WHAT DID THE UNBUNDLED NETWORK ELEMENT PLATFORM COST?

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I. INTRODUCTION

The Telecommunications Act of 1996[1] ("Telecommunications Act" or "Act") assumes that competition is possible and desirable in all telecommunications markets.[2] In some cases, it directs the Federal Communications Commission ("FCC" or "Commission") to promulgate rules intended to move the industry from monopoly to competition, rather than substitute regulation for competition.[3] To the extent that such rulemakings accomplish this goal, they should have a similar effect on consumers as ideal regulation: reducing prices while increasing consumer spending on services.[4] The move from monopoly to competition should produce additional consumer benefits that regulation rarely delivers, such as continuous pressure to lower costs and the introduction of

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   [1]   Pub. L. No. 104-104, 110 Stat. 56 (codified in scattered sections of 47 U.S.C.).
   [2]   The Act promotes "competition and reduce[s] regulation in order to secure lower prices and higher quality services for American telecommunications' consumers and encourage[s] the rapid deployment of new telecommunications technologies." *Id.* 110 Stat. at 56.
   [3]   *E.g.*, 47 U.S.C. §§ 253(a), (d) (2000). Continual regulation tends to be costly since, among other things, it requires constant oversight and is subject to politicization. *See* RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 403 (5th ed. 1998); *see also* Glenn A. Woroch, *Local Network Competition*, *in* 1 HANDBOOK OF TELECOMMUNICATIONS ECONOMICS 641, 655 (Cave et al. eds., 2002).
   [4]   *See* POSNER, *supra* note 3, at 4–6, 382–84.

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innovative new services.[5]

The Telecommunications Act directs the FCC to issue regulations requiring incumbent local exchange carriers ("ILECs") to lease "unbundled" elements of their local networks[6] to competitors at regulated rates.[7] The statute also requires incumbents to lease the entire suite of network elements necessary to provide local telephone service—the "unbundled network element platform" ("UNE-P").[8] In December 2004, the FCC effectively decided to stop forcing incumbents to lease the UNE-P to competitors after a one-year transition period.[9]

Most of the largely inconclusive debate over UNE-P regulation has focused on whether the regulated price of the UNE-P gave ILECs sufficient incentive to

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[5]   *See id.* at 128, 304–05. The FCC's initial regulation of the unbundled network element platform sought to "provide the right incentives for both incumbent and competitive [Local Exchange Carriers] to invest rationally in the telecommunications market in the way that best allows for innovation and sustainable competition." *In re* Unbundled Access to Network Elements; Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, *Order on Remand*, 20 F.C.C.R. 2533, ¶ 2 (Dec. 15, 2004) [hereinafter Unbundled Access to Network Elements]; *see* POSNER, *supra* note 3, at 379–80 (identifying problems warranting public regulation of natural monopolies such as that of ILECs).

[6]   The term "unbundled network element" derives from the combination of the Commission's definitions of "unbundled access" and "network element." Section 251(c)(3) requires Incumbent Local Exchange Carriers ("ILECs") to allow Competitive Local Exchange Carriers ("CLECs") to "unbundled access" of their "network elements." 47 U.S.C. § 251(c)(3). "Unbundled Access" is defined as the "[t]he duty to provide, to any requesting telecommunications carrier for the provision of a telecommunications service, nondiscriminatory access to network elements on an unbundled basis at any technically feasible point on rates, terms, and conditions that are just, reasonable, and nondiscriminatory . . . ." *Id.* "Unbundled" is not defined by the Act, but is commonly known as "services, programs, software and training sold separately from the hardware." HARRY NEWTON, NEWTON'S TELECOM DICTIONARY 865 (20th ed. 2004). A "network element" is the

> facility or equipment used in the provision of a telecommunications service. Such term also includes features, functions, and capabilities that are provided by means of such facility or equipment, including subscriber numbers, databases, signaling systems, and information sufficient for billing and collection or used in the transmission, routing, or other provision of a telecommunications service.

47 U.S.C. § 153(29). The Act neglected to specifically identify the network elements that ILECs were required to provide to CLECs. CHARLES H. KENNEDY, AN INTRODUCTION TO U.S. TELECOMMUNICATIONS LAW 95–96 (2d ed. 2001).

[7]   47 U.S.C. § 251(c)(3); *id.* § 259. Prior to the Act, ILECs wielded significant control over competitors by denying access to the incumbents' customers and exchange facilities. KENNEDY, *supra* note 6, at xxvii ("New, local competitors could achieve only a niche presence unless the incumbents completed calls from the competitors' customers to the incumbents' customers, and delivered calls from the incumbents' customers to the competitors' networks.").

[8]   47 U.S.C. § 251(c)(3).

[9]   *See* Unbundled Access to Network Elements, *supra* note 5, ¶ 63 (adopting transition period from twelve months for mass-market local circuit switching to eighteen months for "unbundled access to dark fiber loops and dark fiber dedicated transport").

invest in the telephone network.[10] This article assesses the effect of UNE-P regulation on economic welfare independent of its effect on investment in the network. By comparing the efficiency of UNE-P regulation to the efficiency of an alternative, feasible policy—reducing long-distance access charges and contributions to the federal Universal Service Fund ("USF")—we will demonstrate how both policies can transfer wealth from ILECs to consumers. In reducing access charges or USF contributions or both, a scheme may be designed to effectuate direct transfers from ILECs to consumers. Platform regulation, on the other hand, passes a portion of the wealth transfer through competitive local exchange carriers ("CLECs"), which may prompt ILECs to reduce their own retail rates in order to remain competitive.[11] The effectiveness of UNE-P regulation depends on whether it stimulates efficient or inefficient competition.[12] Greater wealth transfers to consumers occur when competition is efficient, while smaller wealth transfers occur when competition is inefficient. These alternative policies could also have varying effects on consumer welfare[13] by

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[10]   *See, e.g.*, T. Randolph Beard et al., *Why ADCo? Why Now? An Economic Exploration into the Future of Industry Structure for the "Last Mile" in Local Telecommunications Markets*, 54 FED. COMM. L.J. 421 (2002) (arguing that ILECs go to great lengths to deter CLEC entry into the market); *see also* Mark D. Schneider et al., *The USTA Decisions and the Rise and Fall of Telephone Competition*, COMM. LAW., Summer 2004, at 1, 4 ("Whether this competition is beneficial over the long term, or is what Congress intended, remains a matter of controversy.").

[11]   Unbundled Access to Network Elements, *supra* note 5, ¶ 5. In standard neoclassical economic theory, competitive markets enhance consumer welfare in two ways: (1) every unit of every resource is employed in the use that consumers value most highly ("allocative efficiency"); and (2) firms produce at minimum average total cost ("productive efficiency"). A logical implication of these two results is that consumers pay a lower price than they would pay under unregulated monopoly. *See* JAMES D. GWARTNEY & RICHARD L. STROUP, MICROECONOMICS: PRIVATE AND PUBLIC CHOICE 173–74 (4th ed. 1987). In addition, more sophisticated theories of competition recognize that competition is also a rivalrous process that gives firms incentives and opportunities to discover new products, new technologies, new production methods, and new consumer demands. *See generally* DYNAMIC COMPETITION AND PUBLIC POLICY: TECHNOLOGY, INNOVATION, AND ANTITRUST ISSUES (Jerry Ellig ed., 2001).

[12]   *See generally* Beard et al., *supra* note 10.

[13]   Consumer welfare is a term of art in antitrust and regulatory analysis. It is used to distinguish the policy goal of promoting the overall welfare of consumers from other policy goals, such as assisting producers or redistributing income from one group of consumers to another.

> Consumer welfare is greatest when society's economic resources are allocated so that consumers are able to satisfy their wants as fully as technological constraints permit . . . . Consumer welfare, as the term is used in antitrust, has no sumptuary or ethical component, but permits consumers to define by their expression of wants in the marketplace what things they regard as wealth.

ROBERT H. BORK, ANTITRUST PARADOX 90 (1978); *see also* GWARTNEY & STROUP, *supra* note 11.

altering the price of services in markets that have a different elasticity of de-
mand.[14] Long-distance markets have a relatively high elasticity of demand[15]
while demand for monthly local service is fairly inelastic.[16] It is likely that
policies reducing the price of long-distance would benefit consumers more
than policies reducing the price of local service because the market for local
service is less price-sensitive.

Regulations requiring ILECs to lease their UNE-P have generated substan-
tial "opportunity costs" for consumers.[17] Yet, over the years, consumers re-
ceived only a fraction of the wealth that the unbundling policy transferred from
ILECs. In addition, there is another substantial opportunity cost—that of for-
gone service. Long-distance and wireless service markets have a relatively
high elasticity of demand.[18] Therefore, any regulated increase in price for the
service generates a significant decrease in the quantity of the service de-
manded. If instead, the wealth had been transferred to consumers via a policy
of reducing long-distance access charges and USF contributions, consumers
would have gained as much as $3.3 billion in 2003, and social welfare could
have increased by as much as $5 billion.[19] These results show that the FCC's

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[14] Demand is said to be elastic when "a price increase will lead to a proportionately
greater reduction in the quantity demanded and hence to a fall in total revenue." POSNER,
supra note 3, at 296.

[15] Those markets with a high elasticity of demand are more susceptible to decreased
consumption upon the introduction of a price increase. *Id.; see* David L. Kaserman & John
W. Mayo, *Competition in the Long-Distance Markets, in* 1 HANDBOOK OF TELECOMMUNI-
CATIONS ECONOMICS, *supra* note 3, at 513–16 (discussing the increased demand in long-
distance markets in recent years).

[16] The FCC assumed that demand for local service was inelastic when enacting provi-
sions of the Telecommunications Act. *In re* Implementation of the Local Competition Provi-
sions in the Telecommunications Act of 1996; Interconnection Between Local Exchange
Carriers and Commercial Mobile Radio Service Providers, *First Report and Order*, 11
F.C.C.R. 15,499, ¶ 696 (Aug. 1, 1996) [hereinafter *First Order*]; *see also* Alexander C. Lar-
son, *Resale Issues in Telecommunications Regulation: An Economic Perspective*, 2 MICH.
TELECOMM. & TECH. L. REV. 57, 60 (1995–1996) ("[L]ow price elasticity of demand for
local service, means that it is extremely doubtful that resale policies can lead to significant
changes in consumer welfare.").

[17] Opportunity cost is the highest-valued opportunity forgone because one chooses a
particular course of action. What we have calculated is thus, strictly speaking, a possible
opportunity cost of the UNE-P. If there is another opportunity that consumers would value
even more highly, the value of that opportunity would be the "opportunity cost." *See, e.g.*,
Verizon Commc'ns, Inc. v. FCC, 545 U.S. 467 (2002).

[18] *See, e.g.*, Laura H. Phillips & Jason E. Friedrich, *Wireless: Can Regulatory "Business
As Usual" Continue?*, COMM. LAW., Fall 2002, at 12, 15–16 ("[Wireline and wireless pro-
viders have] starkly different elasticities of demand [and] consumers are more likely to give
up a wireless phone . . . or forego getting an additional wireless phone, rather than give up
their landline telephone service.").

[19] This statement is a summary of the article's principal quantitative finding. *See infra*
Table 7.

decision to abandon UNE-P regulation will enhance consumer welfare, especially if combined with other initiatives to decrease the regulatory impact on prices in long-distance markets.

