MOTOR CARRIER SECTION 22 TENDERS: DO THEY COVER VARIABLE COSTS?

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INTRODUCTION

In 1887 President Cleveland signed into law the Interstate Commerce Act. Included in the original Act under Part I was Section 22. This section specifically stipulated: "that nothing in this act shall prevent the carriage, storage, or handling of property free, or at reduced rates for the United States, State, or municipal governments."[1] Initially, Section 22 provided the avenue by which non-Land Grant Act railroads could legally bid with competitive rates for a share of the government traffic that Land Grant Act railroads were required to move at reduced rates.[2] As the Land Grant Act shows, the idea of giving rate privileges to the government was not a novel product of Section 22 of the Interstate Commerce Act. On the contrary, it uses an outgrowth of English Common Law and earlier American legislative history, with much of the American legalistic thinking being imported from England.[3] The fact that Section 22 was not repealed with the repeal of the Land Grant Acts in 1946 indicates that this philosophy of rate reductions for the government was a specific intention of the law makers. Numerous changes and amendments have been made to Section 22 over the years, but the provision of "free or reduced rates" has remained intact. Section 22 has been expanded to include motor carriers, water carriers, and freight forwarders; but at no time has it affected any other provisions of the Act beyond those of minimum rates.[4]

In the study of highway motor carriage, Section 22 assumes added importance because in this arena carriers are permitted to enter

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1. U.S. Congress, Senate, *Congressional Record*, (Vol. 18, Part 1, Washington, D.C.: U.S. Government Printing Office), p. 98.

2. Louis A. Mascìocchi, "What About Section 22?" *Translog*, Vol. III, No. 5, (May, 1972), p. 27.

3. *Ibid.*

4. Lloyd G. Wilson, *Interstate Commerce and Traffic Law*, (New York: Prentice-Hall, Inc., 1947), pp. 340-341.

freely into rate competition. Data available from the Department of Defense, as the largest single purchaser of motor carrier transportation under Section 22 tenders, provide a source of information from which to draw some conclusions about possible carrier activity in an environment of deregulation. Proponents of regulation argue that since the Interstate Commerce Commission is charged with maintaining a viable transportation industry, Section 22 should be eliminated because of its promotion of competitive bidding to the point that carriers must bid below costs in order to move government freight. They further argue that this practice is sufficient to drive many carriers out of business.[5] On the other hand, supporters of Section 22 say that the competition is at a healthy level and constitutes a direct savings to the taxpayers.[6]

The importance of this topic is the need for executives of the motor carrier industry to have information regarding cost and rate relationships within the realm of Section 22. The same type of information coupled to a definitive statement concerning carriers' ability to remain solvent and operational under the competitive pressures of Section 22 will assist legislators in dealing with the issue of Section 22's future.

Considering only the highway motor carrier industry in a situation where rate competition is permitted, Locklin says that "Short-run variable costs, rather than long-run variable costs, will determine what rate he [the motor carrier] charges."[7] The problem then becomes one of whether highway motor carriers cover their short-run variable costs in competitive bidding for government traffic under the provisions of Section 22 of the Interstate Commerce Act.

HYPOTHESIS OF THIS STUDY

The hypothesis to be tested is whether highway carriers submitting tenders under the provisions of Section 22 of Part 1 of the Interstate Commerce Act to the Department of Defense for movement of military freight within the geographical area of responsibility of the Western Area Military Traffic Management and Terminal Service Headquarters have generally covered their short-run variable costs. To test

5. Transportation Association of America, "House Unit Clears Surface Transport Bill Containing Many TAA-Supported Provisions," *Report*, (Washington, D.C.: Transportation Association of America, August 14, 1972), p. 1.

6. Masciocchi, *op.cit.*, p. 28.

7. D. Philip Locklin, *Economics of Transportation*, (7th ed., Homewood, Ill.: Richard D. Irwin, Inc., 1972) p. 652.

this hypothesis, a sample of tenders will be examined. The sample is subject to certain limitations, which are:

1. The Buyer:

The Department of Defense is the largest single purchaser of transportation under the provisions of Section 22 with an annual outlay in the area of 500 million dollars. The traffic management function of the Department of Defense is carried on by the Military Traffic Management and Terminal Service and its two subordinate elements, Eastern Area and Western Area.[8] The Western Area Headquarters, located in Oakland, California, maintains files of tenders applicable to the western half of the country. Only Section 22 tenders from this file were used to make up the statistical sample for this study.

2. The Tenders:

The Section 22 tenders maintained by the traffic managers in Oakland are filed by the state of origin of the move. For the purpose of this study a random selection was made of tenders from the California file by carrier name. The sample was completed by selecting additional tenders from the same carrier as well as from other carriers from the same movement. After deletion of eleven observations that dealt strictly with sea vans and were not comparable with the remainder of the data, the final number of observations was 89.

3. Cost Data:

The data concerning cost figures were taken primarily from information gathered by the California Trucking Association from motor carriers operating within California.

