

THE PROBLEM OF MEASURING A FAIR RATE OF RETURN  
IN REGULATED INDUSTRY  
WITH SPECIAL REFERENCE TO THE MOTOR CARRIER INDUSTRY

by

PAUL FREDERICK LITTLE  
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Department of BUSINESS ADMINISTRATION

The University of British Columbia  
Vancouver 8, Canada

Date September 30, 1968

## ABSTRACT

The motor carrier industry of North America is subject to regulatory controls over its rate setting practices. In the United States and in Canada , public commissions must develop certain tools for measuring when an individual rate or an entire rate structure is either exploitive to the shipping public or confiscatory to the carrier. The tool that has been applied historically is the operating ratio, simply the relationship of total revenues to total expenses of the carrier.

The operating ratio is not as reliable an instrument as the rate of return principle employed by regulators of other regulated industries. In the United States, where the operating ratio is more highly refined , it is greatly criticized. In Canada, students of the motor carrier industry are still faced with the problem of deciding what cost data must be compiled before the operating ratio can be used with any confidence by regulators .

This thesis attempts to study the problems involved in making a judicial measurement of the financial effect a rate may be having on the carrier and the shipper. As a result , the operating ratio is examined at some length. In addition, the thesis confronts the problem, more pressing to Canadian regulators, that of what cost data must be collected and how to collect it before the operating ratio may be developed.

To study this problem, the thesis has brought together economic analyses of the motor carrier industry as contrasted to other regulated fields with certain research into the development of commission and judicial thought on the manner of how rate regulation should be effected. A pioneering effort was made to collect a set of costs for British Columbia motor carriers to supplement what is otherwise a mainly theoretical piece of writing.

Clearly, this thesis has not been designed so that any concrete conclusions could be drawn about how effective or ineffective motor carrier rate controls are at present nor about precisely what data Canadian regulators should set about collecting. It is felt, however, that some needed focus has been brought onto an area of public regulation that is presently , at its best, badly neglected.



In addition to the assistance provided by his advisors on the Faculty of Commerce and Business Administration at the University of British Columbia, the writer wishes to acknowledge the advice and co-operation afforded him by the offices of the Automotive Transport Association of British Columbia and numerous members thereof.

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INTRODUCTION

Public regulation of prices or rates of certain industries is an accepted fact of Twentieth Century capitalism. Our society has accepted the fact that its elected representatives have the authority to apply various forms of control over industry that is in the opinion of the regulatory commission pricing contrary to what is in the best interest of producers and consumers as a whole.

Although the legislative branch of government decides where and to what extent rate and price controls will be applied , the day to day administration of such powers is generally placed with quasi-judicial commissions. Such commissions sit in judgement over appeals and counter-appeals from consumers and producers affected by the regulation of rates.

Perhaps more than any other class of industry, "service" industries have in large part been subjected to controls over their freedom in setting rates. Gas and electric power companies , communication companies , and most forms of public and freight transportation in North America are policed to some degree as to the rates they may set or the way in which they are set. For the power and communication companies, the foremost concern of the regulator is to assure that the revenue generated by these huge public monopolies is no more or less than what it ( the regulator) considers reasonable. As far as regulation of the various transport modes is concerned, the duties and purposes of the regulator are as varied as are

the economic characteristics of the concerns being regulated. In a situation where a railroad monopolizes service in one area, control of maximum rates may be the overriding concern. Where a number of railroads and trucking firms are engaged in heated competition for the service business of one area, however, the problem of the regulator will be to assure that a workable form of competition ensues and that no firm which is serving an economic and useful purpose is forced out of business. In other words, the regulator must be alert to the possibility of short-term ruinous pricing on the part of one carrier. On the other hand, the regulator must allow a healthy price competition even if such leads to an eventual monopoly situation. To distinguish healthy from unfair pricing practices is a major task in this regard.

In carrying out the duties of rate regulation that they are charged with, the public commissions have, or should have developed a number of criteria for judging whether or not units under their jurisdictions are setting just and reasonable rates in light of their particular circumstances. This thesis will examine these criteria or tools in the general case, and particularly in the motor trucking industry. Specifically, the tool most generally used to judge utility rates is the rate of return on investment. In the case of the motor trucking industry, rate of return on investment has not been utilized by regulatory commissions to judge rate adequacy. Rather, a ratio

of total operating expenses to operating revenues is generally employed where a trucking rate is under examination. The primary purpose of this thesis is to inquire into the mechanics of rate regulation in the motor trucking industry. Such an examination involves mainly an evaluation of the operating ratio as a criterion for determining the reasonableness of rates.

