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**THE COST OF UNIVERSAL SERVICE IN THE U.S. AND
ITS IMPACT ON COMPETITION***

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INTRODUCTION

The modern concept of the Universal Service Obligation (USO) was not present in the early days of the republic. At the beginning of the 19th century the post was simply an intercity carrier that provided no collection or delivery. Service was provided only to towns on post roads designated by Congress. Outlying villages and settlements were not included in the network. City delivery was not introduced until 1863 and then only in 45 cities.¹ By 1890, delivery had expanded to 50 cities, about 30 percent of the population. Ubiquity of delivery only became a goal with the introduction of rural free delivery at the end of the 19th century. By 1917, the post office was only delivering to about 80 percent of rural Americans.² Thus, the goal of ubiquitous delivery was not realized until well into the 20th century. Rural delivery meant that farmers did not have to live so near a post office and so began a long and steady decline of rural postal offices throughout the 20th century.³

At its core “universal service” means ubiquity of access to the mail (either by delivery or other means) and reasonable access to collection and counter service. Many observers, however, would add one or more of the following: uniform prices, six-day-a-week delivery, current product offerings and current service standards. The non-core aspects of universal service have also changed over time. Multiple daily deliveries in cities were eliminated in the early 1950’s. Postage rates for local and long-distance letters were not equalized until 1885 and they diverged again in 1932 only to be set equal again in 1944.

The eminent regulatory economist John Panzar has stated that the cost of the universal service is the cost of the services that would not be provided in a competitive environment.^{4,5} This is the concept of the cost of the USO that we use in this paper.

¹ See Kielbowicz, (2002).

² See Campbell, (2002).

³ Also, this reflected the decline of rural America as well as the fact that rural carriers (unlike their city counterparts) provide retail services to their customers.

⁴ See Panzar, (2001).

⁵ A more precise statement would be that the cost of universal service is the net savings from abandoning services that the Postal Service would not reasonably provide in a competitive environment.

We examine the aspects of universal service that management might consider changing in response to a financial exigency that could be brought about by a competitive environment. Our purpose is not to propose that management make these changes, but to analyze the possible cost savings that might be achieved and to put these savings in perspective.⁶ In the penultimate section of this paper we discuss the significance of the cost of universal service to the competitive position of the Postal Service in the eventuality that the U.S. letter mail market were liberalized. While these analyses are specific to the U.S. Postal Service, the findings should be broadly applicable to posts in other industrial countries.

It will be useful to keep some gross Postal Service statistics in mind in order to provide an international perspective for the potential cost savings presented below. The analysis is based on fiscal year 1999 (FY 99) costs.⁷ In that year total Postal Service expenses were \$62.4 billion.⁸ The distribution of expenses by function is shown in Table 1. The U.S. Postal Service has a greater percentage of mail processing costs than every other industrial post because of its large per capita volume.⁹ Consequently, its delivery costs constitute perhaps the lowest percentage of total costs of any post in an industrial country. The opposite is true for posts with low per capita volume. Thus, cost savings from reductions in the delivery aspect of the USO would be relatively larger in posts with less per capita volume.¹⁰

⁶ We do not predict that competition would bring about a financial exigency. Quite the contrary, our analysis shows that little competition would emerge if the letter mail monopoly were eliminated. See Cohen, et al., (2000).

⁷ Fiscal Year 1999 began on October 1, 1998 and ended September 30, 1999.

⁸ For FY 03 expected expenses are \$69.8 billion. See Postal Rate Commission (2002).

⁹ See Cohen, et al., (2002).

¹⁰ See Cohen, et al., (2002).

**Table 1: USPS Costs by Function
(FY 99)**

	Costs (\$ billions)	Percent of Total Costs
Mail Processing	22.6	36.3%
Delivery	21.5	34.5
Transportation	5.1	8.1
Counters	3.7	6.0
All Other	9.5	15.2
Total Cost	62.4	100.0

This paper first presents the costs of three core universal service elements that conceivably could be candidates for elimination in the face of severe financial exigencies resulting from competition and thereby pass the Panzar test. These are: (1) elimination of unprofitable routes, (2) closure of small post offices; and (3) elimination of Air Parcel Post to the Alaskan bush country. Each of these involves dismantling the ubiquity of service. A core service that we do examine here but reject as not passing the Panzar test is the curtailment of expansion of the delivery function by not adding new delivery points. Lastly, two non-core universal services that might pass the Panzar test are examined, maintenance of six-day delivery on all routes and the right to door delivery on park and loop routes.

