

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

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Postal Rate and Fee Changes, 2006

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Docket No. R2006-1

**INTERROGATORIES OF THE GREETING CARD ASSOCIATION  
TO POSTAL SERVICE WITNESS THOMAS E. THRESS (USPS-T7-1-9)**

**(June 26, 2006)**

Pursuant to Sections 25 and 26 of the Postal Rate Commission's rules of practice, Greeting Card Association hereby submits interrogatories. If necessary, please redirect any interrogatory to a more appropriate Postal Service witness.

Respectfully submitted,

/s/ James Horwood

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Date: June 26, 2006

GCA/USPS-T7-1.

Please refer to Table 13 in your testimony, R2006-1, USPS-T-7, page 63, and to the corresponding Table 7 from your testimony in R2005-1, USPS-T-7, page 60. In R2005-1, your coefficient for the impact of the Internet on FCLM single piece volume has a negative value, - 0.491, indicating that the Internet has a negative effect on the volume of single-piece mail.

- a. Please confirm that for R2006-1, the estimated coefficient for your internet variable (CS\_ISP) by itself,  $C_0$ , is positive and equals 0.753. If you cannot confirm, please provide the correct value or explain.
- b. If confirmed, state whether you agree that your Internet variable  $C_0$  in R2006-1 indicates that the Internet has had a positive effect on the volume of First Class single-piece mail. To the extent you disagree, provide the basis of your position in full. State whether a determination that the Internet has had a positive effect on the volume of single-piece mail is at odds with your prior work and USPS witness Bernstein's testimony in this case. To the extent you disagree, provide the basis of your position in full.

GCA/USPS-T7-2.

Please refer to your testimony, R2006-1, USPS-T-7, page 63.

- a. Please confirm that the estimated coefficient for the average worksharing discount is -0.096 in the FCLM single piece demand equation.
- b. Please confirm that this coefficient when estimated in the workshared equation is a positive number.
- c. Please confirm that you impose the negative sign of this coefficient in the single piece equation, and that the negative value is not, instead, the result of econometric estimation.
- d. Please confirm, by doing the estimation, that including the average workshare discount directly into the single-piece equation leads to a positive econometric estimate for the coefficient of this variable. If you do not confirm, please provide your results, methodology, and all of the data and tests you used to answer the question.
- e. If your answer to (d) is “Confirmed,” is not your imposition of a negative sign on this coefficient in the single piece equation an econometric mis-specification of that equation? If your answer is anything other than an unequivocal “Yes,” please explain fully why you have not mis-specified that equation.

GCA/USPS-T7-3.

- a. Please confirm that the correlation between your ISP variable and your time trend variable is 0.9407. If you do not confirm, please provide the estimate.
- b. Please confirm that your use of the ISP variable is essentially little more than a time trend variable. If you cannot confirm, please explain and provide the basis for your conclusion in full.
- c. Please confirm that your new ISP variable is essentially nothing more than an estimated proxy for the number of users of Internet services, i.e. consumption expenditures on the Internet divided by the price index for ISP. If you cannot confirm, please explain and provide the basis for your conclusion in full.
- d. Please confirm that your demand equation for single piece mail does include the price of single piece mail, but does not include the prices of any competing substitutes (other than the worksharing discount you impose). If you cannot confirm, please explain and provide the basis for your conclusion in full.
- e. Please confirm that your ISP variable in R2006-1 is an entirely new variable from your ISP variables in R2001-1 and R2005-1, but **still** does not represent the unit price of that competing substitute. If you cannot confirm, please explain and provide the basis for your conclusion in full.

GCA/USPS-T7-4.

Please refer to your testimony R2006-1, USPS-T-7, page 46, where you state starting at line 17: “E-mail has emerged as a potent substitute for personal letters, bills can be paid online, and some consumers are beginning to receive bills and statements through the Internet rather than through the mail.”

- a. Please confirm that the normal specification of a demand equation in the presence of competing substitutes includes the prices of the substitutes as well as the price of the good in question.
- b. When you refer to “alternatives” to First Class single piece mail, to “electronic diversion” or “electronic substitution”, or to “losses” of single piece mail, please confirm that you are referring to the existence of competing substitutes for single piece mail in one or more markets.
- c. Please confirm that if the price of a strongly competing substitute is not controlled for in the demand equation for a good, the coefficient representing the impact of the price on the demand equation will be mis-specified and the impact of the price of the good on demand for the good will be biased.
- d. Please confirm that if time series data were available on price per unit for electronic media substitutes and Internet substitutes for mail, these time series would be appropriate variables along with single piece mail price to include in the demand equation for single piece mail volume. If you cannot confirm, please explain and provide the basis for your conclusion in full.
- e. Please confirm that over several rate cases now, the absence of the direct price variables for these competing substitutes noted in c. (above) is one reason why you have used consumption expenditures on internet service providers (ISP) or time trend variables. If you cannot confirm, please explain and provide the basis for your conclusion in full.
- f. Please confirm that your ISP variable is not the price of electronic media substitutes or the price of Internet substitutes for single piece mail. If you cannot confirm, please explain and provide the basis for your conclusion in full.

