Unified Intercarrier Compensation Regime, 16 F.C.C.R. 9610, 9616–17 (Apr. 27, 2001) (notice of proposed rulemaking).

86. *In re* Calling Party Pays Service Offering in the Commercial Mobile Radio Services, 14 F.C.C.R. at 10,861.

87. See Jim Barthold, *Slo-Mo Packets*, TELEPHONY, Mar. 26, 2001 (stating that, "in the long run, according to industry watchers, packetization is the most economical way to deliver voice, data and, eventually, streaming video services"); Hassan Fattah, *IP Telephony Finds Its Voice*, RED HERRING, Dec. 7, 2000 (reporting that, according to Yankee Group estimates, IP-telephony services reached 1.8 billion minutes of talk in 1999 alone—a figure that is expected to double annually through 2005—and that, according to Gartner Group estimates, IP-telephony infrastructure is expected to reach \$19 billion in 2003); *Voice over IP Fuels Future for Interphase*, 3 CTI NEWS 8 (1999) (citing industry analysts who forecast that 18% of enterprise-voice traffic will travel via IP-based networks by the year 2002, and 43% of all international phone calls will travel over IP networks by 2003, and that voice-over IP quality is quickly becoming comparable to regular telephony under emerging technologies). See also Bryan Betts, *Cutting Costs the Web Phone Way*, COMPUTING, Oct. 5, 2000, at 51 (stating that individuals notice virtually no difference between calls made using the regular phone infrastructure and those made using the Internet); *InfoAccel Brings the Ease of Use and Voice Quality of Ordinary Telephones to Internet Telephony*, PR NEWSWIRE, Nov. 8, 1999 (detailing the ways in which InfoAccel improves the quality of Internet telephony). In addition to becoming equal in quality to regular telephony, IP telephony will possess certain inherent advantages. These advantages include the ability to combine data with voice; the ability to control and add telephony and data services remotely through console commands; multiple voice lines at low cost; click-to-talk features; improved video-conferencing features; and lower costs of switching among service providers. See John Gleiter, *Profiting from the VoIP Broadband Home*, 26 BUS. & INDUSTRY 114 (2000); Williamson, *supra* note 20.

delivered via broadband Internet, due to its enhanced features, which will improve quality.⁸⁸ Potentially, firms other than LECs, such as the recipient's cable operator or an Internet backbone, will provide end users with broadband-Internet infrastructure.⁸⁹ Accordingly, if the LEC attempts to charge supracompetitive rates for completing long-distance calls, and these charges are passed on to the caller,⁹⁰ the caller would be induced to access the recipient via broadband IP telephony.

Even if LECs' charges for completing long-distance calls are not passed on to the caller because, for example, of the current FCC requirement that long-distance carriers average their rates,⁹¹ long-distance carriers themselves will be able to access recipients via broadband IP telephony if LECs attempt to impose supracompetitive charges.⁹²

88. See Kate Gerwig, *Voice Rises Up*, TELE.COM, Nov. 27, 2000, at <http://www.teledotcom.com/article/TEL20001127S0022>.

With VoIP and home networking technology, cable operators can offer their customers not only additional telephone lines, but a fully integrated package of broadband services that far outstrip telephony options available with traditional circuit-switched solutions. . . . [Eventually] the VoIP equipment will perform end-to-end IP transport, where the voice packets are carried through to their destination as packets and are never converted to the public phone network.

Id. See also Gleiter, *supra* note 87, at 114–18 (discussing the inherent advantages of VoIP); Williamson, *supra* note 20 (same). The FCC reported that high-speed lines connecting homes and businesses to the Internet increased by 63% during the second half of 2000 to a total of 7.1 million (a yearly rate of growth of 158%). Of the total 7.1 million high-speed lines, 5.2 million were residential and small-business subscribers. About 4.3 million of the 7.1 million high-speed lines provided 200 kbit/s in both directions, meeting the FCC's definition of advanced services. Those advanced services grew at a rate of 118% in 2000. Press Release, Federal Communications Commission Releases Data on High-Speed Services for Internet Access, FCC NEWS (Aug. 9, 2001) (on file with author). The FCC study further said that, at the end of 2000, high-speed services were being offered in all fifty states and the District of Columbia, Puerto Rico, and the Virgin Islands, with subscribers reported in 75% of the nation's ZIP codes, compared to 56% at the end of 1999. *Id.* Broadband-Internet penetration is expected to continue escalating in the future. See Grant Buckler, *Studies Forecast Quadrupling of Broadband by 2005*, NEWSBYTES, June 13, 2001 ("The number of subscribers to broadband Internet access services will top 21 million this year and roughly quadruple to about 84 million by the end of 2005 . . . [with] even faster growth in broadband services to multi-tenant buildings.").

89. See Betts, *supra* note 87 (predicting that users will typically stick to their traditional phone lines while using IP telephony); Steve Strauss, *The Line on Home Networking: Phone-Line Technology Offers Mature Path to New Applications*, ELECTRONIC BUYERS NEWS, June 18, 2001, at 32 ("Clearly, the home of the future isn't going to depend on a single network technology. Instead, homes will contain hybrids of interconnected networks. . . . As a result, other non-phone-line technologies will also find their way into the home.").

90. See *infra* Part IV.C.4 (illustrating that, even if long-distance carriers' rates are equalized according to the 1996 Act, long-distance carriers may pass on to the caller what they pay the recipient's network).

91. See *infra* Part IV.C.4.

92. In fact, several long-distance carriers are currently purchasing considerable stakes in IP-telephony providers or building IP-telephony infrastructure. See Fattah, *supra* note 87 (reporting that Cable & Wireless and Global Crossing are building IP-telephony infrastructure, and that AT&T purchased a 39% chunk of IP-telephony provider, Net2Phone, in August 1999 for \$1.4 billion).

Thus, competition among three providers of access to the recipient—the recipient's LEC, the recipient's cellular provider, and the recipient's broadband IP-telephony provider—are expected to drive down charges for completing calls to the recipient to competitive levels. Even if broadband IP telephony reaches a degree of development so as to replace some subscribers' connection to regular phones, or if broadband IP telephony is provided by the LEC itself, competition between the broadband-Internet provider and the cellular provider over completion of calls to the recipient will remain. Recipients are expected to continue possessing cellular phones for mobility, while continuing to possess broadband-Internet connection for speed.⁹³

Of course, the market forces inherent in IP telephony via broadband Internet and cellular technology are not yet strong; the growth of these technologies is still expressed in terms of future probabilities rather than certainties. Accordingly, unlike the market force of competitive transit discussed in Part IV.C.1 above, these technologies alone would not justify an immediate implementation of a market-based approach. They do, however, strengthen the case for a market-based approach. They also strengthen the claim that the FCC's proposed permanent move to stricter rate regulation of LECs' charges for completing long-distance calls (namely, regulating these charges down to zero) is unwarranted.

