

normal distribution is only an approximate description of the error-generating process, although the approximation should be very good for variables with moderate CVs (0.5 or less). Third, the assumption that the errors in the estimates of the variables found in the formula are independently distributed is too heroic. There are some connections between USPS data systems and special studies that could produce correlations between the errors. However, there exist no estimates of these correlations that could be used in approximations derived under the assumption that the correlations are known. Fourth, the derived approximation for the CV of ACP contains terms that are very small and have no appreciable effect on the approximations. These terms can be ignored as a practical matter in applying the approximation formula. Fifth, the derivations assume that there are no non-sampling errors in USPS estimates of volume-variabilities, distribution key shares and mail volumes, although it is widely suspected that unknown non-sampling errors exist. Fortunately, non-sampling errors in the form of additive biases will have little effect on the approximations. If the amounts of the biases become known, they can be simply subtracted to correct the estimates with little effect on the calculated CVs. In effect, there is little interaction in the approximations between simple biases and the CV of ACP when non-sampling errors are discovered and corrected.

The derivation proceeds, first, for a general function $y = F(x)$ having continuous first- and second-order partial derivatives with respect to the elements x_i of the vector of variables x . An estimate \hat{x} of x is assumed to have been obtained such that the errors $e_i = x_i - \hat{x}_i$ are normally distributed and independent random variables with zero means. The derivation makes use of the following expected values for independent normal errors with zero means:

1. $E[e_i] = 0$ Zero mean (no bias in \hat{x}_i).
2. $E[e_i^2] = \sigma_i^2$ Variance of e_i .
3. $E[e_i e_j] = 0$ for all $i \neq j$ independent errors

4. $E[e_i e_j] = 0$ for any expression $e_i \dots e_j$ in which one or more of the errors appears alone unsquared, e.g., $E[e_i] = 0$ and $E[e_i e_2] = 0, E[e_1^2 e_2] = 0, E[e_1 e_2^3] = 0$.
5. $E[e_i^2 e_j^2] = \sigma_i^2 \sigma_j^2$ if $i \neq j$. Also because of independent errors.
6. $E[e_i^3] = 0$ Third moment about the mean of the normal distribution.
7. $E[e_i^4] = 3\sigma_i^4$ Fourth moment above the mean of the normal distribution.

Only 6 and 7 make use of the normality assumption and 6 is also true for any symmetric distribution.

The second-order Taylor series expansion of the function $y = F(x)$ is taken around $\hat{y} = F(\hat{x})$: $y = \hat{y} + \sum_i F_i e_i + \sum_i \sum_j F_{ij} e_i e_j / 2$ where $F_i = \partial F / \partial x_i$ and $F_{ij} = \partial^2 F / \partial x_i \partial x_j$. All partial derivatives are evaluated at $x = \hat{x}$.

The expected value of y is obtained by taking the expected value of its components. $E[y] = \hat{y} + \sum_i F_i E[e_i] + \sum_i \sum_j F_{ij} E[e_i e_j] / 2$. The term $\sum_i F_i E[e_i] = 0$ because $E[e_i] = 0$ (1). All of the terms in the double summation for which $i \neq j$ also vanish because $E[e_i e_j] = 0$ for $i \neq j$ (3). In the remaining terms $\sum_i F_{ii} E[e_i^2] / 2$, substitute $E[e_i^2] = \sigma_i^2$ (2)

$$8. \quad E[y] = \hat{y} + \sum_i F_{ii} \sigma_i^2 / 2$$

This expression (8) reveals that \hat{y} is likely to be a biased estimate of y unless the function $F(x)$ is linear or in the unlikely circumstance that there are exactly affecting terms in the expression $\sum_i F_{ii} \sigma_i^2$.

The CV of y is defined as: $C_y = \sqrt{E[(y - E[y])^2]} / E[y]$. This definition uses $E[y]$ rather than the biased estimate \hat{y} to normalize the standard deviation of the error

$y - E[y]$, which is also measured from $E[y]$ rather than \hat{y} . Therefore, the approximation for C_y derived here requires a bias correction to obtain $E[y]$ from \hat{y} as shown in (8).

The error $y - E[y]$ is approximated by combining the Taylor series for $y = F[x]$ and the result obtained for $E[y]$: $y - E[y] = \sum_i F_i e_i + \sum_i \sum_j F_{ij} e_i e_j / 2 - \sum_i F_{ii} \sigma_i^2 / 2$.

$E[(y - E[y])^2]$ is the variance of the error in the bias-corrected estimate $E[y]$ of y . Substituting for $y - E[y]$ and squaring the resulting expression produces:

$$\begin{aligned} E[(y - E[y])^2] &= E[(\sum_i F_i e_i)^2 + (\sum_i F_i e_i)(\sum_i \sum_j F_{ij} e_i e_j) \\ &\quad - (\sum_i F_i e_i)(\sum_i F_{ii} \sigma_i^2) + (\sum_i \sum_j F_{ij} e_i e_j)^2 / 4 \\ &\quad - (\sum_i \sum_j F_{ij} e_i e_j)(\sum_i F_{ii} \sigma_i^2) / 2 + (\sum_i F_{ii} \sigma_i^2)^2 / 4]. \end{aligned}$$

The expression is reduced by evaluating the expected value of each component using 1-7 above and then combining the results.

$$\begin{aligned} E[(\sum_i F_i e_i)^2] &= \sum_i \sum_j F_i F_j E[e_i e_j] \\ &= \sum_i F_i^2 \sigma_i^2 \text{ because } E[e_i^2] = \sigma_i^2 \text{ (2) and} \\ &\quad E[e_i e_j] = 0 \text{ for all } i \neq j \text{ (3)}. \end{aligned}$$

$E[(\sum_i F_i e_i)(\sum_i \sum_j F_{ij} e_i e_j)] = \sum_h \sum_i \sum_j F_h F_{ij} E[e_h e_i e_j] = 0$ because any expectation of the product of three errors $e_h e_i e_j$ either involves at least one unsquared e , alone (4) or is e_i^3 . $E[e_i^3] = 0$ by (6).

$$\begin{aligned} E[(\sum_i F_i e_i)(\sum_i F_{ii} \sigma_i^2)] &= (\sum_i F_{ii}) \sum_i F_i E[e_i] = 0 \text{ because } E[e_i] = 0 \text{ (1)}. \\ E[(\sum_i \sum_j F_{ij} e_i e_j)^2] &= E[\sum_h \sum_i \sum_j \sum_k F_{hi} F_{jk} e_i e_j e_k] \\ &= E[\sum_i F_{ii}^2 e_i^4] + E[\sum_i \sum_{j \neq i} (F_{ii} F_{jj} + 2F_{ij}^2) e_i^2 e_j^2] \end{aligned}$$

+ $E[\text{terms } e_h e_i e_j e_k \text{ with one unsquared } e, \text{ alone}]$

$$= \sum_i F_{ii}^2 E[e_i^4] + \sum_i \sum_{j \neq i} (F_{ii} F_{jj} + 2F_{ij}) E[e_i^2 e_j^2]$$
 because expected

values of products with one e_i term all are zero (4).

$$= \sum_i 3F_{ii}^2 \sigma_i^4 + \sum_i \sum_{j \neq i} (F_{ii} F_{jj} + 2F_{ij}) \sigma_i^2 \sigma_j^2$$
 because $E[e_i^4] = 3\sigma_i^4$ (7)

and $E[e_i^2 e_j^2] = \sigma_i^2 \sigma_j^2$ when $i \neq j$ (5).

$$= \sum_i \sum_j (F_{ii} F_{jj} + 2F_{ij}) \sigma_i^2 \sigma_j^2$$

$$E[(\sum_i \sum_j F_{ij} e_i e_j)(\sum_i F_{ii} \sigma_i^2)] = (\sum_i F_{ii} \sigma_i^2) \sum_i \sum_j F_{ij} E[e_i e_j]$$

$$= (\sum_i F_{ii} \sigma_i^2)^2$$
 because $E[e_i^2] = \sigma_i^2$ (2) and

$$E[e_i e_j] = 0 \text{ for } i \neq j \text{ (3)}.$$

Recombining the components $E[(y - E[y])^2] = \sum_i F_i^2 \sigma_i^2 + \sum_i \sum_j (F_{ii} F_{jj} + 2F_{ij}^2) \sigma_i^2 \sigma_j^2 / 4$

$$- (\sum_i F_{ii} \sigma_i^2)^2 / 2 + (\sum_i F_{ii} \sigma_i^2)^2 / 4$$

$$= \sum_i F_i^2 \sigma_i^2 + \sum_i \sum_j F_{ij}^2 \sigma_i^2 \sigma_j^2 / 2$$
 because

$$\sum_i \sum_j F_{ii} F_{jj} \sigma_i^2 \sigma_j^2 = (\sum_i F_{ii} \sigma_i^2)^2.$$

Therefore, the CV of y is found from the approximation formula.

$$9. \quad C_y = \frac{\sqrt{\sum_i F_i^2 \sigma_i^2 + \sum_i \sum_j F_{ij}^2 \sigma_i^2 \sigma_j^2 / 2}}{\hat{y} + \sum_i F_{ii}^2 \sigma_i^2 / 2}$$

In practical applications the term $\sum_i \sum_j F_{ij}^2 \sigma_i^2 \sigma_j^2 / 2$ is frequently small and can be

ignored without materially affecting the accuracy of the calculated value of C_y . The term

$\sum_i F_{ii}^2 \sigma_i^2 / 2$ in the denominator may also be small enough to be ignored in many

applications. In other words, the bias correction to \hat{y} may sometimes be omitted without materially affecting the results.

