POSTAL RATE AND FEE CHANGES, 2000

Docket No. R2000–1

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS BERNSTEIN TO INTERROGATORIES OF THE GREETING CARD ASSOCIATION (GCA/USPS–T41–49 - 63)

The United States Postal Service hereby provides the responses of witness

Bernstein to the following interrogatories of the Greeting Card Association:

GCA/USPS–T41-49 - 63, filed on March 8, 2000. Interrogatory GCA/USPS-T41–64 was

redirected to the Postal Service.

Each interrogatory is stated verbatim and is followed by the response.

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorneys:

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RESPONSE OF POSTAL SERVICE WITNESS BERNSTEIN
TO INTERROGATORIES OF GCA

GCA/USPS-T41-49.   Please refer to Stiglitz, Economics of the Public Sector, second
edition (1988) page 495. He states that "if elasticity of supply is infinite (a horizontal
supply schedule), the tax should simply be inversely proportional to the compensated
elasticity of demand."

    a.   Please confirm that you are assuming in your equations that the elasticity
        of supply is infinite (supply is perfectly elastic) and thus the reciprocal of
        supply elasticity equals zero.

    b.   Explain what would happen to the Ramsey pricing if the supply curve in
        not perfectly elastic. How does it affect the deadweight loss or the
        consumer surplus?

RESPONSE:

a.   I assume that marginal cost of postal products is constant in the range of

volumes considered in my testimony, which is the same as a perfectly elastic supply

curve. It appears that there are small changes in postal marginal cost that occur with

volume changes, but I ignored these small differences because they do not have a

meaningful effect on the Ramsey results. I can also confirm that the reciprocal of

infinity is zero.

b.   Assume marginal cost declines as volume increases. A Ramsey product with a

lower price than R97-1 Index price, will have a higher volume and therefore a lower

marginal cost, since marginal cost declines as volume increases.   The decline in

marginal cost will lead to an even lower Ramsey price as the Ramsey mark-up will be

applied to a lower marginal cost.

    If marginal costs increase as volume increases, then a Ramsey product with a

lower price will have higher marginal costs. This will cause the Ramsey price to be

somewhat higher than if marginal costs are constant because the mark-up is applied to

a higher marginal cost.

The magnitude of the impact of non-constant marginal costs (non-infinite supply elasticity) depends on the degree to which marginal costs change when volume changes. It appears, based on a review of the before-rates and after-rates marginal costs, that postal marginal costs do not change much with volume, consistent with the simplifying assumption presented in my testimony.

The impact of non-constant marginal costs on consumer surplus depends on the impact of the non-constancy on the Ramsey prices. With respect to the Postal Service, it appears that marginal costs do not vary much with volume and so the impact on the Ramsey prices and consumer surplus will be quite small. Please also see my responses to your interrogatories GCA/USPS-T41-57 and 62.

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GCA/USPS-T41-50.

    a.   Please confirm that you are assuming in your testimony that every mailer has the same utility function. If you do not confirm, please explain the assumptions you rely on regarding variations in mailers' utility functions.

    b.   What happens to the Ramsey pricing if mailers have heterogenous utility functions?

RESPONSE:

a.   I do not assume that each mailer has the same utility assumptions. I only

assume that mailer's utility functions are continuous and strictly quasi-concave.

b.   The Ramsey pricing formula used in my testimony is valid whether or not each

mailer has the same utility function.

GCA/USPS-T41-51.

a. Please confirm that in your calculations you used linear demand curves rather than non-linear ones.

b. What happens to the Ramsey prices and total consumer surplus if you use non-linear demand curves? Is it possible to improve on your Ramsey results?

c. Would your Ramsey results in terms of deadweight loss be improved by using non-linear demand curves? Please explain fully either a "yes" or "no" answer.

