

MERCATUS CENTER
GEORGE MASON UNIVERSITY

REGULATORY STUDIES PROGRAM

**Public Interest *Ex Parte* Comment on
Intercarrier Compensation and Universal Service¹**

Developing a Unified Intercarrier Compensation Regime, CC Docket No. 01-92
Biennial Review of Telecommunications Regulations, WC Docket No. 08-183
High-Cost Universal Service Support, WC Docket No. 05-337
Federal-State Joint Board on Universal Service, CC Docket No. 96-45
Intercarrier Compensation for ISP-Bound Traffic, WC Docket No. 99-68
Establishing Just and Reasonable Rates for Local Exchange Carriers, WC Docket No. 07-135

The Regulatory Studies Program (RSP) of the Mercatus Center at George Mason University is dedicated to advancing knowledge of the impact of regulation on society. As part of its mission, RSP conducts careful and independent analyses employing contemporary economic scholarship to assess rulemaking proposals from the perspective of the public interest. Thus, this *ex parte* comment does not represent the views of any particular affected party or special interest group, but is designed to evaluate the effect of possible changes in intercarrier compensation and universal service programs on overall consumer welfare.²

I. Introduction

The Federal Communications Commission (FCC) announced on September 4 that it is seeking comments in its Biennial Review of telecommunications regulations.³ These regulations include regulation of interconnection and access charges.⁴ In addition, the commission faces a court-imposed November 5 deadline to issue a final order justifying its intercarrier compensation rules governing local calls to dialup Internet Service Providers.⁵ As the court decision notes, the dispute in that case has been repeatedly intertwined with the

¹ Prepared by Jerry Ellig, senior research fellow, Mercatus Center. This comment is one in a series of Public Interest Comments from Mercatus Center's Regulatory Studies Program and does not represent an official position of George Mason University.

² Federal Communications Commission, *In the Matter of Developing a Unified Intercarrier Compensation Regime*, Further Notice of Proposed Rulemaking, CC Docket No. 01-92 (Adopted Feb. 10, 2005; Released March 3, 2005).

³ FCC Press Release, "The Commission Seeks Public Comment in the 2008 Biennial Review of Telecommunications Regulations" (Sept. 4, 2008), http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-08-201A1.pdf.

⁴ *Id.* at 8-9.

⁵ *In Re Core Communications Inc.*, U.S. Court of Appeals, D.C. Circuit, No. 07-1446, Decided July 8, 2008.

commission's plans for comprehensive intercarrier compensation reform.⁶ With the court-imposed deadline for deciding the Internet Service Provider issue approaching, the commission has recently received numerous filings regarding broader intercarrier compensation and universal service reforms.⁷

Historically, intercarrier compensation has been used as a mechanism to promote universal service. Local telephone companies—particularly those servicing rural areas—can charge their customers lower monthly rates for a basic telephone connection because they receive a stream of revenues from companies that interconnect with them. Intercarrier compensation—particularly access charges paid by long-distance companies—thus act as a highly opaque form of subsidy.

In addition to transferring wealth from telephone customers in general to a subset of local phone companies and their customers, intercarrier compensation at current rates diminishes overall consumer welfare. This occurs for two reasons: (1) the charges apply to services whose demand is price-sensitive, such as long-distance and wireless, and (2) the charges are usually per-minute charges, which act as a tax on usage.

When applied to price-sensitive services such as long-distance and wireless, intercarrier compensation leads to substantial reductions in usage and output. Consumers are worse off because they use less of the service, and telecommunications firms are worse off because they sell less of the service. Economists call this reduction in consumer and producer welfare the “excess burden” or “deadweight loss” associated with the price distortion. Well-designed policies can reduce this deadweight loss and make all market participants better off. A universal service initiative best promotes the public interest when it raises revenue to achieve its intended purposes with as little deadweight loss as possible.⁸ Per-minute charges on long-distance and wireless, however, tend to maximize rather than minimize the deadweight loss.

The FCC has long recognized this problem and has sought to mitigate it by reducing access charges on interstate long-distance service. Average interstate long-distance access charges fell from 16.6 cents per conversation minute in 1985⁹ to 0.8 cents in 2006.¹⁰ In the late 1980s, the access charge regime reduced U.S. economic welfare by \$10-17 billion annually.¹¹ A 1996 study found that the welfare loss had declined substantially, to between \$2.5 billion and \$7 billion.¹² A more recent estimate suggests that by 2002, the annual welfare loss had shrunk to \$1.5 billion—still substantial, but far below its level in the mid-1980s.¹³

⁶ *Id.* at 6-10.

