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

POSTAL RATE AND FEE CHANGES, 1997 DOCKET NO. R97-1

TESTIMONY
OF
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In Behalf of

FLORIDA GIFT FRUIT SHIPPERS ASSOCIATION

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I. Qualifications

My name is Leonard Merewitz. I am a Principal in LAMA Consulting and have testified before this commission four times before: in R80-1, and R84-1, on behalf of USPS and direct and rebuttal testimony for the National Association of Presort Mailers in MC95-1. In this testimony the Florida Gift Fruit Shippers Association asked me to do studies on purchased transportation and its distribution over classes and subclasses of mail.

My education in economics was at Harvard College where I received a Bachelor of Arts degree magna cum laude in 1964 and at University of California at Berkeley where I received the Ph.D. in 1969. I began teaching as an Acting Assistant Professor at the same University in 1968 and remained as assistant professor at what is now the Haas School of Business Administration at Berkeley. I taught quantitative methods and transportation there until 1975 when I moved to the Motor Vehicle Manufacturers Association of the US (Now American Automobile Manufacturers Association) in Detroit. There I did research on autos and trucks and their regulation. In 1976, I moved to become Director of Transportation Studies at J. W. Wilson Associates in Washington. I joined the federal government in 1977 as a Senior Economist at the National Transportation Policy Study Commission, a temporary agency composed of Congressmen, Senators and members of the public who hired a staff to do studies and write a Report.

In 1979 the Postal Service hired me as Special Assistant to the Senior Assistant Postmaster General-Finance I remained at the PS as a member of Postal Career Executive Service from 1979 until 1986. At that time I joined the PRC as Special Assistant to Commission Crutcher and Staff Assistant. In late 1993, I left the US government's employ and I started LAMA Consulting in 1995. Between 1994 and 1996 I had affiliations with Jack Faucett Associates, Symbiotic Technologies and

Whitfield Russell Associates and participated in a trucking privatization project in Ukraine in 1994. I have published three books and about 17 articles in referreed journals or books including two in a series on postal matters edited by Professors Crew and Kleindorfer and published by Kluwer Academic Publishers in 1993 and 1997. I have been a member of the Transportation Research Forum since 1970. In addition to postal testimony, I have entered expert witness testimony before the South Dakota, North Dakota, and Montana Public Utility Commissions and the Superior Court of Alameda County, California. I am a member of Phi Beta Kappa, the Transportation Research Forum, the American Economics Association and the National Economists Club.

The purpose of my testimony is to review the work of Bradley USPS T-13 on attribution of purchased highway transportation costs. I then review the TRACS system of price-waterhouse sponsored by witness Nieto USPS T-16. I evaluate methods of allocating attributable costs and suggest one of my own. I then review some of the special economics relating to transportation. These principles help us articulate criteria for judging cost allocation methods. From the errors of theory and data we find in TRACS. We find that we are unable to derive a distribution key for highway purchased transportation. In course of making these points we voice some opinions on the methods of TRACS, unfortunately many negative..

II. What Purchased Transportation Do We Study?

The Florida Gift Fruit Shippers Association asked me to study purchased transportation over the period 1988 to 1996, concentrating on highway transportation and the TRACS system.

A. The PS purchased some $3,730 million worth of transportation in FY 1996. Air, rail and water accounted for $1,538 million. Highway in total was almost exactly half the purchased transport budget at $1,540 million. Of this $1540 million, IntraBMC was about $260 and InterBMC was about $230 million. Source: Comprehensive Statement on Postal Operations p.20 (1996).

We have provided an Exhibit on recent history in purchased transportation. That is Exhib LAM-1. We include all modes, of highway purchased transportation, and the two items IntraBMC highway transportation and Inter BMC highway transportation. Since parcel post is nonpreferential mail, and part of Standard (B) it uses(when Inter B and in certain other circumstances) the nonpreferential transportation system which uses the BMC's as hubs. It is collected from Associate Offices (AO's) to the extent it is entered there and then shipped to the rest of the country by InterBMC transportation. From there it is distributed to SCF's and AO's in their distribution area.

B. Bradley's regression analysis.

Professor Bradley describes an elaborate model. Much in it is correct and much is clever. A "scrub"is a logical term for data editing. Unfortunately the theoretical basis of the model is weak. He would not disagree that measurement without theory is a poor methodology. His main independent variable appears to be output but in the final analysis what he has measured is capacity and not volume. There is a close fit of cost to CFM of capacity. There is no showing of a close fit to volume variations, a necessary condition to infer "variability" or attribution. Attributable costs are those costs demonstrably related to volume. see Lib. Ref. H-1.

