



ADVO, INC. INTERROGATORIES TO OCA WITNESS SMITH (OCA-T-3)

**ADVO/OCA-T3-6.** On page 3 (lines 14 to17), you state that: “Clearly delivery points should also be included [in the City Carrier cost model], for carriers need to pass each delivery point in order to complete the route: one of the outputs of the delivery process is the passage by a carrier past a delivery point whether or not any mail is delivered.” On page 8 (lines 9-11), you state: “Density should measure the degree of proximity of delivery points, possibly providing information on congestion or carrier route miles to be driven.”

- (b) With respect to a city carrier passing by a delivery point, if different zip codes have different average distances among delivery points (*ceterus paribus*), would that make a difference in the amount of time (output) the carrier must spend on passing by each? Please explain
  
- (b) Should carrier route miles to be covered within a zip code be considered a constraint on management efforts to minimize carrier delivery costs? Please explain.

**ADVO/OCA-T3-7.** On page 6, line 10 you state that: “Density is an output of the process, not an input to the process. Density is determined partly by how the route is designed and partly by the characteristics of the service territory.” Please provide your definition of “density” as it applies to city carrier costing.

**ADVO/OCA-T3- 8.** On page 4, line 2, you claim that inclusion of the density variable in the city carrier analysis is incorrect. Please assume a hypothetical zip code where possible deliveries are placed uniformly inside the zip code and therefore distances between contiguous delivery points are exactly the same for all points. Do you believe that, for this hypothetical zip code, carrier drive/walk time would be influenced by:

- (a) Total possible deliveries? Please explain your response.
  
- (b) Distance between contiguous delivery points? Please explain your response.

**ADVO/OCA-T3-9.** Given a particular zip code, number of delivery points, and average delivery/collection volume, please explain fully the actions postal management may take to minimize:

- (a) Carrier route miles to be covered (either by driving or by walking)

- (b) Total number of delivery points in the zip code area
- (c) Total zip code area

**ADVO/OCA-T3-10.** On page 4 (lines 3-4), you state: “In the modeling of an economic process one generally expects to see the maximization or minimization of a process subject to some type of constraint. Although no theoretical analysis of the underlying economic process of mail delivery has been explicitly hypothesized in conjunction with the modeling effort, one could conclude that the equations model a cost function, with cost (measured in terms of time) as a function of output (pieces of mail delivered or collected plus coverage of the delivery points).

- (a) Based on your understanding of the carrier activities involved, please identify and describe all the constraints on the minimization of city carrier delivery costs.
- (b) Please identify and describe all the output (workload) variables you believe are appropriate for modeling city carrier delivery costs.
- (c) Do you believe that the “cost function” approach is appropriate for modeling city delivery carrier street costs? Please explain.

**ADVO/OCA-T3-11.** On page 6 (lines 8 –13), you state:

As a result of the consideration of [management] tradeoffs, the cost to deliver a quantity of mail is determined. Density is an output of the process, not an input to the process. Density is determined partly by how the route is designed and partly by the characteristics of the service territory. What drives cost are the management’s decisions on how to utilize resources to accommodate whatever level of mail and service territory characteristics are present. . . However, ZIP code density – i.e., dp/sqm – is a function of the arrangement of the City Carrier delivery routes, which would be achieved through the determination of a least cost solution to a production function through the attainment of equalities between various marginal rates of technical substitution and input/price ratios in a cost minimization process. The value of the density variable is an output of the cost minimization process; density is not an input to the cost function.

- (a) Please explain your understanding of whether the USPS CCSTS model you criticize is a route-level or zip-code-level model.

- (b) Please explain your understanding as to how USPS management determines zip code territories.
- (c) Please explain your understanding as to how USPS management can change the average amount of space among delivery points in a particular zip code territory.
- (d) Please explain how you would describe the delivery cost-causing characteristics of a zip-code service territory.

**ADVO/OCA-T3-12.** With respect to your CC6 and CCS7 models (No Density and No Collection Volume; DPS Case, No Density, No Collection Volume):

- (a) Please confirm that the CCSTS carrier times include collection time. If you cannot, please explain why not.
- (b) Please explain why you included this model and whether you would ever consider this an appropriate model.

**ADVO/OCA-T3-13.** On page 15, Table 2, you present results from your recommended CC5 model using R2005-1 Data. These show that coefficients on the small parcel and small parcel squared variables are both negative. Yet on page 10, Table 1, for the recommended CC5 model you indicate a positive marginal time of 3.208 seconds for small parcels.

- (a) Please explain fully your interpretation of these results.
- (b) If other (non-small parcel) volume values were set to zero in your preferred CC5 model, please confirm that small parcel marginal cost would then be negative. If you do not confirm, please explain fully.

**ADVO/OCA-T3-14.** Please refer to the following variables in your preferred CC5 model on page 15 (Table 2): let\*dp, cf\*dp, seq\*dp, cv\*dp, and spr\*dp.

- (a) Please confirm that these variables are cross-product variables obtained by multiplying each volume variable by total possible deliveries. If you cannot confirm, please explain the meaning of these variables.
- (b) If you do confirm (a), do you believe that the presence of these variables indicates that marginal costs for each volume variable will

be affected linearly by changes in possible deliveries in your model specification? If not, please explain fully.

**ADVO/OCA-T3-15.** After offering a selection of 24 CCSTS quadratic models, you state on page 15 (lines 5-6): “Whether the effort was also hampered by an inadequate model is unknown.”

