UNIVERSAL SERVICE: THE POVERTY OF POLICY

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INTRODUCTION

Competitive forces, technology, and the convergence of traditional industries such as telephony, broadcast media, publishing, and computers are transforming the world's economies. The long-anticipated global information infrastructure is here, although its structure is still evolving.

The convergence of the previously distinct industries has created new problems and issues for policy makers and analysts. The regulatory structure in each industry has been distinct, with different methods of social control, goals and objectives.[1]

The traditional telephone monopolies are disappearing, although vestiges of their market power may continue for some time.[2] New regulatory tools of incentive regulation and competitive entry are replacing the traditional rate-based, rate-of-return regulation, and rate structure setting methodologies.[3]

Many issues arise because of this transition: Are the competing regulatory structures at odds with one another? What

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1. *See* ALFRED KAHN, THE ECONOMICS OF REGULATION: PRINCIPLES AND INSTITUTIONS (1970) (discussing pre-incentive regulation). For a review of the more recent incentive regulation, see JEAN-JACQUES LAFFONT & JEAN TIROLE, COMPETITION IN TELECOMMUNICATIONS 37–96 (2000).

2. See LAFFONT & TIROLE, *supra* note 1, at 4, 265–72, and the references cited therein, for most recent documentation of this convergence.

3. *See id*. at 16–17.

market structure will emerge? What market structure is desired? One element of traditional regulation, however, remains and still impedes the development of an effective competitive transition—the universal service obligation ("USO").[4]

Until recently, the regulator had not needed to recognize the distinction between the aspects of traditional regulation intended to control the incumbent's exercise of market power, and those designed to achieve socially desirable policy objectives, such as universal service. Indeed, to some extent it may have been useful for regulatory authorities to obscure the costs of certain social policies by embedding them within the pervasive regulation of an incumbent firm.

All this changes with the decision to promote a competitive telecommunications market. For the transition to competition to succeed, asymmetric measures to control market power should be phased out as the incumbent's market power diminishes. However, if the regulator wishes to maintain some market interventions in the new competitive market in order to meet social policy goals, then a new method for this will have to be devised—one that does not rely on the market power of the incumbent, that will be sustainable in an environment with more than one firm, and that will be minimally distorting to the market outcome.[5]

4. Universal service is the social obligation imposed on the telecommunications industry to ensure that residential exchange rates are low and that rural telephone rates will not be higher than urban rates. In the United States, it is the principle that exchange service will be subsidized in order, it is alleged, to increase telephone penetration. A similar concept is applied to the National Information Infrastructure ("NII"). *See id.* at 16–17.

5. In terms of the taxonomy developed by Cherry and Wildman, the traditional pervasive regulation imposes a universal service obligation on the incumbent which is asymmetric and unilateral. *See* Barbara A. Cherry & Steven S. Wildman, *A Framework for Managing Telecommunications Deregulation while Meeting Universal Service Goals* (visited Mar. 22, 2000) <http://www.benton.org/Policy/Uniserv/Conference/Frame/frame-exec.html>. The challenge for the regulator is to develop a new approach in which the obligation is *symmetric* (in that it can be applied to firms other than the incumbent) and *multilateral* (it involves a transaction entered into voluntarily, in which the carrier takes on the obligation in return for compensation). *See id.*

I. BACKGROUND: THE MAGNITUDE OF THE ISSUE—POVERTY OF POLICY

In many countries, authorities have, as part of their pervasive regulation of the incumbent, intervened to hold rates for basic local service at levels below those that would have been set by firms in a competitive market.[6] In order to ensure revenue sufficiency, these regulators have allowed incumbent firms to set relatively high prices for other services the firms provide, such as interexchange access, termination of international calls, long distance service, some local rates for business customers, and "vertical services" such as calling features.[7]

The effects of this policy in the United States are quite striking. Figure 1 gives an overview of the market intervention on prices, by major service category, for the areas in twenty-eight states where GTE provides local telephone service as the incumbent. The bars show contribution, calculated as the difference between revenue at current rates and direct or TSLRIC[8] cost, in dollars per year by category. Reading from left to right, Figure 1 shows large positive contributions for interstate switched access,[9] intrastate switched access,[10] toll calls within GTE's serving areas, and vertical services. The bar on the right side of Figure 1 shows a large negative contribu-

6. *See* LAFFONT & TIROLE, *supra* note 1, at 217–20.

7. These cross-subsidies are well known in the industry and have been addressed most recently by Laffont and Tirole. *See* LAFFONT & TIROLE, *supra* note 1, at 15, 144–47.

8. Telecommunications Service Long Run Incremental Cost ("TSLRIC") is the additional cost to the firm attributable to offering a given increment of service. *See* LAFFONT & TIROLE, *supra* note 1, at 24–25. Here, the increment is a broad category of service. As a practical matter, it is difficult to estimate TSLRIC costs with any accuracy. *See* James Alleman, *The Poverty of Cost Models, the Wealth of Real Options*, *in* THE NEW INVESTMENT THEORY OF REAL OPTIONS AND ITS IMPLICATION FOR TELECOMMUNICATIONS ECONOMICS 159–79 (James Alleman & Eli Noam eds., 1999). The estimates used here were developed internally by GTE. *See* Dennis Weller, *Auctions for Universal Service Obligations*, 23 (9) TELECOMS. POL'Y 645, 645–74 (1999). If the figures were constructed using cost estimates from a different model, the absolute values of the bars might change somewhat, but the general pattern would remain much the same.

9. This is access provided through the switched telephone network for long distance calls that originate in one state and terminate in another. The FCC regulates these rates. *See* 47 U.S.C. § 15 (1994).

10. This is the same access for long distance calls that originate and terminate within the boundaries of a state. The state regulatory commission in each state regulates these rates. *See* 47 U.S.C § 152(b) (1994).

tion for residential local service.[11] It is unlikely that this pattern of prices represents profit-maximizing behavior by the firm, since local service is generally found to be the least elastic of the service categories shown in Figure 1.[12]

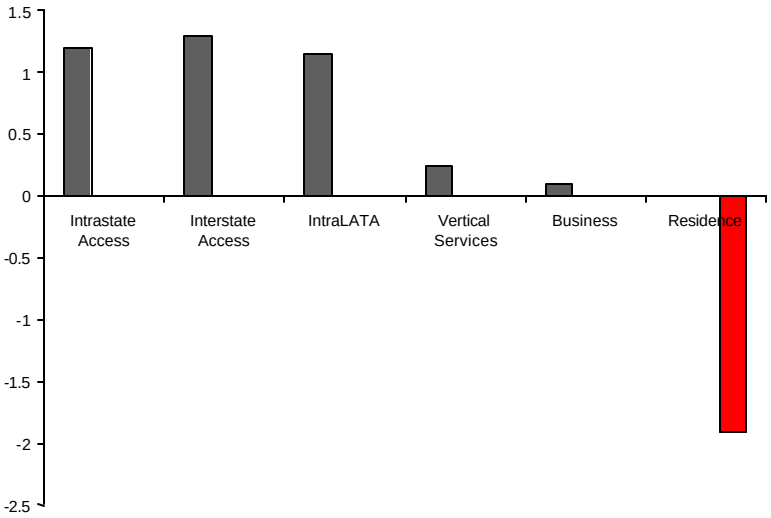


Figure 1. Contribution by Service Category.[13]