⁷ See filings in the abovementioned dockets.

⁸ Jerry Ellig and Joseph P. Rotondi, *Outcomes and Alternatives for Universal Telecommunications Service: A Case Study of Texas*, 12 TEXAS REV. LAW & POLITICS 1 (2007), 15-17 and references cited therein.

⁹ Robert W. Crandall and Jerry Ellig, *ECONOMIC DEREGULATION AND CUSTOMER CHOICE* (1995), Appendix.

¹⁰ Federal Communications Commission, *TELECOMMUNICATIONS INDUSTRY REVENUES* (2006), Tbl. 10.

¹¹ Robert W. Crandall, *AFTER THE BREAKUP: U.S. TELECOMMUNICATIONS IN A MORE COMPETITIVE ERA* 141 (1991).

¹² Robert W. Crandall & Leonard Waverman, *WHO PAYS FOR UNIVERSAL SERVICE?* 120 (2000).

¹³ Jerry Ellig, *Costs and Consequences of Federal Telecommunications Regulations*, 58 FED. COMM. LAW J. 37, 54 (2006).

These improvements are directly attributable to the FCC's access charge reductions. The commission now has an opportunity to finish the job via comprehensive intercarrier compensation reform.

II. Analysis of Proposed Reforms

In its long-lived docket on Universal Intercarrier Compensation, the commission has before it a variety of successive proposals offered by industry participants and state officials. I analyzed some of these in depth in a previous filing in the Unified Intercarrier Compensation docket and a law review article in 2005.¹⁴ Given that the commission may be currently developing plans and making decisions, I believe it will be most helpful to reiterate the principles that would lead to a reform plan most conducive to overall consumer welfare: (1) minimize charges on services whose demand is price-sensitive, (2) use fixed wireline charges for any recovery mechanism designed to make up lost revenues, and (3) if universal service funds are used to make up lost revenues, transform universal service charges into fixed charges.

(1) Minimize charges on services whose demand is price-sensitive.

Charges on price-sensitive services, such as long-distance and wireless, are the primary source of the deadweight loss due to access charges and reciprocal compensation. The amount of deadweight loss depends critically on the “elasticity of demand” for the services paying the assessment. If demand is elastic, a price increase generates a large reduction in the amount purchased, leading to a greater deadweight loss. If demand is inelastic, a price increase generates a small reduction in the amount purchased, leading to a smaller deadweight loss.

a. Wireline and wireless telephone

Demand for long-distance communication is significantly more elastic than the demand for local wireline service; increases in price cause consumers to buy many fewer minutes, which leads them to forego significant benefits. The elasticity of demand for wireline long-distance service is approximately 0.7; that is, a 1 percent increase in the price of long distance leads to a 0.7 percent decrease in minutes used.¹⁵ Historically, access charges have acted like a per-minute surcharge on the price of long-distance service. This is because most long-distance customers paid by the minute—either explicitly, or because they chose to purchase “buckets” of minutes whose prices varied with the number of minutes purchased.

¹⁴ Jerry Ellig, *Public Interest Comment on Unified Intercarrier Compensation*, May 23, 2005, http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6517623936. Jerry Ellig, *Intercarrier Compensation and Consumer Welfare*, 2005 U. of IL. J. OF LAW, TECH., AND POL'Y 97 (2005).

¹⁵ A range of estimates exists, but -0.7 is the consensus view. 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); See also Michael H. Riordan, *Universal Residential Telephone Service*, in 1 HANDBOOK OF TELECOMMUNICATIONS ECONOMICS 423, 431 (Martin E. Cave et al., eds.) (2002).

Many consumers now purchase packages that include unlimited long distance service. These customers do not face a price per minute each time they make a long distance call. Nevertheless, it is likely still accurate to regard access charges as an increase in the per-minute price. If many of the most price-sensitive customers still purchase long-distance by the minute or in buckets with finite numbers of minutes, then a per-minute access charge will still have a significant effect on the amount purchased.

