Despite reforms, telecom regulations are still costing consumers billions of dollars.

Costs and Consequences

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THE FEDERAL COMMUNICATIONS COMmission spent approximately $1.2 billion on telecommunications and broadband regulation in fiscal 2004. Yet the actual cost is more than 60 times that amount.

In a Mercatus Center working paper released earlier this year, I assembled estimates from scholarly literature suggesting that federal telecommunications and broadband regulation generates $75 billion in wealth transfers annually, reduces consumer welfare by $25 billion annually, and reduces social welfare by $41 billion annually.

With the exception of monthly local phone service, most telecommunications services have relatively elastic demand. Because regulation acts as a tax on those services, it generates substantial reductions in consumption and production. For most regulations, the resulting "excess burden percentage"—the value of lost output divided by the amount of wealth transferred—usually exceeds the excess burden associated with general federal taxation. Economic research usually finds that the excess burden of general taxation is between 25 and 40 percent; that is, output falls by between 25 and 40 cents when taxes raise a dollar of revenue. The average excess burden of telecommunications regulation almost always exceeds 40 percent and sometimes exceeds 60 percent.

Regulatory outcomes have not been researched as extensively as costs. Existing research suggests that the most costly telecommunications regulations have negligible effects on the outcomes they are supposed to accomplish. For many other regulations, there is little or no peer-reviewed research or independent program evaluation assessing whether the regulations have accomplished their intended outcomes.

Tables 1 and 2 summarize the current state of research on the costs and consequences of federal telecommunications and broadband regulation. Although this lengthy menu of regulations may seem intimidating, the regulations can be divided into four categories based on the economic effects that create costs: entry barriers, taxes and subsidies, mandated services, and network sharing requirements.

ENTRY BARRIERS

Entry barriers limit competition, thereby raising prices and reducing the amount of service consumed. The two principal entry barriers are spectrum allocation and satellite regulation. The latter has been studied little; the former, much.

The FCC ultimately decides how much spectrum will be devoted to which private uses, and it then licenses equipment to use that spectrum. Broadcasters, for example, can only use their assigned spectrum for broadcasting. Spectrum allocation has gotten more flexible in recent years; wireless communications spectrum, for example, can be used for any wireless communications service. Nevertheless, it is likely that the government has under-allocated spectrum to wireless services.

COSTS A study by my George Mason University colleague Thomas Hazlett and coauthors estimates that the price of wireless service would fall by 50 percent if another 200 MHz of spectrum were devoted to wireless service. The price reduction would save consumers $54 billion annually and generate another $23.4 billion annually in consumer surplus from expanded use of wireless services.

Hazlett's numbers are based on international data from wireless phone service, but many observers believe the most

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valuable wireless services facilitated by an increase in wireless spectrum would be data services, not voice. In addition, his study assesses only the impact of allocating an additional 200 MHz, not the impact of moving to a more competitive market in spectrum across the board. Therefore, his figures should be interpreted as only a rough approximation of the true cost of spectrum allocation policy. They suggest that we pay a huge cost for having government allocate spectrum among various uses.

The costs of current spectrum allocation policy can be expected to fall sometime after 2006, if the FCC carries through on its plan to auction an additional 90 MHz of spectrum that year. A truly market-based approach, however, would allow market transactions to allocate spectrum rather than licenses. Potential users could buy or lease spectrum, then choose how to use it. The amount of spectrum allocated to wireless telephone, broadcasting, broadband, and other services would be determined by market transactions and decisions of users, rather than regulatory proceedings.

OUTCOMES The principal justification given for government allocation to specific uses is that government needs to prevent users from interfering with each other. A long line of economists has argued to the contrary. As Ronald Coase noted in 1959,

> Certainly, it is not clear why we should have to rely on the Federal Communications Commission rather than the ordinary pricing mechanism to determine whether a particular frequency should be used by the police, or for a radiotelephone, or for a taxi service, or for an oil company for geophysical exploration, or by a motion picture company to keep in touch with its film stars, or for a broadcasting station. Indeed, the multiplicity of these varied uses would suggest that the advantages to be derived from relying on the pricing mechanism would be especially great in this case.