4. A Case for De-Averaging Rates

Under current FCC rules that implement section 254(g) of the 1996 Act, long-distance carriers must average their rates. Section 254(g) of the 1996 Act, titled Interexchange and Interstate Services, reads:

Within 6 months after February 8, 1996 [the date of enactment of the Telecommunications Act of 1996], the Commission shall adopt rules to require that the rates charged by providers of interexchange telecommunications services to subscribers in rural and high cost areas shall be no higher than the rates charged by each such provider to its subscribers in urban areas. Such rules shall also require that a provider of interstate interexchange telecommunications services shall provide such services to its subscribers in each State at rates no higher than the rates charged to its subscribers in any other State.⁹⁴

93. See, e.g., David Crowe, *Air Apparent?*, WIRELESS REV., Feb. 1, 2000. Cellular technology is not expected, in the foreseeable future, to provide a viable alternative to broadband Internet with noncellular technologies. See *Be Cautious About Wireless Web Growth—Jupiter*, NEWSBYTES, Mar. 6, 2001 (citing forecasts which state that broadband Internet, via cellular technology, is not expected to emerge in the foreseeable future).

94. 47 U.S.C. § 254(g) (2000).

The FCC implemented section 254(g) by maintaining its policy prior to the 1996 Act of requiring long-distance carriers to geographically average their rates.⁹⁵ One of the consequences of the FCC's rate averaging was that charges long-distance carriers paid LECs for completing long-distance calls were spread out among all the long-distance carriers' subscribers, rather than passed on to the particular long-distance caller causing the charges.⁹⁶

The FCC's historic rationale for rate averaging was the following: Geographic rate averaging redounds to the benefit of rural ratepayers, and customers of high cost local exchange carriers. First, geographic rate averaging ensures that interexchange rates for rural areas, or areas served by high cost companies, will not reflect the disproportionate burdens that may be associated with common line recovery costs in these areas. Thus, geographic rate averaging furthers our goal of providing a universal nationwide telecommunications network. Second, geographic rate averaging ensures that ratepayers share in the benefits of nationwide interexchange competition. If prices are falling due to competition in the corridors carrying the most traffic, prices will also fall for rural Americans.⁹⁷

However, nothing in the language and intent of section 254(g), or, for that matter, the FCC's purpose, requires averaging of rates.⁹⁸ As will be

95. Policy and Rules Concerning the Interstate, Interexchange Market; Implementation of Section 254(g) of the Communications Act of 1934 as Amended, 11 F.C.C.R. 9564, 9567 (Aug. 7, 1996) (report and order).

96. See, e.g., *In re* Developing a Unified Intercarrier Compensation Regime, 16 F.C.C.R. 9610, 9625, 9654 (Apr. 27, 2001) (notice of proposed rulemaking).

97. Policy and Rules Concerning the Interstate, Interexchange Market; Implementation of Section 254(g) of the Communications Act of 1934 as Amended, 11 F.C.C.R. at 9567 (footnote omitted) (quoting *In re* Policy and Rules Concerning Rates for Dominant Carriers, 4 F.C.C.R. 2873, 3132 (Apr. 17, 1989) (report and order and further notice of proposed rulemaking)).

98. The FCC explains that the legislative intent behind section 254(g) was to preserve the FCC's averaging policies: "The legislative history of this section indicates that Congress intended for us to codify our pre-existing policies of rate averaging and rate integration, and to apply these policies to all carriers." *Id.* at 9566. The FCC further asserts that the legislative history states that

[n]ew section 254(g) is intended to incorporate the policies of geographic rate averaging and rate integration of interexchange services in order to ensure that subscribers in rural and high cost areas throughout the Nation are able to continue to receive both intrastate and interstate interexchange services at rates no higher than those paid by urban subscribers.

Id. (alteration in original) (footnote omitted) (citing S. REP. NO. 104-23, at 30 (1995)). However, even if the representatives of the legislature cited by the FCC assumed that the legislative intent of having rural subscribers pay no more than urban subscribers would be implemented by continuing the FCC's preexisting measures, this is not evidence of legislative intent sufficient to require the averaging of rates. The legislative intent expressed in these citations (as opposed to representatives' ideas of how this intent would be implemented) is no different from section 254(g)'s language: *equalization* of rates paid by rural and urban long-distance subscribers, and not necessarily *averaging* of rates, as will be explained below.

illustrated below, the section can be applied in a manner that enables long-distance carriers to pass charges for completing calls on to the long-distance caller causing them. There are at least two good reasons long-distance carriers should be able to pass on these charges to the long-distance caller. First, the party causing the costs of completing the call is the long-distance caller asking to complete that call. Under the FCC's rate averaging, the caller does not bear these costs. Other long-distance subscribers, who did not make this call, subsidize the caller. This will induce long-distance callers to make more calls than is efficient.

Additionally, making the caller bear the costs of completing the call enables other forms of call completion available to the caller (such as the recipient's cellular phone or broadband IP telephony) to place competitive pressures on the charges for completing the call.⁹⁹ Under the FCC's rate-averaging policies, even if an LEC charges supracompetitive rates for completing calls, and even when cellular and broadband-Internet access become potentially viable competitors for such call completion, such competition will not function properly. In order for such competition to function properly, the long-distance caller must bear the charges for completing his or her call so that the caller can switch to a competing access provider if an access provider charges supracompetitive rates. Under the FCC's rate averaging, the caller will not enjoy the benefit of using the competing access devices.¹⁰⁰

How, then, can section 254(g) be applied so as to enable long-distance carriers to pass charges for completion of calls on to the caller that caused them? Suppose LEC A's charges for completing long-distance calls are half a cent greater than LEC B's charges. There is nothing in the language or intent of section 254(g) to prevent the long-distance carrier from passing on this cost difference to all its subscribers alike, regardless of whether they are urban or rural, and regardless of the state in which they reside. For example, the long-distance carrier could charge an urban customer a cent and a half per minute to call a recipient at LEC A and 0.1 cent to call a recipient at LEC B. The very same rates would apply to the long-distance

99. See *supra* Part IV.C.2-3.

100. In any case, the market force inherent in the long-distance carrier's ability to use one LEC to transit calls to the other LEC, *supra* Part IV.C.1, remains intact despite averaging of long-distance rates. This market force operates effectively even if long-distance carriers do not pass charges for completion of calls on to the caller. It hinges on the long-distance carrier bearing these charges. Furthermore, the long-distance carrier itself can choose to complete calls via the recipients' cellular providers or broadband IP-telephony providers. This, too, does not necessitate de-averaging of rates.

carrier's rural customers, or to customers in another state, and section 254(g)'s language and intent would be fulfilled.¹⁰¹

5. Callers' Information Regarding Rates for Completing Calls

Assuming charges for completing long-distance calls are passed on by the long-distance carrier to the caller, the market forces involved in cellular or broadband IP-telephony access to recipients are particularly significant if the long-distance caller is aware of the rates the recipient's carrier charges for completion of the call. Such awareness enables the caller to compare these rates and choose the access provider accordingly. The same market forces causing competition over access to the recipient are expected to produce mechanisms that make callers aware of these rates. If the recipient's cellular provider wishes to steal business away from the LEC, it will make long-distance callers to the recipient's cellular phone aware of its competitive rates.¹⁰² The LEC is expected to fight back and make callers aware of its rates for completing these calls, as is the broadband IP-telephony provider.