II. THE LEGAL AND REGULATORY BASIS FOR RESALE AND UNBUNDLING

Congress sought to increase local telephone competition in the Telecommunications Act through three mechanisms: "full facilities-based entry,"[20] leasing of the incumbent's UNEs, and resale of the incumbent's retail services.[21] Full facilities-based entry occurs when CLECs build and maintain their own facilities in competition with ILECs.[22] "Unbundling" occurs when CLECs lease parts of the ILECs' network.[23] "Resale" occurs when CLECs buy the ILECs' services at a discounted wholesale rate, then sell them to consumers at a retail rate.[24] To achieve this goal, the Telecommunications Act requires ILECs to lease portions of their networks to CLECs at regulated rates.[25]

A basic and fundamental example of a network element is the local loop—the wire that connects a home or business to a switch located in the phone company's central office.[26] A CLEC leasing only local loops would install its own switches in an ILECs' central office and make its own arrangements to transport calls between its switches. In addition to individual network elements, the FCC requires ILECs to lease the entire set of network elements necessary to provide local service—the UNE-P.[27] Leasing the UNE-P is equivalent to buying the ILECs' service at a wholesale discount. Until recently, CLECs had increasingly relied on leasing the UNE-P as a business strategy since it was cheaper than building an entire network from scratch.[28]

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[20]   *First Order, supra* note 16, at 16,249 (Chong, Comm'r, statement). In the First Order, the Commission found that the Act "contemplates" the "construction of new networks" as a requisite for entry into a marketplace, but found that "new entrants will be unable to reach all of their customers without depending on the incumbent's facilities." Therefore, the Commission mandated that incumbents provide network elements to competitors so that they may enter and fully serve the marketplace. *Id.* ¶¶ 12–14.

[21]   *Id.* at 16,249 (Chong, Comm'r, statement); *see also* 47 U.S.C. §§ 251–271 (2000).

[22]   *First Order, supra* note 16, ¶ 13.

[23]   47 U.S.C. § 251(c)(3).

[24]   *First Order, supra* note 16, at 16,249 (Chong, Comm'r, statement).

[25]   47 U.S.C. § 251(c)(3).

[26]   William W. Sharkey, *Representation of Technology and Production,* in 1 HANDBOOK OF TELECOMMUNICATIONS ECONOMICS, *supra* note 3, at 182–83.

[27]   47 U.S.C. § 251(c)(3); *see also id.* § 259.

[28]   The FCC's policies concerning leasing UNEs have generated an overwhelming amount of discussion and litigation. Many telecommunications providers reacted to the FCC's unbundling rules by suing the FCC. *E.g.,* Verizon Commc'ns, Inc. v. FCC, 545 U.S.

The Telecommunications Act gave the largest local telephone companies, the Bell Operating Companies ("BOCs"), an incentive to promptly unbundle their networks. Section 271 of the Act permitted BOCs that sufficiently unbundled their networks to enter the interLATA long-distance market for the first time.[29] The Act specifies a variety of facilities that must be unbundled but no "impairment" analysis is required.[30] Elements that are unbundled under § 271 also need not be offered at "Total Element Long Run Incremental Cost" ("TELRIC")[31] prices. Instead, the prices need only avoid being "unjust, unreasonable, or unreasonably discriminatory."[32] Once the BOCs entered into enough interconnection, unbundling, and resale agreements, competition was deemed to be underway.[33] At this point they received approval under § 271 to begin offering long-distance service.[34] All BOCs have now obtained approval to enter the long-distance market.[35]

A. Regulating Resale of Telecommunication Services

Resale of ILEC services is provided for in § 251(c)(4) of the Telecommunications Act.[36] Subpart (A) declares that it is the duty of ILECs "to offer for resale at wholesale rates any telecommunications service that the carrier provides at retail to subscribers who are not telecommunications carriers . . . ."[37] Subpart (B) states that ILECs are "not to prohibit, and not to impose unreasonable or

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467 (2002); U.S. Telecom Ass'n v. FCC, 359 F.3d 554 (D.C. Cir. 2004).

[29]   47 U.S.C. § 271(c). InterLATA service is defined as "telecommunications between a point located in a local access and transport area and a point located outside such area." *Id.* § 153(21). *See generally* KENNEDY, *supra* note 6, at 62–71 (providing a background of the interLATA restriction).

[30]   47 U.S.C. § 271(c)(2) (listing requirements for BOCs before they may provide long-distance services). An "impairment" analysis involves an examination into a competitor's ability to provide service. *See id.* § 251(d)(2).

[31]   TELRIC is a "pricing standard requiring ILECs to set their rates for reciprocal compensation and unbundled network elements . . . ." KENNEDY, *supra* note 6, at 42. Under this standard, "the rate [an ILEC charges] a CLEC for any facility or network functionality can only recover the associated forward-looking costs, assuming use of the most efficient technology." *Id.* In other words, an ILEC's leasing rates must be based on optimal technology deployment; such rates may not consider less-than-optimal technology implementations. *Id.* TELRIC is an acronym for "total element long run incremental cost." *Id.; see* discussion *infra* p. 8 and note 48.

[32]   *U.S. Telecom Ass'n*, 359 F.3d at 589.

[33]   KENNEDY, *supra* note 6, at 62.

[34]   *Id.*

[35]   FCC, RBOC Applications to Provide In-Region, InterLATA Services Under § 271, http://www.fcc.gov/Bureaus/Common_Carrier/in-region_applications (last visited Sept. 19, 2005).

[36]   47 U.S.C. § 251(c)(4) (2000).

[37]   *Id.* § 251(c)(4)(A).

discriminatory conditions or limitations on, the resale of such telecommunications service . . . ."[38] Subsection (3) of Part (d) deals with wholesale pricing:

> For the purposes of section 251(c)(4) of this title, a State commission shall determine wholesale rates on the basis of retail rates charged to subscribers for the telecommunications service requested, excluding the portion thereof attributable to any marketing, billing, collection and other costs that will be avoided by the local exchange carrier.[39]

Precedent existed for the Telecommunications Act's resale provisions. A similar policy, adopted to open the long-distance market to competition from firms like Sprint and MCI in the 1980s, seemed to work well.[40] In the local market, however, few CLECs now seem to regard resale as the preferred business strategy.[41] AT&T, for example, found that within a year after passage of the Act, offering local service through resale was unprofitable despite a wholesale discount of approximately 17%.[42] Regulated wholesale discounts have typically averaged between 15% and 25%.[43]

Reports from ILECs filed with the FCC indicate that there were 1.7 million resold lines in December 1997, rising to a peak of 5.4 million in December 2000 before falling back to 1.6 million in June 2004.[44] Competitors' numbers are somewhat different; they reported acquiring 3.5 million resold lines in December 1999, rising to 5.1 million in June 2004.[45] Despite the disparity in numbers, the competitors' figures suggest that resale has become less popular, as the percentage of their lines accounted for by resale fell steadily from 42.9%

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[38] *Id.* § 251(c)(4)(B).

[39] *Id.* § 252(d)(3).

[40] Yale M. Braunstein, The Role of UNE-P in Vertically Integrated Telephone Markets: Ensuring Healthy and Competitive Local, Long-Distance and DSL Markets (May 2003) (unpublished manuscript, School of Information Management and Systems, University of California, Berkeley) [hereinafter Braunstein: UNE-P Markets], http://www.sims.berkeley.edu/~bigyale/UNE/UCB_Study_UNE_May_2003.pdf.

[41] *See* Christopher R. Day, *The Concrete Barrier at the End of the Information, Superhighway: Why Lack of Local Rights-Of-Way Access Is Killing Competitive Local Exchange Carriers*, 54 FED. COMM. L.J. 461, 464 (2002) ("In the last two to three years, most new CLECs have embraced the facilities-based model due to the fact that many entrants relying exclusively on the resale model found it difficult, and in some cases impossible, to earn a profit by repackaging and reselling the services of incumbent carriers.")

[42] ROBERT W. CRANDALL, CRITERION ECONS., AN ASSESSMENT OF THE COMPETITIVE LOCAL EXCHANGE CARRIERS FIVE YEARS AFTER THE PASSAGE OF THE TELECOMMUNICATIONS ACT 32 (2001) [hereinafter CRANDALL: CLEC ASSESSMENT], http://www.criterioneconomics.com/docs/Crandall%20CLEC.pdf.

[43] Robert W. Crandall & Jerry Hausman, *Competition in U.S. Telecommunication Services: Effects of the 1996 Legislation, in* DEREGULATION OF NETWORK INDUSTRIES: WHAT'S NEXT? 73, 84, 97 (Sam Peltzman & Clifford Winston eds., 2000).

[44] *See* WIRELINE COMPETITION BUREAU, FCC, LOCAL TELEPHONE COMPETITION: STATUS AS OF JUNE 30, 2004 tbl.4 (2004), http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/lcom1204.pdf.

[45] *Id.*

in December 1999 to 16% in June 2004.[46]

One explanation is that wholesale discounts are not large enough to produce a price discrepancy that would permit effective competition with the ILECs' local rates, which are often below incremental cost because they benefit from cross-subsidies. Another possibility is that the regulated prices of the UNE-P, which are equivalent to wholesale discounts of more than 45%, have made unbundling more attractive than resale from the CLECs' perspective.[47] A final explanation is that resale forces CLECs to offer a service identical to that offered by ILECs. The most successful CLECs, however, have developed their own networks that can offer innovative new services, or at least better service. Therefore, resale is not a very attractive option for CLECs.[48] A CLEC can *market* resold services along with its own (such as long-distance service), but resale offers no cost or quality advantages from *producing* services using a different type of network.

A few empirical studies have assessed the causes and consequences of resale. Employing 1991–2000 data from markets where BOCs are the ILECs, James Eisner and Dale E. Lehman found no statistically significant relationship between the size of wholesale discounts and the number of lines served by CLECs via resale.[49] This finding is consistent with the theory that resale discounts have not been large enough to make resale profitable. Similarly, using 1998–2000 data, Robert W. Crandall found that CLECs relying on resale had only average revenue growth per dollar of capital assets—a finding that does not bode well considering that CLECs' "average" financial performance has not been very good. Crandall concludes, "Just changing the nameplate on the service is not typically a very good strategy for attracting customers."[50]

B. Unbundling the Network

Unbundled access to the ILECs' network is mandated in § 251(c)(3) of the Telecommunications Act.[51] Unbundled access is "[t]he duty to provide, to any requesting telecommunications carrier for the provision of a telecommunica-

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[46]   *Id.* tbls.3, 5.
[47]   Robert S. Pindyck, Mandatory Unbundling and Irreversible Investment in Telecom Networks 7 (Jan. 2004) (unpublished manuscript, Massachusetts Institute of Technology), http://web.mit.edu/rpindyck/www/VZ.UNE.Pindyck0104.pdf.
[48]   *See* CRANDALL: CLEC ASSESSMENT, *supra* note 42, at 23–32.
[49]   James Eisner, Federal Communications Commission, & Dale E. Lehman, Fort Lewis College, Regulatory Behavior and Competitive Entry, Paper Presented at the 14th Annual Conference Center for Research in Regulated Industries (June 28, 2001), http://www.aestudies.com/library/elpaper.pdf.
[50]   CRANDALL: CLEC ASSESSMENT, *supra* note 42, at 42.
[51]   47 U.S.C. § 251(c)(3) (2000).

tions service, nondiscriminatory access to network elements on an unbundled basis at any technically feasible point on rates, terms, and conditions that are just, reasonable, and nondiscriminatory."[52]

Congress and the FCC have reasoned that ILECs "have economies of density, connectivity and scale; traditionally, these have been viewed as creating a natural monopoly."[53] ILECs are capable of providing service at much lower rates because they hold the overwhelming advantage of having a network already in place.[54] In order to promote entry into local telephony markets, Congress and the FCC have attempted to remove this advantage by imposing the unbundling requirements.[55]

1. The Extent to Which Unbundling Is Required

The extent of the UNE requirements has generated significant controversy. The Telecommunications Act instructs the FCC to consider whether access to an ILEC's proprietary network elements is "necessary" and whether an ILEC's failure to provide access to non-proprietary elements would "impair" a CLEC's ability to provide service.[56] In practice, the definition of "impair" becomes determinative as to which network elements must be made available to CLECs. Several rounds of FCC regulations implementing the Telecommunications Act declared that ILECs must make available both individual network elements and the UNE-P.[57] The FCC's First Local Competition Order, released on August 8, 1996, identified a minimum set of network elements.[58] The report stated that "[t]he minimum set of network elements the Commission identifies are: local loops, local and tandem switches (including all vertical switching features provided by such switches), interoffice transmission facilities, network interface devices, signaling and call-related database facilities, operations support systems functions, and operator and directory assistance facilities."[59]

On multiple occasions, federal courts have held that the FCC's list of UNEs

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[52] *Id.*

[53] *See First Order, supra* note 16, ¶ 11.

