

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

Postal Rate and Fee Changes, 2006 )

Docket No. R2006-1

RESPONSES OF OFFICE OF THE CONSUMER ADVOCATE  
WITNESS MARK J. ROBERTS TO INTERROGATORIES OF  
UNITED STATES POSTAL SERVICE (USPS/OCA-T1-27-34)  
(October 16, 2006)

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The Office of Consumer Advocate hereby submits responses of Mark J. Roberts to interrogatories USPS/OCA-T1-27-34, dated October 2, 2006. Each interrogatory is stated verbatim and is followed by the response.

Respectfully submitted,

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RESPONSE OF OCA WITNESS ROBERTS  
TO INTERROGATORIES USPS/OCA-T1-27-34

USPS/OCA-T1-27. Please refer to your response to USPS/OCA-T1-8(b) and USPS/OCA-T1-10.

- (a) Do your calculations in your response to USPS/OCA-T1 -10 reflect your preferred results as stated in response to USPS/OCA-T1-8(b)?
- (b) If not, please provide the marginal costs per FHP, requested in USPS/OCA-T1-10, that reflect your preferred results.
- (c) Please provide the marginal costs per FHP requested in USPS/OCA-T1-10, reflecting your preferred results for letter operations as needed, evaluating your formulas using FY 2005 observations.

RESPONSE TO USPS/OCA-T1-27

(a) No, they reflect the results that were specified in question USPS/OCA-T1-10.

(b) Question USPS/OCA-T1-10 requested the “marginal time (workhours) per FHP” for the letter and flats operations reported in Tables 3 and 6 of OCA-T-1. Using the formulas in my response to USPS/OCA-T1-10 and my preferred estimates for letters (OCA-T-1, Table 4, Panel B), the marginal workhours, on average, are:

Letter Sorting Operation	Marginal Hours with respect to FHP <sub>IN</sub>	Marginal Hours with respect to FHP <sub>OUT</sub>
Manual Letters	.198	.300
OCR	.040	.048
Aggregate BCS	.286	.146

Although I do not recommend using the estimates for flat sorting operations, for completeness I am providing the marginal hours using the parameter estimates

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from OCA-T-1, Table 7, Panel B. These were estimated without using quarterly dummy variables as IV's.

Flat Sorting Operation	Marginal Hours with respect to $FHP_{IN}$	Marginal Hours with respect to $FHP_{OUT}$
Manual Flats	-.042	.777
FSM1000	.060	3.915
AFSM 100	.310	2.553

(c) Using only observations for 2005, the marginal hours for letters by operation, on average, are

Letter Sorting Operation	Marginal Hours with respect to $FHP_{IN}$	Marginal Hours with respect to $FHP_{OUT}$
Manual Letters	.162	.267
OCR	.033	.044
Aggregate BCS	.277	.154

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USPS/OCA-T1-28. Please refer to your response to USPS/OCA-T1-11(a), specifically your discussion of the sample period change between the model presented in your March 2006 paper and the update in USPS-T-12. You note that the results from adding four additional quarters' data from FY 2005 led to results "very similar" to those you previously reported. In your view, is it typical to consider the stability of an econometric model's results with respect to a "fairly small change" in sample size to be a problem as opposed to favorable evidence of the model's robustness? Please explain.

RESPONSE TO USPS/OCA-T1-28

My point is that adding a small amount of data, then reestimating the same regression equation, and then finding the coefficients are similar is not a very demanding way to assess a model's robustness.

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USPS/OCA-T1-29. Please refer to your response to USPS/OCA-T1-11(a), specifically your discussion of the "alternative" capital data.

- (a) Does your response indicate that capital series that eliminate in part the capital timing issue you raised in your March 2006 paper are not preferred to series that exhibit the full anomaly? Please explain.
- (b) Please explain which capital equipment data you used in constructing your capital measures for use in your recommended models. Specifically, did you employ the higher-frequency equipment data developed for the Postal Service's "alternative" series, or the lower-frequency data used before your March 2006 paper identified the issue?
- (c) If you indicate that you used the lower-frequency data in response to part (a), please explain your choice in view of your claim that proper matching of the capital and labor input data is important.

RESPONSE TO USPS/OCA-T1-29

(a) No, but I don't think the alternative capital series (variables qiXXXalt in the USPS- LR-L-56 data files) address my concern about the timing and merging of the capital data and MODS data. There are still 535 cases where hours in AFSM are positive and the alternative capital variable equals zero (USPS-T-12, Table 27). This is only the most obvious anomaly. We have no idea how frequently the reported capital stocks are positive but lagging behind the actual increase in investment, hours, and TPF. I was surprised to learn in USPS-T-12 that the capital variables used in the USPS testimony, which are constructed at the quarterly frequency, are not based on quarterly measurement of capital in use, even though apparently the quarterly data to construct the capital stock variables does exist, at least through 2003. (See USPS-LR-L-56, p.41).