Prof. Bradley has foisted on this Commission a very clever little trick. He correlates container capacity required and container cost. That is a theoretical relationship. His good fits are deceptive. That is like a correlation between plant size and expected output. Industrial cost analysis focuses on cost per actual unit of eventuated output. Actual output is a random variable and as such is stochastic. High costs may eventuate from bad planning. In Bradley's model bad planning can never show. He never discusses actual output, discussing instead ceiling output whether he mentions it up-front or not. The history of capacity utilization as recounted in my Exhibit LAM-10 shows that capacity is a poor measure of true output or throughput. Effective management in transportation is not achieved by simply contracting for capacity. Developing good load factors is the key to that business as it is in the airline business which is well-known to consumers. Entrepreneurs go to great lengths to favorably affect their load factors.

Exhibit LAM-5 through LAM-8 show the impact of drop-ship rules new in 1991 and rates in third-class and Standard (A) on the traffic in the two accounts of purchased transportation which we study. Basically, the conclusion is that traffic is down while expenditures on transportation are up. Traffic is down because mailers, especially Standard (A) mailers are taking advantage of work sharing opportunities and doing more of their own transportation.

The top panel of LAM-6 is a summary showing a 12.8 percent drop in Standard (A) traffic between 1991 and 1996 and a 24% increase in Standard (B) traffic. Since Standard (A) is a bigger class in volume -- 13% of the larger group is greater than 24% of Standard (B).

Panel 2 concerns Standard (A) and shows that mail subject to nationwide entry or BMC entry[1] was 41.9 billion in 1991 and is only 33.1 billion in 1996. The change in workload measured by pieces in a -21 percent. When those pieces are converted to pounds....

Panel 3 (p. 2) concerns Standard (B) (p.2). Here we have largely natural growth taking place with one exception. There has been considerable work sharing proceeding apace in the rate category of Destination-BMC parcel post. This phenomenon substitutes for Inter BMC transportation but not for Intra BMC. Destination BMC parcels still require transportation to their destination SCF's and AO's. Our solution is to claim one half the saved pounds as a workload saving since these two accounts (intra BMC and inter BMC) are roughly equal in magnitude. Line 8 shows the full savings

[1]This mail is "mail not drop-shipped beyond [i.e. deeper into the system than] the BMC."

and line 9 accounts for half the savings. The result when both Standard (A) and Standard (B) are brought together is a 2.7 percent decrease in traffic.

We may now compare this small decrease in traffic to an apparent healthy increase in transportation expenditures and explore the meaning of those changes. First we must obtain an estimate of real increase in the use of transportation services. Expenditures alone will not tell the full story because they include the results of price change, usually increases. When we have taken out those price increases, we will have the real increase in transportation services purchased.

From LAM-7 and LAM-8 we may infer that price change in the over-the-road trucking sector was no greater than 2.5 per cent per year (in fact the current estimate is 2.25 per cent per year) over the period 1991 to 1996. The exhibits show the price index for trucking nonlocal between June 1992 and November 1997. Exhibit LAM-8 performs a regression analysis on the model

$$\ln Y = A + b * t$$

Where ln is natural logarithm and t is time in months. Time differentiation shows that the rate of growth is the parameter. The b we estimate is a monthly rate of growth. The quantity (1+r) raised to the power 12 gives the annual rate of growth which is here estimated to be 2.25 per cent. Since I do not have the complete series I need for my analysis I have to say that price growth was no less than 2.5 per cent per year. Therefore in the period of our comparison price increase was 13.1 per cent while contract expenditures increased 26.8 per cent. The result was a 13.7 per cent increase in

real purchased highway transportation services. One can say this was real in the sense of cubic foot-miles abstracting from price level change.

Thus, between 1990 and 1996 volume in the nonpreferential highway transportation system declined from 7181 million pounds to 6989 or by some 3% mainly because of drop shipping. Please see LAM-6. During the same period, purchased highway transportation increased 27 %. Not more than 10.4% of this increase was price increase because the price index, "Trucking excluding local" shows a 2.25 per cent average rate of growth in truck rental costs over that period). So, during this period there was a 16% real increase in the purchase of highway transportation services by the postal service. To summarize, we have a 16 % real increase in the face of a 3 % decrease in volume demanding transportation.[2] What should we make of this? It certainly seems that the volume growth and spending growth are inversely

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[2]Even though this is the non-pref transportation system, designed for third-class and fourth-class (with the preferential designed for first-class and second-class) periodicals are seen in the traffic. One might object that traffic was increased over the period from the second-class or periodicals direction. But, the volume, by which I mean cube and not pieces (of periodicals has not changed over this time period). In millions of cubic feet, it was 242 in 1991 and only 240 in 1996.

