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A Market-Oriented Analysis of the 'Terminating Access Monopoly' Concept

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A MARKET-ORIENTED ANALYSIS OF THE “TERMINATING ACCESS MONOPOLY” CONCEPT

JONATHAN E. NUECHTERLEIN* AND CHRISTOPHER S. YOO**

INTRODUCTION	21
I. DEFINING THE ISSUE	24
II. THE HISTORICAL ORIGINS OF THE TERMINATING ACCESS MONOPOLY THEORY IN VOICE-NETWORK INTERCONNECTION ARRANGEMENTS	26
III. CONTEXTS IN WHICH THE TERMINATING ACCESS MONOPOLY PLAYS LITTLE EVIDENT ROLE IN NEGOTIATIONS INVOLVING CONSUMER-FACING NETWORK PROVIDERS	28
IV. THE LIMITED EXPLANATORY VALUE OF THE TERMINATING ACCESS MONOPOLY CONSTRUCT	32
CONCLUSION	35

INTRODUCTION

Policymakers have long invoked the concept of a “terminating access monopoly” to inform communications policy. Roughly speaking, the concept holds that a consumer-facing network provider, no matter how small or how subject to retail competition, generally possesses monopoly power vis-à-vis third-party senders of communications traffic to its customers. Over the past fifteen years, regulators and advocates have routinely cited that concern to justify regulatory intervention in a variety of contexts where the regulated party may or may not have possessed market power in any relevant retail market. For example, it has been invoked to support regulation of interconnection arrangements

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between any two voice-service providers, no matter how small;¹ of peering arrangements between the Internet's constituent networks;² and of access by content providers to the networks of residential Internet service providers ("ISPs"), even when ISPs are small and subject to competition.³ Most recently, in its 2015 *Open Internet Order*, the FCC employed the related "gatekeeper" concept as a basis for its net neutrality rules, though it relied on independent policy concerns as well.⁴

1. *E.g.*, *Developing a Unified Intercarrier Compensation Regime*, CC Dkt. No. 01-92, Further Notice of Proposed Rulemaking, 20 FCC Rcd. 4685, para. 24 (2005) [hereinafter *2005 Intercarrier Compensation NPRM*] ("Originating carriers generally have little practical means of affecting the called party's choice of access provider, and the called party's [carrier] may take advantage of the situation by charging excessive terminating rates To address the terminating access monopoly problem, the Commission generally has determined that carriers should not be permitted unilaterally to impose termination charges that are not subject to regulation."); *Developing a Unified Intercarrier Compensation Regime*, CC Dkt. No. 01-92, Notice of Proposed Rulemaking, 16 FCC Rcd. 9610, para. 133 (2001) [hereinafter *2001 Intercarrier Compensation NPRM*] ("[L]ocal carriers possess monopoly power over terminating access. As a result, [competitive entrants] often impose access charges that far exceed the regulated access charges of incumbent [carriers].").

2. *E.g.*, Letter from New America Foundation et al. to Assistant Att'y Gen. Christine Varney and FCC Chairman Julius Genachowski et al., *Application of Comcast Corp., General Electric Company, and NBC Universal Inc. for Consent to Assign License or Transfer Control of Licenses*, Dkt. No. 10-56, 3 (filed Dec. 8, 2010) ("Comcast has a terminating access monopoly; no other provider can directly provide transmission to Comcast's subscribers," and "the nature of the [paid peering] dispute [between Comcast and Level 3] suggests that every residential broadband network owner has the incentive to drive down its own costs in this way . . .").

3. *E.g.*, *Preserving the Open Internet, Broadband Industry Practices*, GN. Dkt. No. 09-191, WC Dkt. No. 07-52, Report & Order, 25 FCC Rcd. 17,905, paras. 24 & n.66, 32 n.87 (2010) [hereinafter *2010 Open Internet Order*] (as a "terminating monopolist," a "broadband provider could force edge providers to pay inefficiently high fees because that broadband provider is typically an edge provider's only option for reaching a particular end user," and "[b]ecause broadband providers have the ability to act as gatekeepers even in the absence of market power with respect to end users, we need not conduct a [retail] market power analysis" to justify regulating such fees), *aff'd in relevant part and reversed on other grounds*, *Verizon v. FCC*, 740 F.3d 623, 646 (D.C. Cir. 2014) ("Because all end users generally access the Internet through a single broadband provider, that provider functions as a 'terminating monopolist' with power to act as a 'gatekeeper' with respect to edge providers that might seek to reach its end-user subscribers") (citation and some internal quotation marks omitted). *See also* FED. TRADE COMM'N, BROADBAND CONNECTIVITY COMPETITION POLICY 77-79 (2007), <https://www.ftc.gov/sites/default/files/documents/reports/broadband-connectivity-competition-policy/v070000report.pdf> (discussing "the terminating access monopoly problem") (capitalization omitted).