4. The Seller:

Because of the method of selection of the tenders, the sellers of transportation are limited, for the purposes of this study, by the fact that they had submitted the particular tender that was selected for inclusion. All were necessarily a party to tenders submitted under Section 22 for the movement of Department of Defense freight within California.

RESEARCH METHODOLOGY

The study consisted of two phases, the first of which involved the application of a stepwise multiple regression analysis of data ex-

8. Major General Clarence J. Lang, "MTMTS Procurement Activities," *Defense Transportation Journal*, (Vol. XXVIII, No. 1, January-February 1972), p. 34.

tracted from the observations to establish the effect certain factors have on the rate per hundredweight listed on the Section 22 tenders.[9] The second phase consisted of a comparison of the Section 22 rates with representative cost data. The ultimate goal was to determine whether carriers submitting these tenders were covering their short-run variable costs. The analysis was based on the following assumptions:

1. that each carrier acted as the classical economic theorists' "Rational Economic Man." This supposes that each carrier made an effort to evaluate his situation and did not intentionally make decisions that would have jeopardized his economic future.
2. that all tenders included in the sampling were valid tenders still in an active category, and that superceded tenders had been purged from the system by the Department of Defense traffic managers in their annual reviews.
3. that the carriers' variable costs include direct vehicle operating costs, direct labor costs, direct terminal costs, and that portion of the administrative costs, such as billing and supervision, that directly affects the move for which the tender is submitted.
4. that these variable costs are a function of the length of haul and minimum weight of the bid.
5. that other factors such as the routing, the possibility of backhaul, length of leadtime before the shipment must be delivered, delays in loading and unloading, claims, and insurance will have a negligible impact on the variable costs, and those carriers who assign some weight to these factors will include them in the percentage affect that length of haul and minimum weight have on the tender rates.
6. that minimum class rates approved by the California Public Utilities Commission represent fully allocated costs for the particular move.

THE BUYER, MTMTS

The Military Traffic Management and Terminal Service (MTMTS) was chartered in 1965 as the Army activity responsible for

9. This article is based on a longer study entitled "Multiple Regression Analysis to Establish the Degree that Section 22 Tenders are Compensatory." Copies are available for $3 apiece from Student Research Associates, c/o School of Business, San Francisco State University, San Francisco, CA 94132.

performing the traffic management functions of the Department of Defense for shipments within the continental United States. MTMTS is divided into three elements. The Headquarters, located in Washington, D.C., carries on liaison with the other services in the Department of Defense and, in addition to its other transportation-oriented activities, conducts major negotiations with carriers for certain types of high volume, high value, or otherwise unique shipments. The country is divided so that the western fourteen states, Alaska, and Hawaii fall under the Western Area Command, and the remainder of the country falls under the Eastern Area Command.

The purpose of MTMTS' traffic management activity is the conduct of negotiations with carriers and directing the consolidation and shipment of goods moving among the various installations while achieving the greatest possible savings to the government. The military traffic managers function just as the traffic managers of any of the larger commercial corporations. The commercial traffic manager, with control over all the shipping of the corporation, plans the movement of raw materials and finished products among different locations in a manner that will keep the transportation costs minimal. He knows of the up-to-date charges that involve volume rates and fees for services, and, through negotiations with various carriers, he strives to obtain the best service at the lowest total cost. The military traffic manager combines these activities with the advantages of being able to accept bids tendered under the provisions of Section 22. This release from the fetters of minimum rate regulation provides increased savings through reductions in cost of transport.

Military items can be divided into those that are similar or identical to civilian commercial products and those that are unique to a defense effort. The development and application of commercial rate classifications to military freight is difficult when the items are not duplicated in the civilian realm. Consequently, applying a rate from an analogous commercial shipment is frequently difficult, if not impossible. The commercial rate structure is the product of a long slow process involving the docketing of proposed rates being established as the necessity arises for new unique shipments. This process requires a great deal of time, and current rate tables are the product of many years of toil. In military shipments, the key requirement is that a speed in execution without the long drawn-out delays of the regulatory procedures to establish rates. This flexibility is provided by Section 22 tenders.

The origin and destination points of military cargo are generally military installations which are normally located outside the geo-

graphical confines of the major metropolitan centers. This should be contrasted with the location of commercial facilities, which generally revolve around economic factors with transportation costs playing a key role.

Tracing the flow of a shipment through its various stages will provide a better understanding of how MTMTS operates. Each military installation has a Transportation Officer who acts as the shipper for the particular installation. He is authorized to route and select carriers for moves involving weights under 10,000 pounds. Larger shipments must be routed by the appropriate MTMTS Area Command. The Transportation Officer submits his requirement for a move to the Area Command. The Directorate of Freight Traffic at the Area Command reviews the request, approves the existing routing or selects more efficient routing, and selects the carrier based on submissions of tenders by all carriers wishing to provide this particular transportation service. If no tender is on file for that particular commodity or destination, the Area Command or the Headquarters will request bids on the particular commodity or routing. Once the tender is submitted and the carrier selected the shipment can then be released for movement.