Zoning

Zoning has existed in periodicals for a long time and this is analogous to dropship discounts. There is a premium for delivering mail and depositing it into the system closer to the destination. There is simply less traffic on those trucks and yet the amount of purchased transportation services is up about 15.8% in real terms. Volume (whether cube or pieces) alone does not drive the amount of purchased transportation input.

correlated. As one goes down the other goes up. We do not seriously conclude this but the simplistic pari passu increase in purchased transportation as volume increases of Bradley's T-13 testimony is surely brought into question. It also appears that transportation is related to service standard needs as well as to volumes. Schedules are made to meet service standards. Trucks are consistently between 50% and 30% empty. Volume alone does not drive capacity; the need to meet schedules and serve volume drives capacity. Dr. Bradley has not taken into account service standards at all in any of his analysis: what has been called Service Related Costs in an earlier PRC proceeding. R77-1.

Mr. Bradley has told us that actual volume would be preferable to capacity.

As he wrote in an article in 1988:

> In purchased transportation, the "output" is the transportation of mail and the appropriate variable should include both distance and weight (or cube). In purchased air transportation, payment is made on the basis of actual shipments, so data is available for the actual pound-miles of mail transportation. In purchased highway and rail transportation, however, data is not available on the actual level of volume, because contracts are specified and payments are made on the basis of capacity. Therefore, a proxy for actual volume is required and the proxy that was used was cubic foot-miles of capacity.[3]

Capacity is just a proxy . The TRACS sampling process actually yields volume data for proper econometric analysis to find the impact of additional pieces on purchased transportation costs without the dubious intervention of the relationship between capacity and volume. The relationship between

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[3]Michael D. Bradley and Alan Robinson, *Determining the Marginal Cost of Purchased Transportation*, Journal of the Transportation Research Forum, p.172

capacity and volume may not be that simple.

Bradley very neatly and very intensely studied the wrong subject. He has done an engineering cost analysis with the econometrician' tools. We need an economic or econometric cost analysis with real world data. He ought to be very pleased to know that the data now exist to do his analysis. Bradley had available to him through TRACS real actualized volume from actual truck runs with live mail. These are available in L.R. H-82, 84. He failed to use it despite the fact that he said in his own writings that real volumes were preferable to a proxy for volume. Unfortunately Bradley must be rejected as a well-executed, poorly conceived project. He has made precise estimates of parameters which unfortunately have little relevance to regulation. Mr. Bradley has told us that actual volume would be preferable to capacity. Capacity is just a proxy . The TRACS sampling process actually yields volume data[4] for proper investigation and to find the impact of additional pieces on purchased transportation cost without the dubious interconnection of the relationship between capacity and volume. The relationship between capacity and volume may not be simple.

This analysis flies in the face of the obvious facts. One of the most successful work sharing programs is in transportation. Mailers are availing themselves of it in droves. So effective volume (for transportation purposes) is going down. PS response by purchasing more transportation. Six years is a long time. This is long enough to make adjustments in the transportation system. Several of the major changes of drop shipping should have had their impact by now.

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[4]Including weight and mailcode or subclass.

As shown in LAM-9b the average use of capacity on Intra BMC is 56.7% and declining. On Inter BMC (longer-haul) it is 69%. Spending on these two accounts has increased 49% in the last six years. Real spending has increased and capacity utilization is going down. After all the t-statistics and R-squared are discussed what is the policy prescription of Bradley's analysis? It is that in the long run[5] as volume increases real purchased transportation will increase 97%. Well, transportation needs have gone down and transportation expenditures have increased, nevertheless.

Bradley would have us believe that he studied cost drivers and that TRACS will provide the missing link to relate transportation cost to volume. He believes that he has studied the change in cost with respect to the change in capacity and the TRACS will provide the answer on change in capacity with respect to change in volume. He is wrong. TRACS has nothing to do with capacity or changes over time. TRACS looks at one point in time to distribute costs. Bradley's analysis, therefore, fails because of the missing link. Professor Bradley surely knows that misspecification is one of the most serious problem in econometrics. Not getting correct variables in an analysis. Unfortunately he has fallen in to a classic trap in social science. Wisely, he divides the problem he must solve into several parts. Unfortunately he cannot or does not know how to study the important or difficult part, while he can flex his methodological muscles on the part that is less important, almost trivial.

