

BEFORE THE
POSTAL RATE COMMISSION
WASHINGTON DC 20268-0001

POSTAL RATE AND FEE CHANGES, 2006

Docket No. R2006-1

DIRECT TESTIMONY
OF

JOHN C. PANZAR

ON BEHALF OF
PITNEY BOWES INC.

Communications Concerning This
Testimony Should Be Addressed To:

James Pierce Myers
Attorney at Law
1211 Connecticut Avenue, NW
Suite 610
Washington, DC 20036
Telephone: (202) 331-8315
Facsimile: (202) 331-8318
E-Mail: jpm@piercemyers.com

Michael F. Scanlon
PRESTON GATES ELLIS &
ROUVELAS MEEDS LLP
1735 New York Avenue, NW
Washington, DC 20006
Telephone: (202) 628-1700
Facsimile: (202) 331-1024
E-Mail: mscanlon@prestongates.com

Counsel to PITNEY BOWES INC.

DATE: September 6, 2006

TABLE OF CONTENTS

Autobiographical Sketch.....	1
I. PURPOSE AND SCOPE.....	3
II. WORKSHARING: A SOURCE OF EFFICIENCY IN THE POSTAL SECTOR.....	5
A. The Quantitative Importance of Worksharing in the United States	5
III. WORKSHARING: AN EXTENDED DEFINITION	7
IV. OPPORTUNITIES FOR EXPANDING THE SCOPE OF WORKSHARING.....	8
A. Distance Related Rates for First-Class Presort Mail	9
B. Postage Evidencing.....	12
C. Address Quality	14
V. THE EFFICIENT COMPONENT PRICING RULE: SETTING DISCOUNTS TO PROMOTE PRODUCTIVE EFFICIENCY.....	16
A. Worksharing as a “Make or Buy” Decision.....	16
B. ECPR-Based Discounts Serve to “Decentralize” the Efficient Division of Labor.....	18
C. An illustrative Model with Two Cost Components.....	19
1. <u>Unbundling the Pricing of Service Components Through Discounts</u> ...	22
2. <u>Preservation of Contribution</u>	24
VI. PRACTICAL ISSUES IN IMPLEMENTING ECPR FOR WORKSHARING DISCOUNTS	26
A. Multiple Dimensions of Worksharing (e.g., Presort and Dropship).....	26
B. Calculating Avoided Costs.....	28

1.	<u>The Appropriate Measure of Per Unit Avoided Cost is Marginal Cost, Not Average Incremental Cost</u>	29
a.	<i>The Postal Service’s Universal Service Obligation means that its upstream fixed costs are not avoidable.</i>	30
b.	<i>The relevant market for upstream entry does not include all of the Postal Service’s volumes.</i>	30
c.	<i>Consolidators supply curves for upstream services are not likely to be perfectly elastic.</i>	31
2.	<u>Cost Difference and Cost Avoidance.</u>	35
3.	<u>Treatment of Non-Modelled Cost Pools When Measuring Cost Avoidances.</u>	40
VII.	BEYOND TRADITIONAL WORKSHARING: THE CASE FOR BASING INTRA-SUBCLASS RATE DIFFERENCES ON POSTAL SERVICE COST DIFFERENCES.	45
VIII.	WHY FOCUS ON PRODUCTIVE EFFICIENCY? ECPR vs. RAMSEY PRICING	47
IX.	CONCLUSION	50
	Appendix 1	51

Autobiographical Sketch

1

2 I am Professor of Economics at Northwestern University (Evanston, Illinois),
3 where I have taught since 1983. Since 2005, I have also held a Professorship at the
4 University of Auckland (New Zealand). I earned my Ph.D. in Economics from Stanford
5 University in 1975. From 1974-1983, I was employed at Bell Telephone Laboratories
6 (“BTL”).¹

7 In addition to teaching at Northwestern University, I have also taught as a visitor
8 at UC Berkeley (1977), the University of Pennsylvania (1983), and the University of
9 Auckland (1998-2004). Thus, I have taught graduate and undergraduate courses in
10 Industrial and Regulatory Economics for more than 25 years. Many of my former
11 graduate students have gone on to staff positions at the U. S. Department of Justice,
12 the Federal Trade Commission, the Federal Communications Commission, and the
13 Illinois Commerce Commission.

14 From 1974 to 1983 I was a Member of Technical Staff at BTL. I was the Head of
15 the Economic Analysis Research Department at BTL from 1980 to 1983. My duties at
16 BTL involved conducting original research on the fundamental economic principles of
17 regulatory pricing and costing analysis as well as consulting on regulatory and antitrust
18 issues involving the Bell System.

19 My published research includes two books and numerous articles in major
20 professional journals. Most of my publications are focused on pricing and costing
21 issues facing multi-product network industries such as telecommunications, electric

¹ A copy of my curriculum vitae is attached as Appendix 1.

1 power, railroads, and postal services. I am an Associate Editor of the *Journal of*
2 *Regulatory Economics* and a member of the Editorial Board of *Information Economics*
3 *and Policy*. These journals publish specialized contributions on regulatory theory and
4 practice. I am also a founding co-editor of the *Review of Network Economics*, an
5 internet journal that publishes articles of relevance both to academic researchers and
6 practitioners working in network industries. Finally, since 1990, I have been an active
7 participant in more than a dozen international conferences on postal economics.

8 I have consulted extensively on regulatory policy issues. In addition to consulting
9 for numerous corporations, over the two past decades I have served as an economic
10 consultant to the United States Postal Service, Federal Aviation Administration, the
11 World Bank, the U.S. Federal Trade Commission, the U.S. Postal Rate Commission,
12 the New Zealand Commerce Commission, Deutsche Telecom, Deutsche Post, Royal
13 Mail, and Senate of the Commonwealth of Puerto Rico.

14 I have testified before this Commission on numerous occasions, beginning with
15 Docket No. R84-1. Over the years, I have also provided written and/or oral testimony
16 before the U.S. Congress, the U.S. Interstate Commerce Commission, the U.S. Federal
17 Communications Commission, the Pennsylvania Public Utilities Commission, and the
18 U.S. Department of Justice.

I. PURPOSE AND SCOPE

1 Over the past quarter century, there has been substantial liberalization of
2 network infrastructure industries, both in the United States and around the world. For
3 example, telecommunications, railroads, and electric power generation have all
4 experienced substantial amounts of privatisation of existing incumbents and the
5 introduction of new competitors in many markets. By comparison, postal services have
6 been relatively slow to liberalize, and the postal sector in the United States slower than
7 those of many other developed countries. Not only does the Postal Service have a
8 legal monopoly on the delivery of most addressed letter mail, it is also illegal for
9 competitors to place items in customers' mail boxes.

10 The introduction of competition into postal markets has taken different forms in
11 different countries. New Zealand and Sweden have fully liberalized their postal markets
12 with little emphasis on unbundling or worksharing. The United Kingdom is proceeding
13 with *both* elimination of the monopoly and the introduction of downstream access.
14 However, on a value added basis, the United States has had more competition, for a
15 longer time, than any other nation despite the continuing presence of letter and postal
16 box monopolies. This is because competition has been introduced almost entirely
17 through the offering of worksharing discounts.² Worksharing discounts give competitive

² The development of worksharing in the U.S. over the past thirty years is the subject of a substantial, and growing, literature. My discussion of worksharing in this testimony draws heavily on the recent paper by R. Cohen, M. Robinson, J. Waller, and S. Xenakis (2006), "Worksharing: How Much Productive Efficiency, at What Cost and at What Price?" in *Progress Toward Liberalization of the Postal and Delivery Sector* (Springer), edited by M. Crew and P. Kleindorfer. In addition, this literature includes M. Elcano, R. German, and J. Pickett (2000), "Hiding in Plain Sight: The Quiet Liberalization of the United States Postal System," in *Current Directions in Postal Reform*, (Kluwer) edited by M. Crew and P. Kleindorfer; J. Haldi and W. Olson (2003), "An Evaluation of USPS Worksharing: Postal Revenues and Costs From

1 providers of transportation, sortation, and other non delivery service components
2 access to the Postal Service's natural monopoly delivery network.

3 Public policy toward the terms under which competitors may obtain access to the
4 natural monopoly or so-called "bottleneck" portions of infrastructure industries has
5 proven to be an important determinant of the success or failure of liberalization policies.
6 Examples include long distance telecommunications services and the transmission and
7 electric power generation. In each case, the success of liberalization of the more
8 structurally competitive vertical segment (i.e., long distance transmission, power
9 generation) turned out to depend quite crucially on the ability of would be competitors to
10 gain access to the "bottleneck" portions of the network (i.e., the local exchange,
11 transmission and distribution grids). It is somewhat ironic that this crucial issue of
12 access was addressed in the monopolized postal sector relatively early (i.e., during the
13 1970s); long before it became the subject of regulatory and court proceedings in
14 telecommunications and electric power. As Cohen, et. al. (2006) point out, the policy
15 focus of the Postal Rate Commission has been on using the pricing of worksharing
16 discounts, and thereby access to the delivery network of the Postal Service, to promote
17 the productive efficiency of a monopoly letter mail industry.³

Workshared Activities," in *Competitive Transformation of the Postal and Delivery Sector*, (Kluwer) edited by M. Crew and P. Kleindorfer; R. Mitchell (1999), "Postal Worksharing: Technical Efficiency and Pareto Optimality," in *Emerging Competition In Postal and Delivery Services* (Kluwer), edited by M. Crew and P. Kleindorfer; and E. Pearsall (2005), "The Effects of Worksharing and Other Product Innovations on U.S. Postal Volumes and Revenues in *Regulatory and Economic Challenges in the Postal and Delivery Sector* (Kluwer), edited by M. Crew and P . Kleindorfer.

³ R. Cohen, M. Robinson, J. Waller, and S. Xenakis (2006), "Worksharing: How Much Productive Efficiency, at What Cost and at What Price?" in *Progress Toward Liberalization of the Postal and Delivery Sector* (Springer), edited by M. Crew and P. Kleindorfer, at 2.

1 The purpose of this testimony is to explain the general economic principles for
2 setting efficient worksharing discounts. In addition I explain in detail how implementing
3 such a discount structure induces mailers and the Postal Service to cooperatively
4 reduce aggregate costs for the postal sector as a whole. This leads not only to reduce
5 costs for mailers, but also for the public at large.

6 **II. WORKSHARING: A SOURCE OF EFFICIENCY IN THE POSTAL SECTOR**

7 **A. The Quantitative Importance of Worksharing in the United States.**

8 There are some worksharing opportunities in all the major classes of mail. Within
9 First-Class Mail, there are presort worksharing discounts for both automation mail (mail
10 with an 11 digit bar code applied by the mailer) and non-automation mail. Within
11 Periodicals Mail, there are worksharing discounts for both presort level and for
12 dropshipping and zone skipping and also some limited discounts for containerization.
13 Standard Mail provides both presort and destination entry discounts, and some
14 subclasses within Package Service also offer these discounts. In each of the classes,
15 there are entry requirements detailing the amount of mail that must be presented in a
16 mailing to qualify for these discounts as well as other requirements. For example, to
17 qualify for First-Class Automation discounts, a mailer must have 500 or more pieces in
18 each mailing, run the mailing list against a Postal Service data base showing customer
19 moves, and use a Postal Service-certified product to apply bar codes.

20 A large portion of the United States mail stream currently qualifies for one form or
21 another of worksharing discounts even with the narrow definition. As shown in Table 1
22 below - reproduced from Cohen et. al. (2006) - of the 206 billion pieces of mail in FY
23 2004, 150 billion pieces, or 72.8 percent of all mail, received worksharing discounts.

24

1 **Table 1: Worksharing Avoided Costs and Value of Worksharing Discounts**
 2 **(2004 Millions)**

Class of Mail	All Volume	Workshared Volume	% Volume Workshared	Total USPS Cost Avoided	Value of Discounts
First-Class Mail	97,926	50,239	51	\$3,466	\$3,440
Periodicals	9,135	8,731	96	1,485	1,396
Advertising Mail	95,564	89,762	94	9,297	9,121
Package Services	1,132	626	73	151	108
Other	2,349	-	-	-	-
Total	206,106	149,559	73	14,399	14,065
User Cost					2,813
Mailers Net Saving					11,252

3
 4 Not only do a large number of pieces receive worksharing discounts, but the
 5 value of these discounts is also large. As the table shows, workshared mail received an
 6 aggregate of \$14.1 billion in discounts in FY 2004 and avoided \$14.4 billion in USPS
 7 costs. These discounts can also be set in perspective by comparing them to the total
 8 costs of the United States Postal Service. In FY 2004, total accrued costs for the
 9 Service were \$66 billion. Thus, in the absence of worksharing discounts, accrued costs
 10 would have been \$14.4 billion larger, or \$80.4 billion.

