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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-T1-10-18) (September 29, 2006)

The Office of the Consumer Advocate hereby submits the responses of Mark J. Roberts to interrogatories USPS/OCA-T1-10-18, dated September 15, 2006. The interrogatories are stated verbatim and are followed by the responses.

Respectfully submitted,

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USPS/OCA-T1-10.
Please refer to Tables 3 and 6 in your testimony, OCA-T-1. Please provide the marginal time (workhours) per FHP implicit in each of the coefficients on log(FHPIN) and log(FHPOUT). Please show your calculations.

Response.

Define $\eta^j_{IN} = \frac{\partial \ln(H^j)}{\partial \ln(FHP_{IN})}$ and $\eta^j_{OUT} = \frac{\partial \ln(H^j)}{\partial \ln(FHP_{OUT})}$ as the elasticities of hours in operation *j* with respect to FHP_{IN} and FHP_{OUT}. These are the parameters estimated in the labor demand equations. The marginal hours are calculated for each observation *i* (plant and time period) as:

$$\left[\frac{\partial H^j}{\partial FHP_{IN}}\right]_i = \eta^j_{IN}\left[\frac{(H^j)_i}{(FHP_{IN})_i}\right] \quad \text{and} \quad \left[\frac{\partial H^j}{\partial FHP_{OUT}}\right]_i = \eta^j_{OUT}\left[\frac{(H^j)_i}{(FHP_{OUT})_i}\right].$$

The mean values, averaged over all observations, and expressed as hours/thousand FHP, are:

Sorting Operation	Marginal Hours with respect to FHP_{IN}	Marginal Hours with respect to FHP_{OUT}
Letters (Table 3)		
Manual	.309	.243
OCR	.041	.037
Aggregate BCS	.242	.184
Flats (Table 6)		
Manual	.051	.791
FSM1000	.242	1.858
AFSM	.272	1.899

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USPS/OCA-T1-11.
Please refer to USPS-T-12, Section VII.G (page 101-104) and Appendix E.
a. Did you consider Dr. Bozzo's FY 2005 update of your March 2006 model in preparing your testimony? If not, why not? If so, please explain why you rejected that approach.
b. If you do not discuss the matter in your response to part a, please describe your views on the relative merits of the aggregate BCS operation group employed in your analysis and the approach employed by the Postal Service using separate incoming and outgoing BCS groups.

Response.

a. Yes, I considered it. There are six tables presented in appendix E, but none of the text in section VII.G references the tables or describes what is in them, so the reader is left guessing about exactly what is being presented. Nonetheless, there appear to be four changes that Dr. Bozzo made when reestimating my 2006 model. First, he included an additional year of data, 2005, where my estimation stopped in 2004. By itself, this is a fairly small change, adding 4 additional quarters of data to the 24 quarters that I included. It appears that the results are very similar to what I reported in my 2006 paper.

Second, he used an alternative capital series that was based on quarterly, rather than annual, updates of the plant-level investment expenditures. The goal was to eliminate some of the anomalous observations where hours would be positive in an operation and capital stock would be zero. This change seemed to reduce, but not eliminate, this particular anomaly. This is a pretty extreme anomaly, and is indicative of a larger problem with the capital series being out of synch with the MODS data. Just because the capital series (eventually) becomes positive when hours are positive, does not mean that the problem is fixed. I believe this is still a limitation in the data that

needs to be corrected. The models are being estimated using the time-series variation in hours, output, and capital variables and it is important that these be properly matched over time.

Third, there is a use of different weights (hours shares by operation) in aggregating the different sorting operations into overall elasticities for letters and flats. There is some flexibility in choosing the weights to use (i.e. the mean or one specific year or an average of a couple of years), as long as they are representative of the time period for which the estimation was done. What is not appropriate is to estimate the labor demands for a time period when an operation is very important (i.e. FSM881 in 2000) and then aggregate them using weights from a time period when the operation is not used (i.e. FSM881 in 2005). The reason is that the allocation of mail volume across operations at any point in time depends on the configuration of technologies in use in the plant at that time. The aggregation weights should reflect actual experience for the time period in which the estimation is conducted.

Fourth, the labor demand for BCS and AFSM are divided into incoming and outgoing operations. However, in the preferred results, there is a strange asymmetry in the way this is done, (see USPS-T-12, p.50, lines 2-13 and Section VII.B). Hours in the BCS operation are divided into two labor demand equations, one for hours in the incoming operation and one for hours in the outgoing operation. Each labor demand depends on one output, the TPF in the same operation. Hours in the AFSM operation are the sum of hours in incoming and outgoing operations and are treated as a single labor demand equation. The measures of TPF in the outgoing sorting scheme and TPF in the incoming scheme are treated as two outputs in the one labor demand equation.