For comparison, Figure 2 shows what the contributions would look like if rates were rebalanced to yield the same total revenue, but with a constant percentage markup over TSLRIC by service category.[14] It is difficult to know the market equilibrium levels of these rates with certainty, if there were effectively competitive markets for each of the service categories shown in Figure 2. If we assume, however, that all firms in the market have cost levels similar to GTE's, and thus consistent

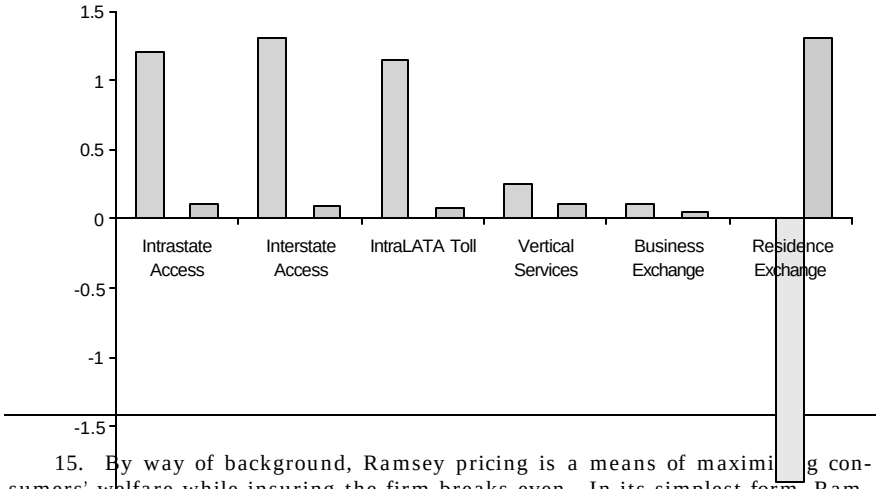
11. Note that, if the dark and light bars were summed, the result would be a positive number. This is because the sum of the contributions from GTE's different service offerings must cover GTE's common costs of about $2 billion.

12. *See* LESTER D. TAYLOR, TELECOMMUNICATIONS DEMAND: A SURVEY AND CRITIQUE 162 (1980).

13. Information in Figure 1 is taken from Weller, *supra* note 8, at 649.

14. Since the aggregate revenue in Figure 2 is the same as that in Figure 1, and all of the costs are also the same, the rebalanced rates in Figure 2 also generate about $2 billion in contribution toward the common costs of the firm. *See* Weller, *supra* note 8, at 649 n.11.

with the revenue level in Figure 2, and if we decline to make any assumptions as to how Ramsey prices[15] might differ from the constant-markup prices, then Figure 2 can serve as a rough guide to the level of contribution each service category would generate at market rates. The *differences* between the two sets of bars thus provide an indication of the degree to which regulation has intervened to displace the current rates from these "market" or cost-based levels. "For the leftmost category alone, interstate switched access, the difference in revenue between the two price levels is about $1.2 billion per year for GTE; for the local carriers in the U.S. as a whole it is about $5.9 billion."[16]



15. By way of background, Ramsey pricing is a means of maximizing consumers' welfare while insuring the firm breaks even. In its simplest form, Ramsey pricing prices services above cost in proportion to the inverse of the services' demand elasticities. In effect, one can think of the constant-margin rates as the result of "mindless Ramsey pricing" by a firm unable to take account of differences in demand, and the current rates as "reverse Ramsey prices" since the pattern of markups is exactly the opposite of what one would expect from a firm setting Ramsey prices. *See* LAFFONT & TIROLE, *supra* note 1, at 60–69. For this reason, the constant-markup rates provide, if anything, a conservative reference point. If firms did take demand into account in setting prices, one might expect the markup for local service rates to be higher than the uniform level shown here.

16. Weller, *supra* note 8, at 650. This figure includes only rates for the larger service areas designated "nonrural" under the Telecommunications Act of 1996. *See* Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (1996) (codified at 47 U.S.C. § 254 (Supp. III 1997)). The national total would thus be somewhat higher. On the other hand, the current access rates include recovery of a portion of the costs of a new fund to subsidize telecommunications services for schools and libraries. *See* 47 U.S.C. § 254(c)(1). The Fifth Circuit has recently reversed a requirement established by the FCC that contributions to these funds be recovered through access rates. *See* Texas Office of Public Util. Counsel v. FCC, 183 F.3d 393 (5th Cir. 1999).

Figure 2. Contribution by Service Category, Rebalanced.[17]

While Figure 1 and Figure 2 reveal a large flow of funds across services, they obscure reality in two important ways. First, the charts show aggregates across geographic areas; thus, they fail to show the very large differences in cost from one area to another. Recent cost modeling has suggested that costs can vary by an order of magnitude, even within the serving area of a rural central office. Figure 2 suggests that, on average, residential local rates have been set almost twenty-three dollars per month below their market levels. In some low-density rural areas, however, this difference might be much larger—several hundred dollars per month—while in some urban areas residential rates may be much closer to, and even above, their costs. Second, the Figures are averages across individual customers. In aggregate, the two price vectors shown in the charts yield the same revenue. However, the distribution of usage for access, long distance, and vertical services across customers is highly skewed; for example, only six percent of the end-user locations served by GTE generate almost half of the demand for interexchange access. As a result, the two price vectors produce very different revenues when the demand of an individual customer, or market segment, is evaluated. If, for example, a new local carrier were to enter GTE's serving area in Texas, and attempt to serve all of GTE's local residence customers, it would find that the revenue from all services would fail to cover costs for seventy-eight percent of those customers.[18]

This system of price manipulation has been sustainable, if inefficient, in a sole-provider environment. With the introduction of competition, two new concerns arise. First, the high margins for services on the left side of Figure 1 will induce firms to focus their entry strategies on the minority of customers who have high demand for those services. Second, the low

17. Information in Figure 2 is taken from Weller, *supra* note 8, at 650.

18. For this analysis, we have assumed that the competitor's costs are the prices for unbundled network elements that have been established on an interim basis by state regulators in Texas. This is a conservative basis for calculating the entrant's costs; if GTE were to sell its current output vector in Texas at those prices, GTE's revenue would be about 36% lower than it is today.

current prices for local service largely will preclude entry into local service markets.[19] This will especially be true for rural areas where costs are high, relative to the average rates.

This paper focuses on the "universal service obligation," but the reader is reminded that this is only a partial analysis of the total telecommunications structure. Among the issues that must be addressed concurrently are the interconnection prices[20] and the asymmetry[21] in the regulation of the different but converging media. The proposal suggested here addresses, in part, this asymmetry, and the efficient method of dealing with the USO.

This paper will review the traditional role of "universal service obligation" in telephony. We argue that, if the objective of universal service policy is to promote subscription, most of the price interventions described above are unnecessary. More limited programs, targeted at marginal subscribers, could meet this objective at lower cost, and with less interference with a competitive market. We present evidence on expenditure patterns that demonstrates that consumers, even those with low incomes, routinely choose packages of service from cable, wireless, and satellite providers whose monthly rates equal or exceed what they would pay for telephone service in the absence of the current universal service policy. These new data reinforce the results of previous demand studies, and suggest that most people would continue to subscribe to telephone service, even if market rates prevailed for local service.[22]

19. The observed pattern of entry into local telecommunications markets in the United States appears to be consistent with these incentives. Significant entry has already occurred in markets for local business services. At the same time, there has been very little competitive activity in local markets for residential service. *See* WILLIAM J. BAUMOL & J. GREGORY SIDAK, TOWARD COMPETITION IN LOCAL TELEPHONY 7 (1994).