11 Worksharing and its attendant discounts also appear responsible for a large
 12 portion of the US mailstream. Additional worksharing discounts would likely also lead to
 13 additional volumes, important in a system with high fixed costs.

1 **III. WORKSHARING: AN EXTENDED DEFINITION⁴**

2 My analysis adopts a broad definition of *worksharing*. That is, I do not limit the
3 discussion to activities performed by mailers that currently entitle them to official
4 worksharing discounts. Rather, I offer the following more inclusive definition:

5 *Worksharing* refers to any private sector *activity* which *reduces the costs* of the
6 Postal Service.
7

8 The simplicity and generality of this definition covers a wide variety of potential
9 actions that can be taken by mailers or consolidators. Depending upon the nature of
10 the network operated by the Postal Service, such activities might include presorting,
11 barcoding, route walk sequencing, and drop-shipping. The application of technology
12 that improved address hygiene or imbedded intelligence in a piece of mail might also be
13 categorized as worksharing. Similarly, a technology or process that provides evidence
14 of payment or of the identity of the sender may also be viewed as a form of
15 worksharing.

16 These examples also illustrate the fact that worksharing includes a number of
17 types of Postal Service cost savings, not merely the operational costs recognized in the
18 current discount structure. For example, a mailer that dispensed with stamps would
19 save the Postal Service the transactions costs associated with selling stamps at the
20 post office window or stamp machine.

21
22
⁴ The discussion in this and the following section is derived from a paper I developed with L. Buc and S. Glick, "Expanding the Scope of Worksharing in the United States," presented at the 14th Conference on Postal and Delivery Economics held in Bern, Switzerland, May 31st – June 3rd, 2006.

1 **IV. OPPORTUNITIES FOR EXPANDING THE SCOPE OF WORKSHARING**

2 Notwithstanding the fact that 73 percent of mail currently receives worksharing
3 discounts in the US, the large value of the discounts, and the large cost savings that
4 workshered mail currently provide the United States Postal Service, there are still
5 substantial unrealized opportunities to expand the scope of worksharing in the United
6 States, reduce costs to the Postal Service, prices to mailers, and reduce the combined
7 cost of postal services.

8 Embracing additional workshare opportunities through the adoption of a broader
9 definition of worksharing would provide an additional means through which the Postal
10 Service could achieve its goals of generating additional revenue, reducing costs, and
11 improving service. As discussed in further detail below, an expanded definition of
12 worksharing would provide a conceptual basis upon which the Postal Service could
13 design workshare incentives to foster growth through enhanced consumer access to
14 products and services, reduce costs through the rationalization of the facilities network,
15 and improve service through enhanced address quality. Importantly, adopting a
16 broader definition of worksharing would also facilitate access to workshare discounts to
17 an expanded range of postal stakeholders, including single-piece mailers. In this sense,
18 by adopting a broader view of worksharing opportunities, the Postal Service could
19 achieve enhanced economic efficiencies while promoting the policy objective of a
20 universal workshare discount.

21 To provide an upper bound on the size of the remaining worksharing
22 opportunities, start with the total volume variable costs of the United States Postal
23 Service since only these volume variable costs can be avoided by worksharing. From

1 these, subtract volume variable street costs of city carrier and costs of rural carriers and
2 the associated “piggyback” costs that vary with carrier costs on the theory that delivery
3 presents no opportunities for worksharing. What remains are the volume variable costs
4 of mail processing and their associated “piggybacks” as well as transportation: these
5 totalled \$32.1 billion in FY 2005.⁵ As the calculation shows, even with the current level
6 of worksharing in the US, there is still an upper bound opportunity for worksharing of
7 slightly more than twice as much as the \$14.4 billion of costs avoided estimated by
8 Cohen, et. al. Of course, for some portion of the \$32.1 billion there may not be
9 worksharing possibilities, but the following subsections describe some obvious
10 opportunities for expanding the scope of worksharing in the United States.

11 **A. Distance Related Rates for First-Class Presort Mail.**

12 Rate designs for all the major classes of mail except for First-Class Mail reflect
13 the fact that mail that is entered deeper into the Postal Service network incurs less
14 transportation and mail processing costs than mail that is entered further upstream.
15 Thus, the rates for almost all other classes recognize the relationship of cost and
16 distance and provide some form of incentives for transporting mail or entering it deeper
17 into the system. For example, Periodicals and Package Services have zoned rates with
18 zoning discounts related to costs avoided. Standard Mail, Periodicals, and Package
19 services also have destination entry discounts.

⁵ This number was calculated as follows. Total volume variable costs in 2005 were \$39,564.7 million. See Exh. USPS-9C, at C-2 (Cost and Revenue Analysis in Base Year 2005). Total City Carrier volume variable costs in 2005 were \$3,909.6 million. See Exh. USPS-9A, at C-1 (Cost Segments and Components, Base Year 2005). Multiplying this by the city piggyback factor of 1.251 yields a total of \$4,891.0 million. For rural carriers, total volume variable costs in 2005 were \$2,214.1 million. See *id.* Multiplying this by the rural piggyback factor of 1.179 yields a total of \$2,610.4 million (piggyback factors were obtained from USPS-LR-52, BYPBack.USPS.xls, tab USPSSummary).

1 We would expect that in the absence of distance related rates, the Postal
2 Service's average hauls for First-Class Mail would be greater than they are for any other
3 class of mail. With no incentive to avoid USPS transportation, mailers would be
4 expected to use it more than in the classes where there is an incentive to avoid it.

5 Distance related rates also recognize the fact that mail that is entered deeper into
6 the system incurs lower handling costs. Mail that is entered, for example, at the
7 destination sorting facility avoids all the piece and container handling costs at an
8 originating facility.

9 In FY 2005, variable costs for purchased transportation of First-Class Mail
10 Presort Letters totalled \$432 million – or about .9 cents per piece - with the vast majority
11 of these costs incurred on domestic air (\$218 million) and truck (\$210 million).⁶ Under
12 the current rate structure, mailers pay a uniform per piece charge, regardless of whether
13 the mail piece is flown 3000 miles across the country for delivery or trucked for delivery
14 30 miles from where it is entered into the mailstream. Such a system provides no
15 opportunity for mailers to find less expensive ways to transport the mail.

16 Providing this opportunity is important since approximately 35 to 40 percent of
17 truck capacity goes unused in the current system and many mailers might be able to
18 find less expensive transportation alternatives.⁷ The system also provides no incentives
19 for distributed printing: if the cost of transportation is the same regardless of where the
20 mail is entered, there is no reason to print in more than one location, minimizing the

⁶ See Exh. USPS-9A, at C-6 (Cost Segments and Components, Base Year 2005).

⁷ See General Accountability Office Audit Report – GAO-05-261, US Postal Service: The Service's Strategy for Realigning Its Mail Processing Infrastructure Lacks Clarity, Criteria, and Accountability (April 2005).

1 total cost of printing and distributing. Recognizing the relationship of costs and distance
2 would provide much better incentives, mirroring the incentives provided for Periodicals
3 and Priority Mail.

4 In FY 2005, variable costs for Presort Letters mail processing and its associated
5 piggybacks amounted to \$2.372 billion.⁸ And while only some fraction of these costs
6 could be avoided by deeper entry into the system, constructing a rate that accounted for
7 the cost savings would provide incentives for mailers to adapt more efficient behaviour.

8 A rate system that mirrored cost behaviour might have a discount for avoided
9 transportation and one for avoided container or piece handling. Thus, it might combine
10 zoning discounts with destination entry discounts. And discounts should be set at
11 efficient component prices.

12 In the past, the Postal Service has objected to the concept of rates based on
13 distance related costs in First-Class Mail Presort Letters on several grounds. First, it
14 argues that such discounts would not save it money, since the transportation costs are
15 fixed with respect to mail volume. But, interestingly enough, its cost accounting system
16 classifies most of these costs as variable with respect to mail volume. And it does
17 provide these discounts in other classes. It also argues that it would lose money with
18 these discounts since a large proportion of the mail is already local mail prepared for
19 delivery in the same area where it is printed. While it is true that there is local mail, rates
20 could be designed to be revenue neutral. Thus, the rates for mail that is not entered

⁸ Mail Processing Presort volume variable costs were \$1,562.8 million. See Exh. USPS-9A, at C-6 (Cost Segments and Components, Base Year 2005). The associated piggyback factor was 1.518 (BYPBack.USPS.xls, tab USPSSummary).

1 deeper into the system would need to be increased to account for the revenue losses
2 that would be incurred by mail that is already destination entered. It should be noted
3 that this situation is not unique to these particular discounts and occurs any time a rate
4 is deaveraged to provide correct pricing signals to incent efficient behaviour.

5 **B. Postage Evidencing.**

6 Selling postage across the window is expensive. The Postal Service attributed
7 about \$312.7 million in F2005 to window sales of Single Piece postage – about 1.6
8 cents per stamp.⁹

9 The Postal Service does recognize the need to provide convenient alternatives
10 for all postal services. And it does provide alternative channels for stamp sales – in
11 vending machines, at Automated Postage Centers, by mail, over the Internet, and at
12 retail outlets.¹⁰ Notwithstanding these alternatives and the Postal Service’s ambitious
13 goals to move retail transactions away from the windows¹¹ most customers have not yet
14 made behavioural changes: about 80 percent of the stamped postage is still sold at the
15 windows and long lines at the windows seem to indicate that merely making alternatives
16 available may not alter consumer behaviour as strongly as monetary incentives.

⁹ Clerk window service costs attributable to Single-Piece were \$221.8 million (WS3.2.2 in B workpapers, USPS-LR-5). The piggyback factor for Single Piece window service is 1.41 (USPS-LR-52, BYPBack.USPS.xls, tab USPSSummary). There were 19,757.1 million stamps sold at windows. See Tr. 16/_____.

¹⁰ In fact, stamps may be purchased at more than 27,800 vending machines, nearly 25,400 commercial retail outlets, nearly 15,300 banking and credit union ATMs, and 2,500 Automated Postal Centers ®. See <http://www.usps.com/communications/organization/postalfacts.htm>.

¹¹ United States Postal Service, *United States Postal Service Strategic Transformation Plan 2006-2010*, September 2005, pp. 17, 59, 60.

1 Providing discounts to move transactions away from the window is an economic
2 approach that would provide strong incentives to induce customers to change their
3 behaviour. And these behavioural changes could reduce both Postal Service costs and
4 waiting time at the windows.

5 These discounts would apply to all Single-Piece types of postage evidencing
6 which are not sold across windows. Thus, they would apply to metered mail as well as
7 to stamped mail. Attributable costs of stocking and repairing vending machines or
8 kiosks, of any discounts provided to retail outlets, or any other costs of selling postage
9 in alternative channels should be considered and the discounts should reflect the
10 difference between the marginal costs of selling postage at windows and the marginal
11 costs of selling postage in the alternative channels.

12 It is also important to note that these discounts would be the first to apply to mail
13 users with small mail volumes. Thus, they would help democratize worksharing
14 discounts. Unlike all other worksharing discounts that require substantial volumes of
15 mail (500 pieces, 20 pounds, etc.), these discounts would be available to mailers of
16 small volumes of mail so long as the postage evidencing did not take the form of stamps
17 purchased at USPS windows. Small mailers as well as large ones could be given
18 incentives to buy stamps over the internet, through the mail, and from all the other
19 channels that are less expensive than the Postal Service window. Total Postal Service
20 costs would decline (perhaps by hundreds of millions of dollars), prices would be
21 reduced for those purchasing through alternative channels, and economic efficiency
22 would increase.

23

1 **C. Address Quality.**

2 The Postal Service estimated that Undeliverable as Addressed (“UAA”) mail cost
3 it \$1.86 billion in 2004. In its Transformation Plan, the Postal Service’s estimate of bad
4 address quality was “over \$1 billion annually.” Regardless of the exact cost, UAA mail
5 is expensive because, depending on class, some of it must be forwarded to the correct
6 address, some must be returned to the mailer, and some must be destroyed when it
7 cannot be delivered. Forwarding and returning mail to the sender is particularly
8 expensive. Physically returning a First-Class Mail letter piece costs 51 cents per piece
9 and the cost of forwarding it is over 21 cents per piece.¹² Well over half the costs of
10 UAA mail are caused by First-Class Mail since it receives free forwarding and return.¹³

11 Mail may be undeliverable as addressed because the addressee no longer lives
12 at the address on the mail¹⁴ or because the address itself is incorrect and the Postal
13 Service cannot correct it. In FY 2004, UAA rates for First-Class Mail were 3.4 percent,
14 2.2 percent for Periodicals, 6.4 percent for Standard Mail, and 3.0 percent for Package
15 Services. Overall, 4.7 percent of the mail was UAA.¹⁵

16 UAA rates are generally lower for mail such as statements and products sent to a
17 business’s customers. They tend to be much higher for solicitations sent to prospective
18 customers and can average as high as 10 percent, for example, to prospective credit

¹² See USPS-LR-61, at 18.