Overall, I do not think this change in model specification is well justified and is not directed at the major difficulties that exist with the USPS model. In Section VII.G, Dr. Bozzo presents an update of Roberts (2006) where the BCS operation is now split into separate incoming and outgoing labor demands. There is no link made to my theoretical model that would justify this change in the estimating equations. 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 that 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.

Fifth, I completely disagree with the conclusions in the last paragraph of Section VII.G. (p. 103, lines 7-16). The point of Dr. Bozzo's estimation of my model is to show that after replacing a few elements of the model the results look more like the ones presented in USPS-T12 and that this is appropriate because they are estimating the "same economic quantities." As I show in OCA-T-1, Section IV, the models are not estimating the same economic quantities unless the proportionality assumption is true. This assumption is rejected in the data. I think that trying to find combinations of variables, weights, and level of disaggregation that make the estimates match empirically without reexamining and comparing the underlying modeling frameworks is the wrong approach to clarifying the source of the differences.

b. This point is covered in my answer to part a.

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USPS/OCA-T1-12.
Please refer to Section VIII.A (pages 31 -33) of your testimony. Please also refer to Dr. Neels's testimony, UPS-T-1, at page 30, especially Table 10.
a. Did you analyze, or consider an analysis, of the validity of your excluded instruments, using the Anderson-Rubin statistic employed by Dr. Neels or some other statistic you consider more appropriate? If so, please describe your analysis and provide all results. If not, why not?
b. If your answer to part a indicates that you did not conduct an analysis of instrument validity, either (i) provide the point estimates and associated p-values of the Anderson-Rubin statistic for each cost pool using your base model or (ii) explain why you believe that the statistic is an inappropriate diagnostic.
c. Please describe how your criteria for determining instrument relevance show that your analysis was not susceptible to the "weak instruments" problem discussed by Dr. Neels.

Response.

a. The Anderson-Rubin statistic is used to test the validity of excluded instruments (more precisely, the overidentifying restrictions) in a model when the LIML estimator is used. This statistic would be appropriate for the model used in USPS-T12, but is not appropriate for the IV estimator I use. There is an analogous test statistic, referred to as the *J*-statistic, that can be used to test the overidentifying restrictions with the IV estimator I use. In my 2002 and 2006 papers, this test could not be used because the labor demand equations are exactly identified, meaning that the number of instrumental variables exactly equals the number of endogenous output variables. When a model is exactly identified there is no test of overidentifying restrictions and so the *J*-statistic is not relevant. The *J*-statistic will always equal zero when the model is exactly identified. In the model presented in my testimony in OCA-T-1 I have added six additional IV's, three quarterly dummy variables and the destinating letters, flats, and parcels, so the

model is now overidentified and the *J*-statistic can be constructed. I did not do the test because I did not think of it prior to receiving this interrogatory.

Reported in the table on the next page are the values of the *J*-statistic and .05 and .01 critical values for each of the labor demand equations. The null hypothesis that is being tested is the joint hypothesis that the model is correctly specified and the IV's are uncorrelated with the error term in the labor demand equation. Under the null hypothesis the *J*-statistic has a χ^2 distribution with *m*-*k* degrees of freedom, where *m* = number of instrumental variables and *k* = number of endogenous output variables.

The test results indicate that we reject the exogeneity of the IV's for four operations, manual letters, aggregate BCS, FSM1000, and AFSM and do not reject it for the remaining six. The reason we get a rejection in the four cases is that, after controlling for FHP_{IN} and FHP_{OUT}, there is still a pattern of quarterly variation in the residuals of those four labor demand equations. This leads the residuals to be correlated with the IV's, particularly the quarterly dummy variables, and leads to the rejection. I believe this is a spurious result resulting from the strong pattern of quarterly variation in the hours and output variables. The FHP variables have an exogenous quarterly pattern in them because of the actions of mailers and quarterly dummies do a good job of accounting for much of this calendar variation. Labor hours in those four operations have a quarterly pattern because of the quarterly variation in mail volume but the FHP variables do not fully account for all of it in the regressions and this leads to the rejection of the exogeneity hypothesis. The reason there is no rejection of the IV's for the priority and cancellation operations is that there is not a strong cyclical pattern in labor hours and thus not a strong pattern of quarterly variation in the residuals for those labor demand