20. Related to the universal service issue is the pricing of intermediate services—a thorny, but extremely important, issue. *See* LAFFONT & TIROLE, *supra* note 1, at 97–136, and the references cited therein. Although the correct interconnection price structure has not been resolved, the universal service requirement distorts the determination of the correct interconnection prices. *See id.*

21. *See* Mark Schankerman, *Symmetric Regulation for Competitive Telecommunications*, 8 (1) INFORMATION ECON. AND POL'Y 3–23 (1996).

22. *See* Jerry Hausman et al., *The Effects of the Breakup of AT&T on Telephone Penetration in the United States*, 83 AM. ECON. REV. 178, 179 (1993). If the policy of minimizing local rates were to end, consumers would not necessarily pay more, on average, than they do today. However, because the relative rates of different services would change, there could be relative gains and losses, for exam-

We recognize, however, that the political forces that have produced the current policies remain very strong. We argue that the current manipulation of telecom rates exists, not because it is necessary to promote subscription, but simply because the public choice process prefers the current rates to those a competitive market would produce. The Telecommunications Act of 1996[23] recognizes that there is a conflict between universal service policy, as practiced in the past, and the promotion of competitive telecommunications markets. Nonetheless, section 254 of the Act reemphasizes the commitment to affordable local service rates as a national goal.[24]

It is therefore reasonable to assume that policies to maintain low rates for local telephone service will persist for the foreseeable future. There is no reason why society cannot designate basic local telephone service as a merit good, and choose to subsidize its price below market level.[25]

As section 254 recognizes, however, this can no longer be accomplished by the traditional means of maintaining relatively high rates for other services offered by the incumbent carrier.[26] Section 254 requires that, to the extent that universal service subsidies are to be maintained, these traditional "implicit" subsidies must be replaced by "explicit" mechanisms

ple, between consumers who make many long distance calls and those who make few.

23. Pub. L. No. 104-104, 110 Stat. 56 (codified as amended in scattered sections of 15, 18, and 47 U.S.C.).

24. Section 254 requires the FCC to designate a "basic local service" whose price is to be "affordable." In addition, prices for that service in different parts of the country are to be "reasonably comparable." *See* 47 U.S.C. § 254 (Supp. III 1997).

25. The reader should note that we use the word "subsidy" sparingly in this paper, and when we do use it, we mean it in the common English sense, rather than in the context of the economic literature on cross-subsidy. *See* Gerald R. Faulhaber, *Cross-Subsidization: Pricing in Public Enterprises*, 65(5) AM. ECON. REV. 966, 972 (1975). When the government intervenes in the market to adjust prices or terms away from their market levels, the result is a market distortion, regardless of whether the resulting rates involve a "cross-subsidy" in the sense that term was used by Faulhaber. *See* LAFFONT & TIROLE, *supra* note 1; *see also* Gerald Faulhaber, *Voting on Prices: The Political Economy of Regulation* (visited Mar. 10, 2000) <http://rider/wharton/upenn/edu/~faulhbe/research.html> [hereinafter Faulhaber (1996)]. Where common costs are large, as they are likely to be in telecommunications, the range of prices that is "subsidy-free" will be quite wide. This does not mean that the government is free to select any rate within that range.

26. *See* 47 U.S.C. § 254 (Supp. III 1997).

that are more consistent with competition.[27] Unfortunately, in the four years since the passage of the Act, little progress has been made toward reforming traditional universal service policies.[28] The passage of the Act has not altered the political process that produced the current rate structure. Regulators have been reluctant to make the difficult choice between reducing the level of the subsidy—by allowing rates to adjust toward market levels—and providing explicit funding for the local rates they wish to maintain.[29]

Further, the debate over universal service funding has been obscured by the difficulty of measuring the subsidy using the traditional tools of cost-of-service regulation.[30] Although the Act was intended to replace regulation with a greater reliance on the market,[31] the result has been the most intense flurry of regulatory and legal activity in the history of telecommunications. Each firm has used this process to pursue its own interests, while regulators have used the resulting confusion to hide their own inability to make difficult choices.

By way of a solution, this article proposes an auction system. If regulators wish to retain some market interventions in the name of universal service, we believe that a process of competitive bidding offers the most effective and least distorting means for doing so.

Auctions offer many potential advantages in the context of universal service.[32] Competitive bidding offers an alternative method of assigning a "value" to universal service, by eliciting the valuations placed on the universal service obligation by the firms themselves. Rivalry among the bidders would be a more effective means of minimizing universal service payments than any amount of litigation over cost estimates. At the same time, because the bids would represent voluntary actions by the

27. *See id*.

28. *See* LAFFONT & TIROLE, *supra* note 1, at 217–18.

29. *See* Faulhaber (1996), *supra* note 25, at 2.

30. *See* William J. Baumol, *Option Value Analysis and Telephone Access Charges in* THE NEW INVESTMENT THEORY, *supra* note 8, at 217–18.

31. The Telecommunications Act of 1996 is entitled "An Act to promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies." Pub. L. No. 104-104, 110 Stat. 56, 56.

32. *See* Paul Klemperer, *Auction Theory: A Guide to the Literature*, 13(3) J. ECON. SURV. 227, 227–31 (1999); Weller, *supra* note 8, at 646.

firms, they would also serve to discipline the regulator, and ensure that the regulator does not use its coercive power over the incumbent to "procure" universal service for a "price" that is too low. By setting a correct value on universal service, an auction can allow the regulator to have confidence that its universal service policy can be sustained, and at the same time, that prices will be realigned in such a way as to promote efficient competitive entry and investment. Auctions represent a market mechanism for dealing with universal service, one that does away with traditional cost-of-service regulation and cuts through the current debate over the measurement of the cost of universal service. This is particularly important if one thinks of universal service as a policy to be maintained well into the future, since it would otherwise be necessary to maintain cost-of-service regulation indefinitely.

Finally, although the program described here is designed to be compatible with a competitive local service market, the program can also be seen as a mechanism for facilitating the transition to that competitive market. It provides a positive replacement for the traditional system of exclusive franchises, one that maintains social policy obligations in a multilateral format. It is by no means obvious, based on the information available to the regulator today, what the optimal market structure should be in a given local telecom market, given the tradeoffs between economies of scale and density, the relative efficiencies of different firms, and the application of different technologies. It is also not obvious which firms should be subsidized, or how many, and it would be all too easy for the regulator, through its universal service policies, to influence the market in such a way as to produce a suboptimal structure. The proposed auction mechanism is designed so that the aspects of universal service that would influence market structure—the number of firms to support, which firms to support, and the amount of the "subsidy"—would all be determined endogenously by the bidding process itself. Further, even if the prices and subsidy amounts in a given area were not conducive to entry prior to an auction, the auction itself would provide a prospective entrant with the means to correct these prices, through the bidding process, as a condition for its entry.

II. UNIVERSAL SERVICE

This Part critiques the universal service obligation, the related cross-subsidy arguments, and its implications for competitive entry. First, this Part illustrates the arguments with the telephone industry; however, the arguments apply equally to the National Information Infrastructure ("NII").[33] The major distortion in the United States telephone industry developed around what has come to be known as "universal service" or the subsidization of subscribers' access[34] to the network.[35] Theodore Vail, the head of the Bell System, coined the term "universal service" in the early years of the twentieth century.[36] He offered to end his competitive wars with independent telephone companies, to interconnect with them, and to accept a framework of exclusive franchises and government regulation.[37] By his motto "One System, One Policy, Universal Service" Vail meant that service would be "universal" only in the sense that any subscriber could place a call to any other subscriber, because networks would be interconnected.[38] In any event, the cross-subsidies that maintain universal service policies today could not exist then, for the simple reason that telephone companies offered few services beyond local service,

33. A similar concept is applied to the NII as noted in the following quotation from the Telecommunications Act: "[E]xtend the 'universal service' concept to ensure that information resources are available to all at affordable prices. Because information means empowerment—and employment—the government has a duty to ensure that all Americans have access to the resources and job creation potential of the Information Age." 47 U.S.C. § 254 (Supp. III 1997).

