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UNITED STATES OF AMERICA
POSTAL REGULATORY COMMISSION
WASHINGTON DC 20268-0001

Before Commissioners:

Ruth Y. Goldway, Chairman;
Tony L. Hammond, Vice Chairman;
Mark Acton;
Dan G. Blair;
Nanci E. Langley

Estimating Volume Changes from Pricing Incentive Programs

Docket No. RM2010-9

INITIAL COMMENTS OF THE PUBLIC REPRESENTATIVE CONCERNING METHODS TO ESTIMATE VOLUME CHANGES CAUSED BY PRICING INCENTIVE PROGRAMS

(July 9, 2010)

I. INTRODUCTION

Commission Order No. 469 initiated the current rulemaking to "investigate methodologies for estimating volume changes due to pricing incentive programs."[1] The Order assigned the undersigned as Public Representative. Pursuant to that Order, the Public Representative hereby files the following comments.

II. METHODOLOGICAL PRINCIPLES

Quantity discounts are common in many industries, ranging from manufacturing to logistics to consumer goods. Economic research has shown that when buying a larger

[1] Order No. 469, Notice of Proposed Rulemaking Concerning Methods to Estimate Volume Changes Caused By Pricing Incentive Programs, (June 8, 2010).

quantity of goods from one supplier, consumers expect to receive a quantity discount.[2] In the logistics industry, the benefits of providing consumers incentives to minimize end-to-end costs, particularly focusing on full truckloads, are widely recognized throughout economic research. Much of the economic research has focused on how to measure and maximize supplier profit.[3] The research assumes that the efficiency of competition forces profit maximizing behavior from each supplier; companies cannot afford to offer money-losing discount schemes, and such schemes are often determined through game theory strategies in coordination with competitors. Comparatively little research focuses on quantity discounts offered by monopolies. In the 1953 paper "The Theory of Monopolistic Quantity Discounts," Nobel Prize winning economist James Buchanan stated that, "there would appear to be little reason why a monopolist should introduce quantity discounts reflecting precisely the change in costs."[4] He assumes that due to the price-setting power held by a monopolist, by introducing quantity discounts the monopolist would look to increase profit (and not only quantity). As discussed by Buchanan, the key to maximizing producer surplus is to match the cost curve of the supplier with the demand curve of the buyer. There are a few pieces of data that are required to perform such a task. The necessary information is vital to establishing the ideal method for the evaluation of profits derived from a pricing incentive program.

The following chart details the additional producer surplus derived from offering a quantity discount using the cost curve of the supplier and demand curve of the buyer. The profit of the supplier is estimated by comparing the additional profit from box A with the leakage discounts from box B. This chart, and the equations and information used to develop it, can be used for both a homogenous group of buyers (one chart with the

