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

POSTAL RATE AND FEE CHANGES, 1997	Docket No. R97-1

THE DIRECT MARKETING ASSOCIATION, INC.'S THIRD SET OF INTERROGATORIES AND REQUESTS FOR PRODUCTION OF DOCUMENTS DIRECTED TO USPS WITNESS BRADLEY (DMA/USPS-T14-19-31)

Pursuant to Sections 25 and 26 of the Commission's Rules of Practice, the Direct Marketing Association, Inc. hereby submits the attached third set of interrogatories and requests for production of documents to USPS witness Bradley (DMA/USPS-T14-19-31). If the designated witness is unable to respond to any interrogatory, we request a response by some other qualified witness.

Respectfully submitted,

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Witness Bradley (USPS-T-14)

DMA/USPS-T14-19. Please define the term "piece-handling" as you use it in your testimony, and describe specifically how it is calculated for each direct activity.

DMA/USPS-T14-20. Please consider the following hypothetical: Suppose a group of N workers at a MODS office clocks into an optical character reader (OCR) sorting activity to sort a quantity Q of unsorted letter mail. They load the Q pieces of mail into the OCR for a primary sort and run the sort.

a. Please confirm that if no other OCR processing is performed in the current AP at this facility, and the sort is completed without errors in one hour, the process generates a value of N for the variable HOCR, and a value of Q for the variable TOCR at this facility in this period. If not confirmed, please explain.

b. Suppose instead that, after running the Q pieces of letter mail through the primary – sort described above, the same N workers collect the sorted mail and reload it into the same OCR for a secondary sort.

   (i) Please confirm that if no other OCR processing is performed in the current AP at this facility, and both sorts are completed without errors in two hours, the process generates a value of 2N for the variable HOCR, and a value of 2Q for the variable TOCR at this facility in this period. If not confirmed, please explain.

   (ii) How would your answer to subpart b. (i) change if, halfway through the secondary sort, the OCR breaks down?

      (a) Would the workers typically clock out of the operation while repairs are made?

      (b) What would the workers typically do during the time the machine is being repaired?

      (c) What is the probable disposition of the mail that is halfway through its secondary sort -- would it be set aside until repairs are completed, moved to another OCR, or sorted under a different activity code?

      (d) Regardless of your answers to subparts b. (ii) (a)-(c), how would this breakdown likely affect the values ascribed to HOCR and TOCR for this operation, if at all?

DMA/USPS-T14-21. Would the responses that you provided to DMA/USPS-T14-20 differ in any material way if the activity had involved:

a. A BCS instead of an OCR? Please explain.

b. An LSM instead of an OCR? Please explain.

c. An FSM instead of an OCR? Please explain.

d. A facer-canceler? Please explain.

DMA/USPS-T14-22. Please refer to page 12 of your direct testimony (USPS-T-14) where you state: "The dependent variable in a cost equation should be a variable that captures the additional cost associated with providing the output being produced. *For mail processing labor cost, the variations in mail processing hours are the variations in cost*" (emphasis added). Please confirm:

a. that variations in the wage rates paid to clerks and mail handlers can affect the cost associated with processing mail.

b. that variations in the benefits package provided to clerks and mail handlers can affect the cost associated with processing mail.

c. that variations in the mix of skills and abilities in the labor force performing mail processing tasks can affect the cost associated with processing mail.

d. that variations in the capital intensity of mail processing activities can affect the cost associated with processing mail.

DMA/USPS-T14-23. Please refer to page 13, lines 12-16, of your direct testimony (USPS-T-14) where you state: "The nature of the labor adjustment process in mail processing facilities is such that current staffing may depend not only upon volume in the current period but also upon volume in the previous period. To allow for this gradual labor force adjustment to changes in piece-handlings, I included a lagged TPH term along with the current TPH term."

a. Besides the reasoning cited above concerning the time lag in the labor adjustment process in mail processing discussed in your testimony, are there any other reasons to introduce a lagged TPH term in your mail processing labor cost equations?

b. Did you experiment with additional lag terms (either higher-order lags in TPH or lags in MANR) in the specification of any of your cost equations? If so, what were the results? If not, why not?

c. Your discussion focused only on the problem of adjusting staffing levels at a facility to mail processing labor requirements within a given activity. Is there also an *overall*

constraint operating in mail processing, such that the Postal Service faces short-term rigidities in its ability to match the overall number of clerks and mail handlers it employs at a facility to the total mail processing labor requirements across all MODS activities at that facility?

DMA/USPS-T14-24. Please refer to page 13, line 17, of your direct testimony (USPS-T-14) through equations (1) on page 16, where you describe the specification of your segmented autonomous trend variable.

a. Please confirm that, in general, an autonomous trend variable included in a linear regression will capture the net effect on the dependent variable of *all* time-varying factors not otherwise included in the model. If not confirmed, please explain.

b. In your judgement, is there anything else besides the introduction of new technologies (which includes not only the introduction of new machines, but also new purposes to which pre-existing activities or machines are put) that a trend variable included in your regressions might pick up? Please explain.

c. Please explain in greater detail why you chose FY 1993 as the break point for your trend variable. Have you performed any sensitivity analyses to test whether any of your results are sensitive to the presence, or the precise location, of the break point? If so, please provide the results of such analyses.

