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BEFORE THE
POSTAL RATE COMMISSION
WASHINGTON, D.C. 20268B0001

POSTAL RATE AND FEE CHANGES, 2006

Docket No. R2006-1

REVISED RESPONSES OF GREETING CARD ASSOCIATION WITNESS JAMES A. CLIFTON TO INTERROGATORIES OF THE UNITED STATES POSTAL SERVICE (USPS/GCA-T1-1-47)

(October 20, 2006)

The Greeting Card Association ("GCA") hereby provides the responses of James A. Clifton to the following interrogatories of the United States Postal Service filed on September 15, 2006: USPS/GCA T1-1-47. This replaces the responses filed on September 29, 2006. The revision is necessitated by the omission of proper identification of each response as required by the Commission's Rules of Practice and Procedure § 3001.26(b). Revised responses are being filed contemporaneously herewith.

Each interrogatory is set out verbatim followed by the response.

Respectfully submitted,

/s/ James Horwood

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Date: October 20, 2006

USPS/GCA-T1-1. On page 3 at line 6 of your testimony, you refer to witness Thress's estimate of the own-price elasticity of First-Class single-piece letters as "biased."

a. Please define the term "biased" as it is used in formal statistical or econometric analysis.
b. Was your use of the term "biased" on page 3, line 6, of your testimony consistent with the definition in a.?
c. If your use of the term "biased" was consistent with the definition in a., please provide the mathematical and statistical evidence which you used to arrive at this conclusion.
d. If your use of the term "biased" was not consistent with the definition in a., please define the term "biased" as you intended it to be understood on page 3 at line 6 of your testimony.

RESPONSE:

a. Bias = $E(\hat{c}) - c \neq 0$. Thus, bias means that the expected value of the estimated coefficient of a parameter is not equal to the parameter's value.
b. Yes.
c. The incorrect and unnecessary Box-Cox specification of the ISP variable is a source of the bias, since it dampens the true estimates. Furthermore, even if Box-Cox is correctly specified, its coefficients should be estimated along with the other coefficients using an appropriate econometric technique such as the maximum-likelihood estimation rather than least square technique. Otherwise, this could also be another source of bias.
d. Not applicable.

USPS/GCA-T1-2. Please define the "payments market" as you use the term on page 3 at line 20 of your testimony and elsewhere. Within your answer, please address whether the following payments would be part of the "payments market" as you use the term in your testimony.

a. Payment for groceries at point of purchase
b. Payment for clothing at point of purchase
c. Payment for a newspaper subscription
d. Payment to an employee
e. Payment to mail a package
f. Payment for theater tickets
g. For the items listed in a – f., what is your best guess as to how such payments are made in 2006?
h. For the items listed in a – f., what is your best guess as to how such payments were made in 1975?
i. Do you believe that payment for any of the items listed in a – f would have ever been sent through the mail? If so, approximately what percentage of such payments would you estimate were sent through the mail at the peak of such usage? What percentage of such payments would you estimate are currently sent through the mail?
j. If you contend that debit cards are currently used for any of the above transactions, or any point-of-sale transactions, how would such use of debit cards affect the volume of First-Class Mail? Please explain fully.

RESPONSE:

The definition of the U. S. payments market I adopt is based on that of the 2004 Federal Reserve Bank of Atlanta study.

a. - f. Yes.

g. - j. I do not have the level of detail to answer these questions.

USPS/GCA-T1-3. Please define "pricing power" as you use the term on page 4, line 1, of your testimony.

RESPONSE:

The term "pricing power" is an economic term referring to the effect that a change in a firm's production price has on the quantity demanded of that product. Pricing power relates to the "Price Elasticity of Demand." Generally speaking, if a company doesn't have much pricing power, then an increase in their prices would substantially lessen the demand for its products. See (http://financial-dictionary.thefreedictionary.com/Pricing+Power).

USPS/GCA-T1-4. a. Do you believe that a firm has "pricing power" if its share of a market exceeds 50 percent? Please explain.

b. Do you believe that a firm lacks "pricing power" if its share of a market is less than 50 percent? Please explain.

c. Are there any conditions under which a firm could lack "pricing power" despite having a market share in excess of 50 percent? If so, what are these conditions?

d. Are there any conditions under which a firm could have "pricing power" despite having a market share that is less than 50 percent? If so, what are these conditions?

RESPONSE:

a. - d. Please see my response to 3. Furthermore, I would have to know the specifics of any market situation before I could answer your questions.

USPS/GCA-T1-5. a. Please confirm that the use of electronic alternatives to mailed bills and statements requires Internet access by both the sender and recipient of electronic bills and statements.

b. What percentage of First-Class workshared mail is sent to households?

c. Please confirm that, in order for a business to send an electronic bill or statement to a household, that household must have Internet access.

d. In light of your responses to parts a. – c. of this interrogatory, please explain your statement on page 6 of your testimony at lines 23 and 24, that "[t]he inclusion of a broadband variable for workshared letters makes no economic sense."

RESPONSE:

a. Confirmed.

b. No data are available to answer this question so far as I am aware.

c. Confirmed.

d. You have taken my remarks out of context. Please read lines 19-27 on page 6, and lines 1-4 on page 7. Since T1 technology has been in widespread use since well before 2002, witness Thress should have used that as an explanatory variable in the workshared letters equation, not starting in 2002, but much earlier. The inclusion of a broadband variable in the single piece equation should be made when that trend started to ramp up, roughly after 2000, which was much later than the ramping up of T1 connections in office buildings.

USPS/GCA-T1-6. In his testimony at page 27, lines 10 – 23, witness Thress makes the following statement:

> "I am not asserting here that the use of broadband Internet access leads directly to a proportional decrease in mail volume. Rather, I am suggesting that the historical pattern of the adoption of broadband Internet access has mirrored electronic substitution out of certain types of mail. In some cases, mail loss may be a direct result of the use of broadband. For example, higher-speed connections, which allow for faster downloads of graphical images, may make online magazines a more attractive alternative to Periodicals mail. In other cases, however, it may simply be the case that the adoption of these technologies is occurring along a similar time path. This similarity may be more than coincidental, of course, and may be the result of common technological advancements. Recent increases in electronic bill presentment may have aspects of both of these factors. That is, while higher-speed connections may make it more feasible to receive bills and statements online, it is also the case that the technology which allows for such things has also developed more or less over this same time period."