Wireless service is more complicated. The elasticity of demand for wireless *subscriptions* is much lower than the elasticity for wireless *minutes of use*. Most economic studies that estimate the demand for wireless subscriptions (using the number of subscribers per hundred or the probability of subscription as the dependent variable) yield elasticities between -0.43 and -0.71.¹⁶ That is, a 1 percent increase in the monthly subscription price reduces the number of subscribers by between four-tenths and seven-tenths of 1 percent.

This contrasts markedly with studies measuring the elasticity of demand for wireless minutes, which usually find that a 1 percent price change leads to a greater than 1 percent change in quantity. Researchers have calculated that the elasticity of demand for wireless minutes ranges between -1.12 and -1.29,¹⁷ though some calculations using international data put the figure as high as -3.62.¹⁸

These elasticities suggest that per minute intercarrier compensation charges—especially long-distance access charges, which at 0.8 cents/conversation minute are much higher than reciprocal compensation rates of \$0.0007/minute—generate substantial deadweight losses. As noted above, my most recent calculation suggests that the deadweight loss associated with long-distance access charges was about \$1.5 billion in 2002. Falling access charges and long-distance minutes have no doubt reduced this figure somewhat in the ensuing years, but the FCC could likely still generate substantial improvements in economic welfare by reducing access charges, or eliminating them entirely via a “bill-and-keep” rule.

b. Broadband

For the same reason, the FCC would substantially reduce consumer welfare if it decided to replace some or all intercarrier compensation with new universal service payments funded by contributions from broadband providers. Imposing universal service contribution

¹⁶ Jerry Hausman, *Cellular Telephone, New Products, and the CPI*, J. BUS & ECON. STAT. 188, 191 (1999) (estimating a demand elasticity of approximately -0.5 with 1988-1993 data); Jerry Hausman, *Efficiency Effects on the U.S. Economy from Wireless Taxation*, 53 NAT'L TAX J. 733, 738 (2000) (estimating a demand elasticity of -0.71); Mark Rodini et al., *Going Mobile: Substitutability Between Fixed and Mobile Access*, 27 TELECOMMUNICATIONS POLICY 457, 470 (2003) (estimating an elasticity of -.43 with respect to the monthly access charge and an overall price elasticity of demand of -0.6 with 2000–01 data); Christopher Garbacz & Herbert G. Thompson, Jr., *Universal Telecommunication Services: A World Perspective*, INFO. ECON. & POL'Y 495 (2005), tbl. 5 (estimating an elasticity of -0.45).

¹⁷ See J. Gregory Sidak, *Is State Taxation Of The Wireless Industry Counterproductive?* Criterion Econ. L.L.C., 19 (2003), www.criterioneconomics.com/docs/sidak_pacific_research.pdf (using 1999–2001 data).

¹⁸ See Thomas W. Hazlett & Roberto E. Munoz, *A Welfare Analysis of Spectrum Allocation Policies*, AEI Brookings Joint Center For Regulatory Studies, related pub'n 04-18, available at <http://www.aeibrookings.org/admin/authorpdfs/page.php?id=1024>; See also, Gary Madden & Grant Coble-Neal, *Economic Determinants of Global Mobile Telephony Growth*, 16 INFO. ECON. & POL'Y 519, 531 (2004).

requirements on broadband would significantly reduce broadband subscribership, thus generating substantial deadweight losses for society.

Multiple studies find that the elasticity of demand for DSL broadband service exceeds -1; that is, a 1 percent change in price leads to a greater than 1 percent change in subscribership.¹⁹ Most attempts to measure the overall elasticity of demand for broadband—not just DSL—have found that it is highly elastic, ranging from -1.5 to -3.76.²⁰ In a recent paper, University of Chicago economist Austan Goolsbee found an average demand elasticity of -2.75.²¹

At a demand elasticity of -2, a 10 percent universal service assessment would reduce subscribership by 20 percent. If the elasticity is -2.75, a 10 percent assessment reduces subscribership by 27.5 percent; an elasticity of 3.5 yields a subscribership drop of 35 percent. This drop in broadband users would be entirely due to FCC policies and is easily preventable. With the FCC's midyear 2007 Broadband Report showing about 100 million subscribers to high-speed service,²² imposing a 10 percent universal service assessment on broadband would generate \$3–5 billion in revenue while reducing subscribership by between 20 million and 35 million. If expanding the funding base to include broadband permits a lower assessment rate—perhaps 5 percent—broadband subscribership would still fall by 4–7 million, while raising \$700 million–\$1.2 billion in new revenue. Even if one counts as “true” broadband only the 41.6 million lines with speeds exceeding 2.5 MB in one direction²³, a 10 percent universal service assessment would reduce subscribership by between 8 and 14.6 million people while generating \$1.3–\$1.6 billion in new revenue, depending on the elasticity assumption. Extending assessments to broadband in order to fund universal service would reduce subscribership unless several billion dollars worth of broadband subsidies generates between 8 million and 35 million new subscribers in rural areas.