Moreover, competition among providers of access to recipients over long-distance callers' business is potentially even stronger than competition among local LECs over local subscribers. Competition among local LECs is limited by subscribers' often significant costs of switching networks.¹⁰³ On the other hand, the switching costs borne by a long-distance caller who wishes to choose an alternative-access path to the recipient are miniscule; all the caller has to do is dial a different digit sequence in order to call via the LEC, cellular, or broadband-Internet provider at any given time. Furthermore, such choices require no long-term or short-term commitments

101. In fact, the FCC itself asserts that different rate structures may satisfy its rule. Policy and Rules Concerning the Interstate, Interexchange Market; Implementation of Section 254(g) of the Communications Act of 1934 as Amended, 11 F.C.C.R. at 9570. For instance, the FCC believes that "carriers that offer their customers rates based on reasonable differences in duration, time of day, and mileage bands will satisfy their obligations under Section 254(g) to provide geographically averaged rates between subscribers in rural and high-cost areas and subscribers in urban areas." *Id.* The FCC continues to say that it "do[es] not believe that [its] current policy of allowing carriers to offer contract tariffs and Tariff 12 options conflicts with geographic averaging because we require that these offerings be available to similarly situated customers throughout the carrier's service area." *Id.* at 9575.

102. Under current technologies, the cellular provider can do so by using a short announcement of rates when the caller calls the recipient via these networks. See, e.g., *In re Calling Party Pays Service Offering in the Commercial Mobile Radio Services*, 14 F.C.C.R. 10,861, 10,865 (July 7, 1999) (declaratory ruling and notice of proposed rulemaking) (discussing the mechanisms that can be used to inform the caller of the cellular provider's rates for completing calls to cellular subscribers).

103. Naturally, local networks wish to raise these costs in order to increase consumer loyalty and their captive markets. They can do so, for example, by offering subscribers attractive deals or bonuses in exchange for long-term commitments.

toward carriers. The caller can decide on the spot which route grants him or her the best value.

Finally, even assuming charges for completing long-distance calls are not passed on to long-distance callers or that callers are unaware of these charges and do not effectively compare them, long-distance carriers themselves will have appropriate incentives to compare these charges. Under a market-based approach (and because, in the foreseeable future, cellular or IP telephony will provide reasonable substitutes to wireline technology), a long-distance carrier dissatisfied with an LEC's high rates might choose to complete long-distance calls via the recipients' cellular or broadband IP-telephony providers. The LEC, the cellular provider, and the broadband IP-telephony provider will compete not only over long-distance callers, but also over long-distance carriers.

D. COMPETITIVE PRESSURES ON LECs' RATES FOR ENABLING LONG-DISTANCE CALLS MADE BY THEIR SUBSCRIBERS

As noted earlier, the rates LECs charge long-distance carriers for enabling long-distance calls made by the LECs' subscribers are also subject to rate regulation.¹⁰⁴ Under the FCC's bill-and-keep proposal, these charges, like LECs' charges for completing long-distance calls made to the LECs' subscribers, will be regulated down to zero; that is, LECs will not be permitted to charge long-distance carriers for enabling the long-distance calls. Instead, LECs will be expected to collect these charges from their own subscribers. Again, the FCC's bill-and-keep proposal is a move toward more strict rate regulation (lowering the regulated cap down to zero) coupled with mandatory interconnection. In contrast, this Article proposes to apply a market-based approach here as well. Under the proposed market-based approach, the rates LECs charge long-distance carriers for enabling long-distance calls made by the LECs' subscribers will be subject to downward pressures produced by market forces, as demonstrated below.

1. Allowing Long-Distance Carriers to Pass the Charges on to Callers

Section 254(g) of the 1996 Act, which was discussed earlier,¹⁰⁵ stands in the way of simple competitive forces that could have restrained LECs' charges for enabling outgoing long-distance calls. Let us imagine an LEC in one state (e.g., California) that charges a long-distance carrier 0.1 cent

104. *Supra* Part II.

105. *See supra* Part IV.C.4.

per minute for enabling long-distance calls made by the LEC's subscribers, and an LEC in another state (e.g., Massachusetts) that charges the long-distance carrier half a cent per minute. The long-distance carrier should have been able to pass these charges on to its consumers. Had this been the case, local competition among LECs in California and among LECs in Massachusetts would have prevented supracompetitive charges for enabling outgoing long-distance calls because customers bearing these costs would have transferred to the LEC that charged less. Section 254(g), however, requires the long-distance carrier to charge similar rates to subscribers of the LEC from California and the LEC from Massachusetts; that is, even if the LEC from California charges the long-distance carrier excessive rates for enabling long-distance calls made by the LEC's subscribers, the LEC's subscribers will receive incorrect pricing signals because the long-distance carrier will be barred from passing on these excessive charges to the caller.

Therefore, in order to strengthen market forces that could cause these rates to be competitive under a market-based approach, section 254(g)'s requirement of rate equalization should be amended to allow long-distance carriers to pass these particular charges on to callers. If subscribers in particular rural and high-cost areas need to be protected from rates that exceed a certain threshold, then explicit transfer payments, funded by explicit universal-service funds, could be granted to those subscribers.¹⁰⁶

2. Competitive Transit of Outgoing Long-Distance Calls

Even if the above-mentioned proposal to amend section 254(g) is not adopted, there is an alternative extremely effective market force that would place downward pressure on the rates LECs charge long-distance carriers for enabling long-distance calls made by the LECs' subscribers. A long-distance carrier should be able to interconnect with LEC B to enable long-distance calls made by LEC A's subscribers, who will call the long-distance carrier at a location in LEC B's network, as illustrated in Figure 2 below. Such a call would be subject to the local mandatory interconnection regime.¹⁰⁷ Thus, if LEC A attempts to charge the long-distance carrier

106. Moreover, it has been shown recently that the cost of telecom services in rural or so-called high-cost areas is not in fact that high. Maria E. Maher, *Access Costs and Entry in the Local Telecommunications Network: A Case for De-Averaged Rates*, 17 INT'L J. INDUS. ORG. 593, 604 (1999). Introduction of new telecom technologies, such as IP telephony, are further expected to bring these costs down. This implies that competition among LECs and among long-distance carriers in rural areas may well suffice to bring rates in these areas to reasonably low levels.

107. *Infra* Part V. LEC A should not be allowed to refuse to enable such local calls. Such a refusal should properly be seen as an infringement of the mandatory local-interconnection requirement.

supracompetitive rates for directly enabling long-distance calls made by LEC A's subscribers, LEC B would be induced to charge the long-distance carrier competitive rates for such transit.