RESPONSE:

a. I use non-linear (logarithmic) demand curves estimated by Mr. Thress (USPS-T-7) in the calculations of the Ramsey prices and Ramsey volumes. My calculation of consumer surplus uses a linear approximation of the integral of the demand curve, as I explained in my testimony at pages 94 and 95.

b. As I explained in (a), the Ramsey prices and volumes use the econometrically estimated demand curves. A more accurate measure of the change in consumer surplus would use the mathematic integral of the demand curve instead of the linear approximation. However, I felt that this was unnecessarily complex for the purposes of my testimony. In the R97-1 case, Roger Sherman presented a better linear estimate of the integral of the demand curve (OCA-T-300). Professor Sherman found that the difference between his somewhat more accurate approach and my approach was small, and for that reason I used the simple linear approximation described in my testimony.

c.   Integrating the demand curve would provide a more accurate measure of the

change in consumer surplus resulting from a move to Ramsey prices. Integrating the

demand curve will most likely cause the gains to mailers from Ramsey pricing to be

somewhat smaller than presented my testimony. However, the work of Professor

Sherman, cited in (b), suggests that the difference is small.

GCA/USPS-T41-52.   Refer to Stiglitz (1988), page 495. He states that "In his analysis, Ramsey assumed that individuals are identical."

      a.   Are you assuming that all mailers' demand curves are identical for a class of mail?

      b.   What would happen to the Ramsey prices and the total consumer surplus if this assumption is dropped?

RESPONSE:

a and b.   I do not assume that all mailers' demand curves are identical. My analysis is based on the total demand for a mail product. By definition, the total demand for a mail product is the sum of the individual mailer demands. The response of mail volume to a change in price (the price-elasticity) represents an aggregation of the various individual mailer responses.   For example, if the price elasticity of demand for product A is -0.5, it means that a 10 percent increase in price causes a 5 percent decline in total volume. This elasticity estimate does not imply that every single mailer responds by decreasing volume by 5 percent, nor is such an assumption necessary, as my calculations are based on the change in total volume in response to a change in price.

The Ramsey pricing formula and the calculation of changes in consumer surplus are valid even if all mailers' demand curves are not identical.

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GCA/USPS-T41-53   Refer to Stiglitz (1988), page 113. He states that "A
compensated demand curve gives the demand for a commodity under the assumption
that as its price rises, the individual is given sufficient additional income that his level of
utility remains unchanged. If when the individual is given more income (compensated
for the price increase), his demand for the commodity is unchanged, then the
compensated and ordinary demand curves will exactly coincide." On page 261, Stiglitz
further states that if an individual's demand does depend on income, compensated and
ordinary demand curves "differ as a result of the "income effect" associated with taking
away or giving income as compensation." Finally, at page 449, footnote 7, Stiglitz
states that "In measuring the deadweight loss in an economy . . . we use the elasticity
of the compensated market demand curve. The number can be estimated through
statistical techniques."

a.   In your maximization of consumer surplus or minimization of deadweight
        loss associated with a change in prices to Ramsey prices, did you use
        compensated demand curves?

b.   (i) If your answer to part (a) is yes, then did you apply the Hausman
        methodology ("Exact Consumer Surplus and Deadweight Loss," America
        Economic Review. Vol. 11, 1981, page 662-76) or another methodology to
        estimate elasticity of compensated demand? (ii) Please identify the
        methodology, if any, you used.

c.   (1) If your answer to part (a) and/or (b) (i) is "no", how reliable are the
        Ramsey prices you obtained in your testimony? (ii) What condition(s) may
        have to prevail in the postal market so that you could make the
        assumption that either the compensated demand curve and ordinary
        demand curves coincide or the effect on Ramsey prices is inconsequential
        if you use one demand curve rather than the other?

RESPONSE:

a and b.   I used the uncompensated demand curves estimated by Mr. Thress (USPS-

T-7) and Dr. Musgrave (USPS-T-8).

c.   The difference between the compensated and uncompensated demand curves for

postal products is trivial. The income compensation discussed in your question

involves taking account of the impact of postal prices on the overall cost of living

(consumer's real income). The Postal Service accounts for less than one percent of

GDP, and changes in postal prices have a tiny impact on the overall cost of living,

meaning that there is virtually no difference between the compensated and

uncompensated demand curves for postal products.

GCA/USPS-T41-54   Please confirm that optimal Ramsey pricing, like commodity taxation, entails that marginal excess burden per marginal dollar raised be the same for all products?

RESPONSE:

Confirmed. However, the Ramsey pricing of postal products is not a tax policy.

It is a multi-product pricing policy as described by Baumol and Bradford in their 1970

article, "Optimal Departures from Marginal Cost Pricing," *American Economic Review*,

Volume 60, June 1970.

