**BEFORE THE
POSTAL REGULATORY COMMISSION
WASHINGTON, DC 20268-0001**

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)
Notice of Market Dominant   )
Price Adjustment   )   Docket No. R2013-10
_____   )

**COMMENTS OF THE
AMERICAN CATALOG MAILERS ASSOCIATION (ACMA)**

(October 17, 2013)

Pursuant to Commission Order No. 1842 (September 27, 2013), ACMA is

pleased to sponsor these comments, along with ACMA_R2013-10_Workbook.xlsx, a

separate file that documents Graphs 1 and 2.

Through catalogs, ACMA members make a wide range of goods and services

available, many of which are difficult to find or otherwise unavailable. Catalogs are a

major component of the mailstream. They provide information, are valued by recipients,

and often serve as resource documents. Catalogers typically spend 40 to 60 percent of

their marketing budget on postage, a proportion that has increased over time. Postage

rates for catalogs, then, are critically important to catalogers, recipients, and the Postal

Service.

Use of the Mail by Catalogers. Most catalogs are flats and are sent as Commercial (as opposed to Nonprofit) Standard Mail. Category use is determined by the automation and density characteristics of the mailings. High-Density is used for pieces going to carrier routes to which 125 or more pieces each are being sent.[1] Then comes Carrier Route, the largest category, requiring 10 or more pieces per route. Short of that, automation and non-automation categories are available for bundles for 5-digit areas, 3-digit areas, ADC areas, and Mixed ADC areas. As applicable, dropship discounts are available for entry at DNDCs and DSCFs. For reporting and breakdown purposes, these categories are parts of three designated products.[2] As a practical matter, the law allows considerable leeway in designating products.[3]

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[1]   Few catalogers use Saturation (usually covering all of a route) or High-Density Plus (requiring 300 or more pieces per route).

[2]   Not counting Saturation, High-Density Plus, or the dropship options, 10 categories are available for Commercial flats [10 = 2 automation options (automation and non-automation) x 4 sortation options (Mixed ADC, ADC, 3-digit, and 5-digit) + 2 additional sortation categories (Carrier Route and High-Density)], and 10 more are available for Nonprofit flats.

These 20 categories are parts of three designated products. The first product is Standard Flats {a collection of 16 categories [2 (Commercial and Nonprofit) x 2 (automation and non-automation) x 4 (Mixed ADC, ADC, 3-digit, and 5-digit)]}. The second product is Carrier Route {a collection of 6 categories [2 (Commercial and Nonprofit) x 3 (letter, flat, and parcel)]}. The third product is High-Density and Saturation Flats and Parcels {a collection of 12 categories [2 (Commercial and Nonprofit) x 3 (High-Density, High-Density Plus, and Saturation) x 2 (flat and parcel)]}.

Thus, though the 10 categories used by Commercial catalogers fall into 3 products, those products house other categories as well, some disparate.

[3]   Section 102(6) of 39 U.S.C. states that the term "product" is "used" to "mean[] a postal service with a distinct cost or market characteristic for which a rate or rates are, or may reasonably be, applied." Therefore, a reference to a product means such a category, whether or not it is designated as a product and whether or not a separate rate for it exists currently. Accordingly, it is clear that the law countenances almost any product breakdown. Indeed the Commission has indicated that "the term 'product' in section 102(6) is so general … that almost any category of mail nominated would qualify" (Order No. 536, Docket No. RM2009-3, September 14, 2010 at 22).

I. POSITION OF ACMA IN THIS PROCEEDING.

As outlined above, catalog mailers use Commercial parts of three products in the Standard class: Flats, Carrier Route (the flats part), and High-Density/High-Density Plus/Saturation Flats and Parcels (the High-Density flats part). In order, the rate increases proposed for these products are 1.809 percent, 1.666 percent, and 1.412 percent.[4] These increases are consistent with "the Postal Service agree[ment] to increase Standard Flats prices by at least CPI x 1.05" (*Id.*). The Commission has approved this formula (FY 2012 ACD at 19).

Considering the circumstances, ACMA agrees that these increases are reasonable, understanding that, depending on which categories they use, ACMA members will see increases that vary somewhat from the averages. It is important, however, to keep the attendant circumstances in mind, as they frame the situation faced.[5] Accordingly, in the subsections below, ACMA identifies circumstances it believes to be important.

A. **The Catalogs Being Sent by ACMA's Members Are Not Paying Below-Cost Rates.**

In recent years, some attention has been focused on reports that show a cost coverage for Standard Flats that is below 100%. In its FY 2012 ACD, the Commission found this coverage to be 80.9 percent (at 106). However, this below-attributable-cost

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[4]   United States Postal Service Notice of Market-Dominant Price Adjustment, Docket No. R2013-10 (September 26, 2013) at 24, hereinafter "Notice."

[5]   Similarly, in thinking about what increases might be appropriate for the Standard Flats product, the Commission referred in Order No. 1427 (Docket No. ACR2010-R, August 9, 2012) to considering the "totality of circumstances presented" (at 4).

outcome is due entirely to (a) the inclusion of the losses of the Nonprofit categories and (b) the decision to report separately on Carrier Route and Standard Flats. If Nonprofit is excluded (as a category virtually designated by Congress to have below-cost rates) and Carrier Route and Standard Flats are combined (consistent with the use made of them), the cost coverage is 107.8 percent.[6]

It turns out, then, that the below-cost outcome is due (a) to reporting on categories that do not relate to our catalogs and (b) to the Postal Service's preferences concerning the relative levels of the rates of Carrier Route and Standard Flats. In its R2013-1 Notice of Price Adjustment, for example, the Postal Service referred to "the need to manage the price gap between Standard 5-Digit automation flats and Carrier Route flats" (at 24).

B. **The Relation Between Carrier Route and Standard Flats Is at Issue in the Matter of FSS Pricing.**

As noted above, Carrier Route and Standard Flats have been designated as separate products, but this distinction is eroding further. For some of the country, the Postal Service will be processing flats on FSS machines.[7] This means that in FSS areas the mail that has been prepared for Carrier Route will need to be prepared in a different way and, quite possibly, entered at different facilities, after which it will be processed in the same way as other mail.

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[6]   Calculated from USPS-FY12-1, FY12PublicCRA.xls, and USPS-FY12-27, StandardNonprofit2012.xls, Docket No. ACR2012. If there were a way to recognize the catalogs sent at High-Density rates, this cost coverage would be even higher.

[7]   The Postal Service states: "FSS machines are a critical element in the … strategic operations plan. … The Postal Service has installed FSS machines in mail processing plants that process high volumes of flat-sized mailpieces." Notice at 15.

"Accordingly, the Postal Service is taking three steps. First, [it plans] to require the previously optional FSS preparation for all flat-shaped mail pieces destinating in FSS zones. Second, in this filing [it proposes] FSS pricing for presorted flat-shaped pieces in Standard Mail, Outside County Periodicals, and Bound Printed Matter Flats that destinate in FSS zones. … Third, in this filing [it is] also proposing to introduce discounts for mail on FSS scheme pallets that is entered at the location of the destinating FSS machine (DFSS)." Notice at 16. Notably, specifics in the form of regulations covering the details were published three business days prior to the originally-established deadline for these comments. Since the implications of these regulations may be material to the real cost of FSS service, we find ourselves in a difficult position to comment fully.

C. Additional Preparation Requirements Will Soon Exist for Automation Prices in Standard Mail, Specifically Concerning the IMb.

As we understand it, beginning at the same time the rates proposed in this docket are implemented, the Postal Service will begin requiring pieces to contain Full-Service Intelligent Mail barcodes to qualify for the automation rates in Standard Mail, which are important to catalogers. *See* Federal Register Notice, 78 FR 23137 (April 18, 2013) and DMM Advisory, October 8, 2013. While many catalogs comply already, others do not. It may be a significant burden on the latter group to comply. The alternative is to face rate increases that are prohibitive. [8] This problem is probably greater for flats than for letters.

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[8]   Movement toward the IMb has not been an unmixed blessing. So far we see little or no evidence that it is decreasing Postal Service costs, which has limited the provision of discounts. *** footnote continued next page

In view of the costs, uncertainties, and disruption to mailers of the changes associated with the FSS and of the requirement for Full-Service IMb, ACMA supports minimal disruption in the rates themselves. For all practical purposes, the Postal Service's proposal meets this need.

D. Questions Still Exist about Whether the Costs Being Reported Are Sufficiently Robust to Provide a Basis for Making Significant Rate Adjustments.

When rates are changed, volumes (and associated revenues) change, which generally causes costs to change. Taken together, the revenue changes and the cost changes affect the Postal Service's bottom line. Were this not the case, there would be little reason to change rates.

A principal reason for costing exercises is to quantify the effects of the volume changes on costs. Supported by economic theory, this has led to an interest in estimating marginal costs, often referred to in Commission proceedings as unit volume-variable costs. The question is: if volumes increase or decrease by an amount commensurate with the rate adjustment, how much would costs change? The volume increment here is rather small, but not as small as the nigh-zero changes associated with first derivatives in calculus. Calculus may be helpful in costing, but it should not be taken to dictate the nature of the cost information desired, which is the actual cost change for the actual volume change.

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At the same time, it has increased mailer costs. It remains to be seen how many mailers will find useful the reports on mail status that the IMb allows.