4. *See Protecting and Promoting the Open Internet*, GN Dkt. No. 14-28, Report & Order on Remand, Declaratory Ruling, and Order, 30 FCC Rcd. 5601, para. 80 n.130 (2015) [hereinafter *2015 Open Internet Order*] ("[The] unique 'gatekeeper' position of broadband providers in combination with other realities about broadband availability and access affects broadband providers' incentives and abilities to harm the open nature of the Internet. . . . [T]he Commission's discussion of these terms [i.e., "gatekeeper" and "terminating access monopoly"] is especially important in combination with switching costs and limited retail broadband competition for fixed broadband. With respect to mobile, the presence of some additional retail competition is not enough to alter our conclusion here."). The Commission also predicated its net neutrality rules on justifications independent of any need to avoid

Despite the centrality of the terminating access monopoly to modern communications policy, there is surprisingly little academic literature on that concept as it applies to current regulatory debates.⁵ This essay seeks to fill that gap by exploring the various settings in which the concept does, or does not, help explain market dynamics in the communications sector. We conclude that the terminating access monopoly phenomenon, strictly understood, does not itself generally threaten market failures except in very limited circumstances. As we explain, the phenomenon could threaten inefficient outcomes only where, because of the underlying market context, the interconnecting provider or its customer has a particularized need to reach the customer set of the terminating access provider, and even then, market forces might correct any problem without regulatory intervention.

This is a narrow thesis. Even though the terminating access monopoly may not itself give rise to widespread market failures, ordinary market-power dynamics may independently justify regulatory intervention. For example, to address monopsony concerns in the video programming marketplace, regulators have long sought to limit the aggregate share of eyeball customers nationwide that any given cable provider may serve.⁶ Just as important, policymakers may have valid reasons for intervening in interconnection arrangements wholly unrelated to market power, particularly if bargaining impasses would otherwise threaten the positive externalities associated with a ubiquitous communications platform, such as the Internet or the public telephone system. This essay is not concerned with those issues; it is concerned instead with whether and when the terminating access monopoly concept, strictly construed, should independently inform whether such intervention is appropriate.

conventional market failures (whether arising from a terminating access monopoly or otherwise), relying as much on the positive externalities it attributed to maintaining the traditional structure of the Internet platform. *See id.* at paras. 76–77.

5. The two best-known recent treatments of the issue by academic economists have both taken the form of regulatory advocacy submitted on behalf of particular companies in the FCC’s *Open Internet* proceedings. *See* Andres Lerner & Janusz Ordovery, *The “Terminating Access Monopoly” Theory and the Provision of Broadband Internet Access*, in Verizon Ex Parte, *Protecting and Promoting the Open Internet*, GN Dkt. No. 14-28 (Jan. 15, 2015); Nicholas Economides, *Broadband Openness Rules Are Fully Justified by Economic Research*, 84 COMMS. & STRATEGIES 1, 2, 7–8 (2011) (sponsored and submitted by Google; addressing the terminating access monopoly in passing). As discussed in note 15, *infra*, older academic treatments focused on a mobile-termination-charge issue that arose outside of the United States because of foreign regulatory choices that U.S. regulators have avoided.

6. *See* 47 U.S.C. § 533(f) (2013); *Comcast Corp. v. FCC*, 579 F.3d 1 (D.C. Cir. 2009); *Time Warner Entm’t Co. v. FCC*, 240 F.3d 1126, 1131–32 (D.C. Cir. 2001); *see also infra* note 32 and accompanying text.

I. DEFINING THE ISSUE

Let us begin by distinguishing the terminating access monopoly concept from more general market power concerns that can arise in any commercial setting. The concept arises from a theoretical model of “competitive bottlenecks” in which users on one side of a two-sided platform are *single-homed*—that is, they can be reached for the most part only through that platform and not feasibly through alternative platforms.⁷ Under the model, if a market participant on the other side of the platform “wishes to interact with [a user] on the single-homing side, [it] has no choice but to deal with that [user’s] chosen platform,” and the platform thus has “monopoly power over providing access to [its] single-homing customers,” whether or not the platform faces competition for those single-homing customers.⁸ The terminating access monopoly construct is an application of this general theory of competitive bottlenecks to the communications marketplace.⁹ According to the construct, any consumer-facing communications provider (1) enjoys *monopoly power vis-à-vis* interconnecting communications providers by virtue of the termination functions it provides for its single-homed customers, even where (2) the provider faces *retail competition* for those customers and (3) does not serve a substantial share of *consumers overall* (including those outside its geographic footprint).

Each element of this definition is critical to untangling the terminating access monopoly concept from related but distinct market dynamics. First, use of the term “monopoly” implies that a provider of service to single-homed customers enjoys more than mere bargaining leverage when dividing up economic surplus with interconnecting providers that wish to send communications traffic (such as voice signals or video content) to those customers.¹⁰ Instead, the provider is said to exercise *monopoly power vis-à-vis* those providers in some properly defined market, accompanied by welfare-reducing deadweight losses. This distinction is important because disparate bargaining power is commonplace and is not generally thought to pose policy concerns unless it deters at least some economically efficient activity or otherwise reduces consumer welfare.

7. See, e.g., Mark Armstrong, *Competition in Two-Sided Markets*, 37 RAND J. ECON. 668 (2006).

8. *Id.* at 669; see also JEAN-JACQUES LAFFONT & JEAN TIROLE, *COMPETITION IN TELECOMMUNICATIONS* 184–85 (2000).

9. See Lerner & Ordovery, *supra* note 5, at 15–16.

10. We are using the “interconnection” concept broadly to include any third-party delivery of communications traffic to a consumer-facing network provider en route to that provider’s customers. The term thus applies to ESPN’s satellite-based delivery of content to a cable head-end no less than to Netflix’s delivery of streaming-video traffic via direct peering between Netflix’s content delivery network (“CDN”) and an ISP’s local network.