Operation	*J*- statistic	Critical Values (.05 and .01 significance level)	Conclusion
Manual Letters (a)	115.44	12.59, 16.81	Reject exogeneity
OCR (a)	5.84	12.59, 16.81	Do not reject exogeneity
Aggregate BCS (a)	17.52	12.59, 16.81	Reject exogeneity
Manual Flats (b)	4.64	12.59, 16.81	Do not reject exogeneity
FSM1000 (b)	42.0	12.59, 16.81	Reject exogeneity
AFSM (b)	41.04	12.59, 16.81	Reject exogeneity
Manual Priority only (c)	3.5	15.51, 20.09	Do not reject exogeneity
Manual Priority (c)	10.30	15.51, 20.09	Do not reject exogeneity
SPBS (c)	8.3	15.51, 20.09	Do not reject exogeneity
Cancellation (d)	2.7	9.49, 13.28	Do not reject exogeneity

The labor demand equations correspond to the ones reported in Tables 3, 6, 8 and 10 (column 1).
Instrumental Variables being tested are:
a. FHP_{IN} and FHP_{OUT} for flats, three quarterly dummies, log of destinating letters, flats, and parcels.
b. FHP_{IN} and FHP_{OUT} for letters, three quarterly dummies, log of destinating letters, flats, and parcels.
c. FHP_{IN} and FHP_{OUT} for letters and flats, three quarterly dummies, log of destinating letters, flats, and parcels.
d. three quarterly dummies, log of destinating letters, flats, and parcels.

equations. One way to see if the use of the quarterly dummy variables are the cause of the test result is to reestimate the labor demand equations and redo the test dropping the three quarterly dummies from the set of IV's. I report the J-statistics for the letter and flat sorting operations in the following table.

Operation	*J*-statistic	Critical values (.05 and .01 significance level	Conclusion
Manual Letters	16.75	7.81, 11.34	Reject exogeneity
OCR	2.95	7.81, 11.34	Do not reject exogeneity
Aggregate BCS	0.55	7.81, 11.34	Do not reject exogeneity
Manual Flats	2.45	7.81, 11.34	Do not reject exogeneity
FSM1000	9.40	7.81, 11.34	Do not reject at .01 level
AFSM	0.35	7.81, 11.34	Do not reject exogeneity.

Now we do not reject exogeneity of the IV's in five of the six operations. The use of quarterly dummies as IV's is leading to the rejection of the exogeneity hypothesis in almost all the cases. In manual letters we still reject the instrument exogeneity and this is primarily the result of correlation between the residuals in the labor demand equation and the destinating letters used as an IV and I think this largely reflects spurious correlation because of the quarterly pattern in both variables. The output coefficients from models that do not use the quarterly dummies as IV's are reported in OCA-T-1, Table 4, Panel B for letters and Table 7, panel B for flats. Given the results of this test it

would be appropriate to not use the quarterly dummies as IV's in the letter and flat sorting operations. There is a cost to this, however, and that is an increase in the standard errors of the output elasticities. Comparing the results in panel A vs panel B of Tables 4 and 7, it is obvious that the use of the quarterly dummies was helpful in reducing the standard errors of the coefficients.

b. See my answer to part a.

c. The F-statistics reported in OCA-T-1, Table 2 are large for both the FHP variables and the quarterly dummies. The three destinating variables are less important but their use has little effect on any result. In the first-stage regressions the excluded instruments explain virtually all of the variation in the regression. It's obvious this would be the case since the endogenous output levels have a strong pattern of quarterly variation as do the excluded instruments, while the included exogenous variables (capital stocks, relative wages, year dummies) have very little quarterly pattern.

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USPS/OCA-T1-13.
Please refer to your testimony at page 36 (especially footnote 17), page 48 (especially footnote 18), and Table 7.

a. Please confirm that you used FY 2005 workhour weights to combine the elasticities in your "base" letter and flat models. If you do not confirm, please explain.
b. Please confirm that you used FY 1999 workhour weights to combine the elasticities in your analysis of "Plants that do not use AFSM," reported in Table 7.
c. Please confirm that FSM 881 equipment have been withdrawn from service. If you do not confirm, please explain.
d. Please explain why you chose FY 1999 weights, with an FSM 881 share of 0.521, rather than FY 2005 weights, with an FSM 881 share of zero, for the "Plants that do not use AFSM" analysis.