Discussions of costing are often couched in terms of the short-run and long-run notions of economic theory. The short run focuses on the effects of volume changes within a fixed plant or network. The long run focuses on effects when a new plant or network is built from the ground up to produce efficiently a new volume level. Changes of the latter kind tend to occur in the economy over time, to deal with which economic theory was mostly developed, but volume changes within the Postal Service are not accommodated by tearing down old plants and building new ones.

Toward estimating of cost changes that are relevant, meaning *actual* cost changes, postal costing adopts (1) a short run that is similar to the one in economic theory, and, since plants are not torn down and rebuilt, (2) a long run that focuses on *full adjustment* to volume changes. The view in the latter case is that the lowest-cost way to accommodate a volume change is by adjusting *all* inputs, as appropriate, in an unconstrained way, *as though* sufficient time were available. So a short-run cost is constrained by what can be accomplished in the near term, and a long-run cost is unconstrained. Because a constrained accommodation is always at least as costly as an unconstrained accommodation, the expectation is that short-run costs are always higher than (or equal to) long-run costs.

As opposed to a random one, an arbitrary one, or one that bounces around over time for exogenous reasons, all costing guidance countenances a causal relation between the volumes and the costs, of the kind that could be represented by a mathematical function. This explains the common reference to the costs being *caused* by the volume. To be causal, the costs need not be at the efficient level, though separate questions arise if they are not, but they do need to be related to volume in a

systematic, non-arbitrary way.[9] Costs due to excess capacity cannot be said to be causal. They are, rather, excessive and unrelated to volume.

Generally, reported costs can be above the efficient level for one or more of three reasons: (1) poor estimates of costs being obtained, including errors, meaning that the estimates fail to quantify the concepts guiding the estimation process; (2) higher-cost procedures being used instead of best-practice ones; and (3) costs not caused by volume being attributed, such as costs of excess capacity. The second reason might relate to *actual* costs, though too high. The first and third reasons relate to costs that are either not actual or not causal, or both; that is, they do not provide the Postal Service with information on the actual effects of volume changes. Obviously, no utility is associated with making decisions based on effects that do not occur.

It is not easy to determine when costs, as reported, are above the efficient level or when they are invalid as estimates of actual effects. The costing systems are extensive and expensive. And once a costing system is funded, it is generally unworkable to fund another one just so the results can be compared. Even worse, having two estimates available would raise the question of which one is the most accurate. Lamentably, the option to check things via controlled experiment is not available.

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[9]   On this point, 39 U.S.C. § 404(b) requires that "Postal rates and fees shall be reasonable and equitable and sufficient to enable the Postal Service, under best practices of honest, *efficient, and economical management*, to maintain and continue the development of postal services of the kind and quality adapted to the needs of the United States" (emphasis added).

Given all of this, in order to help evaluate costing results, ACMA has developed a cost index.[10] [11] It is easy to calculate from readily available data, which makes it consistent with all those data. The only party raising questions about it has been the Public Representative. Taking various turns, he has done this in reply comments and surreply comments.[12] In response, ACMA has explained that his comments are dominantly erroneous, and appear at many points to reflect a misunderstanding of the matters at issue.[13] To deal thoroughly with associated matters, and to respond specifically to observations he made in his recent surreply comments, ACMA provides an appendix below.

One matter discussed in the appendix is that, mixed in with his first response to the ACMA index, the Representative referred to what he called "[t]he ideal Laspeyres

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[10]   ACMA's cost index was presented first in its Initial Comments in Docket No. ACR2011, February 3, 2012.

[11]   ACMA's cost index helps make comparisons over time, which can raise questions and have implications. The specific question of whether costs are above the efficient level is difficult to answer directly. If costs rise over a period much more than can be explained, this would be consistent with costs being further above the efficient level than they were before. But trends over time being satisfactory would not necessarily argue that the costs are *at* the efficient level. Another way to look into the matter is to compare productivities among offices and processing facilities. If some are found to be surprisingly low, finding the reasons might be informative and helpful, including the possibility that attention may be needed to mail preparation in some areas. On this point, see the discussion in the R97-1 Opinion and Recommended Decision (May 11, 1998, at 116, ¶ 3115) concerning testimony that "if the productivity of the top 25 percent of mail processing facilities were achieved by the remaining 75 percent, it would reduce mail processing costs by 20-25 percent." The same situation is believed to exist today.

[12]   *See* Public Representative Reply Comments, Docket No. ACR2011, February 17, 2012, pp. 9-16; Public Representative Reply Comments, Docket No. ACR2012, February 19, 2013, pp. 27-31; and Public Representative Response to Surreply Comments of the American Catalog Mailers Association (ACMA), Docket No. ACR2012, February 27, 2013, "Surreply Comments."

[13]   *See* Comments of the American Catalog Mailers Association (ACMA), Docket No. R2013-1, November 1, 2012, pp. 8-10 and Appendix II; and Surreply Comments of the American Catalog Mailers Association (ACMA), Docket No. ACR2012, February 20, 2013.

cost index," adding "that the data requirements for calculating [it] are nontrivial."[14] The appendix shows that that proffered index is identically equal to a total-cost index divided by a cost-weighted quantity index, this in the face of the Representative's railings against the usefulness of quantity indexes. Thus, using a cost-weighted quantity index that ACMA has developed, [15] the Representative's own index can be quantified. This alternative index is referred to below as the ACMA-ALT index.

What Do the Indexes Show? Graph 1 shows the ACMA cost index for Standard Flats and Standard Letters, along with the factor price index.


Graph 1
ACMA Cst Indx Std Flts,
ACMA Cst Indx Std Ltrs,
w/ Factor Price Index

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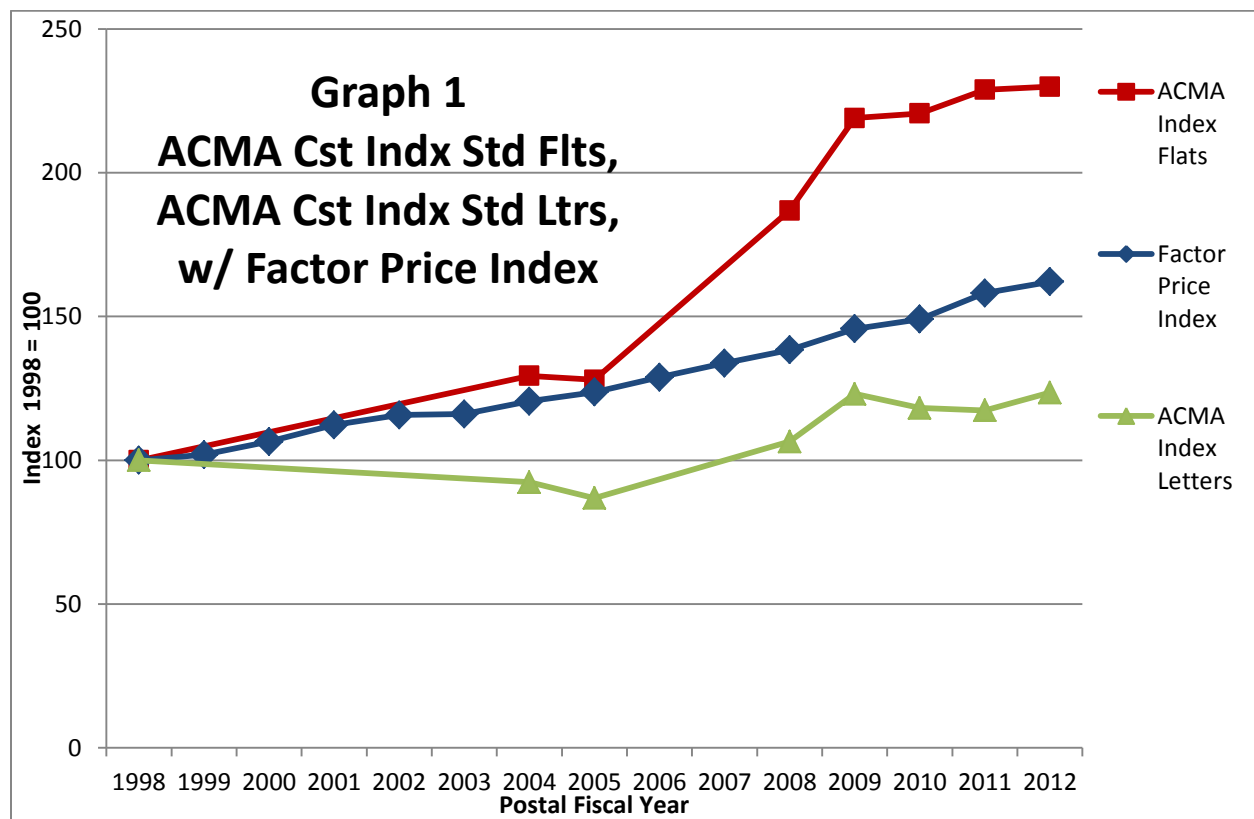
[14]   Docket No. ACR2011, Reply Comments, February 17, 2012 at 10-11.

[15]   See tab 'Std Quant Index' on the spreadsheet filed with these comments, ACMA_R2013-10_Workbook.xlsx. As testimony to the nontrivial nature of developing such indexes, it may be noted that 796 lines on the tab are used. Using data through FY 2011, ACMA presented this same index in Dockets No. ACR2012 and R2013-1.