I. UNPROFITABLE DELIVERY ROUTES

We define the profit of a delivery route as the revenue from the mail delivered on the route, minus the total cost of operating the route, minus the attributable upstream cost of the mail delivered on the route.¹¹ Net profits from delivery routes are a relatively small portion of total costs in a breakeven post. This is intuitive because unprofitable routes offset a large portion of the profit from profitable routes.¹² Table 2 displays the delivery profits and losses by semi decile of the 230 thousand delivery routes of the U.S. Postal Service.

¹¹ Profits from box section or non-delivered mail can be similarly calculated.

¹² Most delivery profits are in non-delivered mail because it involves no delivery cost. The sum of the profits from delivered mail plus non-delivered mail equals the upstream institutional cost in a breakeven post.

**Table 2: Annual Route Profits (Losses) by Semi-Decile
(1999, \$ Millions)**

<u>Profits</u>		<u>Losses</u>	
1	\$1,690	12	(4)
2	888	13	(56)
3	701	14	(112)
4	575	15	(172)
5	471	16	(236)
6	382	17	(307)
7	303	18	(391)
8	232	19	(505)
9	168	20	(764)
10	108		
11	50		
Total Profits	5,572	Total Losses	(2,551)
Net Profits	3,021		

Note: Profitable and unprofitable semi-deciles do not sum to total profits and total losses because semi-decile 12 contains both profitable and unprofitable routes.

It can be seen that approximately 45 percent of routes are loss making and the total losses are \$2.6 billion (or 4.1 percent of total cost). Jettisoning the loss making routes would allow the USPS to reduce its costs and hence its rates by this amount.^{13,14} Because the value of the network is positively correlated with the number of points served, few customers would think it worthwhile to trade a rate reduction of this small magnitude for the inability to reach 45 percent of the population.

Rather than abandon service to all unprofitable routes it would be better from a business standpoint to simply abandon uniform prices and charge differential rates to bulk mailers so that all routes are profitable.¹⁵ Another alternative would be to reduce delivery frequency on loss-making routes until they are at least breakeven.

¹³ People on these routes would probably have a lower propensity to mail leading to some reduction in volume. Thus, the \$2.6 billion figure represents an upper bound.

¹⁴ Eliminating the most unprofitable 10 percent of routes would save \$1.3 billion or about two percent of total cost.

¹⁵ This would be feasible since postage for bulk mail is calculated today by computers. Bulk mail accounts for about three quarters of all mail.

A post that delivers 6 days per week could reduce service on each loss making route just enough so that it was no longer unprofitable. Each route would be reduced to 5, 4, 3, 2 or 1 day per week according to the size of the loss on particular routes.¹⁶ In this way there would be no loss making routes. This would result in about the same \$2.6 billion saving. It would, however, probably cause a political problem for a government owned postal service because profits on a route depend for the most part on volume, which in turn is highly correlated with the income of patrons served on the route. Reducing delivery frequency for unprofitable routes would involve relatively poor people getting less frequent delivery than relatively rich people. Nevertheless, this would not be so great a political problem as abandoning these routes altogether. Arguably, reducing service frequency on loss making routes would be an economically rational approach to lowering costs, especially when direct competitors provide no service to those routes.¹⁷ The estimates of savings from reducing delivery frequency are upper bounds because no allowance has been made for additional costs that might be incurred.

It should be emphasized that the issue of unprofitable routes, uniform prices and uniform delivery frequency are closely linked. While ubiquitous delivery and uniform prices are commonly understood to be part of the universal service obligation, it is not so clear that uniform frequency of delivery is also part of the concept of the USO. Many rural routes received delivery only three days per week until the 1950's.

Unlike France and probably all other European countries, the unprofitable routes in the U.S. are not overwhelmingly in rural areas. Delivery routes serving rural areas as a group are profitable as are the routes serving urban areas. Consequently, there is no cross-subsidy of service to rural areas by urban area delivery. Also, the percentage of unprofitable routes is about the same in rural areas as in urban areas.¹⁸ The major reason for this near balance is the fact that roadside delivery by rural carriers is

¹⁶ A few routes would receive delivery less frequently than once a week.