Do you agree with Mr. Thress's statement here? If not, why not? If so, why do you believe that "[t]he inclusion of a broadband variable for workshared letters makes no economic sense"?

RESPONSE:

Please see my response to 5. d. above.

USPS/GCA-T1-7. a. What percentage of businesses currently has access to "high speed T1 technology"?

b. What percentage of businesses had access to "high speed T1 technology" in 2001?

c. What is the basis for your assertion at page 6, line 25, through page 7, line 1 that "any business that operates in a commercial office environment has had access to high speed T1 line technology for many, many years and certainly well before the rate increase in 2002"?

d. What is the basis for your assertion at page 7, lines 1 – 3, that "[t]he broadband deepening that has gone on in recent years since 2000 is almost exclusively in the household or residential sector"?

RESPONSE:

a. - b. I do not have such precise numerical data.

c. My general knowledge and experience.

d. My general knowledge and experience.

USPS/GCA-T1-8. a. Do you believe that there is an immediate and universal shift from mail to electronic alternatives for all households when they acquire Broadband Internet access? Please explain.

b. Do you believe that the loss of mail due to electronic alternatives must be proportional to the overall level of Broadband usage in the United States? If so, please explain why you believe this to be the case. If not, please explain why you believe that the number of Broadband subscribers "should be included in the single piece equation"?

RESPONSE:

a. No. There is a learning curve. The substitution effect probably resembles a standard "S" shaped growth curve. It is interactive. For example, on-line banking is made more feasible once households have broadband.

b. Not necessarily. The point is accelerating adoption of broadband by households is becoming the major dynamic explaining further Internet diversion. I would expect at some point as this process unfolds, unless the USPS becomes more aggressive in competing, one will see another large drop off in First Class Mail volume such as that experienced in the recent past, and again it will be focused in a further loss of bill payments mail.

USPS/GCA-T1-9. a. Please confirm that the demand equation which is used by you to produce your estimate of the own-price elasticity of First-Class single-piece letters of -0.456 does not include the number of Broadband subscribers as an explanatory variable.

b. Please reconcile your decision to omit the number of Broadband subscribers within the demand equation for First-Class single-piece letters with your assertion on page 7 that "on economic grounds, it should be included in the single-piece equation."

RESPONSE:

a. Confirmed.

b. In this model I was merely trying to investigate whether Mr. Thress' estimated price elasticity is dampened due to: (1) the use of a mislabeled Box-Cox transformation; and (2) the stochastically imposed workshared discount coefficient.

USPS/GCA-T1-10. Please explain in detail the "other problems" which are created "whenever a time trend dummy variable … is re-introduced into a demand equation" to which you refer on page 7 of your testimony.

RESPONSE:

Inclusion of a time trend variable could introduce further autocorrelation in the model. Furthermore, the time trend variable may cause multicollinearity, resulting in some variables becoming insignificant.

USPS/GCA-T1-11. a. Please confirm that the demand equation which is used by you to produce your estimate of the own-price elasticity of First-Class single-piece letters of -0.456 includes an interaction between a linear time trend starting in 2002Q4 and consumption expenditures on Internet Service Providers.

b. Would the inclusion of a linear time trend starting in 2002Q4 interacted with consumption expenditures on Internet Service Providers represent "a time trend dummy variable capturing everything and nothing"? If not, to what variable in witness Thress's First-Class single-piece letters equation were you referring when you denigrated (page 7) his use of "a time trend dummy variable capturing everything and nothing"?

c. Given the inclusion of the linear time trend starting in 2002Q4 interacted with consumption expenditures on Internet Service Providers as an explanatory variable in your proposed demand equation for First-Class single-piece letters, is your demand equation subject to the problems to which you refer on page 7 of your testimony at lines 19 – 21, which are created "whenever a time trend dummy variable … is re-introduced into a demand equation"? If not, why not?

RESPONSE:

a. Confirmed.

b. I was referring to the long-term trend that interacts with the ISP variable.

c. It could, but at a lesser degree than over-the-whole-period time trend.

USPS/GCA-T1-12. Please refer to your testimony at page 9, lines 3-4.

a. Is it your testimony that the 2005 Household Diary Study indicates that of total First-Class Mail sent by households, only 13 percent constitute payments? If so, please show the full derivation of this percentage. If not, please explain fully, and provide the correct percentage of First-Class Mail sent by households that constitutes payments.

b. What percentage of First-Class single-piece letters are payments sent by households? Please explain fully.

RESPONSE:

a. - b. The text above table 4.1 in the HHD talks about "[t]ransactions sent and received" and says they are 53 percent of household First-Class Mail. Part (a) of the question appears to read the testimony as asserting that payments are 13 percent of FCM sent by households. If the 10.8 billion comes from the 2005 column for bill payments, as I assume it does, then household bill payments do constitute 10.8/(42.7 ÷ 0.53) = 13.4 percent of *all* household First-Class Mail (sent and received). But the question asks whether it is 13.4 percent of First-Class Mail *sent by* households.

I have not found a good way of estimating the FCM sent by households, but the following is suggestive. The categories are the ones that seem likely to originate with households (the numbers come from HHD tables 3.1 and 4.1):

Total HH to HH correspondence	5.870 billion
Total HH to NHH correspondence	2.119
Total correspondence sent	7.989

Bill payments	10.809	
Orders		0.769
Donations		0.560
Total transactions sent		12.138
Total sent	20.127	

So the 10.8 billion bill payments would be 53.7 percent of the outgoing.

USPS/GCA-T1-13. Do you understand witness Thress's own-price elasticity estimate for First-Class single-piece letters to be an estimate of the "market own-price elasticity of demand" or an estimate of the "own-price elasticity of demand for [a] single competitor" as you use those terms on page 10, lines 17 – 19, of your testimony?

RESPONSE:

The latter.

USPS/GCA-T1-14. Do you believe that witness Thress has ever asserted that the payments market is highly price inelastic? If so, please provide evidence of such an assertion.

RESPONSE:

Yes. See Tr., page 1322, lines 2 -25, and particularly lines 17-25.