¹³ The Postal Service estimated the costs of UAA mail for First-Class mail at \$1.03 billion for 2004. See USPS-LR-L-61, PrePars ClassTabs_v.xls, Table 4.11, Summary of Cost for Processing Undeliverable-as-Addressed Mail, Pre-PARS Environment, FY 04 First Class Mail, All Rate Categories and Shapes.

¹⁴ In 2003-2004, 13 percent of the population moved.

¹⁵ USPS-LR-L-61, PrePars VolTabs_v.xls, Table 2.3, Final Disposition of UAA Mail by Class of Mail/Rate Category – FY 2004.

1 card customers. These UAA rates are so high since the business does not have a
2 relationship with these prospective customers and obtains their mailing addresses from
3 third-party vendors. First-Class Single Piece Mail also has lower UAA rates because
4 much of this mail comprises bill payments in preaddressed envelopes or birthday cards,
5 greeting cards, and the like to family members.

6 Private industry and the Postal Service both provide many tools which could be
7 used to reduce UAA rates. For example, mailers could check addresses against the
8 Postal Service address change data base (“NCOA”) more frequently or check to ensure
9 that the address on the mail piece is actually deliverable (“DPV”). However, these
10 solutions cost money and the amount of money spent is not necessarily worth the
11 economic return from improved address quality, particularly given the existing pricing
12 structure for First-Class Mail.

13 Although the Postal Service could issue rules to improve address quality – for
14 example additional requirements to use tools or use them more often – applying a
15 correct address to a mail piece could also be viewed as a form of worksharing. Thus,
16 for example, the rate schedule would be changed for workshared First-Class Mail which
17 currently receives free forwarding. Under the new schedule, mailers would receive
18 discounts for properly addressed pieces and, as a necessary corollary, rates would
19 increase for pieces that must be forwarded or returned. If surcharges for forwards and
20 returns were set at cost, those who could correct addresses for less than the Postal
21 Service’s cost to do so would do so themselves. And those who could not, would not.

22

1 **V. THE EFFICIENT COMPONENT PRICING RULE: SETTING DISCOUNTS TO**
2 **PROMOTE PRODUCTIVE EFFICIENCY**
3

4 Mailers are induced to perform worksharing through the use of *discounts*. That
5 is, they perform part of the work involved in the end-to-end mail service and pay less
6 than full price to the Postal Service for completing the job. This section discusses the
7 Efficient Component Pricing Rule (“ECPR”), the principle that worksharing discounts
8 should be set equal to the per unit avoided costs of the Postal Service. I also explain
9 why this policy will induce mailers to perform work if and only if they can do it more
10 cheaply than the Postal Service

A. Worksharing as a “Make or Buy” Decision.

11 When the postal service accepts presorted mail, it has, in effect, “contracted out”
12 a portion of its value chain to outsiders. Since it always has the option to do the work
13 itself, offering a presort or other worksharing discount is tantamount to a “make or buy”
14 decision (i.e., determining whether to perform an activity “in house” or pay outsiders to
15 do it).

16 A hypothetical example will help illustrate this point. Suppose that the single
17 piece rate (stamp price) for a letter is \$0.40 and its unit attributable costs are \$0.25, of
18 which \$0.15 are delivery costs and \$0.10 are “upstream” transportation and sortation
19 costs. If the Postal Service is just breaking even in this example, its institutional
20 (overhead) costs are, on average, \$0.15 per piece. Next, suppose that a mailer is able
21 to lodge its mail with the Postal Service at the delivery office nearest to a letter’s
22 destination. Under what conditions should the Postal Service attempt to induce the
23 mailer (or its agents) to undertake the task? In the example, the Postal Service saves
24 \$0.10 for each piece lodged at the delivery office. Therefore, on cost efficiency

1 grounds, it should be willing to “buy” this service from mailers or consolidators for any
2 amount up to \$0.10 per piece. If a consolidator offered to perform the function for
3 \$0.11, the Postal Service should clearly not accept the offer because doing so would
4 result in an increase in total costs (i.e., in that case it is cheaper to retain the upstream
5 functions “in house”).

6 Thus, from the point overall efficiency of the postal sector, as well as that of the
7 Postal Service itself, it obviously makes sense to have the work that can be done most
8 cheaply by Postal Sector performed “in house.” Work done more cheaply by mailers
9 and/or consolidators is best done by them. The desired outcome is clear enough in the
10 hypothetical situation in which the Postal Service receives an offer from (or makes an
11 offer to) a single mailer or consolidator. If the consolidator is willing to perform the
12 upstream tasks for an amount less than the avoided cost of the Postal Service, the two
13 will reach an agreement and costs will be saved. For example, if the consolidator’s
14 costs are \$0.08 per piece, the Postal Service should agree to let it perform the upstream
15 function and the two would (somehow) divide up the \$0.02 per piece cost savings. But,
16 how can this common sense principle be applied in the more realistic situation in which
17 there are thousands of mailers and consolidators, some with costs of \$0.01, others
18 whose costs are \$0.12, etc.? It is clearly unrealistic to expect the Postal Service to
19 engage in negotiations with all of them and make “deals” with only the low cost potential
20 providers.

B. ECPR-Based Discounts Serve to “Decentralize” the Efficient Division of Labor.

1 Fortunately, the efficient “make or buy” negotiations described above can be
2 *decentralized* using ECPR-based worksharing discounts set equal to the per unit
3 avoided costs of the Postal Service. This leads mailers to choose to perform work-
4 sharing if and only if doing so lowers total postal sector costs. The reason is quite
5 intuitive. If the mailer’s cost is less than the discount offered, it is profitable for the
6 mailer to do the work – and total postal sector costs decrease. If the discount is not
7 sufficiently attractive, the Postal Service continues to provide the service component.

8 In terms of the present example, a worksharing discount of \$0.10 would induce
9 all consolidators whose upstream costs are less than that to engage in worksharing.
10 The result would be that the costs of the Postal Service would fall by more than the
11 revenues lost through the discount. It is also the case that the total costs of the postal
12 sector would fall, because each piece provided through a worksharing partnership must
13 cost less than the \$0.25 costs per piece that would have been incurred by the Postal
14 Service. This follows from the fact that Postal Service delivery costs are \$0.15 per
15 piece regardless, but the consolidator’s costs are always *less* than \$0.10. Otherwise,
16 the consolidator would not have participated in worksharing.

17 Now, it is true that many, perhaps most, of the mailers and consolidators would
18 be willing to engage in worksharing at a discount somewhat less than \$0.10. Suppose
19 that 80% of the potential work-sharers would be willing to accept a discount of \$0.08.
20 Would not it be desirable for the Postal Service to quote this lower discount rate? Doing

1 so would save it a considerable amount of lost revenue and the end result would still be
2 a considerable amount of cost savings for the postal sector.¹⁶

3 The answer to this question depends upon the presumed objective of the Postal
4 Service. *If* the Postal Service were interested in maximizing its profits, or pursuing
5 some other goal than cost efficiency, it would not necessarily want to choose a work-
6 sharing discount equal to its avoided cost. However, this is the *only* discount policy that
7 will allow the decentralized actions of mailers and consolidators to assist the Postal
8 Service in minimizing the total costs of the postal sector. This is the case, because, if
9 the worksharing discount is less than the unit avoided costs of the Postal Service, *some*
10 mailers who could provide the service more cheaply than the Postal Service will not
11 have an incentive to engage in worksharing. On the other hand, if the worksharing
12 discount is greater than the per unit avoided costs of the Postal Service, there will be
13 mailers who will take advantage of the discount even though they cannot perform the
14 service as cheaply as the Postal Service. In either case, the total costs of the end-to-
15 end service will increase.

C. An illustrative Model with Two Cost Components.

16 Efficient access pricing based on worksharing discounts can be illustrated using
17 a simple example of a two stage postal network. In this section, I shall explain how the
18 access pricing policy based upon ECPR can be used to improve efficiency in postal
19 markets. I shall focus the analysis on top down, “retail-minus” *discount policies*

¹⁶ After all, the costs of the mailers excluded from worksharing at this lower rate are close to those of the Postal Service (i.e., between \$0.08 and \$0.10). Worksharing by these mailers would likely yield only a small percentage of the total cost savings.

1 designed to increase worksharing by mailers, competitors, and other industry
 2 participants. I will present the argument in terms of a hypothetical postal network with
 3 two vertical components: a *downstream* delivery component and an *upstream*
 4 composite component consisting of various collection, transportation, and sortation
 5 functions.

6 For simplicity, assume that the incumbent provides a single service and that its
 7 costs can be approximated by a simple affine cost structure:

$$8 \quad C(V) = F_J + F_U + F_D + (c_U + c_D)V.$$

9 Here, c_U and c_D are the upstream and downstream variable costs incurred per unit of
 10 mail volume V , while F_U and F_D are component-specific upstream and downstream fixed
 11 costs and F_J are common overhead costs of operating the network that cannot be
 12 meaningfully attributed to either upstream or downstream operations. Network
 13 operations and/or delivery services are presumed to exhibit significant economies of
 14 scale: i.e., F_J and/or F_D are positive.¹⁷

17 This affine model is easily extended to multiple services and 3 or more vertical components. Suppose there are n services indexed by $i=1, \dots, n$ and m service components indexed by $j=1, \dots, m$. Then the total costs of serving the vector of mail volumes $\mathbf{V} = (V_1, V_2, \dots, V_n)$ can be written

$$C(\mathbf{V}) = F_J + \sum_{j=1}^m F_j + \sum_{i=1}^n F^i + \sum_{j=1}^m \sum_{i=1}^n c_{ij} V_i.$$

Here, the c_{ij} are the costs of handling an additional piece of mail service i at component j of the value chain. As before, F_J is the fixed costs of network operations and the F_j are component-specific fixed costs, while the F^i are product specific fixed costs. The distinction among fixed costs types is important. Product-specific fixed costs can be avoided if the *product* is discontinued, while component-specific fixed costs can be avoided only if the entire *component* is no longer provided by the firm (i.e., that portion of the value chain is not carried out for *any* product or service). For a discussion of the determination of efficient worksharing discounts in the multi-product, multi-component case, see Panzar (2002) "Reconciling Competition, Downstream Access and Universal Service in Postal Markets." In *Postal and Delivery Services: Delivering on Competition*, edited by Michael A. Crew and Paul R. Kleindorfer, Boston, MA: Kluwer Academic Publishers.

1 How does one ensure that efficient upstream entry is encouraged while inefficient
2 entry is deterred? As discussed above, the key to the argument is to view the
3 acquisition of any volume of upstream services as part of a “make or buy decision”
4 facing a downstream delivery monopolist. Ideally, such a firm would choose to provide
5 the required service itself only if it could not be purchased more cheaply from an outside
6 vendor. That is, the monopolist would gain by “contracting out” this volume of services
7 if the costs it avoided by so doing exceeded the amount it paid to the outside vendor.

8 In terms of our algebraic cost example, suppose that users are considering
9 placing an amount of existing mail M with a consolidator instead of with the Postal
10 Service. Assume that these volumes are handled upstream by the consolidator at an
11 average cost per unit of c_e . The total upstream costs incurred by the consolidator are
12 then $c_e M$. The incumbent provides the downstream services, incurring variable costs of
13 $c_D M$ for handling the volume in question. From the social point of view, under dual firm
14 provision, the incremental costs associated with mail volume M is $M(c_e + c_D)$. These are
15 the costs that would go away if the mail volumes in question were no longer sent. In
16 contrast, when the incumbent provides end-to-end service those costs are $M(c_U + c_D)$.
17 Quite clearly, it is socially cost efficient to place the mail volumes M with the
18 consolidator for upstream handling whenever it is less costly (or at least no more
19 expensive) to do so. That is, whenever $M(c_e + c_D) \leq M(c_U + c_D)$, or, $c_e \leq c_U$. Note that this
20 argument is based entirely on the principle of cost efficiency. Thus, the incumbent itself
21 would reach the same conclusion as a hypothetical social decision maker. If the
22 consolidator could provide the upstream component at a lower cost, it would profit the
23 incumbent to arrange for it to do so.