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(b) I used the EquipmentXXXX.xls data files that were provided by the USPS in LR-L-56\Section4\Data. These were the only data files provided that contained the disaggregated capital expenditure that I needed and I thought were the only data files that existed. I believe these are the basis for the capital variables used in constructing the estimates in USPS-T-12. The USPS did not provide the “higher frequency” equipment files that were used to construct the “alternative” capital variables which were used in USPS-T-12,Section VII.G. Even with these, however, the “higher frequency” data is only available through 2003 and so for 2004 and 2005 the “alternative” capital variables used by the USPS utilize interpolation from beginning and end-of-year values. I also had to interpolate in constructing my capital stock measures for 2004-2005 since this was the only data provided so essentially the same information is being used for my capital stock variables and the “alternative” capital series in these two years.

(c) It was not a choice. I used the data made available under the belief that this was the best available. I continue to have concerns about the quality of the matching of the capital data and MODS data.

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USPS/OCA-T1-30. Please refer to your response to USPS/OCA-T1-11(a), specifically your discussion of the choice of weights in combining results from cost pools to the shape level. Please also refer to your response to USPS/OCA-T1-13a, where you note that you used FY 2005 weights to aggregate sorting operations to the shape level in OCA-T-1.

- (a) Is modifying the sample period for the weights a technically challenging modification to your Stata code?
- (b) Confirm that FY 2005 observations are within both the samples you employed and those in the longer sample used in the update presented by Dr. Bozzo. If you do not confirm, please explain.
- (c) Is it your testimony that FSM 881 was not an important flat sorting technology as of FY 2002, while AFSM 100 deployment was in progress? Please explain.
- (d) Is your judgment that using FY 2005 weights is appropriate for your FY 2002-FY 2005 sample, but not a FY 1999-FY 2005 sample, based on any formal criteria? If so, please explain.
- (e) Did you make any calculations to determine the effect of full-sample versus FY 2005 weights on results from the longer sample period? If so, please describe and provide all calculations you performed.

RESPONSE TO USPS/OCA-T1-30

(a) The weighted sums of the elasticities across operations are generated in the program given in OCA-LR-L-1\estimation\seaggelast.do. The year for the weights is chosen in line 18 (keep if fy==2005 ;) and this could be changed to any other year.

To aid your exploration of this issue, I am attaching a table of the hours shares by operation for the 304 plants in each year. With this information, the shape elasticities for any year can be constructed on a hand calculator.

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Letters

Year	Hours Share Manual	Hours Share OCR	Hour Share BCS
1999	.523	.081	.395
2000	.491	.087	.422
2001	.450	.094	.456
2002	.422	.094	.484
2003	.390	.091	.518
2004	.370	.083	.547
2005	.358	.077	.565

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Flats

Year	Hours Share Manual	Hours Share FSM1000	Hours Share FSM881	Hours Share AFSM100
1999	.287	.192	.521	0
2000	.275	.211	.509	.005
2001	.260	.233	.363	.143
2002	.248	.260	.098	.394
2003	.248	.235	.023	.494
2004	.260	.228	.005	.506
2005	.254	.209	0	.537

(b) Confirmed, but the proportion of sample observations that come from 2005 varies substantially across samples. In the samples I use that cover 2002-2005, approximately 25% of the observations in each sample will be from 2005. In the samples used to estimate flat sorting operations for plants that do not use AFSM (Table 7, Panel D) less than 6% of the observations were from 2005. In contrast, approximately 30% of the observations in these regressions were from 1999 and another 30% were from 2000.

(c) No, the table in part (a) shows it accounted for 9.8 percent of total hours in 2002.

(d) This question misstates my opinion on this issue. Please reread my

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answer to USPS/OCA-T1-13(d) and USPS/OCA-T1-11(a).

(e) No. I used the 2005 weights for virtually all of my results because Dr. Bozzo suggested I do this. See USPS-T-12, p. 102, line 4-5. I was trying to reduce the sources of difference between our analyses and felt that this was a fairly trivial issue as long as the weights used to aggregate the operations reflect the mix of operations present in the data used in estimation. From the tables in my answer to part (a) to this question, the hours shares for 2005 reasonably reflect the aggregate shares for the 2002-2005 period used in most of my estimating equations. This is not true for the models I estimated using only the sample of plants that did not use the AFSM technology. In this case, the 2005 weights do not reflect the sample of observations used for estimation. See my answer to part (b) of this question.