[54] *Id.*

[55] *Id.* ¶ 27 ("The Commission also concludes that Incumbent Local Exchange Carriers, 'ILECs,' are required to provide access to network elements in a manner that allows requesting carriers to combine such elements as they choose, and that ILECs may not impose restrictions upon the uses to which requesting carriers put such network elements.").

[56] 47 U.S.C. § 251(d)(2).

[57] *See, e.g.,* Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, 61 Fed. Reg. 18,311 (Apr. 25, 1996).

[58] *First Order, supra* note 16, ¶ 27.

[59] *Id.*

is based on unreasonable definitions of "impair."[60] Courts have called upon the FCC to articulate a definition that is linked to a natural monopoly or one that weighs the benefits of unbundling against the costs or some combination of the two.[61]

In December 2004, the FCC decided that lack of access to the ILECs' switches did not impair CLECs' ability to provide service.[62] The Commission found that CLECs have deployed a significant and growing number of their own switches to serve the mass market, and that similar deployment is possible in markets where CLECs had not yet deployed them.[63] The FCC also found that ILECs have significantly improved the "hot cut"[64] procedures used to disconnect local telephone wires from their own switches and connect them to the CLECs' switches.[65] In addition to removing switching from the list of UNEs, this decision effectively killed the UNE-P, since ILECs were no longer required to furnish one of the key elements of the platform. The FCC required ILECs to continue furnishing the UNE-P for one year from the effective date of the order—December 2005.[66]

2. UNE Pricing

Prices for network elements, determined by state commissions, are to be just, reasonable, based on cost, nondiscriminatory and "may include a reasonable profit."[67] Network element charges are based on the TELRIC pricing method. This price is based upon local telephone companies' Total Service Long Run Incremental Cost, "plus a reasonable share of forward-looking joint and common costs."[68] TELRIC pricing

> equates the current market value of the existing network of an incumbent telecommunications provider with the cost the incumbent would incur today if it built a local network that could provide all the services its current network provides, to meet reasonably foreseeable

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[60] U.S. Telecom Ass'n v. FCC, 359 F.3d 554, 563 (D.C. Cir. 2004); *see also* AT&T Corp. v. Iowa Utils. Bd., 525 U.S. 366 (1999); Verizon Commc'ns, Inc. v. FCC, 535 U.S. 467 (2002); U.S. Telecom Ass'n v. FCC, 290 F.3d 415 (D.C. Cir. 2002).

[61] *U.S. Telecomm Ass'n*, 359 F.3d at 563. For example, the platform requirement appeared to be based on the assumption that entire local telephone networks, rather than just certain elements, are natural monopolies.

[62] *See* Unbundled Access to Network Elements, *supra* note 5, ¶ 27.

[63] *Id.* ¶¶ 42–45.

[64] "Hot Cut" is the "conversion from an old to a new phone system which occurs instantly as one is removed from the circuit and the other is brought in." NEWTON, *supra* note 6, at 399.

[65] *Id.* ¶¶ 199–219.

[66] *Id.* ¶ 227.

[67] 47 U.S.C. § 252(d)(1) (2000).

[68] *First Order*, *supra* note 16, ¶ 29.

demand, using the least-cost, most-efficient technology currently available.[69]

Thus, the TELRIC rate is not based on the ILECs' actual historical costs, but rather on regulators' estimate of the costs that would be borne today by a hypothetical firm building the most efficient network the regulator believes possible.[70] State commissions determine prices using this TELRIC pricing methodology.[71] Thus, actual prices vary from state to state, depending upon the circumstances of the providers involved.[72] Proceedings to calculate TELRIC prices generated significant disagreement.[73] In Virginia, for example, Verizon (the ILEC) proposed a price of $22 per month for local loops, while AT&T and Worldcom argued the price should be $6.50.[74]

In 2003, the Commission began to reconsider the TELRIC pricing methodology.[75] Notably, the FCC was not looking to adopt an entirely new methodology per se.[76] In a report released on August 21, 2003, the FCC concluded that "it is necessary to clarify the application of two components of TELRIC that have a major impact on UNE prices—cost of capital and depreciation."[77]

In its December 2004 decision on UNE-Ps, the FCC modified pricing for the

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[69] *See In re* Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, *Report and Order and Order on Remand and Further Notice of Proposed Rulemaking*, 18 F.C.C.R. 16,978, ¶ 669 (Feb. 20, 2003) [hereinafter Review of Section 251].

[70] 47 C.F.R. § 51.505(b)(1) (2004) ("The total element long-run incremental cost of an element should be measured based on the use of the most efficient telecommunications technology currently available and the lowest cost network configuration, given the existing location of the incumbent LEC's wire centers.").

[71] *See* Review of Section 251, *supra* note 69, ¶¶ 675–76.

[72] *See In re* Review of the Commission's Rules Regarding the Pricing of Unbundled Network Elements and the Resale of Service by Incumbent Local Exchange Carriers, *Notice of Proposed Rulemaking*, 18 F.C.C.R. 18,945, ¶ 6 (Sept. 10, 2003) [hereinafter Review of Commission's Rules] ("We also note that, for any given carrier, there may be significant differences in rates from state to state, and even from proceeding to proceeding within a state. We are concerned that such variable results may not reflect genuine cost differences but instead may be the product of the complexity of the issues, the very general nature of our rules, and uncertainty about how to apply those rules.").

[73] Numerous cases have been filed by telecommunications providers appealing state TELRIC rates. A small sample of cases are referred to in this article. *See, e.g.,* Verizon Cal., Inc. v. Peevey, 413 F.3d 1069 (9th Cir. 2005); Verizon Fla., Inc. v. Jaber, 889 So. 2d 712 (Fla. 2004); Wis. Bell v. Bie, 340 F.3d 441 (7th Cir. 2003).

[74] Timothy J. Tardiff, *Pricing Unbundled Network Elements and the FCC's TELRIC Rule: Economic and Modeling Issues*, 1 REV. OF NETWORK ECON. 132, 139 (2002), *available at* http://www.rnejournal.com/articles/tardiff_sept02.pdf.

[75] Review of Commission's Rules, *supra* note 72, ¶ 4.

[76] *Id.* ¶ 3 ("[N]ow that competition has taken root in many areas of the count[r]y, we initiate this proceeding to consider whether our pricing methodology is working as intended and, in particular, whether it is conducive to efficient facilities investment.").

[77] Review of Section 251, *supra* note 69, ¶ 675.

UNE-P during the one-year transition period.[78] ILECs must lease the UNE-P to CLECs at a monthly rate per line equal to the higher of either (1) the rate paid by the CLEC on June 15, 2004 plus $1.00; or (2) the rate established by the relevant state public utility commission between June 16, 2004 and the effective date of the Order, plus $1.00.[79]

III. PREVIOUS STUDIES OF UNE REGULATION

At first glance, the UNE-P might seem to be a simple and elegant solution to the monopoly problem in local telephone service. To the extent that ILECs enjoy a monopoly over the local telephone network, regulation can potentially promote competition by forcing them to lease the local network to CLECs at prices that would exist in a competitive market. If the underlying premise of the Act is correct—that local telephone service is not a natural monopoly[80]— then UNE-P regulation should lead to competitive entry and eventually obviate the need for retail price regulation. Over time, competition might even make the unbundling requirements unnecessary once there is sufficient facilities-based competition.

A logical extension of this argument might go even further, advocating below-competitive pricing of network elements to give competition an even greater boost. The rationale behind this argument is that such pricing would elicit more rapid competitive entry, which is desirable because competition will bring new services and other innovations that consumers value. Experience shows that when regulated monopolies or cartelized industries are deregulated and opened to competition, substantial innovations result whose effects could not be quantified in advance.[81] Perhaps these benefits are worth sacrificing short-term economic efficiency. However, it is unlikely that below-competitive prices for the UNE-P would hasten the arrival of these dynamic benefits. Indeed, such prices would more than likely assure that CLECs would never build their own local networks until the ILEC networks wear out, because those network elements would always be cheaper to lease from the ILEC

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[78] *See* Unbundled Access to Network Elements, *supra* note 5, ¶ 228.

[79] *Id.*

[80] *See* H.R. REP. NO. 103-559 (1993).

[81] *See, e.g.*, ROBERT CRANDALL & JERRY ELLIG, CTR. FOR MKT. PROCESSES, ECONOMIC DEREGULATION AND CUSTOMER CHOICE: LESSONS FOR THE ELECTRIC INDUSTRY (1997), http://www.mercatus.org/pdf/materials/839.pdf; Robert Crandall & Clifford Winston, *Does Antitrust Policy Improve Consumer Welfare? Assessing the Evidence*, 17 J. ECON. PERSP. 3 (2003); Jerry Ellig, *Railroad Deregulation and Consumer Welfare*, 21 J. REG. ECON. 143 (2002); Clifford Winston, *Economic Deregulation: Day of Reckoning for Microeconomists*, 31 J. ECON. LITERATURE 1263 (1993).

than to build. To encourage efficient competition, with all of its dynamic bene-
fits, it should be sufficient that monopolized network elements are offered at
competitive market prices.

There are three reasons that platform regulation as adopted by the FCC
could fall short of the competitive[82] ideal: regulated prices and competitive
market prices are rarely equivalent,[83] ILECs cannot refuse to provide service,[84]
and cross-subsidies artificially lower retail telephone rates.

A. Regulated Prices May Fail to Mimic the Competitive Market Price of UNEs

Since technological change tends to lower costs over time, regulated prices
based on historical costs are unlikely to mirror competitive market prices.
Likewise, decades of monopoly likely inflated costs.[85] Under TELRIC, regula-
tors estimate hypothetical competitive prices based in part on their estimate of

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[82] For the sake of simplicity, this entire discussion speaks of the "competitive" price in
the same sense as most introductory economics textbooks—as a single price charged by a
firm whose behavior is constrained by the presence of competitors. By assumption, the
competitive entity must be as efficient as possible, or else competitors will displace it. Also
by assumption, competition is sufficiently strong enough that the entity cannot unilaterally
raise prices or earn profits that exceed its cost of capital. In an industry such as telecommu-
nications, which is undergoing rapid technological change, the concept of the "competitive"
price is somewhat more complicated for several reasons. First, technological improvements
mean that prices are likely to fall over time; thus, it is more accurate to speak of a competi-
tive price path rather than a single competitive price. The more rapid the pace of innovation,
the more rapidly prices fall—but the more rapidly prices fall, the higher they must be ini-
tially if firms expect to recoup their investments before competitors imitate or out-innovate
them. Second, diverse consumer wants can lead to product differentiation. In such a situa-
tion, the "competitive" price is actually a set of prices for different products and services
that are not perfect substitutes. Third, the possibility of innovation creates substantial uncer-
tainty about how much consumers are willing to pay for a service, and for how long. This
uncertainty requires a higher level of profit to elicit investment than would be required in
the absence of uncertainty. For these reasons, "the competitive price" of a telecommunica-
tions service or facility is likely to be a range of price paths which differ from the price that
would be observed in a relatively stable, regulated market. To keep the language simple, this
study will continue to use the term "competitive price" to refer to this more complicated,
dynamic collection of prices.

