

UNITED STATES OF AMERICA
Before The
POSTAL RATE COMMISSION
WASHINGTON, D.C. 20268-0001

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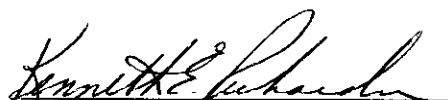
Docket No. R2000-1

ANSWERS OF THE OFFICE OF THE CONSUMER ADVOCATE
TO INTERROGATORIES OF UNITED STATES POSTAL SERVICE
WITNESS: J. EDWARD SMITH (USPS/OCA-T4-8-16)
(June 9, 2000)

The Office of the Consumer Advocate hereby submits the answers of J. Edward Smith to interrogatories of United States Postal Service, dated May 26, 2000. Each interrogatory is stated verbatim and is followed by the response.

Respectfully submitted,

OFFICE OF THE CONSUMER ADVOCATE



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ANSWERS OF OCA WITNESS J. EDWARD SMITH
TO INTERROGATORIES USPS/OCA-T4-8-16

USPS/OCA-T4-8. Apart from those reported in Table 6 of your testimony, did you perform any regression analyses to attempt to quantitatively validate your criticisms of Dr. Bradley's and Dr. Bozzo's methods and/or results, or for any other reason pertaining to your testimony? If so, please provide detailed descriptions of the purpose(s), method(s) and result(s) of your analyses. If not, why not?

RESPONSE TO USPS/OCA-T4-8. Yes. I ran a number of the TSP programs furnished by Dr. Bozzo, and, as expected, obtained identical results. In some cases, I made minor changes in the programs for purposes of experimenting with the application of TSP. Dr. Bozzo has already furnished the output of his programs, and I have no further results.

The Library reference to my testimony reports on a number of other regressions.

Finally, I performed a variety of SAS runs on Dr. Bradley's data as well as a small number of SAS runs on various other data related to Postal Service hours and mail volumes. I did not view these regressions as worthy of reporting or retention.

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USPS/OCA-T4-9. Did you perform any quantitative analysis (including, but not limited to, regression analysis) of the data provided in USPS-LR-I-107 to attempt to quantitatively validate your criticisms of Dr. Bradley's and Dr. Bozzo's methods and/or results, or for any other reason pertaining to your testimony? If so, please provide detailed descriptions of the purpose(s), method(s) and result(s) of your analyses. If not, why not?

RESPONSE TO USPS/OCA-T4-9. I performed a review of the regression equations, but did not perform a quantitative analysis. Quantitative analysis is inapplicable in resolving many of my criticisms:

The database was not adequately examined and verified for accuracy. The MODS database has been shown to be unreliable for these purposes. Additional field checking of the data appears to be necessary. This would be resolved in a data analysis effort with substantial field contact.

Investment and capital data based on the historical data series may be unrepresentative of future operations.

The continued use of the manual ratio is undesirable.

The QICAP variable is defective for application to the analysis.

Capacity utilization may be a cost driver; it is not considered.

The analysis is short term.

Additional explanation and improvement of the underlying theory is needed, particularly as related to operational objectives (i.e., cost minimization, choice of functional forms, homotheticity).

The use of a fixed effects approach is inappropriate.

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There are concerns over the appropriateness of the TPF variable; use of FHP may be more appropriate, for TPF is itself a function of the sorting scheme.

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USPS/OCA-T4-10.

- a. Do you contend that none of the criticisms of Dr. Bradley's and Dr. Bozzo's methods and/or results can be resolved with the data provided in the Docket No. R97-1 and Docket No. R2000-1 proceedings?
- b. If your response to part (a) is affirmative, please enumerate each criticism and provide a detailed explanation of why you believe resolution of the criticism is impossible. If you respond in the affirmative because you believe additional data are required, please state and justify theoretically your beliefs regarding the nature of the additional data that may be needed.
- c. If your response to part (a) is negative, in whole or in part, please enumerate each criticism you believe could potentially be resolved. In each case, please state and justify theoretically your beliefs regarding the methods that might resolve the issue.

RESPONSE TO USPS/OCA-T4-10. (a) Yes, in terms of my criticisms. I am still studying the deficiencies in the studies raised by other witnesses and do not feel sufficiently confident in my understanding of their testimony to answer questions related to their testimony. Other witnesses may best respond to you about their testimony.