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GCA/USPS-T41-55   Please refer to Stiglitz (1988) pp. 454-55. He derives the deadweight loss as a function of the square of the change in prices, a non-linearity. On page 495, he states that the prices (taxes) should be set . . . "so that excess burden increases as the revenue raised increases, but also so that each increment in revenue increases the excess burden more. This follows the fact that the deadweight loss increases with the square of the tax rate."

   a.   In your formulation of Ramsey pricing, have you have taken account of the non-linearity in deadweight loss or consumer surplus gain and price change.

   b.   If your answer is no, please then explain your answer fully, stating your reasons for considering your model superior.

RESPONSE:

a and b.   The Ramsey pricing formula presented in my testimony takes account of

the non-linearity discussed in your question.

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GCA/USPS-T41-56 Please refer to the accompanying table, which reproduces Table 13 in your testimony in R2000-1 and Table 13 in your testimony in R97-1 (R97-1, USPS -T-31). Comparing the gains and losses In consumer surplus for each corresponding mail type we observe several shifts. For example, for Standard A Regular we observe a shift from a loss of consumer surplus of $2,278.9 million in R97-1 to a gain of $616.6 million in R2000-1.

Please confirm from the table in your R2000-1 testimony that there are _five_ such shifts where your conclusions about a gain from or a loss in consumer surplus in a mail category from Ramsey pricing are diametrically opposed to the conclusions you reached in R97-1.

a.   Please explain the reasons for such a shift.

b.   Would you consider it necessary for a regulatory commission, before it adopted Ramsey pricing, to have confidence that, under Ramsey pricing: (i) it knew -- on at least a qualitative basis -- where, as among customer classes, the resulting welfare gains and losses would not be subject to shifts between one rate case and the next, such as those cited above? If your answer is not an unqualified "yes," please explain fully.

RESPONSE:

a.   Of the five cases in which the sign of the change in consumer surplus is different in R2000-1 than it was in R97-1, one is due to a change in the estimated elasticity, one is due to the rule that ties nonprofit mark-ups to regular mark-ups, one represents a changes from a small negative to a small positive, and two represent changes due to differences in the non-Ramsey mark-ups, not the Ramsey mark-ups.

Specifically, in the case of Standard A Regular mail, the R2000-1 estimated elasticity is higher than the R97-1 estimated elasticity. This causes the R2000-1 Ramsey mark-up of Standard A Regular mail (35.2%) to be lower than in R97-1 mark-up (78.6 percent), explaining the change in the sign of the change in consumer surplus for this subclass.

Standard A Nonprofit mail price is affected by the Standard A Regular mail price
due to the requirement that nonprofit mark-ups equal one-half the mark-up of the
corresponding commercial subclass.

In the case of Standard B Bound Printed Matter, it seems to me that in both
R2000-1 and R97-1, the change in consumer surplus is relatively small, indicating that
the current mark-up of bound printed matter is very close to its Ramsey mark-up. In
R97-1, the Ramsey mark-up was 38.2 percent; in R2000-1 it is 36.7 percent, which
might explain why the consumer surplus change went from slightly negative to slightly
positive.

The change in the sign of the consumer surplus of Certified Mail is due to a
change in the non-Ramsey pricing of this mail product. The Ramsey R2000-1 mark-up
of certified mail (57.3 percent) is very close to the Ramsey R97-1 mark-up (53.5
percent). On the other hand, the R97-1 Index mark-up in R2000-1 is 23.1 percent as
compared to 93.9 percent in R97-1. The same logic applies for Money Orders, where
the change in the sign of the consumer surplus is due to differences in the non-Ramsey
price to which the Ramsey price is compared. The R97-1 and R2000-1 Ramsey mark-
ups for money orders are 34.3 percent and 32.4 percent, respectively.

b.   I think the Postal Rate Commission and the Postal Service should be aware of
how Ramsey pricing would affect the changes in consumer surplus before adopting any
set of prices. The main purpose of my testimony is to provide exactly that kind of
information.

However, I see no merit to the view that gains and losses cannot shift from one
rate case to another. To argue that such shifts cannot occur is to argue that there can

never be a change in relative rate relationships between the many postal products.

Since demand and cost conditions are subject to change over time, it seems only

logical that rate relations also be subject to change.