In order to arrive at a point where trucking rate regulation and the tools of such regulation could be intelligently discussed, this writer felt it necessary to examine at some length the following factors:

1. The economic and legal justification for rate regulation over industry.
2. An economic and historical description of the motor trucking industry leading to a discussion of why it may be regulated in its price-setting practices and why justification of its regulation must be different than for other industry.
3. The tools generally applied by rate regulators in their regulation of rates in most industries viz. determination of a rate base and return on that base.
4. A discussion of why these same tools ~~must~~ may not be applied to the motor trucking industry.

The above four points are, in fact, the substance of the first four chapters of this thesis. Chapter I looks first into the economic characteristics of those industries the state



has chosen to regulate; i.e. economies of scale, large fixed investment, and a tendency to result in monopoly situations. By and large, these characteristics are foreign to the motor carrier industry. Chapter I also follows in some depth the legal rationale and development of regulation for those industries which are affected with a common calling and are hence open to price regulation.

Chapter II turns to the motor trucking industry itself; first its history in the United States and then in Canada. The trucking industry is contrasted and compared with other forms of industry whose rates may be regulated by public bodies. The development of rate regulation and the necessity for this development are reviewed in this Chapter. The terms of reference and the duties of the public regulator in respect of trucking are explained. Reference is made equally to the U.S. and to Canada.

Chapter III, an important section of the thesis, looks into the standard tools employed by a public rate regulator to carry out its function. These tools in the case of most regulated concerns are the rate base and the rate of return on that base. Discussion follows of the reasoning behind employment of these tools and how they relate to establishment and maintenance of fair and reasonable rate structures. The development of legal thought on the subject in the United States jurisdiction is given considerable discussion by the writer as it was felt

that such cases as Smyth and Ames<sup>1</sup>; McCardle<sup>2</sup>; and Federal Power Commission<sup>3</sup>, etc., are classic underpinnings to the entire subject of rate of return regulation in the western world and that review of their philosophy and decisions were essential to any work concerned with rate regulation.

Chapter IV turns to specific consideration of the operating ratio - the tool that has been used extensively and generally in the United States to measure the reasonableness of a return in the motor trucking industry. It is pointed out that return on a rate base has not been used generally in the trucking industry to judge rate structures. The reasoning behind this ~~practice~~ practice which springs from the specific economic characteristics of this industry is outlined and examined.

Chapter V in the thesis is a lengthy section. It consists of a detailed study of the operating ratio and its use in regulation of motor carrier rates. The Chapter resorts in large part to illustrations of how and where this tool has been utilized right from the beginning of trucking regulation to the present day. The review and citation of cases on the subject derives from the United States. The Chapter makes some criticism of the operating ratio as well as a number of suggestions as to how it may be more fruitfully employed by regulators.

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<sup>1</sup>Smyth and Ames, 169 U.S., 466 (1898).

<sup>2</sup>McCardle et al., v. Indianapolis Water Company, 272 U.S., 400, 1926.

<sup>3</sup>Federal Power Commission v. Natural Gas Pipeline Company, 315 U.S., 575, 1942.

Chapter VI, the final Chapter of the thesis, turns to a discussion of the cost accounting methods and data that will have to be employed by motor trucking regulators before the operating ratio can be an entirely effective and accurate tool for measuring the reasonableness of trucking rates. With more particular reference to Canada, the Chapter then outlines the lack of cost knowledge of carriers and portrays this by means of the results of a cost survey performed in 1967. There is need for a detailed knowledge of per unit costs of carrier operations before rate regulation with use of the operating ratio can be accurate and objective in Canada. This point is continually stressed.

To state that the purpose of the six chapters of this thesis is to prove or to establish any conclusion either about the motor trucking industry, the regulation of rates in that industry or the tools that may be used to effect such regulation would be to mislead the reader at the outset. In fact, the thesis contains no general conclusion chapter beyond the summary in Chapter VI. Certainly, the discussion does lead to a number of suggestions and observations by the writer with regard to how rate regulation in the industry might be made more objective and accurate. Such is the task of Chapter VI. The purposes of this thesis are as follows:

1. To demonstrate the existence of a problem; i.e. how difficult is the task of maintaining a fair rate structure for regulated industries and, in particular, for motor carriers.