Applying (8) and (9) to ACP is straightforward. The formula used by USPS to compute ACP for the CRA and ICRA is:

$$u = \sum_j T_j E_j d_j / V \quad \text{ACP of a single subclass/category}$$

The summation is taken over all cost pools j . T_j denotes the annual total cost in pool j and is assumed to be known certainly from USPS financial accounts. The other terms in the formula are either assumed values or are estimated in one way or another. These terms are: E_j , the volume variability of costs in pool j ; d_j , the distribution key share for the subclass in pool j ; and, V , mail volume for the subclass.

The CRA or ICRA estimate of u is:

$$\hat{u} = \sum_j T_j \hat{E}_j \hat{d}_j / \hat{V}$$

The \hat{E}_j , \hat{d}_j and \hat{V} are all assumed to be unbiased estimates of the E_j , d_j and V with errors that are independent and normally distributed. The CVs are defined as

$C_{Ej} = \sigma_{Ej} / \hat{E}_j$, $C_{dj} = \sigma_{dj} / \hat{d}_j$ and $C_v = \sigma_v / \hat{V}$. Estimates of these CVs are assumed to be

available. It simplifies the notation somewhat to define \hat{u}_j as the j th component of the

summation that produces \hat{u} , i.e., $\hat{u}_j = T_j \hat{E}_j \hat{d}_j / \hat{V}$

The partial derivatives of u , evaluated at $E_j = \hat{E}_j$, $d_j = \hat{d}_j$ and $V = \hat{V}$ are:

$$\frac{\partial u}{\partial E_j} = \frac{\hat{u}_j}{\hat{E}_j}, \quad \frac{\partial u}{\partial d_j} = \frac{\hat{u}_j}{\hat{d}_j}, \quad \frac{\partial u}{\partial V} = -\frac{\hat{u}}{\hat{V}}, \quad \frac{\partial^2 u}{\partial E_j^2} = \frac{\partial^2 u}{\partial E_j \partial d_j} = \frac{\partial^2 u}{\partial d_j^2} = 0$$

$$\frac{\partial^2 u}{\partial V^2} = \frac{\partial \hat{u}}{\hat{V}^2}, \quad \frac{\partial^2 u}{\partial V \partial E_j} = -\frac{\hat{u}_j}{\hat{E}_j \hat{V}}, \quad \frac{\partial^2 u}{\partial V \partial d_j} = -\frac{\hat{u}}{\hat{d}_j \hat{V}}$$

Inserting partial derivatives in equation 8 provides an approximation for $E[u]$, the expected value of ACP:

$$E[u] = \hat{u} + \frac{2\hat{u}}{\hat{V}^2} \frac{\sigma_v^2}{2}$$

$$E[u] = \hat{u}(1 + C_v^2) \text{ since } \sigma_v^2 / \hat{V}^2 = C_v^2.$$

10. As a proportion: $E[u]/\hat{u} = 1 + C_v^2$.

This shows that the **CRA** and **ICRA** estimates of ACP are biased downwards by an amount that is related to the square of the **CVs** of the volume estimates. In most instances, this bias is small since the **CVs** of the volume estimates are close to zero.

Inserting partial derivatives in equation 9 provides the estimate of the CV of u , denoted C_u .

$$C_u = \frac{\sqrt{\sum_j \left(\frac{\hat{u}_j}{\hat{E}_j} \right)^2 \sigma_{E_j}^2 + \sum_j \left(\frac{\hat{u}_j}{\hat{d}_j} \right)^2 \sigma_{d_j}^2 + \left(\frac{\hat{u}}{\hat{V}} \right)^2 \sigma_v^2 + \left(\frac{2\hat{u}}{\hat{V}^2} \right)^2 \frac{\sigma_v^4}{2} - 2 \sum_j \left(\frac{\hat{u}}{\hat{E}_j \hat{V}} \right)^2 \frac{\sigma_{E_j}^2 \sigma_v^2}{2} - 2 \sum_j \left(\frac{\hat{u}_j}{\hat{d}_j \hat{V}} \right)^2 \frac{\sigma_{d_j}^2 \sigma_v^2}{2}}{\hat{u}(1 + C_v^2)}$$

$$C_u = \frac{\sqrt{\sum_j \hat{u}_j^2 (C_{E_j}^2 + C_{d_j}^2) + \hat{u}^2 C_v^2 + 2\hat{u}^2 C_v^4 - \sum_j \hat{u}_j^2 C_v^2 (C_{E_j}^2 + C_{d_j}^2)}}{\hat{u}(1 + C_v^2)}$$

11.
$$C_u = \frac{\sqrt{\sum_j (\hat{u}_j / \hat{u})^2 (C_{E_j}^2 + C_{d_j}^2) + C_v^2 + [2C_v^4 - \sum_j (\hat{u}_j / \hat{u})^2 C_v^2 (C_{E_j}^2 + C_{d_j}^2)]}}{(1 + C_v^2)}$$

The term in the brackets [] under the square-root sign can be ignored without materially affecting the calculated value of C_u since the terms C_v^4 and $C_v^2(C_{E_j}^2 + C_{d_j}^2)$ are all quite small and enter the formula in a way that tends to be offsetting. Therefore, the approximating formula for C_u can be reduced with no appreciable loss in accuracy to the much simpler expression:

$$12. \quad C_u = \frac{\sqrt{\sum_j (\hat{u}_j / \hat{u})^2 (C_{E_j}^2 + C_{d_j}^2) + C_v^2}}{1 + C_v^2}$$

This is the formula that has been used to calculate the CVs for International Mail.

Finally, consider the possibility that a non-sampling error is discovered in the form of an additive bias β_i in one of the components \hat{x}_i of \hat{x}_j , that is $\hat{x}_i = E[x_i] + \beta_i$. It can easily be shown that if one simply corrects the bias by replacing \hat{x}_i with $\hat{x}_i - \beta_i$ when \hat{y} and all of the partial derivatives F_i and F_j are computed, then the mathematics used to derive $E[y]$ (8) and C_y (9) continues to be valid. Although the use of \hat{x}_i rather than $\hat{x}_i - \beta_i$ will provide biased estimates of $E[y]$ and C_y , correcting for the bias requires no essential change in the application of formulas 8, 9, 10, 11 or 12.

Note also that correcting an additive bias in an \hat{E}_j , \hat{d}_j or \hat{V} is not likely to have much of an impact on a C_u calculated according to formula 12. The bias correction affects C_u , primarily by changing the ratios (\hat{u}_j / \hat{u}) and thus reweighting the summation of terms in $\sum_j (\hat{u}_j / \hat{u})^2 (C_{E_j}^2 + C_{d_j}^2)$. The CV of the biased variable would also change from σ_i / \hat{x}_i to $\sigma_i / (\hat{x}_i - \beta_i)$. Except for a bias in the volume estimate \hat{V} and its effect on C_u , such a change would probably have only a small impact on C_u .

The Postal Service has never proposed a method for computing the overall CVs for the ACPs it annually estimates for domestic and international mail in the CRA and ICRA reports. However, it appears that the Service retains sufficient information about the CVs of the components of its ACP formula to make possible either a simulation or an approximate calculation of the overall CVs using (12). A calculation or simulation of the

CVs of ACP would be a helpful addition to the Service's annual CRA and ICRA reports and would be useful to the Commission and others if supplied by the Postal Service in its submissions for rate proceedings.

Table ^ displays approximate values of the CVs for the ACPs of the major categories of inbound and outbound international Mail. The calculated values depend upon Unit Volume-Variable Costs (UVVCs), volumes and other information provided by the Postal Service in "International Cost and Revenue Analysis (ICRA) Report – PRC Version Fiscal Year 1998", upon CVs for distribution shares and volumes provided in the Service's responses to Commission Orders 1236 and 1244, and upon a small amount of information taken from the 1998 CRA (PRC Version) for domestic mail and the National Consolidated Trial Balance for FY 1998.