Second, in the usual account, a terminating access monopoly is said to exist even if the consumer-facing provider faces substantial retail competition (i.e., competition for consumers) from rival providers.¹¹ For example, around the turn of the millennium, policymakers asserted that new entrants in local telephone markets—known as “competitive local exchange carriers” or “CLECs”—enjoyed such a monopoly even though they competed with much larger incumbent LECs in major metropolitan areas, as discussed below in Section II. Of course, the mere fact of retail competition does not mean that switching costs in the retail market are low. We will assume for purposes of this discussion that switching costs among competing retail providers are generally significant but not insuperable.

Third, and similarly, policymakers have applied the terminating access monopoly construct to providers with small as well as large geographic footprints. Thus, a provider limited to a single metropolitan area—or even to a rural town—has long been assumed to enjoy a terminating access monopoly in negotiating to accept traffic hand-offs from interconnecting providers, even if those providers send the vast bulk of their traffic to consumers in other geographic locations served by other providers.¹²

These last two points are important to bear in mind throughout the ensuing discussion. In questioning the role of this specialized “terminating access monopoly” concept, we are *not* casting doubt on whether plain-vanilla monopoly problems could arise if a given provider tied up a dominant share of end users overall. For example, the Justice Department did not need to rely on any terminating access monopoly concept to block the WorldCom-Sprint merger in 2000, which threatened to tip the Internet backbone market to a monopoly by concentrating an enormous share of the Internet’s transit business in one provider.¹³ And as discussed below, policymakers need not rely on any such concept to justify limiting the total share of “eyeballs” any given provider may serve nationwide.¹⁴

11. *E.g.*, 2010 *Open Internet Order*, *supra* note 3, at paras. 24 & n.66, 32 n.87; 2005 *Intercarrier Compensation NPRM*, *supra* note 1, at para. 24 (explaining that all local exchange carriers, whether incumbent or upstart, have monopoly power with respect to terminating access to their respective customer sets); 2001 *Intercarrier Compensation NPRM*, *supra* note 1, at para. 133 (same).

12. *E.g.*, 2005 *Intercarrier Compensation NPRM*, *supra* note 1, at para. 24; 2001 *Intercarrier Compensation NPRM*, *supra* note 1, at para. 133.

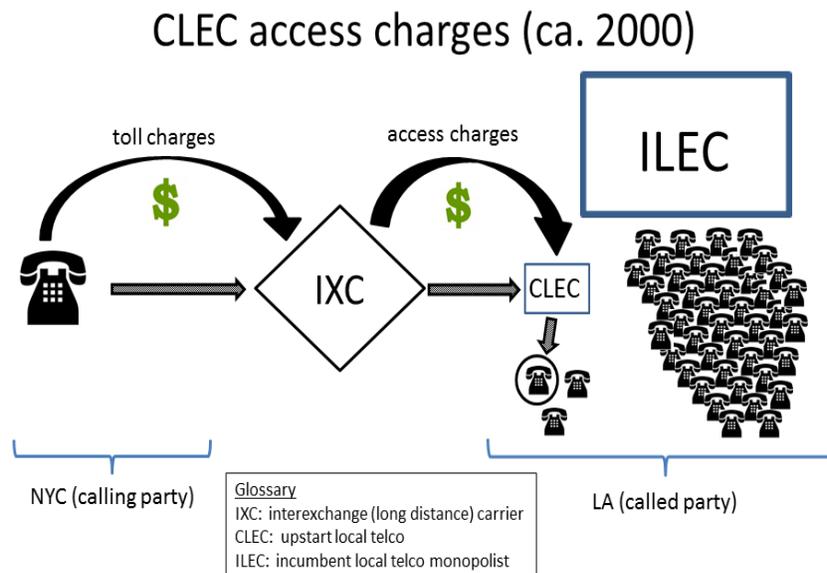
13. *See* Complaint, *United States v. WorldCom*, No. 00-CV-1526 (D.D.C. filed June 26, 2000), <http://www.justice.gov/file/516831/download>.

14. *See infra* note 32 and accompanying text (discussing congressional mandate for horizontal ownership restrictions on cable providers).

II. THE HISTORICAL ORIGINS OF THE TERMINATING ACCESS MONOPOLY THEORY IN VOICE-NETWORK INTERCONNECTION ARRANGEMENTS

The terminating access monopoly concept first assumed prominence in the 1990s and early 2000s with the emergence of competition in voice telephone markets.¹⁵ In the United States, the concept gained currency as fixed-line CLECs began assessing inefficiently high terminating access charges on interconnecting carriers for the delivery of long-distance calls over the public switched telephone network:

FIGURE 1



Because CLECs were new entrants rather than monopolists, observers cited these inefficiently high charges as examples of a market failure

15. The early scholarship on this topic focused on a phenomenon that arose in much of the world outside of the United States: the imposition of excessive termination charges by mobile providers for delivering calls to their subscribers. *See generally* Julian Wright, Competition and Termination in Cellular Networks (Jan. 25, 2000) (unpublished working paper), <http://ssrn.com/abstract=201988>; Joshua S. Gans & Stephen P. King, *Mobile Network Competition, Customer Ignorance and Fixed-to-Mobile Call Prices*, 12 INFO. ECON. & POL'Y 301 (2000). The United States avoided this phenomenon by (inter alia) denying mobile providers any regulatory entitlement to collect terminating access charges of any kind. *See Petitions of Sprint PCS and AT&T Corp. for Declaratory Ruling Regarding CMRS Access Charges*, WT Dkt. No. 01-316, Declaratory Ruling, 17 FCC Rcd. 13,192 (2002), *appeal dismissed sub nom. AT&T Corp. v. FCC*, 349 F.3d 692 (D.C. Cir. 2003).