2. To explore the facets of the problem; i.e. the tools that may be used to bring about effective rate regulation, the reasons these tools have been developed, and the singularity of the type of tool used by trucking rate regulators.
3. To indicate how the trucking rate regulator may better employ the regulatory tool it has used historically and what must be required of the industry itself in a jurisdiction such as Canada, and particularly British Columbia, before any great improvements can be expected in the quality of rate regulation.

In that this thesis is not attempting to arrive at any specific conclusions about rate regulation either in the general case or for motor carriers, why might it be considered important or significant? It is the opinion of this writer that the significance is this: the regulation of truck rates in Canada is, at present, an imprecise practice. In the opinion of certain trucking associations in Canada, regulation of entry and rates and the machinery for alteration of rates is neglected and weak. Especially in light of American regulation of motor trucking, Canadian practice needs and merits attention. Unless research is soon initiated that will result in workable tools and methods for regulation of rates such that the industry can be flexible to changes in economic conditions, the stability of the industry may well be threatened. In addition, until the regulator can assure the regulated that it can measure the

justness and reasonableness of trucking rates from the standpoint of producer and consumer, the Canadian trucking industry and public may begin to question very seriously just how effective and meaningful rate regulation could possibly be in these circumstances. It is suggested that rate regulation over truckers, although it does not have to be strict, is vitally necessary to the stability of the industry and the welfare of shippers and public. The regulators must equip themselves with tools capable of evaluating rates and rate structures, otherwise the regulation itself will become less and less effective and, at the same time, more difficult to justify.

In essence, trucking rate regulation needs more attention in Canada. There is a great need for Canadian regulators who possess rate controls over the trucking industry to study the American example of how the use of operating ratios, standard cost accounting practices and well established procedures of hearings and appeals can combine to make the trucking industry a well adjusted and stable component of a national transportation policy. This thesis attempts to bring together these facets of American practice as an example of what can be done and how it has been done.

Finally, some discussion should be devoted to the limitations of this paper. Clearly, the main problem is that most writings and constructive examples are American and, as a result, the thesis is largely American in its terms of reference. A research study was carried out during the course of the thesis

in British Columbia which did serve to indicate the chasm that exists between knowledge of costs in the U.S. and Canada. As far as its ability to contribute useful data to the thesis, however, the research study was not successful.

Although the United States pioneered and developed most practices of trucking rate regulation, it is unfortunate that some time could not have been devoted to interviewing carriers and regulatory officials in British Columbia so as to obtain opinions as to the efficacy of applying American practices to the relatively unresearched Canadian situation. This lack of attention to the distinct practical problems of regulation in Canada may be a flaw in this study. It could, however, provide more than sufficient material for the next stage of research into development of objective, accurate rate regulation for this jurisdiction.

## CHAPTER I

### THE BASIS OF RATE REGULATION

#### The Role of Competition

In a free capitalist economy, competition is considered to be the "regulator" par excellence. By means of open competition, industrially, politically, even individually and on national scales, it is felt that the systems and individuals involved will work to their highest and most efficient capacities. Society at large will be the beneficiary of upright practices and enforced integrity on the part of participants in the competition. In the industrial sphere, just and reasonable prices or rates to consumers are perhaps the most significant and desired result of free competition. The specific price objectives sought by a system of free competition are usually these four:

1. To prevent unreasonable prices and excessive earnings.
2. To assure that adequate earnings are realized so that the industry can continue profitable operations and thus provide a stable service to society.
3. To prevent unjust discrimination between individuals or groups of individual consumers.
4. To assure the consumer the best possible service at a minimal price.<sup>1</sup>

For various reasons, however, "just and reasonable"

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<sup>1</sup>D.P. Locklin, Economics of Transportation, Chicago, R.D. Irwin, Inc., 1951, p. 701; and D.V. Harper, Economic Regulation of the Motor Carrier Industry by the States, Urbana, University of Illinois Press, 1959, p. 176.

rates cannot always come about in an environment of free competition. Indeed, competition may have to be reinforced or replaced when such conditions as the following might characterize a particular industry:

1. "Situations in which competition, as a practical matter cannot exist or survive for long, and in which, therefore, an unregulated market will not produce competitive results.
2. Situations in which active competition exists, but where, because of imperfections in the market, competition does not produce competitive results.
3. Situations in which competition exists, or could exist, and has produced or may be expected to produce competitive results, but where, in light of other policy considerations, competitive results are unsatisfactory in one or more respects."<sup>2</sup>

The third situation is not of concern to this thesis. It refers to the case where society requires other results to come forth from the operation of a particular industry, results that competition cannot bring about. Equitable distribution of product, defence considerations and economic stabilization would be prime examples. The first and second situations are the material of the thesis however. Both refer to cases where, due to the economic characteristics of an industry, competition cannot be expected to "regulate" in favour of the pricing objectives sought by society.

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<sup>2</sup>Kaysen, C., and D.F. Turner, Antitrust Policy: An Economic and Legal Analysis, Howard University Press, Cambridge, 1959, p. 189.



Regulation cannot, of course, be foisted upon any industry that exhibits certain competitive imperfections. Indeed, it is difficult to think of a field that does not. The legal rationale given for regulation of an industry will be looked into in some detail under the heading, "The Natural Monopoly", in this chapter, but it could be said summarily here that regulation is generally applied where an essential service is involved and the public interest as a whole is affected. The purpose of the next section is to show the economic and social basis of rate regulation.

### Economic Characteristics

There are numerous economic characteristics of an industry that, because it renders an essential service and directly affects public interest, is earmarked for rate regulation. The monopoly, an economic model that exhibits a number of micro-economic features, is clearly the first choice. For reasons which are unnecessary to go into, the firm which enjoys uncontested selling privileges for an essential product in any market normally will have its rates or prices held beneath certain maxima by society. Any firm fitting this description which is not regulated in its price setting practices certainly must realize that the threat of controls is present should serious public agitation begin to develop over its price structure.

Other than the pure monopoly situation which brings

about maximum price controls, economic theory has pointed out other problematic situations to society so that it will know in advance where maximum as well as other types of rate regulation are required. One set of features characterize what has come to be known as the "natural monopoly" situation.

### The Natural Monopoly

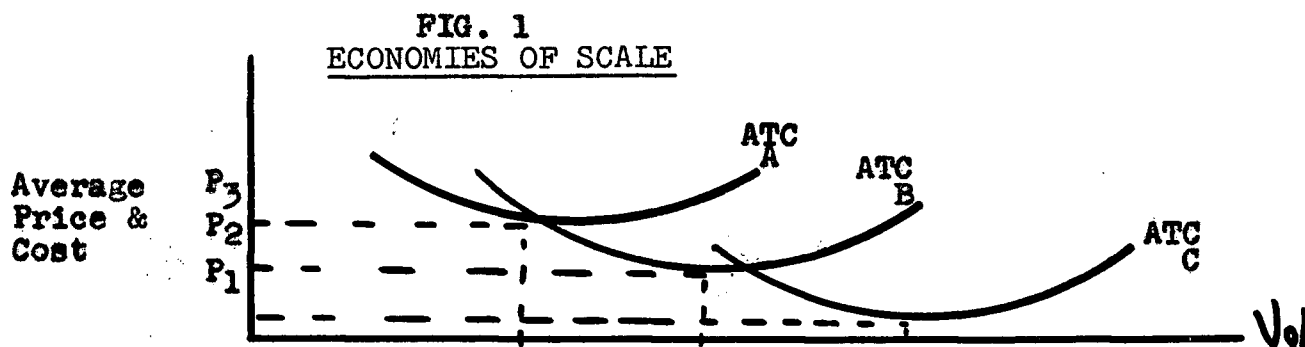
All arguments in favour of rate regulation for public utilities and for most regulated transport modes revolve around the feature of economies of scale that exist somewhere in the industry or at least certain of the factors that cause these economies of scale. Before looking at the components of economies of scale, let us examine why such conditions call for rate regulation.

Wherever economies of scale are to be found in an industry (i.e. the industry is one where unit costs decrease with volume) and one or more firms are able to achieve economies of volume/scale beyond those of its competitors, competition is doomed in the medium to long run. Society must recognize this before ruinous pricing practices have caused significant wastage of resources on the part of the unsuccessful competitors.