The importance of this graph is three fold. First, the cost index for Flats is up 129.9 percent, though the factor price index is up only 62.1 percent. This raises questions. Second, the cost index for Letters is up only 23.5 percent, significantly less than the factor price index. The relation between flats and letters invites the question: Why is the cost for letters reasonably in line with what one would expect, but for flats not? Letters experienced a volume decrease just like flats, though a smaller one, but no attendant increase in the cost of letters is apparent. Third, looking at 2012 relative to 2011 for flats, the near-horizontal movement in the cost index despite the increase in factor prices shows some tightening of operations. This resulted in the increase in the cost coverage for Flats reported for FY 2012.

One other observation may be made. Though not shown on the graph, but documented on the accompanying spreadsheet, the *rates* of Standard Flats over this period increased 72.0 percent, somewhat more than the factor price index. When this occurs, the usual expectation is for the cost coverage to increase, even more if there has been technological change (as the Postal Service has claimed). But the cost coverage over the period has *declined* from 108.1 percent to 80.9 percent (spreadsheet tab 'Std Flats'). This is a large reduction in coverage, which suggests a large cost increase, which is shown by the cost index. The figures are consistent.

As discussed above, ACMA has developed an alternate index, based on a *cost-weighted* quantity index, now referred to as the ACMA-ALT index. This index is shown in Graph 2, along with, again, the ACMA index and the factor price index.

Graph 2, Standard Flats, ACMA-ALT Cost Index and ACMA Cost Index, w/ Factor Price Index
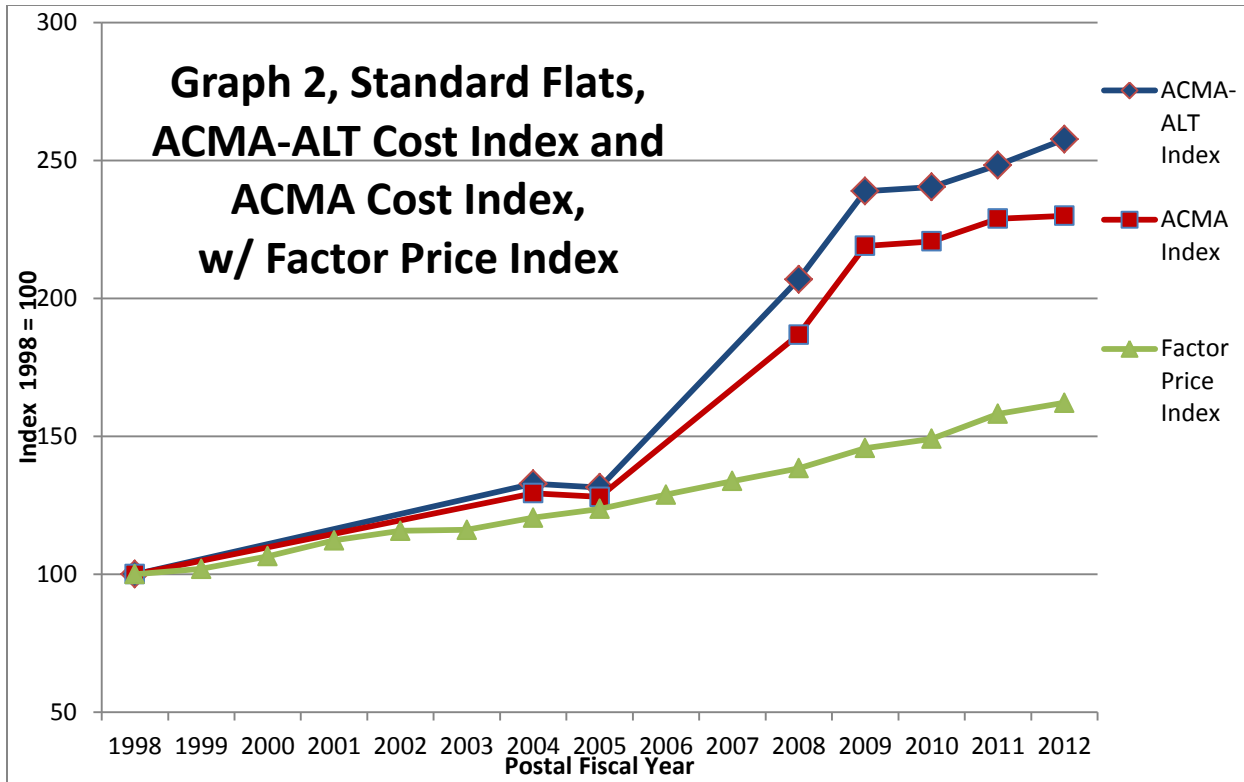
Using this alternate index, our conclusions are even stronger. The increase in unit costs, corrected for volume-mix changes, per the ACMA-ALT index, is 157.6 percent, 27.7 percentage points higher than the ACMA index. Therefore, if one has reservations about the ACMA index and believes that cost-weights in a quantity index are an improvement over price weights, for which there is something to be said, the ACMA-ALT index is evidence that the unit-cost increase for Standard Flats is meaningfully larger than the ACMA index shows.[16]

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[16]   On the surface, the ACMA index depends on the price index and the cost coverage, both calculated and made available by the Commission. But further down, the ACMA index is rooted in a *price*-weighted quantity index. The ACMA-ALT index, on the other hand, is rooted in a *cost*-weighted quantity index. At points, the Representative seems to support reliance on the latter, which is consistent with the index he proffered. It should be noted, however, that the ACMA index has the virtue of being consistent with the cost coverage and the breakdown used in the price index. On this score, it may be noted that if one begins with the cost coverage in 1998, which, obviously, has a numerator and a denominator, and increases the numerator (revenue) by the price index and the denominator (cost) by the ACMA cost index, the result is the reported

*** footnote continued next page

These results put dimensions on a situation that is disturbing. Factor prices increased 62.1 percent but unit costs increased 129.9 percent (157.6 percent if the ACMA-ALT index is used). The difference between these two is substantial. And this happened during a period in which the Postal Service has pointed to technological change and mailers have financed improvements in the way their mail is prepared, including reducing their use of sacks. These would be expected to cause unit costs to increase *less* than factor prices. The question is: how does one explain an outcome like this?

How Does One Explain an Outcome Like This? Various possible explanations exist, but most leave a lot to be desired. We review some of them here.

1. It has been argued that volume declines in recent years explain the increase in unit costs. Proponents of this view envision a marginal cost curve that rises as volumes move toward the vertical axis. It is explained that there are fewer pieces per pallet or bundle, although bulk handling costs are a small part of reported costs. This could be an effect, but it is far from this simple.

> a. While there has been a decrease in the volume of flats, there has also been a decrease in the volume of letters. It is true that the decrease for flats has been larger than the decrease for letters, but the results on letters appear to show no effect at all. This finding argues against a volume effect that is large.
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> b. Some cost categories, like mail processing, which is one of two large ones, have a volume variability that is near 100 percent, and would be 100 percent except for some specific-fixed costs that do not change with

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cost coverage in 2012. The reader may decide on the importance of this consistency. Index numbers are not an exact science, depending for one thing on the way in which the organization and its products are disaggregated.

volume. The costing of these categories is described as long-run in nature, which means that they are costed *as though* the Postal Service adjusts fully to the volume decline. If the unit attributable costs of these categories increase as volume declines, it means either that excess costs are being attributed or that the variability of the costs was wrong in the first place. Fixing this would increase the cost coverage.

c. The other large category is carriers. The in-office time is 100 percent variable and should not increase on a per-unit basis with a volume decline. The street portion has fixed components that are largely identifiable and separable, at least conceptually. These components are not part of unit costs. The variable portions would decline with volume, in some degree. It seems entirely possible that the percent variability of street time would decrease with volume declines. If this is not occurring, there is a suggestion that the attributable costs at the lower volume level are too high. In fact, in many costing areas, percent variabilities may be a function of volume. This needs to be considered in costing exercises.[17]

2. It is possible that the costing results are a reflection of the costs of excess capacity being attributed. In fact, since other explanations fall considerably short, it is *likely* that this is happening. The Presence of such costs has been discussed widely.[18] They can exist for inputs that are normally considered to be variable, such as labor, as well as for other inputs. They are neither causal nor efficiently incurred, and unit costs derived from them are not marginal in any meaningful sense of the term.[19]

Costs that reflect excess capacity not only are too high, but they also are inaccurate and misleading as estimates of the effects of volume changes on the Postal

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[17]   One way to accommodate variabilities that change with volume is to express marginal cost as a function of volume (or perhaps of volume per delivery point; various possibilities exist). In some cases, the marginal cost might be virtually invariant to changes in volume. Another way is to quantify the percent variability as a function of volume. However, since the percent variability is derived from information on the marginal cost, it can be more basic, and perhaps simpler, to work with a relation on the marginal cost itself.

[18]   Even Congress has recognized the possibility of costs of excess capacity and has considered requiring that estimates of them be prepared. *See* H.R. 2309 and S. 1789, 112th Congress.

[19]   *See* further discussion of the costs of excess capacity in ACMA's Initial Comments, Docket No. ACR2012 (February 1, 2013), throughout but particularly pp. 15-18.

