DOCKET SECTION

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

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

RESPONSE OF UNITED STATES POSTAL SERVICE
WITNESS BARON TO INTERROGATORIES OF
UNITED PARCEL SERVICE
(UPS/USPS–T17—9–15)

The United States Postal Service hereby provides responses of witness Baron to the following interrogatories of United Parcel Service: UPS/USPS–T17—9–15, filed on September 17, 1997.

Each interrogatory is stated verbatim and is followed by the response.

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorneys:

Daniel J. Foucheaux, Jr.
Chief Counsel, Ratemaking

Richard T. Cooper

475 L'Enfant Plaza West, S.W.
Washington, D.C. 20260–1137
(202) 268–2993; Fax –5402
October 1, 1997

UPS/USPS-T17-9. Please refer to your testimony at pages 34 to 36, and confirm that:

(a) Your residual load-time cost after deleting fixed-time costs (Table 4) and volume-variable costs (Table 5) for SDR stops is $856,443,000-$522,577,000 = $333,866,000;

(b) The residual costs computed in (a) vary with volume and therefore do not conform to your criterion of "fixed" time as you define it for accrued coverage-related load-time cost at page 35, lines 18 to 21 or your testimony;

(c) Accordingly, your hypothetical demonstrates that the previous approach is "flawed" (page 34, line 18 of your testimony) to the extent that it ascribes the notion of "fixed" time (or cost) with respect to the residual $388,211,000 in Table 8, in contrast to identifying these costs as "residual institutional" costs, but it does not prove that any of these costs are in fact "fixed" with respect to volume.

RESPONSE:

(a) I confirm that the initial accrued SDR load-time cost of $995,848,000 minus the fixed-time at stop cost of $139,405,000 equals the final accrued SDR load-time cost of $856,443,000. I also confirm that $856,443,000 minus my estimate of SDR volume variable cost, $522,577,000 (table 5), equals $333,866,000.

(b) Accrued coverage-related load-time cost, as defined by the Postal Rate Commission in Docket R90-1, is supposed to be fixed with respect to volume at a stop or at a given set of actual stops. However, as traditionally **measured** under the previous approach to load-time cost analysis, accrued coverage-related load-time cost does vary as volume varies. Thus, since the residual cost computed in part (a) does vary with volume, it does not conform with the definition of accrued coverage-related load time cost, but does conform with the traditional measurement of that cost.

(c) Partially confirmed. The previous approach cannot accurately be described as an attempted proof that residual institutional cost is fixed with respect to volume. To my knowledge, proponents of that approach never attempted such a proof. Apparently they did not consider that the residual cost will fall as volume

falls at a stop or at a set of stops, and therefore cannot qualify as fixed with respect to volume.

UPS/USPS-T17-10. Please refer to the calculation of load time elasticities as described at pages 2 and 3 of LR-H-137, and confirm the following:

(a) Point estimates for predicted load time, as determined by substituting the 1996 CCS averages for the corresponding independent variables in the regression equation, include fixed time at stop;

(b) The elasticities derived for these data in LOAD2.ELAST.CNTL are evaluated at the mean values, including fixed time at stop for the dependent variable load time;

(c) If your estimates of fixed time per stop are deducted from the point estimates for predicted load time, then the resulting elasticity estimates are increased.

Please explain any nonconfirmation of the above, and include an explanation of why you included fixed-time per stop in your elasticity calculations.

RESPONSE:

(a) Not confirmed, based on my interpretation of the load-time regressions. I interpret each regression as an estimated equation that defines pure load time – time at stop excluding fixed time - as a function of volume or volume plus deliveries. Given this interpretation, the predicted load time derived through substitution of mean 1996 CCS values for letters, flats, parcels, and accountables (and mean 1985 values for collections and the dummy receptacle and container variables), should also be viewed as a prediction of load time exclusive of fixed-time at stop. See also my response to UPS/USPS-T17-11, part (a).

The alternative view is that each regression predicts load time plus fixed-time at stop. The problem with this interpretation is that if the regression really does predict the sum of load and fixed time, then it must be considered the proper source of the prediction for just the fixed time. Moreover, this regression estimate of fixed-time at stop would be the sum of the estimated intercept coefficient plus the appropriate (if any) estimated coefficients for the receptacle and container dummy variables. This sum, is, of course, negative in many

cases. (For an example, see my response to UPS/USPS-T17-11, part (a). Therefore, this alternative interpretation of the regression forces the acceptance of negative estimates of fixed-time at stop.

(b) Not confirmed. See my response to part (a) of this question. Based on my interpretation of the load-time regressions, the predicted values of the dependent variable exclude fixed-time at stop.

(c) Confirmed. However, the appropriate measure of fixed-time at stop to be deducted from each of these **regression-based** predictions of carrier time would not be my estimate of fixed time, but the fixed-time estimate that is itself derived from the regression. This estimate equals the sum of the intercept coefficient plus the appropriate estimated coefficients for the receptacle and container dummy variables. Such a deduction is also valid only if the regression is first interpreted as a prediction of load time plus fixed-time at stop. As indicated in my response to part (a) of this question, I reject this interpretation.