[5] Really the rate relevant run about three years.

Transportation is pervasive throughout our economy. It is provided by households and by producers both owner operators and firms. The nature of its costs are very well known. The government uses standard costs on income tax returns 24 cents per mile is the allowable cost on transportation. That is an average which can be used nation wide without much error. Similarly, the cost of operating trucks is well known. If Bradley could study the change in transportation cost with respect to his cost driver that would be fine if it were supplemented with good relationship between changing capacity and change in volume. No one has done proper econometric specification of this second relationship. Surely it must consider factors other than volumes so that the net effect of volume can be seen with more preferential mail on in theses accounts service standard is surely influenced. With persistent over capacity the relationship of capacity to changes in volume is variable. With all due respect, professor Bradley is somewhat like the inebriate who has lost his keys. He can't see in the dark (where they probably lie). So he looks under the street lamp where the light is good with such over capacity and with the growth of preferential and nonpreferential transportation runs. Factors other than volume must be in the transportation cost equation.

III. TRACS

A. Description

Although TRACS, a measurement system designed by Price-Waterhouse (PW), for the USPS, has been in use in rate cases since R 90-1 it has never been tested or examined or evaluated on the record. Information about it has come from the PS at a slow pace: a few library references ever now and then in mail classification case and a few now and then in a rate case. It is

a measurement system to measure utilization of transportation resources for air, rail, highway, and water. It is not a statistical system, but it does involve sampling and has statistical properties which can be measured. PW designed forms to be filled out in a CODES environment with hand-held equipment by PW and postal technicians.

In addition to statistical accuracy, issues of not slowing down the mail were in the minds of the designers of TRACS. In the highway sampling system, a truck is never stopped on the road for sampling. Instead, sampling is done only when mail is unloaded from trucks. At that time, mail waits to be processed so there is time for sampling without unduly slowing the mail. Nevertheless, the estimates have statistical properties whether or not they were designed as a statistical system. Despite the heaviness of traffic on the outbound movement, 70% of sampling was done on inbound movements, and only 30% on the outbound.[6] The inbound movement is sampled more heavily for the convenience of the postal service. This is certainly not a sampling scheme designed to minimize the variance of estimators and witness Nieto says as much (see Tr. 7/3434).

B. Expansion

Ms. Nieto uses the word "expansion" to means several things. The TRACS system in seeking to be able to find costs of each leg of the trip expands volume off-loaded many times. It expands what is in items or containers to the size of the container. That space is expanded to the size of the vehicle and later the off-loaded material is expanded for the emptiness of the vehicle on previous legs of its journey. One might almost say that TRACS' designers were obsessed with expanding.

I wish to separate these because some I accept in my analysis and some I cannot accept.

[6] These are detained with respect to the BMC for all intra BMC and inter BMC's.

**Some of the methods used by P-W and described by witness Nieto are haphazard methods. Discussion surrounding the variable PERCONT were loosely described and applied by statistical technicians. Some technicians recorded pieces, others weight or percentages of the truck or of the container or item. Nieto attempts to paper over these problems by saying it will all come out in the wash (FGFSA/USPS, T 2-49).

2. To expand from a "sampling" to a universe or population I accept as standard sampling and extrapolation to a population.

3. To expand for empty space. I cannot accept. This is to charge the "items" for only that traffic presently in the items. It is also to charge the vehicle-trip for only those items presently in the vehicle. The key problem with this approach is the concentration on the leg of the trip as the proper unit of cost analysis of the trip segment from point A to point B and not the round trip from A to B and back to A. Professors Bowersox, Smykay and LaLonde record the accepted analysis unit as the round trip in the freight transportation literature.

I am informed that the PS never stacks freight higher than 6 feet. UPS, on the other hand uses a "double bottom" so that space can be used up to the full 10 feet of the trailer. It is ludicrous to expand to the full cubic foot capacity of the truck when trucks are very rarely if ever used above the six foot high point.

Ms Nieto frequently protests that no <u>costs</u> are calculated in her analysis (Tr. 7/3433). She says she does not <u>cost</u> one leg at a time. This is technically true because she does no costing <u>per se</u>, but it is the simplest of steps from a distribution key to a list of costs. The main contribution of TRACS to purchased transportation cost finding is the development of a distribution key. Nevertheless, how a sample is treated is very important in developing a distribution key. If

proportions of mail codes or subclasses are derived from a calculation, then the calculation in a very real sense is determining the Distribution Key which will then be applied to the attributable amounts.