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USPS/OCA-T1-31. Please refer to your response to USPS/OCA-T1-11(a), specifically your discussion of the disaggregation of BCS operations into incoming and outgoing components.

- (a) Are you claiming that the disaggregation is inappropriate (as opposed to "not... well justified")? If so, on what basis do you support your claim?
- (b) Is there any behavior that an aggregated version of your BCS model can exhibit that disaggregated versions of your BCS models cannot? If you believe so, please explain fully.
- (c) Does your aggregated BCS model relax any restrictions that might be present in disaggregated models? If you believe so, please explain fully.

RESPONSE TO USPS/OCA-T1-31

(a) No. I explained this in my original answer. In particular, I said "I think it is possible to develop a coherent model that would treat the outgoing and incoming sorting schemes as separate production processes (whether or not this is appropriate is a different issue), but it would not lead to an estimating model that looks like the one presented in Section VII.G. In particular, all the sorting operations would be divided into incoming and outgoing components with separate labor demands for each. Overall, I found the disaggregation of the BCS operation into separate incoming and outgoing operations to be inconsistent with the rest of the empirical model."

(b) The problem is not the disaggregation into separate incoming and outgoing labor demands, it is the ad hoc way in which this is implemented for one operation while ignoring its implications for the others. This kind of disaggregation is another form of separability that is being imposed on the production process. If this separability assumption is reasonable, then it would lead to disaggregation of all the sorting operations, not just BCS, into incoming and outgoing streams. This then raises a second issue of the appropriate FHP variable to include. If separability is correct then only mail

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in the same processing stream should affect labor use. How will local mail that gets its FHP count in the outgoing operation then be accounted for in the incoming operations?

Dr. Bozzo's discussion does not address these issues which led to my original conclusion that the changes he proposed were not well justified. I am not opposed to more disaggregated versions of the labor demand equations if the assumptions underlying them can be justified and if the more disaggregated data needed to estimate them is satisfactory.

(c) An empirical model that separates the labor demands into incoming and outgoing labor hours is more general than a model that looks only at their sum in the sense that you can potentially estimate a different effect of an increase of mail volume on incoming versus outgoing hours rather than a single effect on total hours. The limitation is always what can be estimated with the data at hand. Exactly this issue of disaggregation comes up in the treatment of the MPBCS and DBCS operations. In this case, Dr. Bozzo argues that aggregating the two operations together, "addresses the instability in the MPBCS data related to the gradual withdrawal of the MPBCS equipment from service in favor of DBCS equipment" (USPS-T-12, page 6, beginning at line 23). In some cases a precise estimate of the change in the sum of hours might be better than imprecise estimates of the change in each component.

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USPS/OCA-T1-32. Please refer to your response to USPS/OCA-T1-11(a), specifically your discussion of Dr. Bozzo's interpretation of your models. What does Dr. Bozzo's interpretation of your results, which you are presumably free to reject as you see fit, have to do with your decision not to use his update?

RESPONSE TO USPS/OCA-T1-32

I do not see anywhere in my answer that I discuss Dr. Bozzo's "interpretation of your results." In answering the original question, I identified four changes that Dr. Bozzo made when reestimating my model and the conclusions he drew from his new results. I gave my assessment of each of these pieces as I was asked to do.

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USPS/OCA-T1-33. Please refer to your response to USPS/OCA-T1-18.

- (a) Do you agree that mail pieces requiring cancellation have distinct cost-causing characteristics for Postal Service cancellation operations from pieces that do not require cancellation? If you do not agree, please explain your position.
- (b) Does your cancellation model distinguish pieces that require cancellation from pieces that do not require cancellation? If so, please explain in detail how your model purports to do so.
- (c) Please refer to Witness McCrery's testimony, USPS-T-42 at 4. Witness McCrery notes that a capability of AFCS equipment is separation of local from non-local mail.
- (d) Were you familiar with this part of Witness McCrery's testimony?
- (e) Do you agree that local mail may be inducted directly into incoming sorting operations? If not, please explain the basis for your disagreement.
- (f) Please explain how, if at all, your characterization of "output" captures cancelled pieces inducted directly into incoming operations.
- (g) Do you agree that it is possible, in principle, to test whether pieces of mail requiring cancellation and pieces not requiring cancellation can be aggregated for the purposes of estimating a cancellation labor demand equation? If not, why not?
- (h) In the course of developing your cancellation model, did you test whether it is appropriate to aggregate pieces of mail requiring cancellation and pieces not requiring cancellation? If so, please describe fully any test(s) you performed and provide all associated econometric code and output log(s). If not, why not?

