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

MAILING ONLINE EXPERIMENT

Docket No. MC2000-2

DIRECT TESTIMONY
OF
WILLIAM M. TAKIS
ON BEHALF OF
UNITED STATES POSTAL SERVICE

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DIRECT TESTIMONY

OF

WILLIAM M. TAKIS

AUTOBIOGRAPHICAL SKETCH

My name is William M. Takis. I am a Partner in PricewaterhouseCoopers' (PwC) Washington Consulting Practice, located at 1616 North Fort Myer Drive, Arlington, VA 22209.

Over the past thirteen years, I have been responsible for directing many of PwC's projects in the areas of cost analysis and rate design for regulated utilities. My work has focused on cost of service studies, cost of capital studies, rate design analyses, and other related financial and economic studies for utilities in the electric, natural gas, telecommunications, and water supply industries. I have performed these studies for numerous utilities in the United States and abroad.

I am also a leader of PwC's Global Postal Industry Team, comprised of over 500 full-time professionals providing consulting services to the U.S. Postal Service and foreign postal administrations. Over the past thirteen years, I have directed numerous cost analysis projects for the U.S. Postal Service, focusing on the following areas:

- incremental costs
- mail processing

- surface transportation
- air transportation
- window service
- recovery of prior years losses
- new product introductions.

I have also written several papers and articles concerning my work in regulated industries which have been published in various journals and presented at industry conferences.

I have a B.A. in Economics from Williams College and an M.A. in Economics from the University of Maryland. In addition, I have completed most of the requirements for a Ph.D. in Economics at Maryland, including core coursework and comprehensive theory exams. I have also passed the Ph.D. field exam in Industrial Organization.

I have appeared before the Postal Rate Commission on four separate occasions. In Docket No. MC95-1, I presented testimony (USPS-T-12) concerning a variety of costing issues, concentrating on Standard Class letter-shaped mail processing costs. In that same docket, I presented rebuttal testimony (USPS-RT-4) concerning costing issues for Standard Class Enhanced Carrier Route mail. In Docket No. R97-1, I presented estimates of the Postal Service's incremental costs (USPS-T-41). Finally, I provided rebuttal testimony (USPS-RT-2) on general costing issues in Docket No. MC98-1.

I. PURPOSE AND SCOPE OF TESTIMONY

In Docket No. MC98-1, I presented rebuttal testimony before the Commission concerning the proper treatment of advertising costs for Mailing Online (MOL) Service. In that testimony, I emphasized the important role of *cost causality* in allocating advertising costs that were shared by products offered through the PostOffice Online (POL) channel.[1] My central point was that any allocation mechanism used to assign costs to individual products sold through a channel such as POL should be based on the concept of *causality* – that is, costs should be assigned to individual products only if they are caused by the provision of those products. While my testimony focused on the allocation of advertising costs, these principles can and should be applied equally to all costs incurred by MOL.

In this current docket, Witnesses Garvey (USPS-T-1) and Lim (USPS-T-3) describe the changes that have occurred with the MOL product, including the shift in channels from POL to USPS.com, and the various technical and market changes that the shift entails. Despite these changes, however, the principles that served as the basis for developing costs for MOL in the previous case (Docket No. MC98-1) remain the same here: costs should be assigned to MOL and other products sold through the USPS.com channel on the basis of cost causality.

The purpose of my testimony in this docket is to emphasize the importance of ensuring that the methodology used to allocate costs for a new product such as

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[1] A channel is an infrastructure used by an organization to sell products or to communicate with customers (i.e., a "channel" to customers).

MOL sold through a channel such as USPS.com be based on the fundamental principle of cost causality. In this testimony, however, I broaden my discussion to include all costs associated with MOL, not merely advertising costs. The principle of cost causality is consistent not only with sound economic theory, but also with past Commission precedent. Any cost allocation methodology that is not based on this principle may result in final prices for MOL that do not reflect the true costs of providing the service, with potentially adverse effects on customers, competitors, and the Postal Service alike.

These issues are critical for a number of reasons. As noted above, it is important that costs be allocated to MOL accurately and in a manner that is consistent with sound economic theory. More generally, however, it is important that the approach used in allocating shared infrastructure costs in any environment reflect how these costs are incurred, particularly in an environment where new products and services are being continually introduced using a common infrastructure or "backbone", such as USPS.com. Mistakes in cost allocation in this type of dynamic environment can result in some products bearing more than their "true" costs and others bearing less, possibly resulting in cross subsidies. Therefore, my testimony in this docket will provide the Commission with a "road map" for proper product costing as additional new products are introduced by the Postal Service using common infrastructures such as USPS.com.

In the following section of my testimony (Section II), I provide an overview of the importance of cost causality in the assignment of costs to individual products

and groups of products, concentrating on Postal Service and Commission precedent. In Section III, I describe some specific problems that can arise if the principle of cost causality is ignored. In Section IV, I apply this principle of cost causality to the problem of product cost development in a shared infrastructure environment, such as MOL in the USPS.com environment. In Section V, I address the critical question as to whether the costing methodology I propose in this docket ensures that *all* costs are recovered. Section VI concludes and summarizes my testimony.

II. THE IMPORTANCE OF COST CAUSALITY IN POSTAL COSTING

As I note briefly in Section I, the fundamental underpinning of any cost allocation mechanism should be the principle of cost causality, particularly in the case of a shared infrastructure environment such as MOL and the USPS.com channel. Before discussing costing for a shared infrastructure environment, I first address the important principle of cost causality and its central place in postal cost development.[2]

A. Assigning Costs to Products on a Causal Basis

Although causality is often a difficult concept to define, when I apply the principle of causality to product costing throughout this testimony, I am referring to the underlying operational realities of production within the postal network. For example, when developing costs for the retail network, the Postal Service analyst responsible for the analysis will first study the production process and operations within the network. After such a study, the analyst might hypothesize that increased transactions cause additional window service labor costs due to added workload. This hypothesis stems from an understanding of the fundamental operational characteristics of the retail function. Therefore, this notion of causality (garnered from an operational understanding of the production process) should serve as the basis for cost allocation in the retail function.