Using the simple deadweight loss calculations employed in previous Mercatus Center studies of universal service fees,²⁴ a 10 percent universal service assessment that reduces subscribership by 20–35 million would impose a deadweight loss \$3–\$5.5 billion on broadband consumers and providers.²⁵ The actual effects could be much larger if the universal

¹⁹ Robert W. Crandall, J. Gregory Sidak, and Hal J. Singer, *The Empirical Case Against Asymmetric Regulation of Broadband Internet Access*, 17 BERKELEY TECHNOLOGY LAW JOURNAL (Summer 2002) at 973-74; Robert W. Crandall, Robert W. Hahn, and Timothy J. Tardiff, *The Benefits of Broadband and the Effect of Regulation*, in Robert W. Crandall and James H. Alleman (eds.), BROADBAND (2002) at 301 and references cited therein.

²⁰ Austan Goolsbee, *Subsidies, the Value of Broadband, and the Importance of Fixed Costs*, in Crandall and Alleman *Id.*, at 283-84.

²¹ Austan Goolsbee, *The Value of Broadband and the Deadweight Loss of Taxing New Technology*, NBER Working Paper No. 1194 (2006) at 11.

²² Federal Communications Commission, *HIGH-SPEED SERVICES FOR INTERNET ACCESS: STATUS AS OF JUNE 30, 2007* (2008) at 1.

²³ *Id.* at tbl. 5.

²⁴ Ellig & Rotondi, *supra* note 8; Ellig, *supra* note 13.

²⁵ Assumes average broadband price of \$40/month and a marginal cost of \$300 per subscriber, as estimated in Goolsbee, *supra* note 21.

service assessment induces broadband providers to deploy broadband more slowly in areas they do not currently serve.²⁶

Expanding the universal service funding base by including broadband might appear to “solve” the problem of finding new revenues to replace the revenues local phone companies might lose due to intercarrier compensation reform. But since broadband demand is even more price-sensitive than the demand for long-distance, such a switch would be more likely to reduce overall consumer welfare than to increase it.

(2) Use fixed wireline charges for any recovery mechanism.

Substantial reductions in intercarrier compensation would lead to substantial revenue reductions for carriers heavily dependent on this source of revenue. A recovery mechanism could replace these revenues with minimal deadweight loss if it took the form of a fixed monthly charge on wireline phone bills.

Studies indicate that demand for wireline service is almost completely inelastic, meaning that customers will generally continue to purchase the service, regardless of price changes. The elasticity of demand for wireline service has been calculated as near-zero in the United States,²⁷ implying that an increase in subscriber line charges to offset lost intercarrier payments would have little effect on subscription rates (and thus generate little hidden cost to consumers).

(3) If universal service funds are used to make up lost revenues, transform universal service charges into fixed charges.

Federal universal service funds come from percentage assessments against telecommunications carriers’ interstate and international revenues. Because firms’ revenues often vary with the amount of service customers choose to buy, universal service contributions act like a usage-based tax. In other words, a percentage universal service charge has pretty much the same economic effects as an access charge of the equivalent amount.

Under the current universal service funding mechanism, a one-for-one substitution of universal service dollars for dollars generated by access charges would generate little improvement in consumer welfare. Deadweight losses from access charges would fall, but deadweight losses from universal service charges would increase. Indeed, the total deadweight loss might actually increase, since access charges apply to long-distance service but universal service charges apply to both long distance and wireless. Since the demand for wireless minutes is more price sensitive than the demand for long-distance minutes, shifting some of the funding burden to wireless could generate an even larger deadweight loss than currently exists.

²⁶ *Id.*

²⁷ Robert Crandall and Leonard Waverman, WHO PAYS FOR UNIVERSAL SERVICE? WHEN TELEPHONE SUBSIDIES BECOME TRANSPARENT (2000) at 47.