USPS/GCA-T1-15. On page 14 of your testimony at lines 16 – 18, you hypothesize that "[p]ayments made by check are an excellent proxy for payments made by mail, because at the point of sale, checks are rarely used anymore, having been displaced by credit and debit cards."

a. Do you believe that "payments made by check are an excellent proxy for payments made by mail" in the year 2000? Please explain.
b. Do you believe that "payments made by check are an excellent proxy for payments made by mail" in the year 1990? Please explain.
c. If the percentage of checks which are mailed, as opposed to being used at the point of sale, has been increasing over time, could the number of checks which are mailed have increased even as the total number of checks has decreased? Please explain.
d. Please confirm that Table 2 on page 15 of your testimony does not provide any direct evidence on the "USPS market share in the U.S. payments market." If not confirmed, please explain.

RESPONSE:

a. - b. Yes, increasingly over the 1970-2000 period. Not based on statistical data but on "common knowledge" observations of what people do. I do not see many people pay by check anymore, they use credit or debit cards, general purpose or special issue. At the end of the month, however, in paying bills sent by mail, people write checks generally. Automatic debit may be substituting for check writing, particularly if the amount is identical each month, such as a fixed mortgage payment. On-line banking may be substituting for some check writing, but in the main I believe most checks written to pay bills are sent through the mail.

c. I do not have the data to answer your question, but it does not follow that just because point of sale check percentage has declined, it would lead consumers to increase usage of checks sent by mail.

d. Not confirmed. Table 2 lists checks. Even if every check were mailed, the USPS market share in the U. S. payments market would be well under 50%. It is highly unlikely that every check is mailed. I pay a lot of workmen around my home by check on the spot. Those checks come back to me in a single monthly statement from my bank. Most but not all of the checks I write are for bill payments and are sent through the mail.

USPS/GCA-T1-16. On page 17, at lines 18 – 20, you claim that "[a] direct estimate of that cross price elasticity, b_2, would greatly sharpen the estimate for b, the own-price elasticity of demand for single piece payments mail." Please explain in detail why you believe this to be the case.

RESPONSE:

See footnote 11 of my testimony. In particular Carlton and Perloff state "All else the same, the larger a cross-elasticity of demand, the larger in absolute value is the direct elasticity of demand." In their footnote 23, the reason for this is explained. "This result follows because the sum of the direct elasticity plus all cross-elasticities of demand equals 0." In the case of First Class single piece mail, we are speaking about a single substitute, and hence a single cross elasticity. Thus, my statement follows.

USPS/GCA-T1-17. On page 17, at line 20 through page 18, line 2, you claim that "[o]ther things being equal, a further property of the demand specification in equation (2) is that when the cross price elasticity b_2 is high, the absolute value of the own price elasticity, b, will also tend to be high."

a. Please explain why you believe this to be true.
b. What conditions are necessary for this expected relationship to hold true?
c. If P and P_2 in equation (2) are uncorrelated, would you expect the own-price elasticity, b, to be dependent on the level of the cross-price elasticity b_2? If your answer is yes, please provide citations from mathematic or statistical sources that would support your answer.
d. If the Postal Service "refuses to compete on price" with electronic alternatives, would you expect P and P_2 to be correlated? Please explain your answer.

RESPONSE:

a. - d. Please see my answer to 16. Further, in a properly specified demand equation for First Class single piece letters, the price of the competing substitute would be explicit, and not captured by vague non-price variables or time trend variables. In the long run, the USPS has no choice but to compete on price with electronic substitutes, they have just refused to do so thus far. Thus, fundamentally, there is a correlation.

USPS/GCA-T1-18. On page 17, line 6 of your testimony you present the following equation (1):

$$(1)\ \log (Q) = a - b \log (P) + Z(t)$$

On page 18, line 3 of your testimony you present the following equation (2):

$$(2)\ \log (Q) = a - b \log (P) + b_2 \log (P_2)$$

a. Please confirm that equation (1) is mathematically identical to equation (2) if $Z(t) = b_2 \log (P_2)$. If not confirmed, please explain.
b. Please confirm that the estimated value of b will be identical in equations (1) and (2) if Z(t) is perfectly correlated with $b_2 \log (P_2)$. If not confirmed, please explain.

RESPONSE:

a. Confirmed.

b. Confirmed.

USPS/GCA-T1-19. Please refer to your testimony at page 9, lines 5 to 9, where you refer to the response to GCA/USPS-T8-1.c and you state that "Postal Service witness Peter Bernstein notes that an alternative approach to elasticity measurement is to 'decompose First-Class Mail individual mail and make a segment-by-segment projection of diversion.'"

a. By "elasticity" are you referring to the change in First-Class Mail volume in response to a change in First-Class Mail price? If not, what do you mean by the term "elasticity" in your statement?

b. Please confirm that witness Bernstein in his response to GCA/USPS-T8-1.c was not referring to an alternative approach to measuring the price elasticity of First-Class Mail, but rather, as requested in the question, to an alternative approach to measuring the level of electronic diversion of First-Class Mail. If you cannot confirm, please explain fully.

c. Please confirm that witness Bernstein in his response to GCA/USPS-T8-1.c stated that his belief that this alternative segment-by-segment approach to estimating the level of electronic diversion was inferior to the econometric approach employed by witness Thress to estimate the level of electronic diversion. If you cannot confirm, please explain fully.

RESPONSE:

a. By "elasticity" I am referring to percentage change in First-Class single piece mail volume in response to a percentage change in the single piece First-Class Mail price.
b. The issues of electronic diversion and [changing] own price elasticities for First Class single piece mail are inextricably joined at the hip. Under oral cross examination in connection with his response to GCA/USPS-T8-1, witness Bernstein engaged in a discussion that included questions surrounding electronic diversion of payments mail and the elasticity of payments mail. See Tr. at 1452, lines 14-25, through 1453, lines 1-5.
c. Mr. Bernstein's statement about the alleged superiority of Thress' econometric approach was made before GCA-T-1 was filed.