[83] *See* J. Gregory Sidak & Daniel F. Spulber, *Givings, Takings, and the Fallacy of For-
ward-Looking Costs*, 72 N.Y.U. L. REV. 1068, 1139 (1997). Spidak and Spulber argue that
regulated TELRIC pricing "would not cover the firm's total direct costs, nor would it com-
pensate the firm for its economic costs inclusive of opportunity costs." *Id.* They add that
"[c]ompetitve pricing does not emulate . . . TELRIC pricing. To the contrary, such pricing
would invite free riding and would subsidize entrants, both conditions that competitive mar-
kets do not willingly tolerate." *Id.*

[84] 47 U.S.C. § 251(c) (2000).

[85] *See* Braunstein: UNE-P Markets, *supra* note 40, at 1, 3.

what prices could be.[86] Given the informational advantage that ILECs possess, it is possible that regulators could be manipulated into adopting prices that are above competitive levels. Several studies clearly assume that the ILECs are monopolists with plenty of room to cut prices, either because they reap large profits or because they have inherited significantly inflated costs.[87]

Regulated prices could also be below the competitive level. TELRIC represents a regulator's estimate of what a so-called efficient firm's costs ought to be.[88] The methodology has been widely criticized for understating costs for a variety of reasons. One reason is that TELRIC is based on hypothetical rather than actual costs. In addition, TELRIC may assume unrealistically low depreciation rates. Lastly, TELRIC ignores the cost of the valuable option CLECs receive from entrants who must lease network elements at TELRIC prices.[89]

Below-competitive network element prices may appear to benefit consumers in the short run, either because they lead to lower retail prices or because they facilitate entry by CLECs who offer innovative new services. Nevertheless, below-competitive network element prices could diminish an ILEC's incentive to maintain its network, which could lead to shortages or service degradations.[90]

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[86] *First Order, supra* note 16, ¶ 29.

[87] *See, e.g.*,Yale M. Braunstein, UNE-P Benefits Update: SBC's California Territory (May 2004) (unpublished manuscript, School of Information Management and Systems, University of California, Berkeley) [hereinafter Braunstein: Cal. Study], http://www.sims.berkeley.edu/~bigyale/UNE/CA_UNE_competition_update_2004.pdf; Yale M. Braunstein, UNE-P Benefits in Verizon's New Jersey Territory (March 2004) (unpublished manuscript, School of Information Management and Systems, University of California, Berkeley) [hereinafter Braunstein: N.J. Study], http://www.sims.berkeley.edu/~bigyale/UNE/UCB_NJ_UNE_study_Mar_2004.pdf; Braunstein: UNE-P Markets, *supra* note 40, at 1; RICHARD N. CLARKE ET AL., NAT'L BUREAU OF ECON. RESEARCH, ASSESSING THE ECONOMIC GAINS FROM TELECOM COMPETITION (2004), http://www.nber.org/papers/w10482.

[88] *See generally* Robert W. Crandall et al., *Do Unbundling Policies Discourage CLEC Facilities-Based Investment?*, 4 TOPICS ECON. ANALYSIS & POL'Y (2004) [hereinafter Crandall: *Unbundling Policies*].

[89] *Id. See generally* Jerry Hausman, The Effect of Sunk Costs in Telecommunications Regulation, Paper Presentation at Columbia University Conference (October 2, 1998), http://econ-www.mit.edu/faculty/download_pdf.php?id=258; Jerry Hausman & J. Gregory Sidak, *A Consumer-Welfare Approach to the Mandatory Unbundling of Telecommunications Networks*, 109 YALE L.J. 417 (1999); ALFRED E. KAHN, AM. ENTER. INST. FOR PUB. POLICY RESEARCH,WHOM THE GODS WOULD DESTROY, OR HOW NOT TO DEREGULATE (2001), http://www.aei-brookings.com/admin/authorpdfs/page.php?id=112; Alfred E. Kahn et al., *The Telecommunications Act at 3 years: An Economic Evaluation of its Implementation by the FCC*, 11 INFO. ECON. & POL'Y 319 (1999); Thomas M. Jorde et al., *Innovation, Investment, and Unbundling*, 17 YALE J. ON REG. 1 (2000); PINDYCK, *supra* note 47, at 5.

[90] Below-competitive prices could also diminish the incentive to develop new services if they are applied to those services. This is an issue separate from that of the UNE-P, which consisted of existing telecommunications services.

B. ILECs Have an Obligation to Provide Service

The structure of telecommunications regulation suggests another likely effect of below-competitive prices for the UNE-P. Incumbent phone companies are not free to simply abandon the local network or allow service to deteriorate. Financial analysts estimate that ILEC BOCs need to reinvest 15%–20% of their revenues in order to maintain the network without reducing service quality.[91] Given the historic common carrier obligation of local telephone companies, regulators would likely respond to below-competitive UNE-P prices by mandating that ILECs continue to maintain networks sufficient to supply retail customers' demand for service, as well as competitors' demand for UNEs, at the regulated rates. If the regulated rates are insufficient to elicit the investment, cross-subsidies would be required. Consequently, the inefficiencies of below-competitive prices for the UNE-P may ultimately show up not as shortages or reduced investment in the local network, but as higher USF fees, access charges, or other methods of extracting revenue from the services that subsidize local service. In addition to generating supplementary funds for cross-subsidies, elevated charges in these other markets would harm consumers by reducing the amount of service consumed.

C. Significant Cross-Subsidies Inherent in the Structure of Regulated Retail Telephone Rates Currently Exist

For most residential customers, the monthly charge for local phone service fails to cover the incremental cost of providing the service.[92] Businesses usually pay higher rates than residences[93] and it is likely that business rates cover

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[91]   PINDYCK, *supra* note 47, at 24.

[92]   There is virtually unanimous agreement among regulatory economists that historically, local telephone service has received cross-subsidies funded by overcharges for other services. *See* Wayne Leighton, Consumers and Cross-Subsidies: An Interest Group Theory of Telecommunications Regulation (1996) (unpublished Ph.D. dissertation, George Mason University) (on file with authors). The argument that long-distance service does not cross-subsidize local service is based on the assumption that local loop costs are "common costs" of producing long-distance and local service. However, the fact that customers might use local phone lines for both local and long-distance calls does not mean that local loops are common costs for the phone companies. A loop provides a customer with access to the telecommunications network. The cost of any loop is incremental to the rest of the system, and a loop receives a subsidy if it does not cover its incremental costs. *See generally* ROBERT CRANDALL & LEONARD WAVERMAN, WHO PAYS FOR UNIVERSAL SERVICE? (2000); Steve G. Parsons, *Cross-Subsidization in Telecommunications*, 13 J. REG. ECON. 157 (1998).

[93]   WIRELINE COMPETITION BUREAU, FCC, TRENDS IN TELEPHONE SERVICE tbls.13.1, 13.2 (2003), http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/trend803.pdf.

the incremental cost of service at a minimum. To encourage competition, the price of the UNE-P must be sufficiently low that CLECs can profitably meet or beat the ILECs' regulated prices.[94] This is more likely for business customers than for residential customers. Given the size of cross-subsidies to basic residential phone service, it is possible that the competitive market prices of the UNE-P would be insufficiently low to make entry profitable. Regulators then face the dilemma of either having competition appear to be a failure, or mandating below-competitive prices for the UNE-P so that CLECs can match the ILECs' below-cost retail prices.

1. Are UNE Prices Too High?

The purpose of the UNE-P is to encourage local telephone service competition by enabling CLECs to gain a presence in the market.[95] If the price of the platform is above the level that would exist in a competitive market, CLECs would have much less incentive to use UNEs to enter the market. Total investment in the telecommunications network would be lower than it otherwise would be for two reasons: (1) retail prices would be higher, reducing output; and (2) less competitive entry would likely mean fewer additional facilities would be constructed.

One recent paper raises the possibility that many state utility commissions set UNE prices above TELRIC levels.[96] This study estimates that the accurate TELRIC price for the UNE-P is $15.10 per month, which the authors claim is 27.9% below actual average 2002 TELRIC rates for the platform.[97] If the network element platform prices were set at these "true" TELRIC rates, average local revenues per line would be 10.6% below the actual 2002 level. True TELRIC pricing, they contend, would increase the present value of telecommunications companies' expenditures on investment and labor by $71 billion over the next five years and by $155 billion over the next twenty years.[98]

The authors' estimate of a "true" TELRIC rate may be accurate. However, the results of the model rely on the assumption that the "true" TELRIC rate of $15.10 per month is 27.9% lower than actual rates.[99] A survey conducted by the National Regulatory Research Institute shows that the UNE-P rate averaged $16–$17 per month in August 2004, down 16%–20% from January

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[94] *First Order, supra* note 16, ¶¶ 18–19.

[95] *Id.* ¶ 12.

[96] *See* CLARKE ET AL., *supra* note 87, at 5.

[97] The authors arrived at the $15.10 figure by reducing 1998 FCC-calculated TELRIC prices by 5% per year to reflect assumed price and cost reductions. *Id.* at 32.

[98] *Id.* at 5.

[99] *Id.* at 32.

2002.[100] The August 2004 figures were much closer to $15.10, which implies that most of the benefits predicted by this study have already occurred as a result of price reductions that have taken effect since 2002.[101] The authors' predictions imply that the significant reduction in UNE-P rates between 2002 and 2004 should have been accompanied by both a reduction in retail telephone rates and a telecommunications investment boom.[102] Quite the opposite of the latter actually occurred.

2. Are UNE Prices Too Low?

Several reports calculate whether regulated prices of network elements (and, by implication, the UNE-P) are below the level that would exist in a competitive market. Studies by David M. Mandy calculate that the FCC's forward-looking Hybrid Cost Proxy Model ("HCPM")[103] understates the present-value cost of an end-office switch by about 24%.[104] End-office switching is a significant cost comprising approximately 10% of all costs in the HCPM.[105] Aggregated nationally over the life of the switch, this means that ILECs received approximately $4.5 billion (in 1999) less for access to their switches under TELRIC than they would receive in a competitive market.[106]

An FCC working paper co-authored by William Sharkey and Mandy estimates the "correction factor" necessary to make TELRIC prices yield the target

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[100] Billy Jack Gregg, A Survey of Unbundled Network Element Prices in the United States, (Jan. 1999), http://www.cad.state.wv.us/JanIntro2004.htm.

[101] Another potential problem is that the calculations assume that the price elasticity of demand for telephone service equals negative one. See CLARKE ET AL., supra note 87, at 15. Most empirical studies find the elasticity for demand for local phone service is extremely low—which means that a reduction in price will lead to a negligible increase in consumption, and hence a much smaller increase in investment to supply the larger quantity demanded.

[102] See id. at 1.

[103] The Hybrid Cost Proxy Model is a "forward-looking economic cost methodology [used] to calculate support levels for non-rural carriers. Under this methodology, a forward-looking computer based cost mechanism would be used to estimate non-rural carriers' forward-looking economic cost of providing services in high cost areas." William W. Sharkey, Representation of Technology and Production, in 1 HANDBOOK OF TELECOMMUNICATIONS ECONOMICS, supra note 3, at 206. See generally id. at 210–15 (discussing the Hybrid Cost Proxy Model in detail).

[104] State utility commissions, not the FCC, set TELRIC prices and utility commissions may select cost models other than the FCC's Hybrid Cost Proxy Model. However, this model is the tool the FCC uses to estimate forward-looking costs for the purpose of distributing USF subsidies.

[105] See David M. Mandy, TELRIC Pricing With Vintage Capital, 22 J. REG. ECON., 215, 218 (2002).