Section 22 provides the framework for competitive bidding for government traffic, but opponents of Section 22, such as the Transportation Association of America, argue that the competitive bid mechanism forces carriers out of business.[10] MTMTS, on the other hand, considers competitive bidding, since it is permitted under Section 22, as the method by which a public organization, especially the military, can dispense contracts to private firms in a manner which, when properly governed, prevents favoritism or personal gain from influencing decisions.

The competitive bid system provides a tool by which that portion of the Department of Defense's budget for transportation can be most judiciously dispensed. General Lang, the commander of MTMTS from 1969 until 1973, stated:

> The agency (MTMTS) influences the expenditure of more than $2 billion annually, at a management cost of less than one percent, thus saving the Defense Department about $2.50 in direct economies for every dollar spent on traffic management activities.[11]

10. Transportation Association of America, *Report, op. cit.*
11. Defense Transportation Journal, November-December, 1972, *op.cit.*, p. 37.

Although this statement considers the entire scope of MTMTS activities of which highway transport management is but one part, it gives an indication of the funds involved.

The prime function of military traffic managers is to save money. Nowhere is there any overt or covert attempt to influence any carrier's solvency as an ongoing concern. The carrier is expected to conduct his business in a rational manner with the understanding that MTMTS is not a financial aid agency for ailing transportation business.

Under certain circumstances involving extraordinary shipments, long term repetitive requirements or other unusual situations, formal negotiations may be required. Within the course of these negotiations the carrier's ability to perform the service at the rate he is quoting may be questioned. This is the only time that the degree to which a carrier covers his costs is considered by the military traffic managers. Tenders developed as a result of these formal negotiations account for approximately two percent of all Section 22 tenders utilized by the military.[12] The remainder are tenders submitted by carriers on a voluntary basis in response to actual or anticipated demands on the part of the military.

The military traffic managers make no effort to evaluate the tender when it is submitted. It is merely filed until such time as it can be applied against a specific requirement. When an Installation Transportation Officer submits a request for a movement that falls within the scope of the particular tender, then it and all other tenders quoting specifics of commodity and routing which agreed with the request are evaluated. The prime consideration is the rate, so those tenders quoting the lowest rates come under the closest scrutiny. The next hurdle is that of ability to perform the service requested. For this evaluation, records of past performance on similar commitments are examined for each carrier eligible for consideration. Each of the carriers who have survived to this point are again evaluated on the basis of which carrier provides the best additional services. This evaluation is frequently the only subjective determination entered into during the entire process, and includes such factors as flexibility of pickup and delivery times, claim service, and degree of security as well as the prime consideration of length of delivery time. If for some reason this carrier is unable to accept the commitment, the next best choice is selected, and so on.[13]

12. Military Traffic Management and Terminal Service *Traffic Management Information Letter, June 1971*, (Washington, D.C.: MTMTS, June, 1971), p. 8.

13. Interview with Captain Don Strassenberg, WAMTMTS Directorate of Freight

MTMTS maintains a public file of all tenders that are submitted as well as promoting a policy in which military traffic managers are available to meet with any carrier representatives who may have questions concerning the conduct of business with the military. Nowhere in the above discussion of evaluations nor in the day to day operations do the traffic managers consider whether the carriers submitting tenders are covering all or any part of their costs. The one time that the subject may be broached is during discussions with carriers wishing to enter into business with the military for the first time when the conversation turns to the carrier's ability to perform. This phase of the discussion is especially critical when the carrier is a small family-operated sole proprietorship or partnership. The traffic manager takes great care in explaining the requirements that the military expects the carrier to be able to perform. These small one or two truck operators are carefully instructed to consider their costs in computing the rate at which they intend to bid.[14]

To show the volume of voluntarily submitted tenders received by MTMTS, the following statistics were published in the MTMTS Quarterly Progress Report:

> "During the 1972 fiscal year 30,006 voluntary submissions of Section 22 tenders were received. Of these, 7,091 were for the movement of household goods and the remaining 22,915 were for the movement of general freight.[15] MTMTS views these Section 22 tenders as an effort for the government to be granted commodity rates for traffic that might otherwise be moved under the higher class rates. It is felt that these so-called commodity rates are justified on the basis of unique military shipping requirements.[16]

THE SELLER

William Bresnahan, President of the American Trucking Association in 1972 said,

> Eminently adaptable in form and purpose, the truck has become the most indispensable unit at every level of production,

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Traffic, Oakland, California, April 29, 1973.

14. Interview with Major Fred Hebert, WAMTMTS Directorate of Freight Traffic, Oakland, California, March 8, 1973.

15. Military Traffic Management and Terminal Service, *MTMTS Progress Report - 4th Quarter, FY 1972*, (Washington, D.C.: MTMTS, 1972).

16. Lang, *op. cit.*, p. 36.

> distribution, and marketing. It links the shipper and the consumer with every other transport mode.[17]

During the trucking industry's infancy, its chief competition was the railroads. Since World War II the intercity motor carriers have increased their share of the regulated traffic from 15 percent to 53 percent in 1972 while the railroad's share dropped from 80 percent to its present 39 percent with the remaining 8 percent divided between pipelines, air, and water carriers.

