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

POSTAL RATE AND FEE CHANGES, 2000

Docket No. R2000–1

RESPONSE OF UNITED STATES POSTAL SERVICE
WITNESS BRADLEY TO INTERROGATORIES OF
UNITED PARCEL SERVICE
(UPS/USPS–T22–1 - 4)

The United States Postal Service hereby provides the responses of witness

Bradley to the following interrogatories of United Parcel Service: UPS/USPS–T22-1 - 4,

filed on January 31, 2000.

Each interrogatory is stated verbatim and is followed by the response.

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorneys:

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February 14, 2000

Response of United States Postal Service Witness Bradley
to
Interrogatories of UPS

UPS/USPS-T22-1.   Confirm that "intrinsic costs," such as the expedited air network premiums (see USPS-T-22, p.20, footnote 17), were previously called "specific fixed costs" by the Postal Service. If you do not confirm, please explain.

UPS/USPS-T22-1 Response:

Not Confirmed.   It is my sense that there was a bit of confusion about terms in this area

in Docket No. R97-1.   It is also my sense that intrinsic costs were never explicitly

identified but were included as part of "product specific costs." For an explanation of the

relationship among intrinsic costs, specific-fixed costs, and product-specific costs, please

see my answer to your interrogatory UPS/USPS-T22-3.

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UPS/USPS-T22-2. Refer to Docket No. R97-1, USPS-T-41, p.4, where witness Takis presents a graphical comparison of incremental costs and volume variable costs, and to Docket No. R97-1, Tr. 4735-37, where witness Takis discussed the use of the term "specific fixed."

    a.   Confirm that the "darkly shaded triangle" on page 4 of USPS-T-41 represents those costs "which are associated with the economies or diseconomies which are realized or lost as volumes change" (Docket No. R97-1, Tr. 4735) If you do not confirm, please explain.

    b.   Confirm that a product's specific-fixed cost is not included in this "darkly-shaded triangle." If you do not confirm, please explain.

    c.   Are a product's intrinsic costs included in this "darkly-shaded triangle"?

UPS/USPS-T22-2 Response:

a.   As I understand it, the "darkly shaded triangle" represents the difference between incremental cost and volume variable cost in the diagram. In this diagram, incremental cost exceeds volume variable cost because the marginal cost of each unit of the driver decreases as the number of units provided increases. I believe that it is this latter characteristic that is associated with economies of scale.

b.   Confirmed.

c.   I don't think that this chart contemplated the role of intrinsic costs.

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UPS/USPS-T22-3. Provide a precise definition of the term "product-specific cost." Include in your definition the relationship between product-specific cost and each of the following terms:

a.   Specific-fixed costs;

b.   Intrinsic costs;

c.   Costs that are associated with the economies or diseconomies that are realized or lost as volume changes.

UPS/USPS-T22-3 Response:

The definition of product- specific cost and the relationship among product specific costs, specific-fixed costs, and intrinsic costs are described in Section IV. B. of my testimony, starting at page 33. The definition of product-specific costs and its relationship to other costs are repeated here for convenience:

> Before discussing their role in the incremental cost calculation, we should probably be clear as to what product specific costs are. Product-specific costs are incurred if any amount of the product is provided, but they do not increase at the margin with additional units of that product.
>
> There are two types of product specific cost in the Postal Service cost structure: specific fixed costs and intrinsic costs. Specific-fixed costs do not vary with variations in the product's volume; indeed, they would be incurred even if the product's volume fell to zero. However, they are caused by the provision of just one product and would not exist if the product

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was not part of the Postal Service's output vector.[1]

The other type of product-specific costs can be called intrinsic costs. These are variable costs that arise because of the particular characteristics of a product but do not vary at the margin. Consider two instances of intrinsic costs in the postal cost structure; these instances occur in the Priority Mail distribution operations and in network air transportation. The Priority Mail distribution operations exist for the purpose of expediting the handling of Priority Mail. They can and do sort other classes of mail, but without Priority Mail, those classes would be sorted in other operations. Consequently, if the Postal Service decided not to provide Priority Mail, the institutional costs for these operations would not exist. These costs thus are part of Priority Mail's incremental cost.

In similar fashion, the network costs exist for the transportation of expedited mail. For example, it is my understanding that the Eagle Network exists for the purpose of providing air transportation for Express Mail. Network air transportation is more expensive than commercial air transportation and this additional expense, in the case of the Eagle network, is caused by Express Mail. Regardless of what mail is actually carried on the network, the intrinsic costs exists because of the characteristics of Express Mail.

The roles of specific fixed costs and intrinsic costs in the incremental cost calculation can be illustrated analytically. The total cost in a cost component can be divided into fixed cost

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[1]   Note that producing a product at zero volume and eliminating a product from the output vector are not the same thing. Product-specific advertising expenses are incurred before the fact and exist even if no units of the advertised product are sold. On the other hand, if the firm did not plan to sell the product at all, no advertising would be incurred.