Response.

a. Confirmed. In footnote 18, the weight used for FSM`1000 is .208, not .206 as stated.

b. Confirmed. In the footnote to Table 7, the weight used for manual is .286, not .289 as stated.

c. Confirmed if “withdrawn from service” means not being utilized. In 2005 there were no hours or piece feedings (TPF) reported for the FSM881 operation in any of the 304 plants in my base sample. However, in the same year, 107 of these plants still report positive values for the capital input variables (qifsm881 and qifsm881alt).

d. The weights have to correspond to the time period that was used for estimation. Since most of the data used to estimate the regressions underlying Table 7, Panel D comes from the years prior to 2002 I chose the weights to correspond to that period. Approximately 75 percent of the sample observations come from the years 1999-2001 when the FSM881 share was very high. Approximately 17 percent of the observations came from 2003-2005 when the FSM881 was being retired. I used weights that reflect the data used for estimation.

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USPS/OCA-T1-14.
Please refer to your March 2006 paper, Table 3 (page 69).
a. Please provide an update to the table, including data for FY 2005 Quarter 1, using the sample selection methods from your base models in OCA-T-1.
b. Please provide tables (similar to that provided in response to part a) showing the incoming FHP, outgoing FHP, and fractions of incoming FHP by operation for manual letters, OCR, aggregate BCS, manual flats, FSM 1000, and AFSM 100. Please use the sample selection methods from your base models in OCA-T-1.

Response:

a. 304 Plants (units are millions of pieces)

Year: quarter	Letters			Flats		
	FHP_{IN}	FHP_{OUT}	Share of FHP_{IN}	FHP_{IN}	FHP_{OUT}	Share of FHP_{IN}
1999:1	25263	13327	.655	4662	1132	.805
2000:1	26837	13421	.667	4855	1151	.808
2001:1	28225	13203	.681	5085	1131	.818
2002:1	27173	12349	.688	5071	1023	.832
2003:1	27316	11919	.696	5376	999	.843
2004:1	27432	11552	.704	5400	938	.852
2005:1	28153	10957	.720	5461	927	.855

b. I have not measured FHP by the sorting operations listed in this question. I have measured them by the amount of presorting. I provide the FHP shares for each of these presorting categories in the tables below. The categories are defined in OCA-LR-L-2, description.pdf, page 1 and 2. XXX is a three digit code identifying the operation where FHP was assigned. The XXX codes are:

=111 for letters, outgoing primary in OCR/ISS/OSS operations

=112 for letters, outgoing secondary in ISS/OSS or OCR

=113 for letters, outgoing secondary on BCS

=114 for letters, outgoing primary on BCS

=101 for letters, incoming AADC

=102 for letters, incoming SCF/Primary

=103 for letters, incoming secondary

=104 for letters, incoming in OCR/ISS

=211 for flats, outgoing primary

=212 for flats, outgoing secondary

=201 for flats, incoming managed mail

=202 for flats, incoming primary

=203 for flats, incoming secondary

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Incoming Letters

Year:qtr	FHP_{IN}	Share 101	Share 102	Share 103	Share104
1999:1	25263	.250	.447	.223	.080
2000:1	26837	.245	.424	.256	.074
2001:1	28225	.236	.406	.287	.072
2002:1	27173	.249	.386	.301	.065
2003:1	27316	.251	.383	.311	.055
2004:1	27432	.257	.378	.316	.050
2005:1	28153	.247	.364	.344	.045

Outgoing Letters

Year:qtr	FHP_{OUT}	Share 111	Share 112	Share 113	Share 114
1999:1	13327	.706	.008	.047	.239
2000:1	13421	.693	.012	.051	.244
2001:1	13203	.692	.012	.049	.246
2002:1	12349	.696	.007	.046	.251
2003:1	11919	.694	.006	.045	.256
2004:1	11552	.693	.005	.048	.255
2005:1	10957	.695	.005	.050	.249

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Incoming Flats

Year:qtr	FHP_{IN}	Share 201	Share 202	Share 203
1999:1	4662	.195	.432	.373
2000:1	4855	.199	.415	.386
2001:1	5085	.192	.400	.408
2002:1	5071	.191	.352	.457
2003:1	5376	.175	.299	.526
2004:1	5400	.164	.298	.538
2005:1	5461	.170	.290	.540

Outgoing Flats

Year:qtr	FHP_{OUT}	Share 211	Share 212
1999:1	1132	.952	.048
2000:1	1151	.951	.049
2001:1	1131	.965	.035
2002:1	1023	.964	.036
2003:1	999	.972	.028
2004:1	938	.969	.031
2005:1	927	.968	.032

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USPS/OCA-T1-15.
Please refer to OCA-T-1, Table 6, and to Table 5 of your March 2006 paper. Please also refer to USPS-T-12, Table E-2 (page 128).