Service's finances, a matter of implied importance. That is, the purpose of the rate

change is to improve finances, so the costing needs to reflect what actually happens.

The mechanism here is clear. In the presence of excess capacity, a volume

increase might cause no increase in costs or a small increase in costs. Similarly, a

volume decline might allow no further decrease in costs, or a small decrease in costs,

as it should be presumed that the Postal Service is already doing all it can to tighten

operations and reduce costs. Yet the unit volume variable cost, under a long-run

costing algorithm, will be high, much higher than the actual effect. The actual variability

may be very low, though artificial.[20]

It is often thought that a low variability due to excess capacity is a short-run

phenomenon, peculiar to short-run costing, and that reliance on long-run costs smooths

things out and provides a cost that is related in a more fundamental way to the real

behavioral characteristics of the productive operations. There are a number of

problems with this view.

> a. If a low variability and a low marginal cost, and thus a low effect on
> Postal finances of a change in volume, result from a costing process that
> is viewed as short-run, it may be an accurate estimate of the effect on
> finances, but it cannot be viewed as a legitimate costing process, even
> short-run. To be meaningful, costing theory requires causal relationships.
> Otherwise, one is left with the unacceptable outcome that the behavioral
> characteristics of the productive operation being analyzed, as quantified
> by the marginal costs, can have any value from zero up to at least the
> efficient level. The level seen at a particular point in time becomes
> arbitrary. Mailers should be faced with something real, not a figment of
> wayward costs.
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> b. On the reality that marginal costs could be quite low due to excess
> capacity, the OIG Report on Short-Run Costs and Postal Pricing (*Id.*)
> would countenance calling these costs short-run costs. It would be more

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[20]   On the possibility of using a reduced variability in costing, see OIG Report RARC-WP-
13-004, Short-Run Costs and Postal Pricing, January 9, 2013 at 14-20.

helpful for the OIG to take the position that these costs are real but are not legitimate short-run costs. As explained above, using the short-run cost label, a label of long-standing meaning, devalues it to junk status.

c. On the usefulness of the costs it calls "short-run," the OIG Report advises that "[t]he Postal Service should move towards the use of short-run costs to develop prices if and only if," among other things,[21] "it can reliably determine that the response in demand will generate sufficient additional net revenue" (*Id.* at ii). Mapped out a little further, the need is to recognize that for a rate increase, the change in profitability for the Postal Service is equal to the change in total revenue plus the cost reduction. The change in total revenue is a demand matter; it could be small or negative if the demand is elastic. And under low marginal costs due to excess capacity, the cost reduction could be small. Under these conditions, the effect of a rate increase on Postal Services finances could be *de minimis* or negative. This needs to be recognized.

d. The essence of recognizing the effects of excess capacity is that the marginal cost could be very low. If the total cost of a category is equal to marginal cost times volume, this would indeed lead to a low total cost and a high coverage. In the limit, in fact, if the marginal cost were zero, the implied cost coverage would be infinite. This result is clearly of low usefulness. But it should be understood that shifting to the use of a long-run costing procedure would not solve this problem, and might make it worse. In the face of extra costs due to excess capacity, a long-run costing algorithm would begin with this too-high cost, apply a long-run variability, recognize indirect costs, and arrive at a too-high attributable cost. Proceeding to calculate a cost coverage, using this too-high attributable cost, would provide a too-low cost coverage. Such a cost coverage is just as arbitrary, but more misleading, than a low marginal cost due to excess capacity, as discussed above. Also, such a long-run cost may not achieve the stability often claimed. But even if it does, being stable at a too-high level is not a virtue.

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[21]   One of the "important issues" that the OIG advises must be "considered" is that "[b]ecause short-run costs are more volatile, they can lead to prices that are more volatile" (*Id.* at ii). Under a price cap system, this effect does not play itself out. If a price increase is tempered because of a low (or zero) marginal cost (due to excess capacity), this does not increase price volatility. Another point made by the OIG is that "the use of short-run costs does not lead to a reduction in total costs to the Postal Service (*Id.*). This is inherently true; a cost is there whether it is variable or not.

E. The Elasticity Information Available for Catalogs Is Weak.

The Postal Service files elasticity information each year, on or about January 20. The only elasticity that relates to Standard Flats is one for Regular Commercial, which includes as well Standard Letters (a very large category) and Standard Parcels (a very small category). To the extent that that elasticity is accurate, then, it is dominated by Standard Letters. Equally as bad, the only elasticity that relates to Carrier Route flats is that for Commercial ECR, which includes as well Carrier Route letters, Carrier Route parcels, and the flat/parcel categories of High-Density, High-Density Plus, and Saturation.

But even the figures available may not be accurate, or at least they may have very wide confidence intervals. Since May 14, 2007, five annual rate adjustments have occurred, but only four of these have been recognized in the elasticity work so far. These have all occurred under a price cap. The increases were not large enough or varied enough (among categories or through time) to provide a solid basis for statistical estimation. It is difficult enough to work with a range of economic variables that tend to move together through time, but it gets worse when key variables of interest show limited variation. At best, the confidence interval for the elasticity estimates is very wide.

Whether this applies just to catalogs or to all Standard Flats, we don't know, but it is our finding that the elasticity of catalogs is very high (in absolute value). Many of our members have models that document elasticities in the neighborhood of -1.4. Under these conditions, it appears likely that the volume loss from higher catalog rates will be high, considerably higher than is estimated by the elasticity figures the Postal Service

has filed. When this occurs, particularly if costs are downwardly inflexible, as we believe they are, the effects on Postal Service finances can be quite negative.

II. CONCLUSION.

As explained above, Commercial catalogs are not being rated below cost, adjustments to FSS processing will place a burden on flats mailers, the final step in IMb requirements will require flats mailers to make adjustments, important questions exist about whether the costs being reported are valid, and the elasticity values being reported may be much lower than actual values. In this situation, rate adjustments larger than those proposed by the Postal Service could well do damage to the efficacy of flats mail and the finances of the Postal Service. Caution is in order.

Respectfully submitted,

The American Catalog Mailers Association, Inc.

Hamilton Davison
President & Executive Director
PO Box 41211
Providence, RI 02940-1211
Ph: 800-509-9514
hdavison@catalogmailers.org

Robert W. Mitchell
Consultant to ACMA
13 Turnham Court
Gaithersburg, MD 20878-2619
Ph: 301-340-1254
rmitxx@gmail.com

Appendix of Robert W. Mitchell
Cost Indexes, with Special Attention to the ACMA Cost Index
and Observations on It by the Public Representative

The purpose of this appendix is to provide a general review of cost indexes, with special attention to the index introduced by ACMA in its Initial Comments in Docket No. ACR2011, which has come to be known as the ACMA cost index. Only one party has commented on that index, that party being the Public Representative (hereinafter "the Representative"). His comments reside in three places: his surreply comments in Docket No. ACR2012 and, earlier, his reply comments in Dockets No. ACR2012 and ACR2011. They take several turns. Parts of his submissions suggest that he may agree with the ACMA index, but other parts raise questions. Clarification on a range of associated matters may be helpful.

Four conventions on terminology are followed here. I will note when quotations run afoul of these conventions.

> 1. All references to a "unit-cost index" (sometimes shortened to "cost index") are to a weighted average of the changes in the elemental unit costs of a category. An index-number formula is followed to develop the index. Unit costs are always a cost per unit volume. References may also be made to total-cost indexes.[1]
>
> 2. All references to "volume" (sometimes "piece volume") are to the number of pieces of mail. This is traditional postal parlance. When elemental piece volumes are weighted, either by unit costs or prices,

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[1] A total-cost index does not involve weights. It is simply the total reported cost in a period divided by the corresponding total cost reported in a base period. Coherence is generally taken to require that the periods be of the same length. There is no requirement that the periods be adjacent.

consistent with an index-number formula, the result is referred to as a "quantity" index.[2] A quantity index quantifies the *change* in quantity.

3. All references to a cost are to an attributable cost. A unit cost is the attributable cost divided by the associated piece volume. To the extent an attributable cost is based on notions of volume variability (as this latter term has been used in Commission proceedings), the associated unit cost is a marginal cost.

4. All references to costs are to costs as reported. Whether these costs are efficiently incurred or are an accurate estimate of a relevant cost concept is a separate question.

Particularly with respect to the volume vs. quantity distinction, I may not have honored all of these conventions in the past.

A plenary matter that may need clarification concerns the *purpose* of a cost index. Basically, the purpose is to obtain a measure of the extent of change in the unit cost of a category, corrected for any changes in the associated mix of volume elements,[3] which, for the most part, means changes in the degrees of worksharing.[4] Corrections for such changes are almost always needed. Otherwise, for example, an

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[2]   "Volume indexes" can be constructed. Each would be the piece volume in a period divided by the corresponding piece volume in a base period. No weights would be used. There is nothing wrong with constructing a volume index. But it is important not to credit a volume index with providing information that it does not. For example, a volume index does not provide a measure of changes in workload.

[3]   References in the literature to "product mix" are relatively common, meaning the *proportions* of the various products in a group. In this appendix, mix, volume mix, and mix of volume usually refer to the proportions of elemental volume elements in a category, where the category need not be a product. Breakdowns of volume into elements can be according to price elements, such as proportions at each presort rate, at each pound rate, at each dropship rate, in each machinability category, and so on. And breakdowns can go beyond rate element to differentiating pieces by, for example, weight cell, average haul, and container type. A breakdown more relevant to costing inquiries could be the proportions going through each of a breakdown of cost centers.