¹⁷ Most analyses of post liberalization competition presume that entrants would focus on the most profitable routes or areas and avoid loss-making routes.

¹⁸ These points are further documented in the Appendix.

frequently more efficient than park and loop delivery by city carriers.¹⁹ At any rate, it is to be expected that in a breakeven post roughly half the routes would be unprofitable.

II. CLOSING SMALL POST OFFICES

Providing reasonable access to postal counters is part of the universal service obligation of all posts in industrial countries. In 1901, the U.S. had 77,000 post offices and the number has been in decline ever since. Today the Postal Service has about 28,000 post offices, 6,000 stations and branches²⁰, 3,000 contract stations and branches, and 1,500 community (franchised) post offices. All told the USPS currently has about 38,000 facilities with counters. The Postal Service had been closing some small post offices each year until it imposed a moratorium on closings in 1998. It has recently lifted this moratorium. Many small offices have few transactions and many average less than ten transactions daily.

The authors cannot identify which offices would be eliminated under the hypothesis of this paper, and thus cannot quantify the potential savings exactly. We can, however, put an upper bound on the savings. In FY 99 the 10,127 smallest offices²¹ cost the post office \$567 million annually including personnel and facility costs. This was nine-tenth of one percent of total postal costs.

The General Accounting Office recommended the closing of 7,000 small offices in a report written in 1982.²² This was about 70 percent of the small offices at the time. Closing this number would produce annual savings of \$397 million or 0.6% of total costs.

Rural carriers in the U.S. provide retail services to patrons on their route. They sell stamps and virtually all other postal services and accept mail. Customers may meet their carrier making their rounds or more typically they leave a request in their roadside mailbox with payment and the carrier will leave what is requested in the box. The carrier will stop at the customer's roadside box (even if there is no mail to be delivered to that

¹⁹ See Bernard, et al., (2002).

²⁰ Branches and stations are subunits of large post offices and have counters.

²¹ These are the CAG K & L offices. The largest offices in terms of revenue are in CAG A, the next largest are CAG B and so on. "CAG" stands for "cost accounting group."

²² See General Accounting Office (1982).

box) if the customer raises a small flag that is attached to rural boxes. Thus, counters are arguably less important in areas served by rural carriers.

Franchising small post offices has been resisted by rural residents, postmasters and Congress. If the U.S. Postal Service were pressured by competitive forces to economize, franchising much of the retail network (not only small post offices) would become more attractive to postal management. About half of all retail transactions are stamp purchases. The USPS has a stamp consignment program with retail stores (primarily grocery stores). If the Postal Service paid commissions for stamp sales, sales by non-postal outlets might become much more prevalent and relieve postal counters from many current transactions.²³

III. ALASKA AIR SUBSIDY

The USPS has two general parcel classifications; Priority Mail²⁴, which is entitled to air transportation and parcel post, which is entitled to surface transportation only. Because the bush country of Alaska has no roads, virtually all mail is transported to and from the bush by air.²⁵ Although it is a ground service, parcel post is available to the Alaskan bush because of the use of air transportation.

It turns out that parcel post is the lowest priced way to transport goods to the bush because its rates don't reflect the cost of air transportation. This has caused the Postal Service to become the principle means of transporting virtually all merchandise to the bush that is mailable (no more than 70 lbs. and 108 inches in length and girth). Much of the material never enters a post office before being transported.²⁶ Local airlines maintain industrial size freezers, refrigerators and warehouses where groceries and other goods are brought and stored and then have postage applied before being placed directly on airplanes and flown to the bush as parcel post.

The Postal Rate Commission in its R90-1 decision found that the reason the Postal Service flies parcel post to the bush is because of its universal service

²³ See Haldi and Schmidt (1999 & 2000).

²⁴ Priority mail includes all First-Class mail that weighs over 13 ounces (368 grams) and up to 70 pounds (32 kilos). It includes letters, flats and parcels.

²⁵ A few communities in the bush are reachable by water transportation.

