

BEFORE THE
POSTAL RATE COMMISSION
WASHINGTON, D.C. 20268-0001

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POSTAL RATE COMMISSION
OFFICE OF THE SECRETARY

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-T41-34-36, 38-39, 41-48)

The United States Postal Service hereby provides the responses of witness Bernstein to the following interrogatories of the Greeting Card Association: GCA/USPS-T41-34-36, 38-39, 41-48, filed on March 7, 2000. Interrogatories GCA/USPS-T41-37, 40 were 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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March 21, 2000

RESPONSE OF POSTAL SERVICE WITNESS BERNSTEIN
TO INTERROGATORIES OF GCA

GCA/USPS-T41-34

- a. Please confirm that the "Ramsey pricing" principle derives from Frank Ramsey's pioneering article, "A Contribution to the Theory of Taxation," Economic Journal, 37: 47-61.
- b. Please confirm that Ramsey's principle concerned how a national tax authority, a monopolistic entity, could maximize tax revenues across various taxpayers when imposing small changes in tax by, in essence, using what has come to be called the inverse elasticity rule. If you do not so confirm, please provide your understanding of the principle set forth in the Ramsey article.
- c. As applied to the Postal Service, please confirm that Ramsey pricing is a revenue maximization scheme.

RESPONSE:

- a. Confirmed.
- b. Not confirmed. The Ramsey article is not focused on tax revenue maximization. As Ramsey states, "The problem I proposed to tackle is this: a given revenue is to be raised by proportionate taxes on some or all uses of income, the taxes on different uses being possibly at different rates; how should these rates be adjusted in order that the decrement of utility may be a minimum?"
- c. Not confirmed.

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GCA/USPS-T41-35

- a. Please confirm that wide, unpredictable swings in postal pricing are generally undesirable in the eyes of the Postal Service.
- b. Please confirm the following percentage changes in USPS own-price elasticity estimates for various mail categories between R97-1 and R2000-1:

Percentage Change in Own-Price Elasticities

Category	R97-1	R2000-1	% Change
First Class S.P.	-0.189	-0.262	38.6%
Standard A Regular	-0.382	-0.570	49.2%
Standard A ECR	-0.598	-0.808	35.1%

-
-
- c. Please confirm that wide swings in elasticity estimates would lead to wide swings in postal prices if Ramsey pricing were adopted.

RESPONSE:

- a. I do not claim to speak for the Postal Service, but it is my impression that wide swings in postal prices (whether predictable or not) are generally viewed as being undesirable.
- b. I can confirm that mathematical calculations presented in your question. However, for the record, changes in the First-Class single-piece own-price elasticity are misleading because the demand specification for that category includes an important role for the discount elasticity. Furthermore, my Ramsey price calculations use the subclass own-price elasticity. In R97-1, the First-Class letter subclass own-price elasticity was -0.232. In R2000-1, the subclass elasticity is -0.229, a difference of about one percent.

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- c. "Wide swings" is a vague term. If you are referring to the changes in elasticities that occurred between R97-1 and R2000-1, the record shows that these do not lead to wide swings in postal prices. My Table 14D shows a comparison of the R97-1 and R2000-1 Ramsey prices and my discussion at page 105, lines 7 to 18, emphasizes that the percentage change in the Ramsey prices closely corresponds to the percentage change in marginal costs and that the correlation between these two variables is about 0.9, indicating that changes in costs - not changes in demand elasticities - are the predominant factor driving changes in the Ramsey prices.

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GCA/USPS-T41-36

- a. Please confirm that economic welfare is measured by continuous utility functions such as that found at page 50 in Microeconomic Theory, (1995), a textbook authored by Andreu Mas-Colell, Michael Whinston and Jerry Green.
- b. Please confirm that your Summary Table 3 on page 13, "Changes in Consumer Surplus," does not show that economic welfare will increase (or even stay the same) as a result of moving from R97-1 Index prices to Ramsey prices.
- c. Please confirm that your estimated increase in consumer surplus in Table 3 from reliance on Ramsey pricing is:
 - i. less than 2.2 percent of postal revenues in FY1997.
 - ii. less than the Postal Service's 2.5 percent contingency proposed in R2000-1.
- d. Please confirm that even if your estimated positive change in consumer surplus from reliance on Ramsey pricing is correct, economic welfare as defined in a. above could be substantially lower under the Ramsey prices than under R97-1 Index prices.