The chief area of competition that the motor carrier of today need concern himself with is the division of the current 53 percent market share among the various motor carriers. Due to the economic regulation that common carriers are subject to in their day-to-day operations, there is little opportunity for competition in the realm of rates. Therefore, competition places the greatest stress on the area of service.

Motor carriers are regulated by the Interstate Commerce Commission, the Department of Transportation and various state regulatory bodies. The jurisdiction of these agencies extends to virtually every phase of carrier activity.

> . . . The ICC approves rates, routes, type of service, and types of commodities transported. . . . Common carriers are available to the general public to transport, at published rates, a given type of freight between points which they have authority to serve . . . . Every interstate carrier, in order to operate, must prove to the ICC the need for its specific services before it can be certified for those services.[18]

Included within this realm of regulation is the submission of certain reports to the regulatory body and adherence to explicit accounting procedures as well as compliance with requirements concerning stock distribution and acquisition or merger activities. The necessity for approval of acquisitions or abandonments as well as proof of public need act as a stabilizing force for the industry by posing barriers to ease of entry and to uncontrolled expansion by purchasing existing carriers.

The motor carrier industry, having a high percentage of its expenses tied to labor, is characterized by a high proportion of variable cost to fixed cost. This is of importance when one considers the economic

17. American Trucking Association, *American Trucking Trends* 1972, (Washington, D.C., 1972), p. 1.

18. American Trucking Association, *Trends, op. cit.*, p. 36.

efficacy of abandoning a fully allocated costing structure in favor of one which considers only variable costs, an action recommended for development of a pricing policy during short run periods of highly intensive competition. Locklin describes the truckers' cost structure thusly:

> . . . the conclusion that motor carrier costs are mostly variable is based on the fact that the equipment used can be readily adjusted to the volume of traffic. In terms of economic theory we are dealing with the "long run" period, since that term is defined as one in which plant can be adjusted to changes in the volume of business. In the motor carrier industry, however, the long run is short in terms of calendar time, unlike the situation in industries which have difficulty in adjusting their plant and equipment to changes in the volume of output.

He continues by showing that in the short run, motor carriers have a substantial part of their costs fixed or constant:

> . . . This can be seen by considering the case of an individual who undertakes to engage in for-hire transport with only one or two vehicles. If he finds it difficult to obtain business, he is tempted to take any business that he can get at a cut rate price, which may be a price that will give him some revenue above gasoline and oil costs and any other immediate outlays. Under these circumstances he recognizes that interest on investments in vehicles, property taxes on the vehicles, motor vehicle registration fees, and at least part of the depreciation on the vehicle are fixed costs and incurred whether he moves any traffic or not.

In summation, Locklin concludes that: "Short-run variable costs rather than long-run variable costs, will determine what rate he (the carrier) charges. . . . The situation. . . often occurs in the trucking industry and shows . . . short run pricing . . . a problem for the industry."[19]

A Consolidated Freightways publication, in discussing the trucking industry, adds that:

> The (motor carrier) industry is highly unionized, with considerable uniformity in wage rates among competing companies. Labor costs including fringe benefits average approximately 60% of revenue. This results in a relatively high proportion of

19. Locklin, *op. cit.*, p. 652.

variable as opposed to fixed costs, which allows carriers to adjust rapidly in fluctuations in volume."[20]

Further characteristics of the industry cost picture involve a relatively low rate of return on revenue but a good return on capital. Investment consists mainly of vehicles, terminals, equipment, and inventories of tires and spare parts. Business is mainly on a cash basis and credit extensions kept to a minimum because of ICC regulation. Problems of obsolescence and inflation that plague capital intensive industries are negated in the rapid turnover and high cash generation of the short-lived revenue equipment.[21]

The requirement for rates to be published, and to be nondiscriminatory in addition to being reviewed by the regulatory body for reasonableness causes rates that reflect the cost picture projected by the average carriers who are party to the tariff. Carriers who are either much more efficient or who, at the opposite end of the spectrum, have proportionally higher costs will enjoy different profit margins based on their degree of efficiency. Rate regulation, since it permits only competition in service, acts as an incentive to improve the quality of business or traffic actively sought, and thereby improve the average revenue.[22] Because rate regulation exists, it necessarily affects calculations concerning costs and future rate submissions. On the other hand, given a rate regulation vacuum, carriers become free to more closely evaluate their expense picture and their operational requirements. Depending on the intensity of current competition, carriers will adjust their cost allocation between fixed and variable costs to the degree necessary to insure active participation in the available business.

Section 22 provides the rate regulation vacuum in which carriers are free to bid the rates which they feel appropriate based on current service needs. Under these conditions rates will be established based on costs, degree of competition, current unused capacity, size of the carrier, as well as all other business decision factors.