Manual Flats	Roberts(2006) Results (Table 5, p.71)	USPS-T-12 FY 2005 Model (USPS-T-12, Table E-2, p.128)	OCA-T-1 results (Base Model; Table 6, Table 7)
Incoming FHP elasticity	.526	.55	.168
S.E., Incoming FHP elasticity	.140	.14	.170
Outgoing FHP elasticity	.078	.06	.422
S.E., Outgoing FHP elasticity	.073	.07	.288
Total of FHP elasticities	.604	.62	.590
S.E. of Total	Not reported	.14	.201
R^2	.223	.23	.079

a. Please confirm that the above table correctly reports the results from the specified sources. If you do not confirm, please provide a corrected table.
b. Would you characterize the differences in the results for the "Total of FHP elasticities" for the three models listed as being statistically or qualitatively significant?
c. Please confirm that the "Incoming FHP elasticity" you report for manual flats in your March 2006 paper differs significantly from zero at the 1 % significance level in a two-tailed test. If you do not confirm, please explain.
d. Please confirm that neither the "Incoming FHP elasticity" nor the "Outgoing FHP elasticity from the manual flats model presented in Table 6 of OCA-T-1 differ significantly from zero at commonly used significance levels using a two-tailed test. If you do not confirm, please explain.
e. Please confirm that the manual flats model presented in Table 6 of OCA-T-1 yields higher standard errors of the FHP elasticities than the models presented in USPS-T-12 and in your March 2006 paper. If you do not confirm, please explain.
f. Please confirm that the manual flats model presented in Table 6 of OCA-T-1 explains relatively less of the variation in manual flats workhours (as indicated by the

R-squared) than the models presented in USPS-T-12 and in your March 2006 paper. If you do not confirm, please explain.

Response:

a. Confirmed.

b. No. It must be recognized that the differences between the first and second columns are always going to be minimal because they are the same regression estimated on virtually the same data. The only difference in the data, as I understand from the discussion in USPS-T12, Section VII.G, is that the USPS estimates use data from 1999-2005, while my estimates use the same set of plants but data from 1999-2004. There is not very much new information contained in the second column results. A more insightful comparison would be based on the first and third columns where there are more substantial differences in sample and econometric method. The regressions in column 1 use 5064 observations and the regressions in column 3 use 2860 observations from 2002-2005.

c. Confirmed

d. Confirmed

e. Confirmed

f. Confirmed

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USPS/OCA-T1-16.
Please refer to OCA-T-1, Table 6, and to Table 5 of your March 2006 paper. Please also refer to USPS-T-12, Table E-2 (page 128).

FSM1000	Roberts(2006) Results (Table 5, p.71)	USPS-T-12 FY 2005 Model (USPS-T-12, Table E-2, p. 128)	OCA-T-1 results (Base Model; Table 6, Table 7)
Incoming FHP elasticity	.651	.65	.712
S.E., Incoming FHP elasticity	.206	.21	.281
Outgoing FHP elasticity	-.088	-.09	.969
S.E., Outgoing FHP elasticity	.085	.08	.470
Total of FHP elasticities	.563	.57*	1.681
S.E. of Total	Not reported	.21	.334
R^2	.392	.39	.333

* Difference is due to rounding.

a. Please confirm that the above table correctly reports the results from the specified sources. If you do not confirm, please provide a corrected table.
b. Please confirm that the "Incoming FHP elasticity" you report for FSM 1000 in your March 2006 paper differs significantly from zero at the 1 % significance level in a two-tailed test. If you do not confirm, please explain.
c. Please confirm that neither the "Incoming FHP elasticity" nor the "Outgoing FHP elasticity from the FSM 1000 model presented in Table 6 of OCA-T-1 differ significantly from zero at the 1 % significance level using a two-tailed test. If you do not confirm, please explain.
d. Please confirm that the FSM 1000 model presented in Table 6 of OCA-T-1 yields higher standard errors of the FHP elasticities than the models presented in USPS-T-12 and in your March 2006 paper. If you do not confirm, please explain.
e. Please confirm that the FSM 1000 model presented in Table 6 of OCA-T-1 explains relatively less of the variation in manual flats workhours (as indicated by the R-squared) than the models presented in USPS-T-12 and in your March 2006 paper. If you do not confirm, please explain.
f. Are the differences in the "Incoming FHP elasticities" among the three models

statistically significant? Do you regard the range between 0.65 and 0.71 as qualitatively significant? Please explain.

g. Please confirm that the difference in the "Outgoing FHP elasticity" between your OCA-T-1 results and your March 2006 paper accounts for most of the difference in the total of the FHP elasticities for the FSM 1000 operation. If you do not confirm, please explain.