One remedy is not to allow unrestrained competition to get started in this industry in the first place, rather to encourage the unit exhibiting economies to become a monopoly

and then regulate its prices.

Take the following as an example: three firms, A, B, and C, producing an essential service are competing in one marketplace. They are of equal size and have average total cost curves as represented in the exhibit.



In this situation, the minimum long run price that the producers could charge and consumers could expect would be  $P_3$ . If firm A should drop out of the market, or if B and C should expand their plant and take advantage of the economies of scale offered by this industry, thus forcing the unexpanded firm A out, minimum long run average costs would fall to  $P_2$ . If these economies were available in the industry, clearly the first situation was never a stable one. Indeed, the second situation is no more stable. Either firm B or C will eventually expand its plant and capture the further economies that still exist and in time only one firm will be left. The only other alternative would be for the two of the original three firms to make an agreement to share the market and maintain prices well above what the monopolist's average cost would be in the event of one firm dropping out. Certainly this is not in the public interest.

Consumers should be the beneficiaries of any economies of scale that might exist in an industry. This is imperative when the product or service is a necessity. Thus, when a market situation dictates that one optimum-sized producer rather than a number of smaller producers should supply the market due to the presence of economies of scale in the industry, then public policy should allow it. Monopoly, in other words, is in the public interest. As we have stated earlier, however, there is little assurance that a monopolist will price in the best interests of society by any means. Thus, a "natural monopoly" resulting from an unstable competitive situation, such as the industry with significant economies of scale, calls for state regulation of rates in the same manner as the established monopoly if each is producing an essential service or product.

Having seen how the presence of economies of scale in an essential industry can lead to a state-regulated monopoly situation, we should now look at those features of an industry that might hint at the existence of such latent economies of scale. Certainly the main characteristic of such an industry would be a substantial investment in fixed facilities. An industry such as any utility where asset turnover is quite slow would be a good example.

Quite simply, any industry or firm which has a large proportion of its assets tied up in longer term fixed facili-

ties exhibits a cost profile where fixed charges to income are far greater than variable expenses per unit of output. As the volume of output increases, the same fixed costs become spread over a greater and greater denominator of units. Thus, unless variable expenses increase inordinately, economies of scale begin to appear.

The heavy proportion of fixed costs phenomenon, along with the attendant economies of scale it brings about, is of course characteristic of many industries. The automobile factories, the oil and petrochemical industry, various metal industries are but a few examples. This feature is far more prominent for the main part, however, in those fields where the state has chosen to apply rate regulation. As far as capital turnover is concerned, the railways exhibit a 2 to 4 year cycle, telephone companies and power utilities are approximately in the same range.<sup>3</sup> A glance at capital turnover ratios for a few

---

Asset Turnover Ratios				
<sup>3</sup> Ratio of Net Fixed Assets to Operating Revenue				
	<u>1965</u>	<u>Revenue</u>	<u>Fixed Assets</u> <sup>x</sup>	<u>Ratio</u>
Canadian National Railroad Co.		\$827,000	\$3,198,000	.26
Chesapeake & Ohio Railroad		397,000	845,000	.48
Great Northern Railroad		265,000	724,000	.37
Pennsylvania Railroad		893,000	1,291,000	.71
Union Pacific Railroad		549,000	1,574,000	.34
American Telephone & Telegraph Co.		953,000	2,654,000	.36
Bell Telephone/Canada Ltd.		596,000	1,923,000	.30
British Columbia Telephone		98,000	345,000	.29
Consolidated Edison of New York		696,000	3,170,000	.22

Source - Moody's Transportation and Utilities Manuals, 1965.

<sup>x</sup> Net of Depreciation.

of the largest unregulated industries does show a marked difference.<sup>4</sup>

Why the railroads and power companies have been chosen for rate and other types of regulation is clear from the economic characteristics mentioned and the effect such characteristics have on society. Very few regulated industries do not display them to any degree. The exact legal basis for choosing such industries, as opposed to others listed above, will be clarified in the next section.

#### Competition and Rate Regulation

In an industry such as the ones we have described as potential "natural" monopolies with vast investment in fixed assets required for operation in the field, it is a very big decision for society to set up either a state-run firm or to allow a monopoly in that market. Yet to some extent in Western economies, the state has done just that. Telephone companies, electric and gas power companies and some other "utilities" have, therefore, been justified on the foregoing economic grounds.