RESPONSE TO USPS/OCA-T1-33

- (a) Yes.
- (b) Yes. It recognizes that any letters or flats processed in the incoming mail stream do not require cancellation. In the empirical model only mail volume that receives an FHP count in the outgoing operation can affect

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labor hours in cancellation. That is what the regression coefficients on  $FHP_{OUT}$  for letters and  $FHP_{OUT}$  for flats measure.

(c) Requires no response.

(d) Yes. Mr. McCrery describes the addition of an OCR upgrade which allows the AFCS to recognize 5 digit zip codes and thus separate local from non-local mail, as a recent upgrade. Although it is hard to tell from the description in R2006-1-T42, page 4, lines 1-23, exactly when the deployment of this upgrade occurred, it appears to be underway during 2005. In R2005-1, T-29, page 4, lines 8-20, Mr. McCreary describes this upgrade as one that is “planned for all AFCS machines.” From either description this capability does not appear to be relevant to the sample period being used for estimation in my testimony.

(e) Yes, but how quickly it is inducted into incoming operations depends on how early in the sorting process it can be identified. I have not seen any testimony or empirical evidence that would suggest how often this happens.

(f) It does not. If the mail does not receive an FHP count in an outgoing operation it is not included in the output measure. The ability to use the AFCS stage to identify mail that could be directly inducted into incoming operations does not appear to be relevant in the sample period I use for estimation.

(g) I do not see any way to do this.

(h) No. I do not see any way to do this.

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USPS/OCA-T1-34. Please refer to Tables 5, Panels C and D, in your testimony, OCA-T-1.

(a) Please update the results you present for the more finely disaggregated FHP variables to reflect your recommended set of instruments as indicated in the response to USPS/OCA-T1-12, or explain why the concerns you raise about instrument selection in that response are inapplicable to the results you presented in Table 5, Panels C and D.

(b) Please provide the marginal time (workhours) per FHP implicit in each of the reported coefficients on FHP variables for the results you provide in response to part (a). If you do not provide updated results in response to part (a), please use the coefficients originally reported in OCA-T-1. Please show your calculations.

RESPONSE TO USPS/OCA-T1-34

(a) When I construct the  $J$  statistic for the results in models reported in Table 5, Panels C and D, I do not reject the exogeneity of the instruments (which include the quarterly dummies) for the OCR and aggregate BCS operations. I continue to reject the exogeneity for the manual operation, but the values of the test statistics are smaller than those I reported in USPS/OCA-T1-12. The  $J$  statistics are:

Letters	Manual	OCR	Aggregate BCS	Critical Values (.05, .01 significance level)
Estimates in Table 7, Panel C	77.20	2.16	3.92	11.07, 15.09
Estimates in Table 7, Panel D	15.68	2.56	6.16	9.49, 13.28

The test statistic for the manual operation continues to decline as I disaggregate FHP into more categories. This indicates that the quarterly pattern in the residuals from the manual labor demand equation is diminishing as FHP is disaggregated. This suggests

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to me that the quarterly pattern in the labor hours is reflecting quarterly variation in the different categories of FHP and that the rejection of the exogeneity of the instruments is questionable. For this reason I do not think it is necessary to revise the estimates I present in Table 7, Panel C or D.

(b) The marginal hours are constructed using the formulas in USPS/OCA-T1-10, except that  $FHP_{IN}$  is replaced with  $FHP_{IN}$  automated and  $FHP_{IN}$  nonautomated. Similarly for  $FHP_{OUT}$ . As I disaggregate FHP into these four categories some plants can report small values of FHP in one or more of the categories. This results in large values of marginal hours for these observations because the value of FHP is in the denominator. This happens for a small number of observations in the  $FHP_{IN}$  nonautomated category and the  $FHP_{OUT}$  automated categories. To remove the effect of these outliers on the summary measures of marginal hours, I report the median values over all the observations in the following table. The units are hours/thousand FHP.

Table 7, Panel C estimates	$FHP_{IN}$	$FHP_{OUT}$ nonautomated	$FHP_{OUT}$ automated
Manual	.256	.230	.257
OCR	.033	.022	.093
Aggregate BCS	.248	.201	-.031

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Table 7, Panel D estimates	FHP <sub>IN</sub> nonautomated	FHP <sub>IN</sub> automated	FHP <sub>OUT</sub> nonautomated	FHP <sub>OUT</sub> automated
Manual	-1.629	.489	.210	.035
OCR	-.095	.052	.018	.064
Aggregate BCS	.611	.211	.205	.010