LARGE VS. SMALL CARRIERS

Large carriers can be described as having major investments in terminals and maintenance facilities. They normally have authority

20. Consolidated Freightways, *Fact Book and Financial Review—1963-1972*, (Menlo Park, 1973), p. 4.
21. *Ibid.*
22. *Ibid.*

over large geographical areas. An example would be any of the transcontinental carriers such as Time D.C., Transcon, C.F., or California carriers such as O.N.C., or Crescent. Each of these carriers has refined sales and operations staffs organized for round-the-clock operations. Many of these carriers operate runs to certain destinations over given routes on a rigid schedule. Highly paid unionized drivers, dockworkers, and clerical or administrative personnel characterize these carriers. These are the carriers whose numerous trucks are immediately recognizable to any who would peer at a freeway.

At the opposite end of the spectrum are the carriers with one or two trucks. These are family business affairs frequently with the husband acting as salesman, mechanic, driver, and dockman while the wife assumes the duties of clerk, billing, rating, and tracing. Perhaps a friend or relative handles the second truck or helps where needed. At best, it is a "shoe-string" operation, but all the functions performed by the large carrier must be performed by this family operation. The major differences are in operating costs and range of services provided. The question of service provided is subjective and depends on the particular move in question. The small carrier represents one extreme with the other represented by the gargantuans of the industry.

The small carrier is able to provide services on a personal level. Often the same individual who approaches a potential customer in the capacity of salesman will also be the person who will load the freight, drive the truck, and unload the freight at the destination. The customer can be assured that his instructions will be carried out to the letter. The carrier can predict accurate delivery dates and run less risk of damaged or lost freight. On the negative side, the smallest incident causing a claim on high value freight can be financially disastrous to the small carrier. He is normally limited to a small geographical area and suffers from limited types of equipment for special cargo and cannot tie up any given piece of equipment for a customer without adequate compensation.

The large carrier serves a much wider area with direct service to numerous points and interline connections to other points. He has a larger selection of equipment to fill a customer's needs. With more equipment available, the larger carrier can, during periods of suboptimal equipment utilization, permit preferred customers to use trailers as storage for short periods. Other characteristics revolve around the large operating staffs with each element handling one portion of the operation. Examples are the rating and billing section, tracing, pickup and delivery dispatch, freight operations (cross dock

activity transferring freight from smaller city rigs to over-the-road equipment and back at the destination), line dispatch for intercity movement, maintenance, marketing, and administration. Each area becomes a small empire among which information and customers' instructions frequently "get lost" or "forgotten." The sales staff may promise the customer perfect service, but the customers' instructions may never be implemented. No carrier could stay in business for long is this were the routine for every customer, but the larger carrier can absorb a greater degree of counterproductivity based on employee and "hired" management apathy than can the small proprietorship carrier.

As differences in service develop based on size, so do differences in cost structures. The larger carrier has the opportunity to profit from economies of scale and a larger base over which to spread cost. He has the ability to eliminate marginally productive equipment and facilities during a period of "belt-tightening." Because of his control over plant, as mentioned before, the larger carrier has the ability to shorten the calendar time encompassed by his long run cost curves, thus converting more items of expense to variable costs. By the same token, the large carrier's single most expensive item is labor, with wages and fringe benefits taking 59.8 cents out of every truck revenue dollar in 1970.[23] By investment in modern technological equipment, larger carriers have been able to extract greater productivity to offset the high labor costs. An example would be the use of two trailers (called "doubles") for intercity movement, or computerized dispatch and on-line computerized billing and tracing.

The small carrier, either because of limited capital or credit, is less able to adjust his "plant" to changing economic situations. As such, more of his expenses are fixed over a longer period of time. Vehicle registration is a good example. The small carrier who registers one or two vehicles may only have to pay the fee once a year. Once it is paid it is a fixed cost for him for the year. On the other hand, the larger carrier who is adding vehicles to his fleet may pay fees on different vehicles all year long. The larger carrier can alter his fleet size by registering or not registering vehicles at any time. Thus he is able to make this item a variable cost. The small carrier, not using as much union help, is able to reduce his labor expense considerably in relation to his larger counterpart.

23. American Trucking Association, *Trends, op. cit.* p. 28.

CARRIERS AND GOVERNMENT TRAFFIC

Information concerning government traffic that other carriers are bidding for under Section 22 is available from many sources. Carriers subscribe to the *Digest of Section 22 Quotations* by Transportation Services, a private company in Washington, D.C.,[24] the *Daily Section 22 Reporting Service* by the American Trucking Association, Inc.,[25] or to bulletins published by traffic or rate bureaus such as the Rocky Mountain Motor Traffic Bureau, Inc.[26] Each of these sources provide up-to-date information on the most recent tenders submitted under the provisions of Section 22. From these sources, combined with personal contact with the government agencies in question, carriers can determine in what government traffic they would like to share, and bid accordingly.

Large and small carriers actively seek government traffic that they feel is beneficial to their organizations. An example can be seen by looking at Consolidated Freightways, Inc. (referred to as CF). CF considers government traffic important enough to warrant two sales managers specifically for that purpose. One is located in Washington, D.C., and is responsible for east coast activity, while the west coast is covered by a manager located in Hayward, California. In addition CF has a chapter in its sales manual on selling to the government.