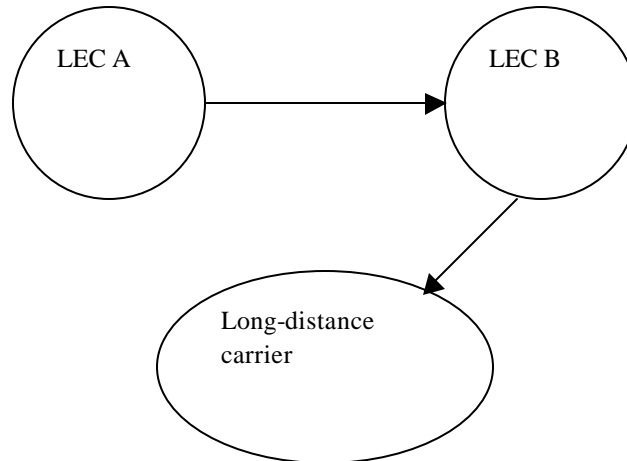


Figure . Transit of outgoing calls

To illustrate how effective this simple market mechanism is, suppose LEC A incurs marginal costs of enabling per minute in order to route the call from the caller to LEC A's point of interconnection with the long-distance carrier. Suppose further that, as I propose, LECs are not allowed to charge each other for completing each other's calls, regardless of whether the calls will be transited further to a long-distance carrier. Suppose now that LEC A charges the long-distance carrier a supracompetitive rate for enabling the call for, say, "enabling" + "profit" per minute. LEC B would then be induced to interconnect with the long-distance carrier so that LEC B could transit, for a lower per-minute rate, long-distance calls made by callers at LEC A who subscribe to the long-distance carrier. For example, LEC B could offer to do this for "enabling" + "profit" - 0.25 cents per minute. LEC B would make a profit from such a deal as long as this rate exceeds LEC B's marginal costs of transiting the calls ("transit"). But then, LEC A would want to win back the long-distance carrier's business and offer to interconnect with the long-distance

Furthermore, LEC B should not be allowed to commit to not allowing long-distance carriers to do this. As previously discussed, such commitments should be considered antitrust conspiracies in violation of the Sherman Act, 15 U.S.C. § 1 (1994).

carrier directly, and enable the long-distance calls for, say, “enabling” + “profit” – 0.50 cents per minute.

Such price competition would go on until the long-distance carrier finally directly interconnects with LEC A for a rate as low as LEC B’s marginal costs of transit (“transit”). LEC A would not be able to charge a higher rate because then LEC B would steal the long-distance carrier’s business by charging a lower rate, while still making a profit. Whether the long-distance carrier directly interconnects with LEC A or uses LEC B’s transit services, LEC A would have to bear the costs of enabling per minute for all long-distance calls that the long-distance carrier’s subscribers make from LEC A. Rather than lose the long-distance carrier’s business to LEC B and receive nothing from the long-distance carrier,¹⁰⁸ LEC A would directly interconnect with the long-distance carrier and receive from it a rate of transit.

Analogous reasoning implies that LEC B will directly interconnect with the long-distance carrier and enable its subscriber’s calls for a per-minute rate as low as LEC A’s marginal costs of transit. Any higher rate LEC B would attempt to charge would be undercut by LEC A, which would make a profit from charging a lower rate to transit long-distance calls made by LEC B’s subscribers.

Note that if LEC A’s marginal costs of enabling are greater than LEC B’s marginal costs of transit, LEC A will not cover its marginal costs from the long-distance carrier’s payments. LEC A could cover the difference by charging its own subscribers for long-distance calls they make.¹⁰⁹ Additionally, the caller would probably need to dial a longer sequence of digits when making a long-distance call transited by LEC B. This inconvenience might grant LEC A a modest competitive advantage and enable it to charge a somewhat higher per-minute rate for direct interconnection to enable long-distance calls.

The competitive force of transit discussed here would be effective even if one of the LECs were to possess a small market share, as new LECs often do. It suffices if the small LEC has the infrastructure needed to transit long-distance calls made by the competing LEC’s subscribers. Therefore, we need not wait until new LECs expand to obtain a significant

108. Note that LEC A could additionally charge its own subscribers for enabling their long-distance calls, but this capability exists also when the long-distance carrier does not directly interconnect with LEC A. LEC A could nevertheless charge its subscribers for making calls to LEC B that are to be transited to the long-distance carrier.

109. Naturally, such charges would be constrained by competition among the LECs.

share of the market in order to rely on the market force currently discussed. Rates LECs charge for enabling long-distance calls made by their subscribers will nevertheless be restrained to competitive levels.¹¹⁰

The discussion above has assumed that interconnection among the LECs is governed by a rule that does not allow them to charge each other for completing each other's calls. Interestingly, if we assume that LECs *do* pay each other for completing each other's calls, say, a rate per minute equal to reciprocal, LECs would be even more eager to cut their rates for enabling long-distance calls made by their subscribers. If a long-distance carrier chooses to interconnect with LEC B to transit long-distance calls made by LEC A's subscribers, LEC A would have to bear not only its marginal costs of enabling per minute, but it would also have to pay LEC B the reciprocal rate of reciprocal per minute. Conversely, LEC B would bear marginal costs of transit per minute in transiting these calls, but would collect additional revenue of reciprocal per minute from LEC A.

Thus, LEC A would be willing to interconnect directly with the long-distance carrier and enable long-distance calls for a rate as low as "transit" – "reciprocal" per minute. For any higher rate (for example, "transit" – "reciprocal" + 0.50 cents per minute), LEC B would be induced to make a profit by offering a lower rate for transiting the long-distance calls." For example, LEC B would offer such transit for "transit" – "reciprocal" + 0.25 cents per minute. It would make a profit of 0.25 cents per minute on such calls. LEC A, for its part, would rather directly interconnect with the long-distance carrier and enable the calls for a rate of "transit" – "reciprocal" per minute (and thus receive "transit" – "reciprocal" and bear costs of enabling per minute). Otherwise, the long-distance carrier would ask LEC B to transit these calls, and LEC A would bear costs equal to reciprocal per minute (which it would have to pay LEC B for such calls) plus costs of enabling per minute, without receiving anything from the long-distance carrier.¹¹¹

110. Even if LEC A were to be integrated with a long-distance carrier, for reasons similar to the ones already discussed, there would be no particular concern that LEC A would be induced to charge unaffiliated long-distance carriers supracompetitive rates for enabling long-distance calls made by the LEC's subscribers. *See supra* notes 71–75 and accompanying text. In any case, such concerns could be dealt with using standard antitrust intervention, with no need for rate regulation. *See supra* note 75 and accompanying text.

111. Thus, LEC A earns more under direct interconnection ("transit" – "reciprocal" – "enabling") than without it (zero – "reciprocal" – "enabling"). If there were a considerable fixed cost of physical interconnection between the long-distance carrier and LECs, and the long-distance carrier were not yet interconnected, additional implications might arise. *See supra* notes 76–78 and accompanying text for analogous implications.

