Postal Rate Commission
Submitted 12/1/2005 10:36 am
Filing ID: 47429
Accepted 12/1/2005

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

RATE AND SERVICE CHANGES TO IMPLEMENT BASELINE NEGOTIATED SERVICE AGREEMENT WITH BOOKSPAN	Docket No. MC2005-3

REVISED RESPONSES OF THE UNITED STATES POSTAL SERVICE TO INTERROGATORIES OF THE OFFICE OF THE CONSUMER ADVOCATE REDIRECTED FROM WITNESS YORGEY (OCA/USPS–T2–23-24)

The United States Postal Service hereby provides a revised version of its responses to interrogatories OCA/USPS–T2–23-24, filed on November 15, 2005. The changes are highlighted. As can be seen, the elasticities shown in the attachment are now properly reflected in the text.

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorneys:

Daniel J. Foucheaux, Jr.
Chief Counsel, Ratemaking

Scott L. Reiter

475 L'Enfant Plaza West, S.W.
Washington, D.C. 20260-1137
(202) 268-2999, Fax -5402
scott.l.reiter@usps.gov
December 1, 2005

REVISED RESPONSE OF THE UNITED STATES POSTAL SERVICE
TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE
REDIRECTED FROM WITNESS YORGEY

OCA/USPS-T2-23. Please refer to your response to the request of the Presiding Officer at the hearing on October 19, 2005. Tr. 2/203. That response, provided on October 28, 2005, included the Excel spreadsheet, "OCA_Exhibit_1.xls."

a. Please confirm that in the worksheet "OCA Exhibit," the revised "TYAR 2006 "Average Revenue per piece" (i.e., assuming implementation of the 5.4 percent rate increase, and approval of the Bookspan NSA) is $0.194. If you do not confirm, please provide the correct number, showing all calculations.

b. Please confirm that the Bookspan NSA discount of $0.02 induces new letter volume of 27 million (105 million – 78 million) in the TYAR 2006. If you do not confirm, please provide the correct number, showing all calculations.

c. Please confirm that of the 27 million new letters induced in the TYAR 2006, 9,000,001 (87,000,001 – 78,000,000) letters generate an "Average Revenue per piece" of $0.198, and revenue of $1,778,151. If you do not confirm, please provide the correct numbers, showing all calculations.

d. Please confirm that of the 27 million new letters induced in the TYAR 2006, 17,999,999 (105,000,000 – 87,000,001) letters generate an "Average Revenue per piece" of $0.178 ($0.198 – $0.02), and revenue of $3,196,301. If you do not confirm, please provide the correct numbers, showing all calculations.

e. Please confirm that the TYAR 2006 "Average Revenue per piece" (i.e., assuming implementation of the 5.4 percent rate increase, and approval of the Bookspan NSA) that induces the 27 million new letters in the TYAR 2006 is $0.184 (($1,778,151 + $3,196,301) / 27 million). (*See* Attachment OCA-2, below, for the calculation of Bookspan's Average Revenue per Piece of $0.198 in the TYBR and $0.184 in the TYAR.) If you do not confirm, please provide the correct number, showing all calculations.

f. Please confirm that Bookspan's TYAR combined elasticity of demand for its Standard Regular Mail letter-size pieces is -4.225 ((105 million – 78 million) / (78 million + 105 million)) / (($0.184 - $0.198) / ($0.198 + $0.184)). (*See* Attachment OCA-2, below, for the calculation of Bookspan's Average Revenue per Piece of $0.198 in the TYBR and $0.184 in the TYAR.) If you do not confirm, please explain and provide your estimate of Bookspan's elasticity over the range of prices from $0.184 to $0.198.

RESPONSE:

a. Confirmed.

b. Confirmed that there are 27 million more letters with the NSA than without it.

c. Confirmed.

d. Confirmed.

e. Not confirmed. A discount of two cents induces 27 million additional letters after rates.

f. Not confirmed. The own-price elasticity for Bookspan's letters is -0.784.

The elasticity of a volume with respect to any factor can only be estimated simultaneously with the elasticity of that volume with respect to all other factors that change between two states. In this case, the marginal price of letters changes, causing a corresponding change in the discount between flats and letters. As a result, the effect of the discount elasticity of flats must be taken into account in estimating the own-price elasticity of letters.