(b) Due to the remarkably broad nature of the question, I may inadvertently omit one or more criticisms as related to the data. Accordingly, it may be necessary to provide supplemental criticisms subsequently. Many of the criticisms below do not directly relate to the data, but they do touch on aspects of the data; accordingly, for purposes of comprehensiveness they are supplied:

The database was not adequately examined and verified for accuracy.

The MODS database has been shown to be unreliable for the purposes used. Additional field checking of the data appears to be necessary.

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Investment and capital data based on the historical series may be unrepresentative of future operations.

The continued use of the manual ratio is undesirable.

The QICAP variable is defective for application to the analysis.

Capacity utilization is potentially a cost drive but is not considered.

The analysis is short term.

Additional explanation and improvement of the underlying theory is needed, particularly as related to operational objectives (i.e., cost minimization, choice of functional forms, homotheticity).

The use of a fixed effects approach is inappropriately applied. This is not strictly a data requirement but is provided only for purposes of completeness.

There are concerns over the appropriateness of the TPF variable; a FHP variable coupled with a facility level rather than activity level approach may be more appropriate.

You will find explanations of the above issues in my testimony. I particularly call your attention to questions about the accuracy of the MODS data base, my concern that investment data are not available at the activity level, and concern over the consideration of potentially omitted variables such as capacity utilization. Since the theoretical basis of the study has not been clearly presented, it is difficult to verify specific data items that may or may not be required.

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It should be noted, however, that my testimony has focused on the study presented. Although I have suggested possible improvements, the time frame of an interrogatory response is inadequate for full consideration of data problems and needs. Accordingly, I have advocated the establishment of a working group, which could give careful and considered review to the proper conduct of a study.

(c) Theoretical issues could be addressed without the gathering of additional data. I believe that the best approach would be to convene a working group to review the material in the less adversarial nature of a meeting. I note that the formal interrogatory process is not well suited to the development of the modeling process, and informal data conferences with lawyers objecting to various questions are little better.

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USPS/OCA-T4-11. On page 5 (lines 4-6) of your testimony you define volume variability as "the percentage change in cost that results from a percentage change in volume, holding delivery points and other non-volume factors constant."

- a. Would you therefore disagree with the statement: "growth in delivery points must be considered a part of the growth in volume"? If you would not, please reconcile your answer with the quoted passage from your testimony.
- b. Please explain your understanding of how a statistical estimation technique such as regression "holds constant" a non-volume factor such as delivery points.

RESPONSE TO USPS/OCA-T4-11. (a) There could be a growth in volume with no growth in delivery points. Conversely, conceivably, there could be a growth in delivery points without a change in volume.

(b) In computing the volume variability, Dr. Bozzo has estimated the multivariate econometric model of hours of labor as a function of TPF and other variables; only the estimator associated with the TPF variable is used in computing the variability. Accordingly, in order to be precise, the statement should be "the percentage change in cost that results from a percentage change in volume".

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USPS/OCA-T4-12. Please refer to your testimony at page 47, lines 3-12.

- a. Please confirm that the passage of Dr. Bozzo's testimony you quote at the cited location refers to "cost-pool-level production (or cost) functions." If you do not confirm, please state your understanding of the quoted passage.
- b. Is it your testimony that the "investment programs designed to reduce [mail processing] costs" to which you refer would reduce costs in every cost pool? Please explain your answer.
- c. Can programs to shift mail processing from labor-intensive (manual) cost pools to capital-intensive (automation) cost pools alter the facility-wide (or systemwide) capital-labor ratios without materially altering the capital-labor ratios at the cost pool level? Provide a detailed justification of any negative answer.

RESPONSE TO USPS/OCA-T4-12. (a) The statement quoted is from Dr. Bozzo's testimony and is used in the same context.

(b) A cost reducing capital investment for a specific activity at a facility would be expected to reduce operating costs. To the degree that activities are part of a network and depend on each other, the investment may have an impact on the operating costs of other activities. It may also be appropriate to model the activities as a joint production, cost, or labor demand function (depending on the function as defined by the analyst).

(c) It would appear that this is a question the Postal Service should be addressing and explaining in detail. Dr. Bozzo did not present detailed data or analysis on this issue. However, based on the very limited information that I have available, I would assume that the answer is yes.

