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POSTAL RATE COMMISSION
WASHINGTON, D.C. 20268-0001

RATE AND SERVICE CHANGES TO IMPLEMENT BASELINE NEGOTIATED SERVICE AGREEMENT WITH WASHINGTON MUTUAL BANK

Docket No. MC2006-3

REBUTTAL TESTIMONY
OF
PETER BERNSTEIN
ON BEHALF OF
UNITED STATES POSTAL SERVICE

[REVISED—October 23, 2006]

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AUTOBIOGRAPHICAL SKETCH

My name is Peter Bernstein. I am vice-president of RCF Economic and Financial Consulting, Inc., where I have been employed since 1992. As vice-president, I have major responsibilities at RCF in forecasting, econometrics, and quantitative analysis. In Docket No. R2006-1, I submitted testimony discussing reasons behind the recent slowdown and stagnation of First-Class Mail letter volumes. In Docket No. R2005-1, I submitted testimony discussing recent market developments affecting the volumes of different postal products. In Docket No. R2001-1, I submitted testimony on the impacts of technological alternatives on mail volume. I have also submitted testimony on Ramsey pricing in Docket Nos. R97-1, R2000-1, and R2001-1. I have assisted Dr. George Tolley, president of RCF, in the development of his testimony for Docket Nos. R94-1, MC95-1, MC96-2, R97-1, R2000-1, and R2001-1.

In addition to my responsibilities at RCF, I have been a faculty member of the department of economics at DePaul University of Chicago since 1992, where I have taught courses in economics, finance, and econometrics. I was a faculty member of the department of economics at Loyola University of Chicago from 1987 to 1991, and taught classes at the University of Chicago Graduate School of Business in 1987.

In 1985, I earned a Masters Degree in Finance and Economics from the University of Chicago Graduate School of Business and I have completed all course work and examinations toward a Ph.D. from the University of Chicago. I received a B.A. in Economics from the University of Chicago in 1981.

1. PURPOSE AND SCOPE OF TESTIMONY

This testimony is in rebuttal to the testimony submitted by OCA witness James F. Callow (OCA-T-1) in Docket No. MC2006-3, otherwise known as the Washington Mutual Bank NSA. The main focus of my testimony is to explain the flaws in Witness Callow's approach to estimating the before-rates volumes of First-Class workshare letters that would be sent by Washington Mutual Bank (WMB) in the absence of the proposed NSA.

My testimony has six remaining sections. Section 2 summarizes Mr. Callow's testimony in this case, as it applies to my rebuttal testimony. Section 3 presents an overview of the econometric analysis of First-Class workshare letter volumes presented by Mr. Thomas Thress in his testimony (USPS-T-7) in Docket No. R2006-1. Section 4 presents a critique of Mr. Callow's use of price elasticities to estimate WMB's before-rates volumes and identifies the key errors. Section 5 explains why the elasticities estimated by Mr. Thress, valuable though they are for assessing the impact of omnibus rate changes, are inappropriate for estimation of volume responses by WMB with regard to this particular NSA. Section 6 explains why the requirement that WMB send 90 percent of its marketing mail as First-Class Mail also makes Mr. Callow's analysis inappropriate for estimating the before-rates volume of workshare letters. Section 7 explains how a volume cap, recommended by Mr. Callow in his testimony, will likely reduce the Postal Service's financial gains from this proposed NSA.

2. BRIEF OVERVIEW OF OCA WITNESS CALLOW'S TESTIMONY REGARDING THE WMB NSA

In his testimony on behalf of the OCA, Witness Callow (OCA-T-1) makes an estimate of the before-rates volume of First-Class workshared letters that would be sent by Washington Mutual Bank (WMB) in the absence of the proposed NSA. To calculate the before-rate volume, he uses a price elasticity estimated by Mr. Thomas Thress for the Docket No. R2006-1 omnibus rate case (USPS-T-7). Mr. Callow finds that the before-rates volume is close to the after-rates volume, concluding therefore that the NSA will produce little additional volume to the Postal Service. Moreover, Mr. Callow's calculated before-rates volume is above the volume threshold established by the NSA, which – if true – would mean that the NSA would result in the Postal Service granting discounts on mail volumes that would have been sent in the absence of the NSA. As a result, Mr. Callow concludes that the benefits to the Postal Service from this NSA are much less than estimated by Postal Service witness Ali Ayub (USPS-T-1). Mr. Callow further argues that to protect the Postal Service from the possibility of large losses in contribution, the volume for which the discount is granted should be capped.

The remainder of my testimony will address the above arguments presented by Mr. Callow. First, his method for estimating the before-rates volume is conceptually flawed because it misinterprets Mr. Thress' econometric analysis and uses an incorrect method for projecting volumes. Second, even if the correct method were used to project volumes, the elasticities estimated by Mr. Thress are inappropriate for computing WMB's volume response because its volume response to changes in prices is likely to be different from the typical First-Class workshare letter mailer. Finally, the requirement in this NSA that WMB send at least 90 percent of its marketing mail as First-Class Mail imposes a constraint on WMB's behavior, not measured by Mr.

Thress's elasticities and not considered in Mr. Callow's analysis.

Therefore, I will show for several reasons that Mr. Callow's estimate of the before-rates volume is incorrect and that the Commission should not rely on his testimony to evaluate this NSA. Moreover, because of the flaws in Mr. Callow's analysis, the Commission should not adopt his recommendation of a cap on the value of the discounts. In fact, my testimony will show that a cap will likely reduce the Postal Service's benefit from this NSA.

My critique of Mr. Callow's testimony requires an understanding of Mr. Thress's econometric analysis, which I provide in the next section of this testimony.

3. OVERVIEW OF WITNESS THRESS' ECONOMETRIC ANALYSIS

A. USPS Witness Thress' R2006-1 Elasticities

Witness Thress developed mail volume demand equations for the Docket No. R2006-1 rate case using econometric estimation techniques. The equations estimate the relation between the volume of a particular mail category and changes in individual variables, such as measures of income or postal prices. The volume of First-Class workshare letters is influenced by a number of variables, but the two that are relevant for analysis of this NSA are the own-price of workshare letters and the price-difference between workshare letters and Standard Mail. The R2006-1 estimated own-price elasticity of First-Class workshare letters is -0.1299. The estimated price-difference elasticity is -0.1115. Workshare letter volume also depends on the workshare discount relative to single-piece letters, but this is not an issue in the current case and, therefore, will not be addressed in my testimony.

The own-price elasticity measures the percentage change in First-Class workshare letter volume that occurs in response to a one percent change in the price of

workshare letters, holding all other variables constant. An elasticity of -0.1299 means that a one percent increase (decrease) in the price of workshare letters leads to a 0.1299 percent decrease (increase) in workshare letter volume, holding all other variables constant. Aside from some mathematical rounding, the relation can be extended to larger price changes so that, for example, a 10 percent decrease in workshare letters price leads to a 1.299 percent increase in the volume of workshare letters, again holding all other factors constant.

B. Changes in Own-Price and the Price-Difference

The "all other variables constant" is an important caveat of the foregoing analysis of Mr. Thress's estimated elasticities. The own-price elasticity, for example, measures the impact of a change in the price of workshare letters changes, holding the price-difference between First-Class workshare letters and Standard Mail constant. The only way in which the price of First-Class workshare letters can change without changing the price-difference, then, is for there to be an equal change in the price of Standard Mail.[1]

The price-difference elasticity measures the impact of a one percent change in the price-difference between First-Class workshare letters and Standard Mail, again holding all other factors constant. The elasticity of -0.1115 means that a one percent decrease in the price-difference leads to a 0.1115 percent increase in the volume of workshare letters and, approximately, a 10 percent decrease in the price-difference leads to a 1.115 percent increase in the volume of First-Class workshare letters.

Again, the "all other variables constant" feature is important. The only way that

[1] To be precise, it requires an equal unit increase in the price of Standard Mail, not an equal percentage increase. For example, if workshare letters price decreases ten percent from 30 cents to 27 cents, the *ceteres paribus* condition requires that the price of Standard Mail also decreases 3 cents, so that the price-difference remains unchanged.

the price-difference between First-Class workshare letters and Standard Regular Mail can decrease without changing the price of First-Class workshare letters is through an increase in the price of Standard Mail. Note that the increase in the price of Standard Mail does not violate the *ceteres paribus* requirement because the price of Standard Mail is not directly entered into the econometric demand equation for First-Class workshare letters.

C. Price-Difference Elasticity verses Cross-Price Elasticity

The price-difference impact is conceptually similar to the typical cross-price elasticity effect. A cross-price elasticity measures the impact on the volume of one product stemming from a change in the price of another product. In this instance, a cross-price elasticity would measure the change in the volume of workshare letters that occurs in response to a change in the price of Standard Mail. Since this is also what the price-difference elasticity measures, one may wonder why Mr. Thress estimates a price-difference elasticity instead of a traditional cross-price elasticity.