As another example, the decision to introduce the MOL service causes the Postal Service to purchase servers and other equipment necessary to provide the service to the public. This decision did not, however, cause the Postal Service to create the USPS.com channel. As with the retail network example discussed above, this operational notion of causality should serve as the basis for allocating the costs associated with MOL to the product. Put simply, if a cost is "caused" by the strategic and operational decisions to provide MOL, then it should be assigned to MOL. If these decisions to provide MOL do not cause the Postal Service to incur a certain cost, then that cost should not be allocated to MOL.

The concept of cost causality has served as the foundation of both the Postal Service's and the Commission's costing systems since the Postal Reorganization Act was passed. Both the Postal Service and the Commission have historically held that costs should be allocated to individual products and groups of products on a causal basis.[3]

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[2] This section of my testimony draws heavily from my testimony in Docket No. MC98-1 (USPS-RT-2). The portion of that testimony that is relevant to this section can be found in Tr. 11/2640 through Tr. 11/2649.

[3] For a Commission discussion of causation as the principle of cost attribution, see Docket No. R90-1, PRC Op., Vol. 1 at III-210.

Figure A: Conceptual Overview of Postal Product Cost Development

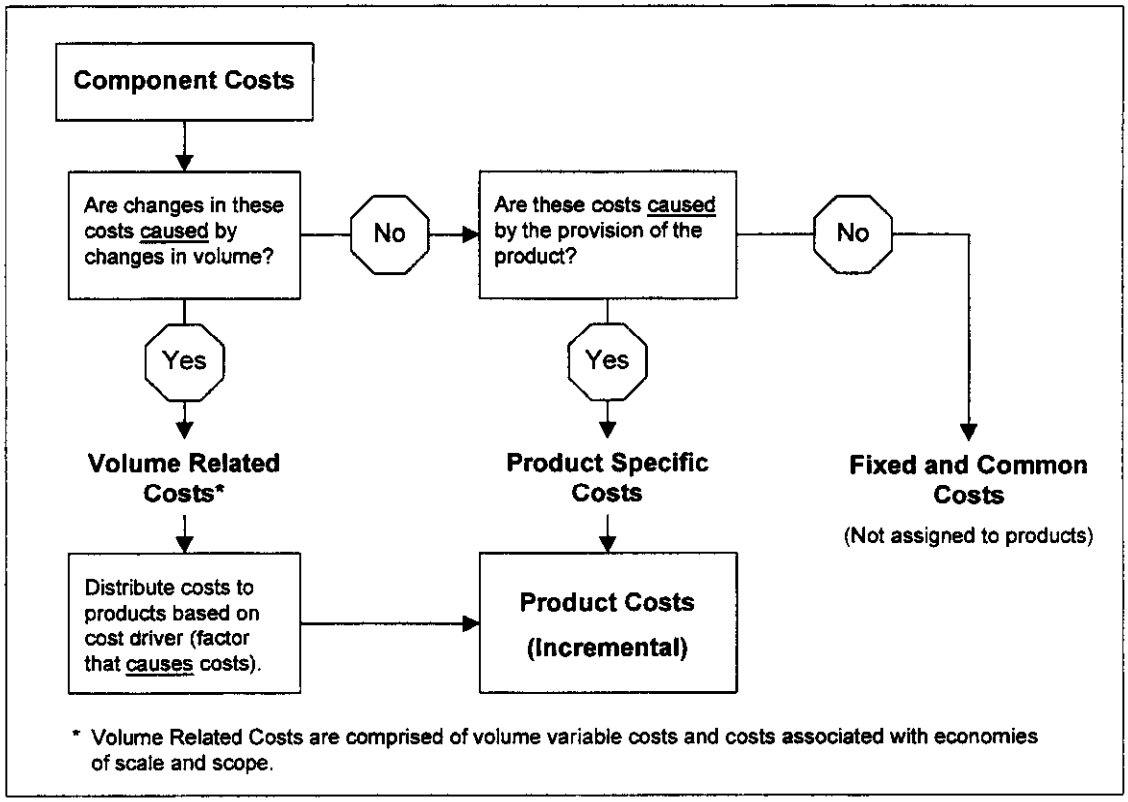

Figure A provides a simplified overview of the assignment of postal costs for a generic cost component to individual products.[4] As illustrated in the figure, causality is the key consideration for the development of product costs. For example, if changes in a portion of the costs for a particular component are caused

[4] This example shows the development of incremental costs for a simple, generic cost component. As I discuss in my testimony (USPS-T-41) in Docket No. R97-1, the development of incremental costs for most components is much more complicated than this simple example illustrates. For example, many components contain volume variable costs, costs associated with economies of scale and scope, and product-specific costs in the product costs that are assigned to specific services. For much of the discussion below, I ignore costs associated with economies of scale and scope for simplicity. However, if these costs are present within a particular component, then they should be allocated to specific products on a causal basis.

by changes in volume at the margin, then that portion of the component cost is termed *volume variable*. Volume variable costs within a particular component are distributed to individual products or subclasses based on *cost drivers* for that component; these cost drivers are also related to those elements that actually cause costs to accrue. If a cost is not caused by changes in volume, but is caused by the provision of the product or subclass, then the cost is *product-specific* to that product or subclass.[5] If costs are not caused by a specific product and do not change when the product's volume changes, then they are fixed and common costs that are not allocated to any specific product. Therefore, at every step of the cost development process, cost causality is the critical determinant for allocation to products.