Some of the CVs of the variables appearing in equation 12 are missing from the Service's responses to the Commission's information requests. In particular, there are no coefficients of variation for any cost pool volume-variabilities. These volume-variabilities are all assumed to be equal to one and their CVs are assumed to be zero. It is frequently the case that the CVs for distribution key shares and mail volumes are reported for aggregations of more than one category of International Mail, or in other ways that do not exactly match the formula. Also, the cost pool definitions used to report UWC in the ICRA do not exactly match the cost categories for which the Service has reported CVs for the IOCS distribution keys. These and other defects in the data have been overcome by using proxies and by making other assumptions as needed to use whatever data has been supplied. Any differences in the Service's use of UWC in the ICRA and the definition of ACP used by the Commission have been ignored in the application of the approximation formula.

The overall CVs for the fifteen major categories of inbound and outbound **International** mail are shown in Table ^ in the column labeled "CV of ACP" These overall CVs are derived directly from CVs for the various cost components and volume as shown in the other columns of the table. The formula also involves cost proportions. These

proportions, shown as percentages, are derived from the ICRA and appear in Table ^A. Some of the ICRA cost categories have been combined or redistributed for the CV calculations as described below.

The specific assumptions that have been made to overcome the various omissions and defects in the data are as follows:

1. The CVs of the volume-variabilities (E_j) are all taken to be zero. For most cost components, the CRA and ICRA rely upon volume-variabilities with an assumed value of one. This means that the cost component is completely volume-variable. When a volume-variability is an assumed value, its associated CV is zero.
2. Several mail categories have been combined in Table 1 "Estimated IOCS Cost CVs for International Mail Categories, FY 1998" from the Service's response to Commission Orders 1236 and 1244. Where this has occurred the same CVs have been used for the components. Inbound Surface and Air LC/AO both use the CVs reported for Inbound LC/AO; Inbound Surface and Air Parcel Post both use the CVs for Inbound Parcel Post. Outbound Surface Publishers Periodicals use the CVs for Outbound Surface AO. The CVs for Outbound Global Priority Mail have been assumed to apply to all outbound international priority mail.
3. The Service was able to supply a CV for mail volume for only one category of inbound international Mail, inbound Air LC/AO. For all other categories of inbound mail the volume CV was assumed to be the same as the volume CV of the corresponding category of outbound mail.
4. A somewhat more aggregate set of mail categories has been used in the Service's Table 2 "TRACS CVs PQ1-4, FY 98" from the Service's response to Commission Orders 1236 and 1244. In addition to the assumptions made above (2) it

was assumed that Post Cards and Postal Cards have the same domestic transportation **CVs** as Letters and Letter Packages.

5. The Postal Service provided **CVs** for Clerks and Mailhandlers broken down by Mail Processing, Administrative, and Window Service. These were recombined into a single CV for Clerks and Mailhandlers under the assumption that the three subcategories have independent errors. The formula is:

$$C_p = \sqrt{(P_1C_1)^2 + (P_2C_2)^2 + (P_3C_3)^2}$$

C_p = CV for mail processing

C_1, C_2, C_3 = **CVs** for Clerks and Mailhandlers

(1) Mail Processing, (2) Administrative, and (3) Window Service

P_1, P_2, P_3 = Proportions of costs for Clerks and Mailhandlers

Values for the proportions appearing in the formula were taken from the 1998 **CRA** (PRC Version) "Cost Segments and Components Report, Segment 3". The proportions are .758 for mail processing, .120 for administrative and .122 for window service. The results of applying the formula were used as the **CVs** for the **ICRA** non-transportation cost category "Process."

6. The **ICRA** non-transportation cost category "Delivery" was assumed to have the CV reported by the Postal Service for "City-Carrier In-Office" in Table 1.

7. No **CVs** were reported by the Postal Service that appeared to apply directly to the **ICRA** non-transportation category "Other." In fact, this category is a collection of capital-related and overhead costs that are customarily apportioned in the annual **CRA** by a method called "piggy-backing." That is, they are apportioned in the same way as related labor costs and can be expected to have similar errors. Consequently, they have been redistributed back to the other domestic cost categories in applying the approximation formula. This redistribution follows the proportions in the **ICRA** for Process, Delivery and Domestic Transportation.

8. No CVs were reported directly for any of the non-domestic ICRA cost categories. These categories are “International Transportation,” “Terminal Dues,” “Transit” and “International Air.” However, most of the costs in these categories are charges that are based upon weight. Therefore, these charges were combined and assigned the CV reported by the Postal Service for weight. This assumption may cause a minor violation of the assumption that the errors in the components of ACP are uncorrelated since weight and volume are measured in ways that are sometimes related. Fortunately, the CVs for weight are all quite small so the effect any correlation with volumes should be small.

9. The Postal Service’s response to PRC Order No. 1236 provided CVs for eight separate modes of domestic transportation and for each postal quarter of FY 1998. These were combined in two stages into the single set of CVs for Domestic Transportation for 1998 used in the approximation formula. First, the CVs for the four postal quarters were combined by assuming that the CVs were drawn from up to four independent, equal-sized samples with the same mean. Where no CV was reported for a quarter, it was assumed that no sample had been drawn for that quarter. The formula for combining the quarterly CVs under these assumptions is:

$$C_y = \sqrt{(C_1^2 + C_2^2 + C_3^2 + C_4^2) / N}$$

C_y = Annual CV

C_1, C_2, C_3, C_4 = CVs for quarters 1-4

N = The number of quarters for which the Postal Service reported a nonzero CV.

10. The annual CVs for the eight modes of domestic transportation were then combined into a single CV for each international mail category using the assumption that the errors in the distribution key shares for these pools are independent. This assumption is an extension of the assumption of independent errors underlying the derivation of the approximation formula.

$$C_i = \sqrt{\sum_{j=1}^8 (P_j C_j)^2}$$

C_i = CV for all modes of domestic transportation

C_j = CV for domestic transportation mode j

P_j = Proportion of domestic transportation cost attributed to mode j

The formula for combining the eight CVs requires the proportion of total domestic transportation cost for each mode. A single set of proportions was used based upon the cost of all categories of international mail reported in the 1998 CRA Report, The proportion for each mode is the cost attributed to international mail for the mode in the "National Consolidated Trial Balance, FY 1998", Accounting Period 14, Year-to-date. The proportions are: Passenger Air .4810, Highway Intra-SCF .0003, Highway Inter-SCF .0016, Highway Intra-BMC .1605, Highway Inter-BMC .1516, Eagle Network .1429, Passenger Rail .0419, and Western Air .0203.

TABLE D-1
PERCENTAGE DISTRIBUTION OF COSTS BY COST GROUPS

International Mail Category	Mail Processing	Delivery	Other	Domestic Transp.	Int'l Transp.	Terminal Dues	Transit	Int'l Air
Outbound:								
Letters and letter packages								
Postcards, postal cards								
International Priority Airmail								
Air AO								
Air Parcel Post								
Express Mail International Service								
Surface AO								
Surface Publishers Periodicals								
International Surface Airlift								
Surface Parcel Post								
Inbound:								
Surface LC/AO								
Surface Parcel Post								
Air LC/AO								
Express Mail International Service								
Air Parcel Post								

TABLE D-2
PERCENTAGE COEFFICIENTS OF VARIATION BY COST GROUPS 1996

International Mail Category	Mail Processing	Delivery	Domestic Transp.	All Other Int'l costs	Volume	CV of ACP	ACP Coverage	Coverage t-value
Outbound:								
Letters and letter packages	5.29%	70.70%	39.00%	1.04%	2.01%	3.00%		
Postcards, postal cards	13.13%	0.00%	39.00%	1.04%	2.01%	6.00%		
International Priority Airmail	19.27%	95.23%	41.77%	0.00%	0.00%	1.80%		
Air AO	11.40%	0.00%	48.84%	2.00%	2.57%	4.50%		
Air Parcel Post	13.46%	0.00%	38.84%	2.93%	3.20%	5.07%		
Express Mail International Service	18.25%	0.00%	12.67%	0.00%	0.00%	3.20%		
Surface AO	12.33%	0.00%	55.04%	5.64%	6.67%	0.63%		
Surface Publishers Periodicals	12.33%	0.00%	0.00%	0.00%	0.00%	2.60%		
International Surface Airlift	31.80%	0.00%	0.00%	0.00%	0.00%	0.37%		
Surface Parcel Post	11.65%	97.48%	63.61%	3.40%	2.65%	9.42%		
Inbound:								
Surface LC/AO	6.70%	6.55%	36.42%	N/A	6.67%	9.76%		
Surface Parcel Post	17.10%	0.00%	54.92%	N/A	2.65%	21.35%		
Air LC/AO	0.70%	6.55%	38.42%	N/A	2.50%	7.70%		
Express Mail International Service	16.45%	106.90%	16.31%	N/A	0.00%	63.54%		
Air Parcel Post	17.10%	0.00%	54.92%	N/A	3.20%	17.49%		

OUTBOUND REGIONAL DATA

The Postal Service provided volume, cost, and revenue data by terminal dues regime. Although terminal dues apply to only LC/AO mail, the Service provided the terminal dues regime separation for all services. There are three regimes: (1) Canada; (2) European Bilateral Countries; and, (3) UPU countries. Although Mexico is part of the UPU country group, the Postal Service has reported data for it separately.