[106] David M. Mandy, Pricing Network Elements When Costs Are Changing, 26 TELE-COMM. POL'Y 53, 55, 64 (2002); Mandy, supra note 105, at 218.

rate of return that regulators want to allow ILECs earn.[107] When investment costs fall by 11% annually—the percentage assumed for switching assets in the FCC's cost model—switching prices should be 50% higher than that model dictates.[108] In other words, TELRIC may underestimate the correct switching prices by about 33%. The principal reason for the difference is that TELRIC assumes that the ILEC charges a uniform price over the life of the asset. A firm in a competitive market where investment costs drop over time would charge higher prices than TELRIC assumes in the early years. If TELRIC prices are recalculated before the end of the asset's useful life, TELRIC under-compensates the ILEC by depriving it of the higher prices in the early years but forcing the ILEC to lower prices in later years.[109]

Jerry Hausman argues that TELRIC prices inadequately compensate ILECs for the risks associated with sunken costs and uncertainty.[110] Adjusting for these factors, he estimates that the price for transport links should be 2.35 times the TELRIC rate. Further, the price for ports should be 1.23 times the TELRIC rate.[111] These estimates suggest that TELRIC prices are 67% and 19% below competitive levels, respectively.[112]

Crandall, Allan Ingraham, and Hal Singer examined the effect of regulated rates for unbundled loops—the wires that connect individual customers with telephone company switching facilities. Loops are arguably the network element most likely to be a natural monopoly. They found that in 2000 and 2001, CLECs' ratio of facilities-based loops-to-loops leased from ILECs was lower in states where unbundled loop rates were lower relative to the cost of building new loops.[113] The rate of growth of CLECs' facilities-based loops was also less when unbundled loop rates were lower relative to the cost of building new loops.[114] Ultimately, lower regulated loop prices prompt CLECs to lease loops

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[107] DAVID M. MANDY & WILLIAM W. SHARKEY, OFFICE OF STRATEGIC PLANNING, FCC, DYNAMIC PRICING AND INVESTMENT FROM STATIC PROXY MODELS 2 (2003), http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-238934A2.pdf.

[108] Id. at 43.

[109] Id. at 8–9; see also Review of Commission's Rules, supra note 72, ¶ 22. To be fair, the FCC has stated that it is "appropriate for state commissions to employ accelerated depreciation in order to reflect accurately the anticipated decline in the value of assets in a competitive market." Id. It is unknown whether states have done so.

[110] See generally Hausman, supra note 89.

[111] Id. at 15. Hausman discusses these figures in regards to TSLRIC (total service long run incremental cost) which allows a new entrant to buy the use of the unbundled element on a month-by-month basis. Id. The author notes that the "FCC chose a variant of TSLRIC, called TELRIC for total element LRIC. However, the essential economic problem of TSLRIC also exists in TELRIC." Id. at 6 n.16.

[112] See id. at 15.

[113] Crandall: Unbundling Policies, supra note 88, at 12.

[114] Id. at 15–17.

rather than build their own.[115]

All of these studies imply that TELRIC prices are below those that would exist in a competitive market. However, none of them take the next step and estimate the impact on consumers of this below-competitive price ceiling. So far, no empirical research published in a scholarly journal proves that network element regulation has reduced ILECs' investments in maintaining the local telephone network.[116] Indeed, J. Gregory Sidak notes that there appears to be significant excess capacity in the telecommunications industry, which suggests over-investment rather than under-investment.[117] A definitive answer needs to focus on investments in the local network rather than all telecommunications facilities, and disentangle the effects of network element prices from the effects of the general telecommunications industry boom of the 1990s. In the absence of such evidence, any negative effects of the UNE-P would have to take the form of cross-subsidies from other services that are higher than they otherwise would be.

3. Are Regulated UNE Prices Low Enough to Offset Cross-Subsidies?

Regulated UNE prices may be below competitive levels, but so are the ILECs' retail prices for residential service in many locations, especially in rural areas.[118] It is possible that UNE prices, even if below competitive levels, are nevertheless insufficiently low to prompt competitive entry in the face of cross-subsidized local rates:

> Local phone companies are being forced simultaneously to provide service at averaged prices to expensive rural customers and to sell wholesale access at cost to their competitors, who can then resell phone service to urban and business customers. This in turn, undermines the local phone companies' ability to comply with universal service obligations.[119]

By most measures, competitive entry has grown steadily since the passage of the Telecommunications Act.[120] Despite a huge drop in CLECs' stock mar-

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[115] *Id.* at 20.

[116] Several studies find that recently abandoned policies applying UNE regulation to new types of investments such as broadband, fiber to the home, and advanced services generally tend to reduce those new investments by incumbents. *See* JEFFREY A. EISENACH & THOMAS M. LENARD, PROGRESS & FREEDOM FOUND., TELECOM DEREGULATION AND THE ECONOMY: THE IMPACT OF "UNE-P" ON JOBS, INVESTMENT AND GROWTH 11–13 (2003), http://www.pff.org/issues-pubs/pops/pop10.3unepimpact.pdf.

[117] J. Gregory Sidak, *The Failure of Good Intentions: The WorldCom Fraud and the Collapse of American Telecommunications After Deregulation*, 20 YALE J. ON REG. 207, 216 (2003).

[118] CRANDALL & WAVERMAN, *supra* note 92, at 105–28.

[119] Stuart Buck, *TELRIC vs. Universal Service: A Takings Violation?*, 56 FED. COMM. L.J. 1, 3 (2003).

[120] *See* COMMON CARRIER BUREAU, FCC, LOCAL TELEPHONE COMPETITION: STATUS AS OF

ket values since 1999 and many significant bankruptcies, their revenues, access lines, voice switches, and market shares have all grown steadily for wholly or partially facilities-based CLECs.[121] At least during the first three years after the enactment of the Telecommunications Act, CLECs (including those leasing some network elements) entered where the economies of scale suited them best: high density or urban markets.[122] It is cheaper to provide wireline service to urban consumers than to rural consumers. Historically, rural consumers' local telephone service has been subsidized by urban consumers because prices are averaged, regardless of the marginal cost per consumer.[123]

4. Studies Report Mixed Results on the Effect of UNE-P Prices on Competition and Prices

Employing 1997–2000 data from markets where BOCs are the ILECs, Eisner and Lehman found that lower UNE prices do *not* increase the number of lines served by competitors using UNEs, but they decrease facilities-based entry.[124] Section 271 approval, which indicates that regulators believe the BOC ILEC has unbundled sufficiently to open the local market to competition, is associated with a 260,000–336,000 increase in lines served by CLECs using UNEs.[125] Lower residential rates are often associated with less facilities-based competitive entry, but lower business rates are not. This is to be expected given that business rates are usually higher than residential rates.

A study using 1998 data found that there is less facilities-based competition for residential customers when the ratio of business to residential rates is higher.[126] This result suggests that cross-subsidies from business to residential

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JUNE   30,   2000   (2000),   http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/lcom1200.pdf.

[121] Ass'n for Local Telecomms. Servs., The State of Local Competition 2004 (2004), http://www.alts.org/Filings/2004%20Annual%20Report.ppt.

[122] *See generally* James Zolnierek et al., *An Empirical Examination of Entry Patterns in Local Telephone Markets*, 19 J. Reg. Econ. 143 (2001).

[123] Wireline Competition Bureau, FCC, Trends in Telephone Service (2003), http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/trend803.pdf.

[124] Eisner & Lehman, *supra* note 49.

[125] Since the incumbents are BOCs and § 271 proceedings tended to reduce UNE rates, this variable may be considering the effects of UNE pricing. Alternatively, it may reflect the fact that long-distance companies responded to Bell entry into long-distance by increasing their use of UNEs so that they could offer packages of local and long-distance service to match the Bells' offerings.

[126] *See* Augustin J. Ros & Karl McDermott, *Are Residential Local Exchange Prices Too Low? Drivers to Competition in the Local Exchange Market and the Impact of Inefficient Prices, in* Expanding Competition in Regulated Industries 149 (Michael A. Crew ed., 2000).

customers discourage competition for residential customers. Using a different measure of business rates, Eisner and Lehman found that the ratio of business to residential rates has no effect on entry. This outcome likely occurred because business rates in all states exceed residential rates to the point that the ratio does not affect the amount of entry.[127]

Yale M. Braunstein noted that in California, the Public Utilities Commission reduced the UNE-P rate by 39% in May 2002 to $13.97 per month.[128] Nevertheless, the price charged by AT&T (a major competitor using the UNE-P) for a basic local phone line at the end of 2003 was actually higher than the rate charged by incumbent SBC Communications. This fact suggests that there is little profit potential for CLECs in only reselling basic phone service. In a similar study, Braunstein's data demonstrated that AT&T's price for a basic local phone line in New Jersey was higher than that of the ILEC, Verizon Communications.[129] Thus, it appears from these figures that even substantial reductions in the UNE-P price were insufficient to make UNE-P-based competition for basic telephone service profitable.

These results also illustrate that competition is much more feasible for packages that include long-distance service and vertical features, such as call waiting or voicemail. This is consistent with 2001–02 surveys of rates for packages of local, long-distance, and vertical services in Illinois and Michigan. Studies conducted by lobbying coalitions in both states found that CLECs offer a "typical" package for $11.87 per month less than the ILEC in Illinois and $8.02 per month less than the ILEC in Michigan.[130]

Nationally, reductions in UNE-P rates since 2002 appear to have increased utilization of the UNE-P. Between January 2002 and July 2003, the average price of the UNE-P fell by 17%, from $18.95 to $15.67 per month.[131] The number of UNE-P lines rose from 5.8 million at the end of 2001 to 13 million by the middle of 2003.[132] By December 2003, UNE-P lines accounted for 51% of all CLEC lines, up from 29% at the end of 2001.[133]

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[127] Eisner & Lehman, *supra* note 49, at 10.

[128] Braunstein: Cal. Study, *supra* note 87.

[129] *See* Braunstein: N.J. Study, *supra* note 87. The "à la carte" tab of the New Jersey spreadsheet, Column B, lists the AT&T price of local service as $8.95, and Column G lists the Verizon price as $8.84. *Id.*

[130] *See generally* ILL. COAL. FOR COMPETITIVE TELECOMMS., CONSUMER SAVINGS FROM LOCAL TELEPHONE SERVICE COMPETITION IN ILLINOIS (2003) (on file with authors) [hereinafter ICCT]; MICH. ALLIANCE FOR COMPETITIVE TELECOMMS., CONSUMER SAVINGS FROM LOCAL PHONE COMPETITION IN MICHIGAN (2003) [hereinafter MACT], http://www.miact.org/pdf/Mich_ConsumerSavings.pdf.

[131] Gregg, *supra* note 100.

[132] *Id.*

[133] *See* WIRELINE COMPETITION BUREAU, FCC, LOCAL TELEPHONE COMPETITION: STATUS

Even if the FCC had retained the UNE-P, it is unclear whether UNE-P based CLECs would have survived in the long term. Analyzing data from 1998–2000, Crandall found that CLECs whose revenues per dollar of assets grew the fastest were those that built their own networks, not those that relied on UNEs.[134] There was no difference in performance between CLECs targeting business or residential customers.[135] CLECs using a mixed strategy of leasing some network elements and building portions of their own network performed better than those that relied wholly on UNEs but worse than those using their own network exclusively.[136] This result may occur because the typical CLEC seeks to offer local telephone service in combination with other services, such as long-distance, Internet, high-speed data connection, or video. A CLEC building its own network and using nascent technology can offer a wider array of services than one relying heavily on the ILEC's older network, which was originally designed to carry voice traffic only. These results do not mean that a CLEC that failed to invest in its own network could not be successful. They simply mean that those firms that did not invest in their own facilities were less likely to succeed.

The existing research on competition suggests that UNE regulation encouraged entrants to use UNEs, but discouraged them from building their own facilities.[137] Prices for leasing the UNE-P were insufficiently low to make stand-alone sales of basic telephone service a profitable business. CLECs who offered packages that included other features, such as vertical services and long-distance, appeared to offer lower package prices than the ILECs in a number of large states.