RESPONSE:

- a. Confirmed.
- b. Not confirmed.
- c. Confirmed.
- d. Not confirmed.

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GCA/USPS-T41-38

- a. Please confirm that the Ramsey pricing exercise you perform in your testimony is static pricing, as that term is commonly understood in microeconomic theory.
- b. In arriving at your conclusion about the superiority of Ramsey pricing for postal services, did you consider any of the dynamic factors that render Ramsey pricing inappropriate, such as the GAO report on electronic diversion.
- c. Have you examined what the impact of your Ramsey prices are for the investment planning decisions of the Postal Service, or other dynamic considerations? If so, please explain fully what your examination consisted of. If not, please explain why not.

RESPONSE:

- a. Confirmed.
- b. I did not consider the GAO report on electronic diversion in my testimony but do not believe that such a report renders Ramsey pricing inappropriate. In fact, it would appear that in a changing market environment posited by the GAO, the information provided in a Ramsey pricing analysis becomes even more important. This is consistent with the point of the GAO in its 1992 report, "U.S. Postal Service: Pricing Postal Services in a Competitive Environment," which supported the use of demand information in postal pricing.
- c. I did not consider the impact of Ramsey pricing on the investment planning decisions of the Postal Service because it was beyond the scope of my testimony.

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GCA/USPS-T41-39.

- a. Please confirm that in a market environment of rapid technological change generally, Ramsey pricing can have serious adverse consequences for investment planning, for example premature or excessive investment, or misallocated investment.
- b. Please confirm that the Postal Service faces rapid technological change in at least two of its major market segments: (1) on the positive side, the emergence of e-mail commerce which creates an opportunity for increased package business; (2) on the negative side, the emergence of electronic diversion of letter mail including bills, bill payments, advertising, and the like, which creates conditions for disinvestment in personnel and equipment.

RESPONSE:

a and b. Rapid technological change can have adverse consequences for investment planning, but I don't see how this is at all related to Ramsey pricing. Ramsey pricing is merely a way of formally capturing the information about mailer response to price changes, information that exists whether or not Ramsey prices are used. In making investment planning decisions, the Postal Service can ignore demand information or use demand information. It would seem that if anything, using demand information would help the Postal Service make correct investment decisions. For example, with respect to E-commerce, one should realize that the Postal Service's ability to capture the increased package business is particularly sensitive to the rates charged for Priority Mail and parcel post, as reflected in these products relatively high own-price elasticities of demand. With respect to electronic diversion of letter mail, which has been going on for some time now, it does not appear that diversion is being driven by changes in postal rates as evidenced by the relatively low price elasticity of demand for First-Class letters. In both cases, I think investment decisions should take account of these

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relations between prices and future volumes, and demand elasticities provide a formal way of analyzing this relationship.

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GCA/USPS-T41-41. A point made about Ramsey pricing by Dennis Carlton in Modern Industrial Organization (1990), page 798 is as follows: "The solution is similar to optimal monopoly price discrimination."

- a. Do you agree or disagree with this statement with respect to your calculation of Ramsey prices?
- b. If you agree, please explain why the regulatory process in postal rate making should support any form of monopoly pricing, as opposed to replicating the price structure of a competitive market.
- c. If you disagree, please explain why your Ramsey prices are not a form of monopolistic price discrimination.

RESPONSE:

a through c. Ramsey pricing is similar to optimal monopoly price discrimination in that both use demand elasticity information to set prices. The key difference is that optimal monopoly price discrimination uses demand information to extract as much consumer surplus as possible, while Ramsey pricing uses demand information to extract as little consumer surplus as possible. Postal rate-making cannot replicate the price structure of competitive market because under competition, price will be equal to marginal cost. Postal rates must be set above marginal cost, and in that sense, any break-even postal rate schedule (Ramsey or otherwise) is similar to monopoly pricing.

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GCA/USPS-T41-42.

- a. Please confirm that Ramsey pricing would never be advocated for a multi-product competitive firm in competitive product markets.
- b. Please confirm that it is a goal of postal pricing sine qua non to reproduce in a regulatory setting a set of prices for postal services that would exist as if each price were set in a fully competitive market.