[4]   Generally, changes in the degrees of worksharing involve changes in the degrees of presorting, dropshipping, automation compatibility, and machinability. Usually, changes in weight per piece and average haul are recognized only to the extent they are recognized in the rate structure or in the cost centers focused on in the indexes.

increase in worksharing, which would be expected to decrease costs, could mask an increase in the inherent costs of the category. A cost index would quantify that inherent increase.

I know of four basic formulations of cost indexes, each with a Laspeyres and a Paasche variant. [5] In all cases, the way and extent the category or productive operation is disaggregated influences the outcome. Discussed further below, they are:

> **Index #1**—a direct index of unit costs weighted by volumes.
>
> **Index #2**—a total-cost index divided by a cost-weighted quantity index.
>
> **Index #3**—a total-cost index divided by a price-weighted quantity index.
>
> **Index #**4—a Laspeyres price index divided by an index of the cost coverages. This is the ACMA cost index.

To distinguish between Laspeyres and Paasche variants, I will append an "L" or a "P," respectively. Here is a discussion of them.

Index #1L. Perhaps the most straightforward of all cost index formulas, one using period-1 volumes as weights (warranting the "L" designation), and the one proffered by the Representative in his ACR2011 Reply Comments (at 11),[6] is

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[5] The terms "Laspeyres" and "Paasche" (surnames) are usually used in regard to *price* indexes. They are used here, generally, to distinguish between the use of base-period and future-period weights. As will be seen later in the text, however, this distinction loses some of its meaning when it is realized that a Laspeyres index of one kind is identically equal to a Paasche index of another kind.

[6] In introducing this index, the Representative states that "[a] cost index would allow the Postal Service to compare changes in cost that are attributed only to increases ["changes" would be a better word here] in processing costs." Actually, it allows *any* party to make the comparisons, not just the Postal Service. More importantly, it is a bit devoid to speak of comparing changes in costs that are due to changes in costs. It would be much better to refer to comparing changes in unit costs that are not due to changes in the mix of the volume. After
*** footnote continued next page

$$\frac{\sum_{i=1}^{I}(V_{i,1} \ x \ UC_{i,2})}{\sum_{i=1}^{I}(V_{i,1} \ x \ UC_{i,1})} = \frac{\sum_{i=1}^{I}(V_{i,1} \ x \ UC_{i,2})}{TC_1},$$

where the first subscript *(i)* refers the elemental processing operation and the second *(1 or 2)* to the period. The level of detail is that the processing is divided into *I* elemental operations. Each elemental operation should be a meaningful center of processing activity, such as a facer canceller. The analyst would have to decide whether to lump all facer-canceller operations together or disaggregate them, by, possibly, technology and/or facility. The interpretation of the result is conditioned by such decisions. V_i, of course, is the piece volume of the category going through elemental operation i. As shown, the index is understood to have a value of 1.0 in period 1, the base period.[7]

It is clear that the denominator on the left-hand-side of the equals sign is the total cost in period 1, allowing TC_1 to be shown on the right-hand-side. The numerators are what the total cost in period 2 would be if the period 1 volumes (level and mix) occurred in period 2 and the unit costs in period 2 were equal to the unit costs that occurred in period 2.

There are two other ways to look at this formula. First, multiply the numerator and denominator of the right-hand-side by $\sum_{i=1}^{I}(V_{i,2} \ x \ UC_{i,2})$, to obtain

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footnote continued

the formula, the Representative states that if the index went from 100 to 102, it could "be said that the price level of unit costs has increased by 2 percent." At best, the notion of a "price level of unit costs" is a difficult one, perhaps too difficult to be helpful.

[7]   Changing the value of an index in its base period, and adjusting other values accordingly, does not change the information content of the index. Indexes are often set equal to 100 in a base period. Any period with an index value may be selected as the base period. Under some conditions, not relevant here, functions of two or more periods are used as a base, such as using the average of two adjacent periods as a base.

$$\frac{\sum_{i=1}^{I}(V_{i,1} \, x \, UC_{i,2})}{TC_1} \quad x \quad \frac{\sum_{i=1}^{I}(V_{i,2} \, x \, UC_{i,2})}{\sum_{i=1}^{I}(V_{i,2} \, x \, UC_{i,2})}.$$

If the numerator of the second term is replaced by TC_2, and the result is rearranged, this two-term expression becomes

$$\frac{\dfrac{TC_2}{TC_1}}{\dfrac{\sum_{i=1}^{I}(V_{i,2} \, x \, UC_{i,2})}{\sum_{i=1}^{I}(V_{i,1} \, x \, UC_{i,2})}}.$$

This is a total-cost index divided by a cost-weighted quantity index, using period-2 weights in the latter index. Thus this basic Laspeyres cost-index formula, proffered by the Representative, turns out to be identically equal to a total-cost index divided by a Paasche quantity index. This result may raise questions about the significance of the Laspeyres label on the original index, but it certainly confirms such a quotient to be a fundamental formulation of a cost index.

Second, expand the right-hand-side of the original formula above to obtain

$$\frac{V_{1,1} \, x \, UC_{1,2}}{TC_1} + \frac{V_{2,1} \, x \, UC_{2,2}}{TC_1} + \frac{V_{3,1} \, x \, UC_{3,2}}{TC_1} + \cdots$$

Now insert $UC_{i,1}/UC_{i,1}$ into the numerator of each term, obtaining

$$\frac{V_{1,1} \, x \, \dfrac{UC_{1,1}}{UC_{1,1}} x \, UC_{1,2}}{TC_1} + \frac{V_{2,1} \, x \, \dfrac{UC_{2,1}}{UC_{2,1}} x \, UC_{2,2}}{TC_1} + \frac{V_{3,1} \, x \, \dfrac{UC_{3,1}}{UC_{3,1}} x \, UC_{3,2}}{TC_1} + \cdots$$

Rearrange slightly to obtain

$$\frac{V_{1,1} x \, UC_{1,1}}{TC_1} x \frac{UC_{1,2}}{UC_{1,1}} + \frac{V_{2,1} x \, UC_{2,1}}{TC_1} x \frac{UC_{2,2}}{UC_{2,1}} + \frac{V_{3,1} x \, UC_{3,1}}{TC_1} x \frac{UC_{3,2}}{UC_{3,1}} + \cdots$$

Think of this expression as (term 1-1 x term 1-2) + (term 2-1 x term 2-2) + (term 3-1 x term 3-2) + …. Terms 1-1, 2-1, and 3-1 are ordinary cost proportions, in each case the proportion of the total cost of the category accounted for by the cost of the elemental

operation, in period 1. If the first operation is the facer canceller and 15% of the

category's total cost in period 1 is for the facer canceller, then term 1-1 is 0.15. To go

with these proportions, terms 1-2, 2-2, and 3-2 are the period-on-period ratios of the unit

costs of the elemental operations. Thus, the index is the sum-product of the base-

period cost proportions and the ratios of the unit costs. That it is a compilation of the

increases of the elemental unit costs makes intuitive sense. It may or may not be

intuitive that the weights should be the cost proportions, but it is testimony to the

apparent rightness of the math to see that the weights are applied to the ratios of the

unit costs, which are at the heart of the purpose of the index.

     Index #1P. This cost index is the same as Index #1L, except that Paasche

weights are used in the base formulation:

$$\frac{\sum_{i=1}^{I}(V_{i,2} \; x \; UC_{i,2})}{\sum_{i=1}^{I}(V_{I,2} \; x \; UC_{i,1})} = \frac{TC_2}{\sum_{i=1}^{I}(V_{I,2} \; x \; UC_{i,1})}.$$

In this case, the numerator equals the total cost in period 2. The denominator is what

the total cost in period 1 would be if the period 2 volumes (level and mix) occurred in

period 1 and the unit costs in period 1 were equal to the unit costs that occurred in

period 1. The same manipulations as done on Index #1L show that Index #1P is

identically equal to a total-cost index divided by a Laspeyres cost-weighted quantity

index and that it can be viewed as a sum-product of period-2 cost proportions and

period-on-period unit-cost ratios.

     Index #1L uses period-1 volumes as the numeraire, and Index #1P uses period 2

volumes as the numeraire. Both have both Laspeyres and Paasche characteristics,

depending on how they are displayed. The Representative refers to Index #1L as "[t]he

ideal Laspeyres cost index." I know of no sense in which it is "ideal." Both numeraires

are sensible. Suggestions have been made that average weights should be used,

which would lead to a Marshall-Edgeworth index. Fisher would probably suggest the

geometric mean of the two.[8] Fortunately, the differences among the variants are

generally quite small, making the message of each about the same.[9]

Index #2L. Divide a total-cost index by a *cost*-weighted quantity index, using

period-1 costs as weights in the quantity index. The formula would be

$$\frac{\frac{TC_2}{TC_1}}{\frac{\sum_{i=1}^{I}(UC_{i,1} \; x \; V_{i,2})}{\sum_{i=1}^{I}(UC_{i,1} \; x \; V_{i,1})}}.$$

As shown above, if the volume categories used in the quantity index have the same

boundaries as the unit costs selected, this index is identically equal to Index #1P.