The FCC can avoid this problem by basing most universal service contributions on phone numbers or connections rather than revenues. Economic research has documented the deadweight losses associated with the current universal service contribution mechanism and estimated how a numbers-based approach would reduce the deadweight loss:

- In one of the first empirical studies assessing the effects of federal USF charges on long-distance consumers, Jerry Hausman estimated that the deadweight loss associated with assessments on long distance averaged between 65 and 79 cents for every dollar raised by the assessment. He estimated that the deadweight loss from raising the revenue by increasing the subscriber line charge would be negligible.²⁸
- In a study published in 2000, Hausman estimated that every dollar raised by USF assessments on wireless reduced producer and consumer welfare by 53 cents on average.²⁹
- A 2006 study found that the \$2.7 billion in federal universal service charges on interstate long-distance in 2002 cost producers and consumers \$1.16 billion in lost welfare (43 percent of revenue raised).³⁰ For wireless, federal universal service charges generated a welfare loss of \$978 million (56 percent of revenue raised).³¹
- Using 2004 data, Jerry Ellig and James Taylor estimated that the welfare loss associated with wireless universal service charges totaled \$994 million, equal to 56 percent of the \$1.77 billion in revenues raised. Switching the USF fee to a numbers-based charge would cut the deadweight loss by \$529 million.³²
- Examining state universal service charges in Texas, Jerry Ellig and Joseph Rotondi found that a numbers-based charge would reduce consumer welfare much less than a revenue-based charge. Substituting a numbers-based charge for the current revenue-based charge would reduce the total deadweight loss from \$176 million (28.4 percent of the revenue raised) to \$86 million (14 percent of revenue raised). The welfare loss in wireless would drop from 48.6 cents to 25.1 cents per dollar of assessment, and the welfare loss in long distance would drop from 53.9 cents per dollar of assessment to zero.³³

²⁸ Jerry Hausman, *Taxation by Telecommunications Regulation*, 12 TAX POLICY THE ECONOMY 29, 31 (James M. Poterba ed., 1998).

²⁹ Hausman (2000), *supra* note 16.

³⁰ Ellig, *supra* note 13, at tbl. 2.

³¹ *Id.*

³² Jerry Ellig and James Taylor, *The Irony of Transparency: Unintended Consequences of Wireless Truth-in-Billing*, LOYOLA CONSUMER LAW REVIEW 19:1 (2006), at 65.

³³ See Ellig and Rotondi, *supra* note 8 at 40.

A numbers- or connections-based approach might not reduce the deadweight loss for every carrier or type of consumer. For example, a numbers-based assessment might be a large price increase for wireless customers who use a small number of minutes, leading to a large reduction in service utilization by these consumers. The commission could minimize deadweight loss by making numbers-based contributions the rule and allowing exceptions for particular types of customers for whom the numbers-based approach would lead to larger deadweight loss than the current system.

III. Conclusion

The FCC has generated substantial improvements in consumer welfare by reducing access charges throughout the 1980s and 1990s. Since 2001, however, interstate long-distance access charges have hovered around 1 cent per conversation minute. A substantial deadweight loss remains, and it may still exceed \$1 billion annually.

The November 5 court deadline provides the FCC an ideal opportunity to finish the job of eliminating excessive access charges. Three criteria can aid the commission in identifying whether a proposed reform plan will advance overall consumer welfare:

(1) Minimize charges on services whose demand is price-sensitive.

Economic research finds that demand for long-distance, wireless, and broadband is quite price-sensitive. Therefore, intercarrier compensation reform should reduce or eliminate charges on the first two and avoid imposing new charges on broadband.

(2) Use fixed wireline charges for any recovery mechanism designed to make up lost revenues.

Demand for wireline telephone connection is not very sensitive to price. Therefore, allowing carriers to make up lost revenue by increasing subscriber line charges would not generate any substantial deadweight loss.

(3) If universal service funds are used to make up lost revenues, transform universal service charges into fixed charges.

Under the current contribution mechanism, substituting universal service contributions for access charges merely substitutes one usage-based charge on price-sensitive services for another. If universal service contributions were based on phone numbers or connections, then using universal service funds to replace access charges would enhance consumer welfare by reducing deadweight losses.