The role of cost causality in both the Postal Service's and the Commission's development of product costs can be illustrated by examining a particular cost segment in greater detail. For example, Cost Segment (C/S) 3.2 (Window Service) contains volume related, product-specific, and fixed and common costs. The approach used by the Commission and the Postal Service to allocate window service or "retail channel" costs is an interesting example to consider because of the similarities between the channel through which retail products are offered (*i.e.*, the window service network) and the channel through which MOL will be offered (*i.e.*, USPS.com). As discussed in the next section of my testimony, both channels exhibit

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[5] The term *product-specific* was introduced by the Postal Service in Docket No. R97-1. It corresponds roughly (but not exactly) to the Commissions' use of the term *specific-fixed*. Please see Tr. 9/4733-36 in Docket No. R97-1 for a complete

shared infrastructure costs, and costs in both environments should be allocated to individual products sold through the respective channels based on the principle of cost causality as it reflects operational characteristics of the two channels.

B. Example 1: Volume Variable/Marginal Costs and Causality

Volume variable costs for the retail channel are determined by examining how changes in volume operationally cause changes in retail labor costs.[6] For example, increases in the volume of different products purchased through the retail channel cause the Postal Service to staff additional window clerks (*i.e.*, incur additional costs) to handle the increased volume. These volume variable costs are then distributed to individual subclasses of mail using a distribution key based on a specific cost driver that causes retail costs. These causal relationships (added workload caused by increased transactions leading to additional labor expenses) are mirrored in the Postal Service's and the Commission's development of volume variable cost estimates.

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discussion of these terms. In either case, the concept for the present discussion remains the same – these costs are *caused* by the provision of the subclass.

[6] Please see Witness Brehm's testimony in Docket No. R97-1 (USPS-T-21) for a complete discussion of the development of volume variable costs for window service, including the important role of cost causality in the operational context of the retail function.

C. Example 2: Product-Specific/Specific-Fixed Costs and Causality

Window service costs also include *product-specific costs*, such as the costs associated with retail operations that are specific to Cards, Express Mail, and Money Orders.[7] It is my understanding that for each of these products, the retail costs for specific activities associated with the product (*e.g.*, costs caused by a window activity performed at the end of each day to satisfy accounting requirements of the Money Order Division) are not volume related and only exist because the specific product exists. This portion of the costs for each product meets the causality-based definition of product-specific in that these costs are caused (in an operational sense) by the provision of each of these products. If these products were not offered by the Postal Service, then these costs would not be incurred. Based on this causal relationship, the product-specific costs for Cards, Express Mail, and Money Orders associated with the retail channel are included in the incremental costs of these products. As with volume variable retail labor costs discussed above, the causal relationships that underlie operations are used throughout the development of product-specific (incremental) costs for the window service network.[8]

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[7] Please see Table I-1 in Appendix I of the Summary Description of USPS Development of Costs by Segments and Components for Fiscal Year 1998 for a complete listing of product-specific costs by cost segment and mail class.

[8] The examples I discuss in this and the preceding section address volume variable and product-specific costs only (for simplicity). It should be remembered that incremental costs are comprised of three components: volume variable costs, product-specific costs, and costs associated with economies of scale and scope.

D. Unallocable Costs

Some cost components within the Postal Service (though not all) contain costs that are neither volume-related nor product-specific. In economic terms, these costs are fixed and common, and cannot be allocated to any specific product on a causal basis.[9]

These types of "unallocable" costs are found in many postal activities, including retail operations. For example, the time incurred by retail clerks for preparation and accounting work related to opening or closing out a window (*i.e.*, reconciling cash) is not related to volume and is not product-specific. Therefore, these costs can be classified as fixed and common and should not be allocated to specific products. The fixed and common portion of retail costs is neither caused by changes in product volume nor the existence of a specific product, and is therefore not allocated to products. As I discuss in greater detail below, the USPS.com channel also exhibits fixed and common costs, and they should not be allocated to products sold through the channel (such as MOL) either.

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[9] In Section III. C. below, I illustrate some of the problems that can arise when one erroneously attempts to allocate fixed and common costs among different products. It should also be noted that although fixed and common costs are not allocable to individual products, they are recovered by the total revenue of all products, as I discuss in Section V of my testimony.

III. COSTING MISTAKES TO AVOID

In my testimony in Docket No. MC98-1, I discussed in detail (Tr. 11/2644 through Tr. 11/2649) some of the problems that can arise when the principle of cost causality is ignored. Because these errors may not be immediately apparent, and because of their potential adverse effects on prices, I revisit the problems with allocating costs based on arbitrary mechanisms.

A. Differences Between Causality and Correlation

In discussing the importance of causality-based costing, it is important to note that *correlation* does not necessarily imply *causality*. Simply because a change in cost is *correlated* with a change in volume does not necessarily mean that it is *caused* by a change in volume. Furthermore, using correlation as a substitute for causality in the cost development process can result in inaccurate product costs.

In Docket No. MC98-1, I discussed the Eagle Network as an example for which a correlation analysis might mistakenly lead an analyst to allocate Eagle Network premium costs to all products that use the network (Tr. 11/2644).[10] The Eagle Network is a dedicated nighttime hub-and-spoke air network that is operated to permit next-day delivery of Express Mail. The premium costs for the network (*i.e.*, the costs over and above standard commercial air transportation costs) are specific to Express Mail because they are caused solely by the provision of this entire

[10] A brief description of the Eagle Network and the nature of its premium costs is included in Tr. 11/2643 of Docket No. MC98-1.

product (*i.e.*, these costs would not be incurred if Express Mail were no longer offered). If an analyst were simply to compare mail volumes for First-Class, Priority, and Express Mail to Eagle Network costs, he or she might find a *correlation*, because these products are flown on the Eagle Network. By contrast, a *causality* analysis (as was performed by the Postal Service and adopted by the Commission in Docket No. R97-1) shows that these premium network costs are incurred entirely for Express Mail, and, therefore, should be treated as product-specific to Express Mail (*i.e.*, included in incremental costs) and to no other product. The example shows the potential "correlation trap" that can arise if an analyst equates *correlation* with *causation* when developing volume related or product-specific costs.[11]