²⁶ This is called "bypass mail".

obligation.²⁷ UPS ground service, for example, is not available to the Alaskan bush. Air transportation of parcel post to the Alaskan bush cost the Service \$99 million or two-tenth of one percent of total costs in FY 99. This is the upper bound amount that the Postal Service could save if it were to discontinue parcel post service to the Alaska bush.^{28,29} It should be kept in mind that Priority Mail service would still be available to the bush as is UPS Blue Label (air) parcel service.

IV. EXPANSION OF THE DELIVERY NETWORK

The cost of serving the ever-expanding number of new delivery points (including the cost of new equipment and local post offices) is an often-cited financial problem for the Postal Service. In order to avoid these expansion costs, the size of the delivery network could be frozen or a charge applied for new access to offset costs due to growth.

The USPS estimated that the cost of new delivery stops in 2003 was \$176 million or two-tenth of one percent of total costs.³⁰ This cost does not take into consideration any new revenue that would offset some or all of the cost increases due to new delivery points.³¹ Thus, there may not be any net savings from curtailing expansion and whatever savings are achieved would be small relative to the growth of costs due to inflation. Consequently, the cost savings from denying service to new delivery points would seem not to be worth the potential reduction in value of the network or lost revenue. It is likely that competitors would seek this business and thus it does not fall under the Panzar definition of the USO. Consequently, it is not included in the list of potential savings summarized below.

²⁷ The Commission calculated the difference between the cost of air transportation and ordinary highway costs (as if roads existed). This amount is removed by the Commission from parcel post attributable costs (which are borne only by parcel post mailers) and charged to institutional costs (which are borne by all mailers). See Postal Rate Commission (1991).

²⁸ It is an upper bound since no allowance is being made for lost revenue.

²⁹ It should be noted that mail (primarily parcel post) subsidizes passenger travel to and from the bush. This is the same role that mail played with stagecoach lines in the early days of the republic and that it later played in the early days of the air transportation. See Campbell, (2002).

³⁰ See Postal Rate Commission (2000), Tr. 11c/4763-64, Docket No. R2001-1.

³¹ New stops represent the growth in population and household formations. Both generate additional volume and revenue.

V. REDUCING THE NUMBER OF DELIVERY DAYS ON ALL RESIDENTIAL ROUTES

Reducing delivery frequency might be part of the response of the Postal Service to a financial exigency. The authors have not conducted a detailed study of the cost savings achievable from reducing the number of delivery days. We have calculated the fixed cost of delivery and assumed that a portion could be saved by reducing delivery frequency on all non-business routes. The latest estimates by the Postal Service are that a little more than half of total delivery costs are fixed.³² If delivery frequency were reduced by half, variable cost would not change but fixed cost would be cut in half.³³ The savings from reducing delivery days on non-business routes are shown in Table 3.³⁴ For example, cutting delivery frequency from six days per week to three would be \$5.7 billion or 9.1 percent of total FY 99 costs.³⁵ Again, this is, in fact, an upper bound on the savings since the analysis has not taken into account costs that might be incurred in order to accommodate reduced delivery frequency.

Table 3: Cost Savings from Reducing Delivery Days on Non-Business Routes (FY 99)

	Cost Savings	Percent of Total Costs
5 days	\$1.9 billion	3.0
4 days	3.8	6.1
3 days	5.7	9.1
2 days	7.6	12.1
1 day	9.5	15.2

³² The actual amount of fixed delivery cost is estimated to be \$11.34 billion in FY 99 based on data submitted by the Postal Service in Docket No. R2000-1.

³³ The portion of fixed cost on days on which delivery is discontinued can be saved. None of the variable costs can be saved.

³⁴ Business routes have 5-day-a-week delivery and that is not modified in this analysis.

³⁵ If loss-making routes are first eliminated, the fixed delivery costs are reduced to \$5.2 billion and the potential savings from reducing delivery frequency on the remaining routes decreases from approximately \$1.891 billion to \$861 million per delivery day in FY 99.