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Asset Turnover Ratios  
<sup>4</sup>Ratio of Net Fixed Assets to Net Sales

	<u>1966</u> <u>Net Sales</u>	<u>Net</u> <u>Fixed Assets</u> <sup>*</sup>	<u>Ratio</u>
Ford Motor Company (U.S.)	\$11,537,000,000	\$3,020,000,000	.29
General Motors Co. (U.S.)	20,733,000,000	4,161,000,000	.20
United States Steel	4,400,000,000	2,714,000,000	.62
I.B.M.	3,573,000,000	2,304,000,000	.65
Shell Oil Company	3,091,000,000	1,716,000,000	.56

Source - Moody's Industrial Manuals, 1966. <sup>\*</sup>Net of Depreciation.

In many cases (i.e. where an area is served only by one company), <sup>the</sup> railway industry provides an example of regulated competition in a field possessing the features of a natural monopoly. What are the problems and objectives that a regulator such as the Interstate Commerce Commission in the U.S. or Canada's Transportation Commission faces in rate regulation of a concern such as the railway industry?

In trying to maintain a system of workable competition, both between individual railroads and between the railroad and other modes, the regulator will be attempting, of course, to protect the interests of consumers of the various transportation services and, in addition, the financial viability of the producers themselves. Specifically, the concern will be mainly with prevention of unjust discrimination between consumers or groups of consumers on the one hand and the discouragement of ruinous competition on the other. For as long as healthy competition exists either inter or intra-modally, there should be little need for scrutiny of maximum rate levels except where discrimination might be involved. Once the potential natural monopoly is allowed to become a monopoly, however, maximum rate control must come into play.

### Unjust Discrimination

The railway or, for that matter, any industry displaying heavy fixed costs, decreasing unit costs, and doing business in an imperfectly competitive situation finds it most

practical to initiate price discrimination among customers.

Unjust discrimination is that which is not justified by cost differentials experienced in serving the different consumers. Rather, the margin between the prices charged is based solely on elasticities of demand; i.e. on the difference between the prices various potential customers will pay! The reason that a heavy fixed cost firm or industry is more likely to follow such a practice is that it has a great deal more pricing flexibility.

Any existing firm, in order to survive in its short run economic term, must at least cover its variable expenses or "out-of-pocket" costs of doing business. Any contribution to overhead, no matter how small, is in the best interests of the firm. In the concern with heavy variable costs, therefore, management has no choice but to cover the major operating costs of serving every customer. No matter how great the spread of customer elasticity of demand in the market, management must recoup most of its total costs every time it solicits a customer. This holds regardless of how imperfect the competitive situation might be.

In the industry where we find large fixed costs and economies of scale, a large proportion of unit costs involved in serving a customer are fixed overhead costs, charges which do not have to be covered in the immediate period. The out-of-pocket expense of serving an individual is relatively quite small. Again, any contribution above this minimum is to be



desired. Thus, management is to be expected to charge the prospective consumer whatever he is willing to pay, provided it will at least meet the variable cost of service. In that variable costs are of minor order in this case, the manager has a far greater range within which to price than does his counterpart, the low fixed investment case. Yet the management of the railroad or similar company must meet fully allocated cost in the long run. The obvious way of doing so is to subsidize the service in which he is pricing well below total cost with profits earned on prices set well above full cost in other markets willing to pay such a price. In effect, the heavy fixed cost firm can set its prices according to the elasticities of demand indicated by its various consumers. This is shown in the diagrams on page 12.

Where the regulator and his rate regulation come into the picture to discourage unjust discrimination has to be, of course, where the railroad or whatever subject industry is involved enjoys a partial monopoly. Usually this will be geographic in nature and complaints come from a so-called "captive shipper". Many I.C.C. hearings and even more Board of Transport Commissioners' cases in the past have involved such situations. The duty of the regulator is to weigh the evidence carefully to determine if the discriminatory price charged the plaintiff is indeed unjust or perhaps justified due to specific cost considerations involved in serving that particular consumer. The rate structure may or may not be suspended.