5. So Cui Bono, Sonny?

No studies published in scholarly journals have quantified the effect of UNE regulation on retail prices or consumer welfare. Several studies published by various think tanks or coalitions, and several working papers on websites, estimate consumer savings or consumer benefits.[138]

These studies likely overstate the savings, for several reasons. First, they at-

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AS   OF   DECEMBER   31,   2003,   tbls.3,   5   (June   2004), http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/lcom0604.pdf [hereinafter LOCAL TELEPHONE COMPETITION: STATUS AS OF DECEMBER 31, 2003].

[134] CRANDALL: CLEC ASSESSMENT, *supra* note 42, at 73.

[135] *Id.*

[136] *Id.*

[137] *See generally* Zolnierek et al., *supra* note 122; LOCAL TELEPHONE COMPETITION: STATUS AS OF DECEMBER 31, 2003, *supra* note 133.

[138] *See generally* ICCT, *supra* note 130; MACT, *supra* note 130.

tribute all of the price savings to the UNE-P. This ignores the effects of actual or potential competition from facilities-based telephone companies—CLECs who lease only some network elements, cable, and wireless.[139] An accurate measure of the effects of the UNE-P would compare actual prices to those that would exist in the absence of the UNE-P. Second, the studies may artificially inflate the price differences due to the way they handle the long-distance component of the service package.[140] A more sophisticated approach can be found in studies estimating the effect of UNE competition on residential prices in California and New Jersey. Braunstein compares the ILECs' and AT&T's 2003 price packages that include local, vertical, and long-distance services with the ILECs' 2002 prices.[141] Braunstein estimates that California residential customers in SBC Communications' territory save between $345 and $625 million annually due to the UNE-P.[142] He obtained similar results in a study of New Jersey, estimating that competition via the UNE-P saved residential customers between $133 and $217 million annually.[143]

Unlike the Illinois and Michigan studies, Braunstein examines comparable service packages afforded by SBC Communications and AT&T. Nevertheless, his calculations likely overstate the saving because he often uses the prior year's SBC Communications' à la carte prices as a proxy for the prices that would exist in the absence of UNE regulation.[144] As a result, some of the inherent efficiencies of packaging were counted as benefits from UNE regulation and any underlying increases in productivity or efficiency were attributed to UNE regulation as well. Like the Illinois and Michigan studies, Braunstein attributes all of the price savings to competition using the UNE-P rather than other forms of competition. In addition, he ignores other factors that may explain reductions in long-distance prices over time, such as long-term price trends driven by technological change, excess capacity, and entry of the BOCs into long-distance service. This is an especially significant factor since many

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[139] Wireless services may be an especially important source of pricing pressure on long-distance rates, since wireless companies offer national calling plans for a modest additional fixed charge.

[140] SBC did not offer long-distance service during the time when the data were gathered, but the competitors offered packages of local service, vertical features, and long-distance. In an effort to make prices comparable, the studies increased SBC's price by an amount equal to the average number of toll minutes in the sample multiplied by the average per-minute price of toll service. This adjustment means that SBC's hypothetical package price incorporates long-distance at its stand-alone price, rather than a lower price that would reflect the efficiencies of packaging. The competitor's package price, on the other hand, includes these efficiencies. Braunstein: Cal. Study, *supra* note 87.

[141] Braunstein: Cal. Study, *supra* note 87; Braunstein: N.J. Study, *supra* note 87.

[142] Braunstein: Cal. Study, *supra* note 87.

[143] *Id.*

[144] *Id.*; Braunstein: N.J. Study, *supra* note 87.

of the California and New Jersey price savings are driven by reductions in long-distance prices.[145] To partially adjust for other factors affecting long-distance prices, he offers a "conservative" estimate that apportions only part of the package savings to local competition, as well as an "aggressive" estimate that assumes long-distance prices were already at competitive levels in 2002 and hence had no further room to fall.[146]

A Phoenix Policy Center study employing 1999 data estimated nationally that "all distance" packages with no additional usage charges save consumers about $6.7 billion annually compared to à la carte prices.[147] Consumer welfare increases by an additional $3.3 billion due to increased use of telecommunications services at the lower price.[148] The study's rhetoric implies that these savings are due to competition fostered by unbundling but it does not test alternative explanations, such as competition from facilities-based carriers, technological change, or excess long-distance capacity. Nevertheless, the study makes the novel point that a long-distance carrier can achieve "do-it-yourself" reductions in access charges by becoming a CLEC.[149] Of course ILECs that are permitted to offer packages of local and long-distance services can achieve these same kinds of savings, but they were not permitted to offer long-distance service in 1999. Although presented as an estimate of the benefits of unbundling, the study's findings actually identify a significant benefit of packaging: it reduces inefficient cross-subsidies by effectively circumventing access charges.[150]

IV. THE EFFECTS OF UNE-P REGULATION ON CONSUMER WELFARE

Information contained in the Illinois, Michigan, California, and New Jersey studies can serve as a starting point for assessing the effects of UNE regulation on consumer welfare. Each of the studies estimates consumer savings by identifying residential price reductions offered by UNE-P-based CLECs and ILECs. None posits any increase in telephone subscriptions as a result of the price reductions—an assumption consistent with well-known research findings that subscription levels have very little response to price changes.[151] CLECs

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[145] Braunstein: Cal. Study, *supra* note 87; Braunstein: N.J. Study, *supra* note 87.

[146] Braunstein: Cal. Study, *supra* note 87; Braunstein: N.J. Study, *supra* note 87.

[147] PHOENIX POLICY CTR., THE $10 BILLION BENEFIT OF UNBUNDLING: CONSUMER SURPLUS GAINS FROM COMPETITIVE PRICING INNOVATIONS (2004), http://www.phoenix-center.org/PolicyBulletin/PCPB8Final.doc.

[148] *Id.*

[149] *Id.*

[150] *Id.*

[151] *See* CRANDALL & WAVERMAN *supra* note 92, at 91; Christopher Garbacz & Herbert

appear to sell basic phone service at a price similar to ILECs. Likewise, ILECs do not appear to have lowered basic phone rates in response to competition. Given this reality, consumers likely perceive the drop in package prices as a reduction in the price of non-basic services such as extended area calling, toll calling, and vertical features. Therefore, one might expect the price reductions to cause an increase in use of these services.

A rough estimate of the additional value this creates for consumers can be calculated by assuming that consumers perceive the package price reductions as a drop in the price of long-distance service. Table 1 shows the results of this calculation, using data in the four studies and assuming that the elasticity of demand for long-distance service equals -0.7 (a common finding in the empirical literature on long-distance pricing).[152] The "per line" figure is the consumer benefit divided by the total number of residential lines in each state, as reported in or estimated from data in each study.

G. Thompson, Jr., *Universal Telecommunication Services: A World Perspective*, INFO. ECON. & POL'Y 495, 497, 506 (2005); Christopher Garbacz & Herbert G. Thompson, *Estimating Telephone Demand with State Decennial Census Data from 1970-1990: Update with 2000 Data*, 24 J. REG. ECON. 373, 376 (2003); Christopher Garbacz & Herbert G. Thompson, *Estimating Demand with State Decennial Census Data from 1970-1990*, 21 J. REG. ECON. 317, 326 (2002).

[152] Different empirical studies, using data from the past several decades, consistently find price elasticities between -0.51 and -0.72. *See* Jerry Hausman & Howard Shelanski, *Economic Welfare and Telecommunications Regulation: The E-Rate Policy for Universal-Service Subsidies*, 16 YALE J. ON REG. 19, 36–37 (1999); Crandall and Waverman find that the elasticity of demand for long-distance service is between -0.7 and -0.75. CRANDALL & WAVERMAN, *supra* note 92, at 186 n.13; In earlier work, Crandall assumed a demand elasticity of -0.7, based on a number of prior studies. *See generally* ROBERT W. CRANDALL, AFTER THE BREAKUP 138 (1991). The calculations also assume a linear demand curve. Thus, the formula for the change in consumer welfare is simply $5\Delta p \Delta q$. The resulting figures are approximations, since the elasticity of demand changes as one moves along the demand curve. *Id.*

Table 1: Unadjusted Effect of UNE-P on Consumer Welfare[153]

State, Incumbent, Year	Annual Savings	Consumer Surplus Gain		Consumer Welfare Gain	
		Total	Per Line	Total	Per Line
Illinois, SBC, 2002	$209,000,000	$46,923,360	$13.43	$255,923,360	$73.27
Michigan, SBC, 2002	$88,600,000	$12,533,309	$4.50	$101,133,309	$36.31
California, SBC, 2003 ("conservative")	$345,213,818	$17,522,856	$1.53	$362,736,674	$31.68
California, SBC, 2003 ("aggressive")	$624,824,721	$57,404,370	$5.01	$682,229,091	$59.59
New Jersey, Verizon, 2003 ("conservative")	$133,161,198	$3,389,717	$0.73	$136,550,915	$29.42
New Jersey, Verizon, 2003 ("aggressive")	$217,282,413	$9,025,208	$1.94	$226,307,621	$48.75

For reasons outlined above, all of these studies likely overestimate the retail price reductions caused by the UNE-P. One major factor influencing package prices is the fact that packaging local with long-distance service allows a telecommunications provider to avoid paying access charges. As Table 2 shows, adjusting the price savings to remove the effect of a one cent per-minute reduction in access charges substantially reduces the price savings figures.[154] The adjusted figures may still overstate the effects of UNE-P competition, but one large source of inaccuracy has been removed.

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[153] The calculations shown in Tables 1–5 are based on data in published studies discussed throughout this article. *See generally* ICCT, *supra* note 130; MACT, *supra* note 130; Braunstein: Cal. Study, *supra* note 87; Braunstein: N.J. Study, *supra* note 87. *See also In re Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, Ex Parte Communication from Joan Marsh on Behalf of AT&T*, CC Docket Nos. 01-338, 96-98, and 98-147, UNE-P vs. 271 LD Entry 5 (Sept. 25, 2002) [hereinafter *AT&T Ex Parte Communication*] (accessible via FCC Electronic Comment Filing System).

[154] FCC estimates suggest that access charges average between 1 cent and 1.44 cents per conversation minute, depending on the data and assumptions employed in the estimate. States usually impose intrastate long-distance access charges that are substantially higher.

Table 2: Effect of Adjusting Savings for One Cent Per-Minute Reduction in Access Charges to Reflect Efficiencies of Packaging

| State, Incumbent, Year	Monthly Savings, Competitors' Customers	Adjusted Savings, Competitors' Customers	Monthly Savings, Incumbent's Customers	Adjusted Savings, Incumbent's Customers
Illinois, SBC, 2002	$11.88	$11.05	$4.20	$3.37
Michigan, SBC, 2002	$8.03	$7.27	$1.22	$0.46
California, SBC, 2003 ("conservative")	$4.46	$2.92	$2.26	$0.72
California, SBC, 2003 ("aggressive")	$9.31	$7.77	$3.93	$2.39
New Jersey, Verizon, 2003 ("conservative")	$3.55	$0.97	$2.21	0
New Jersey, Verizon, 2003 ("aggressive")	$7.18	$4.60	$3.39	$0.81

Adjustments reflect a one cent per-minute access charge reduction multiplied by eighty-three average toll minutes in Illinois, seventy-six average toll minutes in Michigan, 154 weighted average toll minutes in California, and 258 weighted average toll minutes in New Jersey.

Table 3 illustrates revised savings, consumer surplus, and consumer welfare figures using the adjusted price savings in Table 2. The revision reduces the effects on consumer welfare moderately for Illinois and Michigan, and substantially for California and New Jersey, as Figure 1 demonstrates.