Comparision of the Changes in the Consumer Surplus from Ramsey Pricing
Between R2000-1 and R97-1

Mail Product	testimony R2000-1 Change in Consumer Surplus (millions)	R97-1 testimony Change in Consumer Surplus (millions)	Change in the Sign of the Consumer Surplus
First-Class LFIPPs	($2,611.1)	($606.9)	
First-Class Cards	$170.3	$124.1	
Priority Mail	$2,025.3	$2,433.7	
Express Mail	$132.1	$173.1	
Periodicals In-County	($36.3)	($33.4)	
Periodicals Nonprofit	($149.4)	($146.4)	
Periodicals Classroom	($5.5)	($3.9)	
Periodicals Regular	($1,758.6)	($1,396.2)	
Standard Single Piece	N/A	($21.8)	
Standard A Regular	$616.6	($2,278.9)	*******
Standard A ECR	$3,075.5	$3,030.8	
Standard A Nonprofit	$107.4	($248.6)	*******
Standard A Nonprofit ECR	$106.0	$99.5	
Standard B Parcel Post	($32.7)	($99.3)	
Standard B Bound Printed Matter	($8.6)	$21.7	*******
Standard B Special Rate	($133.9)	($86.0)	
Standard B Library	($9.8)	($7.7)	
Registered	($46.5)	($1.5)	
Insured	($69.4)	($25.2)	
Certified	($147.1)	$143.0	*******
COD	($15.7)	($17.9)	
Return Receipts	$32.0	N/A	
Money Orders	$31.3	($29.2)	*******
Total Change in Consumer Surplus	$1,271.9	$1,023.0	

Source: Peter Bernstein R2000-1 T41 and R97-1 T31

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GCA/USPS-T41-57   Please explain in calculating Ramsey pricing, why you did
not use the test year after-rate cost structure in order to be consistent with the proposed
rates? Are you assuming that the TY cost structure remains the same before and after
your Ramsey rates?

RESPONSE:

As I explained in GCA/USPS-T41-49, I assumed that after-rates marginal costs

(volume variable costs per piece) were identical to the before-rates marginal costs.

This was merely a simplifying assumption based on the fact that there is only a tiny

difference between the before-rates and after-rates marginal costs.

RESPONSE OF POSTAL SERVICE WITNESS BERNSTEIN
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GCA/USPS-T41-58   Please refer to page 15, line 7 of your testimony. You state that "Volume variable cost per piece is essentially equal to marginal cost . . . " What do you mean by "essentially."?

RESPONSE:

By essentially, I mean that any difference between volume variable cost per piece and marginal cost is unlikely to have a meaningful impact on the results of my work.

GCA/USPS-T41-59   Please refer to page 15, line 15. You state "A price above marginal cost imposes a burden on consumers."

    a.   Is this statement in general true whether we are in short-run or a long-run state?

    b.   Are you assuming your Ramsey pricing is based on the long-run state?

    c.   Are you assuming that all cost structures and elasticities are for a long-run state?

RESPONSE:

a.   Yes.

b and c.   My Ramsey work uses the long-run estimated price elasticities and the cost and volume conditions expected to prevail in the Test Year. I make no particular assumption about the short-run or long-run nature of costs. I use the long-run estimated price elasticities because they measure the full response of mailers to changes in postal rates, which is the relevant measure for the calculation of Ramsey prices.

GCA/USPS-T41-60   Please refer to page 25, line 15 of your testimony. You state that "For example, a positive cross-price elasticity exists between First-Class cards and First-Class letters because an increase in the price of letters [. . .] would cause some mailers to substitute cards for letters."

    a.   Please confirm that 2003-2008 volume estimates in LR-I-179 show a divergence of First Class letter mail to electronic substitutes.

    b.   Would such as opportunity for mailers to substitute electronic mail or instant messaging for First-Class letters also result in the existence of a cross-price elasticity? If your answer is not an unqualified "yes," please explain fully.

    c.   On the assumption that you have answered "yes" to part b. would a decline in the price of electronic mail or instant messaging, other things being equal, lead to a decline in the volume of First-Class letters?

    d.   On the assumption that you have answered "yes" to part c., would the long-run elasticities for First-Class mail reported in your LR-H-165 be too low? Please explain fully any negative answer.

    e.   In principle, shouldn't high risk factors and high probability factors such as those found in LR-I-179 be incorporated into long-run elasticity estimates even-if the risk is a few years into the future?