1 1. Unbundling the Pricing of Service Components Through Discounts.

2 Competition in the market for the upstream component can be used to
3 *decentralize* this make or buy decision process. However, this requires the delivery
4 monopolist to *unbundle* its pricing so that the upstream service component is priced
5 separately from delivery. This process makes it possible for the providers of
6 competitive services to compete for consumers' business on the basis of their
7 efficiency. If all service providers are charged the same prices for access *to* and usage
8 *of* the local delivery network, any difference in their costs must be due to differences in
9 their efficiency in providing upstream transportation and sortation services. If
10 competition forces prices to costs, then by choosing the lowest cost carrier, the final
11 consumer ensures that the costs of the postal network are minimized.

12 The above example can be used to illustrate this point. Suppose the incumbent
13 (or its regulator) sets a price of p_D for access to its (downstream) delivery network.
14 Equivalently, it could set a worksharing discount of $w = p - p_D$, where p is the price of
15 end-to-end service; i.e., the price of a stamp. That is, a mailer or a consolidator that
16 performed the upstream functions would receive a discount of w off of the full service
17 rate. In this example, this would mean that it could obtain access to the incumbent's
18 delivery network at a net price of $p - w = p_D$. When would it be profitable for the
19 consolidator to purchase access to delivery services *only*? In order to compete with the
20 incumbent, it would have to match or beat its price (i.e., set $p_e \leq p$. In order to be
21 profitable, the consolidator's price must cover its unit costs, including the per unit
22 access fee paid to the incumbent: i.e., $p_e \geq c_e + p_D = c_e + p - w$). Taken together, these

1 conditions mean that the consolidator can be profitable if and only if its upstream unit
2 costs are less than the worksharing discount offered (i.e., $c_e \leq w$).

3 Given these incentives facing the consolidator, the avoided cost approach makes
4 great intuitive sense. By setting the worksharing discount equal to per unit avoided
5 cost, the incumbent would create profitable incentives for worksharing entry whenever
6 the consolidator's costs of performing the upstream function are less than those of the
7 incumbent (i.e., whenever it is the case that $c_e \leq w = c_U$). What about the overhead
8 costs (F_U) associated with the upstream service component? Should not they play a
9 role in determining the efficient discount for the partial service in question? No,
10 because no part of those costs are avoided by the incumbent as a result of the
11 competitor's operation. Those overhead costs must be incurred as long as the
12 incumbent continues to operate those stages of its vertical chain.

13 This efficient incentive condition can be equivalently expressed in terms of the
14 access price. The ECPR access price that induces efficient supply behaviour from the
15 consolidator is the stamp price less the incumbent's per unit avoided cost associated
16 with the mail volume in question (i.e., $p_D = p - c_U$).

17 It is important to point out that it is the *incumbent's* avoided costs that are
18 relevant for the calculation of the cost-based discount used to determine efficient
19 access prices. This follows from the fact that such prices are designed to implement an
20 efficient "make or buy decision" for society. The consolidator can be counted upon to
21 do his part by taking recognition of his costs where required. But the costs actually
22 saved by the incumbent, and not some alternative cost standard, must be the ones

1 used to calculate unbundled access charges if decentralized entry decisions are to
2 result in socially cost efficient outcomes.

3 2. Preservation of Contribution.

4 This “retail minus” approach has another desirable property (the Postal Service’s
5 financial position is actually enhanced by the introduction of efficiently priced
6 worksharing options). This is because, under ECPR pricing, each piece of work shared
7 mail makes exactly the same contribution to institutional costs as ordinary mail. This
8 makes intuitive sense, because, on a per unit basis, the revenues lost through discounts
9 are, by design, exactly offset by cost savings. Nevertheless, the algebra will be useful
10 in understanding the implications for downstream access associated with the
11 implementation of an avoided cost worksharing discount by a break-even firm.

12 In the simple example, the firm’s initial profits with mail volumes V are given by
13 the expression:

14
$$P^0 = pV - C(V) = pV - [F_J + F_U + F_D + (c_U + c_D)V] = (p - c_U - c_D)V - F_J - F_U - F_D$$

15 If a volume of mail $M < V$ is handled upstream by a consolidator, the incumbent’s
16 revenues are reduced to reflect the worksharing discount: i.e., to $p(V-M) + (p-w)M$,
17 while its costs are also reduced because of the upstream costs that are avoided: i.e., to
18 $F_J + F_U + F_D + c_D V + c_U(V-M)$. Subtracting the latter from the former yields the post
19 entry profit level of the firm:

20
$$P^1 = pV - wM - F_J - F_U - F_D - (c_U + c_D)V + c_U M = P^0 - M(c_U - w)$$

21 Thus the change in profits, $P^1 - P^0$, is always given by just the diverted volume times the
22 difference between the worksharing discount and Postal Service’s per unit upstream

1 avoided costs. When these are set equal, the introduction of downstream access has
2 no effect on the firm's profit position.

3 Now, use the firm's overall break-even condition to reveal the characteristics of
4 the efficient downstream access price. This allows one to consider just what costs are
5 covered by that price. Setting the firm's profits to zero in either of the above equations
6 allows one to solve for the break-even stamp price p^0 :

$$7 \quad p^0 = c_U + c_D + (F_J + F_U + F_D)/V$$

8 In words, the equation expresses the familiar result that, in order for the firm to break-
9 even, the stamp price must cover not only the sum of the component unit variable costs
10 but also a pro rata share of the total fixed costs of the firm. Next, use this to derive an
11 expression for the efficient access price when the stamp price is set to allow the firm to
12 just break-even. This yields the expression:

$$13 \quad p_D = p^0 - w = p^0 - c_U = c_D + (F_J + F_U + F_D)/V$$

14 Note that the efficient downstream access price covers not only the variable costs of
15 delivery but also includes a pro rata share of *all* of the fixed costs of the enterprise.

16 An immediate implication of this contribution-preserving property of ECPR is that
17 the *percentage* mark-up on work-shared mail must necessarily be greater than that of
18 ordinary mail. This follows from the fact that while the *difference* between price and unit
19 marginal cost is the same for both types of mail, the *level* of total marginal cost is higher
20 for ordinary mail than for work-shared mail. To see this, let m_0 and m_D denote,
21 respectively, the per unit percentage mark-ups on ordinary and work-shared mail.
22 Then, from above, we have

1
$$m_0 = \frac{p^0 c_D c_U}{c_D + c_U} = \frac{F_U + F_D + F_J}{V(c_D + c_U)} < \frac{F_U + F_D + F_J}{Vc_U} = \frac{p_D c_D}{c_D} = m_D .$$

2 Again, for given mail volume, contribution per piece is unaffected by the
 3 introduction of ECPR worksharing discounts. However, the introduction of work-sharing
 4 will generally stimulate mail volumes because the cost facing the mailer will decrease.
 5 This, in turn, will allow the Postal Service to spread its institutional costs over a larger
 6 number of pieces, resulting in a decrease in the stamp price required to break-even.
 7 Cohen et. al. (2006) argue that the end result of this process is an increase in volume
 8 far greater than what would be predicted on the basis of price elasticities alone.¹⁸

9 **VI. PRACTICAL ISSUES IN IMPLEMENTING ECPR FOR WORKSHARING**
 10 **DISCOUNTS.**

11 While the basic principles of ECPR-based efficient worksharing discounts are
 12 straightforward, their practical application to any real world situation will typically raise
 13 additional issues that must be clarified.

14 **A. Multiple Dimensions of Worksharing (e.g., Presort and Dropship).**

15 In practice, worksharing will involve multiple dimensions. For example, a mailer
 16 may choose various levels of presortation and may also choose different locations to
 17 lodge its mail with the Postal Service. The discounts for these various activities must
 18 also be structured so as to induce efficient choices on the part of mailers. That is, when
 19 there are two or more levels of worksharing possible, efficient discount policy must not
 20 only induce efficient worksharing, but also induce mailers to select the most efficient
 21

¹⁸ See n.3, *supra*, at 2.

1 worksharing option. Again, ECPR-based worksharing discounts based upon Postal
2 Service unit avoided cost will accomplish this.

3 Assume that there are 3 stages of production. The Postal Service always does
4 stage 3, but mailers may do stage 1, or stage 1 and 2, but not stage 2 alone. Suppose
5 that the Postal Service's unit costs are c_{123} for end to end service, c_{23} for stages 2 and 3
6 service, and c_3 for only stage 3 service. Then the ECPR-based discount for stage 1
7 work-sharers would be $d_1 = c_{123} - c_{23}$, while the discount for stage 1 and 2 work-sharers
8 would be $d_{12} = c_{123} - c_3$.

9 These discounts would induce mailers to make the socially efficient decision as
10 to whether they buy the end to end service or do either type of work sharing. That is,
11 if neither type of work sharing is profitable with these discounts, the mailer will not
12 engage in either, and that will be socially efficient. If one or the other type of work
13 sharing looks profitable, the mailer will choose to do it, and that will be socially efficient.

14 What if both types of work sharing are profitable at the ECPR discounts?

15 Obviously, the mailer will choose to do the one that is most profitable for itself. Will that
16 choice be socially efficient? Let m_1 and m_{12} be the mailer's unit cost of,
17 respectively, stage 1 and stages 1 and 2 production. The mailer will choose stage 1
18 only over stage 1 and 2 worksharing if this maximizes its savings (i.e., if
19 $d_1 - m_1 > d_{12} - m_{12}$). That is, if, $m_{12} - m_1$, the incremental costs of stage 2 are larger than
20 the incremental discount $d_{12} - d_1$. Now, given that worksharing is going to be done,
21 social costs are minimized by stage 1 worksharing (only) if $m_1 + c_{23} < m_{12} + c_3$. That is,
22 if $m_{12} - m_1 > c_{23} - c_3 = d_{12} - d_1$, under ECPR discounts. Thus, the mailer will "do the right

1 thing" if the USPS quotes all of its discounts on a *total* basis. This enables mailers to
2 make the correct decisions "at the margin."

3 Of course, this outcome can also be accomplished using "marginal
4 discounts," e.g., set d_1 and d_2 as the discounts for performing stages 1 or 2, respectively
5 so that $d_{12} = d_1 + d_2$. The system will again induce efficiency as long as $d_2 = c_{23} - c_3$, the
6 Postal Service's unit incremental cost of performing stage 2. However, this approach
7 seems unnecessarily disaggregated and artificial. Remember, by assumption, no
8 mailer or consolidator provides only production stage 2. For example, it does not seem
9 realistic to envision a consolidator taking mail that the Postal Service has sorted to the
10 3-digit level, sorting it to the 5-digit level, and then returning it to the Postal Service for
11 delivery.

12 **B. Calculating Avoided Costs.**

13 The calculation of avoided costs is not as straightforward in practice as it is in
14 theory. There are three issues that I address in this subsection of my testimony. The
15 first is whether to use component marginal cost (component unit attributable cost) or
16 component average incremental cost as a measure of the unit costs saved by work-
17 sharing. The difference between the two is whether or not any of the fixed (non volume
18 variable) costs associated with the cost component should be included when calculating
19 per unit cost savings. Not surprisingly, these costs should *not* be included as long as
20 the Postal Service continues to operate the cost component (i.e., does not entirely
21 abandon that stage of production to consolidators). It is my understanding that the
22 current practice of the Postal Rate Commission is to base the calculation of avoided

1 costs on attributable costs. Below, I explain why this is the theoretically correct
2 approach.

3 The second issue discussed in this subsection deals with the distinction between
4 *cost differences* and *cost avoidances* and, relatedly, the choice of benchmark from
5 which to measure avoided cost. This set of issues arises when the mail that might be
6 work-shared is heterogeneous (i.e., if not work-shared, it would impose different costs
7 upon the Postal Service). Here, I find that the Postal Service' past practice of using as
8 a benchmark "the mail most likely to be work-shared" will likely lead to an
9 understatement of the appropriate avoided cost measure. While, heterogeneity
10 invariably leads to some sorting inefficiencies, it seems likely that the Postal Service's
11 current proposal to "delink" the presort rate structure from the single piece rate structure
12 should make the problem less severe.

13 Finally, I discuss the treatment of so-called unmodelled cost pools in the
14 calculation of cost avoidances. I find that, contrary to current practice, these costs
15 should vary with the level of presortation as long as (1) they are volume variable, and
16 (2) their cost drivers vary with the level of presortation.