Expanding for empty space is very akin to blaming the victim. The carpool results we discussed in the next section work out much more equitable with more reason when the unit over which the spreading of costs is done is larger than the leg. Some traffic happens to be on sparse runs. These are often incoming and therefore in a peak-load analysis would be charged a lower unit cost. We explore that possibility but are not advocating that. Please see LAM-3 . They are charged in the Postal Service method for the leg. Because there is sparse traffic on the leg, they pay high unit costs. That is the key problem: costing the leg. One may advocate costing the round trip or costing general transportation in a multi causation framework which we call "jointly determined". In our car pool example, the one driver is on some analysis asked to pay for the full cost of the drive home from school. Since the other riders need the car at home in the morning, I do not believe that is fair. The trip to and from is a unit. Please see our discussion of the special economics of transportation. There is no point in expanding to the size of the truck. Let us charge each CFM on outbound and inbound the same unit cost. Charge each student in the carpool for trips he takes. The students take three man-trips in the morning and only one man trip to return the vehicle because the other students have different schedules and get home on their own. Let us assume that the cost of a round trip is $8.00. Then Table A applies. Expansion is needed when the purpose is to find the cost of the leg *per se*. When costs and CFM are aggregated and then a quotient is formed, the aggregation serves the function of the expansion: applying the sampled proportions to the whole. The crucial item is the unit of aggregation.

There are decided differences between the class composition of the traffic on in-bound and out-bound trips to and from the BMC. See LAM 9a, 9b analysis of this can be facilitated by observing facility categories (FACCAT's) where tests are taken. These come in the following five types :

In-coming SCF

In-coming other

BMC

Out-going SCF

Out-going other

Out bound runs are shown in LAM-3. Here the ratio of Standard (A) to Standard (B) is ^^ be

TRACS was executed more with the convenience of PS in mind and less with statistical accuracy in mind. Ms. Nieto said several times that her estimates did not partake of desirable statistical characteristic of minimum variance".

C. Examples

Most regulatory problems involving joint or common costs can be boiled down to the question of how to split the costs of a group lunch. Four people go out to lunch. Do they split the bill four ways or do they split the bar bill separately?

A simple example may show the issues in a more familiar context. Here is an example which shows that expansion to the size of the truck is wrong, that calculating costs for each leg of a trip is

erroneous.[7] Let us envision a carpool. Three students carpool to a school. All three users, the driver and two riders, use the carpool in the morning. In the afternoon, since class schedules differ, only the driver returns home in the carpool. They rotate using each other's cars but the same student with the late classes takes the car back to the bedroom community each night. The question is how should the $8.00 round-trip cost of the carpool ($4.00 on each leg) be apportioned among the three users. In Scheme A, as shown in Table A below, every man-trip costs $2.00, since there are a total of four man-trips each day. The drive in the morning generates $6.00 and the drive home generates $2.00 in revenue. Scheme B charges the driver more when he is alone coming home. This ensures that the round trip is the unit of analysis, and no effort is spent trying to allocate the cost of each leg.

Table A

Equal Cost Per Person Per Man-Trip First Pricing Scheme

Student	Uses	Total Number Of Man-trips	Charge Per Man-trip	Student Charges
A	Morn & Afternoon	2	$2.00	$4.00
B	Morning	1	$2.00	$2.00
C	Morning	1	$2.00	$2.00
Total:				$8.00

[7]The way each leg is costed individually is through "expansion." Proportions are measured and then the entire car cost is attributed to traffic only on that leg.

Table B **First Pricing Scheme**

Student	Morn	Afternoon	Total
A	$2.00	$2.00	$4.00
B	$2.00	$0.00	$2.00
C	$2.00	$0.00	$2.00
Total	$6.00	$2.00	$8.00

In Scheme B, the riders apportion the cost of each leg in proportion to how many people are on each leg. In the morning, the three users pay $1.33 each so that the revenue generated on the drive is $4.00. In the afternoon, with only one person aboard, the charge is $4.00 for that person. This results in Student A's (the driver) paying $5.33 and the other two paying $1.33 each. Scheme B generates $4.00 revenue for each leg but the cost of a man-trip varies.