Table 3: Adjusted Effect of UNE-P on Consumer Welfare

State, Incumbent, Year	Annual Savings	Consumer Surplus Gain		Consumer Welfare Gain	
		Total	Per line	Total	Per line
Illinois, SBC, 2002	$174,213,060	$32,603,027	$9.33	$206,816,086	$59.21
Michigan, SBC, 2002	$63,206,008	$6,378,448	$2.29	$69,584,457	$24.98
California, SBC, 2003 ("conservative")	$133,627,798	$2,625,561	$0.23	$136,253,359	$11.90
California, SBC, 2003 ("aggressive")	$413,238,700	$25,109,064	$2.19	$438,347,764	$38.29
New Jersey, Verizon, 2003 ("conservative")	$7,282,065	$10,137	$0.002	$7,292,203	$1.57
New Jersey, Verizon, 2003 ("aggressive")	$73,571,233	$1,034,723	$0.22	$74,605,956	$16.07

Figure 1: Consumer Benefits Shrink When Adjusted for Efficiencies of Packaging
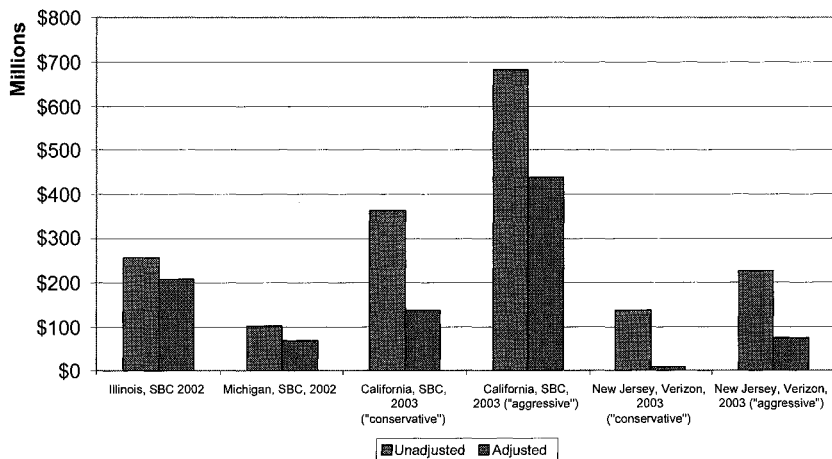
To the extent that these findings actually represent the results of competition using the UNE-P, they suggest that such competition has led to a noticeable increase in consumer welfare compared to the previous status quo. However, neither the four state studies nor the figures in Tables 1–3 assess the opportunity cost of this policy. The opportunity cost of the UNE-P is equal to the benefits consumers would have received under alternative policies that transfer wealth directly to consumers, such as reductions in access charges or USF as-

sessments. The potential for opportunity costs exists regardless of the level of regulated UNE rates. For consumers, the opportunity cost consists of two parts: a wealth transfer and an effect on consumer surplus.

A. Wealth Transfer

As long as UNE rates are below the monopoly level, they transfer wealth from ILECs to CLECs and consumers. Retail price reductions by ILECs in response to the competition, of course, flow directly to consumers. The key question, therefore, is the extent to which the wealth transferred from ILECs to UNE-P-based CLECs flows through to consumers.

If the CLECs are economically efficient and the market is competitive, any wealth transferred to them should ultimately pass through to consumers. If the CLECs are not efficient or the market is not sufficiently competitive, then not all of the wealth transfer will flow through to consumers.[155]

Table 4 estimates the efficiency of the wealth transfer to consumers in the four states using Table 2's adjusted figures for savings to CLECs' customers. For each telephone line served by a CLEC, the wealth transfer to the CLEC is equal to the ILECs' revenues per access line, reduced by the price of the UNE-P and the estimated retail costs that the ILEC avoids when it loses a line to a UNE-P-based CLEC.[156] Table 4's total wealth transfer figure is simply the ILECs' lost revenues per line multiplied by the number of residential lines served by UNE-P based CLECs. These figures reveal that in most cases, a substantial portion of the wealth transfer to CLECs fails to reach consumers. Figure 2 graphically illustrates this gap. The principal exception is the near-total pass through that occurs under the California "aggressive" scenario, which assumes that all of the savings on packages can be attributed to competition from UNE-P based competitors.

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[155] *See First Order, supra* note 16, ¶ 4.

[156] For Illinois and Michigan, local revenues per access line are equal to the incumbent's average price for a local package reported. *See* ICCT, *supra* note 130; MACT, *supra* note 130. Since the packages in Braunstein's studies of California and New Jersey include long-distance service, local revenues per line were taken from elsewhere. *See AT&T Ex Parte Communication, supra* note 153. Estimates of unbundled network element prices and avoided costs are derived from this document as well. *Id.* These estimates of unbundled network element prices are consistent with widely-reported survey results. *Id.; see also* Gregg, *supra* note 100. The principal difference between the two studies is that the former includes transport and amortization of non-recurring costs, while the latter does not. Thus, the AT&T figures lead to a slightly lower estimate of wealth transfers from incumbents to competitors.

Table 4: Efficiency of Wealth Transfer UNE-P Regulation

State, Incumbent, Year	Incumbent Revenue Lost Per Line	Total Transfer to Competitors	Savings of Competitors' Customers	Difference in Wealth Transfers	Customer Savings as % of Wealth Transfer
Illinois, SBC, 2002	$15.03	$64,522,708	$47,436,854	$17,085,853	74
Michigan, SBC, 2002	$13.34	$93,695,624	$51,062,008	$42,633,616	54
California, SBC, 2003 ("conservative")	$7.83	$123,516,339	$46,062,288	$77,454,052	37
California, SBC, 2003 ("aggressive")	$7.83	$123,516,339	$122,569,854	$946,485	99
New Jersey, Verizon, 2003 ("conservative")	$9.07	$68,091,066	$7,282,065	$60,809,000	11
New Jersey, Verizon, 2003 ("aggressive")	$9.07	$68,091,066	$34,533,506	$33,557,559	51

Figure 2: Inefficient Wealth Transfers
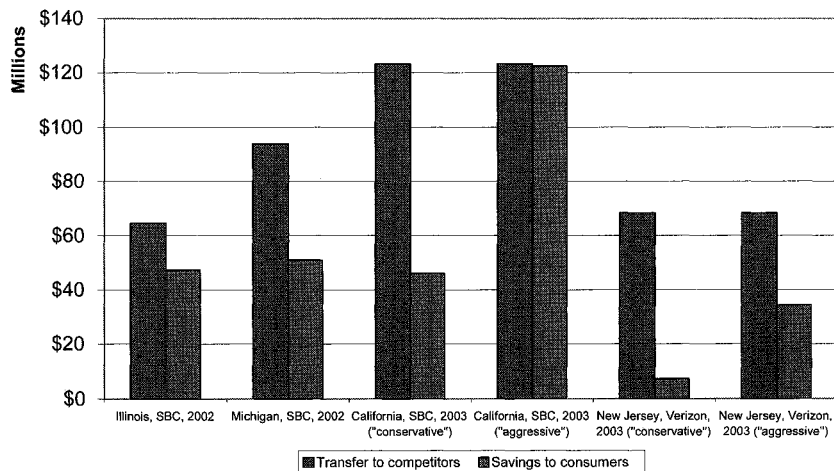
That wealth transfers were inefficient does not mean that UNE-P-based CLECs pocketed the rest of the wealth transfer as profit. Thomas W. Hazlett offered a simple explanation of why many competitive entrants eventually failed to benefit from the wealth transfers created by UNE-P regulation—open

entry forced the competitors to compete away any excess.[157] The money expended by CLECs to capture the wealth transfer was used for many purposes.[158] To the extent that CLECs offered lower prices or new services that consumers could not obtain from the ILECs, some of the wealth transfer actually flowed through to consumers. To the extent that CLECs spent money to develop services or sales efforts that consumers did not value, the money was simply wasted. Similarly, much of the CLECs' and ILECs' expenditures on legal services, economic studies, and engineering models used to contest the wealth transfers must also be classified as a cost of regulation that did not benefit consumers. The fact that the stock market values CLECs' assets at pennies on the dollar suggests that CLECs have captured little of the transfer as profit.[159]

B. Consumer Surplus

The consumer surplus component of the opportunity cost arises because alternative ways of transferring wealth to consumers may have effects on consumer surplus that are superior to those effectuated through UNE regulation. To the extent that UNE-P rates are below the competitive level, local telephone service requires larger cross-subsidies if ILECs are to maintain investment in the network.[160] These cross-subsidies require higher prices on other services, in the form of access charges, USF assessments, or other measures that distort the market.[161] The price increases will reduce consumption of the affected services, and the resulting reduction in consumer surplus is indeed an opportunity cost of UNE regulation.

If UNE-P rates are at or above the competitive level, they still entail an opportunity cost in terms of consumer surplus. Instead of transferring wealth to consumers via competitors, policymakers could have achieved the transfer by reducing access charges, USF assessments, or other measures that generate revenues for cross-subsidies. The price reductions associated with such policies would increase consumption of the affected services, and consumer sur-

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[157] Thomas W. Hazlett, *The Irony of Regulated Competition in Telecommunications*, 4 COLUM. SCI. & TECH L. REV. 10–13 (2003).

[158] *See id.*

[159] *See* LARRY F. DARBY ET AL., PROGRESS & FREEDOM FOUND., THE CLEC EXPERIMENT: ANATOMY OF A MELTDOWN 2 (2002), http://www.pff.org/issues-pubs/pops/pop9.23clecexperiment.pdf.

[160] *First Order, supra* note 16, ¶¶ 231–34.

[161] *See, e.g., In re* Access Charge Reform; Price Cap Performance Review for Local Exchange Carriers; Transport Rate Structure and Pricing Usage of the Public Switched Network by Information Service and Internet Access Providers, 11 F.C.C.R. 21,354, ¶ 42 (1996) ("Current access charges distort competition . . . .").

plus would increase as a result. This increase in consumer surplus that policy-makers forego by regulating the price of UNEs instead of reducing excessive charges on other services is an opportunity cost of UNE regulation.

C. Total Effect on Consumer Welfare

Using data from the state studies and Table 4, it is possible to estimate the total opportunity cost of UNE-P regulation. Table 5 presents estimates based on a comparison to long-distance access charges and USF assessment reductions. The Table takes the size of the wealth transfer from ILECs to CLECs and consumers by UNE regulation as the starting point. It then calculates how that wealth transfer would affect consumer surplus and total consumer welfare if it were achieved through a reduction in access charges and USF assessments imposed on long-distance service. The total consumer welfare gain from this alternative policy is then subtracted from the total consumer welfare gain attributed to UNE-P regulation to calculate the net benefit or cost of UNE-P regulation.

The calculations underlying Table 5 translate the total wealth transfer into a percentage reduction in the per-minute long-distance rates and then use a demand elasticity of -0.7 to calculate the change in consumer surplus. The total consumer welfare gain is the opportunity cost to consumers of transferring wealth through UNE-P regulation. Subtracting this amount from the total consumer welfare gain in Table 3 shows the net effect on consumer welfare of UNE-P regulation. In all cases except the California "aggressive" scenario, UNE-P regulation generates a substantial consumer welfare loss compared to reducing inflated long-distance prices. As Figure 3 shows, regulators could create more consumer benefits by reducing access charges or USF assessments than by transferring an equivalent amount of wealth to CLECs.