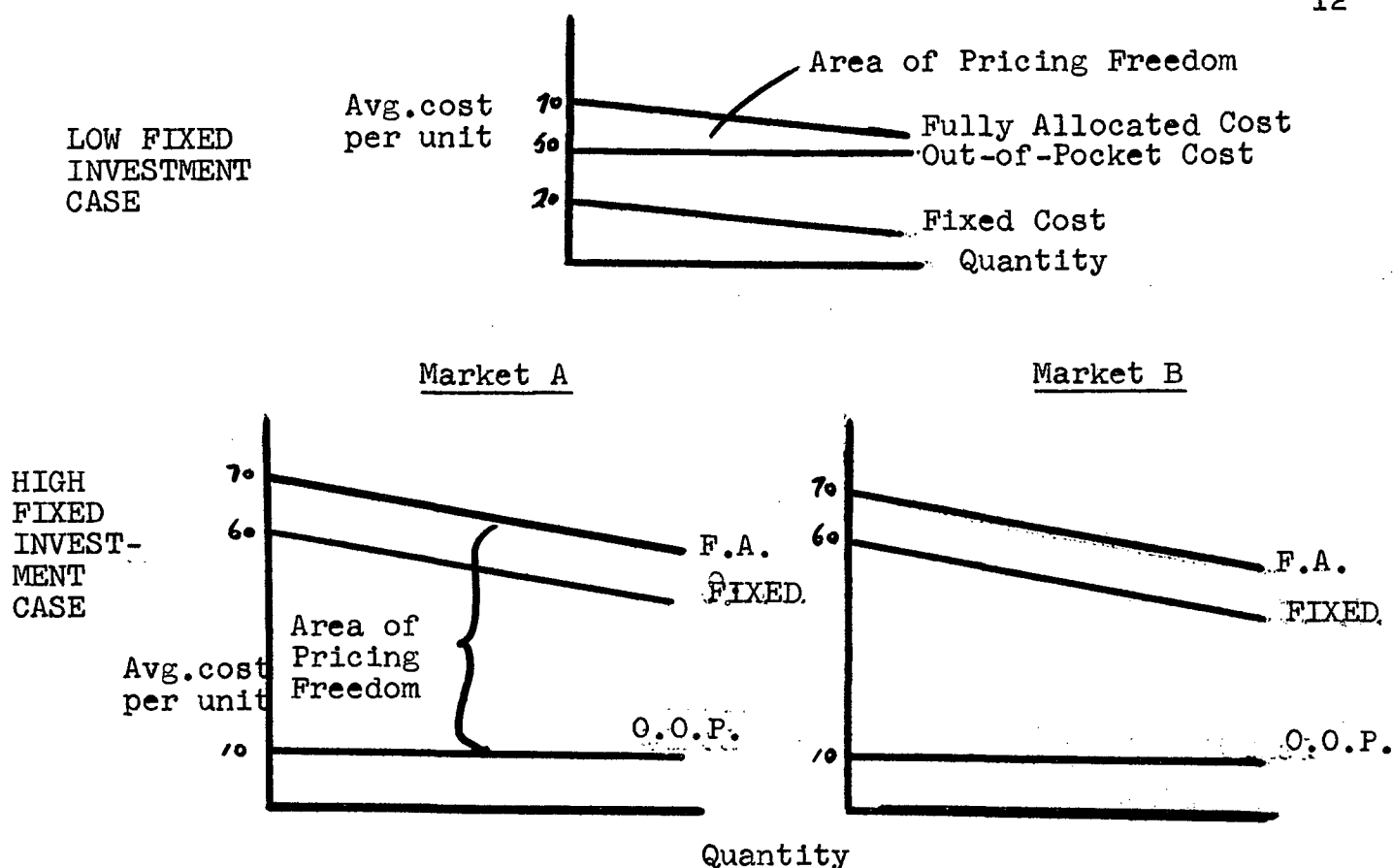


FIG. 2

### FEATURES OF THE NATURAL MONOPOLY

In any time period short of the long run, a firm is well advised to take on business that will at least cover its out-of-pocket costs of servicing that new business. In the case of the firm with low fixed investment in facilities (Case I), pricing flexibility is quite narrow in that the gap between fully allocated and out-of-pocket cost is thin.