There is no reporting of the data for the initiatives on a regime basis. Also, the Postal Service cannot separate the cost for ValuePost/Canada between periodicals and all other printed matter; therefore, those costs are included in the data for Surface printed matter.

TABLE E-I (Revised 6111199)
OUTBOUND INTERNATIONAL MAIL
SUMMARY OF FY 1998 INTERNATIONAL VOLUMES, REVENUE,
ATTRIBUTABLE COST AND COST COVERAGE
BY INTERNATIONAL MAIL CATEGORY AND TERMINAL DUES **REGIME 1/**

International Mail Category	Volume (1)	Revenue (\$) (2)	Attributable cost (\$) <u>2/</u> (3)	Contribution (\$) (4)=(2)-(3)	cost Coverage (5)=(2)/(3)
Surface					
Printed Matter and Small Packets (AO), Excluding Periodicals and ISAL					
Canada					
Mexico					
European Bilateral Group	3,972	12,541			
UPU Countries	8,075	29,564			
Periodicals					
Canada					
Mexico					
European Bilateral Group	14,457	16,944			
UPU Countries	27,487	31,802			
Parcel Post					
Canada					
Mexico					
European Bilateral Group	761	16,429			
UPU Countries	1,218	35,521			
International Surface Airlift (ISAL)					
Canada	N/A	N/A			
Mexico					
European Bilateral Group					
UPU Countries					
Valuepost Canada <u>3/</u>					
Total Surface	259,195	\$ 299,803	\$ 310,880	(11,077)	96.4%
Airmail					
Letters and Letter Packages					
Canada					
Mexico					
European Bilateral Group	124,219	128,534			
UPU Countries	189,790	198,477			
Postcards, Postal Cards, & Aerogrammes					
Canada					
Mexico					
European Bilateral Group	33,663	17,237			
UPU Countries	20,382	10,500			

Footnotes and sources are on Table E-I (continued).

TABLE E-I (CONTINUED)
OUTBOUND INTERNATIONAL MAIL
SUMMARY OF FY 1998 INTERNATIONAL VOLUMES, REVENUE,
ATTRIBUTABLE COST AND COST COVERAGE
BY INTERNATIONAL MAIL CATEGORY AND TERMINAL DUES REGIME ^{1/}

International Mail Category	Volume (1)	Revenue (\$) (2)	Attributable cost (\$) ^{2/} (3)	Contribution (\$) (4)=(2)-(3)	cost Coverage (5)=(2)/(3)
Airmail (Continued)					
<hr/>					
Printed Matter and Small Packets					
Canada					
Mexico					
European Bilateral Group	11,330	59,877			
UPU Countries	17,911	104,134			
Parcel Post					
Canada					
Mexico					
European Bilateral Group	1,052	35,075			
UPU Countries	1,813	67,926			
International Priority Airmail Service					
Canada	N/A	N/A			
Mexico					
European Bilateral Group					
UPU Countries					
Bulk Letter Service to Canada ^{3/}	-	-	-	-	-
Express Mail International Service					
Canada					
Mexico					
European Bilateral Group	652	20,232			
UPU Countries	2,992	84,628			
Total Air	679,857	\$ 966,686	\$ 633,284	\$ 333,402	152.6%
<hr/>					
Initiatives					
<hr/>					
Global Priority Mail					
Global Package Link					
International Customized Mail					
Direct entry					
Total Initiatives	33,002	\$ 66,307	\$ 76,356	\$ (10,049)	86.8%
Grand Total Outbound	972,054	\$ 1,332,796	\$ 1,020,520	\$ 312,276	130.6%

^{1/} Mexico is part of the UPU terminal dues regime.

^{2/} Volume variable cost + product-specific cost

^{3/} See Table IV-2 for caveat

Source: FY 1998 ICRA Report, June 11, 1999, Pages A-3, A-4, A-5, A-7 ; Attributable cost for EURB/UPU split from pages B-4 & B-5, unit cost times volume, as applicable

THE POSTAL SERVICE'S REVISED TREATMENT OF INTERNATIONAL AIR TRANSPORTATION COSTS AND THE SETTLEMENT DIFFERENCE

The Postal Service submitted an FY 1998 ICRA Report – USPS Version on June 7, 1999. It reflected a revised methodology for calculating international air transportation costs and a revised treatment for the difference between imputed settlement costs and booked costs (the settlement difference). The change in the treatment of the latter cost only affects the calculation of incremental costs.

Settlement treatment. In the original ICRA submission, the Postal Service treated the settlement difference as an incremental cost of providing international mail service as a whole. In adjusting this treatment the Postal Service emphasized that the settlement difference was the result of a conservative approach to accruing settlement costs. The Postal Service continues to believe that the imputed values represent the cost consequence of current international volumes but it now apparently concludes that the booked values are less accurate measures of settlement costs than the imputed values, and therefore the booked values can be ignored. This treatment eliminates a component of incremental cost and would reduce the total incremental cost for international mail by \$70 million (from \$122 million to \$52 million).

International air transportation costs treatment. In the original ICRA — PRC Version, submitted on March 15, the Postal Service cross-multiplied outbound volumes by unit air transportation costs, based on IA5 cost information, to calculate an imputed value for international air transportation costs. The calculation produces an imputed value because it does not reflect the corresponding value in the Book of Accounts. For this reason, the Postal Service adjusted the imputed value to the level of the Book of Accounts' accrued value for international air transportation cost. Since the Book of Accounts figure was larger than the aggregate imputed value, the adjustment increased the imputed value.

In the Postal Service version filed June 7, 1999, the Postal Service adjusted the imputed value to the level of the actual payments. This is a level between the imputed value and the booked value. The imputed value of payments to carriers and the actual payments to air carriers differ from accrued expenses because international air transportation costs are accrued using the historical level of payments as a basis. Although the imputed value reflects the expected payment to carriers, sometimes the actual payment differs because of adjustments to the bill resulting from a change in routing or other differences. Accordingly, the Postal Service now believes that using the actual payments as the benchmark for the imputed value is the most accurate method for estimating the international air transportation cost of specific international mail services.

Table F-1 calculates the differences in attributable cost, contribution to institutional cost, and cost coverage for the standard services resulting from the revised Postal Service treatment of air transportation costs. Unit attributable costs that incorporate the revised approach are calculated in Table F-2 for the standard services. The corresponding adjustment of the Initiatives' cost is calculated in Table F-3.

Because of time constraints, the Commission did not ask the Postal Service to produce a PRC Version of the ICRA with the Postal Service's revised treatment. However, in Table F-2, the unit cost for standard services reflecting the revised approach was obtained by adjusting the total unit attributable costs from the revised ICRA — PRC Version submitted June 11, 1999, to reflect the Postal Service's revised international air transportation. The June 11 revised ICRA — PRC Version does not incorporate the two methodology changes discussed in this appendix.

Of the initiatives, only GPM was affected by the revised approach. In Table F-3, the attributable costs for GPM are adjusted, based on underlying Postal Service electronic workpapers, to reflect revised international air costs. Tables F-4 and F-5 calculate the effects of the change on attributable costs, contribution to institutional cost, and cost coverage.