USPS/GCA-T1-20. Please refer to the first sentence of page 57 of your testimony.

a. If you truly believe that single piece First-Class Mail is "clearly" more elastic in demand than Standard Regular Mail, doesn't that suggest that what you refer to as "the statutory monopoly" can no longer provide any valid justification for mitigating the institutional cost share of First-Class single piece mail "in today's competitive market environment," at least relative to Standard Regular Mail? If not, why not?

b. Please confirm that the Private Express Statutes (what you refer to as "the statutory monopoly") are not specific to any mail class, and to the extent that they apply, they apply as equally to letters carried as Standard Mail as to letters carried as First-Class Mail. If not confirmed, please explain fully.

RESPONSE:

a. As worded, I take the question to mean that the statutory monopoly has resulted in a mitigation of First Class institutional costs relative to Standard. This is obviously not true as institutional costs are much higher for First Class than for Standard A Regular. On a unit cost basis, the disparity is actually widening.

b. Confirmed. Nonetheless, the impact of my findings for rate-making are correct.

USPS/GCA-T1-21. Please refer to the first paragraph of page 57 of your testimony. Please assume for purposes of this question that the Commission does not adopt your view that single piece First-Class Mail is "clearly" more elastic than Standard Regular, and instead relies upon relative elasticities more in accord with those employed by the Commission historically (such as the elasticities estimated by witness Thress). Under this hypothetical, would your conclusion be that the single piece First-Class Mail should "be looked at first as a source of extra revenue when there is a general revenue deficiency in postal finances"? If not, why not? Specifically, do you agree that the appropriate role of relative elasticities of demand in the pricing process should not depend on which particular categories of mail get favored or disfavored by this measure in a particular case? If not, why not?

RESPONSE:

The hypothetical is completely unrealistic, particularly because no confidence can be placed on elasticities for FCM estimated by witness Thress in this case. However, even accepting the hypothetical, I do not agree that single piece First-Class Mail should "be looked at first as a source of extra revenue when there is a general revenue deficiency in postal finances." As Postmaster General Potter stated in Congressional testimony in 2005, quoted at page 28 of my testimony, "electronic diversion continues to erode First-Class Mail volume, this product will become more price-sensitive than ever. Higher rates will likely increase the pace of change, accelerating the volume decline, resulting in falling revenue and the need, again, to increase rates." As I noted on pages 26-29, the Postal Service's competitors are competing on price, it is only USPS that is not. Price is one of the few ways, and the only way the Commission can undertake, in which the Postal Service can compete. (In footnote 29 on pages 56 - 57 I identify other ways the Postal Service may be able to cut single piece rates.) But irrespective of price elasticity is the matter of the role of relative institutional cost contributions of classes of mail in rate setting. On page 59 of my testimony I discuss the "longstanding inequity in institutional unit cost contributions between First Class and Standard Mail that calls for such a redistribution of unit cost contributions even in the absence of the own price elasticity comparisons…"

USPS/GCA-T1-22. On page 21 at lines 10 – 11, you state that the BEA deflator in the GDP accounts for computers and peripheral prices "performed appreciably better" than the BLS series for computer prices.

a. What do you mean when you say it "performed appreciably better"? Please provide all of the statistical evidence which was used in making this claim.
b. Did you perform any studies, statistical or otherwise, to assess whether "the BEA deflator in the GDP accounts for computers and peripheral prices" was a suitable proxy for the price of electronic payment instruments? If so, please provide all such studies.

RESPONSE:

a. The GDP deflator has a higher correlation with the single-piece volume compared to the BLS series.

b. No.

USPS/GCA-T1-23. On page 23 of your testimony at lines 18 – 20, you state, "Statements mail exceeding one ounce has fallen because of electronic alternatives to checks and because broadband more recently has made on-line banking an attractive alternative to paying by check."

a. Are you aware that many banks do not return cancelled checks to their customers within their monthly bank statements?
b. If banks no longer return cancelled checks to their customers, could statements mail exceeding one ounce fall, even if the number of checks remained constant or grew?
c. Have you performed any studies, statistical or otherwise, to support the causal relationship hypothesized above?

RESPONSE:

a. - c. I am aware that most banks offer a simplified checking account product which does not return any checks, and other products which print several checks per page by reduced facsimile image. High extra ounce rates for letter mail that cannot be justified by costs are one reason why such products were developed. Notwithstanding these factors, the descriptive statistics I developed in my testimony are one such exercise which supports the causal relationship that increases in extra ounce rates in recent years caused a fall in check volumes.

USPS/GCA-T1-24. With respect to your equation which models commercial check volume as a function of the First-Class additional-ounce rate,

a. Why was the additional-ounce rate not deflated prior to its inclusion in this equation?
b. Were any other explanatory variables investigated as possible explanatory variables, such as the price and availability of alternatives to checks (e.g., credit cards, debit cards) or any measures of on-line banking?
c. Did you conduct any analyses, statistical or otherwise, which attempted to explain the number of First-Class additional ounces as a function of the First-Class additional-ounce rate?
d. Did you conduct any analyses, statistical or otherwise, which attempted to relate the number of commercial checks and the number of First-Class additional ounces?
e. If your answers to any of b., c., or d. were affirmative, please provide details of all such analysis. If your answers to any of b., c., or d. were negative, please explain fully why you failed to perform such analyses.

RESPONSE:

a. - e. This work was descriptive statistics and no other explanatory variable was included. The timing between changes in extra ounce rates and volume declines in checks indicated a close correlation. Clearly, other factors have been impacting check volumes, but data was not readily available to investigate their relative importance. In periods of low inflation such as the limited period examined here, business and consumer decision making may reflect nominal rates as much or more than it reflects real rates.

USPS/GCA-T1-25. On page 27 of your testimony at lines 12 -14, you state the following, "In general one expects that the own-price elasticity of a demand curve for a market is less elastic than the own-price elasticity faced by an individual competitor. The reverse appears to be the case here."

a. What is your best estimate for the own-price elasticity for the "payments market" as you have defined it?
b. Please explain how you arrived at your answer.
c. Please provide all evidence, statistical or otherwise, in support of your assertion that "[t]he reverse appears to be the case here."

RESPONSE:

a. - c. I only have descriptive statistics for the payments market, which indicate own price elasticities for the payments market could be well above -1.0. I am confident, however, that the payments market elasticity for single piece is well above our overall estimate for single piece mail. I would need more data for more variables than I was able to find to determine a magnitude, however.