Index #2P. Divide an index of total costs by a cost-weighted quantity index,

using period-2 costs as weights in the latter index. As before, if the volume categories

used in the quantity index have the same boundaries as the unit costs selected, this

index is identically equal to Index #1L. It follows that if the Representative wishes to

view the Laspeyres variant of Index #1 as ideal, he must at the same time view the

Paasche variant of Index #2 as ideal.

Index #3L. Divide a total-cost index by a *price*-weighted quantity index, using

period-1 prices as weights. It can be argued that since costs are being analyzed, the

use of a *cost*-weighted quantity index (as in Index #2) might be more appropriate. But

in Appendix II to its R2013-1 Comments, ACMA explained why the use of a price-

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[8]   The geometric mean is the square root of the product of the two indexes.

[9]   Further on in the text, I will present two variants and show that they are very nearly the
same.

weighted quantity index "may be more common" (at p. 11 of 17, n. 9, saying: "First, it is a general presumption that prices in competitive markets tend toward marginal costs, so the two indexes are often very close to each other. Second, prices (and associated volumes) are usually more readily available than costs (and associated volumes). *See* billing determinants. Third, price information tends to be more unequivocal than cost information. And fourth, even when cost weights are used, the categories are often selected to align with the price elements.").

Index #3P. Divide a total-cost index by a price-weighted quantity index, using period-2 prices as weights.

Index #4(ACMA). Divide a Laspeyres price index by an index of cost coverages. This formulation is not obvious, but ACMA showed that it is equal to Index #3P. The Representative has agreed with this equality: "The Public Representative also agrees with ACMA that the ratio of a [Laspeyres] Price Index to a Cost Coverage Index results in the ratio of total costs in period 2 to period 1 times the inverse of a Paasche [Quantity] Index" (ACR2012 Surreply Comments, February 27, 2013 at 3). For this equality to hold, of course, the categories used in the Index #3P quantity index must be the same as those used in this index's Laspeyres price index, but the use of the same categories here is not a demanding requirement—it would probably occur naturally.[10] Attention in proceedings before the Commission has been on Laspeyres price indexes, making the numerator of Index #4 readily available. The denominator of Index #4 (ratios of cost coverages) is readily available as well. These are principal advantages of Index #4(ACMA).

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[10]   It may also be noted that, as suggested by symmetry, dividing a *Paasche* price index by an index of cost coverages gives an index that is equal to Index #3L.

As developed above, the relationships among these index alternatives are laid out in the following table.

Row	Column 1 Reference Cost Index	Column 2 Sister Cost Index (identical if same categories are used)
1	Index #1L	Index #2P
2	Index #1P	Index #2L
3	Index #4(ACMA)(Laspeyres price index)	Index #3P

ACMA has calculated and presented Row 3, Column 1, which provides Row 3, Column 2, since it is natural to use the same categories. This leaves Rows 1 and 2.

The Representative has "recognize[d] that the data requirements for calculating [the Row 1, Column 1] cost index are nontrivial" (ACR2011 Reply Comments at 11). This observation applies by extension to the Row 2, Column 1 cost index. However, given the data that are available, it is somewhat easier to develop the quantity indexes needed for the Column 2, Rows 1 and 2 formulations than for the Column 1, Rows 1 and 2 formulations. Also, once a Row 3, Column 1 index is developed, it can be set equal to an expression for Row 3, Column 2, and the equation can be solved for the price-weighted Paasche quantity index contained implicitly in the Row 3, Column 1 index.

In order to explore these relationships, ACMA developed Paasche and Laspeyres *cost*-weighted quantity indexes (*see* tab 'Std Quant' ACMA_R2013-1_Workbook.xlsx, updated in ACMA_R2013-10_Workbook.xlsx filed with these comments, nontrivial to the tune of 795 lines on the sheet), and also solved for the quantity index implicit in Row 3, Column 1. These were shown in Graph 2 of ACMA's Initial Comments in Docket No. R2013-1 at 8, reproduced below.

Graph 2
Quantity Index Implied by ACMA 2011 Cost Index
and
Direct Quantity Indexes, Period 1&2 Weights
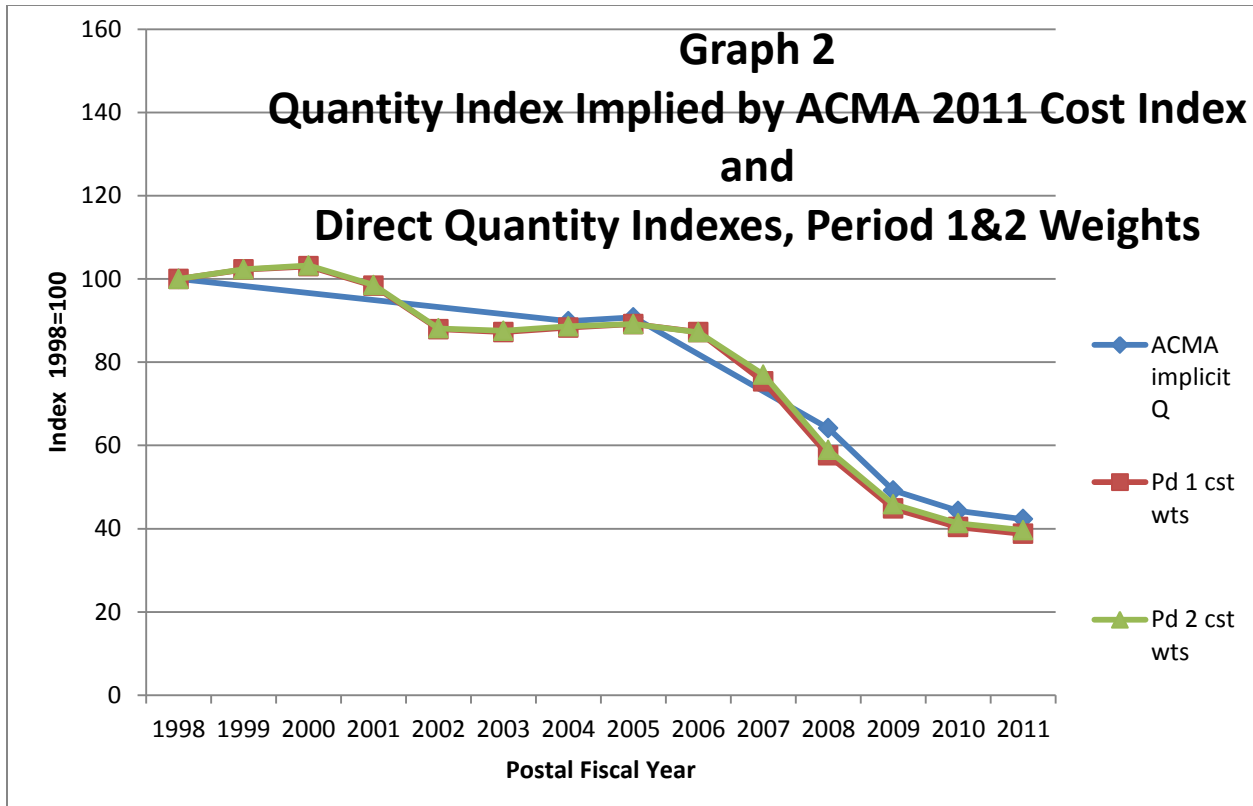
It is seen that the Paasche ('Pd 2 cst wts') and Laspeyres ('Pd 1 cst wts') cost-weighted

quantity indexes are almost indistinguishable, and that the price-weighted quantity index

implicit in Row 3, Column 1 ('ACMA implicit Q') falls slightly less over the FY1998-2011

period than the two cost-weighted quantity indexes.

The finding, then, is that the cost indexes based on cost-weighted quantity

indexes (Rows 1 and 2, Column 2) rise slightly more over the period than the ACMA

cost index (Row 3, Column 1). *See* Graph 3, *Id.* at 9, reproduced below, showing the

Row 2, Column 2 cost index as 'Pd 1 cst wts' and the Row 3, Column 1 cost index as

'ACMA 2011.'

