

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

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POSTAL RATE COMMISSION
OFFICE OF THE SECRETARY

POSTAL RATE AND FEE CHANGES, 2000

Docket No. R2000-1

UNITED STATES POSTAL SERVICE
INTERROGATORIES AND REQUESTS FOR PRODUCTION OF DOCUMENTS TO
UNITED PARCEL SERVICE WITNESS NEELS
(USPS/UPS-T1-32-33)

Pursuant to rules 25 and 26 of the Rules of Practice and procedure, the United States Postal Service directs the following interrogatories and requests for production of documents to United Parcel Service witness Neels: USPS/UPS-T1-32-33.

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorneys:

Daniel J. Foucheaux, Jr.
Chief Counsel, Ratemaking



Susan M. Duchek

475 L'Enfant Plaza West, S.W.
Washington, D.C. 20260-1137
(202) 268-2990 Fax -5402
June 13, 2000

USPS/UPS-T1-32. Please refer to your testimony, UPS-T-1, at pages 34-35.

You indicate at page 34, lines 13-14, that “measurement error in the dependent variable is absorbed in the error term.” You subsequently provide estimating equations for the regressions you use to estimate the elasticities of TPH (or TPF) with respect to FHP at page 35, lines 3 and 7.

- a. Please confirm that the terms u_{it} in the equations cited above denote the “error term[s]” to which you refer in the statement quoted above. If you do not confirm, please explain.
- b. Please confirm that, for a multivariate linear regression, a consistent estimator of the error variance $\sigma_u^2 = \text{var}(u_{it})$ is $(\sum \hat{u}_{it}^2)/(N_{obs} - K)$, where $\sum \hat{u}_{it}^2$ is the sum of squared residuals from the regression, N_{obs} is the number of observations, and K is the number of regressors. If you do not confirm, please provide the formula you believe to be correct for a consistent estimator of the error variance σ_u^2 , and provide a proof (or a citation to a proof) of its statistical properties.
- c. Please provide the estimated error variances for each regression reported in Table 6 and Table 7 of UPS-T-1, using the formula that you confirm (or otherwise provide) in response to part (b). If the estimated error variances are provided in your workpapers, UPS-NEELS-WP-1, please provide detailed citations to the locations in the workpapers where they may be found. Otherwise, please provide detailed documentation of the methods you use to generate your response, including computer programs you employ and the output of those programs.

USPS/UPS-T1-33. Please refer to your testimony, UPS-T-1, at page 35, lines 3 and 7, where you provide mathematical formulas for the estimating equations you employ in your analysis of the relationship between FHP and TPH. Please interpret the term TPH to refer to TPF where appropriate. Please also refer to your testimony at page 34, line 10, where you indicate that you estimated the "reverse regression" of FHP on TPH and other variables.

- a. Please confirm that, based upon the estimating equations provided at page 35, lines 3 and 7, the mathematical formula for the elasticity of FHP with respect to TPH is $\partial \ln FHP / \partial \ln TPH = \beta_1 + 2\beta_2 \ln TPH$. If you do not confirm, please provide a mathematical derivation of the elasticity formula you believe to be correct.
- b. Please confirm that your estimators of the elasticity of TPH with respect to FHP, used to generate the results presented in Table 6 and Table 7 of UPS-T-1, have the form $(\partial \ln TPH / \partial \ln FHP) = (\hat{\beta}_1 + 2\hat{\beta}_2 \ln TPH^*)^{-1}$, where $\hat{\beta}_1$ and $\hat{\beta}_2$ are the estimates (from Appendix C) of the parameters β_1 and β_2 from the appropriate estimating equation, and $\ln TPH^*$ is the value of $\ln TPH$ at which the elasticity formula from part (a) of the interrogatory is evaluated. If you do not confirm, please provide mathematical formula(s) for the estimator(s) you employ, and also please provide detailed citations to your workpapers, UPS-NEELS-WP-1, indicating where the formula you provide, and the implementation of the formula, may be found.
- c. Please describe the value(s) of $\ln TPH$ you chose to evaluate the elasticity estimator from the response to part (b). Please provide detailed citations to

the section(s) of your workpapers, UPS-NEELS-WP-1, in which your calculations are implemented.

- d. Please confirm that the estimating equations for the conceptually correct “non-reverse” regression of TPH on FHP and other variables—i.e., the estimating equations you presumably would have employed, if the FHP data were to have appropriate statistical qualities—corresponding to the reverse regressions you actually estimated would be:

$$\ln(TPH_{it}) = \delta_i + \gamma_1 \ln(FHP_{it}) + \gamma_2 \ln(FHP_{it})^2 + \gamma_3 \ln(DPT_{it}) + \gamma_4 TimeDummies_{it} + v_{it}$$

(the “full estimating equation”), or

$$\ln(TPH_{it}) = \delta_i + \gamma_1 \ln(FHP_{it}) + \gamma_2 \ln(FHP_{it})^2 + v_{it} \text{ (the “restricted model”).}$$

If you do not confirm, please provide the “non-reverse” estimating equations you believe to be conceptually correct, and explain fully the basis for your belief.

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon all participants of record in this proceeding in accordance with section 12 of the Rules of Practice.

A handwritten signature in black ink, appearing to read "Susan M. Duchek", written over a horizontal line.

Susan M. Duchek

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