There are two main advantages of Mr. Thress's approach. The first is that it may more accurately describe the behavior of mailers. Workshare mailers who can choose between sending First-Class Mail or Standard Mail, that is, advertising mailers, may make their choice based on the difference between the postage costs of these two products. In other words, some mailers assess the trade-off between the higher price of First-Class Mail advertising mailings, weighed against certain advantages of First-Class Mail compared to Standard Mail, and that assessment may be based on the price-difference between two products.

The second advantage of Mr. Thress's approach is econometric. The prices of First-Class workshare letters and Standard Regular Mail are highly correlated, with a correlation coefficient of 0.945 during the time period covered by Mr. Thress's

equations. This is a classic example of multi-collinearity, an econometric problem that results when two (or more) highly correlated variables are included in an econometric equation. Multi-collinearity leads to inefficient estimates, meaning that while the estimated elasticities are statistically unbiased, they are estimated with much less certainty (much greater variance) than if multi-collinearity were not present.

The statistical correlation between the price of workshare letters and the price-difference between workshare letters and Standard Regular Mail is 0.486. Therefore, multi-colinearity and its resulting drawbacks are a much less serious issue when using the price-difference variable.

Nonetheless, either a price-difference elasticity or a traditional cross-price elasticity can be used to measure the impact on First-Class workshare letter volumes resulting from a change in the price of Standard Regular Mail. However, in the WMB NSA, the price of Standard Mail does not change. Nonetheless, because the price of workshare letters would change, the price-difference changes as well. This is an important distinction. The price-difference elasticity, by itself, measures the impact of a change in the price-difference, holding the price of workshare letters constant. This condition further requires that the price of Standard Mail changes to create the change in the price-difference.

If, on the other hand, it is the price of First-Class workshare letters that changes, then the total impact on volume is the combined impacts of the change in the own-price *and* a change in the price-difference. In other words, the price-difference elasticity can measure the impact of a change in Standard Regular price (like a traditional cross-price elasticity), but it also can measure part of the impact of a change in the First-Class workshare letter prices through its effect on the price-difference. This distinction will become particularly important in my critique of Mr. Callow's analysis.

4. WITNESS CALLOW INCORRECTLY APPLIES WITNESS THRESS' ELASTICITIES TO ESTIMATE THE BEFORE-RATES VOLUME OF FIRST-CLASS WORKSHARE LETTERS SENT BY WMB

In his testimony, Witness Callow attempts to use the price-difference elasticity estimated by Mr. Thress to calculate the before-rates volume (volume in the absence of the NSA) of First-Class workshare letters sent by WMB. In this section of my testimony, I will show that Mr. Callow's use of Mr. Thress' work is flawed for three reasons. First, his conclusion that the own-price elasticity of WMB's First-Class workshare letter volume is zero is incorrect. Mr. Callow's focus on the price-difference elasticity fails to recognize the distinction between a decrease in the price-difference caused by a decrease in the price of First-Class workshare letters and a decrease in the price-difference caused by an increase in the price of Standard Mail. Second, the equation he uses to calculate the change in WMB's workshare letter volume is conceptually flawed because it does not follow from the underlying demand equation for First-Class workshare letters. Third, Mr. Callow confuses cause and effect by incorrectly assuming that the decrease in Standard Mail volumes causes the increase in First-Class workshare letter volumes, when in reality the reverse is true. As a result, Mr. Callow's estimation of the before-rates volume of First-Class workshare letters sent by WMB is conceptually flawed as well.

A. Witness Callow Incorrectly Assumes that the Own-Price Elasticity of WMB's First-Class Workshare Mailings is Zero

Mr. Callow draws his conclusion that the own-price elasticity of WMB's workshare mailings is zero, based on his interpretation of WMB witness Rapaport's (WMB-T-1) statement that all the increase in First-Class workshare letter volume will come from "converted" Standard Mail volume. Therefore, Mr. Callow argues, the impact on First-Class workshare letter volume can be entirely measured by the price-difference elasticity. But Mr. Callow's assertion that the own-price elasticity in this case is zero is false, as the following simple example will demonstrate.

Consider a shopper who goes to the grocery store. In a typical visit, the shopper buys one pound of steak for $8 and one pound of chicken for $4. On one day, however, the shopper finds that steak is on sale for $6 per pound while the price of chicken remains at $4 per pound. Assume in response to this sale price, the shopper buys two pounds of steak and no chicken, spending the same $12.

All of the increased purchase of steak (one pound) came as a result of reducing the purchase of chicken, also by one pound. So, in effect, this shopper has converted a pound of chicken into a pound of steak in response to the price effect. What kind of price effect is this on the volume of steak? It is an own-price effect. Why is it an own-price effect? It is an own-price effect because it is only the own-price of steak which has changed in this example. And, in this example, the own-price effect led the shopper to increase his purchase of steak.

How do we know that the decision to increase the purchase of steak is not entirely due to a change in the price-difference between chicken and steak? After all, the decrease in the price of steak led to a decrease in the price-difference. Could it be

that the increased purchase of steak is entirely due to the change in the price-difference and that the own-price elasticity effect is in fact zero?

No, it could not be that. To understand the distinction between the own-price effect and price-difference effect, consider a different scenario in which the price of steak remains at $8 per pound, but the price of chicken increases to $6 per pound. This scenario, like the original scenario, results in a decrease in the price-difference from $4 to $2 but achieves that reduction by holding the own-price of steak constant and raising the price of chicken.

Following Mr. Callow's reasoning that only the price-difference matters, the two price scenarios described should have the same impact on the shopper's purchases of steak. After all, if it is just the price-difference that matters, if there is no own-price effect, then the own-price should not matter.

But clearly it does. If only the price-difference changes, but not the own-price, the shopper's response will be different. The shopper may indeed choose to buy more steak and less chicken, but with the price of steak still fixed at $8/pound, the most steak that can be bought with the $12 budget is 1.5 pounds. Clearly, then, it is not simply the price-difference that matters, but how that price-difference is achieved. Note, also that the fact that in the original scenario, all of the increased purchase of steak (from one pound to two pounds) led to an equal decrease in the purchase of chicken (from one pound to zero pounds) does not invalidate the point that the own-price elasticity is not zero.

Returning now to the issue of the NSA, we can see by the same logic that the impact on First-Class workshare letter volume of a change in the price of workshare letters is, in part, an own-price effect. It is true that a change in the own-price of First-Class workshare letters also affects the price-difference so the price-difference elasticity

is also important.

But the impact on WMB's volume is not solely due to the narrowing of the price-difference, it is also due to the direct impact of a decline in the own-price itself. If only the price-difference matters, as Mr. Callow asserts, then this would mean that the impact of on First-Class workshare letter volume resulting from a decrease in its price would be the same as the impact on workshare letter volume of a proposed increase in the price of Standard Mail.

Mr. Callow's analysis also fails to understand that there are two components to an own-price effect: the *substitution effect* and the *income effect*. The substitution effect refers to the increase in consumption of the good which has had a price decrease because the lower price makes this good more attractive than the alternatives. The income effect refers to the increase in consumption of a good that occurs because the price decline has increased the consumer's purchasing power – the consumer can buy more because his budget will allow more purchases due to the lower price of the good in question.

It is clear that WMB would experience both a substitution and an income effect in response to a decrease in the price of First-Class workshare letter mail. The income effect exists because a lower price of workshare mail would allow WMB to afford a greater volume of (still more expensive than Standard Mail) First-Class workshare mailings. The substitution effect exists because the lower price of First-Class workshare letters encourages WMB to substitute workshare mailings for Standard mailings. But both these effects, and importantly the substitution of First-Class workshare mailings for Standard mailings, are components of the own-price effect. They would both be present if WMB were granted a lower price for its First-Class workshare letter mailings and, therefore, there would be an own-price effect on WMB's

mail volume in response to any price decrease. Mr. Callow's assertion otherwise is incorrect.

B. Witness Callow's Forecast Equation is Conceptually Flawed

Mr. Callow's method of estimating the before-rates volume of First-Class workshare letters sent by WMB employs an equation that is conceptually flawed. His equation is flawed because it does not follow from the demand equation that underlies the longstanding volume forecast methodology that Mr. Callow purports to follow in his analysis.

Mr. Callow sets up the following equation:

$$Q_0 = Q_1 (d_0/d_1)^{Ed} \qquad \text{Equation (1)}$$

Q_0 is the before-rates Standard Mail volume, Q_1 is the forecast after-rates First-Class workshare letters volume, d_0 is the before-rates average marginal price-difference between First-Class workshare letters and Standard Mail, d_1 is the after-rates marginal price-difference, and E_d is the price-difference elasticity.

Mr. Callow's approach to projecting volumes is inconsistent with the underlying demand equations used to forecast mail volumes. The notion that the after-rates volume of one mail product is derived from the before-rates volume of another is in contrast to the base volume forecast approach used by Mr. Thress, and Dr. Tolley before him, in postal rate cases.

