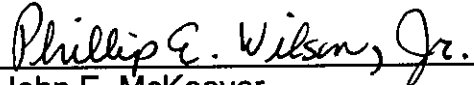BEFORE THE
POSTAL RATE COMMISSION

POSTAL RATE AND FEE CHANGES, 2000   :   DOCKET NO. R2000-1

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ANSWERS OF UNITED PARCEL SERVICE
WITNESS KEVIN J. NEELS TO UNITED STATES
POSTAL SERVICE INTERROGATORIES
(USPS/UPS-T1-13 through 17)
(June 16, 2000)

Pursuant to the Commission's Rules of Practice, United Parcel Service hereby

files and serves the answers of UPS witness Kevin J. Neels to the following

interrogatories of the United States Postal Service: USPS/UPS-T1-13 through 17.

Respectfully submitted,

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RESPONSE OF UNITED PARCEL SERVICE WITNESS NEELS
TO INTERROGATORY OF THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-13. Please refer to your testimony, UPS-T-1, at page 63, lines 5-9. You state that to "capture the effects of structural changes in the underlying technology and organizational design of the postal system, I analyze the effects of mail volume on work hours using aggregate, system-level time series data on volumes and mail processing costs. These aggregate data, by their very nature, automatically reflect net changes in productivity and efficiency from system-wide structural changes."

a. With respect to your statement that "[t]hese aggregate data... automatically reflect net changes in productivity and efficiency from system-wide structural changes," please confirm that "[t]hese aggregate data" refers to the cost data.

b. If your response to part (a) does not confirm, please explain how the aggregate volume data you use in the analysis reported in Table 11 and Table 12 of UPS-T-1 purport to capture changes in any factor explaining mail processing cost other than mail volume. As necessary, resolve any inconsistencies between your response and your apparent use of fixed (FY98) class weights w_j and a fixed worksharing parameter λ to construct your volume index, as described on page 66 of UPS-T-1.

c. Please confirm that if your aggregate time series analysis excludes relevant explanatory variables other than mail volume, the "volume-variability" results you present in Table 11 and Table 12 of UPS-T-1 will be biased and/or inconsistent except in the special case that volume and the excluded variables are orthogonal. If you do not confirm, please resolve the inconsistency between your answer and standard econometric theory (cf., e.g., Proposition 9 at pages 39-40 of Peter Schmidt's *Econometrics*).

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Response to USPS/UPS-T1-13.

(a)   I do not confirm. The aggregate data to which I refer include cost, work sharing and volume data.

(b)   As I explain on pages 4-18 of UPS-T-1, the Postal Service responds to changes in mail volume in a variety of ways, both facility-wide and system-wide. By limiting the analysis to the plant and MODS-level, the very structure of Dr. Bozzo's approach ignores the bulk of these effects. Since Dr. Bozzo estimates variabilities conditional on the activity being present, he ignores decisions to install new processing activities at a plant. Because he uses data for a fixed panel of plants, Dr. Bozzo ignores the effects of plant openings, closings, expansions, and modifications.

The aggregate analysis presented on pages 63-71 of UPS-T-1 encompasses the overall effect of all of these changes. This analysis of volume variabilities employs both aggregate cost data and aggregate volume data. In using aggregate volume data, I deliberately remove the distinction between mail processed in different sorting operations, with different processing technologies, across different processing facilities. These distinctions reflect the decisions of the Postal Service concerning:

- work load allocation across MODS groups, as discussed on pages 21-23, and 57 of UPS-T-1;

- automation or mechanization in mail sortation, as discussed on pages 5-8 and 11-15 of UPS-T-1;

- changes in activity mix over time, as described on pages 9-11 of UPS-T-1; and

construction, expansion, and modification of existing mail processing plants, as discussed on pages 16-18 of UPS-T-1.

These decisions are a subset of "system-wide structural changes" to which I refer on page 63, lines 5-9, of my testimony. They do not belong in the regression model without explicit consideration of their effects on parameter estimation.

Furthermore, both aggregate cost data and aggregate volume data are required to "capture the effects of structural changes in the underlying technology and organizational design of the postal system." Indeed, as the passage quoted in USPS/UPS-T1-13(a) affirms, the aggregate cost data intrinsically reflect net changes in productivity and efficiency from all Postal Service responses to changes in mail volume. Only when aggregate cost data are used in conjunction with aggregate volume data can one take into account the "net changes in productivity and efficiency from system-wide structural changes" in response to changes in volume.