RESPONSE:

a. Not confirmed. To the extent that a multi-product competitive firm can set price above marginal cost, the mark-ups of product prices over product marginal costs almost certainly reflect differences in demand elasticities. Consider a grocery store - a multi-product firm with a certain amount of overhead, similar to institutional costs, that cannot be attributed to individual products. It seems highly unlikely that the grocery store will set the exact same mark-up for every product. Instead, less price elastic products will be assigned a higher than average mark-up and more price elastic products will be assigned a lower than average mark-up, consistent with the Ramsey pricing principles set forth in my testimony.

b. In a fully competitive market, price is equal to marginal cost. The Postal Service cannot set price equal to marginal cost and also satisfy its break-even requirement. Therefore, whether fully competitive pricing is a goal, it is by the very nature of the problem an impossible goal to achieve. Therefore, some other pricing strategy must be employed. Ramsey pricing carries with it important features of competitive pricing. First both competitive pricing and Ramsey pricing are based on marginal costs. Second, competitive pricing maximizes total consumer surplus while Ramsey pricing maximizes total consumer surplus subject to the break-even constraint. Third, as

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explained in my answer to (a), Ramsey pricing is similar to competitive pricing for a multi-product firm that can set price above marginal cost.

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GCA/USPS-T41-43. The mail processing business now has a number of competitors indicating the absence of any remaining economies of scale for the Postal Service in this area. Assume mail processing was a separately priced postal service for each category of mail. Please confirm that Ramsey pricing would not make sense.

RESPONSE: Not confirmed. First, the presence of competitors does not indicate that there are no remaining economies of scale for the Postal Service. Second, economics of scale are not a necessary element of Ramsey pricing. Third, Ramsey pricing of separate postal activities, such as mail processing, would make sense because it would lead to an increase in total consumer surplus while still satisfying the Postal Service's break-even requirement. Please see my R97-1 testimony for a discussion of the benefits of applying Ramsey pricing principles to the separate pricing of postal worksharing activities.

As a side note, if mail processing were a perfectly competitive industry and Postal Service costs were identical to competitor costs, then the Ramsey price of mail processing would be identical to the competitive price, i.e., marginal cost.

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GCA/USPS-T41-44.

- a. Due to the amount of purchased transportation used by the Postal Service, is it not reasonable to conclude that there are no local economies for the USPS in this postal service as such.
- b. Assume mail transportation was a separately priced postal service for each category of mail. Please confirm in the circumstances indicated in a. above (whether or not you agree with a.), Ramsey pricing would not make sense.

RESPONSE:

a. I am not an expert on postal costing, but the information provided in your question does not lead me to conclude that there are no local economies for the USPS in the transportation area.

b. Not confirmed. For example, if the elasticity of demand for long distance mail transportation were different than for short distance mail transportation, mail transportation rates could vary according to the Ramsey pricing principles.

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GCA/USPS-T41-45

- a. In contrast to Ramsey pricing, have you or the Postal Service considered any form of non-linear pricing? If so, please provide all such studies or citations to same if publicly available.
- b. Please confirm that non-linear pricing can dominate Ramsey pricing efficiency in general, and by way of example, if bulk purchases of postage stamps for Christmas cards were priced in a non-linear way.

RESPONSE:

- a. In preparing my Ramsey pricing testimony, I did not consider any form of non-linear pricing. I do not know if the Postal Service considered this issue, though it seems to me that the current rate schedule includes some forms of non-linear pricing as reflected in the presence of piece/pound rates and bulk discounts.
- b. If by "dominate," you mean that non-linear pricing can yield an even higher level of total consumer surplus than Ramsey pricing, while still satisfying the postal break-even requirement, then I would confirm your statement. Non-linear pricing can dominate Ramsey pricing if it takes even greater advantage of differences in marginal costs and demand elasticities.

I have not analyzed the efficiency implications of your specific example, bulk purchases of postage for Christmas cards.

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GCA/USPS-T41-46. Do the Postal Service's rate proposals in R2000-1 represent a movement even further toward pure Ramsey prices:

- a. relative to your R97-1 Index prices
- b. relative to the rates adopted in R97-1 and implemented in 1999?