The correct formulation for projecting the impact of a change in the price-difference is based on the estimated econometric equation. A stripped-down version of this equation is:

$$Q = A (d)^{Ed} \qquad \text{Equation (2)}$$

where Q is volume, d is the price-difference, Ed is the price-difference elasticity, and A represents all other factors affecting volume (including, for example, the own-price

elasticity).

Equation (2) can be used to create both a before-rates and after-rates volume projection as shown in Equations (3a) and (3b):

$Q_0 = A\ (d_0)^{Ed}$ Equation (3a)

$Q_1 = A\ (d_1)^{Ed}$ Equation (3b)

Equation (3a) states that the before-rates volume (Q_0) is a function of the common factor A, the before-rates price-difference (d_0), and the price-difference elasticity (E_d). Similarly, Equation (3b) states that the after-rates volume (Q_1) is a function of the common factor A, the after-rates price-difference (d_1), and the price-difference elasticity (E_d).

Dividing Equation (3b) by Equation (3a), then, leads directly to the calculation of what is known as a projection factor multiplier, used to relate the after-rates volume to the before-rates volume and to changes in one variable (in this case the price-difference):

$Q_1/Q_0 = (d_1/d_0)^{Ed}$ Equation (4)

Equation (4) can be re-written to express the after-rates volume as being equal to the before-rates volume (of the same product), multiplied by the ratio of the after-rates and before-rates price-difference, raised to the price-difference elasticity.

$Q_1 = Q_0\ (d_1/d_0)^{Ed}$ Equation (5)

Equation (5) is the typical, and correct, formulation for calculating the after-rates volume. If one chooses, Equation (5) can be mathematically rearranged to derive an equation for calculating the before-rates volume from the after-rates volume:

$Q_0 = Q_1\ (d_0/d_1)^{Ed}$ Equation (6)

Both Equation (5) and Equation (6) are correct because they are mathematical transformations of the underlying econometric demand equation. They incorporate the

feature that the ratio of the volumes is a function of the ratio of the prices (or price-differences in this particular example), raised to the elasticity.

Let us now revisit Mr. Callow's Equation (1), but re-write his notation to be more explicit. Q_{0S} is the before-rates volume of Standard Mail and Q_{1F} is the after-rates volume of First-Class workshare letters:

$$Q_{0S} = Q_{1F} (d_0/d_1)^{Ed} \qquad \text{Equation (1)}$$

If Mr. Callow's Equation (1) makes sense, then if we divide both sides of the equation by Q_{1F}, the result should also make sense. But clearly it does not.

$$Q_{0S}/Q_{1F} = (d_0/d_1)^{Ed} \qquad \text{Equation (8)}$$

Equation (8) looks somewhat like Equation (6), but given Mr. Callow's formulation, it says that the ratio of the before-rates volume of Standard Mail to the after-rates volume of First-Class workshare letters is equal to the ratio of the before-rates and after-rates price-differences raised to the discount elasticity. Equation (8) makes no sense. There is no mathematical identity between the ratio of these two volumes and the ratio of the two price-differences. It would imply, for example, that if d_0 and d_1 were the same, (so that their ratio equals 1.0), then the volume of Standard Mail and the volume of First-Class workshare letters would also have to be the same. But, of course, this is not true, which demonstrates why Mr. Callow's formulation is conceptually flawed.

C. Witness Callow's Assumption that Decreases in Standard Mail Volumes Cause Increases in First-Class Workshare Letter Volumes Confuses Cause and Effect

Aside from the fact that his forecast equation is conceptually flawed, Mr. Callow makes another error in his approach to projecting the impact of the proposed NSA on the volume of First-class Mail sent by WMB. His equation starts with the volume of Standard Mail and ends with the volume of First-Class workshare letters. In short, Mr. Callow argues that it is the decrease in Standard Mail volume that creates the increase in First-Class workshare letter volume. This reasoning is a classic case of confusing cause and effect. Decreases in WMB's Standard Mail volumes do not cause increases in First-Class letter volumes. In reality, the flow of cause and effect is the reverse. It is the increase in WMB's First-Class workshare letters volumes that causes the decrease in its Standard Mail volumes because WMB finds that by sending more pieces of First-Class Mail (in response to the price decline) they can send fewer pieces of Standard Mail, and still accomplish their marketing goals.

In that sense, we have come full circle, and return to Mr. Callow's view that the First-Class workshare letter own-price effect is zero. But not only is the own-price effect not zero, it is change in the own-price of First-Class workshare letters that drives the volume responses, thereby, determining the causality of the process. The lower price, along with other features of the proposed NSA, would induce WMB to increase its volume of First-Class Mail marketing mail, and that increase in the volume of First-Class Mail marketing mail would cause WMB to decrease its volume of Standard Mail.

5. USPS WITNESS THRESS' ELASTICITIES ARE INAPPROPRIATE FOR EVALUATING THE VOLUME RESPONSE BY WMB TO THIS PROPOSED NSA

Even if the correct equation were used to estimate the before-rates volumes of First-Class workshare letters sent by WMB, the elasticities estimated by Witness Thress should not be used to estimate the volume response of WMB to the proposed NSA. Witness Thress's elasticities are only useful if it can be presumed that the response by WMB to the price changes included in this NSA are the same as those estimated for all First-Class workshare letter mailers in response to changes in workshare letter prices. In this section of my testimony, I will show that this assumption is incorrect for three reasons:

- The change in the WMB's volume of First-Class workshare letters is likely to be greater than the response of the typical First-Class workshare letter mailer. This is because the volume of WMB mail in question is advertising mail, and advertising mail, because of its discretionary nature and tendency to exhibit diminishing returns, is likely to be more price sensitive than other workshare letter mail.
- Advertising mail, in general, will have a larger response to a change in the price-difference between First-Class workshare letters and Standard Mail than the response estimated for total workshare letter volume. The reason why advertising mail has a greater than average response is that advertising mail is primarily, if not exclusively, the mail that shifts between First-Class Mail and Standard Mail in response to a change in the price-difference.

- WMB will likely have an even greater response to a change in the price-difference than the typical workshare advertising mailer because WMB makes greater use of First-Class advertising mail than most advertising mailers. Therefore, the First-Class workshare letter elasticities estimated by Witness Thress should not be used to estimate the volume response of WMB to this proposed NSA.

Additionally, I explain why there is no connection between the standard error of Witness Thress's First-Class workshare letter price elasticities and the price elasticities of mail sent by WMB, in contrast to Witness Callow's assertion that the two are somehow related. Finally, I provide my own illustrative calculation of WMB's response to the proposed price changes in this NSA based on what I believe to represent reasonable elasticities of WMB's First-Class workshare letter mail, as substitutes for the elasticities estimated by Witness Thress which should not be used to estimate the volume response of WMB.

A. WMB's Own-Price Responses are Likely Greater than for the Typical Workshare Mailer

WMB's own-price elasticity of its workshare advertising letter mail is likely greater than the own-price elasticity of all workshare letter mailers estimated by Witness Thress because advertising mailings are likely to be more price-sensitive than other workshare letter mail.

Mr. Thress estimates workshare letter elasticities by regressing total workshare letter volume (per adult per mailing day, to be exact) against a number of aggregated variables such as average postal prices, macro-economic variables, and system-wide rules and postal regulations. As such, Mr. Thress is essentially measuring average

responses (across all workshare mailers) to changes in average variables (across all mailers and across the entire economy). This is appropriate for the purpose of his equation, which is to project workshare letter volume given projected changes in economic variables and future postal rates.

In general, elasticities estimated on aggregated behavior may not be applicable to an individual mailer. Nevertheless, as a first estimate, it may be appropriate to assume that any particular mailer has the same price elasticity as the subclass as a whole. That is, there is no reason to assume immediately that a mailer is necessarily either more price-sensitive or less price-sensitive than the average mailer, and therefore, in the absence of other information, the aggregate elasticity may be the best estimate of the individual mailer elasticity.

But in this instance other information is available, and that information leads to the conclusion that WMB is likely to be more price-sensitive than the typical workshare letter mailer. The estimated own-price elasticity of First-Class workshare letters is low. A low price elasticity means that the volume sent is not particularly sensitive to changes in price. An example of this kind of First-Class workshare letter volume is the operational mailings of WMB. Operational mail consists primarily of credit card bill statements but also includes other mailings such as replacement cards. In his presentation of projected mail volumes, WBM witness Rapaport (WMB-T-1) treats the volumes of operational mail as essentially fixed for any given year. For example, his projection of the response of WMB to the R2005-1 rate increase assumes no change in the volume of operations mail. Historical volumes of operational mail and projections of future volumes of operational mail are based on the number of accounts, not on changes in postal prices.

In other words, WMB's operational mailings appear to have a price elasticity of

zero, at least during the time period examined in this case. WMB is not likely unique in that regard. Other businesses no doubt have certain mailings that are made regardless of postal rates, at least regardless of the range of postal rate changes that has occurred in the recent past. While it may be too extreme to say these volumes have no price elasticity, it is reasonable to suggest that there are large segments of the First-Class workshare letter mail stream for which the price elasticity is close to zero.