TABLE 1

Costs of Federal Telecommunications and Broadband Regulation

From "Costs and Consequences of Federal Telecommunications and Broadband Regulations"

Regulation	Outlays or Wealth Transfer	Forgone Consumer Surplus	Total Cost to Consumers	Value of Forgone Output	Wealth transfer Plus Forgone Output	Excess Burden Percentage
FCC outlays, 2004	$361,000,000	N/A	N/A	$144,000,000	$505,000,000	40
FCC net cost of three regulatory strategic goals	$1,200,000,000	N/A	N/A	$480,000,000	$1,680,000,000	40
Interstate long-distance access charges, 2002	$3,300,000,000	$300,000,000	$3,600,000,000	$1,450,000,000	$4,750,000,000	44
Universal service contributions						
Interstate long-distance, 2002	$2,700,000,000	$240,000,000	$2,940,000,000	$1,160,000,000	$3,860,000,000	43
Wireless, 2003	$1,400,000,000	$39,000,000	$1,439,000,000	$873,000,000	$2,273,000,000	62
International	N/A	N/A	N/A	N/A	N/A	N/A
Local number portability						
Wireline, 2003	$762,000,000	$0	$762,000,000	$0	$762,000,000	0
Wireless, 2003	$952,000,000	$26,000,000	$978,000,000	$594,000,000	$1,546,000,000	62
Enhanced 911						
Wireline, 2003	N/A	N/A	N/A	N/A	N/A	N/A
Wireless, 2003	$1,200,000,000	$32,000,000	$1,232,000,000	$725,000,000	$1,925,000,000	60
Misc. wireless						
Number pooling, 2003	$324,000,000	$9,000,000	$333,000,000	$202,000,000	$526,000,000	62
CALEA, 2003	$457,000,000	$13,000,000	$470,000,000	$285,000,000	$742,000,000	62
Spectrum allocation, 2004	$54,000,000,000	$23,400,000,000	$77,400,000,000	$30,000,000,000	$84,000,000,000	56
Telephone unbundling						
UNE, 2003	$9,700,000,000	$1,400,000,000	$11,100,000,000	$5,900,000,000	$15,600,000,000	61
Resale, 2003	$21,000,000	$6,911	$21,006,911	$14,000,000	$35,000,000	67
Broadband unbundling, 2003	N/A	N/A	$4,500,000,000*	N/A	$4,500,000,000*	N/A
Total	$76,016,000,000	*$25,459,006,911*	*$104,775,006,911*	$41,683,000,000	$122,199,000,000	
Total excluding FCC spending	$74,816,000,000	*$25,459,006,911*	*$104,775,006,911*	$41,203,000,000	$120,519,000,000	
Total excluding spectrum and FCC spending	$20,816,000,000	$2,059,006,911	$27,375,006,911	$11,203,000,000	$36,519,000,000	

Italicized figures in each column are the same because estimates for some items that would make them different are unavailable. N/A = Not available.

* Federal decisions made following the completion of this analysis have removed the uncertainty that created this cost.

Government spectrum allocation has prevented interference—but at extremely high cost. Under market-based allocation, the FCC, courts, or some other government body would still have a significant role in preventing signal interference, but government would not decide which bits of spectrum could be used for which purposes.

TAXES AND SUBSIDIES

Two types of federal regulations effectively "tax" certain services in order to subsidize other services. Telecommunications firms make payments to each other when they exchange traffic. These "intercarrier compensation" arrangements tend to raise the cost of price-sensitive services, such as long-distance, in order to subsidize monthly local phone service.

The access charges that long-distance phone companies pay local phone companies have been studied extensively. Because the demand for long-distance service is relatively price elastic, access charges generate large reductions in consumer welfare—about $300 million in 2002. Long-distance companies also lose about $1.2 billion in producer surplus annually from the reduction in call volume. The subsidies generate virtually no corresponding increase in consumer welfare when they reduce monthly local phone rates because the use of monthly service does not increase very much if price goes down.