endemic to interconnection arrangements in network industries.¹⁶

On close inspection, however, the CLEC access charge phenomenon arose as much from a regulatory problem as from a market failure. CLECs were able to charge inefficiently high rates in part because, under the existing access charge regime, each long-distance carrier was required to interconnect with them and pay them whatever rates were set forth in their tariffs, which regulators had not closely scrutinized for any legitimate cost basis.¹⁷ As a result, the CLECs' customers had little or no reason to discipline their carriers' assessment of such charges. Indeed, those customers affirmatively benefited because high intercarrier charges implicitly subsidized their own low retail rates. To make matters worse, federal law kept even the calling parties that triggered these inefficiently high charges from internalizing the costs of this arrangement. In particular, it forced long-distance providers to recover their costs on a geographically averaged basis from all their customers uniformly and thus forbade them to raise prices specifically on the calls subject to unusually high terminating fees.¹⁸

Suppose, however, that this field were completely unregulated—suppose that long-distance carriers were not required to interconnect with any given CLEC if they did not wish to pay whatever access charges the CLEC demanded, and suppose they could pass through to their own customers whatever charges they wished. At first blush, one might think that a large long-distance company's threat of non-interconnection would keep a fledgling CLEC from trying to charge it monopoly-level termination rates—or perhaps anything at all. After all, in a hypothetical game of chicken between the two carriers, the tiny CLEC would have more to lose than the huge long-distance company if their respective customers begin complaining that they could not talk to their friends. In fact, however, the long-distance carrier might well be willing to interconnect and pay the CLEC's inefficiently high access charges if it could pass those charges through to the specific customers who place calls to that CLEC's customers.¹⁹ By so doing, the long-distance

16. See generally JONATHAN E. NUECHTERLEIN & PHILIP J. WEISER, *DIGITAL CROSSROADS: TELECOMMUNICATIONS LAW AND POLICY IN THE INTERNET AGE* 258–59 (2d ed. 2013) (providing fuller discussion of CLEC access charge controversy). The FCC responded in 2001 by capping the level of terminating access charges CLECs could impose. See *Access Charge Reform*, CC Dkt. No. 96-262, Seventh Report & Order and Further Notice of Proposed Rulemaking, 16 FCC Rcd, 9923 (2001).

17. The FCC appeared to recognize this point when it explained that its 2001 cap on termination charges was needed “to prevent use of the regulatory process to impose excessive access charges.” *Access Charge Reform*, *supra* note 16, at para. 2.

18. See *id.* at para. 31 (discussing 47 U.S.C. § 254(g)).

19. We are making several simplifying assumptions in this example. First, we assume that the CLEC imposes uniformly high access charges on all interconnecting long-distance carriers so that, if every such carrier passes 100% of the charges through to its customers, none of them will face any competitive disadvantage vis-à-vis the others. Second, we assume

company could recover its incremental costs and minimize transaction costs (such as handling consumer complaints about blocked calls and negotiating with individual CLECs about access-charge levels). Indeed, it appears that, in some circumstances, international calling arrangements have worked in this manner: long-distance carriers have paid exorbitant “settlement rates” for terminating access to foreign carriers and have passed those rates through to their end users.²⁰

Of course, these high terminating access charges produce inefficient outcomes: they ultimately require the calling party to pay a monopoly price in order to reach the terminating carrier’s customers, thus creating deadweight losses in the form of inefficiently reduced output (i.e., fewer and shorter calls to those customers). Such inefficient arrangements may nonetheless be stable if the called parties are genuinely single-homed and if they remain loyal to the terminating carrier because that carrier shares the monopoly profits with them indirectly, in the form of subsidized retail rates. The terminating access monopoly may thus pose a legitimate public policy challenge in this context.

As discussed below, however, it is hazardous to extrapolate from this scenario to interconnection arrangements among communications networks in general. The reason is that the calling party in a conventional voice call (or similar person-to-person communication) occupies a unique position. Typically, he wishes to reach one particular person, and no other person is a close substitute for purposes of that communication. For each individual voice call, the “market” in which the calling party participates is a market for access to a single person. Thus, by definition, whatever carrier the called party has chosen is a gatekeeper for 100% of the relevant market. As we discuss next, that key characteristic is absent in most other interconnection contexts.