It stands to reason that if one (or more) parts of that workshare mailstream has a price elasticity which is less than the average, other parts of the workshare mailstream must have a price elasticity that is greater than the average. One such segment of First-Class workshare letter volume is advertising mail.

First-Class workshare advertising mail is likely to be more price elastic than non-advertising mail. This statement holds true even ignoring, for the time being, volume shifts between First-Class workshare letters and Standard Mail. Advertising mailings are likely to be more price-sensitive because they are to a degree discretionary mailings. Credit card statements, however, must be sent. They can be sent electronically instead of through the mail, though this does not appear to be an important delivery choice for WMB.[2]

Advertising mailings, by contrast, do not have to be sent. They are only sent if the expected benefit from the mailing exceeds the cost. A change in postage rates results in a change in the cost of advertising mailings, so that some mailings that were cost effective may no longer be if postage rates increase, and other mailings, previously not cost effective may become so if postage rates decrease. The discretionary aspect of advertising mailings is one reason why the own-price elasticity of Standard Mail is

[2] Electronic delivery may be used by other mailers, which is why – to whatever extent the use of electronic delivery is driven by postal price changes – the overall own-price elasticity of this type of mail is probably not zero.

greater than for First-Class workshare letter mail, only a fraction of which is advertising.[3]

Moreover, advertising mail is likely to exhibit diminishing marginal returns. Diminishing marginal returns means that as the volume of advertising mail increases, its effectiveness (eventually) decreases. One reason for this is that greater volumes may involve sending advertising to recipients who are less likely to respond, and therefore the increased volume has diminishing effectiveness (marginal return). The existence of diminishing returns to advertising mail means that a price decrease is needed to increase volume because, only after a price decrease, do some of the more marginal mailings become profitable for the advertiser. Put differently, when price decreases, advertisers may find some mailings profitable that were not profitable at previously higher postal rates. Other types of First-Class workshare letter mail, for example, bills and statements, are not as likely to exhibit diminishing marginal returns as advertising mail. This feature makes it more likely that the own-price elasticity of First-Class workshare letter advertising mail is greater than for other kinds of First-Class workshare letter mail.

[3] It might be tempting at this point to argue that the own-price elasticity of WMB's advertising mailings is equal to the own-price elasticity of Standard Regular Mail or some weighted average of the own-price elasticities of Standard Regular and Standard ECR Mail. I caution against this simple approach since Standard Mail and First-Class Mail are different products with different service standards. The point of the discussion is merely that workshare advertising mail is likely to be more price sensitive than non-advertising mail.

B. The Price-Difference Elasticity of First-Class Workshare Advertising Mail is Greater than the Price-Difference Elasticity of Total First-Class Workshare Letter Mail

Let us now consider the issue of shifts between First-Class workshare letters and Standard Mail. Advertising mailers have a choice between sending mail as First-Class Mail or as Standard Mail. For current users of First-Class workshare advertising, that choice depends on both the price of First-Class workshare letters and the price-difference between First-Class workshare letters and Standard Regular Mail. In a case where the First-Class workshare letter price changes, both the own-price and price-difference change as well, and both of these changes affect the volume of First-Class workshare letter advertising.

As noted earlier, the elasticity of First-Class workshare letter volume with respect to a change in the price-difference is estimated by witnessThress to be -0.1115. At first glance, this appears to be a small impact, but this initial observation is misleading. The elasticity means that a 10 percent decrease in the price-difference leads to a 1.115 percent increase in *total* First-Class workshare volume. But it is clear that not all components of workshare letters are affected equally. In fact, the 1.115 percent increase must be almost entirely reflected in changes in advertising volume, because it is primarily, if not exclusively, the volume of advertising mail that is affected by the difference between the price of First-Class workshare letters and Standard Regular Mail. If, for the sake of argument, 20 percent of First-Class workshare letter volume is advertising mail, then a 1.115 percent change in total First-Class workshare volume

corresponds to a 5.575 percent change in the volume of First-Class workshare advertising mail. Mathematically, this means that if the price-difference elasticity of total First-Class workshare letters is equal to -0.1115, then the price-difference elasticity of First-Class workshare advertising letters is equal to -0.5575, assuming as I have in this discussion that advertising mail is 20 percent of the total volume. Thus, even for the typical First-Class workshare advertising mailer, the response to a change in the price-difference is greater than the response measured by the overall elasticity of First-Class workshare letters.

C. WMB's Response to a Change in the Price-Difference is Likely to Be Greater than the Response of a Typical First-Class Workshare Advertising Mailer

As explained above, the price-difference elasticity of First-Class workshare advertising mail will be greater than the price-difference elasticity of total First-Class workshare letter mail. Furthermore, it is likely that WMB's price-difference elasticity is even greater than for the typical advertising mailer because WMB makes relatively greater use of First-Class Mail advertising, as opposed to Standard Mail advertising.

At this point, it may be useful to understand the basics behind the choice between sending advertising mail as First-Class Mail or Standard Mail. Marketers can reach customers through direct mail, using either product. Given that First-Class Mail postage is greater than Standard Mail postage, one might wonder why any marketer would choose to use First-Class Mail. The reason is that First-Class Mail offers advantages that for some mailers offset the higher postage costs.

WBM witness Rapaport lists two of the advantages First-Class Mail advertising

mail has over Standard Mail. I will offer a third. One advantage cited by Witness Rapaport is the observation that recipients are more likely to respond to First-Class Mail advertising than to Standard Mail advertising. While it might seem strange that mailer response would depend on the postage indicia, it is possible that recipients view First-Class Mail as having a more personalized content and therefore, more likely to be of value. A second advantage cited by Witness Rapaport is that the forwarding of First-Class Mail makes it more likely to reach its intended recipient. This can be especially advantageous to a marketer trying to reach a customer who is more transient than typical - i.e., renters instead of home owners, or younger people instead of older people.

I offer a third advantage of First-Class Mail advertising. Because First-Class Mail is delivered in a more timely manner than Standard Mail, it may make it a more effective choice for marketers who wish to coordinate their mailing effort with other events, or other marketing initiatives. Furthermore, mailers may want to space their marketing offers according to a schedule that they believe will best increase the likelihood of a response. Using Standard Mail, which has a wider delivery window, may result in a mailer receiving multiple pieces either too close together or too far apart to be optimally effective.

In his testimony, Mr. Rapaport states that First-Class Mail advertising has a 20 percent “lift” relative to Standard Mail advertising. Lift refers to the greater number of new customers generated from sending credit card solicitations via First-Class Mail than sending them via Standard Mail. The lift is a function of the features discussed above, and perhaps other features as well.

In any case, the existence of a 20 percent lift can result in large changes in the mix of mail based on small changes in rates, as illustrated by this simple example. Suppose a mailer is planning a 100 million piece mailing, and is choosing between

sending the mailing as First-Class Mail or Standard Mail, or some combination of the two. Let us assume that the cost per piece (including postage and non-postage costs) of sending a First-Class workshare solicitation is 75 cents. Further, assume that the cost per piece of sending a Standard Mail solicitation is 60 cents.

In this scenario, the First-Class Mail solicitations are 25 percent more expensive than the Standard Mail solicitations. But because First-Class Mail solicitations are only 20 percent more effective, the added lift does not offset the added cost. Thus, in this scenario, the mailer would choose to send the entire 100 million piece mailing as Standard Mail.

Now suppose that the postage price of First-Class workshare letters decreases 5 cents. This postage decrease reduces the per piece cost of First-Class solicitation mailings to 70 cents while leaving the Standard Mail solicitation cost unchanged at 60 cents per piece. In this scenario, First-Class Mail solicitations are 16.7 percent more expensive. With a 20 percent lift, it becomes cost effective to send all the mailings as First-Class Mail instead of Standard Mail.

Thus, a 5.0 cent change in the price of First-Class workshare letters (which might be on the order of a 15 percent change in price) has led to a shift of 100 percent of the mailing from Standard Mail to First-Class Mail.

One might wonder if such a large volume shift can occur, why aren't the price elasticities (own and price-difference) greater than estimated by Mr. Thress? The reason is that not all mailers experience the same 20 percent lift as experienced by WMB. A mailer who experiences only a 10 percent lift would not shift any mail from Standard Mail to First-Class Mail in response to the 5 cent decrease in First-Class Mail price because, even with the price decrease, the lift still does not offset the cost.

Across all advertising mailers, whose behavior in aggregate is analyzed by Mr.

Thress, there is likely to be a range of "lifts." In fact, it is likely that for any given mailer, there is a range of lifts for different marketing campaigns. When postal rates change, these mailers may consider re-optimizing their mix of mail. For some mailers, perhaps most mailers, a given change in rates does not change the relative cost-effectiveness of First-Class Mail versus Standard Mail. These mailers might therefore be expected to make a very small change in the mail mix, if they change at all. For other mailers, the postal change can have larger effects, far greater than measured by the overall price elasticity of total First-Class workshare letters.

The above discussion has shown that it is reasonable that WMB would have a large volume response to a change in First-Class workshare letter rates. That it is reasonable is not the same as it being likely. However, there are reasons to believe that WMB is more likely than other advertising mailers to respond as described in the above section. The Household Diary Study and from WMB's historical volume figures support this view.