USPS/GCA-T1-26. On page 27, starting at line 17, you make the following statement:

> "When an estimate of the own price elasticity for single piece mail is made, because the USPS chooses not to compete on price, little correlation is found between variations (i.e. declines) in single piece volumes and variations in single piece prices. However, the market demand curve, which is the aggregation of all individual demand curves, is not single piece mail. It is single piece mail plus all competing substitutes. The own-price elasticity that single piece mail faces in its problematic areas such as payments mail, statements mail and on-line banking derives from conditions in those markets."

a. Please define the "own-price elasticity that single piece mail faces" as you use that term here.
b. What do you believe witness Thress's estimate of the own-price elasticity for First-Class single-piece letters of -0.184 is intended to measure?
c. What is your best estimate of the "own-price elasticity that single piece mail faces"?
d. What "demand" do you believe witness Thress is estimating with his First-Class single-piece letters demand equation?

RESPONSE:

a. I am referring to the market demand curve USPS faces in, for example, the U.S. payments market, and the associated own price elasticity of that market demand curve.
b. The individual demand curve USPS faces for all single piece mail, is an aggregation of various individual demand curves it faces in various markets where single piece mail is one product competing with other products for market share.
c. I have not calculated, or been able to calculate, the own price elasticity of a market demand curve in a market in which mail is one of the competing substitutes. See also my answer with respect to the payments market in USPS/GCA-T1-25 a-c.
d. The demand for single piece mail in all the markets in which it competes.

USPS/GCA-T1-27. Please define to whom you are referring when you use the term “firm” on page 28 at line 23.

RESPONSE:

An oligopolist as defined in the theory of the firm in microeconomics.

USPS/GCA-T1-28. a. Please confirm that witness Thress uses the real price of First-Class single-piece letters to calculate his estimated own-price elasticity for First-Class single-piece letters.

b. Please confirm that the real price of First-Class single-piece letters has declined on numerous occasions over the time period over which witness Thress estimates the own-price elasticity for First-Class single-piece letters.

c. Please confirm that witness Thress's First-Class single-piece letters demand equation in this case therefore represents "statistical data that would allow one to calculate an own-price elasticity for single piece mail when prices are cut."

RESPONSE:

a. Confirmed.

b. Confirmed. By definition, it always declines [until the next nominal and real rate increase] once a nominal rate is set by the Commission and ratified by the Governors, so long as inflation exceeds zero.

c. Not confirmed. Please see the context of the passage you cite by reading in addition page 29, lines 2-8. I am talking about a cut in the nominal price of stamps.

USPS/GCA-T1-29 a. Please confirm that each of the demand equations estimated by witness Thress in past rate cases, outlined in Table 5 on page 31 of your testimony could, in fact, be summarized by equation (1) on page 17 of your testimony:

$$(1)\ \log (Q) = a - b \log (P) + Z(t)$$

b. Please confirm that equation (1) is mathematically identical to equation (2) on page 18, line 3 of your testimony:

$$(2)\ \log (Q) = a - b \log (P) + b_2 \log (P_2)$$

if $Z(t) = b_2 \log (P_2)$. If not confirmed, please explain.

c. Please confirm that the experiments outlined in Table 5 on page 31 could therefore be viewed as attempts by witness Thress to model the price of competing alternatives to First-Class single-piece mail. If not confirmed, please explain.

RESPONSE:

a. Confirmed.

b. Confirmed.

c. Mr. Thress' R2006-1 internet variable does not reflect or even capture the price of competing substitutes to First-Class single-piece mail. It is merely the number of subscribers reflecting the trend in the use of the internet per se, and nothing more.

USPS/GCA-T1-30. a. Please confirm that the number of Broadband subscribers, as presented by witness Thress in his testimony (Table IV-17, page 354) was equal to 1.165 million in 1999Q3. If not confirmed, please explain.

b. Please confirm that the number of Broadband subscribers, as presented by witness Thress in his testimony (Table IV-17, page 354) was equal to 15.654 million in 2002Q3. If not confirmed, please explain.

c. Please confirm that the number of Broadband subscribers grew by 1,243.7% over the three years from 1999Q3 through 2002Q3. If not confirmed, please explain.

d. Please confirm that the number of Broadband subscribers, as presented by witness Thress in his testimony (Table IV-17, page 354) was equal to 40.211 million in 2005Q3. If not confirmed, please explain.

e. Please confirm that the number of Broadband subscribers grew by 156.9% over the three years from 2002Q3 through 2005Q3. If not confirmed, please explain.

f. Please explain why you believe it is appropriate to focus uniquely upon the "post-2002 period during which broadband has become more widely used" in light of the numbers presented in a. – e. above.

RESPONSE:

a. Confirmed.

b. Confirmed.

c. Confirmed.

d. Confirmed.

e. Confirmed.

f. Because it has been only during the last few years that consumers have accelerated their use of broadband. However, it is important to note that even a broadband variable is not a good proxy for the price of competing substitutes. This broadband variable merely measures the number of broadband subscribers and nothing more.

USPS/GCA-T1-31. Please define the term "empirically significant" as you use it at line 10 of page 30 of your testimony.

RESPONSE:

By "empirically significant", I mean from the standpoint of using basic principles of theory to choose what should be empirically significant, as contrasted with throwing anything into a model that produces a lower MSE.

USPS/GCA-T1-32. Please define the term "arbitrary" as you use it at line 9 of page 32 of your testimony.

RESPONSE:

Arbitrary means without theoretical, econometric, or economic justification, that is, a choice "Based on or subject to individual judgment or preference." (http://www.answers.com/topic/arbitrary). Witness Thress' E-views model solves whether the form of the ISP variable is non-linear or not. It is not a necessary transformation, but it certainly greatly reduces the own price elasticity of single piece mail, especially in his model in R2005-1.