However, as was demonstrated above¹¹² and will be further stressed in Part V.B below, it would be bad policy to allow LECs to charge each other for completing each other's calls.

V. LEC-LEC INTERCONNECTION

As noted, the FCC proposed to adopt a default bill-and-keep approach to interconnection among local carriers, as well as to interconnection between long-distance carriers and LECs. This Article opposes the FCC's bill-and-keep proposal inasmuch as it deals with long-distance carrier/LEC interconnection, and, instead, puts forward a market-based approach to such interconnection. With regard to local interconnection, this Article proposes to adopt a bill-and-keep approach to local interconnection, but, unlike the FCC, claims that bill and keep should be mandatory rather than merely a default rule. To be sure, this is regulation, and it possesses disadvantages of regulation similar, for the most part, to those discussed above in Part IV.A.¹¹³ Unlike regulation of interconnection between LECs and long-distance carriers, which this Article has shown is unnecessary due to market forces, we will see below why regulation of interconnection among LECs *is* necessary.

A. WHY INTERCONNECTION AMONG LECs SHOULD BE MANDATORY

One of the reasons mandatory interconnection among LECs is still warranted is that incumbent LECs have a strong incentive to deny interconnection, or offer inferior interconnection, to new entrants into the local market in order to deter entry.¹¹⁴ The new LEC is a direct potential

112. *Supra* note 68 and accompanying text. See David Gilo & Yossi Spiegel, *Network Interconnection with Competitive Transit* (Working Paper, 2003), available at <http://www.tau.ac.il/~spiegel/papers/transit.html> (presenting an economic model anticipating what rates LECs would charge long-distance carriers if LECs were free to negotiate the reciprocal fee they charge each other, and transit were used for both outgoing long-distance calls, as discussed in this section, and incoming long-distance calls, as discussed in Part IV.C.1, *supra*). They show that LECs would often use the reciprocal fee they charge each other as a tool to boost the rates they could charge long-distance carriers for the long-distance calls made by and to the LECs' subscribers.

113. For example, the FCC will need to determine unambiguously the appropriate meeting point of the two interconnecting LECs so that the LEC from which the call is made will bear the costs of transporting the call up to that point, and the LEC completing the call will bear the costs of completing the call from that point on. See DeGraba, *supra* note 4, at 76–77. Otherwise, disputes and manipulation would arise regarding the nature of this point. See *id.*

114. This incentive that incumbents possess to deter entry has been extensively discussed in the economics literature. See, e.g., Michael Carter & Julian Wright, *Asymmetric Network Interconnection* 22 REV. OF INDUS. ORG. 27 (2003) [hereinafter *Asymmetric Interconnection*]; Michael Carter & Julian Wright, *Bargaining over Interconnection: The Clear-Telecom Dispute*, 75 ECON. REC. 241, 249 (1999)

competitor to the incumbent LEC, threatening to erode the incumbent's market share, profitability, and dominance in the future. When the incumbent refuses interconnection with the new LEC or degrades its quality, the incumbent's subscribers will hesitate to shift to the new entrant because they would then possibly lose access to the incumbent's large customer base. Staying with the incumbent, on the other hand, promises access to this customer base, even without interconnection to the new entrant.¹¹⁵ Furthermore, the new entrant typically has no other large LEC to interconnect with. Interconnection with the sole incumbent is essential to successful entry. Even if the new LEC did dare to enter, as long as it is substantially smaller in market share, the above-mentioned network effect continues to exist, and the incumbent LEC might be induced to refuse or degrade interconnection in order to induce subscribers to stick with the incumbent, drive the new LEC out of the market, or keep the new LEC as an insignificant competitor.¹¹⁶

Of course, the need for mandatory interconnection also necessitates regulatory constraint on charges for completing calls; otherwise, the incumbent could effectively refuse interconnection or considerably raise the costs of entry by unilaterally setting very high rates for completing the new entrant's calls, while offering to pay the entrant low rates for completing calls made by the incumbent's subscribers.¹¹⁷ The current reciprocal-compensation regime is a form of regulatory constraint on such behavior. If the incumbent wishes to insist on a high rate for completing calls made by the new LEC's subscribers, it would have to pay the same rate to the entrant reciprocally. This solution, however, has its own problems, as will be illustrated below.

[hereinafter *The Clear-Telecom Dispute*]; Nicholas Economides, Giuseppe Lopomo & Glenn Woroch, *Regulatory Pricing Rules to Neutralize Network Dominance*, 5 INDUS. & CORP. CHANGE 1013 (1996); Jean-Jacques Laffont, Patrick Rey & Jean Tirole, *Network Competition: I. Overview and Nondiscriminatory Pricing*, 29 RAND J. ECON. 1, 20-21 (1998) [hereinafter *Nondiscriminatory Pricing*]; Jean-Jacques Laffont, Patrick Rey & Jean Tirole, *Network Competition: II. Price Discrimination*, 29 RAND J. ECON. 38, 54 (1998) [hereinafter *Price Discrimination*].

115. This is a classic case of a network effect (i.e., where subscribing to a network is more valuable the more subscribers that network has). A well-known result in industries that possess network effects is their tendency to tip into monopoly. See, e.g., DeGraba, *supra* note 4, at 74; Nicholas Economides, *The Economics of Networks*, 14 INT'L J. INDUS. ORG. 673, 691 (1996); Michael L. Katz & Carl Shapiro, *Systems Competition and Network Effects*, 8 J. ECON. PERSP. 93, 94, 105-06 (1994); Rubinfeld & Singer, *supra* note 75, at 639.

116. In New Zealand, for instance, a market-based approach to local interconnection did not go smoothly. See *The Clear-Telecom Dispute*, *supra* note 114, at 242; Cremer et al., *supra* note 11, at 441 n.14.

117. See, e.g., *Asymmetric Interconnection*, *supra* note 114, at 12.

There is an additional reason mandatory interconnection is required. Suppose the rule is that LECs do not have to interconnect with each other. Under a market-based approach to interconnection with long-distance carriers, both LECs might prefer not to interconnect in order to credibly commit not to transit long-distance calls made by or to the other LEC's subscribers. If they are not interconnected, they avoid the competitive pressure¹¹⁸ caused by the ability to transit. This strategic motivation to avoid the competitive pressures of transit could more than offset the benefits LECs expect from interconnecting with each other.¹¹⁹

B. WHY LECs SHOULD NOT BE ALLOWED TO CHARGE EACH OTHER FOR COMPLETING EACH OTHER'S CALLS

1. The Reciprocal Rate as a Self-Enforcing Market Division

One of the FCC's primary motivations for proposing a bill-and-keep default rule for interconnection among competing LECs is the trend of new LECs attracting mainly ISPs. New LECs tend to attract mainly ISPs so as to have more incoming calls from the incumbent LEC than outgoing calls to the incumbent. ISPs are net receivers of calls. They exclusively receive calls from ISP subscribers using their computer's dial-in modem. Many new LECs exert efforts to attract ISPs as their subscribers and make less of an effort to attract regular subscribers. Such a practice enables the new LECs to use the reciprocal-compensation regime¹²⁰ in order to collect handsome revenue from incumbent LECs. If the new LEC serves mainly ISPs, more calls flow from the incumbent LEC to the new LEC than vice versa.¹²¹ In such cases, new LECs would be expected to try to push for a

118. See *supra* Parts III.C.1 and IV.D.2 for discussion concerning this competitive pressure.

119. If LECs do not interconnect with each other, subscription would be less valuable to subscribers, and they might be willing to pay lower subscription fees. In addition, if both LECs face competition from cellular networks, for example, they might lose subscribers to the cellular networks, which would offer them more ubiquity.