The Post Office Department eliminated the second daily delivery in 1952 because the ubiquity of the telephone had made it much less necessary. Overnight services, fax and e-mail now provide alternatives to mail that were not available in 1952. Moreover, phone costs have dropped dramatically since then, making mail even less competitive for personal communications. Today, much of the mail is non-urgent advertising. The average household receives more advertising mail than First-Class. Moreover, about 10 percent of First-Class mail consists of pure advertising. Given sufficient competitive pressure, 3-day-a-week delivery to residences might become attractive to postal management. Such a change would be very inconvenient for weekly magazines and daily newspapers that use the mail for a substantial portion of their circulation. This change might also have adverse effects on advertising mail. Many observers believe that each piece of advertising in a day's mail competes for the recipient's attention. Cutting delivery frequency would increase this competition and make mail a somewhat less desirable advertising medium.

While many posts in industrialized countries deliver six days a week, several deliver only five days without apparent problems (Australia, Austria, Canada, Finland, Greece, Ireland, Luxembourg, Portugal, Spain and Sweden). Sweden Post's competitor, City Mail, delivers every third business day. Thus, six-day-a-week delivery may not be necessary to retain volume.

VI. CONVERSION OF PARK & LOOP ROUTES TO CURB ROUTES

The distribution of the various types of delivery for the USPS in FY 99 were:

City Carriers (166,743)	
Foot	11.5%
Park & Loop ^a	70.6
Curb	17.8
Rural Carriers (63,552)	
Roadside	100

^a "Park and loop" refers to a route where the carrier parks his or her vehicle and serves a group of houses on foot, returns to the vehicle and drives to another location, and so on.

Foot routes and park and loop routes involve delivery to the door while curb delivery is to a box placed by the street in front of the residence and roadside delivery is to a box

placed alongside a road that is traveled by a rural carrier.³⁶ In the mid-1970's the Postal Service stopped serving new housing developments with park and loop routes. Since then new housing developments have been served by curbside routes. The increasing use of cluster boxes is a continuation of the trend to more efficient delivery.

Table 4 displays the possible savings from converting all park and loop routes to curbside routes. The savings of \$778 million, is 1.2 percent of total costs. Again, this is an upper bound since we have not factored in the additional vehicle costs and we do not know the number of routes where curbside delivery is not practical.

Table 4: Savings from Conversion of All Park & Loop Routes to Curbside Routes (FY 99)

Volume Delivered	43 billion pieces
x Time Per Piece Saved ^a	1.78 seconds
= Total Time Saved	21.4 million hours
 Savings	 \$778 million

^a An econometrically estimated translog model of street time was used to calculate the average delivery time per piece saved when park & loop routes are converted to curbside routes. The model is presented in Bernard, et al., (2002).

Obviously, mail recipients prefer the convenience of delivery to the door versus curbside delivery (and they do not have to pay for the extra cost). The disparity of treatment of different mail recipients is clear, however. It would be difficult but not impossible to force change in this area, especially if the Postal Service were to give the recipient the option of being charged for delivery to the door but not to the curbside.

Park and loop routes tend to be in the older parts of cities while curbside routes tend to be in the newer more outlying parts of cities. Generally, the newer areas are more affluent and would be more likely to attract competitive entry in the face of strong competition. Arguably the U.S. Postal Service might choose to rationalize its costs by

³⁶ Since not all roads are traveled by rural carriers, it is the responsibility of residents served by rural carriers to place a mailbox along the line of travel.

converting park and loop routes in response to a financial exigency caused by competition.³⁷

THE COST OF UNIVERSAL SERVICE

Table 5 presents a summary of the potential savings from modifying the USO in response to a financial exigency caused by competition. This in effect is an application of the Panzar definition of the cost of the USO. We use the GAO recommendation of closing 7,000 small post offices to arrive at the savings for this category. We use three-day a week delivery for reduction in frequency of delivery since. We think further reductions are unlikely.

³⁷ Another possibility would be to convert curb routes to cluster box delivery. While this would save costs it is not clear that it would be feasible to install them in established neighborhoods. Thus, we have not included this possibility in our analysis.

Table 5: Summary of Potential Savings

	Savings (\$ billions)	Percent of Total Costs
Core Elements		
Eliminating Losses on Unprofitable Delivery Routes ^a	2.55	4.1
Closing 7,000 Small Post Offices	0.40	0.6
Eliminating Air Parcel Post Service to Alaska	0.10	0.2
Noncore Elements		
Reducing Delivery to 3 Days per Week Before Eliminating Unprofitable Routes ^b	5.67	9.1
After Eliminating Unprofitable Routes	2.58	4.1
Converting All Park & Loop Routes to Curb	0.78	1.2

^a Losses for unprofitable routes could be eliminated by charging non uniform prices or reducing delivery frequency on unprofitable routes until costs are aligned with revenues or by eliminating service to unprofitable routes.