Similarly, federal universal service programs (and state counterparts) require all telecommunications firms to pay "contributions" into a fund that subsidizes low-income phone subscribers, rural phone companies, telecommunications for rural health care facilities, and Internet hookups for schools and libraries.

COSTS The federal government spent approximately $5.7 billion on universal service programs in 2003. Of that, $3.3 billion went to subsidize high-cost carriers and $713 million went to programs for low-income customers that help pay initial connection charges (Linkup) and subsidize monthly phone bills (Lifeline). Most of the remaining money ($1.7 billion) subsidized internal wiring, telecommunications, and Internet service to schools and libraries.

Jerry Hausman estimated that the universal service contributions required from long-distance service reduce the sum of consumer plus producer welfare by approximately 65–79 cents for every dollar of revenue raised. The marginal effect—that is, the effect of additional contributions—is even higher: $1.25 for each additional dollar raised. Similarly, he calculated that every dollar raised from wireless firms reduced consumer plus producer welfare by approximately 53 cents. Additional taxes or contributions would, on average, entail a cost of 72 cents for each dollar of revenue raised. Subsequent analyses have estimated even higher figures for wireless, because demand appears to have become more elastic since Hausman's original studies.

The Mercatus study constructs similar estimates using the most recent available FCC data. Federal universal service contributions from long distance totaled approximately $2.7 billion, but the resulting price increases reduced consumer welfare by about $240 million and reduced producer welfare by about $920 million, for a total reduction in economic welfare of $1.16 billion. Universal service assessments on interstate wireless service raised approximately $1.4 billion in 2003. The resulting price increase yields a consumer welfare loss of $39 million and a producer welfare loss of $835 million, for a total reduction in economic welfare of $874 million.

OUTCOMES If the goal of those subsidies is to increase telephone subscriptions among low-income and rural households, they do so at very high cost. This is a direct result of the fact that demand for local residential telephone service is not very sensitive to price.

A series of studies by Christopher Garbacz and Herbert Thompson find that low-income subsidies add subscribers to the network at a cost of between $1,500 and $2,200 per additional subscriber. But other studies find that the programs have no effect on low-income subscribership. Such findings are consistent with surveys; the most common reason phoneless households give for not subscribing to telephone service is concern about uncontrollable usage-based charges such as long-distance—not the cost of basic local service.

Perhaps the purpose of low-income subsidies is simply income redistribution. If so, the nation incurs substantial reductions in economic welfare to give each low-income household participating in the programs an average of about $100 a year. Because the low-income programs account for about 13 percent of universal service funding, it might be reasonable to assume that they also account for about 13 percent of the $2 billion deadweight loss, or $260 million.

But the low-income programs are a bargain compared to the rural programs, which add subscribers to the network at a cost of between $5,000 and $11,000 per additional subscriber annually. The principal purpose of the rural programs is likely to redistribute wealth to rural Americans, regardless of income. But because rural carriers are usually subject to rate-of-return regulation and because rural Americans also use the services that are taxed to fund the subsidies, it is not clear how much of the wealth transfer actually reaches rural consumers.

Similarly, the effectiveness of subsidies to connect schools and libraries to the Internet is questionable. The most sophisticated analysis of the program has been conducted by the Urban Institute under contract to the U.S. Department of Education. The study finds that Internet connectivity for both high-poverty and low-poverty schools increased after implementation of the schools and libraries program, but connectivity for both was also increasing prior to the program.

Most of the funding goes to high-poverty and rural schools. Schools receiving subsidies report increases in deployment of Internet technology. However, the study contains no data or analysis demonstrating that Internet connectivity is higher than it would be in the absence of the program; indeed, several statistical tests in the study find no effect. Similarly, there are no studies demonstrating whether any increase in Internet subscription or usage generated by the program has actually improved educational outcomes.