120. In most states, ISP-bound calls have been under the regular reciprocal-compensation regime for local interconnection. See *In re* Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Intercarrier Compensation for ISP-Bound Traffic, 16 F.C.C.R. 9151, 9181 (Apr. 27, 2001) (order on remand and report and order). For background on the regulatory debate and litigation over the ISP-bound-calls issue, see generally *Bell Atl. Tel. Cos. v. FCC*, 206 F.3d 1 (D.C. Cir. 2000) (vacating the FCC's ruling that the 1996 Act does not require a reciprocal-compensation regime for ISP-bound traffic); *In re* Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Inter-Carrier Compensation for ISP-Bound Traffic, 14 F.C.C.R. 3689 (Feb. 26, 1999) (declaratory ruling and notice of proposed rulemaking) (ruling in response to requests to clarify whether an LEC should receive reciprocal compensation for delivery of traffic to an ISP).

121. As the FCC stated:

high reciprocal rate that LECs would pay each other for completing each other's calls. The higher the reciprocal rate, the more revenue new LECs would collect from calls flowing from the incumbent to the new LEC.¹²²

A new LEC's incentive in attracting mainly net receivers of calls distorts its motivations for efficient entry. After all, the 1996 Act envisioned entry of true competitors to the incumbent LECs: networks that will serve regular residential and business subscribers that make and receive calls, and not only net receivers of calls. Furthermore, a markup on completion of calls would cause inefficient pricing of the services given by these net receivers of calls, such as ISP services. ISP dial-in, for example, would be subsidized using the markup earned from the incumbent's payments for completing the calls to the ISP. Dial-in ISP users, therefore, would not bear the true costs of using the telecom networks and the Internet. Inefficient, high congestion of the telecom networks and the Internet would result.¹²³

New LECs' distorted incentives to attract mainly net receivers of calls are eliminated if LECs are not allowed to charge each other for completing each other's calls. The reason is that under such a regime, new LECs would not expect to collect revenue from calls originated at the incumbent LEC. The FCC hopes to solve new LECs' distorted incentives by imposing a default bill-and-keep regime on interconnection among LECs.¹²⁴ A mere

The four largest [incumbent LECs] indicate that [new LECs], on average, terminate eighteen times more traffic than they originate, resulting in annual [new LEC] reciprocal compensation billings of approximately two billion dollars, ninety percent of which is for ISP-bound traffic.

Verizon states that it sends [new LECs], on average twenty-one times more traffic than it receives, and some [new LECs] receive more than forty times more traffic than they originate.

In re Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Intercarrier Compensation for ISP-Bound Traffic, 16 F.C.C.R. at 9183 (footnotes omitted). Origination of calls here means enabling the call made by the caller and transferring it to the recipient's LEC.

122. Incumbent LECs cannot cope with this threat by themselves, focusing mainly on net receivers of calls, because, unlike new LECs, they are under universal-service obligations that require them to serve many residential consumers. See Julian Wright, *The ISP Reciprocal Compensation Problem 6* (Feb. 13, 2001) (unpublished manuscript, on file with author). New LECs, on the other hand, have more freedom in choosing their subscribers. See *id.*

123. See *id.* at 12-13. If the incumbent were permitted to charge its subscribers different prices depending on whether their calls are destined to the competing LEC, the incumbent could pass the charges it pays the new LEC on to the dial-in callers. Such a practice, if permitted, would tend to alleviate the distortion of ISP overuse. To be sure, healthy development of the Internet is important, and it could be claimed that ISP services need to be subsidized. *Id.* If Internet users do not incur the true costs of their use of the Internet, however, congestion occurs and other Internet users are harmed.

124. *In re* Developing a Unified Intercarrier Compensation Regime, 16 F.C.C.R. 9610, 9633 (Apr. 27, 2001) (notice of proposed rulemaking) (discussing two FCC staff-member papers that propose bill-and-keep regimes as a solution to the problems created by reciprocal-compensation regimes). The FCC has already ordered a gradual transition to a bill-and-keep approach when it comes to ISP-bound calls. *In re* Implementation of the Local Competition Provisions in the Telecommunications Act of 1996;

default rule of this nature, however, will not suffice. The FCC assumes that when new LECs try to push the negotiated reciprocal rate to a high level, incumbent LECs will disagree and revert to the default rate of zero. What the FCC overlooks is that incumbent LECs might agree to supracompetitive reciprocal rates for their own reasons, notwithstanding the costs they would have to bear when more calls flow from the incumbent to the new LEC (rather than the other way around).

In particular, incumbent LECs might have a strategic long-run incentive to keep the reciprocal rate at a relatively high level in order to induce the new LEC to focus on the niche of subscribers who are net receivers of calls, leaving the rest of the market to the incumbent. This is a distortion of the ISP-bound-calls problem, unidentified so far by regulators and the literature. Incumbents themselves, who the regulators¹²⁵ and the literature¹²⁶ consistently claim are harmed by the trend of new LECs attracting mainly ISPs, may well be interested in this trend because it helps the incumbent secure a captive market that includes all subscribers except for ISPs and other net receivers of calls. This captive market will not enjoy competitive entry into the local market and will effectively continue to be subject to a regulated monopoly.¹²⁷

In this sense, negotiation by the incumbent and the new LEC of a reciprocal rate for completing each other's calls resembles an arrangement for division of the market, according to which the new LEC commits to serve mainly net receivers of calls and not to compete with the incumbent LEC over other kinds of subscribers. In return, the incumbent pays the new LEC in the form of the above-cost negotiated rate for the many calls flowing from the incumbent to the new LEC. Moreover, this tacit arrangement is self-enforcing. If the new LEC starts competing with the incumbent over regular subscribers, who also make calls, fewer calls would flow from the incumbent to the new LEC, as the incumbent would have less regular subscribers making ISP-bound calls. The more the new LEC successfully competes with the incumbent over regular subscribers, the less net revenue the new LEC makes from the reciprocal-compensation arrangement. Conversely, the more regular subscribers the new LEC attracts, the less the incumbent will lose from the reciprocal arrangement.