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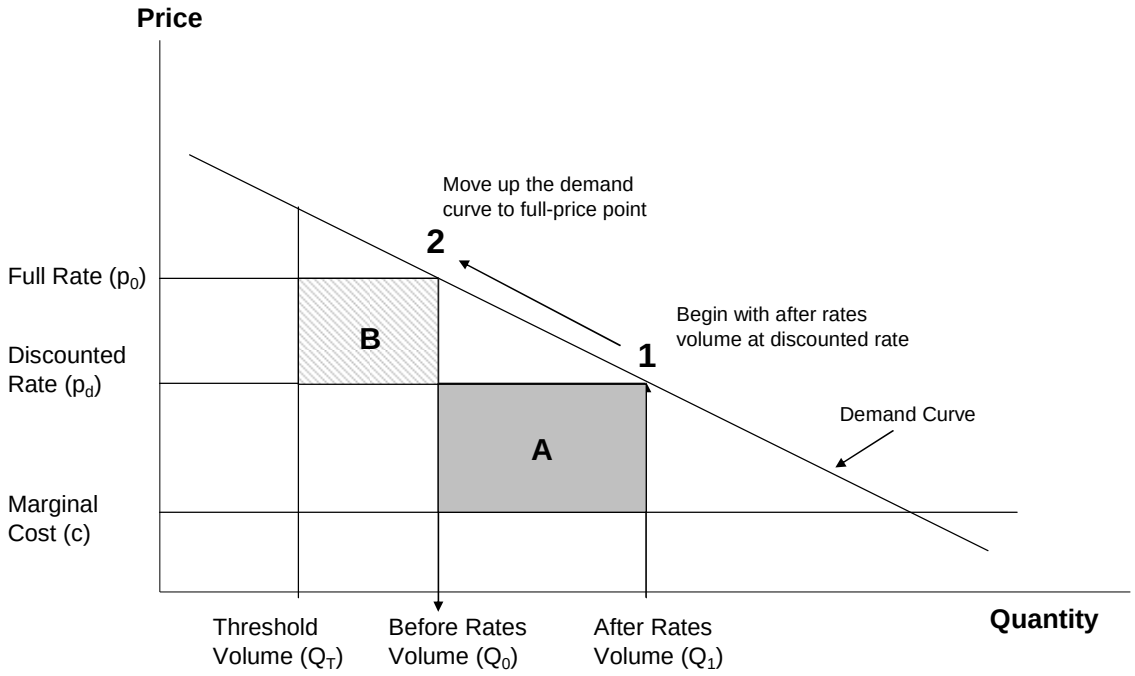
[2] Nason, Robert and Albert Della Bitta (1983), "The Incidence and Consumer Perceptions of Quantity Surcharges," *Journal of Retailing*, 59, pp. 40-54.

[3] Lee, Hau and Rosenblatt,Meir (1986), "A Generalized Quantity Discount Pricing Model to Increase Supplier's Profits," *Management Science* Vol. 32 No. 9 pp1177-1185.

[4] Buchanan,James (1953), "The Theory of Monopolistic Quantity Discounts," *The Review of Economic Studies*, Vol. 20 No. 3 p 199.

same demand function) and for each buyer among a heterogeneous group of buyers (multiple charts with different demand functions). The method for determining a monopolist's profit from a pricing incentive program should also take into account whether the cost function for the supplier is homogenous across many buyers.



There are 5 key pieces of data:

1. The After Rates Volume
2. The Threshold Volume
3. The Discount in Price
4. The Marginal Cost of the Supplier
5. The Slope of the Buyer's Demand Curve

Of this data, three pieces are readily available. The buyer's total volume during the discount period is available from the mailer's permit statements, the threshold volume is

available from the discount schedule, and the discount price is available from the discount schedule. The other data is less straightforward to develop.

a. Cost Data

In most of the Pricing Incentive Programs offered by the Postal Service (e.g. MC2002-2 (ACS), R2009-3 (excess capacity)) the Postal Service has claimed reduced marginal cost on incentivized pieces. Accurately capturing this reduced cost is essential to estimating the value of the incentive. In the case of excess capacity, due to either secular or seasonal causes, it is important to develop the marginal cost of the incentivized pieces through econometric models similar to those used in the ACR process. In response to R2009-3 CHIR No.1, the Postal Service stated that, "there is and will continue to be material excess capacity in city carrier street activities and operational experts are confident the additional volume caused by the Standard Mail Volume Incentive Program can be handled without incurring additional city carrier street time costs."[5] This qualitative analysis forces an inaccurate estimation of the cost function and will lead to a less accurate estimation of incremental profits. The information provided during the ACR process contains the best current estimates of the Postal Service's incremental costs. The Rulemaking process allows the Postal Service to propose adjustments to costing methods. If the ACR methods are unsuitable for the purpose of estimating incremental costs for incentivized volume, proposals should have to follow the Rulemaking process to ensure that they meet the necessary economic rigor (the 90 day Rate Case process does not allow for substantial review of new costing proposals). In the Ideal Model, the marginal cost of the supplier relates to the specific cost of a specific buyer. With respect to the Postal Service, there is a wide variety of cost-causing characteristics, ranging from machineability to bundle density to dropshipping profiles. The methods currently used in the ACR process to estimate cost