"CF is definitely interested in government traffic," the manual says and it continues by stating:

> Remember, Sell the Government Traffic Manager just as you would a commercial traffic manager. Sell him these points:
>
> 1. CF coverage and service
> 2. CF serves more government shipping and receiving points with direct service, than any other motor carrier.
>
> Managers should assign sales personnel to individual government accounts just as they would to a commercial account.[27]

Larger carriers, whether after government or commercial traffic, are not interested in carrying all available freight. They actively seek

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24. Transportation Services, *Digest of Section 22 Quotations*, TS No. 283, (Washington, D.C., January 29, 1974).

25. American Trucking Association, Inc., *Daily Section 22 Reporting Service, Washington, D.C., 1974.*

26. Rocky Mountain Motor Tariff Bureau, Inc., *Bulletin Service*, (Denver, Colorado, May, 1973).

27. Consolidated Freightways, *Sales Manual*, (Menlo Park, Cal., C.F., Inc., 1970), pp. 13-14.

only freight, referred to as "quality traffic," which moves at high rates while simultaneously causing relatively little expense. This philosophy emphasizes shipments of between 500 and 20,000 pounds, or even larger. In seeking government traffic, exempt from rate regulation, this philosophy causes the larger carriers to consider only those shipments for which competition has not driven the tendered rate below that which provides an adequate "profit to revenue" ratio as determined by the corporate staff. Herein lies the difference between the larger and smaller carriers. The smaller carrier, who may be less refined in his approach to marketing, frequently wastes much effort by seeking any traffic and ends up with less income than if he sought only "quality traffic." He may be doing a nice volume of business, but be heading for bankruptcy.

What impact does all of this have in the quotation of Section 22 tender rates? The small carrier comes into the government transportation office and asks if there is something he can move. Frequently the carrier will review tenders in the public file to establish a pricing base. In interviews with the carriers, traffic managers see the "shoe string" operator relying on intuition and past experience rather than on highly refined data collection and analysis characterized by the pricing decisions of the larger carriers.[28]

The analysis entered into by the larger carrier resembles the following:

> The carrier starts out by knowing what origin terminal and destination terminal is involved and the linehaul distance between them. They consider the weight of the shipment and compute the expense of the move by figuring the linehaul cost from the distance and the carrier's cost per mile multiplied by the percentage of load factor. This cost is doubled if the matching return trip must be deadheaded back to the origin. The cost per mile is computed including the driver's wages, operating costs of the vehicle, a share of line dispatch administrative costs, all of which are based on accurate record keeping and computer analysis. This is added to the cost per pickup at the origin terminal and cost per delivery at the destination terminal given in a rate per cwt. Monthly statistics are kept for each terminal in the system showing the breakdown of all terminal expenses and applying these against the weight picked up and delivered, as well as those expenses that are applied to the line haul. The

28. Interview, Hebert, *op. cit.*

> final element of expense to be added is the percentage of revenue for corporate overhead. In the case of commercial traffic under regulated rates, the expense total is compared with revenue computed from the legal rate. If the resulting operating ratio (expense to revenue) is satisfactory according to corporate standards, the shipment is actively sought.[29]

In the case of Section 22 traffic, the cost estimate and the minimum operating ratio at which the carrier will seek a shipment combine to determine what minimum rate will be bid. Of course, they will bid as high above this minimum as competition will permit, but following the theory of "quality traffic," large carriers will not actively seek government shipments for which competition has driven the rate below the satisfactory minimum.

COLLECTING THE DATA

The first phase of data collection centered around the price that was bid by motor carriers under the provisions of Section 22. Copies of all Section 22 tenders submitted for the movement of Department of Defense shipments are maintained at the Directorate of Freight Traffic within WAMTMTS located at the Oakland Army Base.

Personal interviews were conducted with members of the Directorate of Freight Traffic staff[30] [31] and permission received to extract information from the 1973 operation file of Section 22 tenders. Since all sample observations were drawn from the working files used by the traffic management technicians, they were considered to be still in effect although their individual dates of submission ranged as far back as 1961. (Tenders are maintained on file until they expire, if an expiration date has been assigned by the submitting carrier or until they are rescinded or superceded by a later submission by the same carrier.)

The Section 22 tenders provide information concerning the carrier, the commodity stated as either a specific commodity or FAK (mixed freight), the origin and destination of the movement stated as either specific locations or general points within a larger geographical area, minimum weight applicable for that particular rate, and the rate per hundredweight in cents. Other information contained on the tender

29. Interview with Mr. Art Colley, Director of Operations Planning, Consolidated Freightways, Inc., of Delaware, Menlo Park, California, February 4, 1974.

30. Interview, Hebert, *op. cit.*

31. Interview, Strassenberg, *op. cit.*

includes specifics such as accesorial services and charges, nature of payment, exclusions, as well as any other specifics the carrier may have wanted to include.