^b Reducing delivery to 3 days on all delivery routes produces more net savings than the combination of eliminating unprofitable routes and then reducing delivery to 3 days on the remaining routes. This occurs because reducing delivery to 3 days on unprofitable routes makes them profitable as a group.

Table 5 is divided into core aspects of universal service (those aspects which bare on ubiquity) and non-core aspects. The cost with the core concept of universal service is \$3.05 billion or 5 percent of total annual expenditures. The cost with the expanded concept of universal service is \$6.41 billion or 10 percent of total cost.

In an absolute sense these are substantial sums. However, in the context of postal inefficiencies they are not large. For example, from the time of postal reorganization in 1970 through 1999 total factor productivity only had a cumulative growth of 9.2 percent despite the automation of mail processing and the growth of curbside delivery. In the middle part of the last decade postal costs began to grow faster than inflation. The R2001-1 rate increase was 7.7 percent while inflation had grown just 2.7 percent since the previous rate increase. Postal management began to take steps to reduce the rate of cost growth in 1999. Since that time, employment has been reduced by nearly 9 percent and this trend shows every sign of continuing.

The Postal Service has employed Dr. Michael Wachter, an economist at the Wharton School, the University of Pennsylvania, to study the postal wage premium. His latest study estimates that postal clerks are paid between 21.2 and 35.7 percent more than employees who have similar “human capital” characteristics and who are doing compatible work in the private sector.³⁸ Assuming all postal bargaining employees enjoy a similar premium, the total would amount to between \$7.6 and \$12.8 billion in FY 99 or between 12 and 20 percent of total costs.³⁹

The basic reason for introducing competition into the postal market would be to stimulate efficiency gains. In all probability, these gains would exceed any costs associated with universal service. This can be seen in the efficiency gains in posts that have lost their monopolies or expected to lose them.

New Zealand Post began to prepare for liberalization in 1988 and was actually liberalized in 1999. From 1988 to 2001, it reduced employment by about 40 percent. We understand that New Zealand Post has lost almost no market share and it continues its USO.

Sweden liberalized its market in 1993 and City Mail emerged as a competitor, along with many small operators. To date, City Mail has gained about a 30 percent share of its “niche,” but Sweden Post has lost only about five percent of its total market. Sweden Post has reduced its employment by about 30 percent. It continues its universal service obligations, but it has abandoned uniform prices for bulk mail. It now charges different rates for bulk mail according to the area of the country where it is delivered.

Deutsche Post had expected to lose its monopoly by 2001. In contemplation of this, and its pending privatization, Deutsche Post reduced its employment by about 37 percent between 1990 and 1999.

Royal Mail anticipates the first stage of liberalization in 2003. In preparation, it has announced plans to cut employment by 15 percent by 2005. These figures are summarized in Table 6.

³⁸ See U.S. Postal Service, et al., (2001).

³⁹ The cost of fringe benefits are included.

Table 6: Impact of Liberalization on Operators' Efficiency

	Reduction in Work Force	Over Time Period
New Zealand ^a	40%	1988 – 2001
Sweden ^a	30	1990 – 2000
Germany ^a	37	1990 – 1999
Great Britain ^b	15	2002 – 2005

a. United States Postal Service Transformation Plans, Appendix H. April 2002.

b. Royal Mail Group plc Press Release June 13, 2002
<http://www.royalmailgroup.com/news/expandarticle.asp?id=485&brand=consignia>

Compared to potential cost savings from reductions in their USO, these posts have achieved, or planned to achieve far greater savings by reducing employment.

COMPETITION

For more than two centuries posts have been developing their markets and building scale. Because the postal delivery function exhibits large economies of scale, incumbents would have a considerable advantage under liberalization.^{40,41}

Consequently, it is unlikely that an entrant would be able to assume the same universal service obligation as the incumbent and compete successfully. An entrant would instead provide limited service. For example, it might be that an entrant would initially provide less frequent service than the incumbent, provide little or no counter service, provide a limited range of products, or provide service only to the most profitable areas.