TABLE F-1
COMPARISON OF REVENUE, ATTRIBUTABLE COST, CONTRIBUTION TO INSTITUTIONAL COST AND COST COVERAGE
FOR OUTBOUND SURFACE AND AIR INTERNATIONAL MAIL USING PRC METHODOLOGY UNADJUSTED
AND ADJUSTED FOR THE USPS' NEW METHODOLOGY FOR INTERNATIONAL AIR TRANSPORTATION COST
(Amounts in Thousands)

	Revenue (1)	PRC Total Attributable Costs		Contribution to Institutional Costs			Cost Coverage		Percent Change (10)=(9)/(8)-1	
		Unadjusted (2)	Adjusted (3)	Adjusted minus (4)=(3)-(2)	Unadjusted (5)=(1)-(2)	Adjusted (6)=(1)-(3)	Adjusted minus (7)=(6)-(5)	Unadjusted (8)=(1)/(2)		Adjusted (9)=(1)/(3)
OUTBOUND MAIL										
Surface										
1 Printed Matter & Small Packets, excl. SAL & Per.	\$ 57,461	\$	\$	\$	\$	\$			0%	
2 Periodicals	\$ 68,615	\$	\$	\$	\$	\$			0%	
3 Parcel Post	\$ 57,607	\$	\$	\$	\$	\$			0%	
4 Int'l Surface Airlift	\$ 116,120	\$	\$	\$	\$	\$			0%	
5 Value Post/Canada 1/	\$	\$	\$	\$	\$	\$				
6 Subtotal, Surface	\$ 299,803	\$ 310,880	\$ 310,880	\$	\$ (11,077)	\$ (11,077)	\$	96%	96%	0%
AI?										
7 Letters and Letter Packages	\$ 451,943	\$	\$	\$	\$	\$			3%	
8 Postcards, Postal Cards, and Aerogrammes	\$ 3,129	\$	\$	\$	\$	\$			2%	
9 Printed Matter and Small Packets (AO)	\$ 194,833	\$	\$	\$	\$	\$			8%	
10 International Priority Air Mail Service	\$ 39,219	\$	\$	\$	\$	\$			10%	
11 Bulk Letter Service to Canada 1/	\$	\$	\$	\$	\$	\$				
12 Parcel Post	\$ 124,029	\$	\$	\$	\$	\$			10%	
13 Express Mail International Service	\$ 125,363	\$	\$	\$	\$	\$			6%	
14 Subtotal, Air	\$ 966,686	\$ 633,284	\$ 598,884	\$ (34,400)	\$ 333,402	\$ 367,602	\$ 34,400	153%	161%	6%
15 Total Surface and Air	\$1,266,489	\$944,164	\$ 909,764	\$ (34,400)	\$ 322,325	\$ 356,725	\$ 34,400	134%	139%	4%

1/ See caveat in Table IV-2, footnote 1

Source: Cols. 1 & 2 from Table IV-2, Col. 2 or 5, as applicable; Col. 3 from Table F-2, Col. 6

TABLE F-2
DEVELOPMENT OF FY 1998 ATTRIBUTABLE COST FOR INTERNATIONAL MAIL USING PRC COSTING METHODOLOGY
WITH USPS REVISED METHODOLOGY FOR CALCULATING INTERNATIONAL TRANSPORTATION COST
(Amounts in Thousands)

U.S. Total		PRC	PRC		Adjusted	Adjusted		Adjusted	Unadjusted
International Mail Category	Volume	Unit Cost	Int'l Tp Unit Cost	Int'l Tp Unit Cost	Unit Cost	Total attrib Cost	Revenue	Cost Coverage	cost Coverage
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)=(7)/(6)	(9)
OUTBOUND MAIL									
Surface									
1 Printed Matter & Small Packets, excl SAL & Per	28,215	\$	\$	\$	\$	\$	\$ 57,461		
2 Periodicals	65,082	\$	\$	\$	\$	\$	\$ 66,615		
3 Parcel Post	2,312	\$	\$	\$	\$	\$	\$ 57,607		
4 Int'l Surface Airlin	163,587	\$	\$	\$	\$	\$	\$ 116,120		
5 ValuePost/Canada 1/		\$	\$	\$					
6 Subtotal, Surface	259,196					\$ 310,880	\$ 299,803	96.4%	96.4%
Air									
7 Letters and Letter Packages	510,053	\$	\$	\$	\$	\$	\$ 451,943		
8 Postcards, Postal Cards, and Aerogrammes	63,010	\$	\$	\$	\$	\$	\$ 31,299		
9 Printed Matter and Small Packets (AO)	45,017	\$	\$	\$	\$	\$	\$ 194,833		
10 International Priority Airmail Service	52,843	\$	\$	\$	\$	\$	\$ 39,219		
11 Bulk Letter Service to Canada 1/						\$	\$		
12 Parcel Post	4,240	\$	\$	\$	\$	\$	\$ 124,029		
13 Express Mail International Service	4,694	\$	\$	\$	\$	\$	\$ 125,363		
14 Subtotal, Air	679,857					\$ 598,884	\$ 966,686	161.4%	152.6%
15 Total Surface and Air	939,053					\$ 909,764	\$ 1,266,489	139.2%	134.1%

1/ See caveat in Table IV-2, footnote 1

Source: Col. 1 from Table IV-4, Cols 2 & 3 from FY 1998 ICRA Report-PRC Version, p. B-1; Col 4 from FY 1998 ICRA Report-USPS Version, p. B-1;

Col. 5 = Col. 2 - Col. 3 + Col. 5; Col. 6 = Col. 1 x Col. 5; Col. 7 from Table IV-2, Col. 9 from Table IV-4

TABLE F-3
DEVELOPMENT OF **ATTRIBUTABLE COST** FOR GLOBAL PRIORITY MAIL
USING THE 6/11/99 ICRA REPORT-PRC VERSION AND THE POSTAL SERVICE'S
NEW METHODOLOGY FOR INTERNATIONAL AIR TRANSPORTATION COST
(Amounts in Thousands)

Cost Segments/Components	Source	PRC	USPS	PRC
		Version (3/15/99) (1)	Version (6/7/99) w/ new Int'l Air Trans Cost (2)	Version (6/11/99) w/ new Int'l Air Trans Cost (3)
1 Total Cost Segment Costs excluding CS 1	Sheet Cost Segment Cell X19	\$	\$	\$
2 Domestic Rail Cost	Sheet Domestic Trans. Cell AV47	\$	\$	\$
3 Domestic Other Transportation Cost	Sheet Domestic Trans. Cell A0183	\$ -	\$ -	\$
4 Domestic Highway Cost	Sheet Domestic Trans. Cell P138	\$	\$	\$
5 Domestic Water Cost	Sheet Domestic Trans. Cell P 227	\$	\$	\$
6 International Air Transportation Cost	Sheet Intl Trans & Adj Cell G217	\$	\$	\$
7 Terminal Dues	Sheet Intl Trans & Adj, Cell L217	\$	\$	\$
8 Transit & Air Conveyance costs	Sheet Intl Trans & Adj, Cell M217	\$	\$	\$
9 Subtotal,	Sum of Lines 1 thru 8	\$	\$	\$
10 Product-Specific Cost	ICRA Report, p A-1	\$	\$	\$
11 Total Attributable Cost	L 10 + L 11	\$	\$	\$
12 Reconciliation Total	ICRA Report, p h-7	\$	\$	\$
13 Reconciliation Difference	L 12-L 11	\$	\$	\$

Note on Sources For USPS, Sheet references are for File ICRAusp3.XLS

For PRC (3/15/99), Sheet references are for File ICRAPRC5.XLS

1/ Line 1 costs are obtained from the international cost segments and components report accompanying the FY1998 ICRA Report-PRC Version. 6/11/99 All other costs come from column 2

TABLE F-4
DEVELOPMENT OF ATTRIBUTABLE COST
FOR OUTBOUND MAIL- STANDARD SERVICE AND INITIATIVES-
ADJUSTED TO REFLECT THE NEW USPS METHOD FOR
INTERNATIONAL AIR TRANSPORTATION COST
(Amounts in Thousands)

Outbound Categories	PRC Version (6111199) (1)	PRC Version (6111199) w/ new Int'l Air Trans Cost (2)	Reduction in Attributable costs (3)=(2)-(1)
1 Standard Services Initiatives	\$ 944,164	\$ 909,764	\$ (34,400)
2 Global Priority Mail	\$	\$	\$
3 Global Package Link	\$	\$	\$
4 Direct Entry/Inbound	\$	\$	\$
5 International Customized Services	\$	\$	\$
6 Subtotal, Initiatives	\$ 76,356	\$ 74,969	\$ (1,387)
7 Total Outbound	\$ 1,020,520	\$ 984,733	\$ (35,787)

Sources:

Line 1-- Table E-I, L 15, Col 2 or Col 3. as applicable

Line 2-- Cal. 1 from Table IV-2, L 15, Col 5.

Col 2 from Table F-3, L. 11, Col. 3

Lines 3, 4, & 5 from Table IV-Z, Col 2, Lines 16, 17, or 18, as applicable

Line 6 = Sum of Lines 2 thru 5.

Line 7 = L 1 + L 6.