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and variable cost.[2] This is described analytically as:

$$C_j = F_{0j} + \sum_{i=1}^{m} F_{ij} + VC_j.$$ (17)

Note the two types of fixed cost F_{0j} and F_{ij}. The former represents fixed and common cost, which exist for the provision of all products and are not part of the incremental cost of any. The F_{ij} represent specific-fixed costs. Within the postal costing structure, variable costs are well defined and this equation can be rewritten as:

$$C_j = F_{0j} + \sum_{i=1}^{m} F_{ij} + \alpha_j D_j^{\epsilon_j}$$ (18)

Later on, at page 38, my testimony presents an analytical definition of intrinsic costs:

> The first of our two instances of intrinsic costs arise in the Priority Mail distribution operations. As explained above, other classes of mail are handled in these operations, but they are designed primarily for the handling of Priority Mail. That is, the operations were created because of the existence of Priority Mail and would not exist otherwise. The incremental cost calculation reflects this. From the base-year cost model, one obtains the volume variable costs of the individual products handled in a Priority Mail operation. One also then identifies the institutional cost. The incremental cost for Priority Mail in a Priority Mail operation is thus calculated as its volume variable cost and the total institutional costs. Mathematically, the incremental cost of Priority Mail (IC_{ij}) in one of these

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[2] Variable cost is not the same thing as "volume variable cost." In fact, volume variable cost is a subset of variable cost found by multiplying the total variable cost times the relevant "volume variability" or cost elasticity.

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operations is given by:[3]

$$IC_{1j} = \alpha_j D_j^{\epsilon_j}\left(1 + \epsilon_j(\theta_{1j} - 1)\right). \tag{21}$$

where θ_{1j} is Priority Mail's share of the driver.

The other instance of intrinsic cost is for dedicated air network transportation. In these cost components, the volume variable cost is found by multiplying the amount of the driver (pound-miles) times the (constant) marginal cost of commercial air transportation, (β_j). In product cost model, the cost function for the dedicated air network is thus given by:

$$C = \alpha_j \bar{D}_j, \tag{22}$$

where the bar on the driver indicates that its amount is fixed with respect to small changes in volume and α_j represents the cost of a pound mile of dedicated network air transportation.[4] One can express the volume variable cost for Express Mail as the product of the cost of a pound-mile of commercial air transportation times the number of pound-miles required:[5]

$$VVC_{1j} = \beta_j D_{1j}. \tag{23}$$

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[3]   Note that there are no fixed costs in these components.

[4]   It is my understanding that the air network is sized for a minium scale and more capacity exists than is required to handle just the Express Mail. Thus marginal increase in Express Mail volume do not affect the capacity of network.

[5]   The volume variability of commercial air transportation is one.

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The incremental cost of Express Mail in this component adds
in the intrinsic cost to the volume variable cost:

$$IC_{1j} = \beta_j D_{1j} + (\alpha_j - \beta_j)\bar{D}_j. \tag{24}$$

I'm not sure exactly what was meant by "Costs that are associated with the economies or diseconomies that are realized or lost as volume changes." However, the other part of incremental cost (the only part that is left after accounting for specific-fixed and intrinsic costs) is the volume related cost caused by the product. That is represented by the term $\alpha_j D_j^{e_j}(1 - (1 - \theta_{ij})^{e_j})$ from equation 12 from my testimony, reproduced below for convenience.

$$IC_{ij} = F_{ij} + \alpha_j D_j^{e_j}(1 - (1 - \theta_{ij})^{e_j}), \tag{12}$$

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UPS/USPS-T22-4. Witness Kay uses the term "volume related incremental cost" at line 26, page 4 of USPS-T-23. Provide your definition or understanding of this term, and describe the relationship between "volume related incremental cost" and each of the following terms:

a.   Product-specific costs;

b.   Specific-fixed costs;

c.   Intrinsic costs;

d   Costs that are associated with the economies or diseconomies that are realized or lost as volume changes.

UPS/USPS-T22-4 Response:

When Witness Kay uses the term "volume related incremental cost," she is referring to those costs that are caused by a product and that vary with the level of provision of that product. In the incremental cost calculation, they are give by the term: $\alpha_j D_j^{\epsilon_j}(1 - (1 - \theta_{ij})^{\epsilon_j})$.

I provide a detailed description of the relationship among product-specific costs, specific -fixed costs, intrinsic costs and volume related cost in my answer to USP/USPS-T22-3. However, the following taxonomy may be helpful.
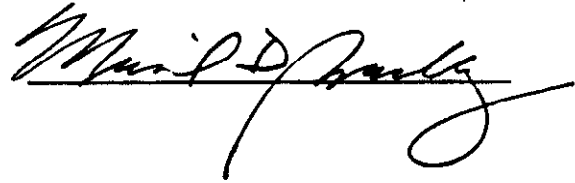
> Product-specific costs are made up of specific fixed costs and intrinisic costs. (Neither of these costs vary with volume at the margin).

> A product's total incremental cost is made up of its product-specific cost and its volume related incremental cost.

DECLARATION

I, Michael D. Bradley, declare under penalty of perjury that the foregoing answers are

true and correct, to the best of my knowledge, information, and belief.

Dated: 2/14/00

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon all participants of record in this proceeding in accordance with section 12 of the Rules of Practice.

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