17 1. The Appropriate Measure of Per Unit Avoided Cost is Marginal Cost, Not
18 Average Incremental Cost.

19
20 When there are non constant returns to scale, there are two ways to measure
21 "per unit avoided cost:" marginal cost or average incremental cost. These two
22 measures typically yield different answers. The preceding discussion used the
23 incumbent's upstream marginal cost as the per unit measure of avoided cost. This sub
24 section explains why this, and not upstream average incremental cost, is the
25 appropriate measure for the case at hand.

1 a. *The Postal Service's Universal Service Obligation means that its*
2 *upstream fixed costs are not avoidable.*

3
4 First, and most persuasively, the Postal Service's obligation to provide ubiquitous
5 nationwide service (its USO) means that it must remain capable of providing end-to-end
6 retail service. That is, regardless of market conditions and consolidator supply, the
7 Postal Service has to stand ready to collect, sort, transport, and deliver any letter that is
8 stamped and placed in a mailbox. Therefore, there exist no circumstances in which the
9 upstream fixed costs in question can be avoided.

10 b. *The relevant market for upstream entry does not include all of the*
11 *Postal Service's volumes.*

12
13 Another explanation of why the Postal Service's upstream fixed costs should not
14 be viewed as being avoidable is based upon the appropriate definition of the market for
15 competitors' upstream services. That is, does the volume of mail contested by the
16 consolidator(s) in question include *some* or *all* of the mail serviced by the incumbent's
17 upstream operations? If the answer is that the markets served by access seekers
18 account for only a portion of the incumbent's upstream operations, then the costs
19 avoided are only the variable costs associated with those volumes. None of the
20 incumbent's upstream fixed costs should be included in the avoided cost calculation,
21 because they cannot be avoided by transferring the contested volumes to the
22 consolidator(s).

23 This point can be illustrated using Figure 1. When the relevant market for
24 consolidators' upstream services include volumes amounting to $M < V$, the appropriate
25 measure of per unit avoided cost is *always* upstream marginal cost. This is true
26 because, whatever the shape and position of the consolidators' supply curve, e.g., S_1 ,

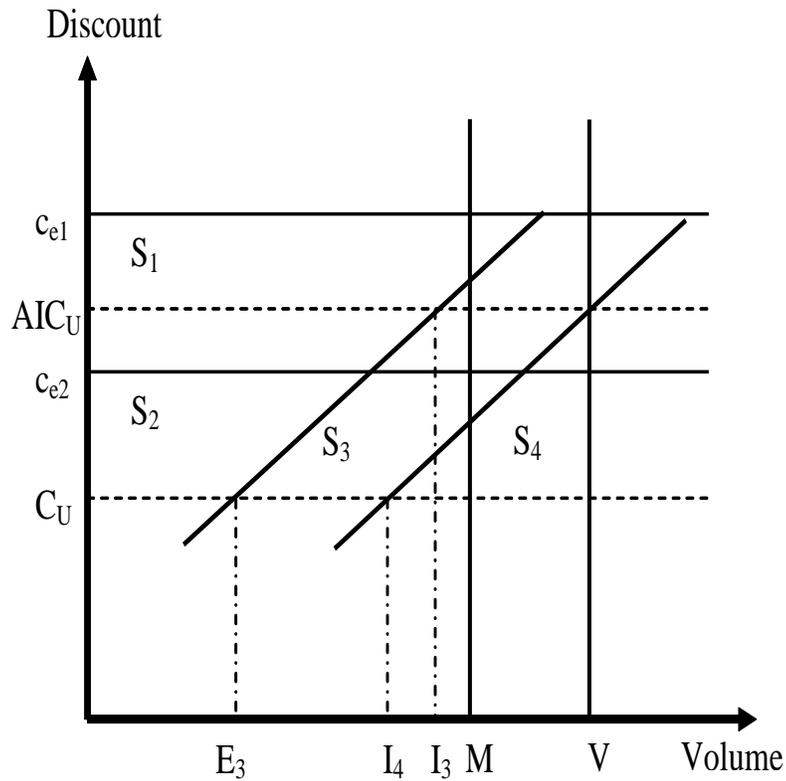
1 S₂, S₃, or S₄, they can acquire no more than the upstream services associated with
2 volume *M*. Since this will always leave some upstream processing for the Postal
3 Service, its upstream fixed costs cannot be avoided.

4 As a practical matter, there seems little doubt that such is the case. New
5 consolidators are simply not in a position to compete for the upstream service
6 component across the full range of the Postal Service's markets.

7 *c. Consolidators supply curves for upstream services are not likely to be*
8 *perfectly elastic.*
9

10 The Postal Service costs avoided will depend upon the quantity of upstream
11 services taken over by the consolidator (or group of consolidators). If, at a given level of
12 the worksharing discount, the competitors would supply upstream services for only a
13 portion of the incumbent's volume, the appropriate measure of avoided cost per unit is
14 the incumbent's marginal cost (c_U). If, however, consolidators would be willing to supply
15 upstream services for *all* of the incumbent's volume at that discount, the appropriate
16 measure of avoided cost per unit is the incumbent's average incremental cost (AIC_U).
17 Which scenario is relevant depends upon the ability of the consolidator(s) to expand
18 their market share without increasing unit costs (i.e., on the elasticity of competitive
19 supply).

20 In theory, this is a complicated issue to resolve. The difficulty comes about
21 because the Postal Service's upstream average incremental costs are greater than its
22 upstream marginal costs. This difference arises because the Postal Service incurs
23 some fixed costs associated with its upstream components (i.e., $AIC_U = c_U + F_U/V$).
24 Figure 1 illustrates the conceptual issues involved.



1
2
3
4
5
6
7
8
9

Figure 1

The vertical axis measures levels of the worksharing discount, while the horizontal axis measures levels of upstream services in units of mail volume. The dashed horizontal lines indicate two key levels of the worksharing discount: the incumbent's upstream average incremental cost and the incumbent's upstream marginal cost. It is important to note that, unlike c_U , AIC_U is not assumed to be a constant. The level depicted in the diagram is calculated for a particular volume of mail, V .

1 The solid horizontal lines labelled S_1 and S_2 are the supply curves of (one or
2 more) competitive consolidators whose constant unit costs of providing upstream
3 services are given by c_{e1} and c_{e2} , respectively. These supply curves depict market
4 situations in which consolidators are willing to supply *unlimited quantities* of upstream
5 services whenever the worksharing discount is greater than or equal to their *constant*
6 unit costs. Such *perfectly elastic* supply curves clearly represent an extreme, knife-
7 edge situation. However, when they do pertain, the question of setting the work-sharing
8 discount to induce efficient entry reduces to a very simple matter indeed. If the
9 consolidators' unit cost (the height of the horizontal supply curve) is below AIC_U , say at
10 S_2 , then it is efficient for the consolidators to replace the incumbent's entire volume V of
11 upstream services; and, a discount set equal to AIC_U will accomplish this. This is true
12 because, with a perfectly elastic supply curve, consolidators are willing to supply an
13 arbitrarily large volume of upstream services at any discount greater than or equal to
14 their (constant) unit cost c_{e2} . In contrast, if the consolidators' supply curve is given by
15 S_1 , with (constant) unit costs above AIC_U , it is not socially efficient for consolidators to
16 provide any upstream services; and, a discount set equal to AIC_U will not induce them to
17 supply any. Notice that the position of c_U plays no role in this analysis. This is because,
18 with perfectly elastic consolidator supply, if it is efficient for competitors to supply *any*
19 upstream services, it is efficient for them to supply *all* upstream services. The upstream
20 fixed costs of the incumbent will always be avoided if *any* entry takes place.

21 The assumption of perfectly elastic consolidator supply curves is responsible for
22 the above "bang, bang" outcome. More plausible is the assumption that competitive
23 consolidators would respond more or less continuously to changes in the level of the

1 worksharing discount. The greater the discount, the greater the amount of upstream
2 services consolidators would be willing to supply. However, a “small” increase in the
3 discount would induce a correspondingly “small” increase in supply. This is what one
4 would expect to occur as firms which are less and less efficient at upstream processing
5 are drawn into the market by higher discounts. The upward sloping supply curves S_3
6 and S_4 generate this type of competitor behaviour.

7 In this, more realistic case, the theoretical determination of the efficient mix of
8 consolidator and incumbent upstream processing becomes more complicated. The
9 basic efficiency result relies on equating the upstream marginal costs of the incumbent
10 (c_U) and the last unit produced by the consolidators (the vertical height of the supply
11 curve). This familiar marginal condition characterizes the efficient division *as long as*
12 *the incumbent continues its upstream operations.*¹⁹ For example, when the
13 consolidators’ supply curve is located at S_3 , the level of upstream activity that equates
14 consolidator marginal cost with incumbent marginal cost is given by E_3 . This is also the
15 quantity of upstream services consolidators would supply when the worksharing
16 discount is equal to c_U . (The incumbent would continue to supply the remainder of
17 upstream services, $V-E_3$.) True, consolidators would supply more at the higher discount
18 level of AIC_U : i.e., the quantity I_3 . However, since the incumbent would still be required
19 to operate its upstream facilities, its upstream fixed costs would *not* be avoided, so AIC_U
20 has no relevance.

¹⁹ See the discussion on multiple plant cost minimization in any intermediate microeconomics textbook.

1 Matters are different if the consolidators' supply curve is positioned at S_4 . As
2 before, quantity supplied (I_4) at a worksharing discount equal to the incumbent's
3 upstream marginal cost (c_U) is less than the total volume V . However, now the
4 consolidators' supply curve intersects the level of the incumbent's upstream average
5 incremental cost at or to the right of the incumbent's total volume V . This means that
6 consolidators would be willing to expand their supply of upstream services to cover the
7 entire market volume V if the discount were increased to the level of the incumbent's
8 upstream average incremental cost (AIC_U). Then, the incumbent would avoid its
9 upstream fixed costs, making AIC_U the relevant avoided cost standard for determining
10 the efficient worksharing discount.

11 Thus, the appropriate measure of avoided cost per unit is an empirical question.
12 The analysis has demonstrated that the incumbent's marginal cost will be the relevant
13 measure when (1) consolidator supply curves are upward sloping; and (2) consolidators'
14 supply at a discount equal to AIC_U is insufficient to replace the incumbent's upstream
15 operation. In my opinion, these are the conditions most likely to be relevant to the case
16 at hand.

17 2. Cost Difference and Cost Avoidance.

18 Typically, as in the previous subsection, theoretical analysis of worksharing
19 assumes that mail of a given category has the same avoided cost to the Postal Service.
20 However, in practice such mail is heterogeneous and would have different unit avoided
21 costs if it were to be handled by the Postal Service. This has given rise to extensive
22 discussions attempting to distinguish the *cost avoidance* resulting from worksharing and
23 the *cost difference* between typical pieces of work-shared and non work-shared mail. In

1 past rate cases,²⁰ the Postal Service has emphasized this distinction by specifying a
2 “benchmark” mail type for calculating the cost avoidances used for setting worksharing
3 discounts. In R2005-1, this benchmark was taken to be bulk metered mail (“BMM”),
4 described as the type of mail *most likely to be work-shared*.²¹ However, in the current
5 proceeding, the Postal Service proposes to abandon the benchmarking methodology for
6 calculating cost avoidances and to “delink” the rate structures of single piece First Class
7 Mail and various categories of presorted First Class Mail.²² Since the PRC has also
8 issued two Notice of Inquiries related to this issue,²³ this subsection of my testimony
9 addresses the matter in some detail.

10 In my view, the problem arises because of the mail heterogeneity described
11 above. The difference in Postal Service processing costs for various types of mail that
12 *might* be work-shared complicates the task of choosing the appropriate discount. In a
13 recent paper,²⁴ I analyzed the choice of the appropriate discount in a simple model that
14 incorporated mail heterogeneity and one level of worksharing. The basic theoretical
15 result was that an efficient allocation of mail processing activity between the Postal
16 Service and mailers requires a worksharing discount equal to the average Postal
17 Service processing cost of the type of mail just at the margin of being profitable for
18 mailers to workshare. This suggests that the previous methodology of basing discounts

²⁰ See, e.g., Dkt. No. R2005-1, USPS-T-28.

²¹ See Dkt. No. R2005-1, USPS-T-21 at 11 (citations omitted).

²² See USPS-T-32 at 12-17.

²³ See Second Notice of Inquiry (July 21, 2006) and Third Notice of Inquiry (July 26, 2006).