USPS/GCA-T1-33 .a. Please confirm that witness Thress's specification of ISP consumption, ISP^{λ}, does not preclude the possibility of entering ISP consumption directly into the First-Class single-piece letters demand equation. That is, please confirm that using witness Thress's specification with $\lambda = 1$ is identical to simply entering ISP consumption directly into the First-Class single-piece letters demand equation. If not confirmed, please explain.

b. Please confirm that the value for λ is estimated mathematically by witness Thress and is not simply chosen arbitrarily. If not confirmed, please explain.

c. Please confirm that the value for λ which is estimated mathematically by witness Thress is significantly different from 1. If not confirmed, please explain.

d. Please provide all evidence, statistical and otherwise, which would suggest to you that the value for λ as used by witness Thress should be equal to 1.

e. Please confirm that if one constrains the value of one coefficient within an econometric equation to an incorrect value that this may bias the estimated coefficients on the other variables within that equation. If not confirmed, please explain.

f. Please confirm that your constraint of the value of λ to be equal to 1 in your demand equations for First-Class single-piece letters has biased your estimates of the own-price elasticity for First-Class single-piece letters. If you cannot confirm, please provide all evidence, statistical and otherwise, upon which you relied to reach your conclusion that your own-price elasticity estimates are not biased.

RESPONSE:

a. Confirmed.

b. Not confirmed. Mr. Thress just estimates λ econometrically. He did not derive λ from any mathematical principle. What I am disputing is the arbitrary choice of his non-linear form (X^{λ}) for this particular variable without any reasonable justification, such as Box-Cox or any econometric tests.

c. Partially confirmed. Mr. Thress just estimates λ econometrically. He did not derive λ from any mathematical principle. It is confirmed that the estimated value is different from 1. However, this is not the Box-Cox coefficient.

d. The coefficient of a properly transformed Box-Cox variable $[(X^{\lambda} – 1)/\lambda]$ has a specific property. When λ approaches zero the variable is transformed to log form [ln(X)] and when it approaches 1, it transforms to linear form (X). A Box-

Cox coefficient is expected to have a value between -2 to +2. Mr. Thress' non-linear specification (X^{λ}) can assume any value between -∞ to +∞. Thress' estimated [so-called] Box-Cox coefficient of 0.122 has no theoretical, empirical or economic meaning in this context. Furthermore, if this value approaches zero, the value of ISP variable becomes 1 not log form. Obtaining a value of 0.122 is not a sufficient reason to assume that the ISP variable is best represented by a non-linear form. The attempted use of Box-Cox to justify his non-linear form (X^{λ}) is therefore without any merit, since Mr. Thress did not correctly specify his variable as Box-Cox. Furthermore, Mr. Thress has provided no other theoretical, empirical, or economic justification for the non-linear specification he in fact did use. On the contrary, there is a reasonable justification to enter the ISP variable as a simple linear form (ISP^1).

e. Confirmed.

f. Not confirmed. My model is a non-log linear form. I did not perform any tests to see if each individual variable should be written in non-linear form. Possibly, it would have been better for both Mr. Thress and me to specify every variable, other than the dummy variables, in the Box-Cox form and estimate the model. This is far too difficult to do.

USPS/GCA-T1-34. a. Please confirm that the Internet variable(s) used by witness Thress were different in R2001-1, R2005-1, and R2006-1. If not confirmed, please explain.

b. Please confirm that a coherent discussion of an alleged "trend" in the coefficient estimates of a variable requires the definition of the variable to be consistent for each coefficient estimate under discussion. If not confirmed, please explain.

RESPONSE:

a. Confirmed, as clearly shown in Table 5 of my testimony.

b. Confirmed. However, this does not refute the fact that these elasticities were used in past rate cases for rate-making purposes and at the time were considered to be true estimates, even if later some of them were disavowed once they had served their purpose. With respect to the issues I am concerned with in my testimony, it is important to examine how these elasticities have evolved over time and whether that accords with economic principles and known business facts.

USPS/GCA-T1-35. On lines 16 and 17 of page 33, you indirectly assert that "Mr. Thress' choice criterion 'could very well lead to an incorrect model.'"

a. Please provide all evidence, statistical or otherwise, that Mr. Thress's choice criterion did, in fact, lead to an incorrect model.
b. Please confirm that the demand equation which you present in your testimony uses the same explanatory variables as the model presented by Mr. Thress in his testimony.
c. Based on the selection criteria of your choosing, which of the First-Class single-piece letters models presented by witness Thress in LR-L-65 would you choose?
d. If your choice is different from the model used by witness Thress in this case, please explain the basis for your choice and describe the ways in which your chosen model is superior to the model used by witness Thress.
e. If your choice is different from the model used by witness Thress in this case, please explain why you did not use that model as the starting point in developing your estimate of the own-price elasticity for First-Class single-piece letters.

RESPONSE:

a. The mislabeled Box-Cox transformation can affect the MSE value. Furthermore, autocorrelation problems which still continue to be present in the estimated models can lead to lower standard errors and lower MSE, thus, making a model to be wrongly chosen.
b. Partially confirmed. My model is similar to Thress, except that my model does not include the time trend interaction with the ISP variable. Further, my work sharing discount variable is allowed to be estimated endogenously rather than being stochastically imposed from the worksharing equation.
c. - e. I did not consider any of those models, since it would not allow me to observe the changes in elasticity over time. Furthermore, they all had imposed restrictions on them.

USPS/GCA-T1-36. To what specifically are you referring when you claim that "Mr. Thress' model … includes prolonged periods in the 1970s" at line 4 on page 35 of your testimony.

RESPONSE:

There was no impact on the volume of First Class single piece mail during the 1970s and 1980s which caused it to decline in the way it has with Internet diversion and electronic payments options since the mid-1990s.

USPS/GCA-T1-37. a. Please define the term "long run own-price elasticities" as you use in at line 9 on page 35 of your testimony.

b. Please explain your understanding of witness Thress's use of the term "long-run price elasticities" as you quote him at lines 7-8 on page 34 of your testimony.

RESPONSE:

a. The distinction between long run and short run demand curves is clear from any elementary textbook of economic principles, and focuses on whether ceteris paribus conditions hold in the main, or not. Elasticities are generally thought to be greater for true long run demand curves than short run demand curves.

b. In each rate case, witness Thress adds several more quarterly observations to a database which starts with 1983 data for the single piece demand equation. I believe this is an inappropriate approach when short run market demand conditions are in rapid flux as the impact on postal volumes from current competitive conditions gets diluted and distorted because, for example, there is 1983 data influencing the determination of the elasticity.