The aggregate analysis presented in UPS-T-1, like all empirical analyses (including Dr. Bozzo's in USPS-T-15), requires – for the sake of feasibility – the use of certain maintained assumptions. In order to feasibly implement the analysis with the available data, I use time-invariant labor weights (w) to aggregate volumes and a time and class-invariant worksharing parameter (λ) to construct my volume index. Fixing w and λ in this manner has the effect of ignoring certain volume-driven changes that may be reflected only in these parameters. Not only am I unaware of any volume-driven changes that are likely to appear only in these parameters, but the treatment of w and λ as fixed is certainly *not* inconsistent with my response above. Even if these parameters

were to truly vary over time or by class, the aggregate analysis presented in UPS-T-1 comes much closer than does Dr. Bozzo's at capturing the full breadth of the Postal Service's responses to changes in volume.

(c)   Not confirmed. In assessing the effects of omitting possible explanatory variables one must draw a clear distinction between explanatory variables that are endogenous and under the control of the Postal Service, and variables that are exogenous, or outside the control of the Postal Service.

Many aspects of postal operations are likely to affect the structural relationship between mail processing labor costs and mail volume. However, many such aspects of postal operations -- including capital intensity, choice of sorting technology, and the structure and organization of the mail processing network -- are under the control of the Postal Service, and likely themselves to change systematically in response to changes in mail volume. Including such explanatory variables in the regression model without accounting properly for their endogeneity is likely to lead to simultaneity bias. Moreover, even if the econometric problems associated with the inclusion of a right hand side endogenous variable could be adequately resolved, the resulting structural model would produce incomplete results. While it would capture the direct effects of volume on labor costs, holding other decision variables constant, it would exclude the indirect effects exerted by volume growth through its influence on these other decision variables.

In such a situation, the appropriate econometric model is a reduced form model that excludes from the right hand side all endogenous variables. The estimated

coefficient on volume in such a model captures both the direct and indirect effects of volume on labor cost. The result is a more comprehensive measure of the volume variability of labor costs, and one that comes closer to meeting the requirements of the Commission.

Certainly, it is basic econometrics that the exclusion from the model of relevant exogenous variables that are correlated with included variables will result in omitted variables bias or inconsistency. All empirical work, including Dr. Bozzo's, is vulnerable to this possibility. Determining whether omitted exogenous variables bias is a substantive concern for any particular application requires consideration of what variables might be missing and what relationship these omitted variables, if they exist, are likely to have with the included explanatory variables. This interrogatory does not give any consideration to these questions, nor does it put forth any explanatory variables that are likely to be excluded from my analysis.

In designing the aggregate cost models presented in UPS-T-1, I have given consideration to what other variables, in addition to volume, might rightly be included in the list of explanatory variables. Obvious candidates included the number of facilities operating in each year and a system-level measure of the degree of mail processing automation. Each of these, however, is a Postal Service decision variable and is jointly determined with costs. In keeping with Dr. Bozzo's analysis in USPS-T-15, the aggregate models in UPS-T-1 exclude endogenous explanatory variables and instead estimate the reduced form effect of changes in volume on costs.

RESPONSE OF UNITED PARCEL SERVICE WITNESS NEELS
TO INTERROGATORY OF THE UNITED STATES POSTAL SERVICE

USPS/UPS-T1-14. Please refer to your testimony, UPS-T-1, at page 64, lines 5-9. You indicate that the cost data for cost segment 3.1 are taken from the Postal Service's response to UPS/USPS-T11-7-17, specifically citing to Tr. 21/9351-9352.

a. Please explain how, if at all, you account for the effect on Cost Segment 3.1 costs of changes in the definition of Cost Segment 3.1 in your aggregate time series analysis, other than conflating the effect with that of volume.

b. If you claim that you account for changes in the definition of Cost Segment 3.1 in response to part (a), please provide detailed citations to the section(s) of your testimony and/or workpapers that describe the variable(s) or other quantitative method(s) you use for this purpose.

Response to USPS/UPS-T1-14.

(a)   I have reviewed the documentation on changes in the definition of Cost Segment 3.1 cited by the Postal Service in response to UPS/USPS-T11-8. Several changes in the definition have occurred. Because they do not appear to be of a significant nature, I have not accounted explicitly for these changes.

(b)   Not applicable.

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USPS/UPS-T1-15. Please refer to your testimony, UPS-T-1, at page 69, lines 1-8. At lines 5-7, you discuss the "importance of considering capital costs in evaluating the response of mail processing costs to increases in volume." You also refer at lines 7-8 to "Dr. Bozzo's argument that the capital intensity of mail processing is unaffected by growth in mail volume."

a. Please confirm that the three cost segments you analyze in your aggregate time series analysis represent labor costs. If you do not confirm, please indicate which non-labor cost segments you include in your analysis.

b. Please provide a detailed citation to the portion of Dr. Bozzo's testimony containing "Dr. Bozzo's argument that the capital intensity of mail processing is unaffected by growth in mail volume."