TABLE 2

Outcomes of Federal Telecom and Broadband Regulation

From "Costs and Consequences of Federal Telecommunications and Broadband Regulations"

Regulation	Intended Outcomes	Outcomes Achieved
Interstate long-distance access charges	Increased subscription Increased low-income subscription Redistribution to low-income households	Negligible; net effect may be negative Negligible; net effect may be negative $24 average per low-income household
Universal service contributions	Increased low-income subscription Redistribution to low-income households Increased rural subscription Redistribution to rural households Improved educational outcomes	Best case: $1,581–$2,200 per additional subscription Net effect may be negligible Lifeline: $98.93 per subsidized household Linkup: $17.77 per beneficiary $5,155–$11,000 per additional subscription Unknown Unknown
Local number portability Wireline Wireless	 Increased competition/consumer welfare Increased competition/consumer welfare	 Unknown Unknown
Enhanced 911	Improved health, reduced health/safety costs, enhanced public safety	Cardiac patients 1.62 times more likely to survive 6-hr. cardiac mortality risk reduced 60% 40-hr. cardiac mortality risk reduced 35% Hospital costs reduced by $1,000/cardiac patient
Misc. wireless Number pooling CALEA	 More efficient utilization of numbers Improved law enforcement/national security	 Unknown Unknown
Spectrum allocation	Promote the "public interest" Promote consumer welfare Prevent signal interference	Implies no particular outcome Tends to reduce consumer welfare fcc allocation not necessary to accomplish this
Telephone unbundling UNE Resale	 Lower prices Increased competition Innovative new services Increased economic welfare Increased competition Innovative new services	 $9.7 billion savings, but $1.74 spent for each $1 transferred Substituted platform competition for facilities-based competition Not possible when reselling incumbent's network $21 spent for each $1 gain in economic welfare Has not been an attractive strategy for entry Not possible when reselling incumbent's service
Broadband unbundling	Encourage deployment Reduce price	Appears to retard investment No evidence

MANDATED SERVICES

A variety of regulatory costs arise because lawmakers or regulators have decided that phone networks must support certain functionalities such as Enhanced 911, local number portability, or wiretapping by law enforcement officials. Those mandates increase the cost of telecommunications services, and either regulators or competitive markets have ensured that the costs get passed through to consumers. Such mandates bestow benefits as well as costs—but the benefits are often easier to name than to document and quantify.

One exception is Enhanced 911 service, which allows the recipient of the 911 call to identify the caller's location. A study of cardiac patients found that Enhanced 911 reduced the risk of death within six hours of the emergency phone call by 60 percent, and reduced the risk of death within 48 hours by 35 percent. Even assuming a relatively low value of life saved ($450,000), the authors estimated annual benefits of $684,000 for a typical county for cardiac arrest cases alone, compared to an estimated annual cost of $800,000. In addition, adoption of either basic or Enhanced 911 lowered hospitals' average total costs of treating cardiac patients by 16 percent—about $1,000 per patient or $304,000 for the average county. The combination of risk and cost reduction suggests that Enhanced 911 reduced the need for more extensive treatment by enabling patients to receive care sooner.

Since cardiac emergencies account for less than 10 percent of all 911 calls, these figures suggest that the benefits of wireline 911 are substantial. It remains to be seen whether similar benefits result from the wireless Enhanced 911 mandate or from the 911 mandate for Voice over Internet Protocol (VOIP) service that the FCC adopted earlier this year. Similarly, the actual effects of local number portability on telephone competition, or of wiretapping mandates on public safety and homeland security, have yet to be documented.

NETWORK SHARING REQUIREMENTS

Several regulations require incumbent service providers to let competitors use their networks in some way. In local telephone

service, competitors can buy the incumbent's service at a wholesale discount and resell it at retail or lease elements of the incumbent's network at regulated prices. Similar requirements threatened cable moden and DSL until the Supreme Court's *Brand X* decision in June and the August FCC decision to classify DSL as a lightly regulated information service.