RESPONSE:

a and b. First, I did not present pure Ramsey prices in my testimony. Second, I am not sure what you mean by "even further toward," since it suggests a specific alternative from which postal prices have moved away.

The table accompanying this response compares the Ramsey and R97-1 Index rates presented in my testimony with the Postal Service's proposed after-rates prices. For each subclass, there is an indication as to whether the Postal Service proposed rates are closer to the Ramsey rates or the R97-1 Index rates. As the table shows, of the 22 products considered in my testimony, the Postal Service's proposed rates are closer to the R97-1 Index prices for 13 products, closer to the Ramsey prices for six products, and closer to the before-rates prices for three products.

TABLE ACCOMPANYING WITNESS BERNSTEIN'S RESPONSE TO GCA/USPS-T41-46

Comparison of USPS Proposed After-Rates Prices with Ramsey, R97-1 Index, and Before-Rates Prices

Mail Product	BR Price	USPS AR	Ramsey	R97-1 Index	USPS vs. Ramsey % Difference	USPS vs. R97-1 Index % Difference	USPS vs. Before-Rates % Difference
First-Class LFIPPs	0.3437	0.3560	0.3704	0.3442	-3.9%	3.4%	3.6%
First-Class Cards	0.1841	0.1939	0.1794	0.2111	8.1%	-8.2%	5.4%
Priority Mail	3.8550	4.4358	3.0037	4.4382	47.7%	-0.1%	15.1%
Express Mail	14.0402	14.5760	10.0346	11.2503	45.3%	29.6%	3.8%
Periodicals In-County	0.0854	0.0928	0.1414	0.0979	-34.4%	-5.3%	8.6%
Periodicals Nonprofit	0.1614	0.1804	0.2650	0.1881	-31.9%	-4.1%	11.8%
Periodicals Classroom	0.2293	0.2610	0.3798	0.2692	-31.3%	-3.0%	13.8%
Periodicals Regular	0.2409	0.2735	0.5482	0.2927	-50.1%	-6.5%	13.5%
Standard A Regular	0.2018	0.2209	0.2251	0.2407	-1.9%	-8.2%	9.5%
Standard A ECR	0.1494	0.1568	0.0864	0.1594	81.5%	-1.6%	5.0%
Standard A Nonprofit	0.1231	0.1302	0.1355	0.1450	-3.9%	-10.2%	5.8%
Standard A Nonprofit ECR	0.0763	0.0881	0.0785	0.1163	12.2%	-24.2%	15.5%
Standard B Parcel Post	3.1054	3.2290	3.2448	3.1547	-0.5%	2.4%	4.0%
Standard B Bound Printed	0.9101	1.0713	1.2449	1.2271	-13.9%	-12.7%	17.7%
Standard B Special Rate	1.5685	1.6443	2.2677	1.5895	-27.5%	3.4%	4.8%
Standard B Library	1.7161	1.7918	2.1246	1.7593	-15.7%	1.8%	4.4%
Registered	7.6346	9.4645	13.5165	9.1146	-30.0%	3.8%	24.0%
Insured	1.8760	2.2903	4.1719	2.4969	-45.1%	-8.3%	22.1%
Certified	1.4398	2.1463	2.6317	2.0606	-18.4%	4.2%	49.1%
COD	5.1458	5.6458	9.3407	4.7301	-39.6%	19.4%	9.7%
Return Receipts	1.2566	1.5118	1.7021	1.8502	-11.2%	-18.3%	20.3%
Money Orders	0.8088	0.9096	0.8995	1.0436	1.1%	-12.8%	12.5%

Bold indicates which price (Ramsey, R97-1 Index, or Before-Rates) is closest to the Postal Service's proposed After-Rates price

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GCA/USPS-T41-47. Please confirm that a welfare goal which simply aggregates an unweighted sum of producer and consumer surplus is:

- a. essentially an arbitrary goal.
- b. not a goal required or encouraged by the Postal Reorganization Act.

RESPONSE:

- a. Not confirmed. First, I do not consider producer surplus in my testimony. I examine aggregate consumer surplus subject to a break-even constraint. To that end, I would say that anything but an unweighted sum (e.g., some kind of weighted sum) of the changes in consumer surpluses across different mail categories is an arbitrary goal.
- b. It seems to me that economic efficiency is a goal encouraged by the Postal Reorganization Act.