III. CONTEXTS IN WHICH THE TERMINATING ACCESS MONOPOLY PLAYS LITTLE EVIDENT ROLE IN NEGOTIATIONS INVOLVING CONSUMER-FACING NETWORK PROVIDERS

If the terminating access monopoly threatens inefficient outcomes whenever a consumer-facing network provider routes incoming traffic to

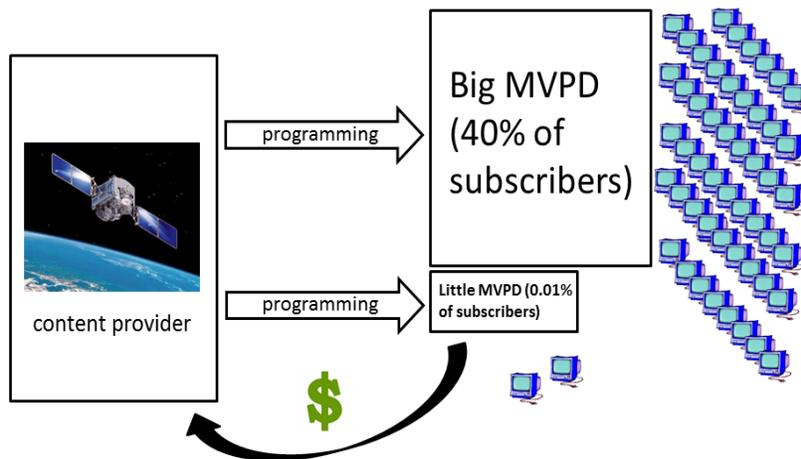
perfect information: the calling parties know that and why they are paying higher prices to reach the called parties. Third, we assume that the called parties are genuinely single-homed, in that a calling party cannot feasibly reach them except through the single network that charges monopoly terminating access rates. Of course, this third assumption was more justified in the late 1990s than it is today, when most people subscribe to multiple voice networks through which they can be reached (e.g., a cellphone as well as a home or office phone).

20. See LAFFONT & TIROLE, *supra* note 8, at 179, 184; see also Executive Office of the President, Office of the U.S. Trade Representative, *2013 Section 1377 Review on Compliance with Telecomm. Trade Agreements* 12 (Apr. 2013) (noting efforts to curb such rates through international trade agreements).

its single-homed customers, one would expect to see many different examples of small competitive providers charging very high rates to the senders of that incoming traffic. Tellingly, that phenomenon rarely arises outside of the voice-interconnection context.

To take one example, consider the marketplace for programming sold to multichannel video programming distributors (“MVPDs”), such as conventional cable companies, fiber overbuilders (e.g., Verizon FiOS or RCN), and satellite television providers. An MVPD’s customers are typically single-homed: a single household within Cox Cable’s footprint generally does not subscribe to both Cox and some alternative MVPD such as DirecTV; it subscribes to one or the other. And like other MVPDs, Cox receives the programming bound for its subscribers from a variety of content sources (such as HBO and Discovery), typically via intermediate satellite or fiber-optic transmissions. If the terminating access monopoly threatened endemic market failures for any unregulated exchange of communications traffic bound for any given provider’s single-homed customers, one would expect each of those MVPDs to charge content providers inefficiently high rates for rights of “access” to the MVPD’s customers. In fact, the consideration often flows in the opposite direction, from MVPDs to interconnecting content providers²¹:

FIGURE 2



21. See, e.g., *Amendment of the Comm’n’s Rules Related to Retransmission Consent*, MB Dkt. No. 10-71, Report & Order and Further Notice of Proposed Rulemaking, 29 FCC Rcd. 3351, para. 2 (2014) [hereinafter *2014 Retransmission Consent Order*] (noting that “broadcasters have increasingly sought and received monetary compensation [from MVPDs] in exchange for retransmission consent”).

And the smaller the MVPD is, the more it must typically pay for the privilege of routing that incoming content to its single-homed end users—a clear indication that the terminating access monopoly, which is by definition indifferent to a provider’s size, plays little or no role in these commercial dynamics. Indeed, MVPDs have cited the increasing size of these payments in urging Congress and the FCC to regulate this marketplace on their behalf.²²

The inapplicability of the terminating access monopoly to MVPDs stems from the difference between point-to-point services such as telephony and point-to-multipoint services such as video entertainment. To achieve its purpose, a telephone call must reach a particular recipient, and the calling party will thus pay supracompetitive rates to reach that recipient. A television show, in contrast, is targeted not at a specific individual, but at a mass audience. As a result, the total number of viewers reached is more important than the ability to reach any particular customer.²³ Although content providers would clearly prefer to reach as many viewers as possible, they are generally free to forgo the revenue that would have been generated by a particular customer if the terminating access provider sets the price for reaching that customer too high.

To take another example, consider the case of small and mid-sized ISPs, each of which may serve thousands or millions of single-homed consumers.²⁴ If each small ISP’s terminating access monopoly were

22. See, e.g., Petition for Rulemaking from Time Warner Cable Inc. et al., *Amendment of the Comm’n’s Rules Related to Retransmission Consent*, MB Dkt. No. 10-71 (filed Mar. 9, 2010), <http://apps.fcc.gov/ecfs/comment/view?id=6015543391>. For the most part, the FCC has declined to intervene substantively in this area on grounds of insufficient statutory authority. See *Amendment of the Comm’n’s Rules Related to Retransmission Consent*, MB Dkt. No. 10-71, Notice of Proposed Rulemaking, 26 FCC Rcd. 2718, para. 18 (2011); cf. *2014 Retransmission Consent Order*, *supra* note 21.