USPS/GCA-T1-38. At page 36 of your testimony, you make the following claim:

> "One interpretation of witness Thress' models over the span of several rate cases is that demand is not simply inelastic for the FCLM subclass, but becoming increasingly price inelastic over time."

a. Please confirm that witness Thress has never himself made this particular interpretation of his work. If not confirmed, please explain.
b. Please confirm that witness Thress, in fact, explicitly rejected this particular interpretation of his work under oral cross-examination from the GCA (Tr. 6/1325, l. 16 – p. 1326, l.2). If not confirmed, please explain.

RESPONSE:

a. - b. In fact, in this case Mr. Thress has refuted his own previous work in R2005-1 and considers it flawed with respect to the own price elasticity of workshared mail in the FCLM subclass. GCA (Tr. 6/1326, l 3-7**.)** If he does not have confidence in his own previous work on which basis rates were increased in R2005-1, how can the Commission have confidence in his current elasticities, at least in the problematic areas I identify?

USPS/GCA-T1-39. At page 36 of your testimony you claim that witness Thress "defends" the interpretation that "demand is not simply inelastic for the FCLM subclass, but becoming increasingly price inelastic over time" by "claiming that customers who stop using single piece mail are at any point in time the marginal customers, the ones whose own individual price elasticities are higher, on average, than those of the customers who continue to use the mail."

a. Please confirm that you are referring here to Thress's response to GCA/USPS-T7-8(e) where he says "the introduction of a new product may induce more price-elastic consumers to stop using the old product, leaving the average own-price elasticity of the product's remaining customers lower than before the introduction of the new product, even when one accounts for the increasing own-price elasticity of these individual consumers relative to their own individual elasticities prior to the introduction of the new product." If you cannot confirm, please provide an exact citation to the statement by witness Thress to which you were referring.
b. Please confirm that GCA/USPS-T7-8, the interrogatory to which Mr. Thress was responding when he made the statement to which you refer on page 36 of your testimony, made no reference to First-Class Mail.
c. Please confirm that Mr. Thress's hypothesis that "the introduction of a new product **may** induce more price-elastic consumers to stop using the old product, leaving the average own-price elasticity of the product's remaining customers lower than before the introduction of the new product" (emphasis added) was purely hypothetical and made no specific reference to any category or user of mail. If not confirmed, please explain.
d. Please confirm that Mr. Thress, in his response to GCA/USPS-T7-8, explicitly stated that "[t]he extent to which two goods are substitutes and the extent to which consumers would be expected to substitute between two goods because of changes in the relative price of the goods is ultimately an empirical question that can not be answered generally, but can best be answered in a specific case via rigorous econometric investigation." If not confirmed, please explain.

RESPONSE:

a. - d. Mr. Thress, at (Tr 6/1291, l16), specifically, refers to "first class single piece letters."

USPS/GCA-T1-40. In footnote 25 at the bottom of page 37 of your testimony you make the following assertion:

> "If [the hypothesis that the own-price elasticity of First-Class Mail were declining over time] were true, there is no reason why the real prices of stamps should not also be increasing over time. The fact that they have not been – in the presence of competing substitutes due to Internet diversion and electronic payments substitutes for the mail – demonstrates that the own (real) price elasticity of single piece mail is higher than what witness Thress has calculated over recent rate cases."

a. What are the factors which you believe determine the real price of stamps?
b. If the Postal Service does not go to the Postal Rate Commission and seek an increase in the real price of stamps, is there any mechanism by which stamp prices will increase? Please explain.
c. If mail volume declines as a result of an increasing "presence of competing substitutes due to Internet diversion and electronic payments substitutes for the mail" when nominal stamp prices remain unchanged, what do you believe this indicates about the own-price elasticity for First-Class Mail? Please explain why you believe this.

RESPONSE:

a. - c. My observations from looking at real single piece prices over the past 10-15 years is that the USPS did at one time make an effort to keep real prices steady. It has not stopped additional lost volume due to Internet diversion and the growth of electronic payments, and it looks to me as if USPS management is not interested any more in keeping real prices of single piece mail constant, has given up trying to do so, and/or feels it cannot do so. That is my interpretation of why "price caps" find widespread support in current postal reform legislation, namely to keep real prices from rising in the future, now that the will and/or ability are lacking at USPS.

USPS/GCA-T1-41. Your footnote 27 on page 41 says the following, "In the experiments we conducted, the exponential specification of the elasticity and functional form of the equations produced the wrong sign associated with the high absolute value. This circumstance does not alter the conceptual merit of the critique, however."

a. Are you saying here that the experimental own-price elasticities which you found necessary to "bring the forecasted volume curve to the actual volume curve" had values which were greater than zero? If not, please explain what you meant here.
b. If your answer to a. was affirmative, please confirm that own-price elasticities greater than zero are theoretically untenable. If not confirmed, please explain.
c. If your answer to a. was affirmative, please confirm that if the experimental elasticities necessary to "bring the forecasted volume curve to the actual volume curve" had values greater than zero, this indicates that the own-price elasticities estimated by witness Thress in recent cases were not too close to zero. If not confirmed, please explain.

RESPONSE:

a. Yes.

b. Confirmed.

c. It could simply mean that the demand equation is either not properly specified or is estimated improperly. It does not necessarily mean that Thress' forecasting estimates are correct and without bias. In fact, he himself does not believe his own previous estimates to be correct.

USPS/GCA-T1-42. At page 43, lines 20-21, you say that "it made no sense to introduce any other non-linear specification of the Internet variable."

a. Do you believe that it would make sense to introduce a non-linear specification for a variable if there was strong statistical evidence that the variable was related to mail volume in a non-linear fashion? If not, why not?
b. Did you investigate any evidence, statistical or otherwise, with regard to whether the relationship between First-Class single-piece letters volume and the Internet was linear or non-linear? If so, please describe all such evidence. If not, why not?