UPS/USPS-T17-11. Please refer to your regression analysis of SDR load time at page 57 of LR-H-137, and confirm the following:

(a) The sum of the parameter estimates for LD (0.6325055 seconds) and LDS (0.0069554 seconds) represents the estimated variable load time to deliver a single letter at a single letter stop;

(b) Your estimate of 1.052 seconds of fixed time at stop includes the time to deliver a single letter.

Please explain any nonconfirmation, including why the difference (0.412539 seconds) does not represent the fixed time at stop prior to loading any mail.

RESPONSE:

(a) Not confirmed. According to my interpretation of the SDR regression, this sum of parameter estimates, which equals about 0.639 seconds, is simply the estimated total load time to deliver one letter to an SDR stop. To agree that 0.639 equals just variable load time would imply that I view the estimate of the dependent variable as the sum of load time plus fixed-time at stop, and that this sum minus 0.639 equals just the fixed time. In effect, I would be agreeing that fixed-time at stop equals the sum of the estimated intercept coefficient and estimated coefficients for the relevant receptacle and container dummy variables.

In fact, I do not regard the sum of the intercept and dummy variable coefficient estimates as a valid measure of fixed-time at stop. See my responses to NAA/USPS-T17-3 and NAA/USPS-T17-14. In addition, I view the dependent variable as just the load-time portion. See my response to UPS/USPS-T17-10.

Moreover, if 0.639 second **is** viewed as a valid measure of just variable load time at an SDR stop, then, by necessary implication, the sum of the intercept plus relevant dummy variable coefficients would have to be viewed as a valid estimate of just the fixed time. This, in turn, would force the acceptance of clearly impossible results.

Suppose, for example, that an SDR stop has a mail box, and that the carrier's container type is "bundled mail." Then the dummy variables MR2 and CT2 in the SDR regression would equal one, and all other receptacle and container dummy variables would equal zero. Since MR2 but not CT2 appears as a right-hand-side variable in the SDR regression, the sum of the coefficient estimate for MR2, -2.861 seconds, and the intercept coefficient, 1.115 seconds, would equal the estimated fixed-time at stop. This sum, -1.746 seconds, is obviously an unacceptable result. However, if the predicted dependent variable value really is viewed as estimated fixed time plus load time, and if 0.639 seconds is viewed as a valid estimate of just the load time (i.e. variable time), then how could –1.746 not be viewed as the appropriate fixed-time estimate?

(b) Confirmed in the sense that 1.052 is the average of the lowest 20th percentile of 1985 carrier times recorded at one-letter stops. However, I view this 1.052 seconds as an upper-bound estimate of just the fixed-time at stop. I am using the lowest 20th percentile of 1985 carrier times to infer a value for fixed-time at stop, given the absence of any direct measurements of this fixed time.

UPS/USPS-T17-12. Please refer to your regression analysis of SDR load time at page 57 of LR-H-137, and confirm the following:

(a) The sum of the following parameter estimates represent the estimated variable load time in seconds to deliver a single piece of mail at a single piece stop:

Category	Volume Coefficient	Volume-Squared Coefficient	Sum(=variable Load time)
Letters	0.6325055	0.0069554	0.6394609
Flats	1.4789208	-	1.4789208
Parcels	12.2500025	-1.8524356	10.3975669
Accountables	47.9910158	-	47.9910158
Collections	1.1830019	-0.0150421	1.1679598

(b) If your estimates are deducted from the single-piece delivery load time observations for the respective categories, then the resulting estimate of the mean fixed time at stop prior to loading any mail for the lowest 20th percentile of the SDR tests is -0.037 seconds.

Please explain any nonconfirmation, including an explanation of why this estimate does not represent the fixed time per stop prior to loading any mail at SDR stops.

RESPONSE:

(a) Not confirmed. I view these sums of parameter estimates as estimates of total load time. I do not view them as estimates of just "variable" load time, which, for this question, is defined as total load time minus the sum of the estimated intercept coefficient and estimated coefficients for the relevant receptacle and container dummy variables. See my responses to UPS/USPS-T17-11, part (a) and UPS/USPS-T17-10.

(b) It is unclear how the –0.037 seconds is derived. However, to view it as a measure of mean fixed-time per stop, I must apparently first accept the premise that the sums of parameter estimates shown in the table presented in part (a) of the question are "variable" load times, in the sense that they equal total time at stop minus the sum of the estimated intercept and relevant dummy variable

coefficients. As indicated in my responses to UPS/USPS-T17-11, part (a), and to part (a) of this question, I reject such a premise.

UPS/USPS-T17-13. Please refer to your response to UPS/USPS-T17-8(a), and confirm the following:

(a) Your elasticities are computed based on FY1996 CCS data which are different from the 1985 test data that was the basis for the underlying regression estimates;

(b) Accordingly, your elasticities are not computed at the simple mean values of the right-hand side variables as presented by the Postal Rate Commission in Docket No. R87-1, Appendices to Opinion and Recommended Decision, Appendix J, pages 26-27.