²⁴ See Panzar (2006), “Clean Mail and Dirty Mail: Efficient Worksharing Discounts in the Presence of Mail Heterogeneity,” presented at the 14th Conference on Postal and Delivery Economics held in Bern, Switzerland, May 31st – June 3rd, 2006.

1 based upon the avoided processing cost of mail *most likely to be work-shared*, is likely
2 to lead to discounts too low to result in an efficient allocation of mail processing activity.
3 However, the primary practical implication of my analysis was that *in the presence of*
4 *Postal Service mail processing cost heterogeneity, any discount policy will lead to some*
5 *mail being processed inefficiently.*

6 The logic of the argument can be readily seen in the context of the example
7 employed by Cohen et. al. 2006, that is meant to “. . . present[s] an example of the
8 distortions that can be caused by using total cost differences to set worksharing
9 discounts.”²⁵ They assume that non work-shared mail costs an average of 23 cents for
10 the Postal Service to sort, transport and deliver, while a *subset* of that mail with
11 characteristics similar to work-shared mail (non-workshared bulk) costs 20 cents, and
12 work-shared mail costs 15 cents.²⁶ Next, they demonstrate that a discount equal to the
13 8-cent cost difference between work-shared and non work-shared mail would not
14 encourage the most efficient behaviour.²⁷

²⁵ See n.3, *supra*, at 9.

²⁶ See *id.*

²⁷ See *Id.*

Example of Bottom Up Costing and Cost Avoidance Methods
or Attributable Cost Difference vs. Worksharing Cost Savings

<u>Mail Type</u>	<u>Non-worksharing Factors</u>	<u>Worksharing Factors</u>	<u>Unit Cost</u>	<u>Cost Difference</u>	<u>Cost Avoidance</u>
Total Non-workshared	5% in trays 10% handwritten 2% nonmachinable	not presorted not barcoded not dropshipped	23 cents	8 cents Cost difference is due to both worksharing and non-worksharing factors.	
Non-workshared Bulk (subset of non-workshared)	100% in trays 0% handwritten 0% nonmachinable	not presorted not barcoded not dropshipped	20 cents		
Workshared Bulk	100% in trays 0% handwritten 0% nonmachinable	presorted prebarcoded dropshipped	15 cents	5 cents Cost avoidance is due exclusively to worksharing factors.	

1

2 They illustrate this possibility by considering the case of a hypothetical mailer of

3 bulk non work-shared mail for whom it costs 7 cents to do the work needed to qualify for

4 the 8-cent discount.²⁸ Such a mailer would have an incentive to work-share, gaining 1

5 cent per piece. Cohen et. al. correctly point out that, as a result, the total cost to society

6 of the mail increases from 20 cents per piece, the Postal Service cost, to 22 cents per

7 piece, 15 cents incurred by the Postal Service plus 7 cents incurred by mailer.²⁹ They

8 also claim that the mailer incentive problem would be solved in the example by using a

9 discount equal to 5 cents, the costs saved by Postal Service when processing work-

10 shared bulk rather than non work-shared bulk.³⁰ However, it is easy to see that such is

11 not the case. Consider another hypothetical mailer whose profile exactly matches the

²⁸ See *Id.*

²⁹ See *Id.*

³⁰ See *Id.*

1 average for the postal service (i.e., only 5% in trays, 10% handwritten, and 2% non
2 machineable). Yet suppose that, say, through updating its computer system, this mailer
3 can also satisfy the requirements for a worksharing discount for *all* his mail at an
4 average cost of 7 cents per piece. Clearly, it would be socially efficient if he did: an 8
5 cent discount would induce him to do so, a 5 cent discount would not.

6 Cohen et. al. are certainly correct in concluding that “If the cost differences within
7 nonworkshared mail are to be addressed, it should be through other rate elements. For
8 example, nonmachinable mail is currently subject to a surcharge and it would be
9 possible (though unlikely) to impose an additional surcharge on mail with handwritten
10 addresses to reflect the additional cost of processing it.”³¹ However, if such remedies
11 are not available in practice the solution to the benchmarking problem *must* involve a
12 trade off. On the one hand, using the average Postal Service unit cost saved will result
13 in some mailers worksharing whose costs are too high. On the other hand, use of a
14 lower discount runs the risk that some mailers will inefficiently choose not to work-
15 share.

16 From this perspective, the current Postal Service proposal to “de-link” single
17 piece and workshared First Class letters should be viewed as a means of *decreasing*
18 the heterogeneity discussed above.

19

³¹ See *Id.*

1 3. Treatment of Non-Modelled Cost Pools When Measuring Cost
2 Avoidances.

3
4 Only a small proportion of Postal Service cost pools are used in the calculation of
5 the cost avoidances associated with differing levels of presortation. Even when it is
6 recognized that at least some portion of the costs in these *unmodelled* cost pools are
7 volume variable, it is simply assumed that the costs are unaffected by the level of
8 presort of the underlying mail volumes.³² This approach fails to consistently apply the
9 economic logic of cost causation, which firmly underpins the Postal Service’s volume
10 variability analysis, to the cost avoidance analysis used to establish worksharing
11 discounts. This subsection explains the contradiction and indicates how the Postal
12 Service’s standard cost attribution methodology can be used to measure the level of
13 unit costs avoided by a change in presort level.

14 There are many examples in which cost components are related. In particular,
15 the level of cost in a cost component, such as “allied labor” may have as its cost driver
16 the amount of labor employed in a component such as “mail processing.” The amount
17 of labor used in mail processing may, in turn, be driven by total piece handlings (“TPH”).
18 And, it may also be the case that pre-sorted letters involve fewer TPHs than ordinary
19 mail. Yet, it is my understanding that, in such a situation, no savings of allied labor
20 costs would be included when calculating the avoided costs of presortation because the
21 cost pool was *unmodelled* by the Postal Service. That is the allied labor cost pool is
22 assumed not to be variable with respect to the level of presort.

³² See PB-T-2 at 13-29.

1 This is surprising, since it is also my understanding that such allied cost pools are
2 routinely “piggybacked” when calculating volume variable costs. That is, even though
3 allied labor does not vary directly with volume, its cost pool does make up part of
4 volume variable costs because the amount of allied labor is driven by something (i.e.,
5 mail processing labor) that *is* driven by volume. The logic of the situation is the same in
6 both cases. That is, if part of allied labor is volume variable, then part of allied labor will
7 typically be subject to presort savings as well.

8 A simple example can serve to illustrate this important point. Suppose that the
9 cost drivers for the “mail processing labor” cost pool are the number of TPH and the
10 number of first piece handlings (“FPH”) and that each TPH or FPH requires 2 units of
11 labor time. Assume that there are two types of presort mail, X and Y.³³ Assume also
12 that each piece of type X mail requires 3 TPH, while each piece of type Y mail requires
13 only 2 TPH. Obviously, both types of mail require one FPH. Next, consider the “allied
14 labor” cost pool. Allied labor does not vary directly with either mail volume, FPH or
15 TPH, but does vary with the amount of labor employed: every 10 units of labor time is
16 assumed to require 1 unit of allied labor. Finally, assume that the wage of mail
17 processing labor and allied labor are both \$1 per unit.

18 The example can be used to illustrate the impact of worksharing on allied labor
19 cost by comparing the following two situations. Initially, there are 2,000 pieces of type X

³³ My analysis of the treatment of unmodelled cost pools focuses on accurately measuring the amount of cost avoidance associated with differing *levels* of presortation because of the change in rate design introduced by the Postal Service for R2006. See USPS-T-32 at 12-17. If anything, the argument applies more strongly to the treatment of unmodelled cost pools under the “benchmarking approach” to the design of worksharing discounts previously used by the Postal Service; see e.g., Dkt. No. R2005-1, USPS-T21 at 11.

1 mail. Processing this mail would involve 6,000 TPH, 2,000 FPH and 16,000 units of
2 mail processing labor. In addition, 1,600 units of allied labor would be required. The
3 total mail processing costs associated with the 2,000 pieces of type X mail are equal to
4 mail processing labor costs of \$16,000 *plus* \$1,600 in allied labor costs, for a total of
5 \$17,600, or \$8.80 per piece. Next, suppose that additional worksharing is performed on
6 1,000 pieces of type X mail, converting them into type Y mail. Thus the processing
7 center now handles 1000 pieces of type X mail and 1000 pieces of type Y mail. The
8 number of FPH would not change. However, as a result of worksharing, the number of
9 TPH would decrease to 5,000, the number of units of mail processing labor would
10 decrease to 14,000, and the costs of mail processing labor would decrease to \$14,000.
11 Also, the number of units of allied labor would decrease to 1,400 and allied labor costs
12 would decrease to \$1,400.

13 If the avoided mail processing costs associated with worksharing are calculated
14 by using only the savings in mail processing labor, they would amount to \$2,000 =
15 \$16,000 - \$14,000, or \$2.00 per piece. However, avoided costs per piece increase
16 significantly once it is recognized that allied labor costs are also impacted by
17 worksharing. In the present example, the avoided allied labor costs are \$200, or an
18 additional \$0.20 per piece. Including those unmodelled cost savings increases per unit
19 avoided costs from \$2.00 to \$2.20. This example has revealed a basic principle: any
20 cost pool that is volume variable will also vary with the level of presort as long as the
21 level of its driver or piggyback factor varies with the level of presort.

22 Of course, the principle holds much more generally than the example indicates.
23 This fact can be illustrated with the following somewhat formal model. For clarity, I limit

1 attention to two types of presorted mail, with volumes measured by X and Y , two cost
 2 drivers (D_1 and D_2), and two cost pools, one modelled (A) and one unmodelled (B). The
 3 level of each cost driver is assumed to be an increasing function of each type of mail:
 4 i.e., $D_1 = D_1(X, Y)$ and $D_2 = D_2(X, Y)$. The level of costs in the modelled cost pool are
 5 given by $C_A = w_A L_A(D_1, D_2)$, where w_A is the wage rate of pool A labor and L_A is the
 6 amount of pool A labor required. Costs in the unmodelled pool are “piggy backed” upon
 7 those of the modelled pool so that $C_B = w_B L_B(L_A)$, where w_B is the wage rate of pool B
 8 labor and L_B is the amount of pool B labor required. Then, the total costs of the two
 9 pools in question are given by

$$10 \quad C(X, Y, w_A, w_B) = w_A L_A[D_1(X, Y), D_2(X, Y)] + w_B L_B\{L_A[D_1(X, Y), D_2(X, Y)]\}$$

11 This equation allows us to directly analyze the reduction in total mail processing
 12 costs *caused* by converting one unit of type X mail into a unit of type Y mail. Clearly,
 13 this is nothing more than the difference in marginal costs of the two types of mail. That
 14 is,

$$15 \quad C = \frac{C}{X} - \frac{C}{Y} = w_A + w_B \frac{dL_B}{dL_A} \frac{L_A}{D_1} \frac{D_1}{X} \frac{D_1}{Y} + \frac{L_A}{D_2} \frac{D_2}{X} \frac{D_2}{Y} .$$

16 The above equation may look intimidating, but it is really quite intuitive. The first
 17 parenthetical term on the right hand side converts a unit change in pool A labor into cost
 18 dollars. Within the parenthesis, the pool A wage rate, w_A , is the direct cost effect of an
 19 increase in pool A labor. The second term within the parenthesis is the indirect effect of
 20 an increase in the amount of pool A labor through its impact upon the amount of pool B
 21 labor. It consists of the pool B labor wage rate, w_B , multiplied by the marginal impact of
 22 an additional unit of pool A labor on the amount of required pool B labor. The square

1 bracketed term on the right hand side of the equation measures two sources of change
2 in the amount of pool A labor caused by a marginal change in the level of worksharing –
3 one associated with each cost driver. The first results from a change in the level of cost
4 the first cost driver, D_1 , caused by a change in the level of worksharing. Thus, the first
5 product within the bracket is marginal impact on pool A labor of an increase in the first
6 cost driver multiplied by the *difference* between the marginal impacts of X and type Y
7 mail on the level of the first cost driver. The second product within the bracket
8 measures the same effect with respect to the second cost driver.

9 It is helpful to apply the equation to the illustrative example developed at the
10 beginning of this subsection. There, $w_A = \$1 = w_B$, and $dL_B/dL_A = 0.1$, so the term in
11 parentheses equals \$1.10. Let the first cost driver be the number of first piece
12 handlings, so $D_1 = FPH$. Since, in the example, FPH was assumed to be the same for
13 type X and type Y mail, the first product in the bracketed term is zero. Turning to the
14 impact of worksharing on TPH = D_2 , it was assumed that each TPH required two units
15 of pool A labor ($L_A/D_2 = 2$), that type X mail required 3 TPH ($D_2/X = 3$), and that type
16 Y mail required 2 TPH ($D_2/Y = 3$). Therefore, the term in brackets equals 2. Carrying
17 out the required multiplication yields a unit cost avoidance of \$2.20, as derived above.