B. "Benefits" vs. "Causality"

Just as it is important not to confuse *correlation* with *causality*, it is also important not to confuse *benefits* with *causality*. The notion that a particular cost *benefits* a product is not necessarily equivalent to the notion that a product *causes* the cost to accrue. For example, First-Class Mail may benefit from being transported on the Eagle Network, but it does not cause the premium costs associated with the network. Therefore, the incremental cost of First-Class Mail should not include these

[11] I do not want to leave the impression that statistical/econometric analyses cannot be used to help identify causal links. For example, the econometric analyses that the Postal Service uses to investigate cost variabilities are firmly rooted in causality principles, as they are accompanied by operational analyses of causality. I am trying to distinguish between "spurious" correlation studies and causality-based operational studies here.

premium costs. The retail channel also exhibits costs that benefit products, but are not caused by specific products. One example is the fixed and common portion of the costs associated with window clerk time. The preparation and accounting activities associated with opening or closing out a window are not caused by a specific subclass, but benefit many subclasses. Accordingly, the costs for these activities are classified as fixed and common, and are not included in the incremental cost of any single product.[12] As another example, postal products benefit from the activities of the Postmaster General, but the costs of his salary are not caused by any specific product. Therefore, the Postal Service and the Commission do not allocate the PMG's costs to specific products. Any costing methodology that relies on *benefits* to allocate costs to products instead of *causality* should be viewed with suspicion.

C. Fully Distributed Costing (FDC)

The problems associated with allocation mechanisms not based on causation can be readily seen when one examines the effects of fully distributed cost (FDC) approaches, which often rely on correlation analyses rather than operationally-based causation analyses to distribute costs. Under a generic FDC system, all of an organization's costs are assigned to individual products, even though they may not

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[12] For a detailed description of the USPS cost treatment of certain activities, see the Summary Description of USPS Development of Costs by Segments and Components for Fiscal Year 1998.

be caused by those products. Direct costs are first assigned to products where causal relationships can be found. Fixed and common costs are then assigned to individual products using a variety of allocation methods that might sound reasonable on the surface, but are not reasonable when the underlying causality is examined. An individual product's share of fixed and common costs could be (inappropriately) determined by the product's share of total volume, its share of total revenue, or any number of other measures. FDC approaches can often result in significant under- or over-statements of product costs, which can lead to adverse pricing results.

The following example demonstrates how an FDC system might work within the context of the retail channel. For the purposes of this example, I assume that an FDC system would assign direct costs to individual products in the same way that the Postal Service determines a product's volume variable cost. However, to mimic an FDC system, the fixed and common (institutional) costs from this segment must then be distributed to individual products using an arbitrary allocation factor.[13] In Figure B, I demonstrate how an FDC costing approach might look for C/S 3.2 with the following three different allocation methods for the common costs in C/S 3.2:

- Method A: Distribute fixed and common costs in proportion to product volume

[13] Although in this example I show the varying results of using FDC in applying arbitrary allocation factors to indirect costs, one could take the example a step further by applying arbitrary allocation factors to direct costs as well, rather than

- Method B: Distribute fixed and common costs in proportion to product revenue
- Method C: Distribute fixed and common costs in proportion to product volume variable costs

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assigning them to products on a causal basis. Applying FDC to this extent would yield even more widely varying results.

Figure B: Illustration of FDC Approach for Cost Segment 3.2 (Window Service)

	C/S 3.2 Costs[1]	Percent of Total VVC[2]	Revenue[3]	Percent of Total Revenue[4]	Pieces[5]	Percent of Total Pieces[6]
First-Class Mail	$ 564,421	58.9%	$ 33,982,677	56.9%	101,172,828	51.1%
Express Mail	$ 26,695	2.8%	$ 854,530	1.4%	66,244	0.0%
Other Products & Services	$ 367,774	38.4%	$ 24,868,068	41.7%	96,704,125	48.9%
Other (Fixed & Common)	$ 1,081,462		N/A		N/A	
Total	$ 2,040,352		$ 59,705,275		197,943,197	

Method A: Distribute Fixed and Common Costs Based on the Proportion of Pieces

	VVC/Piece[7]	Piece Allocation of Other Costs[8]	Piece Alloc./ Piece[9]	FDC Total Cost[10]
First-Class Mail	$ 0.0056	552,757	$ 0.0055	$ 0.0110
Express Mail	$ 0.4030	362	$ 0.0055	$ 0.4084

Method B: Distribute Fixed and Common Costs Based on the Proportion of Revenue

	VVC/Piece[11]	Revenue Allocation of Other Costs[12]	Rev. Alloc./ Piece[13]	FDC Total Cost[14]
First-Class Mail	$ 0.0056	615,540	$ 0.0061	$ 0.0117
Express Mail	$ 0.4030	15,478	$ 0.2337	$ 0.6366

Method C: Distribute Fixed and Common Costs Based on the Proportion of VVC

	VVC/Piece[15]	VVC Allocation of Other Costs[16]	VVC Alloc./ Piece[17]	FDC Total Cost[18]
First-Class Mail	$ 0.0056	636,569	$ 0.0063	$ 0.0119
Express Mail	$ 0.4030	30,107	$ 0.4545	$ 0.8575