[5] R2009-3 Response of the United States Postal Service to Chairman's Information Request No.1, (May 15, 2009) p.20.

by rate category produce average costs across a wide set of heterogeneous mailers. However, the very purpose of those rate categories is to create smaller subsets of mailers for whom cost-causing characteristics are largely homogenous (e.g. Standard Mail 5-Digit presorted automation Letters less than 3.3 ounces entered at a DSCF). Due to the magnitude and complexity of Postal Service operations, the relationship between the size of a buyer and the buyer's cost cannot easily be compared many private firms (where scale economies exist on a per order basis and transaction costs on a per order basis can be optimized). If there is an economically valid reason to believe that costs vary by mailer (or by season), the Postal Service can (and should) produce a study that proposes more appropriate costs. Without such a study, an appropriate proxy for the supplier cost function is the unit cost developed for the worksharing models, and provided for "special classifications" in ACR2009-USPS-LR27.

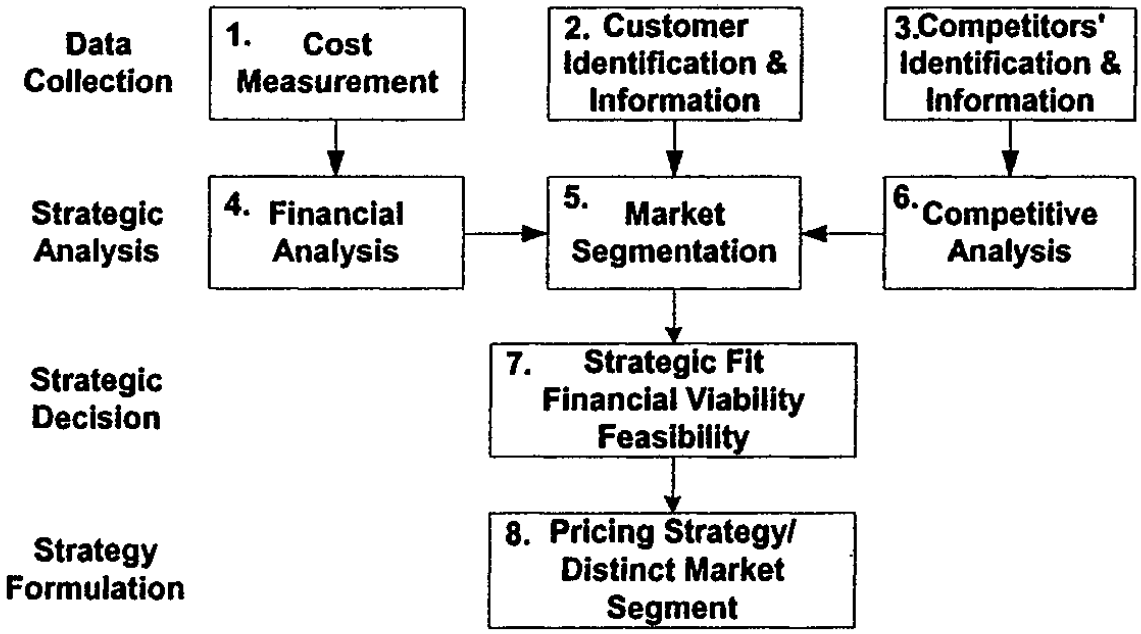
b. Demand Data

Estimating the demand function is the most important and difficult task when faced with building a monopolist quantity discount profit model. The economic research on quantity discounts, which largely focuses on competitive firms, offers no relevant solutions other than using a demand elasticity model. Developing a mailer specific demand is unlikely to produce rigorous and valid results. However, the model does not have to be mailer specific. As discussed above, there is no expectation that mailer-specific costs would improve the accuracy of the model as long as homogenous groups of mailers can be found. The same is true of demand. The following chart is from a paper concerning Postal Pricing Innovation published by persons with expert knowledge of the Postal Service and its markets.[6] The chart details how a Post can group mailers into market segments, and derive a pricing strategy. This strategy would require more

[6] Adra, Ayub, Crum, Plunkett (2004), "Pricing Innovation for a Transitioning Postal Administration" Competitive Transformation of the Postal and Delivery Sector. Massachusetts, Kluwer Academic Publishers p.376.

detailed demand regressions and information gathering, a process which should be aided by the incentive programs implemented by the Postal Service thus far.