Table 1 presents 2005 Household Diary Study (HDS) data showing the mix of advertising mail received by households by industry. Although not all advertising mail is sent to households, households (as opposed to non-households) account for the vast majority of advertising mail received.

Table 1 shows that Standard Mail accounted for 85 percent of the advertising mail received by HDS households in 2005, with First-Class Mail accounting for 15 percent of the total. Some industries make even heavier use of Standard Mail. Merchants, for example, sent 90 percent of their advertising mail via Standard Mail, and it is likely that within that group there are senders who relied exclusively on Standard Mail.

Table 1
Advertising Mail Received by Households in 2005

	Millions of Pieces			Percentage of Pieces	
Sender Type	First-Class	Standard	Total	First-Class	Standard
Credit Card	2,691	7,706	10,396	25.9%	74.1%
Other Financial	2,208	7,810	10,019	22.0%	78.0%
Financial Total	4,899	15,516	20,415	24.0%	76.0%
Merchants Total	2,761	26,142	28,903	9.6%	90.4%
Services Total	1,908	7,445	9,352	20.4%	79.6%
All Other including DK/RF and Unknown	1,214	11,760	12,974	9.4%	90.6%
Total for All Senders to Households	10,782	60,862	71,644	15.0%	85.0%
Credit Card Shares of Total Advertising Mail Received	25.0%	12.7%	14.5%		

Source: 2005 Household Diary Study

The credit card industry is different from other users of advertising mail. The data show that the credit card industry sent more than one-fourth of its advertising mail as First-Class Mail. Put differently, while the credit card industry accounted for 14.5 percent of all advertising mail received by households, and 12.7 percent of all Standard Mail received by households, it represented 25.0 percent of all First-Class Mail advertising mail received by households.

Washington Mutual Bank (WMB) makes even greater use of First-Class Mail advertising mail than the typical credit card company. According to Mr. Rapaport, in 2005, WMB sent 403 million pieces of First-Class Mail advertising mail and 123 million pieces of Standard Mail. For 2006, the projected breakdowns are 327 million pieces of

First-Class Mail and 237 million pieces Standard Mail or, after consideration of the R2005-1 rate increase, 250 million pieces First-Class Mail and 314 million pieces of Standard Mail. Thus, at a minimum, WMB sends more than 40 percent of its marketing mail as First-Class Mail, higher than the credit card industry average and higher than the mix across all mailers.

The data in Table 1 and the above paragraph show that credit card mailers, in general, and WBM, in particular, are different from other users of direct mail advertising. The mailing patterns of other industries indicate that for many mailers, First-Class Mail is not a cost effective means for sending advertising mail. These mailers are unlikely to shift their mailings between Standard Mail and First-Class Mail in response to changes in relative rates because the always lower price of Standard Mail dominates (for them) the other advantages of First-Class Mail. It may also be that for these other mailers, the other advantages of First-Class Mail, e.g., forwarding, are less important. In any case, marketers who rely exclusively (or almost exclusively) on Standard Mail are less inclined to change their mailing patterns in response to changes in the relative prices of First-Class Mail and Standard Mail.

An advertising mailer who makes the choice between First-Class Mail and Standard Mail as an ongoing part of their marketing strategy, and a mailer who makes lift an explicit use of lift in its evaluation of the relative value of First-Class Mail and Standard Mail, as WMB does, will have a much greater response to changes in First-Class Mail rates.

D. There is No Connection between the Standard Error of the First-Class Workshare Letter Elasticity Estimate and the Elasticity of WMB

In his response to an interrogatory from the Postal Service (USPS/OCA-T1-11, Tr. 3/277), Witness Callow observes that the price-difference elasticity (assuming a zero price elasticity) of WMB's First-Class workshare letters volumes, based on its before-rates and after-rates forecasts is "29 standard errors from the price-difference elasticity developed by witness Thress." From this, one might be tempted to conclude that the derived WMB price-difference elasticity is for all intents and purposes, statistically impossible. But there is no connection between the standard error of the elasticity estimated by Mr. Thress and the elasticity of an individual mailer.

The standard error of the price-difference elasticity is a measure of the reliability of Mr. Thress's elasticity estimate. Whether the standard error of Mr. Thress's elasticity estimate is big or small does not tell us anything about the range of elasticities of individual mailers. The size of the standard error of the overall workshare letter elasticity is not a function of the variation in individual elasticity responses. It is a function of how well his equation explains the variance of total First-Class workshare letter volume. The fact that the standard error is low is evidence that Mr. Thress's equation explains quite well the variance in total First-Class workshare letter volumes. It does not mean that the range of elasticities of individual mailers is small.

To further understand this point, suppose Mr. Thress's equation were even better. Suppose, hypothetically, his equation explained all of the variance of total First-Class workshare letter volumes so that the standard errors of all his elasticity estimates were zero. That is, suppose the First-Class workshare letter price-difference elasticity were known with certainty. Would this imply that every individual mailer would have to

have a discount elasticity equal to the overall workshare elasticity?

Of course not. As noted earlier, the price-difference elasticity of WMB, or any First-Class advertising mailer, is necessarily greater than the overall elasticity estimated by Mr. Thress because the overall elasticity includes the zero volume response of non-advertising workshare volumes to changes in the price-difference with Standard Mail. The overall elasticity is a weighted average of the elasticities of individual mailers, estimated across total workshare letter volume in response to price changes and changes in other variables over twenty-plus years of data. The reliability of the overall elasticity measure has no bearing on the range of elasticities of individual mailers, particularly a single mailer such as WMB which sends approximately one-tenth of one percent of total First-Class workshare letter volume, in response to a specific rate proposal over a specific period of time. Witness Callow's 29 standard error calculation is therefore meaningless. Instead, the elasticity of WMB's workshare letter mailings are greater than those estimated for total workshare letter mail by Mr. Thress.

E. An Illustrative Example of WMB's Elasticities and WMB's Response to this NSA

The purpose of the following discussion is to present an illustrative calculation of WMB's response to the proposed NSA. The calculations use the proper method for estimating the volume response, unlike the approach used by Mr. Callow. These calculations are illustrative because they rely on my assessment of what represents reasonable elasticities of WBM, based on the discussion presented earlier in this section and in contrast to Mr. Callow's inappropriate use of the overall workshare letter

price elasticity in his analysis. My analysis shows that the volume response of WMB will be much greater than found in Mr. Callow's analysis using the overall First-Class workshare letter elasticities presented by Mr. Thress.

i. The Correct Equation for Estimating the Volume Response

The correct equation for estimating WMB's volume response to a change in the price of workshare letters takes account of both the own-price and price-difference elasticity. The volume response is therefore calculated using the following equation:

Percentage change in volume = $(P_1/P_0)^E \times (D_1/D_0)^{Ed}$ Equation (9)

P_1 is the after-rates price of First-Class workshared letters, P_0 is the before-rates price, D_1 is the after-rates price-difference between First-Class workshare letters and Standard Mail, and D_0 is the before-rates price-difference. E and E_d are the own-price and price-difference elasticities, respectively. This volume response equation follows from Equation (4) presented earlier in my testimony, though Equation (9) also includes the own-price elasticity effect.

ii. Price Data Used in this Analysis

The following data are used in these calculations. The before-rates prices are taken from Witness Ayub's (USPS-T-1) Appendix A (REV 6-7-06), page 10. The after-rates prices are the final tier prices in the proposed NSA, which includes a 5.0 cent discount for First-Class workshared letters.

Table 3
Price Data Used in Illustrative Calculation of WMB's Response to Change in First-Class Workshare Letter Price

Before-Rates price of First-Class workshare letters	$0.346
Before-Rates price of Standard Mail	$0.206
Before-Rates price-difference with Standard Mail	$0.140
After-Rates price (final tier) of First-Class workshare letters	$0.296
After-Rates price of Standard Mail	$0.206
After-Rates price-difference (final tier) with Standard Mail	$0.090

iii. Volume Response Incorrectly Using Overall Workshare Elasticities

For comparison purposes, the volume response is first calculated using the overall workshare elasticities. This approach is incorrect because, as explained earlier, WMB's price elasticities are larger than the overall workshare letter elasticities. Nonetheless, this calculation is presented below using the overall workshare own-price elasticity of -0.1299 and the overall price-difference elasticity of -0.1115. This calculation yields a 7.2 percent volume increase in response to the change in First-Class workshare letter rates. Note, of course, that this result depends on the use of price elasticities that are inappropriate for the purposes of this NSA. The volume response to the after-rates prices using the overall First-Class letter workshare price elasticitites is calculated as:

$$(0.296/0.346)^{-0.1299} \times (0.090/0.140)^{-0.1115} - 1 = +7.2 \text{ percent} \quad \text{Equation (10)}$$

Thus, using the correct volume forecast equation, unlike Mr. Callow, but using price-elasticity estimates that are inappropriate for the purposes of analyzing this NSA, we find a relatively small volume response to the proposed price change.

iv. Volume Response Using Reasonable Estimates of WMB's Elasticities

The same equation is used to project WMB's response to this NSA, substituting reasonable estimates of WBM's price elasticities. For the purposes of this illustration, it is assumed that the own-price elasticity of WMB's First-Class workshare advertising mailings is -0.2600, about twice the estimated own-price elasticity for all First-Class workshare letters. This assumption follows from the observation that advertising mailings are likely to be more price-elastic than non-advertising mailings. A second assumption is that the price-difference elasticity of WMB's First-Class workshare advertising mailings is -0.7000. This is based on the view that WMB will have a higher price-difference elasticity than the typical First-Class workshare advertising mailer who, in turn, has a price-difference elasticity that is five times the price-difference elasticity for all First-Class workshare letters. The five times factor is based on the fact that only advertising mailings can shift between First-Class Mail and Standard Mail and that 20 percent of First-Class workshare letters volume consists of advertising mailings. Therefore, the typical First-Class workshare letter mail is assumed to have a price-difference elasticity of -0.5575 and WMB is presumed to have a price-difference elasticity of -0.7000.