[1,3,5] Data Obtained from USPS 1998 Cost Segments and Components Report. Costs for First-Class Mail, Express Mail, and "Other Products and Services" represent volume variable costs.
[2] VVC divided by sum of First-Class Mail, Express Mail, and Other Products & Services VVC.
[4] Revenue divided by sum of First-Class Mail, Express Mail, and Other Products & Services Revenue.
[6] Pieces divided by sum of First-Class Mail, Express Mail, and Other Products & Services Pieces.
[7,11,15] VVC divided by Pieces.
[8] Other (Fixed and Common) C/S 3.2 Costs multiplied by Percent of Total Pieces.
[9] Piece Allocation of Other Costs divided by Pieces.
[10] VVC/Piece plus Piece Alloc./Piece.
[12] Other (Fixed and Common) C/S 3.2 Costs multiplied by Percent of Total Revenue.
[13] Revenue Allocation of Other Costs divided by Pieces.
[14] VVC/Piece plus Rev. Alloc./Piece.
[16] Other (Fixed and Common) C/S 3.2 Costs multiplied by Percent of Total VVC.
[17] VVC Allocation of Other Costs divided by Pieces.
[18] VVC/Piece plus VVC Alloc./Piece.

The results in Figure B show that there is a relatively small difference between the three allocation methods for First-Class Mail – the FDC unit window service cost only ranges from $0.0110 to $0.0119. The FDC unit window service

cost for Express Mail, however, ranges between $0.4084 and $0.8575 – a difference of $0.4491. On the surface, each of the allocation methods might appear to be reasonable methods of allocating common costs. However, none of the methods captures causality because they fail to consider operational realties in the window service function. Fixed and common costs are not caused by any specific product, and therefore cannot be allocated to any specific product. The sizable difference in these allocation methods makes it impossible to determine the true cost of the product in this example. Furthermore, this example shows that the cost of one product (First-Class Mail in this example) may not be affected significantly by the allocation mechanism, while another product's cost (Express Mail) varies widely.[14]

The problem with choosing an allocation factor for common costs is that there is no cause-and-effect relationship between *individual products* and a pool of *common costs* – if a causal relationship to individual products existed, these costs would not be classified as common. The resulting product costs can vary widely depending on the selected allocation method.

Furthermore, the effects of using cost estimates developed through FDC approaches can be disastrous. For example, if an FDC approach based on one set of allocation factors results in an artificially low product cost, then the price for that

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[14] In my testimony in Docket No. MC98-1 (Tr. 11/2646 through Tr.11/2648), I presented a similar analysis with even more variation in results: using the same three FDC methods of distributing C/S 7 (City Carriers) fixed and common costs, the unit delivery costs for Express Mail ranged between $0.369 and $1.6492.

product may be set too low, thereby harming both the Postal Service and its competitors. If, on the other hand, another set of allocation factors results in a product cost and price that are artificially high, then consumers may be harmed, and a product that benefits consumers and provides a contribution towards institutional costs may be eliminated. In either case, with an FDC approach, one is never quite sure that prices are set accurately, and one never quite knows who is being harmed.[15]

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[15] Both the Commission and the Postal Service have long recognized the serious problems associated with FDC approaches, and have consistently stated their disapproval for such methodologies. See, for example, PRC Op., R87-1, Vol. 2, Appendix J, CS IX, p.9. The Commission has shown its discomfort with FDC approaches for many years. In PRC Op., R74-1, the Commission stated:

> In the prior case, we expressed statutory reservations regarding a fully distributed costing method under which costs are first assigned to the classes and services on the basis of causation, and the remainder mathematically apportioned on a uniform basis. See PRC Op. 1-280, n. 1. We now believe those reservations were well taken; and that fully distributed costs, as defined above, would not satisfy the standards of § 3622. We reject a fully distributed costing method here in favor of the concepts of variability and demand discussed throughout this opinion.

PRC Op., R74-1, Vol. 1, p.124.

IV. COST CAUSALITY AND ALLOCATION IN A SHARED INFRASTRUCTURE ENVIRONMENT

In the preceding section of my testimony, I discuss the critical concept of cost causality based on operational considerations and its important place in postal costing. I now apply this principle to the problem of cost allocation in a shared infrastructure environment such as MOL within the USPS.com channel.

A. USPS.com is a Shared Infrastructure/Channel Environment

As discussed by witnesses Garvey (USPS-T-1) and Lim (USPS-T-3), the USPS.com channel is an example of what I call a "shared infrastructure environment". USPS.com can be thought of as a channel through which a number of different products and services will be provided to the Postal Service's customers. The infrastructure associated with USPS.com (including servers, telecommunications lines, development costs, etc.) exists to serve many different products, of which MOL is one.[16] The USPS.com channel also allows access to basic Postal Service information, such as ZIP Codes, Post Office locations, online stamp purchasing, Change of Address forms, tracking and delivery confirmation, and rate information. It is clearly evident that the USPS.com infrastructure exists independent of MOL.

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[16] In some cases, there may be parts of USPS.com that exist to serve only one particular product (e.g., an additional server that needed to be added to USPS.com to support a new product being offered through the channel). I will discuss the proper treatment of these types of costs below.

Again, an analogy can be made between the shared infrastructure for the USPS.com channel and the shared infrastructure for the retail channel. The window service network is an example of a retail channel through which a variety of products and services are sold. Much of the infrastructure associated with the retail network (*e.g.*, the fixed and common portion of clerk costs or building/equipment costs) exists to serve many different products and no specific individual product.[17]

B. Cost Allocation in a Shared Infrastructure/Channel Environment

The question remains, however, how to allocate costs in a shared infrastructure/channel environment to individual products and services sold through the channel. The simple answer to this question is that costs should be allocated to individual products and services offered through the channel on a causal basis. This approach is consistent with sound economic principles and past Postal Service and Commission precedent, as I discuss in Section II of my testimony.