The equation form used to forecast mail volumes by witness Thress in R2005-1 can be used to derive the own-price elasticity for Bookspan's letters. The basic equation is:

$$V_t = V_b * \left(\frac{X_{1t}}{X_{1b}}\right)^{\varepsilon_1} * \left(\frac{X_{2t}}{X_{2b}}\right)^{\varepsilon_2} * \ldots * \left(\frac{X_{nt}}{X_{nb}}\right)^{\varepsilon_n} * \left(\frac{u_t}{u_b}\right) \qquad \text{(Eq. 1)}$$

(R2005-1 USPS-T-7, p. 277), where

V_q is volume at time q
X_{mq} are values of factors affecting volume at time q
ε_m is the elasticity of volume with respect to X_m, and
u_q is the error at time q.

Because the volumes under consideration represent different pricing scenarios, but identical time periods, all non-price factors are $\left(\frac{X_{mt}}{X_{mt}}\right)^{\varepsilon_m}$, which reduces to one, and can be ignored. For Bookspan's letters, equation 1 then becomes:

$$L_{NEW} = L_{OLD} * \left(\frac{P_{NEW}}{P_{OLD}}\right)^{\varepsilon_P} * \left(\frac{D_{NEW}}{D_{OLD}}\right)^{\varepsilon_D} \quad \text{(Eq. 2)}$$

where

L is the letter volume
F is the flat-size volume
P is the marginal (not average) price of letters
D is the discount of letters relative to flats
ε_P is the own-price elasticity of letters, and
ε_D is the elasticity of letters with respect to the discount of letters relative to flats.

From the three sets of volumes and prices, three equations can be constructed: the change between "no rates" and before-rates, "no rates" and after-rates, and before-rates and after-rates. The first two scenarios can be presented in the form of equation 2 as:

$$L_{BR} = L_{NR} * \left(\frac{P_{BR}}{P_{NR}}\right)^{\varepsilon_P} * \left(\frac{D_{BR}}{D_{NR}}\right)^{\varepsilon_D} \quad \text{(Eq. 3a)}$$

$$L_{AR} = L_{NR} * \left(\frac{P_{AR}}{P_{NR}}\right)^{\varepsilon_P} * \left(\frac{D_{AR}}{D_{NR}}\right)^{\varepsilon_D} \quad \text{(Eq. 3b)}$$

Dividing each equation by L_{NR} and taking the natural log (represented here as "ln") yields:

$$\ln\left(\frac{L_{BR}}{L_{NR}}\right) = \varepsilon_P * \ln\left(\frac{P_{BR}}{P_{NR}}\right) + \varepsilon_D * \ln\left(\frac{D_{BR}}{D_{NR}}\right) \quad \text{(Eq. 4a)}$$

$$\ln\left(\frac{L_{AR}}{L_{NR}}\right) = \varepsilon_P * \ln\left(\frac{P_{AR}}{P_{NR}}\right) + \varepsilon_D * \ln\left(\frac{D_{AR}}{D_{NR}}\right) \quad \text{(Eq. 4b)}$$

Multiplying equation 4a by $\ln\left(\frac{D_{AR}}{D_{NR}}\right)$ and equation 4b by $\ln\left(\frac{D_{BR}}{D_{NR}}\right)$ gives:

REVISED RESPONSE OF THE UNITED STATES POSTAL SERVICE
TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE
REDIRECTED FROM WITNESS YORGEY

$$\ln\left(\frac{L_{BR}}{L_{NR}}\right) * \ln\left(\frac{D_{AR}}{D_{NR}}\right) = \varepsilon_P * \ln\left(\frac{P_{BR}}{P_{NR}}\right) * \ln\left(\frac{D_{AR}}{D_{NR}}\right) + \varepsilon_D * \ln\left(\frac{D_{BR}}{D_{NR}}\right) * \ln\left(\frac{D_{AR}}{D_{NR}}\right) \quad \text{(Eq. 5a)}$$

$$\ln\left(\frac{L_{AR}}{L_{NR}}\right) * \ln\left(\frac{D_{BR}}{D_{NR}}\right) = \varepsilon_P * \ln\left(\frac{P_{AR}}{P_{NR}}\right) * \ln\left(\frac{D_{BR}}{D_{NR}}\right) + \varepsilon_D * \ln\left(\frac{D_{AR}}{D_{NR}}\right) * \ln\left(\frac{D_{BR}}{D_{NR}}\right) \quad \text{(Eq. 5b)}$$