Therefore, the volume response of WMB to the after-rates prices proposed in this NSA, using reasonable elasticities is calculated as:

$$(0.296/0.346)^{-0.2600} \times (0.090/0.140)^{-0.7000} - 1 = +41.9 \text{ percent}$$

Given the reasonable assumptions made above, the response by WMB to the rates proposed in this NSA is far greater than the response based on the aggregate elasticities. It is also a far greater response than estimated by Mr. Callow, partly

because he used an incorrect equation to calculate his response and partly because he used elasticity measures that are inappropriate for analysis of this NSA.

However, it may be noted that even the larger response shown above is not as great as the response projected by WMB. That difference can be explained by a key feature of this proposed NSA, discussed in the next section.

6. THE SPECIFICS OF THIS NSA CREATE A NON-PRICE VOLUME RESPONSE THAT WITNESS CALLOW FAILS TO ACCOUNT FOR IN HIS ANALYSIS

In this section of my testimony, I will show that because Witness Callow fails to account for the NSA requirement that WBM send 90 percent of its credit card solicitation mail, or a minimum of 500 million pieces, as First-Class Mail, he underestimates the degree to which WMB may increase its volume of First-Class advertising mail in response to the NSA. I conclude that because Witness Callow fails to account for this NSA requirement, he is unable to project the full response of WMB to this NSA. Additionally, I show that the elasticities estimated by Witness Thress or, for that matter, the more reasonable elasticities I presented in the previous section, cannot be used to project the response of WMB to the 90 percent rule included in this NSA, because the 90 percent rule is a non-price factor affecting volume, and price elasticities cannot be used to calculate the impact of non-price factors.

A. WMB's Response to this NSA is Also Due to the 90 Percent Rule

A key feature of this proposed NSA is the requirement that WMB send at least 90 percent (or a minimum of 500 million pieces) of its marketing mail as First-Class Mail. Witness Callow fails to account for this requirement in his analysis and, therefore,

underestimates the degree to which WMB may increase its volume of First-Class advertising mail in response to the NSA. Moreover, the 90 percent rule imposes a non-price constraint on WMB's use of First-Class Mail. Therefore, the effect of the 90 percent rule cannot be estimated through analysis of price elasticities estimated by Mr. Thress or, for that matter, the more appropriate price elasticities suggested by me in the previous section. In other words, even if one knew for certain the own-price and price-difference elasticities of WMB's workshare advertising mailings, that knowledge would not be sufficient to project their volumes in response to this NSA. Their volume response is a product of the price response (due to the price change as measured by their price elasticities) and their non-price response to the 90 percent rule included in the NSA.

Therefore, in assessing the likely impact of this NSA on WMB's volumes, we cannot rely solely on volume responses based on price elasticities alone, even the more reasonable price elasticities suggested by me in the previous section.

B. Price Elasticity Estimates do not Account for the 90 Percent Rule

The First-Class workshare letter price elasticities estimated by Mr. Thress are based on observed volume changes in response to observed changes in factors affecting volume, such as the price of workshare letters and the price-difference between workshare letters and Standard Mail. However, the volume responses that Mr. Thress analyzes occur under different conditions from those that would be faced by WMB in response to this proposed NSA. Specifically, this NSA includes a requirement that WMB send at least 90 percent of its marketing mail as First-Class Mail.

The 90 percent rule, however, is not imposed on mailers when they respond to omnibus rate changes. Mailers respond to omnibus rate changes in a way that optimizes their mix of mail (between First-Class Mail and Standard Mail, for example)

based on relative rates and relative effectiveness, subject to whatever internal constraints exist for the mailer. By internal constraints, I mean that mailers may have self-imposed constraints on their marketing budget, their total volume of mail, and/or their goals for new business.

Given these internal constraints, therefore, the mailer optimizes his or her mailing decision in response to a change in rates. If desired, the mailer could make no response, or the mailer could increase or decrease the volumes of First-Class Mail or Standard Mail, changing volumes by as little or as much as determined to be optimal. For example, a mailer could respond to a rate change that increased the attractiveness of First-Class Mail relative to Standard Mail by increasing First-Class Mail volume by ten percent, if the marginal benefit of the additional ten percent volume offset the marginal costs. Or, put differently, a mailer could chose to change the mix of its advertising mail from 50 percent First-Class Mail and 50 percent Standard Mail to 55 percent First-Class Mail and 45 percent Standard Mail, as well as changing the total volume of mail sent, if desired.

In other words, mailers normally are allowed to make marginal decisions in response to rate changes, based solely on those rate changes if they so choose. They can, if so desired, make small changes in their mailing plans. And this environment, an environment that allows mailers to make changes in their mailing plans in response to changes in rates is the environment which produces the volumes that Mr. Thress analyses in his econometric work.

C. The 90 Percent Rule May Require WMB to Send More First-Class Mail Advertising Mail than It Would Based on Price Effects Only

This proposed NSA does not allow WMB to adjust its volume of First-Class advertising mail based solely on changes in postal prices. WMB must also satisfy the 90 percent requirement to qualify for the NSA. Thus, the 90 percent requirement adds an *external constraint* to WMB's optimization strategy. Its first-best response (optimal subject to their internal constraints) may not be available to them. Instead, it may have to move to a second-best response in order to satisfy the external constraint.

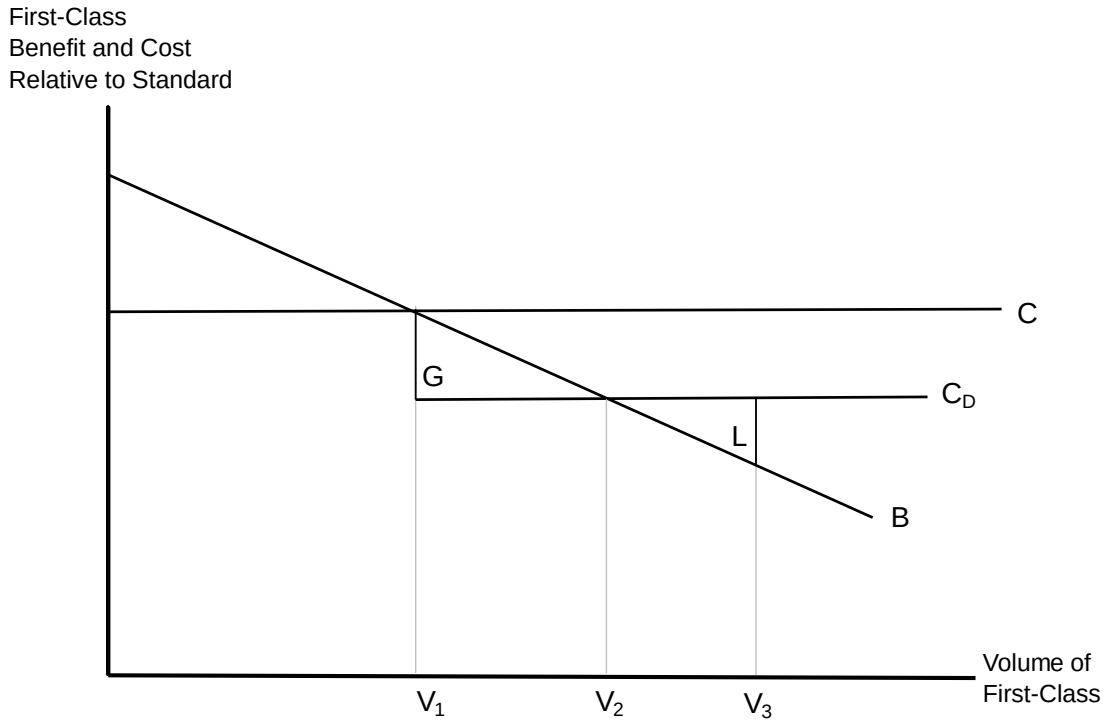
Figure 1 illustrates this example, considering a simplified case in which there is only one discount provided. In Figure 1, line B shows the benefit of First-Class Mail advertising over Standard Mail advertising. Note that line B is drawn with a downward slope. This means that as the volume of First-Class Mail advertising mail increases, the benefit of additional First-Class Mail advertising mailings versus Standard Mail declines. In economic terminology, First-Class Mail advertising exhibits diminishing marginal benefits.