GCA/USPS-T7-5.

Please refer to your testimony, R2006-1, USPS-T-7, pages 312-316 and the following table showing the correlation coefficient matrix for several of the variables you have included in your SP equation over 1988-2005 periods.

Correlation Coefficient Matrix: 1988Q2-2005Q4				
	D1_3WS_FIT	EMPL_T	CS_ISP	TREND
D1_3WS_FIT	1.0000	-0.9251	0.8184	0.9625
EMPL_T		1.0000	-0.9202	-0.9681
CS_ISP			1.0000	0.9407
TREND				1.0000

- a. Please confirm that the variable reflecting the average workshared discount is accounted for by the variable D1\_3WS\_fit in your dataset. If you cannot confirm, please explain why.
- b. From the above table, please confirm that there exists a very high correlation between each of the three variables and the time trend. If you cannot confirm, please explain why.
- c. Please confirm that the inclusion of the trend variable alone would have been sufficient to capture the effect of these variables. If you cannot confirm, please explain why.
- d. Please confirm that the inclusion of any one of the three variables alone in the above table would have been sufficient to capture the effect of all three. If you cannot confirm, please explain why.
- e. Please confirm that the very high correlations among the variables shown in the above table could result in multi-collinearity in the model. If you cannot confirm, please explain why. Please provide any tests that you have conducted showing that multi-collinearity is not present in your single piece equation, and more specifically among the three independent variables in the above table.
- f. On page 313 lines 20-22, you state that “in my work, multi-collinearity is particularly acute with regard to a high degree of correlation between current and lagged prices....” Please confirm that, in light of the above table, multi-collinearity is also “acute” between and among the three variables identified above, *i.e.*, D1\_3WS\_FIT, EMPL\_T, and CS\_ISP..
- g. Please confirm that the presence of multi-collinearity in the model can result in the coefficients not being correctly estimated. In other words multi-collinearity masks the separate effect of each variable. If you cannot confirm, please explain why.
- h. Please confirm that the presence of multi-collinearity could also affect the estimated coefficient of the FCLM single piece own price variable. If you cannot confirm, please explain and provide the basis for your conclusion in full.

GCA/USPS-T7-6.

Please refer to your LR-L-64, File demandequations.txt.

- a. Please confirm in your estimation of the FCLM single piece demand equation that the Shiller coefficient is zero.
- b. Is it unusual to have a Shiller coefficient value equal to zero in the presence of multi-collinearity? Please explain fully.

GCA/USPS-T7-7.

Please refer to your R2005-1, LR-K-65 and R2006-1, LR-L-65, after rate forecasts.

- a. Please confirm that the annual single piece volume forecasts given in the following table are correct. If you cannot confirm, please provide the correct numbers.

R2006-1 vs R2005-1 SP Volume Forecasts (in millions of pieces)			
TIME	R2006-1	R2005-1	Difference
2006	41,410.402	42,459.296	(1,048.894)
2007	39,104.641	41,271.110	(2,166.469)
2008	37,206.438	N/A	N/A

- b. Please state approximately when your forecast in R2005-1 was made and when your corresponding forecast in R2006-1 was made.
- c. Please explain what factors, including the changes in the FCLM single piece equation model, have caused the R2006-1 forecast to be more than 1 billion pieces lower than the R2005-1 forecast for the year 2006.
- d. Please explain what factors or changes, including the changes in the SP equation model, have caused the R2006-1 forecast to be almost 2.2 billion pieces lower than the R2005-1 forecast for the year 2007.
- e. Please confirm that, given the trend in the difference between your R2006-1 and R2005-1 forecasts, if in R2005-1 you had forecast FCLM single piece volume for the year 2008 in R2005-1, the difference would have become even wider than 2.2 billion pieces, and likely well over 3 billion pieces. If you cannot confirm, please explain why.
- f. Please confirm that had you used the same volume trends for single piece mail in R2006-1 that you used for R2005-1, on that account alone the revenue requirement for this case would be \$1.5 billion lower for TY2008, (\$0.51 revenue per piece X 3 billion pieces).

GCA/USPS-T7-8.

Please consider the following simple hypothetical example which deals with the impact on own price elasticity from not including the prices of competing substitutes in a demand equation. Table 1 shows the raw annual data on quantity demanded of good X, the price of good X and the price of substitute good Y, given in Columns 1-3 and the corresponding natural log of these variables, given in Columns 4-6. Column 7 shows the price of substitute Y divided by the price of X and Column 8 shows the price of X divided by the price of substitute Y reflecting the relative prices. Table 2 shows the regression of the natural log of the quantity demanded of good X with respect to the natural log of its own price. Table 3 shows the regression of the natural log of the quantity demanded of good X with respect to the natural log of its own price and the natural log of the price of the substitute good, Y. Regressions were conducted in Excel.