Intercarrier Compensation for ISP-Bound Traffic, 16 F.C.C.R. at 9154. If the FCC's bill-and-keep proposal is adopted, it would presumably replace the order that is particular to ISP-bound calls.

125. See *id.* at 9154-57; *In re* Developing a Unified Intercarrier Compensation Regime, 16 F.C.C.R. at 9616.

126. See, e.g., Wright, *supra* note 122, at 14-15.

127. Presumably, costly state and FCC regulation of the incumbent's rates and practices will continue given that the incumbent continues to enjoy such dominance.

An arrangement between an incumbent and a new entrant into the incumbent's market, under which the incumbent pays a bribe to the entrant to ensure that the entrant serves only a certain segment, leaving the rest of the market to the incumbent, is obviously an illegal conspiracy in violation of section 1 of the Sherman Act.¹²⁸ We have just seen, however, that allowing an incumbent LEC and a new LEC to negotiate a reciprocal rate for completing each other's calls—which is perfectly legal under the current regime and will continue to be legal under the FCC's recent proposal—achieves precisely the same result.

2. LECs Might Negotiate Excessive Reciprocal Rates to Raise Retail Prices

There are a few results in the economics literature that raise the concern that if LECs are left to negotiate their reciprocal rate for completing each other's calls, they will use this rate in order to raise the retail prices they charge their own consumers. First, if LECs charge their subscribers only a per-minute rate (without a fixed fee), Jean-Jacques Laffont, Patrick Rey, and Jean Tirole,¹²⁹ as well as Mark Armstrong,¹³⁰ show that LECs will be induced to negotiate a high reciprocal rate in order to deter each other from cutting retail prices. LEC A, for example, would hesitate to cut its retail prices in order to expand its market share because, if it does so, its subscribers would make more (and longer) calls to people at LEC B, and LEC A would have to pay LEC B the high reciprocal rate for these calls. The same goes for LEC B, which would similarly hesitate to cut its retail prices. This makes both LECs better off because their profits rise when they are less eager to price-cut.

The question arising now is whether this result applies similarly in the case where LECs charge their subscribers not only per-minute rates, but also fixed monthly fees or other sorts of pricing packages that have fixed components in them. Initially, it might be thought that the fear of an excessive negotiated reciprocal rate might disappear when LECs charge fixed fees as well because what drives the fear of an excessive negotiated reciprocal rate is that LECs use the per-minute rate to steal market shares from each other. When LECs charge only per-minute rates, they are deterred from cutting their rates to steal subscribers because this makes their subscribers call more, thereby raising each LEC's payments to the

128. See 15 U.S.C. § 1 (2000).

129. See *Nondiscriminatory Pricing*, *supra* note 114, at 10–11.

130. Mark Armstrong, *Network Interconnection in Telecommunications*, 108 *ECON. J.* 545, 553–54 (1998).

other LEC. LECs, however, could steal subscribers from each other by lowering their fixed fees. This would not involve additional payments to the other LEC because lower fixed fees, unlike lower per-minute rates, do not induce subscribers to call more. Therefore, LECs might as well negotiate a cost-based reciprocal rate for completing each other's calls since an above-cost rate will not raise their profits.

Indeed, a few recent economics papers have shown this to be the case, but under quite restrictive assumptions, and the literature is critical of the results.¹³¹ These restrictive assumptions include the assumption that networks have identical marginal costs for outgoing and incoming calls;¹³² the assumption that both LECs would have equal market shares if they charge the same prices;¹³³ the assumption that more "heavy" users (such as businesses) see the new LEC as a substitute for the incumbent LEC, just as "light" users (such as households) see the LECs as substitutes;¹³⁴ the assumption that all users are willing to be connected to a network for any price the LECs would like to charge;¹³⁵ and the assumption that recipients do not pay for calls they receive and also have no utility from receiving calls.¹³⁶ Finally, all the economics models exploring this issue stress that

131. See *Nondiscriminatory Pricing*, *supra* note 114, at 21–22 (showing such a result with consumers who are identical to each other); *Price Discrimination*, *supra* note 114, at 52–53 (same); Wouter Dessein, *Network Competition with Heterogeneous Calling Patterns* (Dec. 2000) (unpublished manuscript, on file with author) (showing such a result in the case of two different types of consumers: heavy users and light users); Jong-Hee Hahn, *Network Competition and Interconnection with Heterogeneous Subscribers* (May 2002) (unpublished manuscript, on file with author) (showing similar results with consumers of various types).

132. This assumption will not hold, for example, if the new LEC utilizes a different technology or kind of facility than the incumbent LEC, or if the incumbent LEC and the new LEC handle different volumes of calls.

133. If there is consumer loyalty to the incumbent LEC, for example, or high costs for consumers of switching to the new LEC, this assumption will not hold. See *Asymmetric Interconnection*, *supra* note 114 (showing that, when the incumbent LEC enjoys such customer loyalty, the new LEC might want to push for an excessive reciprocal rate).

134. This assumption will not hold if, for example, households tend to stick more with their old telephone company out of inertia, or lack of information or sophistication, while businesses switch LECs more easily because they are more sophisticated and informed, and have more to lose from sticking with their old telephone company. See Wouter Dessein, *Network Competition in Nonlinear Pricing* (Oct. 2002) (unpublished manuscript, on file with author) (showing that when the assumption does not hold, LECs may negotiate either excessive or below-cost reciprocal rates, depending on the characteristics of heavy and light users).

135. Steve Poletti & Julian Wright, *Network Interconnection with Participation Constraints* (Sept. 18, 2000) (unpublished manuscript, on file with author) (showing that, when this assumption does not hold, LECs might negotiate an excessive reciprocal rate).

136. As the FCC acknowledges in its recent bill-and-keep proposal, recipients *may* benefit from calls they receive. Furthermore, the FCC's premise is that LECs will be able to charge recipients for calls they receive. See *In re Developing a Unified Intercarrier Compensation Regime*, 16 F.C.C.R. 9610, 9624 (Apr. 27, 2001) (notice of proposed rulemaking).

the models “do not work” (in economic terms, there is no equilibrium) where the reciprocal rate is sufficiently above marginal costs or where the LECs are close enough substitutes to one another.¹³⁷ Accordingly, the economics literature fails, to date, to supply an answer to what happens when LECs *do* negotiate an excessive reciprocal rate. This is precisely the underlying policy concern. Also, LECs *are* often close substitutes to one another. After all, telecom service may be seen as quite fungible, and the costs involved in switching networks, in many cases, might be small.