34. We use the terms "access" and "subscriber access" interchangeably to indicate the connection from the subscriber's premise to the telephone company's switch. It offers the ability to make and receive telephone service. The same function may be performed by wireless or cable facilities, or by some other means.

The FCC has chosen not to include advanced services in its definition of the basic local service to be subsidized pursuant to the Act. *See* Federal-State Joint Board on Universal Service, First Report and Order, 12 F.C.C.R. 16,8776 ¶ 84 (1997). However, the Act provides for periodic review of this definition. *See* 47 U.S.C. § 254.

35. One study estimates this subsidy at $20 billion. *See* Calvin S. Monson & Jeffrey H. Rohlfs, The $20 billion Impact of Local Competition in Telecommunications (July 16, 1996) (study on file with author).

36. *See* MILTON MUELLER, JR., UNIVERSAL SERVICE: COMPETITION, INTERCONNECTION, AND MONOPOLY IN THE MAKING OF THE AMERICAN TELEPHONE SYSTEM 96–103 (1997).

37. *See id.* at 108.

38. *See id.* at 96.

and there was thus no source of revenue to fund such cross-subsidies.[39]

When Congress passed the Communications Act of 1934,[40] establishing the FCC, the term "universal service" did not appear anywhere in the Act, although the principle that service should be widely available was affirmed.[41] At that time, "Congressional records contain[ed] no mention of telephone penetration levels."[42] During the 1940s and 1950s, as long distance service developed, the revenue from long distance provided a source of funds which regulators could use to keep local rates low.[43] Until 1984, the cross-subsidy from long distance service to local rates was accomplished as a matter of bookkeeping within the Bell System, which provided both services.[44] When a portion of long distance was divested from local service in 1984, this flow of funds had to be handled on an arms-length basis, so that the old subsidy flow was replaced by the "access charges" that local companies charged long distance carriers to originate or terminate long distance calls.[45] In 1996, when the revised Telecommunications Act finally enshrined "universal service" as a national policy goal, the term had assumed a different meaning from the one Vail had intended years earlier.[46]

We argue here that the current universal service policy is inefficient as a means of obtaining its intended goal for the following reasons:

- it is not directed to the marginal subscribers,
- it is not directed to the needy subscribers,
- it may not be desired, nor necessary,

39. *See id.* at 37–42.

40. *See* 47 U.S.C. § 151 (1994).

41. The wording in the preamble is: "to make available, so far as possible, to all people . . . a rapid, efficient, Nation-wide, and world-wide wire and radio communications service . . . at reasonable charges . . . ." 47 U.S.C. § 151; *see also* MUELLER, *supra* note 36, at 157.

42. MUELLER, *supra* note 36, at 157.

43. State regulators also relied on revenues from private line services, business lines, touch-tone service, and, later, calling features such as call-forwarding and call-waiting, to subsidize local service. *See* LAFFONT & TIROLE, *supra* note 1, at 3; *see also* MUELLER, *supra* note 36, at 156–57.

44. *See* JERRY HAUSMAN, TAXATION BY TELECOMMUNICATIONS REGULATION: THE ECONOMICS OF THE E-RATE 16 (1998); *see also* RICHARD GABEL, DEVELOPMENT OF SEPARATIONS PRINCIPLES IN THE TELEPHONE INDUSTRY 129–32 (1967) (providing a discussion of the process know as "Separations").

45. *See* 47 C.F.R. pt. 69 (1999); *Access Charge Order*, 93 F.C.C.2d 241 (Feb. 28, 1983).

46. *See* MUELLER, *supra* note 36, at 167–70.

- the pricing practice does not obtain the desired goal, and
- the means of raising the funds to support the subsidy may be counter-productive.

Moreover, because they distort the incumbent's rates, the current subsidies distort the development of competition. High rates for services that generate the subsidy, such as interexchange access, long distance, and calling features, create an artificial incentive for entry into markets for customers such as large businesses with high concentrations of these services. At the same time, low rates for local service make it unattractive for new firms to compete for customers with lower usage levels, especially for residence customers. Furthermore, the rate distortion makes it difficult for the market to reveal whether the incumbent is an efficient provider of service. If a new carrier can offer lower rates to a business customer in an urban area, that may indicate the new firm is more efficient than the incumbent, but it may simply mean that the incumbent has charged high rates for that customer as part of the pervasive scheme of cross-subsidy. Similarly, if no entrant can match the incumbent's rate for local service to a residence subscriber in a rural area, this may show the incumbent is the most efficient provider, but it probably means only that the local rate to that customer has been below the incumbent's cost. This anticompetitive effect of universal service can be minimized by minimizing the subsidy itself, and also by making the necessary subsidies explicit and portable among the local carriers chosen as universal service providers.

A. Possible Objectives of Universal Service Policy

Even though universal service has become part of national telecommunications policy, the objective of the policy has never been entirely clear. Several different possible justifications have been offered.[47]

47. *See* LELAND L. JOHNSON, TELEPHONE ASSISTANCE PROGRAMS FOR LOW-INCOME HOUSEHOLDS: A PRELIMINARY ASSESSMENT, TECHNICAL REPORT R-3603-NSF/MF (1988); LAFFONT & TIROLE, *supra* note 1, at 219; Milton Mueller & Reina Schement, *Universal Service from the Bottom Up: A Study of Telephone Penetration, in* THE INFORMATION SOCIETY 275–76 (1996).

1. Promoting Subscription

The objective most often cited is that of promoting subscription.[48] This justification takes several forms. First, some suggest that the subsidization of local service corrects for an externality, in that the value of the telecommunications system is increased for all subscribers when more people participate—an effect that may not be fully internalized in each individual's decision with respect to subscription.[49] Second, more widespread subscription may be seen as a public good, valued for its own sake, or as a matter of perceived fairness. Third, some argue that wider subscription facilitates the delivery of public services and participation in community and political affairs.

In the United States, as in most western European countries, the vast majority of households now subscribe to telephone service.[50] It is difficult to argue that the external benefit to existing subscribers is high when new subscribers are added.[51] Furthermore, if such effects were significant, telecommunications firms would partially internalize them, since they would increase demand for services by inframarginal subscribers.[52]

In any event, if promoting subscription were the goal of universal service policy, then subsidizing rates for local service generally is an extremely inefficient means for achieving that goal. Inframarginal subscribers do not need a subsidy to remain on the service. Only the marginal subscribers have to be subsidized to remain on the system at prices that cover the cost of access. If, for example, at the full cost of subscriber access, ten percent of today's subscribers would no longer subscribe, these customers could be given a direct subsidy for one-tenth of the cost of the current subsidy to all subscribers.