TABLE F-5
COMPARISON OF REVENUE, ATTRIBUTABLE COST, CONTRIBUTION TO INSTITUTIONAL COST AND COST COVERAGE
FOR INTERNATIONAL MAIL - STANDARD SERVICES AND INITIATIVES. USING PRC METHODOLOGY UNADJUSTED
AND ADJUSTED FOR THE USPS' NEW METHODOLOGY FOR INTERNATIONAL AIR TRANSPORTATION COST
(Amounts in Thousands)

Outbound Categories	Revenue (1)	Attributable Costs			Contribution to Institutional Cost			Cost Coverage			Percent Change (10)=[(9)/(8)]-1
		PRC Version (6/11/99) (2)	PRC Version (6/11/99) w/ new Int'l Air Trans Cost (3)	Reduction in Attributable Costs (4)=(2)-(3)	PRC Version (6/11/99) w/ new Int'l Air Trans Cost (6)=(1)-(3)	PRC Version (6/11/99) w/ new Int'l Air Trans Cost (5)=(1)-(2)	Increase in Contribution (7)=(6)-(5)	PRC Version (6/11/99) w/ new Int'l Air Trans Cost (9)=(1)/(3)	PRC Version (6/11/99) w/ new Int'l Air Trans Cost (8)		
										(8)=(1)/(2)	
1 Standard Services Initiatives	\$ 1,266,489	\$ 944,164	\$ 909,764	\$ (34,400)	\$ 322,325	\$ 356,725	\$ 34,400	134 %	139 2%	3.8%	
2 Global Priority Mail	\$	\$	\$	\$	\$	\$	\$			3.7%	
3 Global Package Link	\$	\$	\$	\$	\$	\$	\$			0.0%	
4 Direct Entry/Inbound	\$	\$	\$	\$	\$	\$	\$			0.0%	
5 International Customized Service	\$	\$	\$	\$	\$	\$	\$			0.0%	
6 Subtotal, Initiatives	\$ 66,307	\$ 76,300	\$ 74,969	\$ (1,387)	\$ (10,049)	\$ (8,662)	\$ 1,387	86.8%	88.4%	1.8%	
7 Total Outbound	\$ 1,332,796	\$ 1,020,520	\$ 984,733	\$ (35,787)	\$ 312,276	\$ 348,063	\$ 35,767	130.6%	135.3%	3.6%	

Source Col. 1 = Table IV-2, Col. 2, L. 6+L. 14; Col. 2 = Table IV-2, Col. 5, L. 6+L. 14; Col. 3 = Table F-4, Col. 2, as applicable

The effects of these revised unit attributable costs on aggregate and individual international mail services are developed in Tables F-6, F-7, and F-8 of this appendix. In Table F-6, settlement differences in the amount of \$70 million are excluded from the incremental cost in accordance with the Postal Service's revised treatment. The remaining incremental costs are equal to the IBU overhead cost in the amount of \$52 million. Both figures are obtained from the ICRA Report – PRC Version submitted June II, 1999 at page A-I, Footnote 3.

Table F-7 displays the impact of revised attributable air transportation costs on the cost coverages of individual international mail products.

Table F-8 is a summary of FY 1998 revenue and attributable costs for international mail, similar to Table IV-I in the body of this report except that it reflects both the air transportation and settlement cost methodologies now favored by the Postal Service.

TABLE F-6
EFFECT OF USING THE POSTAL SERVICE'S METHOD
FOR CALCULATING INTERNATIONAL AIR TRANSPORTATION
AND SETTLEMENT COSTS
(Amounts in Thousands)

Category	Reduction in Attributable Cost (\$) (1)	Increase in Contribution to Institutional Cost (\$) (2)	Unadjusted cost Coverage (3)	Adjusted Cost Coverage (4)
Outbound Mail	(35,787)	35,787	130.6%	135.3%
Inbound Mail			98.2%	98.2%
Subtotal	(35,787)	35,787	123.5%	127.0%
Int'l Mail Incremental Cost		70,242	-	
Grand Total	\$ (35,787)	\$ 106,029	112.9%	122.0%

Source: Line 1 from Appendix F, Table F-5, Line 7; Line 2 = No effect on inbound mail;
Line 4 = Table IV-I, L.4 - Table F-8, L.4. Reflects ICRA Report released 6/11/99.

TABLE F-7
EFFECT OF USING THE POSTAL SERVICE'S METHOD
FOR CALCULATING INTERNATIONAL AIR TRANSPORTATION COSTS
ON INTERNATIONAL ATTRIBUTABLE COST

	Reduction in Attributable cost (\$) (1)	Increase in Contribution to Institutional Cost (\$) (2)	Unadjusted cost Coverage (3)	Adjusted cost Coverage (4)
OUTBOUND MAIL				
Surface				
Printed Matter & Small Packets, excl. ISAL & Per. Periodicals	-			
Parcel Post				
Int'l Surface Airlift				
ValuePost/Canada ^{1/}				-
Subtotal, Surface			96.4%	96.4%
Air				
Letters and Letter Packages				
Postcards, Postal Cards, and Aerogrammes				
Printed Matter and Small Packets (AO)				
international Priority Airmail Service				
Bulk Letter Service to Canada ^{1/}				
Parcel Post				
Express Mail International Service				
Subtotal, Air	\$(34,400)	\$34,400	152.6%	161.4%
Initiatives				
Global Priority Mail				
Global Package Link				
Direct Entry/Inbound				
International Customized Services	-	-		
Subtotal, Initiatives	\$(1,387)	\$1,387	86.8%	88.4%
Total Outbound	\$(35,787)	\$35,707	130.6%	135.3%

^{1/} See caveat in Table IV-2, footnote 1

Source: For surface & air use Appendix F, Table F-1, Cols. 4, 7, 8, 8 9, as applicable; for initiatives, use Appendix F, Table F-5, Cols. 4, 7, 8, & 9, as applicable.

TABLE F-8
SUMMARY OF FY 1998 REVENUE AND **ATTRIBUTABLE COST**
FOR OUTBOUND AND INBOUND INTERNATIONAL MAIL
USING USPS NEW METHOD FOR **ESTIMATING**
INTERNATIONAL AIR TRANSPORTATION COST AND SETTLEMENT COST
(Amounts in Thousands)

Category	Revenue (\$) (1)	Attributable cost (\$) (2)	Incremental Cost (\$) (3)	Total Attributable Cost (\$) (4)	Contribution (\$) (5)=(1)-(2)	cost Coverage (6)=(1)/(4)
Outbound Mail	1,332,796	984,733	-	904,733	348,063	135.3%
Inbound Mail	282,311	287,379	-	287,379	(5,068)	98.2%
Subtotal	1,615,107	1,272,112	-	1,272,112	342,995	127.0%
Int'l Mail Incremental Cost			52,203	52,203	\$ (52,203)	
Grand Total	\$1,615,107	\$1,272,112	\$52,203	\$1,324,315	\$ 290,792	122.0%

Note: The attributable costs reflect the FY 1998 ICRA Report - PRC Version, submitted 6/11/99

Source: Table IV-2, except Line 1, Col.2 = Appendix F, Table F-4, Col.2, L. 7 and Line 4, Col. 3 is from the FY 1998 ICRA Report - PRC Version, June 11, 1999, p.A-1, footnote 3.

REFERENCE MATERIAL – POSTAL SERVICE VIEWS

This appendix provides two Postal Service documents for reference: a chart that relates international domestic services; and the Postal Service description of how it develops international mail rates.

Response to Question 23 of the Second Notice of International Mail Data Requirements, Order No. 1236.

23. For each of the international categories shown in the list of appended to Order No. 1228, please indicate what the Postal Service considers to be the most closely analogous subclass of domestic mail and discuss the reasons for these conclusions.

See the following attachment.

International Outbound Product	Like Domestic Product	Characteristic	Weight	Options	Competition
Letters & Letter Packages (CC)	First-Class Mail	LC contains personal handwritten or typewritten communications having the character of current correspondence and AO which is like First-Class Mail	International ranges from 0 to 4 pounds while domestic goes to 11 ounces.	Domestic has presorted and automation rates while international is only single piece	Domestic has a monopoly while international is under direct competition
International Priority Airmail Service (IPA)	First-Class Mail	Any item of the LC or AO classification can go IPA which is the same as First-Class Mail	International has a 4 pound maximum for LC and an 11 pound maximum when AO is included while domestic goes to 11 ounces	IPA is a bulk service requiring a sort to country and minimum number of pieces while the various levels of presort requirements are more severe	Domestic has a monopoly while international is under direct competition
Bulk Letters to Canada	First-Class Mail	Any letter of the LC or AO classification can go Bulk Letters to Canada which is the same as First-Class Mail	International has a 3 ounce maximum while domestic goes to 11 ounces.	Bulk letters to Canada requires 500 three ounce letters or more and sorted to the provisions in Canada similar to presort at its highest level	Domestic has a monopoly while international is under direct competition
Global Priority Mail (GPM)	First-Class Mail	Any item of the LC or AO classification can go GPM which is the same as First-Class Mail	International ranges from 0 to 4 pounds while domestic goes to 11 ounces	Domestic has presorted and automation rates while international is only single piece	Domestic has a monopoly while international is under direct competition
Postcards & Aerogrammes	Post Cards	same as domestic Postcards	same	same	Domestic has a monopoly while international is under direct competition
Air Other Articles (AO)	Standard A & Periodicals	Contains printed mailer books sheet music, publishers periodicals This mail can not be considered personal correspondence	International this mail can go to 11 pounds while domestic 1 pound Domestic there is a flat rate for the first 3 ounces	International this mail flies while domestic standard A is a surface product which can require deposit at a destination office	Both domestic and international face competition except international is faced with other Posts operating acceptance offices and processing plants in this country accepting and sorting US origin mail going to other countries
Surface Other Articles (AO)	Standard A & Periodicals	same as above	same as above	This mail goes by boat to the destination	same as above