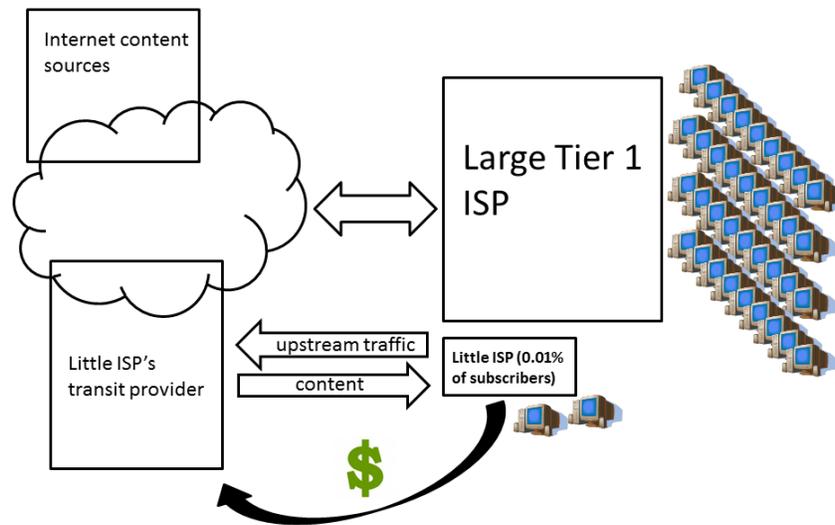
In the case of broadcast programming, Congress has set up an elaborate system under which cable companies need not bargain with content owners and may instead avail themselves of a “compulsory copyright,” but they must nonetheless bargain with broadcast stations (which often act as close proxies for their affiliated programming networks) for rights of “retransmission consent.” See NUCHTERLEIN & WEISER, *supra* note 16, at 335–39. Although the compulsory copyright and retransmission consent provisions complicate the economic picture, the ensuing market dynamics are similar to those that any MVPD confronts in the unregulated market for *non*-broadcast programming, such as that offered by HBO and Discovery. In both contexts, MVPDs must enter into market-based negotiations for the right to send specified content to their subscribers.

23. See Christopher S. Yoo, *Vertical Integration and Media Regulation in the New Economy*, 19 YALE J. ON REG. 171, 253–58 (2002); accord *Time Warner Entm’t Co. v. FCC*, 240 F.3d 1126, 1131–32 (D.C. Cir. 2001) (citing *Implementation of Section 11(c) of the Cable Television Consumer Prot. and Competition Act of 1992*, MM Dkt. No. 92-264, Third Report and Order, 14 FCC Rcd. 19,098, 19,114–18 paras. 40–50 (1999)).

24. To give the terminating access monopoly concept the benefit of the doubt in the broadband Internet context, we are treating fixed-line residential service as the relevant market, and we are thus treating retail customers as “single-homed” if they have one fixed-line

material to its negotiations with other Internet-based networks, one would expect each of those ISPs to extract inefficiently high rates from the interconnecting backbone providers and content delivery networks that deliver incoming Internet traffic bound for the ISP’s customers. In fact, such ISPs typically charge little or nothing for such access to their customers. To the contrary, the money often flows in the opposite direction: any ISP that is not a Tier 1 network typically pays third-party networks for transit services, which include the service of terminating traffic to that ISP’s customers.²⁵

FIGURE 3



Of course, the more eyeballs a given ISP serves, the greater its size and scope is likely to be within the Internet peering marketplace, and the less likely it is to pay transit providers for access to any given Internet content. Indeed, the largest ISPs have succeeded in charging some

connection into the home, whether or not they may also have Internet connections via their mobile devices or office computers. This is because any problems associated with terminating access are minimized if retail customers maintain multiple fungible connections. LAFFONT & TIROLE, *supra* note 8, at 215.

25. See Peyman Faratin, David Clark et al., *The Growing Complexity of Internet Interconnection*, 72 COMM. & STRATEGIES 51, 63 (2008); see also Stanley M. Besen & Mark A. Israel, *The Evolution of Internet Interconnection from Hierarchy to “Mesh”: Implications for Government Regulation*, 25 INFO. ECON. & POL’Y 235, 243–44 (2013). A Tier 1 network is a network of sufficient global size and scope that it does not purchase transit services from any other network and peers with each other Tier 1 network.

interconnecting networks—such as Level 3 and Netflix’s proprietary content distribution network (“CDN”)—for sending large amounts of incoming streaming video traffic to the ISPs’ customer base.²⁶ But there is little evidence so far that these charges are inefficiently high, such that they could cause deadweight losses to the Internet ecosystem; only then could they suggest a monopoly problem.²⁷ More importantly, only the largest ISPs appear capable of charging interconnecting CDNs anything at all for access to their customer base. This fact reaffirms that any negotiating leverage such ISPs may have originates from their size—and thus from traditional sources of bargaining power—not from the size-agnostic phenomenon of the terminating access monopoly.

In sum, these examples underscore that the terminating access monopoly does not play a central role in all unregulated interconnection arrangements. Instead, whatever role it plays is a contingent phenomenon that arises only under certain traffic patterns and market structures.

IV. THE LIMITED EXPLANATORY VALUE OF THE TERMINATING ACCESS MONOPOLY CONSTRUCT

Our discussion so far suggests the following: any consumer-facing network provider has, in some sense, “monopoly” or “gatekeeper” power over access to its single-homed customers, but that concept is not particularly edifying as a tool for understanding what factors actually shape interconnection arrangements. A small rural MVPD/ISP may be the gatekeeper for access to its customer set, but HBO is likewise the gatekeeper for access to its programming, and Netflix is the gatekeeper for access to its streaming video service. The rural MVPD/ISP’s possession of a terminating access monopoly does not itself tell us very much about how it will fare in its negotiations with those other gatekeepers. All we know is that, despite the MVPD/ISP’s gatekeeper status, it is very unlikely to earn monopoly rents from any

26. See, e.g., NUECHTERLEIN & WEISER, *supra* note 16, at 287–90; 2015 *Open Internet Order*, *supra* note 4, at paras. 196–205.