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USPS/OCA-T4-13. Please refer to your testimony at page 47, line 16, to page 51, line 13. Also refer to Dr. Bozzo's response to OCA/USPS-T-15-58, Tr. 15/6362-6364.

- a. Do you disagree with Dr. Bozzo's statement, provided in response to OCA/USPS-T-15-58(a) (Tr. 15/6362-63), that "my facility-level capital variable (QICAP) does not make use of the Postal Service's Total Factor Productivity results (i.e., the TFP index). Rather, it makes use of methods developed to measure capital input for the TFP analysis. That is, the relationship between my analysis and the Postal Service's TFP analysis is that they share common methods to develop data on economic input?" If so, please state the basis for your disagreement.
- b. Does Dr. Bozzo's statement, quoted in part (a) of this interrogatory, explain the nature of the "references to Total Factor Productivity" you mention at page 48, line 2 of your testimony? Please explain any negative answer.
- c. Do you have any evidence that the Postal Service's behavior is described by "output maximization"? If so, please provide all such evidence.
- d. Do you believe that the institutional environments in which the Postal Service operates and the Soviet manufacturing industries operated are comparable? If so, please provide all evidence that supports your belief.

RESPONSE TO USPS/OCA-T4-13. (a) This is not strictly a yes/no question.

The issues that are open to consideration are whether the TFP index is incorrectly computed (the article and information referenced by Dr. Bozzo led to this conclusion), and whether Dr. Bozzo's work is incorrect (by maintaining that he uses the same methods, Dr. Bozzo sets the basis for the conclusion that the results are incorrect). Although I did not state that he used the TFP index, it appears that the development of the index may involve the use of prices that are incorrect; he states that he used a common method. If he used a common method, it would be desirable for him to clarify whether his method makes use of incorrect prices. Otherwise, it is not a common method.

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(b) This also can not be answered with a "yes" or "no". As can be gathered from my previous statement, I don't believe that Dr. Bozzo's statement adequately addresses the issues.

(c) Yes. The need to increase volume of mail is a very familiar refrain in communications from the Postal Service. For example, in the Postal Service's *May Mid-Atlantic Area Update*, Vice President Henry A. Pankey references the growth of mail volume and revenue growth as one of the three pillars needed to support the Gateway to America's households and businesses. He references a Postal Forum speech by the Postmaster General.

(d) Yes. Although there are significant social and institutional differences between American and Russian governmental philosophies ranging back in historical precedent (e.g., no postmaster has been liquidated for failure to meet plan), in fact, there is significant evidence to suggest that the Postal Service in many ways operates in a manner similar to a state controlled business in a non market economy: these similarities include output maximization, central planning, investment actions that may be sub optimal, and concern over efficiency.

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USPS/OCA-T4-14. Please refer to your testimony at page 24, lines 1-10. On page 24 (lines 9-10) of your testimony you state that "[o]ne response [to an interrogatory, at Tr. 15/6387-81 discussed data errors due to commingling of manual and SPBS parcels." At lines 6-7, you state that "[f]ield level data verification appears to be required to provide a sound basis for the analysis."

- a. Do you disagree with Dr. Bozzo's statement at Tr. 15/6388 that "the manual parcels observations [from the site in question] do not enter the manual parcel regression sample"? If so, please state the basis for your disagreement.
- b. Is it your opinion that the manual parcels data from the site in question was actually erroneous? If not, please state the basis for your belief.
- c. Assuming the data could not be reconstructed, what would you propose doing with the manual parcels data for that site? Justify your answer in detail.
- d. Do you disagree with Dr. Bozzo's statement at Tr. 15/6387 that "[i]n contrast to the other MODS operations I studied, manual parcels and Priority volumes must be manually logged, so the volume data collection process is considerably more labor intensive than for operations in which volume data are transmitted from equipment or scales via electronic interfaces." If so, please state the basis for your belief.

RESPONSE TO USPS/OCA-T4-14. (a) No.

(b) To the degree that data from two activities are commingled, as indicated by Dr. Bozzo, the data are unsuitable for analysis; whether you term the data erroneous, unsuitable, misleading, inaccurate, or any of a number of other terms, the use of such data would be inappropriate.

(c) The absence of data can be a problem. Potentially, one could obtain a biased estimate due to the unavailability of data. A good data collection procedure would begin with careful data collection, appropriate follow up, and, subsequently, the statistical analysis of the data set. Assuming that the data could not be reconstructed, one would need to determine whether the resulting data set was representative of the population of data.