Figure C presents a graphic depiction of different types of costs that can arise in a hypothetical environment involving a shared infrastructure or channel and three individual products.[18]

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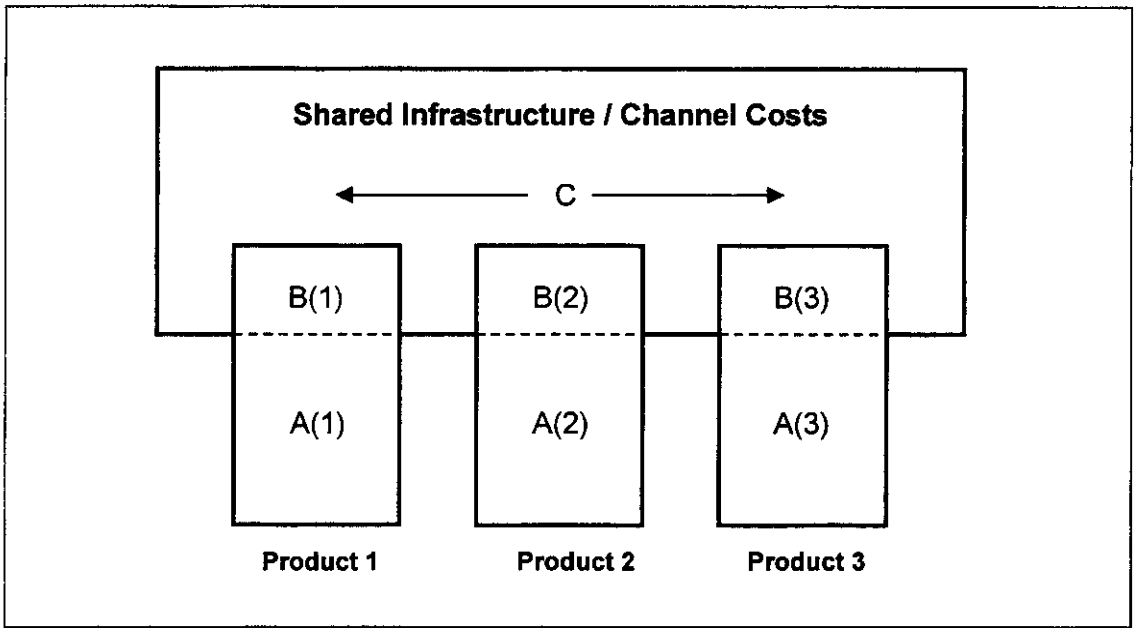
[17] In Docket No. MC98-1, one Commissioner acknowledged the analytic utility of a similar analogy between the PostOffice Online channel and the retail channel (Tr. 11/2778).

[18] Although I chose to illustrate a hypothetical postal service offering only three products sold through one channel for this example, my discussion can be generalized to include any number of products.

Figure C: Hypothetical Shared Infrastructure/Channel Environment



This diagram shows that there can be some costs caused by individual products that are neither part of the shared infrastructure/channel nor part of the costs of any other product. Area A(1) depicts these types of costs for Product 1, for example. These costs caused by an individual product could be either volume-related or product-specific (*i.e.*, specific-fixed) as I discuss above, but because they are caused by a specific product, they should be allocated to the specific product. In the case of MOL, the printing costs described in Witness Poellnitz's testimony (USPS-T-2) are examples of these types of costs, because they are caused by MOL and are not part of the USPS.com channel.

I also show an example of overall shared infrastructure/channel costs in Figure C. These costs consist of area C plus areas B(1), B(2), and B(3). However, an important distinction can be drawn between the costs in area C and those in

areas B(1), B(2), and B(3). In drawing this diagram, I have assumed that there exist some costs which are technically part of the shared infrastructure/channel but are caused by specific products (*i.e.*, costs in areas B(1), B(2), and B(3)). These costs might include modifications to the basic infrastructure of the channel designed to meet the unique needs of a specific product.[19] An example of such a cost could be the programming necessary to allow a particular product to interface with the shared infrastructure. These costs are caused by individual products and should therefore be allocated to individual products. In the case of MOL and the USPS.com channel, a portion of the help desk and T3 Internet connection costs described by Witness Lim (USPS-T-3) are examples of these types of costs because, although they are part of the shared infrastructure, they are caused by MOL.

I have also assumed that some costs exist that are part of the shared infrastructure/channel but are not caused by any particular product sold through the channel (*i.e.*, they are caused by all of the products as a group, as shown in area (C)). Because these costs are not caused by any individual product, they should not be allocated to any individual product.[20] In economic costing terms, these costs are considered "fixed and common" and not allocable to any particular product. Instead, they are covered by all postal products sold through the channel in their respective

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[19] There is no reason to believe that these costs have to arise in every shared infrastructure/channel setting.

[20] Attempts to allocate costs such as those shown in area C would constitute some form of fully distributed costing, which can lead to costing and pricing distortions.

markups over costs.[21] Because these costs are not pertinent to MOL's product costs, Witness Lim (USPS-T-3) has not delineated any such costs associated with the USPS.com infrastructure in his testimony.[22] However, it is my understanding that these costs include the basic system architecture of the infrastructure/channel which is used to support a wide variety of products and services.

When examining a specific set of costs within the shared infrastructure/channel, it is often difficult at first glance to determine whether they fall into the category of "allocable" costs (*i.e.*, areas B(1), B(2), and B(3)) or "unallocable" costs (*i.e.*, area C). In such cases, we must fall back on the principle of cost causality in determining whether they should be allocated to individual products. Advertising costs are an excellent example of this type of cost. One could imagine a situation where advertising costs are incurred for the channel as a whole and not to promote any particular product.[23] In this situation, if the existence of any individual product would not change the total advertising expenditure, and any product-specific advertising would not cause the Postal Service to either incur an additional cost or to forgo other advertising, then the advertising expenditures are

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[21] In the case of the USPS.com channel, there are a wide variety of postal products and services that will be provided to the public through the channel, as discussed by Witness Garvey (USPS-T-1).