27. Large volumes of incoming traffic impose costs on ISP networks. ISPs could efficiently recover those costs by charging higher retail rates to their heaviest data users or, alternatively, by charging wholesale rates to the networks that offload high volumes of unidirectional traffic. Suppose that, in the latter scenario, the interconnecting network that pays these wholesale charges is a CDN operated by a subscription streaming-video provider such as Netflix. Ultimately, the video provider will pass some or all of the charges through to its subscribers in the form of higher rates for its service, and it can vary those rates explicitly depending on each subscriber’s ISP and the wholesale rates that ISP charges for interconnection. Under either scenario, the costs caused by the extra streaming video traffic will be paid by the end users that benefit from that traffic and cause it to be transmitted. There is no reason in principle why either of these cost-recovery models is inherently more efficient than the other. See generally Besen & Israel, *supra* note 25, at 243–44. Certainly the mere existence of wholesale charges for access to an ISP’s customer base is not evidence of a market failure.

interconnection deal.

Borrowing from the economic literature, it may be useful to employ a bilateral monopoly framework to analyze commercial negotiations in these circumstances.²⁸ Under that framework, the monopolist on each side of a transaction bargains for a greater share of the economic surplus that would be created if the two can agree upon terms. Each has an incentive to strike a deal because otherwise no surplus is created and each side comes away with nothing. But one side may have more to lose than the other from delays in negotiations, and the other side can exploit that fact to win a larger share of the surplus. In the interconnection contexts discussed above, several familiar factors influence bargaining outcomes, and each is exogenous to the terminating access monopoly construct.

First, interconnecting entities that wish to deliver unusually high-value traffic may successfully extract fees from (rather than paying them to) a consumer-facing network provider because, as the negotiating parties understand, withholding the traffic from the consumer-facing provider will diminish the value that consumers attach to the network provider’s service. For example, ESPN typically enjoys a stronger negotiating position than the Tennis Channel vis-à-vis MVPDs, and it successfully charges MVPDs substantial fees for access to its content. Again, the fact that consideration often flows from the supposed terminating access monopolist to the interconnecting supplier of incoming communications traffic underscores the limited explanatory value of the terminating monopoly construct.

Second, if the consumer-facing network provider faces little retail competition, that fact will affect negotiations in its favor, because the sender of communications traffic will perceive that the network provider could credibly threaten to hold out for a better deal without losing substantial retail revenues. In contrast, if the network provider does face retail competition, the sending party can try to exploit that fact by encouraging the network provider’s customers to incur the switching costs of defecting to an alternative network provider—as broadcasters routinely do when they reach negotiating impasses with given MVPDs. These dynamics, too, cut against any heavy explanatory emphasis on the terminating access monopoly, which is said to exist irrespective of retail

28. For the classic exposition of this issue, see Ariel Rubinstein, *Perfect Equilibrium in a Bargaining Model*, 50 *ECONOMETRICA* 97, 97–100 (1982). See generally ABHINAV MUTHOO, *BARGAINING THEORY WITH APPLICATIONS* (1999). Although “bilateral monopoly” analysis can shed light on the dynamics of interconnection agreements, our use of that term does not imply that the parties on either side of such agreements (e.g., a small competitive ISP and HBO) are conventional “monopolists” in any well-defined antitrust market. For example, HBO obviously competes for viewers with other programming networks even though it serves as a gatekeeper for access to its own programming.

competition.

Third, even if the consumer-facing network provider faces no competition and enjoys a complete retail monopoly within its footprint, it will enjoy greater or lesser bargaining leverage depending on the total number of customers it serves. For example, a large MVPD/ISP is more likely than a small one to strike favorable terms with a content provider or some other interconnecting entity because it can credibly threaten to impose costly delays on access to its large customer set. For example, a cable programmer is likely to be far more nervous about losing even temporary access to 25% of the nation's eyeballs. Again, this consideration has nothing to do with the mere fact that the consumer-facing network provider serves single-homed customers, and thus has little in particular to do with the terminating access monopoly. It relates instead to the aggregate share of eyeballs the provider can claim nationwide.

In contrast, if a consumer-facing network provider's customers account for only a very small share of the overall market that the interconnecting entity wishes to reach, the network provider may have little negotiating power because a bargaining impasse might have only a *de minimis* effect on the interconnecting entity. By analogy, every parent is a "gatekeeper" for access by magazine publishers to the children in her household. But this does not mean that each parent enjoys monopoly/monopsony power *vis-à-vis* child-magazine publishers, because the relevant market from the publisher's perspective is the nationwide set of potential child subscribers, not the set of children within a given household.