Line C shows the cost premium of First-Class advertising over Standard Mail advertising. As long as the marginal benefit of First-Class advertising exceeds this marginal cost, then it is optimal for the mailer to use First-Class Mail advertising. As Figure 1 shows, the marginal conditions result in volume V_1 being sent by the mailer.

Now suppose an NSA is introduced that provides a discount for First-Class Mail volumes beyond V_1. The discount lowers the cost premium for First-Class Mail advertising mail and causes the cost premium line to shift downward (for volumes beyond V_1) to C_D. This lower cost premium encourages the mailer to increase the volume of First-Class advertising mail to a point V_2. More volume is sent because,

though this greater volume has a lower marginal benefit, it also has a lower marginal cost and up to V_2, the marginal benefit is greater or equal than the marginal cost.

Figure 1
Illustration of Unconstrained and Constrained Volume Responses



V_2 then represents the mailer's externally unconstrained optimal volume of First-Class Mail advertising mail. I use the term externally unconstrained to refer to constraints imposed from outside the company itself. The company may have one or more internal constraints such as limits on its marketing budget or mailing volumes, and/or goals for new customer acquisitions or sales. But these internal constraints – and any others – are already embedded in the lines drawn in Figure 1.

The specific NSA proposed in this case includes an external constraint. In order to receive the discount, WMB would have to send at least 90 percent of its marketing mail as First-Class Mail. The mix of mail at V_2 (which can also include a volume of

Standard Mail) may not satisfy the rule. Therefore, the mailer would have to move from its first-best optimal mailing mix to another mailing mix, one that satisfies the 90 percent rule. Suppose that volume occurs at V_3.

Note that, as drawn in Figure 1, V_3 is inferior to V_2. It involves sending volumes of First-Class Mail where the marginal benefit is below the marginal cost, both measured relative to Standard Mail. This is because as volumes of First-Class Mail rise to satisfy the 90 percent requirement, the marginal benefit of First-Class Mail falls further and further.[4] However, as long as V_3 is superior to V_1 (the original volume mix), then the NSA, with its 90 percent rule, would provide a net gain to the mailer.

Comparing V_3 with V_1 involves analysis of the areas G and L. G represents the net gain on volumes from V_1 to V_2, where the gain exists because for these volumes the marginal benefit is greater than or equal to the marginal cost. L represents the net loss on volumes from V_2 to V_3, where the loss exists because for these volumes the marginal benefit is less than the marginal cost. As long as area G exceeds area L, then sending volume V_3 (post-NSA) is superior to sending volume V_1 (pre-NSA). Figure 1 is drawn so that area G exceeds area L, meaning that V_3 is superior V_1. But a key conclusion from this figure is that the 90 percent rule imposes a constraint on the mailer's response to the NSA that moves it away from its first-best response to a larger volume response.

Another key conclusion of this section is that the 90 percent rule is a non-price feature of this proposed NSA. Because it is a non-price factor, price elasticities cannot be used to assess its impact. Instead, the response of WMB's First-Class Mail volumes may be greater than calculated using price elasticities alone, even if the more appropriate price elasticities presented by me earlier in this testimony were used.

[4] This problem is mitigated within this NSA because of increased discounts as volumes increase. Therefore, cost per piece decreases as volume increases, offsetting the declining marginal benefit of additional First-Class Mail.

Mr. Callow does not account for this feature in his analysis of WMB's response to the NSA, yet another error in his testimony. Moreover, the Commission, in its assessment of the merits of this NSA, must recognize that price elasticities alone – even reasonable price elasticities similar to the ones suggested in this testimony – cannot project the full response of WMB to this NSA.

7. WITNESS CALLOW'S RECOMMENDATION OF A VOLUME CAP ON WMB'S DISCOUNTS WILL LIKELY REDUCE THE POSTAL SERVICE'S CONTRIBUTION FROM THIS NSA.

In this section of my testimony, I challenge Witness Callow's argument that the Commission must place a volume cap on WMB's discounts under the NSA. First, I summarize Witness Callow's argument for the imposition of the cap. Second, I provide my own analysis of the likely impact of a volume cap, specifically when there is uncertainty as to WMB's before-rates and after-rates volumes. My conclusions are that a volume cap will likely reduce the Postal Service's contribution from this NSA and that Mr. Callow's argument in favor of a cap rests on his incorrect calculation of WMB's volume response to the NSA.

A. Brief Overview of Witness Callow's Argument for a Cap

In his testimony, Witness Callow recommends that a cap be placed on the volumes for which WMB would receive discounts in this NSA. In other words, Mr. Callow recommends that WMB receive discounts on volumes up to a certain level (the cap) but for volumes beyond that level, no discount should be granted. Much of the

basis for his conclusion appears to come from his incorrect assessment of the volume response of WMB to this NSA. Mr. Callow finds – incorrectly – that this NSA will not generate much additional volume for the Postal Service. Moreover, Mr. Callow concludes that since the before-rates (without NSA) volume is close to the after-rates (with NSA) volume, the before-rates volume is also well above the volume threshold level after which discounts are granted to WMB. Therefore, according to Mr. Callow's logic, this NSA runs the risk of granting discounts to WMB for volumes that it would have sent in the absence of the NSA and – if true – runs the risk of reducing contribution to the Postal Service.

Mr. Callow's conclusions are incorrect for two main reasons. The first reason is that is finding that the before-rates and after-rates volumes are likely to be close to one another is incorrect for the many reasons presented earlier in this section. The second reason why a cap is not recommended in this case is that a cap is more likely to reduce Postal Service contribution than to increase it. A cap is more likely to harm the Postal Service because it exposes the Postal Service to an asymmetrically unfavorable risk, given uncertainties about WMB's volumes. The reason for this asymmetric impact of the cap is that the cap protects against the loss in contribution on volume that would be sent in the absence of the NSA, equal to the discount granted on that volume, but it limits the Postal Service's potential gain in contribution from additional volume sent *because* of the NSA. Since the discount is much less than the contribution on this additional volume, a cap sets up a condition under which the potential savings are far less than the potential costs.

B. Overview of My Analysis of the Impact of a Cap

A cap on the volume for which WMB receives discounts will likely reduce the Postal Service's contribution from this NSA. This conclusion is not based on the volume response projected by WMB in this case. Moreover, it is not based on the analysis of WMB's response to this NSA presented in this testimony. The argument against a cap is that even given uncertainties about WMB's before- and after-rates volumes, a cap would be more likely to reduce Postal Service contribution than to increase it.

It may be agreed that there are uncertainties about WMB's volumes. These uncertainties can affect its before-rates volume, its after-rates volume, or both. This section presents illustrative estimates of the impact of a cap as it relates to the uncertainty of WMB's volumes. My analysis first considers the case where WMB's before-rates volume is known and its after-rates volume is subject to uncertainty. In this scenario, a volume cap cannot help the Postal Service and will likely harm it. My analysis next considers the case where WMB's after-rates volume is known, but its before-rates volume is subject to uncertainty. In this scenario, a volume cap is more likely to reduce Postal Service contribution than to increase it.

Some simplifying assumptions are made. First, I assume there is only one discount tier, as opposed to the several tiers included in the actual NSA. Second, I do not consider the impact on contribution resulting from changes in the volume of Standard Mail. However, I explain that why the impact on Standard Mail volumes is unlikely to affect the argument against a cap. Third, I use illustrative volume, price, and cost estimates as opposed to the exact data used in the testimonies of other witnesses in this case. In terms of prices and costs, I use a before-rates price of $0.346, an after-

rates rate price of $0.296, and a before- and after-rates unit cost of $0.110. Use of exact data would alter the exact calculations that follow in this section but would not change the conclusion that a volume cap is not in the best interest of the Postal Service or its customers.

C. Impact of a Cap When There is Uncertainty about After-Rates Volumes

Let us assume that the before-rates (in the absence of the NSA) volume of WMB's First-Class Mail is known to be 450 million pieces. Furthermore, assume the NSA is constructed so that discounts are granted on volumes above 450 million pieces.5 In this case, the financial impact of the NSA to the Postal Service depends on the after-rates volumes sent by WMB. Table 4 compares the financial benefit to the Postal Service given different possible after-rates volumes. It shows that in this case, a cap on discounts cannot help the Postal Service and will likely harm it.

[5] I understand that the actual volume threshold is this case has been set at 490 million pieces. As the purpose of this analysis is merely illustrative, I did not attempt to mimic the details of the NSA exactly.