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(d) I do not disagree; in fact, the statement illustrates the importance of implementing the data collection procedures that I advocate.

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USPS/OCA-T4-15. Please refer to your testimony at page 68, lines 1-2. With reference to the analysis you present on the previous page, you state that "A modeling approach consistent with the data would be the 'between' model or the pooled model." Did you perform any formal specification test(s) to validate your statement? If so, provide a detailed description of the test method(s) and results. If not, what is the basis for your statement?

RESPONSE TO USPS/OCA-T4-15. I did not perform any formal specification tests to validate the statement. There has been extensive analysis presented comparing the fixed effects, pooled, and cross sectional approaches as presented in the Postal Service sponsored testimony of witness Bradley in the previous case and witness Bozzo in this case. The Postal Service analysis of the regression results has found that the fixed effects approach is preferable in analyzing the cases presented. However, I maintain that the modeling effort as presented by Dr. Bozzo, and previously Dr. Bradley, is incorrect; accordingly, the tests as presented are meaningless.

I have not presented an alternative model of mail processing costs. I have, instead, concluded that a working group is the appropriate deliberative and collaborative forum for the development of the model which could then be presented before the Commission. It is highly unlikely that a model acceptable to all parties would be developed in the four month time frame of a rate case,

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particularly in view of the massive efforts which the Postal Service has already devoted to the work and the projected efforts to conclude the effort.

At this time, the "between model" presented by Dr. Bozzo is the "least bad" of the models presented by the Postal Service. Cross section estimates relate to the long run version of many parameters, rather than the short run version relevant for time series studies. In studying long-run elasticities one may use cross-section data, while for purposes of short-run forecasting time-series data may be appropriate.

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USPS/OCA-T4-16. Please refer to your testimony at page 66, lines 24-25, where you state "Dr. Bozzo apparently believes that the multivariate nature of the modeling process makes the bivariate graphs irrelevant."

- a. Do you believe that appropriate econometric models for measuring mail processing volume-variable costs would be multivariate in nature?
- b. If your response to part (a) is negative, reconcile the inconsistency between your response to part (a) and your claim on page 36 of your testimony that there is at least one variable you believe to be important omitted from Dr. Bozzo's study.
- c. Do you disagree with Dr. Bozzo's testimony on the shortcomings of visual analysis, presented at page 60, line 21, to page 61, line 12? If so, please state each point of disagreement, discuss in detail the nature of your disagreement, and provide all evidence that supports your position.

RESPONSE TO USPS/OCA-T4-16. (a) I don't know.

(b) Two important variables for the analysis of volume variability appear to be TPH and hours. On a bivariate basis they seem to be closely associated. Applying the concept from William of Ockham, *Pluralitas non est ponenda sine necessitate* (this translates as "entities should not be multiplied unnecessarily." Put differently, "keep it simple"), also known as Ockham's Razor, one would look for the simplest explanation, and a simple explanation is that there is a very high degree of relationship between the two variables: it is visually compelling.

As the modeling in the case has grown more complicated, the estimated variabilities have declined--but the hours/TPH data still vary together closely. Accordingly, I believe that additional analysis would be appropriate, which is why I advocate the working group.

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(c) There appear to be two major points in Dr. Bozzo's testimony:

1. It is impossible to determine whether any two points represent observations of the same site in different periods, the same period at different sites, or different sites and periods. I agree.
2. Visually fitting a line or curve to a plot is not an adequate substitute for numerical analysis and formal specification tests. I neither agree nor disagree with the statement. Instead, I offer the following observation. The data suggest a strong relationship between TPH and hours; Ockham's Razor suggests that the simplest explanation is preferred. I conclude that there is a strong relationship between TPH and costs as presented in the data.

DECLARATION

I, J. Edward Smith, declare under penalty of perjury that the answers to interrogatories USPS/OCA-T4-8-16 of the United States Postal Service are true and correct, to the best of my knowledge, information and belief.

Executed June 7, 2000

J. Edward Smith

CERTIFICATE OF SERVICE

I hereby certify that I have this date served the foregoing document upon all participants of record in this proceeding in accordance with section 12 of the rules of practice.

JENNIE D. WALLACE

Washington, D.C. 20268-0001
June 9, 2000