Subtracting equation 5b from equation 5a leaves:

$$\ln\left(\frac{L_{BR}}{L_{NR}}\right) * \ln\left(\frac{D_{AR}}{D_{NR}}\right) - \ln\left(\frac{L_{AR}}{L_{NR}}\right) * \ln\left(\frac{D_{BR}}{D_{NR}}\right)$$

$$= \varepsilon_P * \left(\ln\left(\frac{P_{BR}}{P_{NR}}\right) * \ln\left(\frac{D_{AR}}{D_{NR}}\right) - \ln\left(\frac{P_{AR}}{P_{NR}}\right) * \ln\left(\frac{D_{BR}}{D_{NR}}\right)\right) \quad \text{(Eq. 6)}$$

Rearranging equation six results in:

$$\varepsilon_P = \frac{\ln\left(\frac{L_{BR}}{L_{NR}}\right) * \ln\left(\frac{D_{AR}}{D_{NR}}\right) - \ln\left(\frac{L_{AR}}{L_{NR}}\right) * \ln\left(\frac{D_{BR}}{D_{NR}}\right)}{\ln\left(\frac{P_{BR}}{P_{NR}}\right) * \ln\left(\frac{D_{AR}}{D_{NR}}\right) - \ln\left(\frac{P_{AR}}{P_{NR}}\right) * \ln\left(\frac{D_{BR}}{D_{NR}}\right)} \quad \text{(Eq. 7)}$$

Finally, expanding and recombining terms in equation 7 gives:

$$\varepsilon_P = \frac{\ln(L_{NR}) * \ln\left(\frac{D_{BR}}{D_{AR}}\right) + \ln(L_{BR}) * \ln\left(\frac{D_{AR}}{D_{NR}}\right) + \ln(L_{AR}) * \ln\left(\frac{D_{NR}}{D_{BR}}\right)}{\ln(P_{NR}) * \ln\left(\frac{D_{BR}}{D_{AR}}\right) + \ln(P_{BR}) * \ln\left(\frac{D_{AR}}{D_{NR}}\right) + \ln(P_{AR}) * \ln\left(\frac{D_{NR}}{D_{BR}}\right)} \quad \text{(Eq. 8)}$$

Calculations are shown in the attachment to this answer.

REVISED RESPONSE OF THE UNITED STATES POSTAL SERVICE
TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE
REDIRECTED FROM WITNESS YORGEY

OCA/USPS-T2-24. Please refer to the response of witness Epp to the partially redirected request of the Presiding Officer at the hearing on October 19, 2005, Tr. 2/203, provided on October 28, 2005. In his response, witness Epp states

> While a rate increase affects both letters and flats, the NSA discount only applies to letters, so in addition to the lower postage for letters (which by itself will help mail volume) flats now become more costly in relative terms which will lead to a shift from flats to letters. This shift would not be captured in any "postage-mail volume elasticity" if it existed.

a. Please confirm that witness Epp is referring to the cross-price elasticity of demand for flats with respect to the change in price of letters. If you do not confirm, please explain.
b. Where the change in letter-size volume is based on Before Rates and After Rates volumes of 78 million and 88 million, respectively, please confirm that Bookspan's TYAR 2006 own-price elasticity of demand for letters is -1.725 (((88 million – 78 million) / (78 million + 88 million)) / (($0.198 - $0.184) / ($0.184 + $0.198))). If you do not confirm, please provide the correct number and show all calculations used to derive Bookspan's TYAR 2006 own-price elasticity of demand for letters.
c. Where the change in letter-size volume is based on Before Rates and After Rates volumes of 95 million and 105 million, respectively, please confirm that Bookspan's TYAR 2006 own-price elasticity of demand for letters is -1.432 (((105 million – 95 million) / (95 million + 105 million)) / (($0.198 - $0.184) / ($0.184 + $0.198))). If you do not confirm, please provide the correct number and show all calculations used to derive Bookspan's TYAR 2006 own-price elasticity of demand for letters.
d. Where the change in flat-size volume is based on Before Rates and After Rates volumes of 78 million and 95 million, respectively, please confirm that Bookspan's TYAR 2006 cross-price elasticity of demand for flats with respect to the change in price of letters is -2.814 (((78 million – 95 million) / (78 million + 95 million)) / (($0.198 - $0.184) / ($0.184 + $0.198))). If you do not confirm, please provide the correct number and show all calculations used to derive Bookspan's TYAR 2006 cross-price elasticity of demand for flats with respect to the change in price of letters.
e. Where the change in flat-size volume is based on Before Rates and After Rates volumes of 88 million and 105 million, respectively, please confirm that Bookspan's TYAR 2006 cross-price elasticity of demand for flats with respect to the change in price of letters is -2.522 (((88 million – 105 million) / (88 million + 105 million)) / (($0.198 - $0.184) / ($0.184 + $0.198))). If you do not confirm, please provide the correct number and show all calculations used to derive Bookspan's TYAR 2006 cross-price elasticity of demand for flats with respect to the change in price of letters.