RESPONSE:

a.   Confirmed.

b.   Not necessarily. Products can be substitutes without being price-substitutes. It may be the case that any substitution between First-Class letters and electronic alternatives is based on service characteristics and not price.

c.   If First-Class letters and electronic alternatives are price substitutes, then it would follow that a decline in the price of electronic mail or instant messaging would lead to a

decline in the volume of First-Class letters, although the magnitude of the decline would

depend on the level of the cross-price elasticity. However, my understanding of the

volume forecasts presented in LR-I-179 is that there is no cross-elasticity between First-

Class letters and electronic alternatives and, for that matter, no explicit adjustment to

the First-Class letter own-price elasticity to take account of the diversion of letter mail to

electronic alternatives.

d. No. First of all, the elasticities I use in my testimony are presented in LR-I-156.

The elasticities presented in LR-I-156 are the same elasticities used in the volume

forecasts presented by Drs. Tolley and Musgrave for the GFY 2001 Test Year. LR-I-

179 considers volume impacts in 2003 and beyond, which is outside the scope of the

current case.

e. Long-run elasticities are defined as the volume response that occurs after taking

full account of the lagged response of mailers to changes in real postal rates. The

lagged response can take up to one year, so that the full long-run impact of postal rate

changes is realized one year after the rate change. Consideration of years in the

future, namely 2003 to 2008, should not be incorporated into the elasticity estimates

used to make forecasts for 2001 and 2002.

GCA/USPS-T41-61   Please refer to page 23, line 18. You state "By the methodology of postal service costing, product volume variable cost is equal to product marginal cost multiplied by product volume. Therefore, marginal cost is equal to volume variable cost per piece, obtained by dividing product volume variable cost by product volume."

    a.   Is this an economic approach or an accounting approach to costing?

    b.   In your opinion, does it make a difference for Ramsey prices to be based on an accounting approach as opposed to an economic approach?

    c.   Are you assuming either (i) that marginal cost is constant over all ranges of output or (ii) that the Postal Service is at the minimum point of its long-run average variable cost?

RESPONSE:

a.   It is my understanding that it is both an economic and accounting approach to costing.

b.   Ramsey prices, and for that matter any set of prices, should be based on the most accurate estimate of marginal costs, whether that approach is accounting, economic, or both.

c.   I am assuming that marginal cost is constant over the ranges of output considered in my testimony. I am not assuming that the Postal Service is at the minimum point of its long-run average cost.

RESPONSE OF POSTAL SERVICE WITNESS BERNSTEIN
TO INTERROGATORIES OF GCA

GCA/USPS-T41-62   Please refer to page 53, lines 12-13, of your testimony. On
what basis do you assume that in the range of volumes being considered, volume
variable cost per piece and thus, marginal cost is constant?

RESPONSE:

This assumption is based on my examination of the before-rates and after-rates

volume variable costs per piece of the postal products considered in my testimony. My

review shows virtually no difference in costs despite differences in volume, indicating

that constant marginal costs is a reasonable simplifying assumption.

RESPONSE OF POSTAL SERVICE WITNESS BERNSTEIN
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GCA/USPS-T41-63   Please refer to page 53 lines 13-16, of your testimony. You state "In fact, Postal Service analysis shows that the marginal costs at the after-rates volumes are slightly different. However, for simplicity and consistency this testimony uses before-rates marginal costs throughout the analysis." Please provide Ramsey prices for the after-rates.
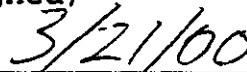
RESPONSE:

I do not have the data to answer this question. To perform this exercise, the

Postal Service would have to estimate costs at the Ramsey volumes. At that point,

Ramsey prices would have to be recalculated based on the new cost estimates, which

would in turn create new volume estimates, requiring the Postal Service to perform

another cost iteration. Given that there appears so little difference in the marginal costs

between the after-rates and before-rates volumes, I decided not to burden the Postal

Service with these additional requests.

DECLARATION

I, Peter Bernstein, declare under penalty of perjury that the foregoing answers are true and correct to the best of my knowledge, information and belief.

_____
(Signed)

_____
3/21/00
(Date)

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon all participants of record in this proceeding in accordance with section 12 of the Rules of Practice.

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March 22, 2000