The second phase of data collection concerned carrier costs. The California Trucking Association, Inc. (CTA), which, among its other activities represents its members in actions before the California Public Utilities Commission (PUC), maintains a division level staff which has as one of its functions the requirement to generate current and historical cost data to support the CTA's presentations at PUC hearings. Because the research conducted by the CTA is directed toward supporting proposed increases in minimum class rates, the cost data are generally oriented toward full allocation of costs, which includes net revenue after expenses and operating expenses. Rate hearings before and approval by the California PUC are based on the actual cost of transportation[32] as opposed to the "fair return upon the fair value of their property" as used by the ICC.[33] This means that in California the rate for any particular move must cover the fully allocated costs of that move, where the ICC rate policies consider the overall financial solvency of the carrier.

The statistics used in compiling the final California rates are derived from the broad spectrum of carriers from the very large to the very small. Because of the sheer volume of data generated by the larger carriers, they tend to over-balance the data in their own favor. The rates tend to be inflated due to the larger carriers' higher costs such as labor costs while some tendency to reduce the rates is generated by the larger carriers' greater efficiency. The primary impact of the rate structure is that, because the small carriers are able to operate at lower labor costs, they find the rate structure provides a higher percentage return over their costs than is provided to the larger carriers for the individual move.[34] Larger carriers tend to reduce this gap by utilizing economies of a scale inherent in their size. The fact that many larger carriers are using computers to improve vehicle and personnel utilization, better monitor lay times in intercity relay operations, and better control cross dock freight operations contributes to reduction of the costs of individual moves and is ultimately reflected in requests for smaller rate increases.

Statistics generated by both the American Trucking Association

32. Interview with Mr. Peter Shaw, Division of Transportation Economics, California Trucking Association, Burlingame, Ga., February 4, 1974.

33. Locklin, *op. cit.*, p. 421.

34. Interview, Shaw, *op. cit.*, February 11, 1974.

and the California Trucking Association gave the breakdown of operating expenses found in Table 1. The ATA statistics represent information gathered in 1961 from a sample of Class I, II, and III carriers operating within California. Even though there are nine years difference in these percentages, they represent a striking similarity with the exception that the CTA TERMINAL EXPENSES are nearly five percent lower while their OTHER EXPENSE is 2.4 percent higher and their EQUIPMENT MAINTENANCE is 1.5 percent higher.

TABLE 1

Net Operating Expense Breakdown
by Percent of Total[50]

Expense Category	1971 ATA	1961 CTA
Equipment Maintenance	9.4%	10.9%
Transportation	44.5	45.2
Terminal	21.4	16.7
Traffic	2.8	2.3
Insurance and Safety	4.5	4.3
Administrative and General	6.5	7.3
Sub-total	89.1%	86.7%
Other Expenses	10.9	13.3
TOTAL OPERATING EXPENSE	100.0%	100.0%

The CTA computed INDIRECT COST, which is included in operating expenses and is given as a percentage of total revenue, ranged from 17.5 percent to 20.5 percent. The actual percentage is assigned on the basis of weight groupings and length of haul. During a short run situation in which variable cost pricing techniques were being considered, these indirect costs would be classified as fixed costs, and as such, would be deleted from the data used to determine the rate.[35]

The mileage used by the military traffic managers was converted to constructive mileage by the use of Distance Table #7.[36] This step was necessary because the minimum class rates approved by the California PUC are computed on the basis of constructive mileage.

35. *Ibid.*

36. California Public Utilities Commission, *Distance Table #7*, (San Francisco, Cal., Cal. PUC, January 1969, with changes through February, 1972. Constructive mileage takes into account changes in elevation and other factors which influence costs of operating a truck over a given route.

The next step involved assigning commodity classifications to the observations. This proved to be the most subjective part of the operation because the commodity descriptions on the tenders were not specific enough to match with those commonly accepted descriptions used for rating purposes. The final step in this sequence involved reviewing the Minimum Rate Tariff for the year of each observation and assigning the appropriate rate.

DATA ANALYSIS

The results of the multiple regression application yields the following equation for estimating a Section 22 tender rate in cents per hundredweight (Y) when the two independent variables of minimum weight in pounds (X2) and distance in miles (X1) are known:

Y (rate) = 87.523(cwt) - 0.002X2 (minimum weight) + 0.167X1 (distance).

Table 2 contains the comparison of the calculated rates with the actual rates for two examples taken from the sample observations. In both examples, the minimum weight remains the same, 40,000 pounds, but the distance changes. For observation number 78 the formula gives a computed rate that is 95.4 percent of the observed rate, while for observation number 22 the formula accounts for 80.1 percent of the actual rate.

COMPARISON OF TENDER RATE TO COSTS

In order to verify the hypothesis that carriers are covering at least their variable costs in submitting Section 22 tenders, it was necessary to compute what portion of fully allocated costs represented the variable costs and then to establish to what degree the Section 22 tender rates exceeded or fell short of this level.