18 Returning to the avoided cost equation, it is the second term in parenthesis that
19 illustrates the difference between the Postal Service's proposed cost avoidance
20 methodology and its own analysis of volume variability. This term will be positive for
21 any unmodelled cost pool that is volume variable and, therefore, should also appear
22 when attempting calculate cost avoidances.

1 **VII. BEYOND TRADITIONAL WORKSHARING: THE CASE FOR BASING INTRA-**
2 **SUBCLASS RATE DIFFERENCES ON POSTAL SERVICE COST**
3 **DIFFERENCES**
4

5 In two recent Notices of Inquiry,³⁴ the Commission asked for guidance on the
6 general subject of basing rate differences – other than worksharing discounts - on cost
7 differences for mail within a subclass. This section addresses that issue and explains
8 why the principles supporting the ECPR apply to these situations as well.

9 More so than in most markets, mailers have the opportunity to “design their own
10 service.” That is, they can choose many of the intrinsic properties of their mailing: its
11 *size* (one ounce or several); its *shape* (letter or flat), the time of day at which it enters
12 the mail stream, the location at which it enters the Postal Service network – and many
13 other of their mail’s characteristics. Two aspects of this flexibility are important for rate-
14 making purposes. First, and most importantly, differences in these characteristics may
15 have important impacts on the costs that the mail imposes on the Postal Service.
16 Second, while mailers may have preferences over these characteristics (e.g., a flat may
17 better serve their purposes than a letter), the relative value of shifting from one
18 alternative to another may be dramatically different than the difference in Postal Service
19 costs. Just as with traditional worksharing, an effective way to induce changes in mailer
20 behaviour is through rate differences that reflect cost differences.

21 The basic economic argument in support of cost-based rate differentials is the
22 same as that for avoided cost worksharing discounts. Mailers can act to minimize end-
23 to-end costs only if the difference in rates for mail with differing characteristics reflects

³⁴ See n.23, *supra*.

1 differences in the costs incurred by the Postal Service. Nevertheless, it is useful to
2 illustrate the principle using a simple example.

3 Suppose, for a given subclass of mail, mailers assess the profit impact of
4 sending a flat at \$0.33 and the profit impact of a standard letter at \$0.30. Then, the
5 mailer will choose to produce and mail the flat only if the difference in postal rates for
6 mailing a flat and mailing a letter is less than or equal to \$0.03. Now suppose that
7 Postal Service per unit volume variable costs for a flat are \$0.15, while those of a letter
8 is \$0.10, but the rate for mailing a flat is \$0.25 and the rate for mailing a letter is \$0.23.
9 At these rates, the mailer would choose to send flats, because the \$0.02 difference in
10 rates is smaller than the \$0.03 difference in his valuation.

11 Under the assumptions of the example, both letters and flats earn substantial
12 contributions: $\$0.13 = \$0.23 - \$0.10$ and $\$0.10 = \$0.25 - \$0.15$, respectively. Yet both
13 net social value and contribution could be increased if Postal Service rates were
14 “rebalanced” to reflect the cost differences between letters and flats. To see this, note
15 that the mailer sending flats receives a net return of $\$0.08 = \$0.33 - \$0.25$ on each unit.
16 If, instead, it had chosen to send letters, its net return would have been $\$0.07 = \$0.30 -$
17 $\$0.23$ per unit. However, net *social* value would be increased if the mailer switched to
18 sending letters. Each flat sent yields a net social value of $\$0.18 = \$0.33 - \$0.15$. But,
19 sending a letter would yield a net social value of $\$0.20 = \$0.30 - \$0.10$.

20 Consider, instead, the outcome if Postal Service rates reflected the cost
21 difference between letters and flats. That is, assume that the mailer’s valuations
22 remained the same, but the prices for mailing letters and flats were \$0.26 and \$0.21,
23 respectively. In this case, the mailer would choose to send a letter, because doing so

1 would yield a higher net payoff. The net value from sending a letter would be $\$0.30 -$
2 $\$0.21 = \0.09 , while the net value from sending a flat would be $\$0.07 = \$0.33 - \$0.26$.
3 The contribution to the institutional costs of the Postal Service would increase to $\$0.11 =$
4 $\$0.21 - \0.10 . However, as noted above, the net social value of the transaction would
5 increase to $\$0.20$. Thus, in this example, a “rate rebalancing” that aligns Postal Service
6 rates with Postal Service unit volume variable costs can induce efficient changes in
7 mailer behaviour that both benefits the mailer and increases the institutional cost
8 coverage of the Postal Service: i.e., the rebalancing makes possible a Pareto
9 improvement.

10 **VIII. WHY FOCUS ON PRODUCTIVE EFFICIENCY? ECPR vs. RAMSEY PRICING**

11 My analysis focuses on pricing rules that promote the overall *productive*
12 *efficiency* of the postal sector. However, that is not necessarily equivalent to pricing
13 rules that maximize the *economic efficiency* of the postal sector. Economic efficiency is
14 maximized when prices are set so as to maximize the sum of the *economic profits*
15 accruing to industry participants plus the *consumers' surplus* accruing to final
16 consumers. This maximization of total surplus takes place subject to the constraint that
17 the Postal Service covers its costs. Given that the Postal Service operates under
18 conditions of economies of scale and scope, satisfying the break even constraint
19 requires that some or all rates must be set above their respective unit attributable
20 (marginal) costs.

1 Over the past several decades, regulatory economics has developed
2 sophisticated theoretical analyses of this problem.³⁵ This topic is generally referred to
3 as *Ramsey Pricing*. The primary insight stemming from this vast literature is that
4 Ramsey Optimal mark-ups of price over marginal cost depend upon relative demand
5 conditions. In the simplest case of independent demands, the mark-up of a service's
6 price above its marginal cost should be inversely proportional to the price elasticity of
7 demand for that service. This *inverse elasticity rule* is closely related to the long
8 standing regulatory practice of *value of service pricing*. That is, the belief a service
9 highly valued by its customers can and should bear a greater percentage mark up of
10 price over marginal cost. Value of service considerations make up an important part of
11 the *non cost factors* for pricing under the Postal Reorganization Act of 1970.

12 The potential conflict between Ramsey Pricing and ECPR can be readily
13 explained and illustrated. Consider two categories of mail that differ only in the amount
14 of worksharing that they embody (e.g., mail presorted to 3 digit and 5 digit zip codes).
15 Under ECPR, the prices of these two types of mail would differ by the amount of per unit
16 Postal Service costs saved. The 5 digit mail would always have a greater percentage
17 mark up over marginal cost because the same nominal mark up would be applied to a
18 smaller level of total marginal cost. Under Ramsey Pricing, however, the percentage
19 mark up of the 5 digit mail could be greater than, less than, or equal to the percentage

³⁵ For a clear exposition and review of this literature, see R. R. Braeutigam (1989), "Optimal Policies for Natural Monopolies," Chapter 23 in Volume 2 of the *Handbook of Industrial Organization*, edited by R. Schmalensee and R. Willig, Elsevier.

1 mark up of the 3 digit mail. The ranking would depend in a complicated way on the own
2 and cross price elasticities of the two types of mail.

3 The advantage of Ramsey Pricing is that, by definition, it maximizes the total
4 economic surplus available from the postal sector. Why then, do I advocate the use of
5 ECPR for the pricing of work-shared products? There are several reasons:

6 First, Ramsey Pricing requires precise information about production costs and
7 consumer demands. ECPR requires only information about cost differences at the
8 margin. Thus a system of prices that provide incentives for efficient worksharing can be
9 put in place using only the costing systems of the Postal Service. Estimates of demand
10 elasticities are not required.

11 Second, Ramsey Pricing does not automatically ensure that prices are free of
12 cross-subsidization.³⁶ That is, it must be verified that the prices of each product are at
13 least as large as the associated average incremental costs. This is much less likely to
14 be a problem for worksharing discounts set in accordance with ECPR. Intuitively, as
15 long as the base, non work-shared price covers its average incremental cost,
16 application of ECPR will ensure that all of the associated discounted prices are also free
17 of cross subsidy.³⁷

18 Third, Ramsey Pricing weighs surplus dollars equally. While appealing to
19 economists, this neutrality does not allow for the Commission to exercise independent
20 judgment with respect to the non cost factors specified by the Postal Reorganization

³⁶ See *id.*, at 1341.

³⁷ This is *always* true when component marginal costs are constant and the Postal Service continues to operate the workshared cost component.

1 Act. It is true that Ramsey Pricing principles could be applied using unequal welfare
2 weights. However, ECPR facilitates the application of non cost factors on a subclass by
3 subclass basis while maintaining incentives for efficient worksharing within a subclass.

4 Finally, and most importantly, the use of ECPR is much better suited to a
5 constantly changing and evolving postal industry. In particular, it allows relatively
6 straightforward adjustments to reflect changing worksharing technology without the
7 need to obtain information on changing demand elasticities.

8 **IX. CONCLUSION**

9 Worksharing is an important feature of the U. S. postal sector. Determination of
10 appropriate worksharing discounts is essential for the efficient operation of this sector.
11 By promoting productive efficiency, the use of the Efficient Component Pricing Rule for
12 setting discount benefits both mailers and the Postal Service. More specifically, this
13 testimony has attempted to:

14 (1) Emphasize the quantitative importance of worksharing under current discount
15 policies and suggest opportunities for increasing the scope of worksharing.

16 (2) Explain the basic economic theory supporting the application of the Efficient
17 Component Pricing Rule to postal worksharing discounts.

18 (3) Provide an analysis of some of the practical issues encountered when
19 attempting to apply the Efficient Component Pricing Rule to determine worksharing
20 discounts.

21 (4) Explain the advantages of extending the ECPR approach to other intra
22 subclass cost differences, such as those based upon shape.

1

Appendix 1

2

CURRICULUM VITAE

John C. Panzar

1
2
3
4
5
6 Business Address: Department of Economics
7 Northwestern University
8 2003 Sheridan Road
9 Evanston, Illinois 60208
10 TEL: (847) 491-8242
11 FAX: (847) 491-7001
12 e-mail: jpanzar@northwestern.edu
13
14 Date of Birth: May 17, 1947
15
16 Citizenship: U.S.
17
18 Education: B.A. cum laude, with distinction in Economics, Carleton College,
19 1969
20 A.M., Economics, Stanford University, 1973
21 Ph.D., Economics, Stanford University, 1975
22 Dissertation: "Regulation, Service Quality, and Market
23 Performance: A Model of Airline Rivalry"
24 Advisors: James N. Rosse (chair), A. Michael Spence, and Bruce
25 M. Owen
26
27 Employment: Professor of Economics, University of Auckland, 2005-
28 Professor of Economics, Northwestern University (1983-present):
29 Louis W. Menk Professor of Economics, 1988-2005
30 Chairperson, Department of Economics, 1988-92
31 Director of Graduate Studies, 1984-88; 1993-98
32 William A. Patterson Distinguished Professor of Transportation
33 and Acting Director, Transportation Center, 2000-01
34
35 Member of Technical Staff, Bell Laboratories, 1974-1983.
36 Head, Economic Analysis Research Department, 1980-1983.
37
38 Visiting positions:
39
40 Department of Economics, University of Pennsylvania: Spring 1983
41 Department of Economics, UC Berkeley: Autumn, 1977
42 Wissenschaftszentrum, Berlin: Summers 1995, 1996.
43 Department of Economics, University of Auckland: 1998-2004.
44
45
46
47

1
2
3 **WRITTEN WORK**
4

5 **I. Journal Publications:**
6

7 "Vindication of a 'Common Mistake' in Welfare Economics," (with R. D. Willig), *Journal of*
8 *Political Economy* 84 6, December 1976, pp. 361-64.

9
10 "A 'Neoclassical' Approach to Peak Load Pricing," *Bell Journal of Economics* 7 2,
11 Autumn 1976, pp. 521-30.

12
13 "Free Entry and the Sustainability of Natural Monopoly," (with R. D. Willig), *Bell Journal of*
14 *Economics* 8 1, Spring 1977, pp. 1-22.

15
16 "Economies of Scale in Multi-Output Production," (with R. D. Willig), *Quarterly Journal of*
17 *Economics* 91 3, August 1977, pp. 481-93.

18
19 "On the Comparative Statics of a Competitive Industry with Inframarginal Firms," (with R.
20 D. Willig), *American Economic Review* 68 3, June 1978, pp. 474-78.