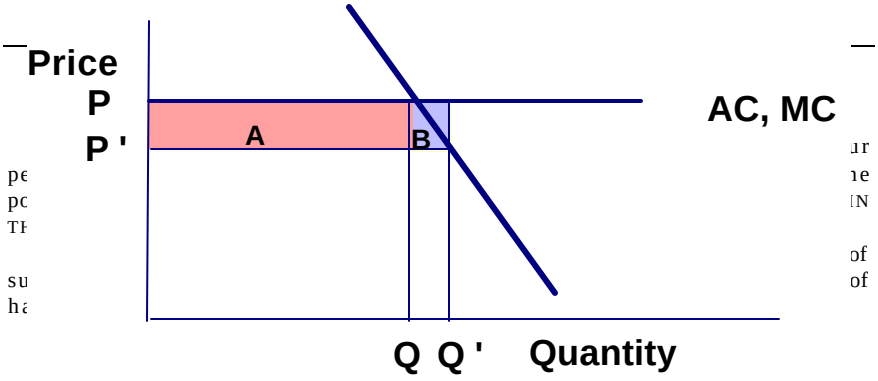


Figure 3. Service Subsidy Required.

In the above diagram, the current subsidy required is the sum of the two shaded areas (A + B) to support the service subsidy required to add the incremental subscribers (Q – Q'). The same increment could be added by subsidizing only these marginal subscribers by directly giving the dark shaded area (B) to the incremental subscribers (Q - Q').

The preferred method of addressing the problem is by targeting a subsidy directly to the individuals who need them, rather than to subsidize the service for all customers.[53] Commissions have taken small steps in this direction. Most states have "Lifeline" programs funded jointly by states and by a federal subsidy scheme, which defray part of the cost of local service for qualifying low-income subscribers.[54] There are inherent difficulties in targeting subsidies to marginal subscribers, but a qualification test with any power must be more efficient than simply subsidizing everyone.[55]

Furthermore, the current policy implicitly assumes that the decision to subscribe depends entirely on the price of local service, rather than on the prices of other telecommunications services. In the United States, at least two empirical analyses indicate a significant negative cross-elasticity between the long distance and subscriber access.[56] That is, the higher the price of toll services, the less the demand for subscriber access service. When one considers that the only reason to subscribe to the telephone system is to make or receive a call, this makes

53. Universal service is the acknowledged goal of the subsidy; however, as pointed out two decades ago, and repeatedly since then, regulators have not addressed the incidence of the subsidy. Targeted subsidies are preferable, if subsidies are supported at all, to the service subsidies currently applied in the industry. *See* JOHNSON, *supra* note 47, at 74; LAFFONT & TIROLE, *supra* note 1, at 219; *see also* HAUSMAN, *supra* note 44, at 17.

54. Other methods could be used to bring marginal subscribers onto the network, for example, clever non-linear prices or "means-test" tariffs. *See* JOHNSON, *supra* note 47, at 70–75; *see also* Timothy J. Tardiff, Universal Service with Full Competition, Paper presented at the Eleventh Biennial Conference of the International Telecommunications Society (June 16–19, 1996) (on file with author).

55. *See* HAUSMAN, *supra* note 44, at 15–16; LAFFONT & TIROLE, *supra* note 1, at 231–35.

56. *See* LESTER D. TAYLOR, TELECOMMUNICATIONS DEMAND IN THEORY AND PRACTICE 200–04 (1994); Hausman et al., *supra* note 22, at 178.

sense. Access is a derived demand—derived from the demand for local, toll and international usage; as these prices increase, there will be less demand for subscriber access. In fact, studies have suggested that the greatest single factor prompting households to disconnect phone service is the accumulation of high toll bills.[57] Thus, be counterproductive to raise the price of long distance service in order to finance subsidies for local service. Targeted programs such as toll blocking, which help households control their toll bills, may be more effective in promoting subscription.

B. Redistribution of Income

A further objective of universal service policy could be the redistribution of income to households perceived to be needy because of low income or other attributes.[58] Subsidizing the price of local service could provide a mechanism for redistribution, to the extent the subsidized service is a larger proportion of the expenditures of the customers the government wishes to favor.

The first objection to this approach is that, if the objective is to transfer income, it would be more efficient to do this directly by giving money to the targeted households, rather than indirectly by subsidizing a service they may or may not wish to consume.[59]

The second objection is that a subsidy for the price of a given service does a poor job of targeting benefits to needy groups. Different consumers use services such as long distance in different amounts, but these choices are not strongly related to differences in income. If customers are segmented by income, one finds a mix of high and low volume customers within each income group. In other words, a person's income does not determine whether he is a low or high volume users. For the lowest income segment Crandall examines, those with house-

57. *See* Mueller & Schement, *supra* note 47, at 186–290.

58. *See* LAFFONT & TIROLE, *supra* note 1, at 219–29.

59. *See* A.B. Atkinson & J.E Stiglitz, *The Design of Tax Structure: Direct versus Indirect Taxation*, 6 J. PUB. ECON. 55 (1976). Laffont and Tirole discuss caveats to Atkinson and Stiglitz's results where some of the assumptions underlying the result may not be met, for example, if the inequality the government wishes to correct cannot be observed directly. *See* LAFFONT & TIROLE, *supra* note 1, at 228–32.

hold income below $10,000 annually, forty-five percent of the average monthly bill represents charges for long distance service.[60] Thus, a system that relies on high long distance prices to fund low prices for local service would ask a poor household that happens to make many long distance calls to subsidize a wealthy household that makes few calls. Our data, presented below, not only support this conclusion, but amplify it.

We examine detailed data on *total* telecommunications usage and billing—wireless, cable, internet, local and long distance calling, as well as traditional wire-line telephony access—stratified by income and other demographic data from the United States. These data confirm that consumers, even those with low incomes, choose to purchase packages of wireless, cable, and other services with prices at least as high as local phone prices would be in the absence of the current subsidy.

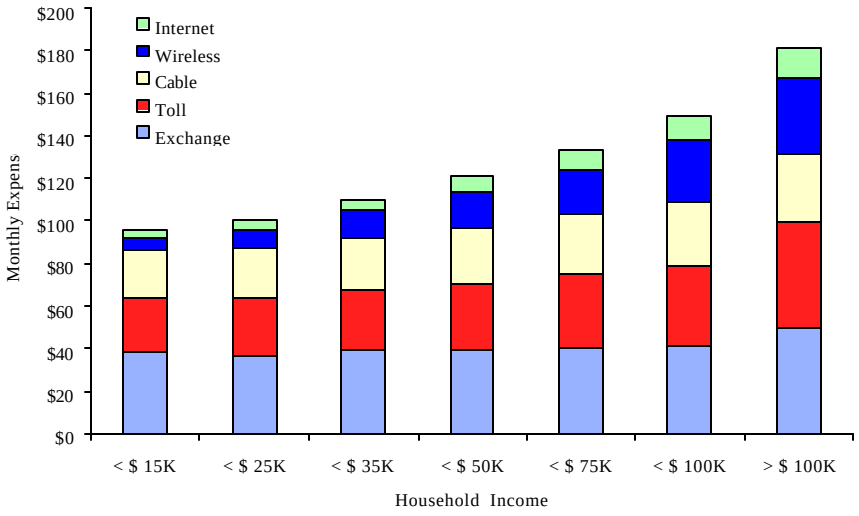


Figure 4. Expenditures by Income.[61]

60. *See* Robert Crandall, *Telephone Subsidies, Income Redistribution, and Consumer Welfare, in* A COMMUNICATIONS CORNUCOPIA 403 (Roger G. Noll & Monroe E. Price eds., 1998).