Response to USPS/UPS-T1-15.

(a)   Confirmed. However, it is important to note that the labor costs associated with the maintenance of mail processing equipment (Cost Segment 11.2) are directly related to and are most certainly positively correlated with the size of the mail processing equipment stock. Thus, as automation or mechanization increases in response to mail volume, the labor costs associated with the maintenance of mail processing equipment will also increase. In this manner, the aggregate models of volume variability that use both Cost Segments 3.1 and 11.2 are able to incorporate labor *and* capital responses to changes in mail volume.

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(b)   Dr. Bozzo maintains that the capital intensity of mail processing is unaffected by growth in mail volume in at least three separate contexts in USPS-T-15. First, Dr. Bozzo describes the "reasonable assumption" of homotheticity, which he defines on page 40 of USPS-T-15: "Homotheticity implies that changing the level of output of the operation will not alter relative factor demands such as the capital/labor ratio. . . ." The capital/labor ratio is a measure of capital intensity. By assuming that it does not change when output or volume changes, Dr. Bozzo essentially argues that "the capital intensity of mail processing is unaffected by growth in mail volume."

Second, Dr. Bozzo argues that the manual ratio is not volume-variable in section IV.F. of his testimony, USPS-T-15, at pages 56 through 58. The manual ratio is defined as the fraction of letters or flats processed manually and is a measure of capital intensity. By assuming that it is non-volume variable, Dr. Bozzo argues that "the capital intensity of mail processing is unaffected by growth in mail volume."

Third, Dr. Bozzo's labor demand model treats the capital stock variable, QICAP, as an exogenous variable that is not jointly determined, along with work hours, in response to changes in volume. Dr. Bozzo's labor demand model is specified on page 117 of USPS-T-15. If Dr. Bozzo believed that the capital intensity of mail processing is affected by growth in mail volume, he would have had to model the Postal Service's joint decision of work hours and capital. Instead, by treating capital as exogenous in the work hours equation, he implicitly argues that "the capital intensity of mail processing is unaffected by growth in mail volume."

RESPONSE OF UNITED PARCEL SERVICE WITNESS NEELS
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USPS/UPS-T1-16. Please confirm that the work sharing parameter, λ, that you describe at page 66, line 14, to page 67, line 1, does not vary by class or subclass. If you do not confirm, please explain.

Response to USPS/UPS-T1-16.

Confirmed.

RESPONSE OF UNITED PARCEL SERVICE WITNESS NEELS
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USPS/UPS-T1-17. Please consider the workhour weights w_j, which you describe in
your testimony, UPS-T-1, at page 66, lines 2 and 14.

a. Please confirm that the notation $HRS_{j,98}$ at page 66, line 2, and $L_{j,98}$ at page 66, line
4, refer to the same thing. If you do not confirm, please explain fully the differences
between the two.

b. Please confirm that the workhours by class that you use in the construction of w_j do
not include workhours from mail processing cost pools other than the nine cost pools
in the column headings of the "transition matrix" you present in UPS-T-1, Appendix
G.

c. If you confirm in response to part (b), please explain fully why you ignored the mail
processing cost pools other than the nine cost pools in the column headings of the
"transition matrix" you present in UPS-T-1, Appendix G.

d. If you do not confirm in response to part (b), please provide an Excel spreadsheet
containing a detailed derivation of the data you present in UPS-T-1, Appendix H.

Response to USPS/UPS-T1-17.

      (a)   Confirmed.

      (b)   Confirmed.

      (c)   Construction of the labor weights required information on MODS work
hours. For this purpose I used data taken from Reg9398.xls provided in USPS-LR-I-
107. This source did not include data for non-MODS facilities or for a number of MODs
cost pools other than those examined by Dr. Bozzo. To the extent that labor weights

based on these direct MODS pools reflect the distribution of volume by class in indirect

MODS pools and in other parts of the mail processing system, the use of the nine cost

pools shown in USPS-T-1, Appendix G, should provide a reliable estimate of overall

volume variability.

     (d)   Not applicable.

DECLARATION

I, Kevin Neels, hereby declare under penalty of perjury that the

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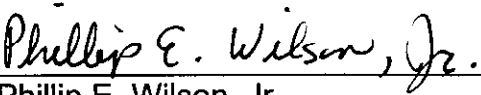
and belief.

Kevin Neels

Kevin Neels

Dated: June 16, 2000

CERTIFICATE OF SERVICE

I hereby certify that I have this date served the foregoing document by first class mail, postage prepaid, in accordance with Section 12 of the Commission's Rules of Practice.

Phillip E. Wilson, Jr.

Phillip E. Wilson, Jr.
Attorney for United Parcel Service

Dated: June 16, 2000
Philadelphia, Pa.

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