21
22 "Public Utility Pricing under Risk: The Case of Self-Rationing," (with David S. Sibley),
23 *American Economic Review* 68 5, December 1978, pp. 888-95.

24
25 "Theoretical Determinants of the Industrial Demand for Electricity by Time of Day," (with
26 R. D. Willig), *Journal of Econometrics* 9 1, January 1979, pp. 193-207.

27
28 "Equilibrium and Welfare in Unregulated Airline Markets," *American Economic Review*
29 69 2, May 1979, pp. 92-95.

30
31 "Economies of Scale in Multi-Output Production: Reply," (with R. D. Willig), *Quarterly*
32 *Journal of Economics* 93 4, November 1979, pp. 743-44.

33
34 "On the Nonexistence of Pareto Superior Outlay Schedules," (with J. A. Ordoover), *Bell*
35 *Journal of Economics* 11 1, Spring 1980, pp. 311-15.

36
37 "Regulation, Deregulation, and Economic Efficiency: The Case of the CAB," *American*
38 *Economic Review* 70 2, May 1980, pp. 311-15.

39
40 "The Contestability of Airline Markets During the Transition to Deregulation," (with E. E.
41 Bailey), *Journal of Law and Contemporary Problems* 44 1, Winter 1981, pp. 125-45.

42
43 "Economies of Scope," (with R. D. Willig), *American Economic Review* 71 2, May 1981,
44 pp. 268-72.

45
46 "On the Nonlinear Pricing of Inputs," (with J. A. Ordoover), *International Economic Review*
47 23 3, October 1982, pp. 710-26.
48

- 1 "Contestable Markets: An Uprising in the Theory of Industry Structure: Reply," (with W.
2 J. Baumol and R. D. Willig), *American Economic Review* 73 3, June 1983, pp. 491-
3 96.
- 4
- 5 "Regulatory Theory and the U.S. Airline Experience," *Zeitschrift fur gesamte*
6 *Staatswissenschaft* 139 3, October 1983, pp. 490-505.
- 7
- 8 "An Economic Analysis of Alternative Fee Shifting Systems," (with R. R. Braeutigam and
9 B. M. Owen), *Journal of Law and Contemporary Problems* 47 1, Winter 1984, pp.
10 173-85.
- 11
- 12 "Testing for 'Monopoly' Equilibrium," (with J. N. Rosse) *Journal of Industrial Economics*
13 35 4, June 1987, pp. 443-56.
- 14
- 15 "Public Utility Pricing and Investment Under Risk: A Rational Expectations Approach,"
16 (with S. Coate). *Journal of Regulatory Economics*, December 1989, pp. 305-17.
- 17
- 18 "Diversification Incentives Under 'Price-Based and 'Cost-Based' Regulation," (with R. R.
19 Braeutigam) *Rand Journal of Economics*, Autumn, 1989, pp. 373-91.
- 20
- 21 "Two-Part Tariffs for Inputs: The Case of Imperfect Competition," (with D. S. Sibley),
22 *Journal of Public Economics*, 40 1989, pp. 237-49.
- 23
- 24 "Effects of the Change from Rate of Return to Price Cap Regulation," (with Ronald R.
25 Braeutigam), *American Economic Review*, 83 2 May 1993, pp. 191-98.
- 26
- 27 "Network Competition and the Provision of Universal Service," (with Steven S. Wildman),
28 *Industrial and Corporate Change*, 4 December 1995, pp. 711-719.
- 29
- 30 "On Setting Prices and Testing Cross-Subsidy with Accounting Data," (with Michael
31 Bradley and Jeffrey Colvin), *Journal of Regulatory Economics*, 16 1 July 1999, pp. 83-
32 100.
- 33
- 34 "A Methodology for Measuring the Costs of Universal Service," *Information Economics*
35 *and Policy*, 12 3 September, 2000.
- 36
- 37 "When Does an Optional Tariff Not Lead to a Pareto Improvement?" (with H. Greg Sidak)
38 *Journal of Competition Law and Economics*, June 2006.
- 39

40 **II. Books**

41
42 *Regulation, Service Quality, and Market Performance: A Model of Airline Rivalry*,
43 Garland Press, New York, 1979.

44

45 *Contestable Markets and the Theory of Industry Structure*, (with W. J. Baumol and R. D.
46 Willig), Harcourt Brace Jovanovic, San Diego, 1982, Revised Edition, 1987.

47
48

1 **III. Publications in Conference Proceedings and other Volumes**

- 2
- 3 "Some Thoughts on the Market Implications of the Federal Aviation Act of 1975," Printed
4 in *Regulatory Reform and the Federal Aviation Act of 1975*, DOT-TST-76-59.
- 5
- 6 "The Pareto Domination of Usage Insensitive Pricing," in H. S. Dordick, ed., *Proceedings*
7 *of the Sixth Annual Telecommunications Policy Research Conference*, Heath,
8 Lexington, Mass., 1979.
- 9
- 10 "Sustainability, Efficiency, and Vertical Integration," in B. M. Mitchell and Paul Kleindorfer,
11 eds., *Proceedings of an International Symposium on Public Regulation and Public*
12 *Enterprises*, Heath, Lexington, Mass., 1980.
- 13
- 14 "Open Entry and Cross-Subsidy in Regulated Markets: Comment," in Gary Fromm, ed.,
15 *Studies in Public Regulation*, M.I.T. Press, Cambridge, Mass., 1981.
- 16
- 17 "On the Theory of Perfectly Contestable Markets," (with W. J. Baumol and R. D. Willig) in
18 F. W. Matthewson and J. E. Stiglitz, eds., *New Developments in the Theory of Industry*
19 *Structure*, M.I.T. Press, Cambridge, Mass., 1986.
- 20
- 21 "Competition and Efficiency," in John Eatwell, Murray Milgate, and Peter Newman, eds.,
22 *The New Palgrave: A Dictionary of Economics*, Stockton Press, New York, NY, 1988.
- 23
- 24 "Technological Determinants of Firm and Industry Structure," Chapter 1 in Richard
25 Schmalensee and Robert Willig, eds., *Handbook of Industrial Organization*, North
26 Holland, Amsterdam, 1989.
- 27
- 28 "Regulation, Deregulation and Safety: An Economic Analysis," (with Ian Savage), in
29 Leon Moses and Ian Savage, eds., *Transportation Deregulation and Safety*, Oxford
30 University Press, 1989.
- 31
- 32 "Is Postal Service a Natural Monopoly?" in M. Crew and P. Kleindorfer, eds., *Competition*
33 *and Innovation in Postal Services*, Kluwer, 1991.
- 34
- 35 "Competition, Efficiency, and the Vertical Structure of Postal Services," in M. Crew and P.
36 Kleindorfer, eds., *Regulation and the Evolving Nature of Postal and Delivery Services:*
37 *1992 and Beyond*, Kluwer, 1993.
- 38
- 39 "Contestability: Useful Benchmark or Empty Box?" Proceedings of an International
40 Congress on the Value of Competition, Milan, March 26-28, 1992.
- 41
- 42 "The Economics of Mail Delivery," in G. Sidak, ed., *Regulating the Postal Service*
43 American Enterprise Institute, 1994.
- 44
- 45 "Issues in Measuring Incremental Cost in a Multi-Function Enterprise," (with Michael
46 Bradley and Jeff Colvin) in M. Crew and P. Kleindorfer, eds., *Managing Change in the*
47 *Postal and Delivery Industries*, Kluwer, 1997.
- 48

1 "The Way I See It," in M. Gaudry and R. R. Mayes, eds., *Taking Stock of Air*
2 *Liberalization*, Kluwer, 1999.

3
4 "Incentive Regulation in the U.S. Telecommunications Industry." In *1999 Industry*
5 *Economics Conference: Regulation, Competition and Industry Structure*, Conference
6 Proceedings, Australian Productivity Commission 1999.

7
8 "Funding Universal Service Obligations: The Costs of Liberalization," In M. Crew and P.
9 Kleindorfer, eds., *Current Directions in Postal Reform*, Kluwer, 2000.

10
11 "Reconciling Competition, Downstream Access, and Universal Service in Postal Markets,"
12 In M. Crew and P. Kleindorfer, eds., *Delivering on Competition*, Kluwer, 2002.

13 14 **IV. Book Review**

15
16 *Nonlinear Pricing*. By Robert Wilson. Oxford University Press, 1993. *Journal of*
17 *Economic Literature*, XXXIII 4 (September 1995), pp. 1339-41.

18 19 **V. Work in Progress**

20
21 "Vertical Organization of Competitive Industries," (with Federico Ciliberto)

22
23 "Vertically Differentiated Equilibrium with Random Cheating," (with Ian Savage)

24
25 "Combining Liberalization and Unbundling Policies in Postal Markets," (under
26 revision for the *Journal of Regulatory Economics*)

27
28 "PO Box Access: Competition Issues in Two-Sided Postal Markets"

29
30 "Clean Mail and Dirty Mail: Efficient Work-Sharing Discounts with Mail
31 Heterogeneity"

32 33 **PROFESSIONAL ACTIVITIES**

34
35 Memberships: American Economic Association
36 European Association for Research in Industrial Economics
37 (E.A.R.I.E.)
38 Econometric Society
39 International Telecommunications Society
40 AEA Commission on Graduate Education in Economics, 1988-92
41 Board of Directors, Telecommunications Policy Research
42 Conference: 1991-95, Chair 1994-95

43
44 Editorial Boards: *Review of Network Economics*, Co-Editor 2002-
45 *Journal of Regulatory Economics*, Associate Editor 1988-
46 *Journal of Economic Literature* 1983-85
47 *Journal of Information Economics and Policy* 1982-
48

1 Program Committees: 8th Annual Telecommunications Policy Research Conference, 1979
2 Econometric Society, 1980 North American Winter Meetings
3 E.A.R.I.E. Annual Conference 1984
4 Econometric Society, 1985 World Congress
5 American Economic Association, Annual Meetings 1987
6 Econometric Society, 1991 North American Summer Meetings
7 Chair, 20th Annual Telecommunications Policy Research Conference, 1992
8

9 Referee for, inter alia: National Science Foundation, *American Economic Review*,
10 *Econometrica*, *Journal of Political Economy*, *Quarterly Journal of*
11 *Economics*, *Bell Journal of Economics*, *Rand Journal of Economics*,
12 *Journal of Economic Theory*, *International Economic Review*, *Journal*
13 *of Industrial Economics*, *Journal of Economic Literature*.
14

15 **GRANTS, FELLOWSHIPS, and AWARDS**

16

17 National Science Foundation, "Efficient Regulatory Pricing under Competition," SES-
18 8409171, Principal Investigator, 1984-87.
19

20 U.S. Department of Transportation, "Transportation Deregulation and Safety," Co-Principal
21 Investigator, 1987.
22

23 Northwestern University Annenberg Faculty Research Fellowship, 1987.
24

25 Northwestern University Ameritech Faculty Research Fellowship, 1990.
26

27 FAA, Center for Aviation Systems Reliability, Northwestern University Transportation Center,
28 1991-93.
29

30 Ameritech Foundation, "Consortium for Research on Telecommunications Policy," 1994-96.
31

32 Alumni Distinguished Achievement Award, Carleton College, June 1994.
33

34 Andrew Mellon Foundation, "Economics of the Scholarly Publishing Industry." Co-Principal
35 Investigator, 1995-97.
36

CONSULTING EXPERIENCE

1		
2	Corporations:	Ameritech, AT&T, Bell Atlantic, Bell South, British Telecom,
3		Commonwealth Edison, GT&E, Niagara Mohawk Power Company,
4		Nynex, Pacific Telesis, Pitney Bowes, Inc., Southern California Gas,
5		Southwestern Bell, Telephone and Data Systems, Telstra, Union
6		Pacific RR, and U.S. West.
7		
8	Industry Groups	American Newspaper Publishers Association, Electric Power
9		Research Institute.
10		
11	Governmental	Canada Post, Deutsche Post AG, Deutsche Telekom AG, New
12		Zealand Commerce Commission, U. S. Department of
13		Transportation, U. S. Federal Trade Commission, U. S. Postal Rate
14		Commission, U. S. Postal Service, Senate of the Commonwealth of
15		Puerto Rico, OECD, World Bank.
16		
17	Testimony	Congress of the United States, U. S. Department of Justice, Federal
18		Communications Commission, Postal Rate Commission,
19		Pennsylvania Utilities Commission, Interstate Commerce
20		Commission, Surface Transportation Board.
21		