Response.

a. Confirmed.

b. Confirmed.

c. Confirmed, although for completeness we note that the test statistic for the Incoming FHP elasticity is 2.53 and the critical value for the test that is specified in the question is 2.58. The hypothesis would not be rejected at the 5% significance level, for example.

d. Confirmed, if by "models presented in USPS-T12" you mean the results presented in column 2 above. Also, see my answer to part b of question 15 above for limitations on distinguishing results between columns 1 and 2. It is also the case that the regressions generating the results in column 1 used 3980 observations from the period 1999-2004 while the regressions underlying the results in column 3 used 2325 observations from 2002-2005 and only represent plants that had the AFSM technology in use.

e. Confirmed, if by "models presented in USPS-T12" you mean the results presented in column 2 above.

f. The differences in incoming elasticities are not statistically significant. I do not regard the difference between .651 and .712 as qualitatively significant.

g. Confirmed.

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USPS/OCA-T1-17.
Please refer to OCA-T-1, Table 6, and to Table 5 of your March 2006 paper. Please also refer to USPS-T-12, Table E-2 (page 128).

ASM100	Roberts (2006) Results (Table 5, p. 71)	USPS-T-12 FY 2005 Model (USPS-T-12, Table E-2, p. 128)	OCA-T-1 results (Base Model; Table 6, Table 7)
Total of FHP elasticites	1.009	1.00	0.844
S.E. of Total	Not reported	.09	.047
R^2	.884	.88	.856

a. Please confirm that the above table correctly reports the results from the specified sources. If you do not confirm, please provide a corrected table.
b. Please provide the standard error of the total of the incoming and outgoing FHP elasticities from your March 2006 AFSM 100 model, as presented in Table 5 of your March 2006 paper.
c. Please calculate and provide the 95 percent and 99 percent confidence intervals for the total of the incoming and outgoing FHP elasticities from your March 2006 paper, using the standard error you calculated for the response to part b.

Response.

a. Confirmed. For completeness, we note that the underlying estimates of the elasticity for FHP incoming are .791(.085), .79(.08), and .394 (.039) for columns 1, 2, and 3, respectively. The underlying estimates of the elasticity for FHP outgoing are .218 (.027), .21 (.03), and .450 (.067) for the three columns.

b. The standard error is .091.

c. The 95% confidence interval is (.831, 1.187). The 99% confidence interval is (.775, 1.243)

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USPS/OCA-T1-18.
Please refer to your testimony, OCA-T-1, at page 52, lines 18-19.

a. Please confirm that your measure of "output" for cancellation operations is "FHP_{OUT} for letters and flats." If you do not confirm, please explain.
b. Please confirm that outgoing FHP includes volumes of mail that do not require cancellation—e.g., mixed ADC/AADC presort volumes. If you do not confirm, please explain.
c. Please explain why you chose FHP measures that include volumes that do not require cancellation, rather than a count (or counts) of cancelled pieces, for your measure of cancellation output.

Response.

a. Not confirmed. There are two outputs in the cancellation labor demand equations, FHP_{OUT} for letters and FHP_{OUT} for flats. Each output has a separate labor demand elasticity in the cancellation operation.

b. Confirmed.

c. The goal is to measure the effect of a change in mail volume on labor use in the cancellation operation. That is what the regression I estimate will do. If, for example, most of the outgoing mail skips the cancellation stage that will be reflected in a small estimated volume elasticity for labor demand. If I used piece handlings in the cancellation operation as the output variable, then it would still be necessary to estimate the elasticity of piece handlings in cancellation with respect to the volume of outgoing letters and flats in order to calculate the marginal cost of a letter or flat. This is the same reason I do not use piece handlings in the labor demand equations for any of the sorting operations. At best, it only provides part of the information needed to estimate the marginal cost of processing a letter or flat.