DMA/USPS-T14-25. Please refer to page 31, lines 2-5, of your direct testimony (USPS-T-14) where you state that "[t]he first scrub requires that a site have at least thirty-nine *continuous* observations in any activity. The time dimension is an important part of the nature of panel data and if possible, it is preferable to have *continuous* data" (emphases added).

a. Define "continuous" as you use it in this context.

b. Please explain why using "continuous" data is so important to your analysis.

c. Please refer to the following SAS code excerpted from Bcs.txt (found in LR-H-149):

```
*************************************************************;
* TO CHECK FOR DATA SUFFICIENCY THE PROGRAM IDENTIFIES      ;
* THE NUMBER OF OBS. PER SITE                               ;
*************************************************************;

PROC MEANS NOPRINT;
     BY IDNUM;
     VAR TPH;
     OUTPUT OUT=OUT1 N=N;

PROC SORT;
     BY IDNUM;

************************************************;
```

```
* ELIMINATING ANY SITES THAT DO NOT HAVE 39 OBS   ;
************************************************;

DATA OPER;
     MERGE OPER OUT1;
     BY IDNUM;

DATA MODSET;
     SET OPER;

DATA OPER SHORT;
     SET MODSET;
     IF N< 39 THEN OUTPUT SHORT;
     IF N > 38 THEN  OUTPUT OPER;
```

(i) Please confirm that this scrub eliminates sites that do not have at least 39 observations, continuous or otherwise. If not confirmed, please explain.

(ii) For each regression, please list how many observations were eliminated as a result of this scrub.

(iii) For each regression, please list how many observations would have been eliminated if sites having fewer than thirty-nine *continuous* observations in any activity were dropped?

DMA/USPS-T14-26. Please refer to pages 31-32 of your direct testimony (USPS-T-14), where you suggest that the fact that MODS is "an operational data set" used for management decisionmaking "raises the possibility that, on occasion, the data may be misreported."

a. Please explain the reasoning underlying this assertion.

b. In your judgement are some variables more likely than others to be misreported? If so, please list these variables and explain.

DMA/USPS-T14-27. Please refer to page 32, lines 3-25, of your direct testimony (USPS-T-14) where you describe the four steps of your "one-percent outlier" data scrub.

a. Did you examine any of the observations eliminated by this scrub to assess whether or not they were the result of obvious mechanical (e.g., keypunch) errors? If so, what conclusions did you draw?

b. Please provide a complete accounting of how many observations were eliminated by this scrub for each activity, on both an absolute and a percentage basis, and indicate the effect that these deletions had on each of your final variability estimates.

DMA/USPS-T14-28. Referring to equation (3) on page 38 of your direct testimony (USPS-T-14), please explain why you omitted time-trend interaction terms from your allied activities

regressions.

DMA/USPS-T14-29. Referring to equation (5) on page 40 of your direct testimony (USPS-T-14),

a. Please confirm that the fixed-effects estimator of the parameters of this equation restricts the slope coefficients (represented by the vector β) to be identical across facilities, while all of the time-invariant, facility-specific fixed effects operate through a facility-specific intercept shifter (the α_i).

b. Did you test this restriction against a more general alternative hypothesis that allows some or all of the slopes to vary across facilities? If so, please provide the results of this test. If not, please explain.

DMA/USPS-T14-30. Please refer to pages 41-42 of your direct testimony (USPS-T-14), where you discuss the Gauss-Newton Regression (GNR) tests of site-specific effects.

a. For each regression model for which you performed a GNR test, please provide a list of the variables that were included in the final specification which you chose to omit from the regression used to generate the residuals used in the GNR test.

b. Please explain why you omitted these variables specified in response to sub-part (a) when generating the GNR residuals.

DMA/USPS-T14-31. Please refer to pages 80-84 of your direct testimony (USPS-T-14), where you discuss the problem of measurement errors in the righthand-side variables of your cost equations and your errors-in-variables estimator of β.

a. Please confirm that your model of measurement error in the total piece-handlings variable, embodied in equations (17) and (18) on page 81, assumes a linear error process. If not confirmed, please explain.

b. Please list all of the assumptions about how measurement errors are distributed (other than the linearity referred to in subpart a) that you relied on to derive the probability limits of the estimated fixed-effects and first-differenced coefficients in equations (19) and (21) on pages 81-82.

c. Please refer to page 83, lines 1-3, of your direct testimony (USPS-T-14), where you state: "In the mail processing analysis, measurement error is of particular concern for the manual letter and flat operations, in which the mail is weighed to produce volume counts."

(i) Please confirm that conversion factors based on linear feet, as well as weight, are used to estimate first handling pieces (FHP) in the MOD system when console or

meter readings of mechanical equipment, or actual counts from mailers' statements, are unavailable (see MODS Handbook M-32, chapter 4).

(ii) Please confirm that when FHP estimates in manual letter and flat operations are obtained using conversion factors based on weight, the procedure consists of weighing the quantity of mail to be processed and dividing by an assumed average weight per piece. If not confirmed, please explain.

(iii) Please confirm that when FHP estimates in manual letter and flat operations are obtained using conversion factors based on linear measurement, the procedure consists of measuring the linear footage of inventoried mail to be processed and multiplying by an assumed average number of pieces per linear foot. If not confirmed, please explain.

(iv) Regardless of your answers to subparts c. (i)-(iii), please confirm that subsequent handling pieces (SHP) are always derived from initial FHP, and thus reflect any errors inherent in the latter. Please confirm also that total piece handlings (TPH) in a MODS operation is the sum of FHP and SHP in that operation (see MODS Handbook M-32, *op. cit.*)

(v) Taking into account your answers to subparts c. (i)-(iv), please confirm that the most likely source of measurement error in manual letter and flat operations is through the use of conversion factors that are either too high or too low. If not confirmed, please explain.

(vi) If subpart (v) is confirmed, please confirm that subparts c (i)-(v) together imply a non-linear error process with a non-unit mean error, rather than an additive process as you imply. If you disagree, please explain.

CERTIFICATE OF SERVICE

I hereby certify that I have this date served the foregoing document in accordance with Section 12 of the Commission's Rules of Practice.

Michael D. Bergman

Dated: August 13, 1997