RESPONSE:

(a) Confirmed.

(b) Confirmed. However, the Commission itself in its Docket No. R94-1 Decision accepted the computation of load-time elasticities at the mean values of FY 1993 CCS data (where this was possible), instead of at the mean values of the 1985 test data.

UPS/USPS-T17-14. Please refer to your response to UPS/USPS-T17-8, and confirm the following:

(a) The volume elasticities, as calculated using equation (1) at page 7 of your testimony, are higher when the mean volumes used to calculate the elasticities are increased by 1%;

(b) The use of a higher elasticity estimate in your illustration at page 35, lines 8,9, and 13 of your testimony, would reduce, if not eliminate, any increase in accrued coverage-related load time cost;

(c) That if an elasticity of .612373721, rather than an elasticity of .61, is used in computing volume-variable load-time cost after volumes are increased by 1 percent in your illustration on page 35 of your testimony, then there would be no resulting increase in coverage-related load time;

(d) Please confirm that the results of your illustration on page 35 of your testimony form the only basis in your testimony to conclude that the traditional calculation of coverage-related load time is flawed. If not confirmed, please explain.

RESPONSE:

a. Confirmed. At the mean volumes used in my testimony, the aggregate SDR elasticity with respect to the volume terms is 0.61017. (See table 5 in my testimony). At volumes that are 1 percent higher than these means, the aggregate elasticity increases to 0.61182. The EXCEL workbook in USPS LR-H-289, which is attached to this response, shows the computations that produce this 0.61182 estimate.

b. Confirmed. The use of the higher elasticity would reduce but not eliminate the increase. It may also be useful to show the specific result. To do so, I will redo the hypothetical from page 35 of my testimony using elasticities that are calculated to the fifth significant digit. This will avoid distortions from using variabilities that have different levels of rounding. I will then modify this hypothetical to account for the change in the elasticity that results from a one percent increase in volumes.

Row 1 of the table shown below assumes that accrued cost currently equals $800,000,000. The SDR load-time elasticity is assumed to equal the 0.61017 reported in table 5 of my testimony, which is the elasticity derived from the SDR regression at mean values for the volume variables. This elasticity produces a volume variable cost equal to $488,136,000, and an accrued coverage-related load-time cost equal to $311,864,000.

As confirmed in my response to part (a) of this question, the aggregate elasticity will increase from 0.61017 to 0.61182 as volumes increase by one percent above the mean values. The initial elasticity of .61017 implies an increase in accrued cost to $804,881,360. (In particular, $800,000,000 times 1.0061017 equals $804,881,360). Furthermore, as shown in row 2 of the table, the product of this new accrued cost and the new 0.61182 elasticity equals a volume variable cost of $492,442,514. The accrued cost minus this volume variable cost equals a new accrued coverage-related load-time cost of $312,438,846. This is $574,846 higher than the initial accrued coverage-related load-time cost. Although this increase is not as high as the one derived in my testimony, it nevertheless again illustrates the point that coverage-related load-time cost is not fixed with respect to volume loaded at one stop or at a given set of actual stops.

The Impact of Volume Growth On Accrued Coverage-Related Load-Time Cost

VOLUME	VOLUME VARIABILITY	ACCRUED COST	VOLUME VARIABLE COST	ACCRUED COVERAGE-RELATED LOAD-TIME COST	INCREASE IN ACCRUED COVERAGE-RELATED LOAD TIME COST
Current Levels	0.61017	$800,000,000	$488,136,000	$311,864,000	N.A.
All Volumes are 1% Higher Than Current Levels	0.61182	$804,881,360	$492,442,514	$312,438,846	$ 574,846

c. Confirmed. However, it is unclear how this 0.612373721 is derived.

d. Confirmed in the limited sense that this illustration is the only illustration presented in the testimony. Additional illustrations are provided by hypothetical examples and questions presented in NAA/USPS-T17-13, and in my answers to those questions.

UPS/USPS-T17-15. In reference to the hypothetical illustration at pages 34 to 36 of your testimony, please confirm that given the specification of equation (1), *the residual will always increase as volume increases unless the elasticities are* calculated at the higher values.

RESPONSE:

Not confirmed. As my response to UPS/USPS-T17-14 shows, the residual will increase even when the higher elasticities calculated at the higher volume are used to calculate volume variable and coverage-related costs.

DECLARATION

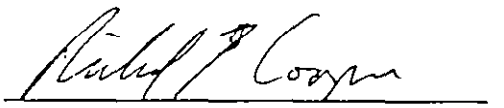
I, Donald M. Baron, declare under penalty of perjury that the foregoing answers are true and correct, to the best of my knowledge, information, and belief.

Donald M. Baron

Dated: 10-1-97

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.



Richard T. Cooper

475 L'Enfant Plaza West, S.W.
Washington, D.C. 20260–1137
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