- a. Please refer to Table 2. Please confirm that the results for the quantity demanded with respect to its own price when the price of the substitute is excluded from the equation, indicates an own price elasticity of -0.7435, which implies an inelastic demand for good X. If you cannot confirm, please explain and provide the basis for your conclusion in full.
- b. Please refer to Table 3. Please confirm that the results for the quantity demanded with respect to its own price when the price of the substitute is included, indicates an own price elasticity of -1.3955, which implies an elastic demand for good X in the presence of the substitute. If you cannot confirm, please explain why.
- c. Refer to Table 1 Column 7. Please confirm that the price of the substitute good Y is falling relative to the price of good X. If you cannot confirm, please explain and provide the basis for your conclusion in full.
- d. If your answer to (a) is affirmative, please confirm that economic theory predicts that consumers will substitute good Y for good X when the relative price of good Y is falling.
- e. Please confirm from economic theory that in the long-run the availability of substitutes for a given good X with falling relative prices should result in the good's own price elasticity becoming more elastic, properly measured. If you cannot confirm, please explain why and provide specific citations to supporting economic authorities..

date	Qx	Px	Py	LQx	LPx	Lpy	Py/Px	Px/Py
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1990	23.00	142.17	8.00	3.14	4.96	2.08	0.056	17.771
1991	22.61	143.93	8.05	3.12	4.97	2.09	0.056	17.880
1992	23.41	146.50	8.10	3.15	4.99	2.09	0.055	18.086
1993	22.74	150.80	8.20	3.12	5.02	2.10	0.054	18.390
1994	22.04	160.00	8.10	3.09	5.08	2.09	0.051	19.753
1995	16.24	161.30	7.80	2.79	5.08	2.05	0.048	20.679
1996	16.69	170.47	7.68	2.81	5.14	2.04	0.045	22.196
1997	18.20	188.10	8.30	2.90	5.24	2.12	0.044	22.663
1998	18.51	189.37	8.50	2.92	5.24	2.14	0.045	22.278
1999	17.65	189.53	8.60	2.87	5.24	2.15	0.045	22.039
2000	17.68	197.88	8.90	2.87	5.29	2.19	0.045	22.234
2001	17.76	199.77	9.00	2.88	5.30	2.20	0.045	22.196
2002	17.67	211.23	9.10	2.87	5.35	2.21	0.043	23.212

Dependent Variable: LQx					
<i>Regression Statistics</i>					
Multiple R		0.7558			
R Square		0.5712			
Adjusted R Square		0.5322			
Standard Error		0.0934			
Observations		13			
ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	0.12793	0.12793	14.65073	0.00281
Residual	11	0.09606	0.00873		
Total	12	0.22399			
<i>Coefficients</i>					
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	
Intercept	6.7903	0.9999	6.7911	0.0000	
LPx	-0.7436	0.1943	-3.8276	0.0028	

**TABLE 3**

Dependent Variable: LQx

*Regression Statistics*

Multiple R	0.9164
R Square	0.8397
Adjusted R Square	0.8077
Standard Error	0.0599
Observations	13

## ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	0.1881	0.0940	26.2007	0.0001
Residual	10	0.0359	0.0036		
Total	12	0.2240			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	5.6451	0.6994	8.0710	0.0000
LPx	-1.3955	0.2022	-6.9027	0.0000
LPy	2.1236	0.5187	4.0939	0.0022

GCA/USPS-T7-9.

Please refer to your testimony at page 37.

- a. Please confirm that the only reason you applied the Box Cox transformation to your ISP variable was to make it non-linear. If you cannot confirm, please explain and provide the basis for your conclusion in full.
- b. Please confirm that this was not a necessary transformation to estimate your model, i.e. you could have left the ISP data as linear in your translog model.
- c. Have you applied the Box Cox transformation to all variables rather than just the ISP variable? If “yes”, please provide the results.
- d. Please confirm that imposing Box Cox coefficient values of zero and one across all variables in your single piece model yields the two extreme versions of the model, namely the log linear version and the linear version respectively. If you cannot confirm, please explain and provide the basis for your conclusion in full.
- e. Please confirm that any value between zero and one for the Box Cox coefficients when the transformation is applied across all variables would be a set of values determined by the data rather than imposed by the researcher. If you cannot confirm, please explain and provide the basis for your conclusion in full.
- f. Why is your Box Cox coefficient for the ISP variable of 0.122 so different from last year’s estimate of 0.326? Provide the basis for your explanation in full.