Table C

Equal Cost and Charges Per Leg

Second Pricing Scheme by Trips

Leg	Rides	Cost Of Leg	Cost/Student Per Ride
Morning	3	$4.00	$1.33
Afternoon	1	$4.00	$4.00

Total:	$8.00

Table D **Second Pricing Scheme by Students**

Student	Morning	Afternoon	Total for Student
A	$1.33	$4.00	$5.33
B	$1.33	-	$1.33
C	$1.33	-	$1.33
Total:	$4.00	$4.00	$8.00

Another example is from postal circumstances. In carrier street time analysis, carrier access is the time taken away from the route to access the house and load the mail receptacle and return to the route. Apart from load time, the time "up the garden path" (or access) to the house and "back down the path" (deaccess) to the route is attributed to the single class causing a stop. In a PW-Nieto world, the time used in making the access would be attributable to the subclass causing it (which was being carried), but the time caused by the deaccess would be attributable to the classes remaining in the pouch, all but the true cause. The deaccess is necessitated by the access and the trip should be attributable to the same cause not to the mail which happens to be in the leg while the deaccess takes place. This shows that it is treacherous and misleading to allocate costs leg by leg. When asked if mail to be mail to be delivered causes the trip from the route to the house. Did that same mail cause the trip back to the route? His answer in

FGSA/USPS T 11-3 was, yes. This mean that mail present on a segment is not coincident with the cause of that segment's costs.

Our two approaches (so far)[8] may be characterized as follows: Our choice is to cost the leg or to cost the joint product: the round trip. If we cost the leg some riders will pay $1.33 per ride and others will pay $4.00 Why is the first or method A above preferable? When there is uneven traffic not at the option of the traveler or shipper there will be wide swings in cost per trip, if we cost each leg. It is not that one user is getting a better product and therefore they should pay more. There is nothing more desirable about the service being offered to incoming trips at BMC's than that offered outgoing trips.

There are really three cases discernable in allocating costs of truck transportation:

- Every leg on its own- allocate cost of each leg by dividing costs of leg by traffic on that leg only.

- Round trip- add up the costs of line haul and back haul. Divide total by traffic (person-trips or CFM).

- Joint determination- this approach recognizes that service standards have a role in determining costs as well as mail volume. A schedule of trips prevents long delay times. The costs of transportation are partitioned through accounting techniques into a small

[8] We shall find that there really are three cases.

number of sectors based on size of vehicles and approximate length of haul (e.g., Intra B, Inter B, Inter SCF, Intra SCF). Within such groups where costs can be expected to be homogeneous total costs are divided by total CFM, a measure of transportation demand.

It is important to realize that all approaches but one aggregate CFM and costs and make a grand quotient within a control group (either the round trip or the accounting sector). Only the each leg on its own method keeps the quotient within the leg exclusively.

IV. Received Economic Theory Pertinent to Transportation and Its Application

A. Theory

There are some salient facts about transportation which should guide its analysis.

1. It is created in bulk. If some potential services are not used, those are gone for ever. This is why it is efficient to have a high load factor. This is also why international tanker (ship) rates fluctuate by a factor of 10 to 1 and more.

2. It is often scheduled for service quality rather than for efficiency. There is a fixed schedule of trips whether passengers or freight eventuates. The schedule is staggered so that demand will be "sufficient." There is usually one trip per day at a minimum between two cities. Commuter railroads run several trains in the middle of the day (albeit with fewer cars) so that maximum waiting time will be reduced.

3. Entrepreneurs prefer to sell units of round trips. This is evident to anyone who has ever tried to purchase a one-way airline ticket.

4. Line haul and back haul are joint products. This is as near to fixed output proportions as we ever come in economics. The miles from New York to Washington are exactly equal to the miles from Washington to New York. As Marshall (see below)tells us that the cost of anything used for several purposes has to be defrayed by its fruits in all of them.5.In the PS the rules for transportation do not allow mixing mail with other freight. Therefore we cannot haul furniture if not enough mail materializes in order to minimize cost.

To elaborate on number 4 above, we might discuss the following. In the production of transportation services, it is very difficult to produce a line haul without producing a back haul to go along with it. Therefore, the contract costs of purchased transportation would be joint costs.

The useful unit of analysis is the line haul and back haul together. They are a unit because we cannot have the one without the other. This resembles in essential ways the classical joint product of economics: the wool and mutton and the wheat and straw discussed by Alfred Marshall, Principles of Economics (p. 321-323, Eighth Edition, London: Macmillan, 1961). The truck needs to return to its origin to accomplish the next line haul. Similarly, the car in our carpool example above needs to get back to the bedroom community so that it is available to take the group to school in the morning. The trip there and back is more fruitfully seen as a unit in transportation.

Microeconomic theory usually focuses on the pricing problem: What can the enterprise get for the "by product" which is desired in addition to the prime product. By contrast, our problem is one of cost analysis, but it is always maintained that the joint production of two outputs must be seen as a unit. Prof. Panzar, in referring to "the 'segments' or 'legs' of a route...," says that he "[does] not see how their costs could be analyzed separately from those of the route as a whole." (Panzar FGFSA T-11-1(b)).