International Outbound Product	Like Domestic Product	Characteristic	Weight	Options	Competition
Letters & Letter Packages (LC)	First-Class Mail	LC contains personal handwritten or typewritten communications having the character of current correspondence and AO which is like First-Class Mail	International ranges from 0 to 4 pounds while domestic goes to 11 ounces.	Domestic has presorted and automation rates while international is only single piece.	Domestic has a monopoly while international is under direct competition
International Priority Airmail Service (IPA)	First-Class Mail	Any item of the LC or AO classification can go IPA which is the same as First-Class Mail	International has a 4 pound maximum for LC and an 11 pound maximum when AO is included while domestic goes to 11 ounces.	IPA is a bulk service requiring a sort to country and minimum number of pieces while the various levels of presort requirements are more severe.	Domestic has a monopoly while international is under direct competition
Bulk Letters to Canada	First-Class Mail	Any letter of the LC or AO classification can go Bulk Letters to Canada which is the same as First-Class Mail	International has a 3 ounce maximum while domestic goes to 11 ounces.	Bulk letters to Canada requires 500 three ounce letters or more and sorted to the providences in Canada similar to presort at its highest level	Domestic has a monopoly while international is under direct competition
Global Priority Mail (GPM)	First-Class Mail	Any item of the LC or AO classification can go GPM which is the same as First-Class Mail	International ranges from 0 to 4 pounds while domestic goes to 11 ounces.	Domestic has presorted and automation rates while international is only single piece.	Domestic has a monopoly while international is under direct competition
Postcards & Aerogrammes	Post Cards	same as domestic Postcards	same	same	Domestic has a monopoly while international is under direct competition
Air Other Articles (AO)	Standard A & Periodicals	Contains printed matter, books, sheet music, publishers periodicals. This mail can not be considered personal correspondence.	International this mail can go to 11 pounds while domestic 1 pound. Domestic there is a flat rate for the first 3 ounces.	International this mail flies while domestic standard A is a surface product which can require deposit at a destinating office.	Both domestic and international face competition except international is faced with other Posts operating acceptance offices and processing plants in this country accepting and sorting to US origin mail going to other countries
Standard A & Periodicals	Standard A & Periodicals	same as above	same as above	This mail goes by boat to the destination	same as above

International Outbound Product	Like Domestic Product	Characteristic	Weight	Options	Competition
International Surface Airlift (ISAL)	Standard A & Periodicals	same as above	same as above	ISAL is airlifted to the destination and then surface	same as above
Valuepost to Canada	Standard A & Periodicals	same as above	International there is a 2 pound weight limit for a piece. You must have 50 pounds of letters of 100 pounds of flats.	This mail is trucked the same as standard A.	same as above
Express Mail	Express Mail	No service guarantee for Express International. Customs is a high difference for international merchandise. A separate agreement with each country is required.	Maximum weights could be different for each country		Competition for parcels is probably about the same
Air Parcel Post	Priority Mail	Customs is an issue. A different delivery rate for each country	Maximum weights could be different for each country		Competition for parcels is probably about the same
Surface Parcel Post	Standard B	Customs is an issue. A different delivery rate for each country	Maximum weights could be different for each country		Competition for parcels is probably about the same
Global Package Link (GPL)	Express Mail & Priority Mail	This product includes special software to provide customs preadvice. There is a large overhead for this. It is restricted to a few countries. A different delivery rate for each country.	Maximum weights could be different for each country		Competition for parcels is probably about the same
International Customized Mail (ICM)	Nothing	These are contract with specific customers going to certain countries with a known product. To qualify you need to have a minimum amount to mail.			
Direct Entry	Nothing	This service uses the domestic rates at the destination country for delivery charges.			
Canada Admail	Nothing	This product is one of the direct entry products.			
International Special Services	Special Services	same as domestic except for requirements within destination country			

Response to Question 18 of the Second Notice of International Mail Data Requirements, Order No. 1236,

18. Please provide the information on rate design described at page 6 of order No. 1228. (See the first full paragraph of page 6.)

Page 6 of PRC Order No. 1228 asks that the Postal Service provide the Commission enough documentation to allow the calculation and reporting of the cost coverage for each subclass of international mail. Material has already been furnished by the Postal Service to allow such calculations to be made by the Commission. In addition, Order No. 1228 also discusses rate design information necessary to demonstrate how the Postal Service designs the rate for each constituent rate category. The information should allow the Commission to determine whether the difference between the category rate and the base rate for the subclass to which it belongs reflects its added or avoided costs. The information below addresses this request.

General

The following discussion outlines the assumptions and approach underlying the development of international rate levels and the structure specific to each international mail class, subclass, and rate category.

Classification of Mail

Mail class is identified according to the nomenclature and definitions described in the Convention Agreements of the Universal Postal Union (UPU). The *International Mail Manual* provides further descriptive information. There are three basic classes of international mail:

<u>Letters & Cards (LC):</u>	Items weighing up to 2 kilograms (64 ounces).
<u>Printed Matter (AO):</u>	Items consisting of printed papers, literature for the blind and small packets. Weight limits are 2 kilograms for small packets, 5 kilograms for printed papers, and 7 kilograms for literature for the blind.
<u>Parcels:</u>	Parcel post is similar to domestic Standard (B) mail. Merchandise is permitted, but written communications having the nature of current and personal correspondence are not permitted.

These three classes of international mail service are also delineated by air and surface modes of transportation where the transportation mode equates roughly to priority and non-priority levels of service.

Within these three classes, subclasses/rate and product categories can be identified. Within the LC class, these include post cards, aerogrammes, Global Priority Mail, international priority airmail and bulk letters to Canada. Within the AO class, regular printed matter, publishers' periodicals, books and sheet music, international surface airtail (ISAL), and Valuepost Canada are defined.

Within parcels, a distinction is made by mode of transportation: namely, surface and air, and by geographic region.

In addition to these three major classes of mail, the Postal Service also offers an expedited service simply named International Express Mail Service.

Basic Principles

The development of international rates conforms to the statutory criteria of 39 U.S.C. 101 and 403. Factors used to develop international mail rates in some respects parallel those used in domestic rate setting; namely, international mail must cover its direct and indirect costs; international mail must make an appropriate contribution to all other costs, and derivation of

international mail rates must consider the environmental conditions of the market it serves. In general, the following principles are followed when setting international mail rates.

1. Outbound rates are based on outbound costs.
2. Costs are estimated in a manner similar to domestic cost estimation.
3. Rate development follows a bottom up approach. Unlike domestic rate development where base rates are reduced by a cost avoidance/cost savings factors, international rates are set by establishing markups and cost coverage targets.
4. Markups are applied to estimates of unit cost.
5. Unit costs are developed by component and identified according to three basic categories: non-transportation, transportation, and settlement charges.
6. Markups are based upon market factors and recognition that all outbound services are subject to competitive forces and substitute services.
7. Rate differences are a function of cost differences and the markups applied to unit costs.

Rate Design

As a brief historical note, it had been the practice, through the February 1985 international change in rates, to configure outbound international postage rates on total combined inbound/outbound international costs. This had the effect of burdening outbound ratepayers with the cost of delivery of foreign-origin inbound international mail. With the suspension of the Private Express Statutes in September 1988, the subsequent change in international postage rates in April 1988 departed from pooling inbound and outbound costs. It should be understood that since April 1988, outbound international postage rates have been designed solely on outbound costs. There has been no exception to this approach over the past eleven years.

International rates are predicated on specific cost drivers identified with providing outbound international mail service. The costs that are taken into account for each category of mail include domestic handling and domestic transportation, international transportation, and the cost of delivery in each country of destination. Domestic handling and domestic transportation are factors pertinent, for example, in the development of ISAL and IPA gateway rates. International transportation is a cost driver which, in conjunction with foreign delivery costs, contributes to the construction of rate groups for ISAL, IPA, EMS, printed matter, and air parcels. Transportation costs conform to Department of Transportation (DOT) rates for U.S. flag carriers. ISAL transportation costs, however, are contract rates and are generally lower than DOT rates. Transportation and delivery charges are also primary factors in considering the development of country specific rates.

There are three basic types of delivery charges, each of which can contribute to the design of a particular rate structure, and influence the construction of rate groups. *Terminal* dues apply to the distribution and delivery of CC and AO categories of international mail. *Imbalance* charges apply to the distribution and delivery of EMS items; while *inward land rates* apply to parcel post items.