61. *See* PNR & Associates, Request™ (1999). ReQuest™ is a national residential survey that provides market information concerning consumer behaviors, attitudes, switching probabilities and price sensitivity. Each year, PNR surveys

over 45,000 households to collect information on household expenditures, penetration rates, and attitudes on telecommunication products and services. Households are randomly selected from a national panel of households and are weighted to correspond to census distributions for age, income, household size and marital status. ReQuest™ covers local telephony, short distance toll, long distance, wireless (cellular, PCS, and paging), cable, internet, calling card, coin, and international long distance. The data displayed in the accompanying figures and table is based on surveys conducted during the first quarter of 1999. *See* INDETEC/PNR, *ReQuest* (visited Mar. 13, 2000) <http://www.pnr.com/Products___Services/Market_Information/Consumer_Market_Info/ReQuest/request.htm>

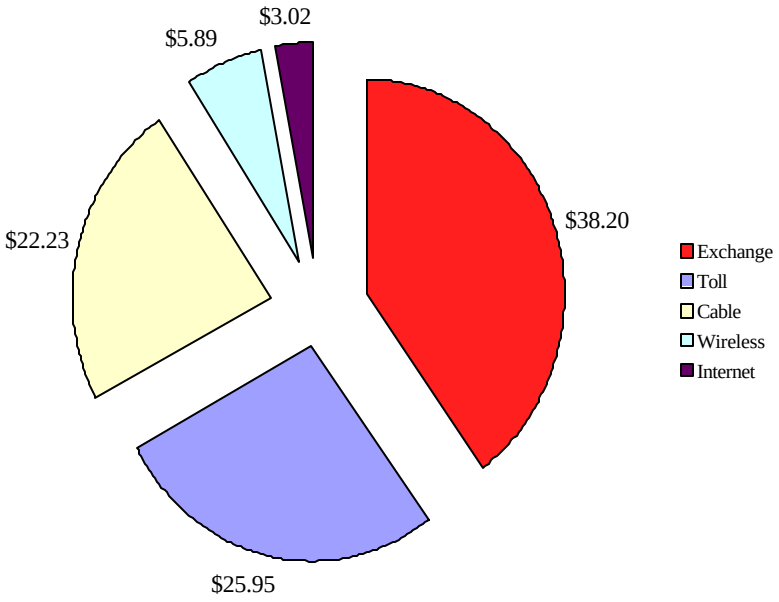


Figure 5. Expenditures by Household with Income under $ 15,000.[62]

62. *See* PNR & Associates, Bill Harvesting™ (1999). Bill Harvesting™ is a study based on PNR's continuous data acquisition of actual customer bill data from a national cross-section of approximately 2,000 households per month. *See* INDETEC/PNR (visited Mar. 13, 2000) *Bill Harvesting* <http://www.pnr.com/Products___Services/Market_Information/Consumer_Market_Info/Bill_Harvesting/bill_harvesting.htm>

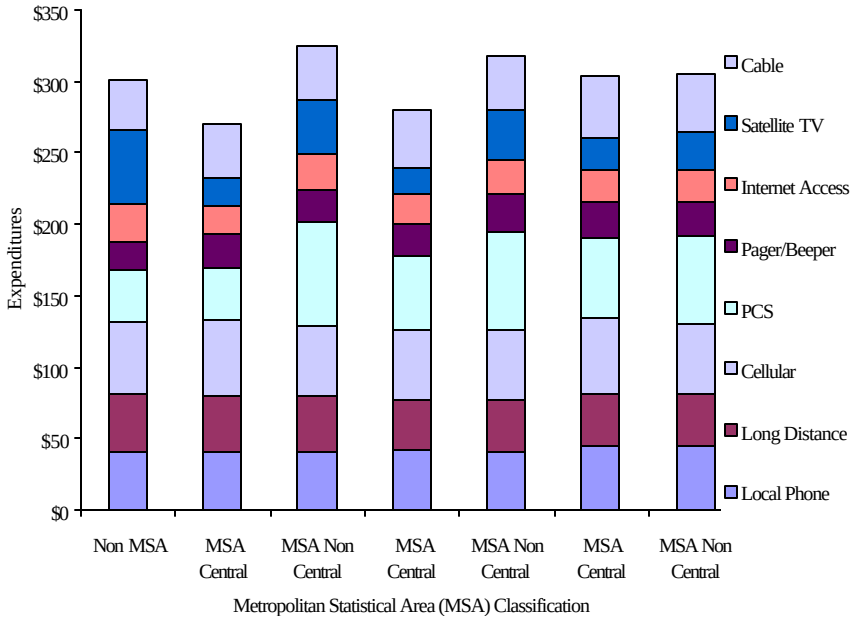


Figure 6. Monthly Household Expenditures by Statistical Area Classification.[63]

If we examine all of the discretionary spending by the low-income subscribers in the United States[64], the level of spending is much greater than what is spent for subscriber access. Thus, it is far from clear that raising the price of "discretionary" services in order to fund subsidies for local service is an effective means of transferring wealth to those customers who are most needy.

63. *See id.*
64. *See* Figures 5 & 6, *supra*.

Table 1. Telecommunications Expenditures by Household above and below $15,000.[65]

	< $ 15K	> $ 15K
Exchange	38.20	39.74
Toll	25.95	32.33
Cable	22.23	26.51
Wireless	5.89	17.90
Internet	3.02	7.69

Furthermore, distorting the prices of telecommunications services is a particularly costly method for financing universal service subsidies. The services with elevated prices are generally those for which demand is more elastic than for local service. The current universal service policy thus represents Ramsey pricing in reverse. Because the burden of this funding is concentrated on certain telecommunications services, rather than drawn from general revenues, the base of the "tax" is relatively narrow, and the markups on the prices of the services generating the subsidy are quite high. Finally, the telecommunications sector is undergoing rapid changes, as new technology appears and as competition is introduced; the danger of dynamic distortions in the development of these markets is particularly acute. Examining only the first two of these concerns, Hausman estimates that for every dollar raised by increasing the price of long distance service, the welfare cost to consumers is $1.65.[66] This far exceeds estimates of the comparable deadweight loss associated with a dollar of general revenue, which is approximately forty cents.

For all these reasons, Crandall finds that if rates were to be rebalanced, without any universal service mechanisms to cushion the effects, the average welfare loss among the lowest income group would be only about six dollars per year, compared with an average expenditure for telecommunications among that group of about $490 per year.[67]

65. *See* PNR & Associates, *supra* note 62.
66. *See* HAUSMAN, *supra* note 44, at 13–14.
67. *See* Crandall, *supra* note 60, at 405–06.

C. Rural Development

Universal service policy may also strive to maintain equity between rural and urban consumers.[68] This involves a judgement about how much of the higher cost of rural service should be borne by a customer who chooses to live in a rural area. Some also see subsidies to telecommunications infrastructure in rural areas as a policy to promote business development and employment in those areas. The Telecommunications Act of 1996 requires that rates in rural areas be "reasonably comparable" to those in urban areas.[69]

However, since rural customers generally rely more heavily on long distance service, raising long distance rates to subsidize rural subscribers is counterproductive. Further, it is far from clear that all rural subscribers are needy. In Colorado, the rural areas contain some of the most affluent regions in the state, if not the country. One only has to mention Aspen and Vail to drive home this point. These communities receive preferential rates and the serving companies receive the money from the telephone industry's "Universal Service Fund." One would think that Vail homeowners Gerald Ford and Barbara Streisand could afford unsubsidized phone service.[70]

D. Budget Considerations

Agreed-upon budget constraints or an inability to secure political support from other interest groups may limit the general revenue funds available for projects that some political interests view as worthwhile. Policies that appropriate resources by manipulating the prices of regulated services provide opportunities to fund these projects in an "off-budget" way. Further, the funding process is relatively obscure and poorly understood by most people, thus reducing the level of scrutiny that would

68. *See* 47 U.S.C. § 254 (Supp. III 1997).