Discussion with Mr. Shaw of the CTA emphasized the probability that in a variable cost pricing situation, the main determinants of minimum variable cost would be incorporated in the TRANSPORTATION and TERMINAL categories of operating expenses, with the majority of the remainder of these categories, including EQUIPMENT MAINTENANCE, being deleted from consideration in establishing the rate.[37] Using the information contained in Table 1 to develop a mean percentage representative of those two categories after

37. Interview, Shaw, February 11, 1974, *op. cit.*

deduction of indirect costs, a minimum variable cost limit of 63.9 percent of operating expenses was computed. Completion of the analysis required that this percentage representing variable cost be converted to a percentage of fully allocated cost. The operating expense, including indirect costs, consisted of the amount remaining when net revenue after expenses is deducted from the fully allocated cost as applied to the minimum class rates.[38]

TABLE 2

Comparison of Computed and Observed Rates

	Regression Formula with Coefficients	Computations for Observation #78*	Computations for Observation #22**
Constant	87.523	87.523	87.523
B_2	− 0.002	− 0.002	− 0.002
X_2	X_3	40,000	40,000
B_2X_2	$-0.002X_3$	−80.000	−80.000
B_1	+ 0.167	+ 0.167	+ 0.167
X_1	X_2	412.000	100.000
B_1X_1	$+0.167X_2$	+68.804	+16.700
Computed rate	Y_c	76.327 cwt	24.223 cwt
Actual rate	Y	80.000 cwt	30.000 cwt
Computed rate as a percent of the observed rate	$\frac{Y_c}{Y}$ 100	95.40%	80.07%

*Observation number 78 was tendered by the Little Debra Shipping Company in 1971 to move FAK commodities in 40,000 pound minimum truckload lots from Oakland, CA. to Long Beach, CA. (412 miles) at a rate of 80 cents per hundredweight.

**Observation number 22 was tendered by the C.Q. Trucking Company to move lumber and building materials in 40,000 pound minimum truckload lots between points in California not exceeding 100 miles distance at a rate of 30 cents per hundredweight in 1969.

The deduction of net revenue after expenses was justified on the basis that this net figure includes deductions for income taxes and the remaining profit. In a situation in which only variable costs are

38. *Ibid.*

considered in setting the price, there will be a net accounting loss on the individual move and, consequently, no contribution to profit nor income taxes attributed to the move. The mean net revenue for the period of the sample observations was computed from expense and revenue statistics published by the American Trucking Association. The mean net revenue corresponding to the sample observations amounted to 4.4 percent of total revenue.[39]

The CTA computed indirect costs as a percentage of total revenue and based on the weight group and distance of each move, this is then applied to each category of operating expenses. The mean indirect cost applicable to the Section 22 tenders amounted to 18.9 percent of total revenue or fully allocated costs.

Setting fully allocated costs as 100 percent and deducting the 4.4 percent representing net revenue leaves 93.6 percent to cover operating expense. With the minimum variable cost being set at 63.9 percent of operating expense, the minimum variable cost level translates to 61.34 percent of fully allocated costs. The establishment of fully allocated costs for the sample observations was based on the California PUC approved minimum class rate in effect for the particular move at the time that each Section 22 tender was submitted to the military traffic managers. The Section 22 tender rate was then converted to a percentage of the fully allocated cost. In those cases where the Section 22 rate exceeded 61.3 percent of fully allocated cost, the carrier exceeded his minimum variable cost.

The mean fully allocated cost for the sample observations was 54.7 cents per hundredweight, and the mean Section 22 tender rate was 37.3 cents per hundredweight or 68.2 percent of fully allocated costs, which exceeds the 61.3 percent minimum variable cost level. In order to establish that the difference between the 68.2 percent of fully allocated costs representing the sample is statistically significant from the 61.3 percent minimum variable cost level the Students-t test was used. The null hypothesis was formed by stating that there was no statistical significance to the difference between 68.2 percent and 61.3 percent. The calculated Students-t statistic was 3.55 which exceeds the table value of 2.642 for a 99.5 percent confidence level. This calls for the rejection of the null hypothesis and acceptance of the alternate hypothesis that, with 99.5 percent confidence, the mean rate of the sample, expressed as a percent of fully allocated cost, is greater than the minimum variable cost limit, also expressed as a percent of fully allocated cost, by a statistically significant difference.

39. American Trucking Association, *Trends, op. cit.*, p. 189.

SUMMARY

In summary, the purpose of this study has been to establish the degree to which bids submitted under the provisions of Section 22 provide for adequate revenue to cover the carrier's costs. The approach utilized was establishment of the impact of the factors of minimum weight and length of haul on the rate per hundredweight bid on Section 22 tenders. This phase was computed from inference of the results of a stepwise multiple regression analysis of a sample of Section 22 tenders on file at WAMTMTS in Oakland.

The second phase consisted of establishing fully allocated costs for each observation by using the minimum class rates approved by the California Public Utilities Commission and comparing these costs with the rates quoted on the tenders. The results of this analysis provide the basis for acceptance of the hypothesis that highway carriers submitting tenders under the provisions of Section 22 of Part I of the Interstate Commerce Act to the Department of Defense for movement of military freight within the geographical area of responsibility of the Western Area Military Traffic Management and Terminal Service Headquarters have generally covered their short-run variable costs.