Graph 3, Standard Flats Cost Index Implied by Quantity Index and 2011 ACMA Cost Index
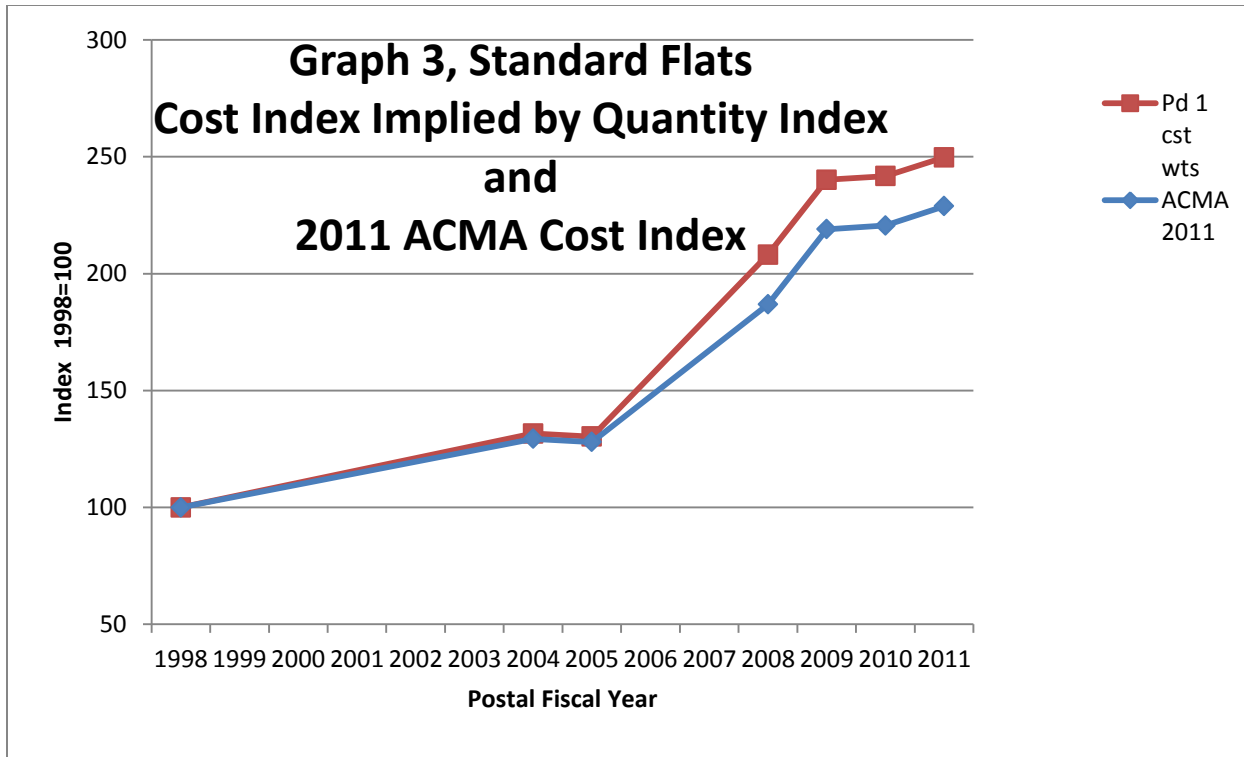
This is strong confirmation of the ACMA cost index. And if an inordinately rising cost index is taken to suggest trouble with the reported costs, it means that the situation is worse than initially thought.

Still, in the end submitting surreply comments, the Representative has concerns. These are reviewed below.

1. Continuous Growth Rates. Initially, at least, the Representative argued that "ACMA's measurement of the rate index is flawed" (ACR2011 Reply Comments at 10). Although ACMA did not at any point "measure" a rate index, he was referring presumably to the Laspeyres rate index that is the numerator of Index #4. He suggested taking the natural log of a price ratio, but did not clarify whether he would take logs of the Commission's Laspeyres-price-index results or whether he would inject logs of ratios of price elements into the basic Laspeyres price-index formula.

In Appendix II to ACMA's R2013-1 Initial Comments (pp. 2 of 18 through 9 of 18), I explained that natural logs are used to find continuous growth rates, as in interest on money being compounded continuously, but that postal rates do not change continuously. Also, if a non-Laspeyres index were used in the formula for Index #4, it would no longer be equal to a ratio of a total-cost index to a price-weighted quantity index. It would therefore be more difficult to interpret and would lose its pedigree as a cost index.

2. Price Weights vs. Cost Weights. Going into somewhat more detail, the Representative refers to the quantity index implicit in ACMA's cost index, and states: "This [quantity] index, however, is a measure which holds the rate constant in period two, not the unit cost, and allows the volume to vary" (ACR2011 Reply Comments at 12). It is of course true that the ACMA cost index contains a price-weighted quantity index. I explained above why this produces a legitimate cost index and why such a cost index is often used. Also, as explained above, I developed cost indexes based on *cost-*weighted quantity indexes and showed that they rise somewhat more than the ACMA index.

In an attempt to "demonstrate[] … that [Index #4(ACMA)] does not identify a constant volume growth rate of unit costs" (*Id.* at 12), the Representative presents an appendix (*Id.* at 14-16) that shows manipulations on a definitional identity. But all he succeeds in doing is showing that taking differentials of an identity does not obviate the

need for index numbers.[11] This result is hardly surprising, as identities contain no weighting scheme, no invariant numeraire, and have little or no empirical content.[12]

        3. Order of Calculation. The Representative observes: "It is worth noting that the formulas presented in Mr. Mitchell's 2011 Comments do not match the formulas he used in his spreadsheets" (ACR2012 Reply Comments at 29, footnote omitted). He repeats this on the next page. What he has observed is this:

> **First Path, t**ake two steps: (a) divide the price index by the cost coverage, and then (b) divide this result by a similar result for the previous year, to obtain the final cost index.

> **Second Path, t**ake one step: (a) divide the price index by an *index* of the cost coverages, which yields the final cost index directly.

The fact is that it makes absolutely no difference which path of calculation is followed.[13]

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[11]   In his R2012 Reply Comments (at 28-29), the Representative described his manipulations as a "proof that the ratio of a price index to cost coverage is not a Laspeyres cost index." A correct focus would have been on the ratio of a price index to a *cost coverage index*. But he did not even purport to begin with the ACMA index and show what it is or is not; he began with an identity on total cost, which provided no way to focus separately on the changes in the various unit costs or to weight them.

[12]   At the end of his "proof" in his R2011 Reply Comments, the Representative states (at 16): "In other words, … the growth rate of total costs is equal to the growth rate of the entire sum $\sum_{j=1}^{J} V_{j,t}\, x UC_{j,t}$." Since $\sum_{j=1}^{J} V_{j,t}\, x UC_{j,t}$. is equal to total cost by definition, his finding is simply that *the growth rate of total cost is equal to the growth rate of total cost*.

[13]   This is relatively easy to see. Let's pick numbers that are unreasonable, but easy to follow. Suppose the price index is 100 in year 1 and 150 in year 2. And suppose the cost coverages in the two years are, respectively, 2.0 and 1.5 (percentage cost coverages of 200% and 150%, respectively).

     One approach is to divide the price indexes by the cost coverages, getting 50 in year 1 (100 / 2.0) and 100 in year 2 (150 / 1.5). If the year 2 result is divided by the year 1 result, implying the final index is 1.0 in year 1, we get 100 / 50 = 2.0

*** footnote continued next page

It is not uncommon, and not wrong, for actual calculations to take slightly different steps from the variables identified as meaningful in the theory. Problems arise, however, when one stops half way through, as the Representative did. For example, in his Surreply Comments (at 5, n. 8), the Representative arrives at the formula $\frac{V_1 P_S}{V_1 P_1} \cdot \frac{V_2 UC_2}{V_2 P_2}$, which, in words, is the price index in period 2 divided by the cost coverage in period 2. The Representative then makes observations on this expression. In terms of the two paths identified above, he has stopped after step (a) in the First Path. This makes his conclusion wrong.

    4. Further Explanation Is Baffling. Just after discussing the order of division in ACMA's spreadsheet, the Representative shifts to the Appendix in ACMA's ACR2011 Initial Comments, and, using notation that omits summation signs and category subscripts, explains:

> After simplifying, [Mr. Mitchell] correctly presents the following terms:

$$\frac{V_2 UC_2}{V_1 UC_1} \cdot \frac{V_1 P_2}{V_1 P_2} \qquad (4)$$

> He correctly describes the first term as the ratio of total costs in period 2 to period 1, and correctly describes the second term as a Paasche [quantity] index. Instead of deriving a rate or cost index, Mr.. [*sic*] Mitchell has derived a [quantity] index. A [quantity] index is useful for determining the change in volumes if costs or prices are kept the same. He claims that a [quantity] index solves "the mix problem" by holding volumes constant at different prices. [with "volume"

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footnote continued

Now suppose we create an index of the cost coverages. Taking the index to be 100 in year 1, the cost-coverage index in year 2 is 2.0 / 1.5 x 100 = 75. Dividing the price index in year 2 by the cost-coverage index in year 2, we get 150 / 75 = 2.0, which is the same answer we got before.

replaced by "quantity" 4 places, which is believed to be a
correct interpretation]

ACR2012 Reply Comments at 30 (citation omitted). It is true that the first term is a total-cost index.[14] It is also true that the second term is a price-weighted quantity index using future-period (i.e., Paasche) weights. But it is flat-out wrong to state that the product of these two terms is a quantity index. Rather, the product is equal to Index #4(ACMA), which, as shown above, is equal to Index #3P, which, as explained above, is a legitimate cost index. Also it is flat-out wrong to suggest that the intent was, or might have been, to develop a rate index. The intent (and the outcome) from the start has been to develop a cost index. The Representative understood this intent in his first response to the index, when he referred repeatedly to the "proposed cost index" (e.g., Reply Comments, Docket No. ACR2011 at 9). Further, it is nonsensical to suggest that a quantity index is useful for determining "the change in volumes if costs or prices are kept the same." And a quantity index does not solve a mix problem "by holding volumes constant at different prices," whatever that may mean.

If the Representative means that the ACMA index is the ratio of a total-cost index to a price-weighted quantity index, he is correct. I explained this above, and explained why the result is a cost index. I also calculated a cost index based on a *cost*-weighted quantity index, and showed that it is little different. The Representative has not identified a difficulty.

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[14]   In the case of total costs, since no weights are involved, there is no difference between a total-cost ratio and a total-cost index. TC_2/TC_1 is an index of the total cost in period 2 with the understanding that the index in period 1 (the implied base period) is 1.0.