69. *See id.*

70. Vail is in Eagle County, Colorado, and has an average per capita assessed property value of about $51,500. *See Eagle County Government - Eagle County, Colorado* (visited Mar. 28, 2000) <http://www.eagle-county.com/frames/gov.htm> (listing the total taxable assessed property value of Eagle County as $1,647,562,700); *Eagle County Government - Eagle County, Colorado* (visited Mar. 28, 2000) <http://www.eagle-county.com/frames/vis.htm> (listing the population of Eagle County as about 32,000).

otherwise be focused on such large expenditures. The funding authorized by the Telecom Act, for example, provided money to schools and libraries nationwide.[71] This expenditure for what is essentially an input to education is now the largest single component of the universal service funding mechanisms at the federal level, absorbing more than two billion dollars per year.

E. Public Choice

All of this notwithstanding, the political economy of low basic service rates is powerful and persistent. In a recent paper, Gerald Faulhaber explained the preference for low local rates in the context of a simple median voter rule model.[72] In this model, candidates for regulatory commissions announce, as their "platform," the price vectors they would establish if elected. Because almost all voters consume local service, and usage of other services is less widespread, the median voter model picks candidates who endorse low local rates.[73] As the data we have summarized here indicate, usage of services other than basic local service has become more democratic over the last few years; that is to say, the distribution of the consumption of these services has become more uniform. As this trend continues, the public policy emphasis on low subscription rates may diminish. However, it is likely to be with us for a long time.

F. Possible Outcomes

As Laffont and Tirole note: "Universal service is a knotty and explosive problem."[74] Regulators have been reluctant to admit the size of the resource transfers embedded in the current system of implicit subsidies. Thus, they are reluctant to rebalance rates, but equally reluctant to implement more efficient, explicit funding mechanisms for universal service. Den-

71. *See* 47 U.S.C. § 254(h)(1)(b).

72. *See* Faulhaber (1996), *supra* note 25, at 3–8.

73. Faulhaber's explanation subsumes many of the policy rationales discussed in this section, but is more general. *See id.* at 19. For example, the median voter may be more likely to consume local service because of income constraints, but this need not be the case, so long as the consumption of local service is less skewed than that of other services.

74. LAFFONT & TIROLE, *supra* note 1, at 218.

nis Weller outlines three possible resolutions for the policy dilemma regulators now face.[75] First, and most preferred, regulators may make the difficult choices necessary to resolve the issue. This would involve some combination of rate rebalancing, without imperiling other policy goals. Where rates must be subsidized, the subsidies would be as targeted as possible, and implemented so as to minimize any resulting distortion. The second possible outcome is the "train wreck" scenario, in which regulators require low local rates, but provide no explicit mechanism for funding them, ultimately leading to a failure in the market and a breakdown in the supply of service. The third possibility is that we all "muddle through," with some adjustments in prices, and some gains in productivity sufficient to validate the prices that remain.

G. Interconnection/Intermediate-Good

Interconnect pricing represents the price of the intermediate services needed by a new entrant to provide service.[76] The price is also known as the access price, and would be the price charged by one service provider, usually the incumbent, for connection to its network in order for a new entrant to complete the service for its end-user customers. For example, in the United States, long distance carriers must pay the exchange carriers an access price to complete a call on the public switched network. Another example would be the connection of a mobile provider to the public switched network. The pricing becomes more difficult when the company charging the interconnection price also competes with the company it charges. The company charging for interconnection has an obvious incentive to over charge the competing company—not only to enhance its own revenue, but to make the competing company's cost, and hence its price, higher. If the regulators continue to build subsidies into service rates, then they face a difficult choice. The regulator can add the subsidy to the interconnection rate, thus raising the entrant's costs. Or, if it excludes the subsidy contribution from the interconnection price, the regulator artificially favors the entrant in competition with the in-

75. *See* Dennis Weller, *Universal Service—The Policy that Was*, Conference Presentation at the London Business School (Apr. 30, 1999) (on file with author).

76. *See* LAFFONT & TIROLE, *supra* note 1, at 16–17.

cumbent's services, which do contribute. Stated differently, no matter how methodologically erroneous the interconnection price, it is further distorted by the size of the subsidy that must be included. Only by eliminating implicit subsidies from rates can the regulator avoid this Hobson's choice. While the pricing of interconnection is critical, it cannot be covered in this paper. The reader should be aware that this is a serious policy issue that feeds back to the universal service obligation.[77]

III. AN ALTERNATIVE

For the purposes of this paper, we will assume that regulators wish to continue to intervene in local service markets. This means that the generally available rate for basic service in many areas will be held below market levels; there may also be requirements with respect to quality, tariffing, and other nonprice attributes of the service. The above discussion, by making this assumption, does not necessarily endorse this policy; however, we believe that important elements of the current market intervention will persist for a long time.

This Part proposes the use of auctions for determining which carriers should undertake a universal service obligation, and what compensation they should receive for performing this function. The auction would reveal carriers' valuations of the USO, determine the number of USO providers endogenously, and provide an alternative to traditional cost-of-service regulation.

In an earlier paper, one of the authors suggested that a process of competitive bidding could serve this purpose.[78] The regulator would define the market intervention it wished to impose in the form of a universal service obligation. An auction would then determine which carriers should undertake this obligation and the compensation those carriers should receive in return. In 1996, one of the authors began a project, working jointly with Paul Milgrom and David Salant, to de-

77. *See* Mark Armstrong et al., *The Access Pricing Problem: A Synthesis*, 44(2) J. INDUS. ECON. 131 (1996).

78. *See* Weller, *supra* note 8, at 645–48. Laffont and Tirole provide a discussion of this work, referring to it as the "GTE proposal." *See* LAFFONT & TIROLE, *supra* note 1, at 244–50; *see also* Klemperer, *supra* note 32, at 227–31.

velop an auction framework for this purpose.[79] This Part describes the specific auction mechanism developed.[80]

Competitive bidding has been used by governments for many years to procure products and services—to choose the most efficient supplier, and to ensure that the government obtains the most advantageous price. Auctions have also been employed to assign rights to government-held resources, such as spectrum or offshore oil deposits—to direct these resources to their highest valued use, and to maximize the resulting revenue. Auctions are particularly useful in valuing items for which it would otherwise be difficult to establish a price—because of their novelty or complexity, or because of the lack of observable market prices for comparable items. In this case, the "item" to be auctioned is an obligation to supply service to private customers, but at prices, terms, and conditions the firm would not have chosen voluntarily.[81]

To summarize the framework set forth, we will propose that the regulator should first define the universal service obligation it wishes carriers to undertake. We also define the market area for which this obligation would be assigned, suggesting that these should be relatively small, standard geographic areas. The universal service obligation for each small geographic area should be put up for auction when one or more of the carriers nominates that area for bidding. The auction would be a single-round, sealed bid; the form of the bid would

79. In December 1996, Paul Milgrom delivered the Nobel Lecture in Stockholm, in which he provided an overview of the application of auctions to universal service. *See* Paul Milgrom, *Procuring Universal Service: Putting Auction Theory to Work*, Lecture at the Royal Swedish Academy of Sciences (Dec. 9, 1996), *cited in* Weller, *supra* note 8. Milgrom was invited to deliver the lecture in honor of William Vickrey, winner of that year's Prize in economics, who died before he had the opportunity to come to Stockholm himself. Milgrom used the design of a universal service auction as an example of a practical application of Vickrey's important work in the field of auction theory. *See id.*

80. Padmanabhan Srinagesh and Valter Sorana have also participated in this project. In addition, the authors of this article have benefited from discussions with Evan Querel, Greg Rosston, Barbara Cherry, Jeremy Bulow, and Dean Foreman.