Figure 2: Conceptual Framework for Pricing Innovation



The primary difficulty of developing more specific demand equations remains. While the information available to the Postal Service for estimating demand increases with every pricing incentive, the actions of the Postal Service in developing a rigorous demand model appear to move in the opposite direction, and a qualitative understanding of demand appears to be driving pricing decisions. In the most recent demand model provided to the Commission, [7] the Postal Service removed the Cross-Price Elasticity between Standard Mail Regular and ECR. These products have a clear pricing relationship for at least one major market segment- catalog mailers; "the Postal Service

[7] Market Dominant Demand Analysis Materials in Response to Rule 3050.26, (January 20, 2010)

finds that these mailers view Standard and Carrier Route Flats as essentially the same product."[8] Yet, when developing demand models, no attempt is made to provide rigorous and meaningful analysis of this market segment. In the most recent price increase, the same qualitative logic is used to determine the price increase for this market.[9] Since the Postal Service is unable to develop mailer-specific demand functions and unwilling to develop market segment specific demand functions, the only remaining option is to use product specific demand. It may seem that product-specific demand is unlikely to yield a valuable estimate, as the set of buyers is largely heterogenous. But those same demand functions are used in the most recent Rate Case (R2010-4) to estimate the additional revenue from a price increase on the same mailers. The alternative of using mailer history to estimate Before Rates Volume is neither rigorous nor accurate, as discussed in the Comments of the Public Representatives in Docket No. R2010-3.[10] Mailer volume history varies too much to create a demand curve. The lack of information needed to estimate an econometrically rigorous demand elasticity for a given mailer should not be taken as an invitation to use the most recent quantity demanded as the best indicator of future demand.

III. CONCLUSION

PAEA does not mention quantity discounts, or volume incentive pricing programs, but it does discuss the Commission's role with regard to "special classifications." §3622 (c)(10) states that "special classifications," the manifestation of Pricing Incentive Programs in the product list, are desirable if they increase contribution (profit). As such, the Commission has a responsibility to ensure, to the best extent possible, that the successes of such incentives are measured accurately. Quantity discounts are popular

[8] Docket No. R2010-3 United States Postal Service Notice of Market-Dominant Price Adjustment, (February 26, 2010) p. 7.

[9] Docket No. R2010-4 Statement of James M. Kiefer on Behalf of the United States Postal Service, (July 6, 2010) at 29.

[10] Docket No. R2010-3 Comments of the Public Representatives, (March 22, 2010) pp.4-15.

among competitive businesses (such as UPS and FedEx), but they have clear cut profit motives and their customers have options for perfect substitutes. In a 1986 paper, Robert Dolan provided the following anecdote concerning quantity discount schedules:[11]

> When asked about quantity discounts policy, one marketing manager replied: 'well, I am not sure I know why we do it that way except that that's the way it was printed in the pricing book when I arrived.' Another common reply was 'that's the way X (a competitor) does it and we have to be competitive.' Finally, a management consultant specializing in the grocery business summarized practice in that industry by saying, 'I've never seen one that makes sense.'

The Postal Service does not have the luxury of pricing to match their competitors; it cannot directly compare its discount schedule to the comparable prices of non-perfect substitutes to evaluate the additional profit from such a schedule. Quantity discounts, while at times are allegedly nonsensical in private practice, are designed not to maximize **total consumption** of a good and all of its perfect substitutes, but rather **supplier specific consumption**. The quantity consumed is a function of demand. The method to determine profit as a function of volume must include an estimate of the elasticity of demand.

The Public Representative respectfully submits the preceding Comments for the Commission's consideration.

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[11] Dolan, Robert, "Quantity Discounts: Managerial Issues and Research Opportunities" *Marketing Science* Vol. 6 No. 1 pp.1-22.