5. Surreply Comments. After the Representative's reply comments of ACR2012, ACMA filed Surreply Comments that pointed to specific errors of the Representative. He then responded with a "Response to Surreply Comments." His Surreply has three sections. Section III, among other things, repeats his confusion over the order in which the calculations are done, which I explained above. Excepting this matter, all three sections are dealt with below.

In Section I, the Representative argues that "ACMA does not make meaningful *use* of its cost index" (at 1, emphasis added), apparently signaling that the index itself *is* meaningful. The matter of how the index might be used, however, though important, was not a matter addressed in ACMA's Surreply.

Going further nevertheless, the Representative argues that "ACMA's index is not needed to demonstrate that since 2004 there has been a difference between the change in the unit costs of Standard Flats compared to all other mail" (at 2). But this neglects the problem and addresses a different question.

Suppose there is interest in how much the average weight of high school boys at a particular school increased over the 1990 to 2000 period, much like being interested in how much the average cost of Standard Flats has increased. And suppose that, due to students entering, relocating, and graduating, the proportion of frosh in 1990 is very high (say 75%) and the proportion of Srs. in 2000 is very high (say 75%). Comparing 2000 to 1990, it might be sensible to compare the average weight of frosh boys, the average weight of soph boys, the average weight of Jr. boys, and the average weight of Sr. boys, and even to average or otherwise weight these increases to get an increase

for all boys. As a second step, it might be interesting to make the same comparisons for the girls, much like Standard Letters.

But what the Representative has argued is that no frosh-to-frosh, soph-to-soph, Jr.-to-Jr., or Sr.-to-Sr. comparisons are "needed to demonstrate that [from 1990 to 2000] there has been a difference between the change in the [average weight of all boys in the school] compared to [the change in the average weight of all girls in the school]." This is a patently absurd thing to say. First, the original question related to the increase for boys. Second, it is obvious that the high proportion of Srs. in 2000 might cause the average weight of all students in 2000 to be higher than in 1990, even if there were no weight-gain problem.

The Representative has a right to be interested in the average weight of all boys (or girls) in the school in 2000 compared to 1990, even though the result defies rational interpretation, but he does not have a right to change the question. More particularly, it is a non sequitur to say that a technique to answer the original question "is not needed" because a replacement question can be answered easily. He has neglected the original problem and introduced an irrelevant comparison that cannot be interpreted.

In Section II, the Representative (a) agrees that he made math errors in his Reply Comments ("did not properly cancel terms in equations 1-3" at 3), (b) agrees that the ACMA cost index "results in the ratio of total costs in period 2 to period 1 times the inverse of a Paasche Volume Index" (at 3), and (c) clarifies his understanding that the desired cost comparison "is properly accomplished by using the same volumes in both periods, and letting only unit costs change" (at 4), which points to the cost index he proffered early on, which is Index #1L, which I have shown to be identically equal to a

total-cost index divided by a cost-weighted quantity index. The only difference, then, between the Representative's index and the ACMA index is whether to use cost or price weights in the quantity index. I have explained why price weights are often used and that the data requirements for the ACMA index are much less formidable (indeed the data are readily available), and I have shown that the difference between the two is small, the cost index using cost weights coming out a little higher. The Representative is imprecise in some of his expression,[15] but I see no difference in our basic positions.

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[15]   Here is some remaining imprecision, all from the Representative's Surreply Comments.

(1) "A [quantity] index is not an appropriate index to employ when the task is to remove the effects of changes in worksharing discounts on attributable costs" (at 4). This is a nonsensical statement. The link between a change in a discount and a change in cost is indirect at best, and no one has asked whether any such effect can be removed. But even if the Representative means that a quantity index cannot be used to help remove the effects of changes in the mix of volume elements on unit costs, he is wrong. ACMA has shown that when used with a total-cost index, a quantity index is precisely appropriate. Even the cost index proffered by the Representative contains a quantity index, as shown in the text.

(2) As an explanation of why it is not "appropriate [] to employ" a quantity index, the Representative proceeds: "In this case, the task is to develop a measure that … us[es] the same volumes in both periods, and let[s] only unit costs change" (at 4). In and of itself, this sentence is basically right, but, as shown in the text, doing exactly what he says, using his own formula, does in fact employ a quantity index, at least implicitly. He points away from a quantity index, toward an index that has a quantity index embedded in it.

(3) "If one were to hold unit costs constant and let volumes vary, as does ACMA's index, one would have a measure of how much volume would change if unit costs were constant" (at 4). ACMA's index does not hold unit costs constant. It is shown to be equivalent to using the same prices in the numerator and denominator to weight changes in volume to create a quantity index, to be used with a total-cost index. But even if this is what the Representative had in mind, neither the quantity index nor the cost index is "a measure of how much volume would change if" prices were constant. The quantity index tells instead how much the quantity changes, using unchanged prices as the numeraire.

(4) "If one wants to compare the output of a product over time, a [quantity] index would be the appropriate measure, since only constant-price volumes are being compared" (at 4). It is not clear what a "constant-price volume" is or that any of them are being compared. But perhaps the last phrase should be "since weighting the various volume elements by price, and using the same price in the numerator and denominator, is a meaningful way to compare the amount of output in each period."
*** footnote continued next page

In Section III, in an effort to clinch all controversy, the Representative goes back to a final-result formula for the cost index in the spreadsheet accompanying ACMA's Initial Comments In Docket No. ACR2011 and purports to show that the formula "is not a cost index" (at 5, footnote omitted). Actually, under assumptions he makes, he shows that the formula is in fact a cost index, though disguised.

In several steps, the Representative expands a formula in column M of tab '3-Std Flt' of ACMA's spreadsheet (Response to Surreply at 5). To be specific, let's look at cell

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footnote continued

(5) "In contrast [to "compar[ing] the output of a product over time"], if one is interested in comparing the unit cost of a product over time, a unit-cost index … would be the appropriate measure, since only constant volume unit costs are being compared over time" (at 4). The first part of this sentence is correct, and I work in the text with the Representative's own cost index. But the last part is not correct, since the unit costs being compared are those that actually occur in the various periods. It is not clear what is meant by "constant volume unit costs."

(6) Referring to the rate increases by year in ACMA's spreadsheets, the Representative states a concern that "[s]ome years the percentage increase in price is simply $\left(\frac{P_2}{P_1}\right)$" (at 5, n. 8). This is difficult to understand. It is true that some of ACMA's price increases are calculated on the sheet and some are brought in, but they are all Laspeyres price indexes, using the usual Laspeyres formula. Furthermore, there is no such thing as a concept of P_i which could be used to calculate the ratio pointed to by the Representative. If ACMA has made an error in gathering or developing rate increases, the Representative should point to the error and, if possible, supply the correct rate increase.

(7) Pointing to a multiplication by $\frac{V_1 P_S}{V_1 P_1}$, the Representative refers to "multipl[ying] by the percentage change in prices using the Commission's price cap methodology" (at 5, n. 8), and then points to implications of doing this. The multiplier here is clearly a Laspeyres price index, as I believe it should be. However, it is not apparent that "the Commission's price cap methodology" is in any way involved or has implications, except that any price changes that occur would be expected to comply with the cap, which would apply to the class of the category being analyzed. It would be appreciated if the Representative would explain how the cap methodology is used and how that use is different from the straightforward use of a Laspeyres price index.

(8) "The Public Representative requests the Commission to review ACMA's cost index and determine whether, as presented, it is a useful tool for measuring the true cost of Standard Flats" (at 6). The index does not "measure the true cost" of any category, regardless of how it is applied. It simply quantifies the increase in the unit costs of the category, as reported, corrected for changes in volume mix.

M22, which links to years 1998 and 2010. Assume 1998 is year 1 and 2010 is year 2. Nothing is lost in doing this, because the years need not be adjacent. M22, labeled as a cost index in the spreadsheet, is equal to M10 x L22 / L10. In turn, L22 is G22 / I22, and L10 is G10 / I10. Since M10 and G10 are both 100, being base-period values for indexes, they cancel and cell M22 becomes equal to (G22 / I22) x I10. Looking further, G22 is the rate index in year 2, I22 is the cost coverage in year 2, and I10 is the cost coverage in year 1.

At this point, adopting R for revenue and C for cost, the Representative assumes that the rate index in year 2 is R_2/R_1. That is, he assumes the rate index (G22) can be represented by the revenue ratio. This assumption is valid only if there is no volume change, mix or level, between year 1 and year 2. This assumes away all need for index numbers, but it is an assumption that can be made. Next, the Representative assumes that the cost coverage in year 1 is 100%, so that I10 = 1.0 and can be dropped. With these assumptions, cell M22 becomes equal to $(R_2 / R_1) / (R_2 / C_2)$, a formula he shows in the middle of page 5. Cancelling R_2, this reduces to C_2 / R_1, which leads to a statement that "C_2 / R_1 is not a cost index" (*Id.*). But, if a little thought is given to the assumptions made (that there is no volume change [mix or level] so that the revenue ratio is a price index, and that the cost coverage in year 1 is 100% [allowing cell I10 to be dropped, as he did]), it becomes clear that C_2 / R_1 is in fact a cost index for year 2, with a value of 1.0 in year 1, the implied base year. This means that the Representative has proved precisely what he set out to disprove.