[22] Although these costs are irrelevant in determining costs/prices for MOL, they still need to be recovered. I discuss how these costs should be recovered in Section V of my testimony.

[23] In Docket No. MC98-1, the advertising costs in question were incurred to promote the POL channel as a whole, and no advertising expenditures were caused by MOL. In the current docket, however, there are advertising

not allocable to any specific product.[24] Under this scenario, the existence of a specific product does not cause the Postal Service to incur advertising expenditures. If, on the other hand, the existence of a particular product causes advertising costs to be expended, then this portion of advertising costs for the channel should be allocated to the specific product. In this second example, the existence of particular products causes advertising expenditures. One must examine how advertising costs are caused to be able to determine whether they are allocable to individual products.

C. Application of Costing Concepts to MOL

Witnesses Lim (USPS-T-3) and Poellnitz (USPS-T-5) identify the information technology (IT) costs and the printing and advertising costs of MOL in their respective testimonies in this docket. The costing concepts and terminology used by the Postal Service and the Commission over time can be readily applied to these costs. To do so, one should consider the principles of causality I discuss in Section II.

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expenditures that are caused specifically by MOL. See the testimony of Witness Poellnitz (USPS-T-2).

[24] In this instance advertising costs are incremental to the entire group of products sold through the channel, but are not incremental to any particular product in that group. To ensure economic efficiency in this case, these expenditures should be covered by the total markup over attributable costs for the group of products, but do not have to be covered by the markup for any individual product in the group. Please see my testimony (USPS-T-41) in Docket No. R97-1 and Dr. Panzar's testimony (USPS-T-11) in the same docket for a complete discussion of these issues.

Witness Lim has identified two general types of IT costs: pre-experiment costs and program year costs. According to Witness Lim, the pre-experiment costs are those costs incurred to create the MOL infrastructure. These costs are up-front expenditures that are not caused by volume, but rather are necessary for the system to be functional. As such, these costs are not volume variable. However, because they are caused by the existence of the MOL system, these costs are product-specific to MOL.

Program year costs are those costs that will be incurred once MOL is available during the experimental period. Witness Lim identifies two components of IT program year costs that are related to volume: the portion of help desk costs and T3 Internet connection costs caused by MOL. Because these costs are related to volume, I consider them to be volume variable. The remaining types of program year costs identified by Witness Lim do not vary with volume. Witness Lim describes the operational nature of these IT costs in his testimony. Namely, in this technical environment, the maintenance and replacement of IT components is not increased by usage, but rather is a function of time. Furthermore, the costs of any enhancements to the system are not related to volume. Therefore, from an economic standpoint, the costs of these remaining program year components are not volume variable. However, because these costs are caused by provision of MOL, they are product-specific to MOL.

Having identified information technology components that were shared by examining MOL's interface with the USPS.com infrastructure, Witness Lim analyzed

further only those that were caused by MOL, disregarding those whose costs were not affected by MOL. For example, it is correct for Witness Lim to exclude the costs of the USPS.com payment and registration functions because his analysis is consistent with the causal basis for product costing that I discuss in Section II. Because the payment and registration functions used by MOL are caused by USPS.com and exist regardless of MOL, their costs should not be included with MOL costs.

Witness Poellnitz identifies MOL printing and advertising costs in his testimony. According to his operational description of the printing process associated with MOL, each of the printing cost components (impressions, inserters, transportation, paper, and envelopes) incurs additional costs as volume increases. In fact, contracts between the Postal Service and print sites are unit contracts, such that print site invoice amounts to USPS are based on volume. As such, all MOL printing costs are volume variable. Advertising costs caused by a specific product, as I discuss earlier in this section, are product-specific to that product. The advertising costs described by Witness Poellnitz are caused specifically by MOL and are therefore product-specific to MOL.

V. ENSURING THAT ALL COSTS ARE RECOVERED

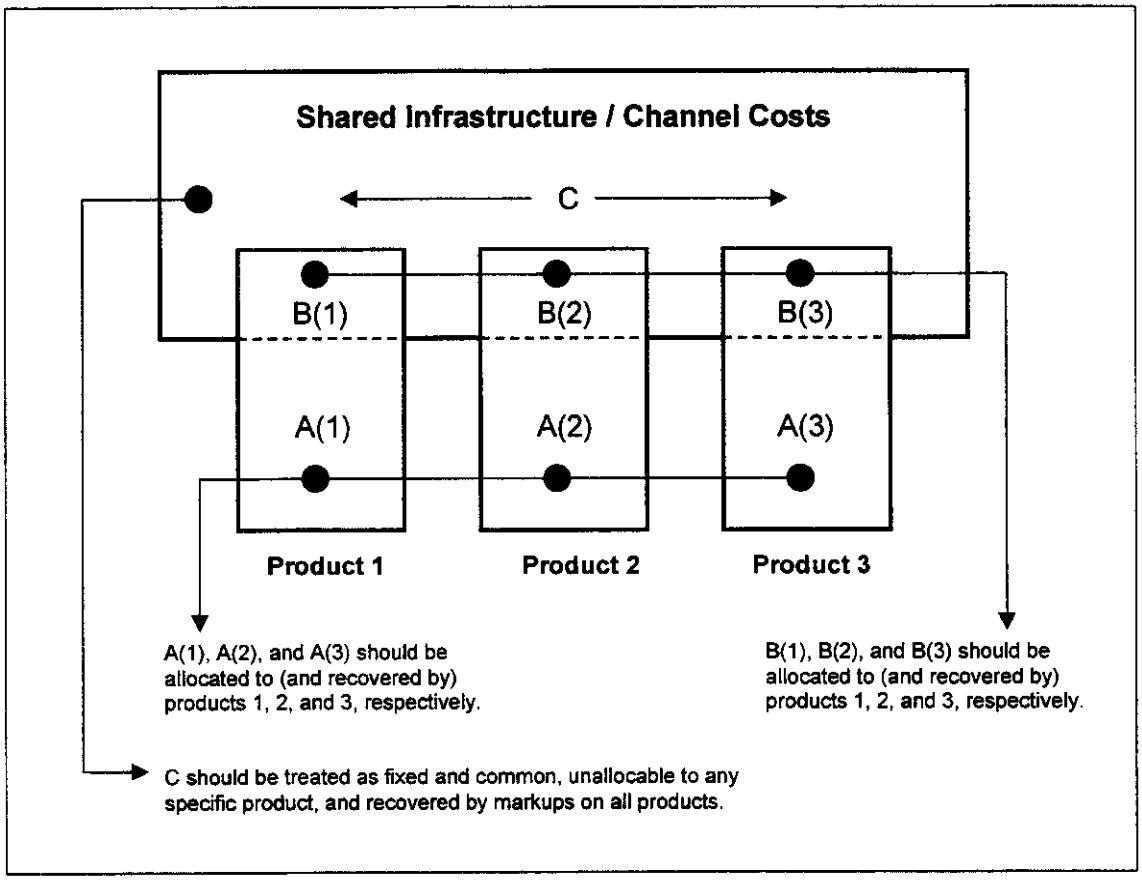
In the preceding section of my testimony, I describe how to allocate costs in a shared infrastructure environment using a concept cost causality that is firmly rooted in operational and production realities. In practice, the actual process by which these costs are allocated can be quite complex. After completion of that exercise, however, the Commission is still left with one simple question that is of critical importance: How do we ensure that all costs are being recovered? If through the allocation process we somehow "miss" a certain set of costs and they are not recovered in product prices, then we may have a cross subsidy problem where one product, or a group of products, subsidizes another. Therefore, it is important to assure the Commission that all of the costs of both the individual products sold through a channel (*e.g.*, MOL) and the costs of the channel itself (*e.g.*, USPS.com) are recovered. In this section of my testimony, I expand on the allocation process I discussed previously to show how all costs within the shared infrastructure environment should be recovered.