That the round trip is a logical unit of analysis in transportation is demonstrated in several ways:

- The authority Bowersox, Smykay and Lalonde (BS&L), Physical Distribution Management: (New York: Macmillan, 1968 rev. ed.). This is a practical book on transportation analysis and logistics. We provide a quotation from this book which discusses the rational analysis of line-haul cost.
- The difficulty, experienced by many, of purchasing one-way airline tickets is a layman's introduction to this truth acknowledged by transportation professionals. Entrepreneurs

want to cover their return trips when they undertake a line haul. If you are not convinced, try to take a taxi trip which takes the driver out of his normal area.

- The difficulty in renting a car and returning it to a place other than the origin. There is almost always an extra charge for doing so.

BS&L in their standard text on logistics have a chapter on transportation cost analysis. It is entitled, "Transportation Costing." For truck transportation cost what BS&L call line-haul costs[9] are usually analyzed with the round trip as a unit. "because a truck usually goes from an origin to a destination and back, line-haul costs are generated in both directions." Round trip costs is a heading in the following table, 7-2. (p. 169). See LAM-1, p. 5 of 5.

B. HOW MUCH USE CAN WE MAKE OF TRACS DATA VS. TRACS ANALYSIS

We would like very much to design a distribution key for TRACS which eliminates the inequity of charging traffic on light segments high rates. Present indices are that the data forthcoming from TRACS is not reliable. Is there enough quality control ? Exhibit LAM 4b shows alternate estimates of cubic feet by two approaches.

Exhibit LAM-4b combines two Library References, one on Standard (A) and one on Standard (B) mail. The Exhibit is in terms of thousands of cubic feet. In the Intra BMC movement these figures from Lib. Ref. H-111 and 135 indicate the ratio of cubic feet between parcel post and standard A as

[9] To be distinguished from terminal and administration cost for example.

4.25 to 1 in favor of standard A. But if we rely on TRACS we find a ratio of CF equal to 1.112 (y96812). This is quite a discrepancy: one estimate is 3.8 times the other (also see LAM-4a, p.1 of 6).

We are despondent about TRACS. The ability to estimate CF and CFM is necessary and the effort is laudable. But what are we to make a system which makes the following findings.

See LAM 4b. There are further problems with the TRACS data. The mail code KK signifies bulk small parcels, a category which never existed. Somehow TRACS technicians found 225,000 cubic feet in postal quarter 1 of 1996 and 739,000 cubic feet in the second quarter of this mail code. Please see LAM 4a for Quarters 1 and 2 There are different patterns to in-bound and out-bound movements. In one observation, standard A was 33.1% of in-bound movements whereas looking at out-bound movements where bound equals 2, standard A was 37.2% and this is not the most dramatic of comparisons. In-bound and out-bound movements have very different composition. In a situation such as this one we cannot be indifferent as to which type of trips fall in to the random sample because certain types of movements serve some classes more than others and if those are monitored too much cost will be allocated to these classes.

We showed above that charging by the leg and making an "equitable" distribution therein penalizes classes of mail on lightly-traveled routes just as the driver in the carpool is penalized for being the only one on the outbound leg. It is more equitable and efficient to charge every volume unit (CFM) and therefore implicitly "cost out"[10] the round trip as a unit. With regard to witnesses in this case Nieto clearly states that she costs out purchased transportation leg by leg [Tr., 7/3434]. Bradley

[10] By "cost out" we mean "find of the costs of."

by contrast, clearly says that to study the problem leg by leg is improper [FGFSA/USPS T13-25]. Panzar says the same thing.

This distribution key would be more in line with economic theory. We could go further with economic theory in the direction of linear or mathematical programming. Such analysis would lead us to calculate costs at the maximum-load point as Meyer, Kain and Wohl (Cambridge: Harvard University Press, 1965) have done in their classic study of urban transportation.[11] In our application here this would suggest calculating costs when the trucks are at their fullest (certainly on outbound trips). This peak-load approach looks at outbound runs only and divides costs as the proportions of mail classes present on those trips. This distribution key is shown in Exhibit LAM-3. .

Unfortunately the TRACS data collected are not reliable because of the finding DBMC mail on incoming runs: a logical contradiction. Further TRACS data collection problems are shown in LAM 4b. Lib Refs H-111 and H-135 are inconsistent in their estimates of PP cubic feet.