We believe that the cost of providing universal service to be significant but a modest burden, for the incumbent under potential competitive situations. The advantages of providing universal service is in itself very important. In addition, the incumbent would have the advantage of scale economies in delivery, name recognition, established relationships and incumbency itself. These would more than offset the

⁴⁰ In the United States, worksharing discounts have effectively liberalized the sorting and transportation functions, and private competition also exists for window service (e.g. Mail Boxes Etc.). The delivery function, the source of the greatest scale economies, is essentially the only function for which the incumbent retains a monopoly.

⁴¹ The authors have previously written about the difficulties facing entrants. See Cohen et al., (1999 & 2000).

burden of the USO in a competitive situation.⁴² On the other hand, the prospect of reducing the incumbent's cost by jettisoning the USO would reduce the incumbent's cost. Since the savings are modest, however, we do not think that these savings would be crucial to the competitive outcome.

CONCLUSIONS

We have presented the cost of the universal service obligation of the U.S. Postal Service according to the method espoused by John Panzar. It appears that the core concept of the USO (those aspects that imply ubiquity) cost about 5 percent of current expenditures. Other non-core aspects cost another 5 percent. In an absolute sense, these costs are large but they are modest in light of the possible efficiency gains shown above.

We think that the USO burden in of itself is not an excessive handicap in a liberalized market. After all, the incumbent would have considerable offsetting advantages (scale, name recognition, customer loyalty, etc.). Finally, reducing the USO in and of itself would not reduce the cost of the incumbent so much that the mail would become uncontestable for competitors.

⁴² See Cohen, et al., (1997).

Appendix

Profitability of Routes in Rural and Urban Areas

As a group, routes serving rural areas are profitable in the U.S., contrary to common expectations and experiences in many other countries. Consequently there is no cross-subsidy of rural routes by urban routes in the U.S. This is demonstrated by the data in Table 7. The profit for “rural areas” in FY 99 was \$175 million. The definition of “rural area” used here is actually a “most rural” subset of rural households as defined by the Census Bureau. The Postal Service has two distinct delivery crafts city delivery carriers and rural carriers. The latter serve both urban and rural areas. In our study we ordered all Rural Carrier routes by the number of boxes per mile on each route.⁴³ We then selected the 60 percent of routes that serve the fewest boxes per mile and considered that these routes clearly serve rural areas.⁴⁴ It turns out that only 13.3 percent of households are included in that group of rural routes.⁴⁵ This is far less than the 21 percent of the households classified by the Census Bureau as being in rural areas.⁴⁶ Because rural carrier routes become more profitable as boxes per mile increase, and since we have clearly selected the most rural of rural routes, we have understated the profits earned from delivering to all rural areas and correspondingly overstated the profits earned from delivering to urban areas.

⁴³ We take the number of boxes per mile as a proxy for population density.

⁴⁴ The remaining 40 percent of rural routes were combined with city delivery routes to calculate profits from urban areas.

⁴⁵ We assume that each box serves one household.

⁴⁶ U.S. Census Bureau. Census 2000 Summary File 1: Final National. ftp://www2.census.gov/census_2000/datasets/Summary_File_1/0Final_National/ (Table P15 Households; data dictionary reference name: P015001; summary level: 010; geographic component codes: 00, 43). October 19, 2002.

**Table 7: Rural and Urban Areas Compared^a
(FY 99)**

	Routes				Profits (Losses) (\$ Millions)	Percent of Total	Delivery Points (Millions)	Percent of Total
	Profitable	Unprofitable	Total	Percent of Total				
Rural Areas	20,225	17,886	38,111	16.6%	175	4.5%	14.7	13.3%
Percent	53.1%	46.9%	100.0%					
Urban Areas	108,593	83,561	192,154	83.4%	3,730	95.5%	95.8	86.7%
Percent	56.5%	43.5%	100.0%					
Total	128,818	101,447	230,265	100.0%	3,905	100.0%	110.5	100.0%

^a For the purpose of this table, it is assumed that 60 percent of the least dense rural routes serve rural areas and the remaining 40 percent of the rural routes along with all city routes serve urban areas.

Table 7 shows that 47 percent of the routes serving our sample of rural areas of the U.S. are unprofitable and 44 percent of the routes serving remaining (presumably) urban areas are unprofitable.

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