REVISED RESPONSE OF THE UNITED STATES POSTAL SERVICE
TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE
REDIRECTED FROM WITNESS YORGEY

f. Please confirm that the average TYAR 2006 own-price elasticity of demand for letters is -1.578 ((-1.725 -1.432) / 2). If you do not confirm, please provide the correct number and show all calculations used to derive the average TYAR 2006 own-price elasticity of demand for letters.

g. Please confirm that the average TYAR 2006 cross-price elasticity of demand for flats with respect to the change in price of letters is -2.688 ((-2.844 -2.522) / 2). If you do not confirm, please provide the correct number and show all calculations used to derive the average TYAR 2006 cross-price elasticity of demand for flats with respect to the change in price of letters.

h. Please explain how the financial model for the Bookspan NSA, shown in your testimony at USPS-T-2, Appendix A, incorporated and analyzed the cross-price elasticity of demand for flats with respect to the change in price of letters.

RESPONSE:

a. Not confirmed. Witness Epp is referring to the discount elasticity of letters with respect to flats, that is, the price of flats less the price of letters, which measures the relative difference in the two prices.

b. Not confirmed. The own-price elasticity for Bookspan's letters is -0.784. See OCA/USPS-T-2-23f.

c. Not confirmed. Bookspan's before-rates volume is 78 million pieces, and the own-price elasticity of Bookspan's letters is -0.784. See OCA/USPS-T-2-23f.

d. Not confirmed. The elasticity of Bookspan's flat-size volume with respect to the discount between flats and letters is -0.226.

The equation form used to forecast mail volumes by witness Thress in R2005-1 can be used to derive the elasticity of Bookspan's flat-size volume with respect to the discount between flats and letters. The basic equation is:

$$V_t = V_b * \left(\frac{X_{1t}}{X_{1b}}\right)^{\varepsilon_1} * \left(\frac{X_{2t}}{X_{2b}}\right)^{\varepsilon_2} * \ldots * \left(\frac{X_{nt}}{X_{nb}}\right)^{\varepsilon_n} * \left(\frac{u_t}{u_b}\right) \quad \text{(Eq. 1)}$$

(R2005-1 USPS-T-7, p. 277), where

V_q is volume at time q
X_{mq} are the values of factors affecting volume at time q
ε_m is the elasticity of volume with respect to X_m, and
u_q is the error at time q.

Because the volumes under consideration represent different pricing scenarios, but identical time periods, all non-price factors are $\left(\frac{X_{mt}}{X_{mt}}\right)^{\varepsilon_m}$, which reduces to one, and can be ignored. For Bookspan's flat-size mail, equation 1 then becomes:

$$F_{AR} = F_{BR} * \left(\frac{D_{AR}}{D_{BR}}\right)^{\varepsilon_D} \quad \text{(Eq. 2)}$$

where

F is the flat-size volume
D is the discount of letters relative to flats
ε_D is the elasticity of flats with respect to the discount of letters relative to flats.

Solving for ε_D in equation 2 yields:

$$\varepsilon_D = \frac{\ln\left(\frac{F_{AR}}{F_{BR}}\right)}{\ln\left(\frac{D_{AR}}{D_{BR}}\right)} \quad \text{(Eq. 3)}$$

See the attachment to this answer for calculations.

e. Not confirmed. Bookspan's before-rates flat-size volume is 137 million pieces, and the elasticity of Bookspan's flat-size volume with respect to the discount between flats and letters is -0.226. See part d.

f. Not confirmed. The own-price elasticity for Bookspan's letters is -0.784. See OCA/USPS-T-2-23f.

g. Not confirmed. The elasticity of Bookspan's flat-size volume with respect to the discount between flats and letters is -0.226. See part d.

h. The financial model did not use a cross-price elasticity for letters with respect to flats.

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.

Scott L. Reiter

475 L'Enfant Plaza West, S.W.
Washington, D.C. 20260-1137
December 1, 2005