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In the Opinion and Recommended Decisions of several recent cases, the PRC has found that the identity and integrity of the preferential and nonpreferential transportation systems which once existed separately is now a thing of the past. (R 87-1)

We see first class loading in candidate Distribution Key's of 14%; 11-17% in the fourth quarter of the base year between 10 and 18% for first class including priority. Some 10 % of the cubic foot miles are periodicals. The decline of the distinction between preferential and nonpreferential in

[11]See p. 186 for their decision to charge the construction cost of rapid transit largely to the traffic at the peak.

the transportation system began when non-red tag mailers in second class insisted that the postal service charge "red tag"[12] mailers for the better service they received. Postmaster-general bolger decree that all second class will be preferential. There was a long tradition that magazines were distributed through BMC's.

There is more and more preferential mail on these historically nonpreferential transportation routes. Therefore decisions begin to be made considering service quality and the need to meet service standards. New transportation contracts are entered into because of these considerations and not exclusively because of volume. That transportation cost could vary 97% with volume or even 90 or 95% seems more and more unlikely.

TRACS is preoccupied with proportions to the exclusion of basic piece data. If one parcel were in a container or item, all the space would be allocated to Parcel Post. If three parcels were in the container all the space would be allocated to Parcel Post as well.

Mr. Hatfield's analysis has problems. He suggests treating DBMC differently from Intra BMC. These parcels move with each other on the same truck at the same time. Why should their cost analysis be different? Many other classes of mail are transported for the convenience of the carrier. To try to make decisions as to whether a particular segment was part of the net pay load in the direction that the pieces traveling or whether for the convenience of carrier would subject rate making to much more detail than it presently has. Mr. Hatfield divided cost in one topology as Inter BMC, Intra BMC, DBMC and Intra SCF. In an other topology, he distinguishes local, intermediate and long distance transportation.

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[12] Red tag means second class items which received preferential service because they were published weekly or more frequently.

The files related to TRACS highway transportation analysis are divided in to the following groups: DESIGN, EDIT and EXPAND. In the Design group, samples are defined. In the EDIT group, data are scrubbed and mistakes are found and caste off. In the EXPAND group, articles are weighted for cubic feet and to convert from pounds to cubic feet and they are expanded to fill the size of items and containers and ultimately the size of the truck. We have concentrated on analysis on the EXPAND group of analysis especially hwy-1 through hwy-12. The results available in LAM-4b are from an exercise which follows the TRACS methodology except for three items:

. An error in PERCONT

. Expansion to the size of the truck is eliminated

3.

Distribution key can be observed for cubic foot miles and cost using the Nieto methodology. These are available for in the intra BMC account for both in-bound, out-bound and the union of the two categories which we call "." or "dot.".

There is no question that there is a bias in data collection for TRACS:

. TRACS is not a minimum variance sample.

. TRACS takes 70% of its sample on inbound movements.

Why PW and PS collect in-bound sample? It was easier to sit at the BMC where a lot of shipments

come in and collect much data with little travel and in short amount of time. AO's and DU's have less dock activity per hour.

We have shown in the in-bound and out-bound analysis that parcel post is heavily represented in in-bound trips. This has an easy explanation. PS has a large market share in the household to household and household to business parcel post market. PS's comparative advantage is its retail infra structure are set of offices all over the land, well established and convenient to households. That mail is present or on in-bound movements to BMC's and AO's. Business to household packages are more likely to be drop shipped at BMC's.[13] Such traffic would not arrive on postal purchased transportation. The weighting of FACCAT is meant to counteract this known bias. The only way to be sure there was a random sample of possible trips is to know the NASS schedule. That is considered proprietary by the PS. I believe that there is a strong likelihood that sample remains biased in favor of a sampling of in-bound unloadings and the mail classes which are present on those inbound runs.

[13] FGFSA's packages do this largely for quality because of the limited shelf life of the product and desire for freshness.

We used data provided in LR's H-82 (TRACS Highway Sample Design Programs and Documentation) and H-84 TRACS Data Files in Machine Readable Format. We did two types of analysis. We studied the pure data collected by PW and PS. We also did several runs of the SAS program with modifications.

We analyzed implicit cost distributions over mail codes on inbound, outbound (using the BOUND Variables). our distribution were made in CF, cubic foot miles and costs as shown in Exhibits LAM-4a,-4b, -5 and LAM-9

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon all parties of record in this proceeding on this date in accordance with Section 12 of the Rules of Practice and Procedure.

Dated : December 30, 1997.

M. W. Wells, Jr., Attorney