- (a) Do you believe all of these models were inadequate or possibly inadequate, including the one you recommend (CC5 restricted quadratic)? Please explain why you believe that.
- (b) When did you decide these models were [or were possibly] inadequate – before you ran them or after? Please explain.
- (c) Did you have a particular cost model concept in mind when you selected the 24 different models to run? Please explain.
- (d) Please explain fully how you believe econometric model adequacy should be judged.
- (e) Given your statements on pages 4-8 (lines 3 ff) and your criticism of the CCSTS model as being an “Ad-Hoc Equation,” (page 8, lines 19-20) do you have suggestions as to how to correctly model the city delivery function? If so, please provide them

**ADVO/OCA-T3-16.** Please compare your preferred CCSTS model (CC5 Full Quadratic) to your preferred DOIS model (ND6 Technology Delivery points Restricted Quadratic).

- (a) Please confirm that in CC5 the letters variable contains only DPS letters while the flats variable includes cased letters and flats. If this is incorrect, please explain.
- (b) Please confirm that in ND6 letters include both DPS and cased letters while flats include only cased flats. If this is incorrect, please explain.
- (c) Please explain fully why you treated the cased letter, cased flat and DPS volume variables differently in your two recommended models.
- (d) You stated on page 12 that: “Based on my understanding of Postal Service delivery practices, the [CC5] equation seems to model

actual carrier activities more closely.” Conceptually, which version of cased letters and flats is the most appropriate? Please explain.

- (e) Please explain why you did not present a CCSTS or DOIS model that combines all the features you appear to prefer: i.e., lack of density, DPS-only letter variable, delivery points disaggregated by technology, and unrestricted quadratic.

**ADVO/OCA-T3-17.** In developing econometric models that are structured according to sound economic principles and, in this case, known operational behaviors on the part of city carriers, is it your view that variables that are known to affect city carrier costs in specific ways should be treated differently across all model versions that are tested?

**ADVO/OCA-T3-18.** Please consider the following general proposition with respect to model development and explain fully whether you agree or disagree with it. The correct model selection procedure in econometrics starts with developing a model that can be justified from economic theory. This generally includes selecting the appropriate independent variables that are believed to cause (and not just correlate with) costs and structure the model so that expected cost behaviors are described with reference to variations in the selected variables. Thus, the modeling procedure involves defining and applying variables consistently, given the available data. It should not include selecting variables based on best statistical fits.

**ADVO/OCA-T3-19.** Please refer to page 21 of your testimony where you acknowledge that collection volume is missing from the DOIS database and therefore is not included as a separate variable in your analysis. With your recommended DOIS model lacking a collection volume variable, please explain fully how collection volume variability should be determined for costing purposes if your DOIS model were accepted.

**ADVO/OCA-T3-20.** On page 21, you discuss the fact that the DOIS database does not include collection volume.

- (a) Do the carrier street times included in the DOIS data reflect carrier collection activities? Please explain.
- (b) If an independent volume variable explaining (at least in part) the dependent variable in an econometric model is absent, can't that bias the coefficients for all the remaining independent volume variables? Please explain.

- (c) If the excluded explanatory volume variable (as in (b) above) is positively correlated with the remaining explanatory variables, please confirm that the coefficients on those other volume variables (and the marginal costs derived from them) will be inflated.
- (d) Did you test for correlations between collection volumes and other explanatory variables within the CCSTS database? Please explain.
- (e) Did you test for correlations between density and the other explanatory variables within the CCSTS database? Please explain.

**ADVO/OCA-T3-21.** It appears that the DOIS volume data in OCA LR-L-4 have only one parcel variable and one priority variable (i.e., data do not distinguish among small parcels, SPRs, and large parcels). It also appears that you sum the parcels and Priority Mail volumes together to obtain the values for your “small parcel”/“SPR” variables.

- (a) Do the DOIS carrier street times include time to deliver all types of parcels and Priority Mail? Please explain.
- (b) Does the broader DOIS data set from which you derived your data set have separable data on parcel types? Please explain.
- (c) Is it your opinion that there is no delivery cost difference among the three types of parcel volumes? Please explain.
- (d) Is it your opinion that there is no delivery cost difference between parcels and Priority Mail? Please explain
- (e) If your responses to (c) and (d) are no, please explain how the specific costs for these different types of volumes will be distinguished.
- (f) Do you believe that your proposed DOIS model variability results are unaffected by the lack of distinguishing among these types of volumes? Please explain.

**ADVO/OCA-T3-22.** It appears that the DOIS volume data in OCA LR-T3-1 do not include data on accountables.

- (a) Do the DOIS carrier street times include time to deliver accountable mail? Please explain.

- (b) Does the broader DOIS data set from which you derived your data set have separable data on accountable volume?
- (c) Is it your opinion that there is no delivery cost for accountables? Please explain.
- (d) If your response to (c) is no, please explain how the specific costs for accountables will be determined.
- (e) Do you believe that your proposed DOIS model variability results are unaffected by the lack of accountable volume data? Please explain.

**ADVO/OCA-T3-23.** Please specify the cost pool(s) to which your DOIS model variabilities should apply.

**ADVO/OCA-T3-24.** On page 8, (lines 21-24), you state that: “. . . further specification of an economic [city delivery cost] model would be appropriate.” And on page 16 (lines 7-10), you state that the DOIS database has been available only for a short time and “. . . significantly more time would be required for a thorough analysis. Due the to the limited amount of time, I have been able to apply minimal quality control procedures and have not yet made full use of all of the data.”

- (a) Given that city carrier delivery cost modeling has been considered in virtually every postal rate case, has there been sufficient time to conduct a theoretical analysis of the underlying economic process of mail delivery?
- (b) Given that the CCSTS database has been available for over a year, have you had sufficient time to develop an appropriate economic specification for a city delivery cost model?
- (c) Given that the CCSTS database has been available for over a year, have you had sufficient time to apply all necessary quality control procedures to it? Please explain.