Figure 3: Consumer Benefits of Platform Regulation Versus Access Charge (Universal Service Contribution) Reduction
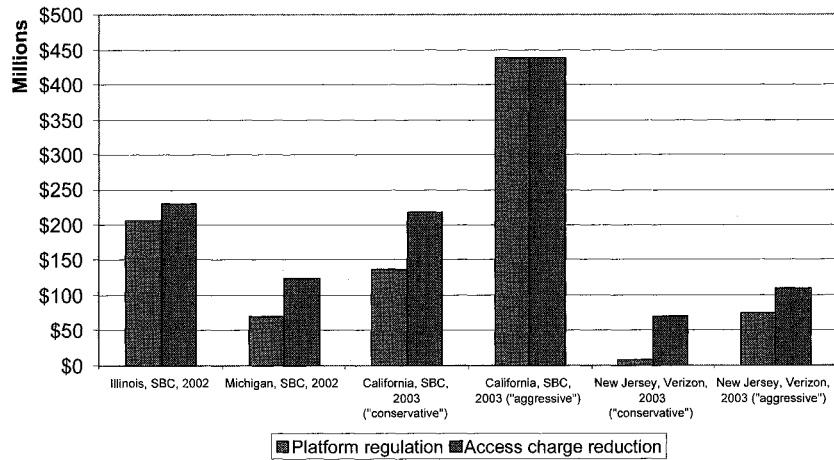

Table 5: Reduced Long-Distance Access Charges or Assessments as an Opportunity Cost of UNE-P Regulation

State, Incumbent, Year	Effect of Reducing Access Charges			Net Consumer Welfare Effect of UNE-P Regulation	
	Wealth-Transfer From Incumbent	Consumer Surplus Gain	Consumer-Welfare Gain	Total	Per Line
Illinois, SBC, 2002	$191,298,913	$39,311,671	$230,610,584	-$23,794,498	-$6.81
Michigan, SBC, 2002	$105,839,624	$17,885,245	$123,724,870	-$54,140,413	-$19.44
California, SBC, 2003 ("conservative")	$211,081,850	$6,551,343	$217,633,192	-$81,379,834	-$7.11
California, SBC, 2003 ("aggressive")	$414,185,185	$25,224,216	$439,409,401	-$1,061,637	-$0.09
New Jersey, Verizon, 2003 ("conservative")	$68,091,066	$887,012	$68,978,078	-$61,685,875	-$13.29
New Jersey, Verizon, 2003 ("aggressive")	$107,128,792	$2,195,642	$109,324,434	-$34,718,478	-$7.48

D. The National Opportunity Cost

The foregoing analysis examined the benefits and opportunity costs of UNE-P regulation for residential consumers in the service territories of large ILECs in several states. Sufficient data exists to estimate very crudely the nationwide opportunity cost associated with the wealth transferred to UNE-P-based CLECs. The National Regulatory Research Institute's surveys of UNE prices, AT&T's 2002 estimate of ILECs' avoided costs, and various FCC reports provide the data.[162]

Table 6 presents the results. The first two columns estimate the amount of wealth transferred from ILECs to CLECs by UNE-P regulation. Unlike the state-based tables above, the calculations include all UNE-P based lines, not just those sold to residential customers. They assume that the amount of revenue at stake when the ILEC loses a line to a CLEC is equal to average local revenues per line, which includes revenues from local services sold by the ILEC but not long-distance service. These figures underestimate the amount of the transfer, for two reasons. First, the figures omit the wealth transfers that occur in a number of smaller states for which the FCC does not report CLEC line counts. Second, the figures measure only the wealth transfer from ILECs to CLECs; they do not include any wealth transferred from ILECs to consumers when competition from UNE-P based CLECs forces ILECs to reduce their own prices. A comparison of the wealth transfer figures in Tables 3 and 4 suggests that the total wealth transfer can be more than three times as large as the transfer to CLECs when the ILECs' price reductions are included in the total. Nevertheless, the wealth transfers in Table 6 are substantial: $1.3 billion in 2002, and $3.1 billion in 2003. The wealth transfer more than doubled in one year due to a decline in regulated UNE-P prices, a 30% increase in UNE-P based lines, and an increase in ILEC revenues per line.

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[162] Tables 6 and 7 are the authors' calculations based on three data sources. *See AT&T Ex Parte Communication, supra* note 153; Gregg, *supra* note 100; LOCAL TELEPHONE COMPETITION: STATUS AS OF DECEMBER 31, 2003, *supra* note 133; NAT'L REGULATORY RESEARCH INST., STATE REGULATORY TREATMENT OF ADVANCED TELECOMMUNICATIONS SERVICES: RESULTS OF THE 2002 SURVEY (2002), http://www.nrri.ohio-state.edu/cart/download.php?id=02-12.

Table 6: Nationwide Opportunity Costs to Consumers of UNE-P Regulation[163]

	Wealth Transfer from Incumbents		Consumer Surplus Gain	Consumer Welfare Gain	
Year	Total	Per Competitor-Platform-based Line		Total	Per Competitor Platform-based Line
2002	$1,326,138,446	$138.42	$26,340,716	$1,352,479,162	$141.17
2003	$3,145,820,811	$228.35	$148,223,754	$3,294,044,564	$239.11

If used to reduce interstate long-distance access charges or USF assessments, these wealth transfers would have cut the price of long-distance service by 4/10 of a cent in 2002 and 9/10 of a cent in 2003. These price reductions would have generated gains in consumer surplus as consumers used more long-distance service. The total consumer welfare gain is the sum of the wealth transfer and the consumer surplus gain. These figures suggest that the opportunity cost of UNE-P regulation was about $3.3 billion in 2003. Stated differently, UNE-P regulation did not provide a net benefit to consumers unless it increased consumer welfare by more than $3.3 billion or about $240 for each line furnished by CLECs using the platform.

These figures measure one opportunity cost of UNE-P regulation to consumers. However, they do not measure the entire opportunity cost to society as a whole. If long-distance access charges or USF fees were reduced, telecommunications companies that sell these services would also benefit from increased sales. The companies benefit from sales to the extent that the increased revenues exceed the additional costs. Conversely, the welfare of both companies and consumers falls when excessive charges increase long-distance rates. The change in consumer plus producer welfare that occurs as a result of these charges is the "excess burden" of raising the revenue that the charges produce. In a series of papers, Hausman has estimated the average excess burden associated with taxes and USF assessments on long-distance and wireless service.[164] Each dollar raised through an assessment on long-distance has an average excess burden of at least sixty-five cents, and each dollar raised through an assessment on wireless service has an average excess burden of fifty-three cents. These results make it possible to estimate a more complete measure of the opportunity cost of UNE-P regulation that includes the entire change in excess

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[163] *Id.*

[164] Jerry Hausman, *Efficiency Effects on the U.S. Economy from Wireless Taxation*, 53 NAT'L TAX J. 733 (2000); Jerry Hausman, *Taxation by Telecommunications Regulation*, 12 TAX POL'Y & THE ECON. 29–48 (James M. Poterba ed., 1998).

burden, rather than just the change in consumer welfare.

Table 7 shows the combined opportunity costs to producers and consumers of transferring wealth via UNE regulation rather than a reduction in USF assessments on wireless and long-distance. The calculations assume that assessments against long-distance and wireless would each have been reduced by the same percentage. Comparing Tables 6 and 7, the social opportunity cost is 40% greater than the opportunity cost to consumers in 2002 and 50% larger in 2003.

Table 7: Nationwide Social Opportunity Costs of UNE-P Regulation

	Wealth Transfer from Incumbents			Consumer + Producer Welfare Gain	
Year	Total	Per Competitor Platform-ased Line	Consumer + Producer Surplus Gain	Total	Per Competitor Platform-based Line
2002	$1,326,138,446	$138.42	$825,388,569	$2,151,527,015	$224.58
2003	$3,145,820,811	$228.35	$1,920,209,023	$5,066,029,833	$367.74

E. Nationwide Benefits of UNE-P Regulation

Our data does not permit us to calculate the analogous nationwide benefits of UNE-P regulation, due to a lack of quality data on CLECs' prices and consumer savings in each state. In a forthcoming book, however, Crandall examines the effects of the Act's unbundling provisions more generally.[165] Using rather generous assumptions, he estimates that in 2003 unbundling may have transferred approximately $1.3 billion from ILEC phone companies to residential and small business consumers.[166]

The UNE-P accounts for a large majority of CLEC lines furnished using UNEs—71% in 2002 and 78% in 2003.[167] If we assume that the entire $1.3 billion in savings is due to UNE-P regulation, then our figures in Table 6 imply that consumers received about 42% of the wealth transferred from ILECs.[168] If

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[165] ROBERT W. CRANDALL, COMPETITION AND CHAOS: THE U.S. TELECOMMUNICATIONS SECTOR SINCE 1996 (forthcoming 2005) (manuscript at 54–56, on file with authors).

[166] *Id.*

[167] LOCAL TELEPHONE COMPETITION: STATUS AS OF DECEMBER 31, 2003, *supra* note 133, tbl.4.

[168] This figure was calculated by dividing $1.3 billion in consumer savings from UNE-P regulation by the $3.1 billion transferred from incumbent phone companies. Mathematically, this equals 0.42.

the wealth transfer had been used to reduce access charges and USF contributions from long-distance, consumer welfare would have increased by about $3.3 billion. Consequently, UNE-P regulation produced about 39% of the consumer benefits that an equivalent reduction in long-distance access charges and USF contributions would have produced.[169]

These ratios are consistent with the findings reported in Tables 4 and 5 for individual states. Consumers would have received much larger benefits if regulators had focused on reducing the market distorting effects caused by long-distance access charges and USF contributions, instead of mandating the UNE-P.

Competition often offers non-price benefits, such as innovative new services, but such benefits are unlikely to occur under UNE-P regulation. Since competitors leasing the platform do not build their own local facilities, platform regulation permits them no opportunity to offer local services different from those offered by the incumbents. In theory, UNE-P regulation might eventually open the door to innovative new services if CLECs use the UNE-P as a transitional strategy to enter the market before building their own facilities. In practice, empirical research shows that UNE-P regulation has precisely the opposite effect because it served as a substitute for facilities-based competition.

V. CONCLUSION

In rejecting the UNE-P, regulators have rejected a policy that entailed significant opportunity costs for consumers. Subsequently, the telecommunications debate has moved on. Going forward, the regulatory priorities appear to include: expanding the amount of spectrum available for wireless service;[170] reforming the intercarrier compensation arrangements that subsidize local phone service and tax other services;[171] keeping Voice over Internet Protocol

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[169] This figure was calculated by dividing $1.3 billion in consumer savings from UNE-P regulation by the $3.3 billion increase in consumer welfare from reducing long-distance access charges and USF contributions. Mathematically, this equals 0.39.

[170] *See* Press Release, Federal Communications Commission, FCC to Commence Spectrum Auction that will Provide American Consumers New Wireless Broadband Services (December 29, 2004), http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-255802A1.pdf. The auction cannot occur until June 2006 because the Commercial Spectrum Enhancement Act of 2004 requires the FCC to notify the National Telecommunications and Information Administration at least eighteen months prior to the auction of any frequencies mentioned in the legislation, so that any public sector users can be relocated to other spectrum. *Id.*

[171] *See In re* Developing a Unified Intercarrier Compensation Regime, *Further Notice of Proposed Rulemaking*, 20 F.C.C.R. 4685 (Feb. 10, 2005).

services (a substitute for both local and long-distance telephony) free from public utility regulation;[172] and (perhaps) access charges and USF contributions.[173] These initiatives would all help reduce the price distortions in long-distance and wireless service markets. Thus, there is room for cautious optimism that the FCC has embarked on a regulatory reform agenda consistent with the findings in this article.

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[172] *See In re* Vonage Holdings Corporation Petition for Declaratory Rulemaking Concerning an Order from the Minnesota Public Utilities Commission, *Memorandum Opinion and Order*, 19 F.C.C.R. 22,404 (Nov. 9, 2004).

[173] *See* Wireline Competition Bureau Extends Reply Comment Deadlines for IP-Enabled Services Rulemaking and SBC's "IP Platform Services" Forbearance Petition, *Public Notice*, 19 F.C.C.R. 10,474 (June 9, 2004).