Terminal dues are promulgated by the Universal Postal Union (UPU). Currently there are three structures that UPU members can invoke: (i) a flat rate set at 3.427 SDR/kg, (ii) a revision mechanism rate set at 0.14 SDR/item plus 1.0 SDR/kg, and (iii) a bulk mail option whose rate may not be higher than those calculated on the basis of 67% of the charge for a 20 gram domestic letter rate or exceed 0.204 SDR/item plus 1.46 SDR/kg. A separate, lower rate of 0.653 SDR/kg applies to M-bags. The UPU does permit administrations to enter into bilateral or multilateral payment agreements to settle their terminal dues accounts. The UPU establishes terminal dues rates at Congress, which is held once every five years. However, the Postal Operations Council of the UPU can amend terminal dues rates between Congresses. Such amendments have generally applied to revisions in the rates for the bulk mail option.

Imbalance charges for EMS items are set by each individual postal administration. Likewise inward land rates for parcel post items are determined by each UPU member and can be revised annually.

Important parameters to measure with respect to applying all possible terminal dues options are the total weight and the number of items per kilogram (IPK) exchanged with major mail trading partners. Estimates of IPKs are statistically determined.

Changes in the structure and level of terminal dues, imbalance charges, and inward land rates contribute to the definition of rate groups, rate structure, and mail acceptance procedures. Delivery structures that have an explicit item component and weight component have, for example, driven the rate design for IPA and ISAL from weight-based (rate/pound) to a rate per item plus a rate per pound.

Market factors are also relevant considerations in setting international rates. Both markups and mail preparation schemes are taken into account. Development of the Air LC rate provides a good illustration of how these two factors were used to alter its link with domestic First-Class Mail rates. Prior to 1988, the first half-ounce Air LC rate was set at twice the domestic first ounce rate. This rule of thumb, together with the charge for the additional weight increments, had the effect of over-pricing international air letters. This practice was abandoned in April 1988. Had it remained in effect, the first half-ounce Air LC rate, effective May 30, 1999, would be changing to 86 cents. The Postal Service believes that this change in methodology contributed to the reversal of the downward trend in international mail volume and revenue through fiscal year 1988, and was responsible for the growth in international volume and revenue for the period 1989 through 1996.

A description of each mail offering follows.

Air LC: Consists of personal correspondence, statements of accounts, and other business oriented transactions posted at single piece rates. Mailers are typically Individuals, households, and small business enterprises. Air letters receive First-Class Mail service in the United States, are dispatched by the most expeditious transportation available, and receive airmail or priority treatment in the country of destination. The rate structure is weight-based and is currently unzoned. Air LC is offered as a universal service. Consistent with moderating the institutional cost burden on this category of mail, the May 1999 International rate change does not increase Air LC from those implemented on July 9, 1995. Separate rates are developed for Canada, Mexico, and rest of the world.

International Priority Airmail (IPA): IPA is a bulk air letter product. It provides business mailers with a service that is as fast or faster than regular airmail. Mailers must meet a minimum ten-pound volume requirement. The current rate design provides for both a presort and non-presort option. The presort option requires separation by country of destination. The rate levels for 1998, however, are not the result of applying cost avoidance factors to the single piece Air LC rates.

Bulk Letter Service to Canada: This service was introduced for business mailers mailing quantities of bulk letters to Canada. A minimum of 500 pieces weighing three ounces or less is required to qualify for this service. Mailers are also required to tray their mail and apply a Canadian post code to each mail piece. The rates for this service represent a fixed reduction from the single piece rate. The reduction was determined on the basis of cost coverage and not on cost avoidance.

Aerogramme and Post Cards: Aerogrammes are designed for personal correspondence. An aerogramme consists of a single page that folds into a self-sealing envelope. Aerogrammes are very light weight and have little rigidity. Post cards are a non-sealed medium for personal and business communications similar to domestic post cards, with the exception that different size standards apply to international cards. Both services are offered with a flat per item rate. The

aerogramme rate is universal, while a separate card rate applies to Canada, Mexico, and the rest of the world.

(AO) Printed Matter and Small Packets: Printed matter has two levels of service. Surface printed matter is a non-priority service. It includes regular printed matter, books and sheet music, and publishers' periodicals. The long-term trend for surface printed matter has been down. Separate surface printed matter rates apply to Canada, Mexico, and the rest of the world. Rate increases to Mexico and the rest of the world are being implemented in phases to mitigate hardship on the publishing industry. Air printed matter is a priority service whose overall long-term trend has shown steady growth in revenue, pieces and weights. As a priority printed matter service, its cost coverage has been sufficiently high so as not to be impacted by the terminal dues changes which have impacted surface printed matter. Air printed matter is priced according to geographic regions taking into account transportation costs and terminal dues differences.

Publishers' Periodicals: Publishers' Periodicals is one of the three subclassifications of surface printed matter. The service is offered only to public and registered newsagents for mailings that would qualify as periodicals under the domestic classification. Similar to other surface offerings, Publishers' Periodicals have experienced a decline in revenue, pieces, and weight since postal reorganization. The rate design recognizes separate rates to Canada, Mexico, and the rest of the world according to terminal dues regime and transportation expense. Changes in UPU terminal dues have resulted in a phased implementation of Publishers' Periodical rates to Mexico and the rest of the world. The UPU convention allows Publishers' Periodical rates to be reduced up to 50% from regular printed matter rates.

International Surface Air Lift (ISAL): ISAL is a bulk mailing service for the delivery of publications, advertising mail, catalogs, directories, other printed matter, and small packets. Mailers must meet a 50-pound minimum mailing requirement. ISAL requires mailer presort by country. Like IPA, ISAL rate design recognizes geographic regions based upon terminal dues and transportation characteristics. The geographic regions are the same for both services. ISAL receives air treatment within the United States, and air transportation to its overseas destination. Surface transportation is provided at destination. ISAL rate design provides for threshold volume discounts for large mailers. The threshold incentives are similar to IPA. When ISAL rates were revised in February 1998, ISAL sustained a rate increase because of a terminal dues change affecting printed matter categories.

ValuePost/Canada: ValuePost Canada is a bulk mailing service for the delivery of regular printed matter, books and sheet music, publishers' periodicals, and small packets. It was introduced as an ISAL equivalent service taking particular account of the terminal dues applicable to mail exchanged with Canada Post Corporation. The rate design recognizes shape, namely, letters and flats. Within shape, a per item rate applies to letters weighing up to one ounce, and a per item rate applies to flats weighing up to five ounces. An item plus pound rate applies to letters and flats exceeding the one ounce and five ounce thresholds, respectively.

M-Bag Service: M-Bag service allows a mailer to prepare a direct sack of printed matter weighing between 11 pounds and 66 pounds to a single address. A reduced terminal dues rate of 0.653 SDR/kg applies and recognizes reduced delivery cost because the M-bag does not require sortation to multiple addresses. The rate design is a simple weight-based charge.

Global Priority Mail (GPM): Global Priority Mail is an expedited airmail letter service providing fast, reliable delivery of all items mailable as letters and merchandise up to four pounds. The service is targeted to specific countries based on market considerations. Rate design provides both a flat rate for small and large envelopes, and single piece weight-based rates. LC terminal dues rates apply to the delivery of GPM, however, the level of service is better since its Express endorsement accords it special delivery treatment in the country of destination.

Global Package Link (GPL): Global Package Link is a bulk mailing service that provides fast, economical international delivery of packages containing merchandise. A customs pre-advisory option offers convenience and affordability to parcel mailers. GPL is the only bulk parcel service offered internationally by the Postal Service. The rate design is country specific due to the different delivery charges assessed by the countries participating as GPL partners. The rate levels were initially set with a target cost coverage of 130%, however, the world economic slowdown has adversely impacted the volume growth, thus causing fixed costs to be distributed over fewer pieces. GPL rates were increased 9% last December with the expectation of achieving breakeven in the face of declining volumes.

Express Mail Service (EMS): International EMS is the fastest delivery service offered for the delivery of international items by the Postal Service. EMS items may consist of documents and merchandise. The service is offered to approximately 180 countries. EMS expedites urgent letters, small packages, and documents to the country of destination where they are handled and delivered on a priority basis by either a local postal administration or private courier. Rate design considerations have recognized both geographic regions and country specific markets.

Parcel Post: International surface parcel post is comparable to d-lit zone-rated parcel post in that it is a non-priority service. It is appropriate for mailing merchandise, printed matter or other items not required to be mailed at letter rates. Written communications having the character of personal correspondence may not be enclosed in parcel post packages. The maximum weight limit for parcel post varies from 11 to 70 pounds, depending on country of destination. International air parcel post is a priority service that can be compared to domestic priority mail service. Weight limitations also apply as specified by the country of destination. Both services are designed as single piece offerings. Anomalies between surface and air parcel rates, however, are a function of the non-transportation costs estimated for each of the two parcel categories.