These considerations suggest a broader principle. A network provider's gatekeeper role could enable it to earn monopoly rents and produce inefficient market outcomes only if, among other preconditions, its set of single-homed customers is material to the broader market that the traffic-delivering entity wishes to reach. That precondition often is not met. For example, Netflix or a cable programming channel need not reach 100% of American households to succeed, and either could easily balk at any request by a tiny MVPD/ISP to pay high fees for access to its small customer base. Of course, even if this precondition is met—even if the MVPD/ISP acts as a gatekeeper for a substantial share of a given market—market forces might produce efficient outcomes anyway. For example, even a large MVPD/ISP probably could not succeed in charging inefficiently high rates to providers of popular content for access to its customer base if it faces strong retail competition and the content provider has independent relationships with consumers.²⁹

29. See, e.g., Lerner & Ordover, *supra* note 5, at 17–23 (arguing that a content provider's independent relationship with end users, combined with retail mobile broadband competition,

Viewed from this perspective, voice-network interconnection appears as a special case in which the terminating access monopoly would sometimes play a central role in an unregulated market. Again, in the absence of regulation, any terminating voice carrier, large or small, may succeed in charging inefficiently high rates for access to its single-homed customers if the calling party’s carrier can pass those rates through to the calling party itself. The reason is that, in any given call, the calling party has a particularized need to reach a given individual at a given number, and the terminating carrier (with whom the calling party typically has no relationship) controls access to that entire “market.”

This is not to say that this market dynamic is unique to the PSTN. There may also be other special cases in which even a small consumer-facing network provider could exploit its terminating access monopoly to produce inefficient market outcomes. In theory, that concern could arise whenever (1) a retail provider controls exclusive access to a potential recipient of a communication and could feasibly condition that access on the receipt of a termination payment, (2) a mechanism exists for the originator of the communication to make that payment either directly or indirectly, and (3) the originator has a strong need to reach the particular recipient in question and thus would be willing to pay supracompetitive rates to do so. For example, if these conditions are all met, even a small over-the-top VoIP provider with no physical network could theoretically impose inefficiently high access charges on interconnecting VoIP providers.³⁰ Moreover, in a variation on a classic hold-out problem, a small MVPD/ISP might be able to extract inefficiently high payments from a content provider if, for some reason, the content provider’s business plan requires access to all (rather than most) consumers nationwide and the MVPD/ISP can credibly threaten that plan by refusing to deal. But these are special cases; they are not endemic to interconnection negotiations in the communications marketplace.

CONCLUSION

In sum, the terminating access monopoly plays a major role in the communications ecosystem only in narrowly defined circumstances. Its importance is highly contingent on other market facts, and policymakers should thus be wary of invoking it as a generalized basis for broadly intervening in any marketplace involving consumer-facing network providers.

would keep a mobile provider from exploiting any terminating access monopoly vis-à-vis the content provider).

30. In reality, these conditions will rarely be met. For example, multi-homing is increasingly common, and few people would agree to be *single-homed* customers of a VoIP provider that threatened to block calls from non-paying interconnecting providers.

We repeat what we said at the outset: this is a narrow thesis. There may be a variety of sound analytical bases independent of any terminating access monopoly for regulatory oversight of relationships between consumer-facing network providers and interconnecting suppliers of voice, Internet content, and other communications traffic. First, conventional market power concerns might well justify caps on any given provider's market share. For example, policymakers may reasonably seek to maintain competitive equilibrium within the marketplace for Internet peering and transit, a key basis for the rejection of the WorldCom-Sprint merger in 2000.³¹ Or they may wish to address monopsony concerns in the sale of cable programming, the basis for regulatory limits on a given cable provider's share of subscribers nationwide.³² Again, however, these concerns have nothing to do with conventional notions of a terminating access monopoly, which are indifferent to a terminating provider's size.

Second, because of network externalities, a given network of networks—whether the public telephone system or the Internet—may serve as an optimally valuable platform for innovation and economic growth only if all constituent networks are in fact interconnected.³³ This public good rationale may well justify regulatory intervention if and when necessary to avoid negotiating impasses and potential balkanization of such platforms. For that reason, regulators may wish to scrutinize, and perhaps intervene in, (1) VoIP-to-VoIP interconnection as voice networks transition from their historic circuit-switched format to the Internet Protocol, (2) the relations between “eyeball” ISPs and content providers (or CDNs), and (3) peering negotiations between Tier 1 networks.³⁴ But any regulatory intervention should be tethered to these concerns. Invocation of the terminating access monopoly concept in these contexts is likely to confuse the policy debate more than clarify it.

31. See Complaint, *United States v. WorldCom*, *supra* note 13 and accompanying text.

32. See 47 U.S.C. § 533(f) (2013). Although the D.C. Circuit has twice rejected the FCC's various rationales for capping cable ownership shares at 30% (*see, e.g., Comcast Corp. v. FCC*, 579 F.3d 1 (D.C. Cir. 2009)), that is a dispute over details; there is no dispute that *some* limit is appropriate (and required by statute).

33. See, *e.g.*, BRETT FRISCHMAN, *INFRASTRUCTURE: THE SOCIAL VALUE OF SHARED RESOURCES* 331 (2012); Timothy F. Bresnahan & M. Trajtenberg, *General Purpose Technologies: “Engines of Growth”?*, 65 J. ECONOMETRICS 83 (1995).

34. See NUECHTERLEIN & WEISER, *supra* note 16, at 281–87 (discussing challenges of the IP transition for voice networks), 290–93 (discussing concerns about the risk that Tier 1 bargaining impasses could theoretically lead to at least partial and temporary Internet fragmentation).