Table 4
Impact of a Cap on Postal Service Contribution
Before-Rates Volume is Known but After-Rates Volume is Uncertain

Price	$0.346
Discounted Price	$0.296
Cost	$0.110

Before-Rates Volume Known
After-Rates Volume Unknown

Volume Threshold	Volume BR	Volume AR	Volume CAP	Uncapped Change in Contribution	Capped Change in Contribution	Effect of Cap
450	450	450	550	$0.00	$0.00	$0.00
450	450	500	550	$9.30	$9.30	$0.00
450	450	550	550	$18.60	$18.60	$0.00
450	450	600	550	$27.90	$18.60	-$9.30
450	450	650	550	$37.20	$18.60	-$18.60
450	450	700	550	$46.50	$18.60	-$27.90

In Table 4, the volume threshold is set at the known before-rates volume of 450 million pieces. The change in contribution to the Postal Service for after-rates volumes ranging from 450 million pieces to 700 million pieces is calculated, given the price and cost data shown at the top left of the table. For example, if the after-rates volume is 500 million pieces, then the Postal Service's contribution increases by $9.30 million, equal to the increase in volume (500 million – 450 million = 50 million) multiplied by the per piece contribution on this volume ($0.296 - $0.110 = $0.186).

The change in contribution given a volume cap of 550 million pieces is also shown and the final column shows the effect of the cap, equal to the difference between the capped and uncapped change in contribution.

Table 4 shows that in this scenario, a volume cap cannot help the Postal Service and will likely harm it. The only effect of the cap is to limit the increase in the after-rates volumes to a maximum of the capped volume, assumed here to be 550 million pieces.

The after-rates volume does not exceed the cap because, by definition, the after-rates volume is the volume that occurs in response to the discount. Once the discount is capped, there is no longer an incentive to increase volume beyond the cap level.

Thus, at best, the cap will have no impact on the Postal Service (if the after-rates volume is equal or less than the cap) and at worse, it will limit the Postal Service's upside benefits from this NSA by limiting the increase in volume.

D. Impact of a Cap When There is Uncertainty about Before-Rates Volumes

A second scenario is one where the after-rates volume is known but the before-rates volume is not. This scenario is the one that exposes the Postal Service to some risk, since it raises the possibility (but not the inevitability) that the before-rates volume will 1) be above the volume threshold for the discount, thereby causing the Postal Service to grant discounts on volumes that would have been sent in the absence of the discount; and 2) be close to the after-rates volume, so that there is little offsetting volume increase from the NSA. Nevertheless, as shown in Table 5, a cap on discounts will likely reduce the Postal Service's contribution, even given considerable uncertainty about the before-rates volumes.

In this scenario, the after-rates volume is assumed to be known and equal to 700 million pieces, but there is uncertainty about the before-rates volumes. Otherwise, the assumptions are used as in scenario shown in Table 4. Specifically, the price and cost data are the same, the volume threshold is assumed to be 450 million pieces and the volume cap is assumed to be 550 million pieces.

The formula for calculating the uncapped change in the contribution follows from

the equation referred to as the Panzar test. Specifically, the change in uncapped contribution (in millions of dollars) is calculated as:

(BR Volume – 450)($0.296 - $0.346) + (AR Volume – BR Volume)($0.296 - $0.110)

The formula used to calculate the capped change in contribution (again in comparison with the situation in which there is no NSA) is different. In those cases where the before-rates volume is 550 million pieces or less, the after-rates term in the above equation is replaced with 550. In those cases where the before-rates volume is more than 550 million pieces, the before-rates volume in the first term of the above equation is replaced by 550, and the second term drops out of the equation, because with a cap there is no further increase in volume because the discounts would no longer apply.

Table 5
Impact of a Cap on Postal Service Contribution
Before-Rates Volume is Known but After-Rates Volume is Uncertain

Price	$0.346
Discounted Price	$0.296
Cost	$0.110

After-Rates Volume Known
Before-Rates Volume Unknown

Volume Threshold	Volume BR	Volume AR	Volume CAP	Uncapped Change in Contribution	Capped Change in Contribution	Effect of Cap
450	450	700	550	$46.50	$18.60	-$27.90
450	500	700	550	$34.70	$6.80	-$27.90
450	550	700	550	$22.90	-$5.00	-$27.90
450	600	700	550	$11.10	-$5.00	-$16.10
450	650	700	550	-$0.70	-$5.00	-$4.30
450	668.2	700	550	-$5.00	-$5.00	$0.00
450	700	700	550	-$12.50	-$5.00	$7.50

The top row of the contribution calculations shows the case when the before-rates volume is 450 million pieces and the after-rates volume is 700 million pieces. This

can be considered the best-case scenario for the Postal Service. Because the before-rates volume is equal to the threshold, there is no contribution "given away" on volumes that would have been sent in the absence of the discount. Because the after-rates volume is well above the before-rates volume, there is considerable contribution gained in response to this NSA. Table 5 shows that under these circumstances, the NSA would generate a $46.5 million increase in contribution (less whatever decrease in contribution results from a decline in Standard Mail).

Clearly, a cap in this case would harm the Postal Service as it would limit the after-rates volume to the cap level (550 million pieces) and reduce the Postal Service's contribution to $18.60 million, or $27.9 million less than the uncapped contribution.

The last row of Table 5 shows what might be viewed as the worst-case scenario for the Postal Service. In this scenario, the before-rates volume is equal to the after-rates volume of 700 million pieces – the NSA has no effect on volume. Moreover, the before-rates volume is well above the threshold, meaning that the Postal Service would be granting discounts on volumes that would be sent in the absence of the NSA. In this worst case scenario, the Postal Service experiences a loss of contribution of $12.50 million, equal to the 5.0 cent discount given on 250 million pieces of mail that would have been sent – in this scenario – in the absence of the discount. Note, however, that in this case, the reduction in Standard Mail volumes will not be an issue since, as there is no change in First-Class Mail volumes, there will be no reason for Standard Mail volumes to decline.

Nevertheless, in this final row worst-case scenario for the Postal Service, a volume cap of 550 million pieces does provide some benefit. The loss of contribution with the cap is limited to $5.00 million, equal to the 5.0 cents of lost contribution on each of the 100 million pieces sent before the cap level is reached. However, it should be

noted that as the actual WMB NSA is structured, the worst case losses would be smaller because the discount is less 5.0 cents for volumes just above the threshold.

So far, we have seen that in the uncapped best case scenario in the illustration above, a discount cap harms the Postal Service by $27.9 million, while in the uncapped worst case scenario, a discount cap provides $7.5 million of relief to the Postal Service. Thus, one effect of the cap, even at the extreme scenarios discussed so far, is that its potential cost is greater than its potential benefit.

One reason for this asymmetric impact of the cap is that the loss in contribution on volume that would be sent in the absence of the NSA is equal to the discount granted on that volume, but the gain in contribution from additional volume sent because of the NSA is equal to the difference between the discounted price and the unit cost. Since the difference between the discounted price and unit cost ($0.186) is much greater than the discount ($0.05), a cap sets up a condition that the potential savings are far less than the potential costs.

The rest of Table 5 considers intermediate cases in which the before-rates volume is somewhat between the low-end level of 450 million pieces and the high-end level of 700 million pieces. Table 5 shows that for almost all possible before-rates volumes, the cap on discounts has the effect of reducing Postal Service contribution. For example, suppose the before-rates volume were 600 million pieces. In this case, the Postal Service would be losing 5 cents on each of the 150 million pieces sent above the 450 million piece threshold, pieces that would have been sent in the absence of the NSA. But this loss, equal to $7.50 million, would be more than offset by the increased contribution from the additional 100 million pieces that would be sent in response to the NSA. These pieces have a per-piece contribution of 18.6 cents, and a total contribution of $18.6 million. Thus, as shown in Table 4, the uncapped change in contribution is

$11.1 million.

But a volume cap of 550 million pieces, along the lines recommended by Witness Callow, would result in a loss of contribution. This loss occurs because the cap does not reduce the volume for which discounts are granted that would otherwise be sent, but does reduce the volume for which additional contribution is received. That is, the cap of 550 million pieces limits the after-rates volume increase and it is precisely the after-rates volume increase that generates offsetting contribution for the Postal Service.

In fact, as Table 5 shows, it is only if the before-rates volume is around 668 million pieces (or very close to the after-rates volume of 700 million pieces) the cap produces any benefits to the Postal Service. If the before-rates volume is any lower than this, the cap imposes harm to the Postal Service, bearing in mind that these exact calculations are based on the simplified assumptions.

Returning now to Witness Callow's testimony, it should be clear that the basis for arguing for a cap is based on his incorrect calculation of the before-rates volume. Mr. Callow's analysis misuses the econometric data and volume forecasting method, ignores the differences between WMB and a typical workshare letter mailer, and fails to account for a key non-price feature of this NSA to conclude – incorrectly – that WMB's before-rates volume is close to its after-rates volume. Based on this incorrect analysis, he concludes that a volume cap will benefit the Postal Service.

But, as this testimony has shown throughout, Witness Callow's volume calculations are incorrect and, therefore, his basis for recommending a cap on discounts is also incorrect. Witness Callow's recommendations should be rejected in their entirety.