RESPONSE:

a. No. Because the power coefficient of a variable is significant does not necessarily mean that the variable should be entered in a non-linear form. The non-linearity should be justified before it is attempted on theoretical, economic, or econometric theory. The whole model should be tested to see if a linear or a non-linear form results in a better mode. The non-linear form should be based on a correct premise. If Box-Cox transformation is a method to introduce the variable into the model in a non-linear form, then it should be done properly and estimated with the proper technique, such as maximum likelihood estimation. Simply entering a variable in non-linear form (ISP^{λ}) without the appropriate test for that particular variable can produce unnecessary bias in the model. Including a variable as non-linear without some reasonable justification is nothing but an arbitrary choice. A correct Box-Cox transformation and proper estimation of a Box-Cox coefficient along with the other coefficients is justifiable with the caveat that one needs to test whether the Box-Cox transformation improves the efficiency of the forecasting ability of the model.
b. My model by its structure is in a non-log linear form and thus, it does not require transformation of any variables.

USPS/GCA-T1-43. On page 47 of your testimony you state that a linear demand function "accommodates our expectation of varying elasticities due both to the changing level of postal rates and the changing availability and strength of competing substitutes."

a. What is your expectation of how elasticities will vary due to the changing availability and strength of competing substitutes?
b. What is the precise mathematical relationship between the own-price elasticity and the "availability and strength of competing substitutes" in your demand equation?

RESPONSE:

a. The own price elasticity of single piece mail should increase as the number and intensity of competition from substitutes increases.
b. In my model I kept Mr. Thress' ISP variable and its interaction with the time trend 2002Q4. There is currently no good proxy for the price of competing substitutes such as Internet to include in the model. One purpose of staying as close as possible to Mr. Thress' model was to investigate how his inappropriate and unnecessary transformation of the ISP variable and certain stochastic imposition had dampened the single-piece own-price elasticity. Carlton and Perloff state "The direct price elasticity –not the cross elasticity of demand—determines market power. … There is a lot of discussion in court decisions as to the importance of cross-elasticity of demand in defining markets. Courts often use the term [cross elasticity] loosely to indicate that products are substitutes." (Carlton and Perloff, 2005, page 647.)

USPS/GCA-T1-44. Please refer to Table A-8 on page 9 of Appendix A of your testimony.

a. Please confirm that the volume of First-Class single-piece letters lagged two quarters is included as an explanatory variable in the demand equation presented in Table A-8.
b. You state at the top of Table A-8 that the volume of First-Class single-piece letters lagged two quarters is included as an explanatory variable "to correct for autocorrelation." Please provide a citation to an econometric textbook or other econometric literature that suggests that merely adding the lagged dependent variable as an explanatory variable is an appropriate means of correcting for autocorrelation.

RESPONSE:

a. Confirmed.
b. According to Granger and Newbold (1974) the usual approaches to autocorrelation are either (i) to include a lagged dependent variable; or (ii) to take first differences of the variables; or (iii) to assume a simple-first-order autoregressive process for the residuals. The last two were not practical for us. Autocorrelation and partial autocorrelation that Mr. Thress has provided in his output file demandequations.txt for each mail category in LR-L-64 reveals that his econometric program is incapable of dealing with the autocorrelation problems. Furthermore, in most cases the calculated Durbin Watson values are in the indeterminant range of critical values. The Durbin Watson critical values exist up to only 20 explanatory variables. For example, at the 5% level the critical values for a sample of size 90 are D_L = 1.16 and D_U = 2.21; and for a sample size of 70 they are D_L= 0.971 and D_U=2.362. We know that the greater the number of explanatory variables the wider the range becomes. We also know that there are more than 20 explanatory variables in Thress' models. Thus, this range is much wider than the above two ranges. The reason for some of the autocorrelations to continue to persist in Mr. Thress' estimated models could be due to the arbitrary specification of his autocorrelation structure (AR1, AR2, & AR4). I therefore did not use Mr. Thress' program. At the same time we decided to preserve the integrity of his specification of seasonal variables. As a result of this, we were not able to

use the built in procedures of E-views to deal with the autocorrelation. The approach we took was to introduce the lagged dependent variable into the equation when necessary.

Granger, C.W.J. and P. Newbold, “Spurious Regressions in Econometrics,” *Journal of Econometrics*, Vol. 2, 1974, 111-120.

USPS/GCA-T1-45. Please provide a 95% confidence interval for the own-price elasticity value of -0.456 which you present in your testimony at page 3, line 6, and elsewhere.

RESPONSE:

The 95% confidence intervals for the sum of the two price coefficients with 68 degress of freedom are:

-1.055226 ± 2*0.224174 or

-0.6069 to -1.5036

Evaluating this at the average price and average volume for the 1983-2005 period we obtain the 95% confidence interval for the own-price elasticity to be:

-0.262 to -0.650

USPS/GCA-T1-46. On page 38 of your testimony, at lines 13 – 15, you make the following statement:

> "To imply that major structural changes in market conditions faced by single piece mail have not changed the elasticity of single piece mail at all is … incredible"

a. Please confirm that your estimate of the own-price elasticity for First-Class single-piece letters in 1983 as shown in Table A-8 on page 9 of Appendix A is -0.428.
b. Please confirm that your estimate of the own-price elasticity for First-Class single-piece letters in 1995 as shown in Table A-8 on page 9 of Appendix A is -0.425.
c. Do you believe that the availability and strength of competing substitutes for First-Class single-piece mail was greater in 1995 than in 1983? Please explain fully.
d. Do you believe that your own-price elasticity estimates for 1983 and 1995 are credible, in light of your statement on page 38 quoted above? Please explain fully.

RESPONSE:

a. Confirmed.

b. Confirmed.

c. - d. I did not investigate, and had no reason to investigate, the period between 1983 and 1990. My point elasticity estimates from VES demand assumptions show that the elasticity increased between 1990 and 1995. My own focus was on the post-1995 period when Internet Diversion is acknowledged to have become a growing and significant competitive threat to single piece mail.

USPS/GCA-T1-47. Please refer to page 24 of your testimony, line 3. Please explain the distinction between "commercial checks" as you use that term, and any other types of checks.

RESPONSE:

"Commercial checks" is the terminology used in The 2004 Federal Reserve Payments Study. Please refer to that study for the distinctions you request, especially Appendix A. See also http://www.federalreserve.gov/paymentsystems/checkservices/commcheckcolqtr.htm