Perhaps the most vitriolic struggle over network sharing occurred when the FCC decided that incumbent phone companies must lease all of the network elements necessary to provide local phone service—the "unbundled network element platform"—to competitors at big discounts. This regulation generated a spirited and inconclusive debate over whether the regulated price of the platform diminished incumbent phone companies' incentives to invest in maintaining the local phone network. Analysis of the investment effects is complicated because state public utility commissions are unlikely to let local phone companies significantly reduce the quality of telephone service. Any effects of below-competitive prices for the unbundled network element platform may ultimately show up not as shortages or reduced investment in the local network, but rather as higher universal service fees, access charges, or other methods of extracting revenue from the services that subsidize local service. In addition to generating additional funds for cross-subsidies, higher charges in those other markets would harm consumers by reducing the amount of service consumed.

James Taylor and I estimated that that unbundled network element platform regulation transferred approximately $3.1 billion from incumbent phone companies to competitors in 2003. If that money had instead been used to reduce interstate long-distance access charges or universal service assessments, the wealth transfer would have cut the price of long-distance service by 0.9 cents per minute. That price reduction would have generated a $148 million gain in consumer surplus from the increased use of long-distance service. The total consumer welfare gain is the sum of the wealth transfer and the consumer surplus gain, or about $3.3 billion in 2003. Put differently, platform regulation did not benefit consumers on net unless it increased consumer welfare by more than $3.3 billion, or about $240 for each line furnished by competitors using the platform.

If long-distance access charges or universal service fees were reduced, telecommunications companies that sell those services would benefit from increased sales as long as the increased revenues exceed the additional costs. Conversely, the welfare of both companies and consumers falls when excessive charges increase long-distance rates. Transferring $3.1 billion to consumers by reducing long-distance and wireless universal service contributions would have increased the welfare of consumers, long-distance, and wireless companies by an additional $1.9 billion from increased use of long-distance and wireless service.

OUTCOMES It is doubtful that the unbundled network element platform created consumer benefits equivalent to the opportunity costs, because a great deal of the wealth transfer from incumbents to competitors never reached consumers. Robert Crandall, for example, estimates that all unbundling regulations saved residential and small business customers approximately $1.3 billion annually – far less than the $3.1 billion transferred from incumbents to competitors. Similarly, Taylor and I found that only a fraction of the wealth transfer from incumbents actually reached consumers in several large states where competitors used the unbundled network element platform extensively.

The purpose of the unbundled network element platform, as with unbundling generally, was to make it easier for competitors to acquire a customer base so they could gradually build out their own facilities. The existing empirical research, however, suggests that unbundled network element regulation encouraged entrants to use unbundled network elements, but discouraged them from building their own facilities. Thus, the regulation failed to achieve the desired outcome. In December 2004, the FCC effectively killed the unbundled network element platform when it decided that incumbents need not offer their competitors one of the elements—local switching.

PAST AND FUTURE

The Mercatus paper offers a snapshot of the costs and outcomes of telecommunications regulation circa the past few years. To place the numbers in context, two caveats are in order:

First, if this were a historical study examining changes in costs over time, it would show significant reductions in several categories of costs. The total social welfare cost of long-distance access charges, for example, fell from $10–17 billion in the late 1980s to $1.5 billion in 2002—largely because of FCC initiatives to replace excessive access charges with the monthly federal subscriber line charge. Similarly, when Congress gave the FCC authority to auction spectrum in 1993, it significantly improved the efficiency of spectrum allocation. Prior to 1981, the FCC decided whose equipment could use what spectrum through "comparative hearings." In 1981, Congress authorized the FCC to allocate licenses through lotteries. The rent-seeking extravaganzas generated by license award procedures prior to auctions cost consumers billions of dollars from administrative costs and delayed adoption of wireless communications services.

Second, several categories of regulatory costs will likely fall in the future are a result of reforms that are already baked into the cake. For example, the FCC plans to auction more spectrum for wireless service in 2006, and mandated provision of the unbundled network element platform is also supposed to expire in 2006.

Nevertheless, much work remains. During the next few years, Congress, the FCC, and the courts will make significant decisions affecting intercarrier compensation, the size and structure of universal service programs, the regulatory status of VOIP, the amount of spectrum available for new services, and the regulation of broadband. All of those issues create opportunities to significantly affect the costs and outcomes of telecommunications and broadband regulation. R