Accordingly, the economics literature does not yet have a clear answer to the question of whether the fear of excessive negotiated reciprocal rates goes away in real-life settings. A rule that does not allow LECs to charge each other for completing each other’s calls has the virtue of eliminating the reciprocal rate as a strategic device in the hands of the LECs. Given that recipients benefit from calls they receive, such a rule sees completion of calls among LECs as a service each LEC grants its own subscribers. Accordingly, LECs need not charge each other for completion of calls that flow among them. The caller’s LEC will charge the caller for enabling the call and the recipient’s LEC will charge the recipient for completing the call.¹³⁸

At this stage of economic study, it is unknown whether this solution is the best regulatory solution that would maximize total welfare, but at least we know that LECs will not be able to use the reciprocal rate strategically to harm consumers and reduce total welfare, as the economics literature predicts will happen in certain cases.¹³⁹ Furthermore, prohibiting LECs from negotiating rates they pay each other for completing each other’s calls has the clear virtue of eliminating the above-mentioned problem of new

137. See, e.g., *Nondiscriminatory Pricing*, *supra* note 114, at 21–22; *Price Discrimination*, *supra* note 114, at 52 n.10.

138. This raises the issue of unwanted calls. Since, generally, the caller initiates the call, it would be problematic to charge the recipient for a call he or she did not want (e.g., a call from a telemarketer during dinner). Several solutions to this problem exist. First, the recipient can quickly hang up on unwanted calls and thus minimize the charges involved. Second, LECs could be required to offer a one-minute grace period in which recipients do not have to pay for incoming calls. Such grace periods have been voluntarily adopted by several cellular providers that charged recipients for incoming calls. DeGraba, *supra* note 4, at 80. Third, many recipients are expected, in the foreseeable future, to possess caller ID technology, which will enable them to screen many of the unwanted calls. *Id.* at 33–34. One type of unwanted call that would be difficult to screen is an unwanted fax message. Since fax messages are generally expected to run from each LEC to the other, however, LECs could be allowed to negotiate a separate compensation arrangement (e.g., a reciprocal-compensation arrangement) for fax messages.

139. Imposing on LECs a positive, “optimal” reciprocal rate would involve the regulatory costs of determining this optimal rate in each situation, and updating it as circumstances change.

LECs attracting mainly net receivers of calls, and incumbent LECs acquiescing to enshrine their dominance.

3. Raising the Reciprocal Rate to Raise Charges from Long-Distance Carriers

As shown in Part IV.C.1, if we allow LECs to negotiate a reciprocal rate for completing each other's calls, they might be induced to negotiate an excessive rate in order to boost the rates they charge long-distance carriers for completing long-distance calls. This adds a rationale for a rule prohibiting LECs from charging each other for completing each other's calls. Recall that under such a rule, the long-distance carrier's ability to ask one LEC to transit calls made to the competing LEC would drive down the rates LECs charge the long-distance carrier for completing calls to the marginal costs of transit.¹⁴⁰

Will the LECs' incentive to negotiate excessive reciprocal rates to boost the rates they charge long-distance carriers for completing long-distance calls disappear when we take into account fixed fees LECs can charge their consumers? Under several simplifying assumptions,¹⁴¹ the fear of an excessive reciprocal rate might indeed disappear. To see why, suppose LECs negotiate an excessive reciprocal rate so that they could charge long-distance carriers supracompetitive rates for completing calls. Any new subscriber attracted by the LEC will receive a certain volume of long-distance calls for which the LEC will collect the supracompetitive rates from the long-distance carriers. Accordingly, LECs would be more willing to cut their fixed fees to steal customers from each other. In simple settings as the one discussed here, it may be that fixed fees will go down by the very supracompetitive profits the LECs expect to make from the long-distance carriers. In such a case, absent other motivations concerning the reciprocal rate, the LECs might as well negotiate a reciprocal rate that would not allow them supracompetitive profits for completing long-distance calls. This is because they know these supracompetitive profits would be "competed away" through competition with regard to the fixed fees.¹⁴²

140. *Supra* Part IV.C.1.

141. *See supra* notes 131-37 and accompanying text. Also included is the assumption that all the LECs' subscribers receive the same volume of long-distance calls.

142. Michael Carter & Julian Wright, Local and Long-Distance Network Competition 3-4 (Dec. 22, 1999) (unpublished manuscript, on file with author). Their study reached a similar result with a simplified model in which LECs interconnect with a long-distance carrier. They do not discuss the possibility of transit, but show that any profits LECs expect to make from the long-distance carrier are competed away through competition with regard to the fixed fees. *Id.* at 3.

The assumptions underlying the claim that supracompetitive profits from long-distance carriers would be competed away by reduced fixed fees, however, are too restrictive to make concrete policy implications. The simplifying assumptions driving such a result may not hold in real-life situations. Therefore, LECs might still negotiate excessive reciprocal rates to boost the rates long-distance carriers pay them for completing long-distance calls. In any case, the other justifications for not allowing LECs to charge each other for completing each other's calls remain strong. In particular, the fear that an excessive reciprocal rate might be used as a tacit market-division mechanism, discussed in Part V.B.1, continues to exist. Needless to say, an excessive reciprocal rate harms the competitive force of transit even when it is driven by such other motivations.

VI. CONCLUSION

While local telecom markets are being opened to competition, the FCC, paradoxically, is proposing to move toward the strictest possible regulation of interconnection between long-distance carriers and LECs: mandatory interconnection coupled with regulation of interconnection charges down to zero. In sharp contrast to the FCC's approach, this Article proposes simple regulatory changes that will foster the deregulation of interconnection between long-distance carriers and LECs.

Under deregulation and nonmandatory interconnection, a long-distance carrier's credible threat to transit calls made to one LEC via the competing LEC would drive LECs' rates for completing long-distance calls down to the marginal costs of transit, provided LECs are not allowed to charge each other for completing each other's calls. Moreover, recipients' cellular phones and broadband-Internet IP-telephony connections are expected, in the foreseeable future, to compete with LECs on completing long-distance calls, especially if long-distance carriers will no longer be required to average their rates.

Competitive forces can also drive down the rates LECs charge long-distance carriers for enabling long-distance calls made by the LECs' subscribers. First, they can be driven down through direct competition among the LECs, provided the 1996 Act is amended to allow long-distance carriers to pass these charges on to callers. Second, even short of amending the 1996 Act, a long-distance carrier's ability to ask one LEC to transit long-distance calls made by the competing LEC's subscribers is expected to drive these rates down. The rate will reach the marginal costs of transit if LECs are not allowed to charge each other for completing each other's

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calls, and it will drop even lower if they negotiate a reciprocal rate for completing each other's calls.

On the other hand, interconnection among the LECs themselves should remain mandatory; otherwise, the incumbent might refuse or degrade interconnection to deter entry. Furthermore, even established networks might decide not to interconnect in order to disable transit and boost rates charged to long-distance carriers. LECs should not be allowed to charge each other for completing each other's calls. Such a rule would prevent new LECs and incumbent LECs from using the reciprocal rate as a strategic tool to raise their profits at the expense of consumers. In particular, LECs might negotiate an excessive reciprocal rate to enforce an implicit commitment on the part of the new LEC to focus only on net receivers of calls, leaving the rest of the market to the incumbent.