81. Perhaps the closest parallel is a program under which the United States government subsidizes airline services on routes which might not otherwise be served in the wake of airline deregulation. *See* 14 C.F.R. pt. 271 (1999). The government enters into contracts which obligate the carrier to provide a specified level of service, and the contracts are awarded through a process of competitive bidding. A similar process is used in Great Britain to select franchisees to provide rail service. *See* Weller, *supra* note 8, at 645–48.

be the per-customer support amount the carrier would require. The auction would allow more than one carrier to win, with the number of winners in a given area determined endogenously. A limited form of conditional bidding is used to take account of possible economies of density. Repeated auctions over time allow this framework to adapt to changes in technology, costs, or policy objectives.[82]

A. Why an Auction?

Most of the discussion about universal service, in the United States and elsewhere, has focused on estimating the cost of the basic service, and deriving support levels by comparing this cost to some estimate or assumption regarding revenue. Compared to this alternative, an auction offers a number of advantages over traditional cost-of-service approaches as a means to select universal service providers, and to determine the level of support payments.

In a recent survey, Elmar Wolfstetter cited three reasons for the use of auctions:

- Speed of sale,
- To reveal information about buyer's valuations (in this case, sellers' valuations)
- To prevent dishonest dealing between the seller's agent and the buyer (here, the buyer's agent and the seller).[83]

The application of auctions to universal service has all three of these advantages.

1. Speed

With respect to speed of sale, competitive bidding offers a means to settle long-standing regulatory controversies, and allows an effective universal service mechanism to be put in place. In the United States, debates over the cost and revenue estimation necessary for the traditional approach have created a procedural logjam. Congress, for example, charged the FCC with adopting its version of a universal service plan within fif-

82. We will not discuss the specifics of the auction proposal here. For a more detailed description, see Weller, *supra* note 8, at 655–73.

83. *See* Elmar Wolfstetter, *Auctions: An Introduction*, 10 J. ECON. SURV. 369 (1996).

teen months of the passage of the Telecommunications Act of 1996.[84] As of this writing, four years have passed, and the FCC has yet to determine the calculation it will use to estimate support under its universal service program. The cost model to be used for this purpose is still a work in progress.[85]

Recall that the current prices, on which an implicit method of support is built, provide incorrect incentives for investment and entry. Implementing an explicit universal service plan would allow the prices for services on the left of Figure 1 to be rebalanced downward toward the "market" levels we have indicated in Figure 2.[86] This would remove artificial incentives to enter those markets. At the same time, explicit funding would associate revenue with the provision of local service, which would compensate carriers for the costs of providing it. Until this can be done, entry into local markets will be blocked economically; namely, new entrants would not find these markets economically viable. Delay in correcting these price signals will be costly, in the sense that efficient development of competition in these markets will also be delayed.

2. Revealing Carriers' Valuations

Auctions provide a means of revealing carriers' valuations of the universal service obligation itself. The current process has been lengthy precisely because it has proven extraordinarily difficult for regulators to determine these valuations through traditional means. For example, in a 1996 case before the California Utility Commission, parties presented their estimates of the funding needed in California. Pacific Bell, the largest incumbent telephone company in California, estimated this amount at $1.7 billion annually; AT&T's estimate was zero. In June, 1998, in a hearing before FCC and state commissioners, not much had changed. One party (and one of the authors) estimated the amount of funding the FCC should provide at about $6 billion; AT&T suggested that the funding

84. *See* 47 U.S.C. § 254(a)(2) (1994).

85. For a generic critique of cost models, see Alleman, *supra* note 8, at 159–80.

86. *See* Figures 1 & 2, *supra*.

should be zero.[87] Clearly, a regulator faced with a record like this has two prospects: the ability to choose any number within a very wide range, and uncertainty as to whether the number chosen can possibly be correct. Similarly, the FCC's difficulty in choosing a cost model stems from the fact that the available models, each of which has been sponsored by an interested party, differ so drastically in their results.

Competitive bidding obviates the need for the regulator to make such unappealing choices.[88] Each bid will reflect the bidder's own expectations with respect to costs as well as revenues.[89] Further, bidders will also consider any other factors they may find relevant, but which the traditional approach cannot include. For example, if the regulator establishes a quality requirement for universal service that the carrier would not choose to meet in the absence of the obligation, or if dealing with the regulator is burdensome, the bid would reflect the carrier's assessment of these factors. On the other hand, there might be some benefits to a carrier, other than the local service revenue itself, associated with the universal service obligation. These might include any demand complementaries between basic local service and other services the carrier might offer, or perhaps some increased brand recognition that might result from official designation as a universal service provider. One of the great virtues of an auction is that there is no need for the regulator to assess the likelihood of any such factors, positive or negative, or their relative magnitude.

CONCLUSION AND RECOMMENDATIONS

The major distortion in the telephone industry is universal service, or the subsidization of subscribers' access to the net-

87. If the FCC did not care for either of those numbers, there were other parties in the room proposing $600 million, $2.8 billion, and $4 billion. *See* Weller, *supra* note 8, at 256 n.23.

88. As will be seen below, the auction design proposed here does not do away with cost models entirely, since it uses the traditional cost-revenue comparison to establish an initial level of support. However, it does provide a means for correcting errors in that amount, and for adjusting the support level over time, without recourse to the cost model.

89. Milgrom presents an auction design in which each bidder has a dominant strategy. *See generally* Milgrom, *supra* note 79. However, there may be a tradeoff between achieving symmetric treatment of winning bidders, as does the design presented here, and arranging for dominant strategies to take hold.

work. This paper has shown that universal service is inefficient as a means of obtaining its intended goal. Because it is not directed to the marginal subscribers, it is costly to support; because it is not targeted directly to the needy subscribers, it misses its goal. Fundraising through cross-subsidies from other services are counterproductive—higher prices for the services providing the subsidies reduce the demand for subscriber access from the group which it is intended to aid. The subsidies inhibit effective competition because of artificially low prices for subscribers' access, and high prices for other services, thus preventing the market from testing the efficiency of the provider. This can lead to inefficient entry in the high-priced markets and preclude efficient, low-cost entry in the subsidized markets. This is incompatible with competitive policy. If a democratic process determines that subsidies are desirable, these should be targeted to the end-users and funded directly through government. While the myth of universal service—as currently embedded in regulatory policies—is without economic foundations, universal service arguments nevertheless continue to plague the telecommunications industry to the detriment of business, the public and potential competitors. The issue should be re-examined in light of the criticisms above.

Auctions provide a method for regulators to reconcile their desire to promote competition with their continued commitment to universal service. Competitive bidding is a market mechanism for deciding which firms should provide universal service, and how much they should be paid for doing so. Many of the current efforts to reform telecommunications policy have only created more legal and regulatory disputes; oddly enough, a process that began with a desire to rely more on markets, and less on regulation, has in fact given cost-of-service regulation a new lease on life. Competitive bidding provides an approach that is more likely to reveal the amount of universal service support accurately. This is important not only to ensure that the universal service policy is sustainable, but also to correct the current distortions in relative prices, so as to provide incentives for efficient entry and investment decisions. Finally, by revealing information about the most effective market structure, the auction itself provides a mechanism for the transition to competition.