To facilitate this discussion, it will be helpful to refer back to Figure C and concentrate on where each "area" of costs identified there should be recovered. At the end of this analysis, we want to make sure that all of the "areas" of costs are recovered in some way.

Figure D shows how each of the areas of costs developed in Figure C should be recovered. Specifically, areas A(1), A(2), and A(3) (whether they are volume related or product-specific) should be treated as incremental to each individual

product sold through the channel. Likewise, areas B(1), B(2), and B(3) (whether they are volume-related or product-specific) should be treated in the same way. Therefore, the total incremental cost for product 1 would be the sum of A(1) and B(1), and the total incremental costs for product 2 would be the sum of A(2) and B(2) (likewise for product 3).[25]

Figure D: Ensuring that all Costs are Recovered



[25] By using the term "total incremental cost", I am assuming in this simple example that these products do not cause any additional costs in the postal network. Of course, total incremental cost for any particular product would be the sum of incremental costs for that product across all cost segments and components. Please see my testimony (USPS-T-41) in Docket No. R97-1 for a complete discussion of incremental costs across segments and components.

Finally, costs in area C are neither volume-related nor specific to any particular product sold through the hypothetical channel, as I discussed previously. Rather, these costs should be treated as fixed and common, and thus unallocable to any product, and should be recovered through markups on prices of all postal products.[26] Simply because they are not allocated directly to specific products does not mean they are not recovered.

Therefore, the simple question I posed at the beginning of this section has been answered – all costs of the shared infrastructure environment are recovered if costs are allocated on a causal basis. Volume-related and product-specific costs are recovered by individual products, and unallocable costs are recovered by all postal products.

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[26] Though these costs are recovered by all products, they should be included in any group incremental cost test for the group of products sold through the channel. To meet a group incremental cost test, the total revenue from products 1, 2, and 3 should cover (as a group) the entirety of costs A, B, and C. In the case of MOL, the USPS.com infrastructure supports all postal products, so the group incremental cost test is satisfied if total Postal Service revenues cover total Postal Service costs. Please see my testimony in Docket No. R97-1 (USPS-T-41) and Docket No. MC98-1 (USPS-RT-2) for a complete discussion of group incremental cost tests.

VI. SUMMARY AND CONCLUSIONS

In my testimony I lay out the economic principles that govern proper product costing methods, particularly in a shared infrastructure environment. As more new products are introduced by the Postal Service using shared infrastructures such as USPS.com, the use of proper costing techniques based on the principle of causality will continue to be of utmost importance to the Postal Service, its competitors, and its customers. My testimony is based on the following central themes:

- The Postal Service and the Commission have built a longstanding precedent of performing product costing based on the principle of causality.

- When one ignores the importance of cost causality in product costing, one is subject to pitfalls that prevent meaningful cost analysis and can lead to disastrous pricing consequences. Among these pitfalls are allocating costs based on "correlations" or "benefits" rather than causality, and using arbitrary Fully Distributed Costing methods to allocate fixed and common costs.

- Applying the principle of causality to products in a shared infrastructure environment such as MOL in the USPS.com environment (similar to the treatment of product costs in the window service/retail channel) is central to ensuring appropriate product costing.

- The exclusion of shared costs from the cost base of a particular product does not mean that these costs are not recovered. Quite the contrary, shared infrastructure costs that are fixed and common, and thus unallocable should be treated in the same manner as other unallocable costs to the Postal Service, which are recovered through pricing markups on all postal products.

For over 25 years the Postal Service and the Commission have defined appropriate costing methods based on the principle of causality, and they have applied these methods in shared infrastructure environments such as the retail channel. Applying these proven concepts to new Postal Service products and services such as MOL in the USPS.com environment will help to ensure appropriate product costing and to avoid adverse pricing consequences to the Postal Service, its competitors, and customers.