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GCA/USPS-T41-48

- a. Please confirm that second best solutions, including Ramsey pricing, are quite sensitive to the assumptions being made.
- b. Please confirm that the following assumptions are among those necessary for the Ramsey inverse elasticity rule of demand pricing to hold true:
 1. economies of scale or scope such that marginal cost pricing would not cover all costs.
 2. all cross price elasticities of demand are zero or
 - 2.a. demand interdependencies that require direct and cross price elasticities to act in a multiplicative fashion
 3. the rest of the economic is perfectly competitive
 4. no production or consumption externalities
 5. Equal welfare weights between producer surplus (profit) and consumer surplus (utility).
 6. no nonmarket clearing, no taxation or government regulation and no public sector.
 7. no income effects.
 8. monopoly under no threat of entry
 9. constant factor prices
 10. constant marginal costs
 11. no intermediate good production by the firm'
 12. no two part tariffs, or other forms of taxation to raise revenue
 13. costs can be measured without institutional constraint
 14. Information is accurate and reasonably priced

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15. Income distribution is optimal
 16. Dynamic efficiency is optimal
- c. If you believe any of the above assumptions can be assumed to be true for Ramsey pricing in the institutional context of the Postal Service, please list by number and defend your answer fully.

RESPONSE:

a. Second-best models, like Ramsey pricing, are versions of the first-best model of perfect competition. All of these models make use of a number of assumptions which greatly simplify their exposition. The strength of the work is not whether the circumstances of the real world exactly replicate those of the textbook, but rather the value of the predictions and information of the model.

Few if any of the assumptions of perfect competition hold exactly in the real world: industries are rarely characterized by a large number of small firms, producing a homogenous product using identical technologies, free of any constraints, taxes, transactions or information costs. Yet, the perfect competition model serves as the fundamental tool for the analysis of market behavior because the important conclusions of the model are largely unaffected by differences between theoretical assumption and real world conditions.

With respect to your question then, I think it is necessary to explain that my testimony is designed to show the importance of demand factors in pricing. It shows this importance by examining the impact of prices on postal net revenues and mailer consumer surplus. Therefore, with respect to (a), I do not believe that the value of the Ramsey pricing model as it used in my testimony is particularly sensitive to any of the assumptions presented in part b of your question. This is true either because the

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assumption is not necessary for a Ramsey price model or because relaxation of the assumption to match real world conditions does not have a meaningful impact on the calculation of consumer surplus.

1. economies of scale or scope are not necessary for a Ramsey model. In any event, it is well understood that marginal cost pricing will not cover all the costs of the Postal Service.
2. A Ramsey pricing model can be developed under any demand conditions. However, for the record, the conditions stated in (2.a) hold for the mail products I consider, based on the work of Thomas Thress (USPS-T-7).
3. The degree of competition in markets unrelated to the market for postal services will have a trivial impact on the consumer surplus calculations presented in my testimony. My testimony addresses competition between the Postal Service and private competitors.
4. A Ramsey pricing model can be modified to take account of externalities. In any event, whatever externalities might exist would seem to be of minor importance.
5. I do not address producer surplus in my testimony. Equal weight among different consumers can be assumed to be true.

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6. While these conditions do not hold, I do not think they meaningfully affect the gains to mailers presented in my testimony.
7. Income effects are quite small and will not meaningfully affect the gains to mailers presented in my testimony.
8. This is not a necessary condition of a Ramsey pricing model.
9. This is not a necessary condition of a Ramsey pricing model.
10. This is not a necessary condition of a Ramsey pricing model.
11. This is not a necessary condition of a Ramsey pricing model.
12. Two part tariffs considerations can be included in a Ramsey pricing model. The issue of taxation was addressed in (6) above.
13. I am not sure what this means.
14. I believe these conditions exist.
15. I am not sure what you mean by an optimal distribution of income.

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16. Dynamic considerations are not a necessary condition of a Ramsey pricing model.
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- c. Please see my responses to (a) and (b).

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.

A handwritten signature in cursive script, appearing to read "Peter Bernstein", written above a horizontal line.

(Signed)

A handwritten date "3/20/66" written above a horizontal line.

(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.



Eric P. Koetting

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March 21, 2000