For the firm with a large proportion of its fully allocated costs represented by fixed costs, costs which do not have to be met and allocated immediately, a far greater range of pricing freedom exists. When a firm of this type characterizes the market moreover, unjust price discrimination is likely to come about sooner or later as well. As demonstrated in the section on natural monopoly and in Fig. 2, this firm has features of a natural monopoly. As such, it will charge the customer in Market A the maximum he is willing to pay in the knowledge that, as the monopoly situation becomes more apparent, this price can be "subsidized" by the price that can then be exacted from the customer in Market B.

## Ruinous Competition

Another most serious problem faced by regulators of commerce, a problem pertinent to transportation and railroads, is, without a doubt, the matter of ruinous ~~or~~ destructive competition . A definition of such practices would be : competitive pricing by a producer , or producers , designed to undercut rivals to the extent that the latter are forced out of business, whereupon the original producer , having gained sole control of the market , may raise his prices again and price as a monopolist. All too often the result is irreparable damage being done to all firms engaged in the price "war" and an unstable service situation for the consumer. Moreover, a firm in an industry characterized by heavy fixed costs is far more suspect to engage in such practices than one in another in a different industry.

Again, because the railroad or similar firm need only earn a very small short run out-of-pocket cost plus any contribution in order to stay in business, management is free to price for protracted periods at levels far below fully allocated cost or even long run variable cost. For the firm which must cover a much higher variable cost in order to remain viable, clearly this same flexibility does not exist . Although there are exceptions to the rule, ( the early motor carrier industry being one that shall be examined later), ruinous competition is far more likely to take place when the market is composed of one or more units which do have a high proportion of fixed costs. Such firms as this do have greater lasting power in a

low price situation for the short to medium run.

The biggest difficulty for a regulator such as the B.T.C. or the I.C.C. is the situation where a heavy fixed cost firm such as a railroad is competing for the same business as a concern such as a trucking line that exhibits low fixed and high variable costs per unit. In trying to maintain a workable competition, the regulator must continually be aware of the power the railroad may possess to engage the trucker in a ruinous competitive situation. As a result, a great deal of commission time can be spent in investigation of such complaints by truckers. The standard which has come to be the accepted minimum a railroad may charge is its long run variable cost of service\*\*. This will take in more costs than those present in simple short run out-of-pocket cost.

#### Legal Justification

Why are some industries singled out for rate regulation and controls while others, apparently exhibiting the same economic characteristics, are entrusted to the regulating forces of the market? Indeed, what is the legal and historic justification for public regulation when it is applied? In this section some indication will be given of the reasoning employed by the most prestigious courts to justify rate regulation of certain industries throughout the years.

The terms "affected with a public interest" and "a

NOTE \*\* Although it seems a strange use of economic terminology to talk of "long run variable cost", as obviously in the true long run all costs are variable, transportation economists such as G.W. Wilson (Essays on Some Unsettled Questions in the Economics of Transport, U. of Indiana 1965) do employ the term. We must assume basic capitalization costs are excluded.

common calling" have been ~~as some legal terms~~ used since the seventeenth century to distinguish those industries which should, in the opinion of law, be subjected to public regulation when competitive conditions fall short of what society expects. In other words, when the legislator sought jurisdiction or certain controls over an industry because of socio-economic problems such as those examined in the last section, the commission had to appeal for a court decision so that the subject industry could be labelled in this manner. A definition of either of these terms is, of course, most subjective. Perhaps as controversial a matter as any that a Supreme Court has had to face was that of determining what was and what was not "affected with a public interest". Today, the situation has become more nebulous. As Phillips notes:

...today the legal concept of common callings, with its many duties and obligations, is not static. Stated simply, the public interest with which some businesses are affected is one created by the public policy of the people.<sup>5</sup>

### English Common Law

Rate regulation, justified on these grounds, derives from English common law. In the seventeenth century Chief Justice Hale in his famous De Portibus Maris laid out the conditions under which a merchant can continue to seek his private advantage and yet go beyond the bounds of "bare private interest". "If" as he says...

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<sup>5</sup>C.F. Phillips, The Economics of Regulation, Homewood, Ill., R.D. Irwin, Inc., 1965, p. 55.

the king or subject have a public wharf unto which all persons that come to that port must come and unlade or lade their goods...because they are the only wharfs licenced by the queen...or because there is no other wharf in that port...there cannot be taken arbitrary or excessive duties for wharfage or cranage....For now the wharf and crane are affected with a public interest and they cease to be juris private only.<sup>6</sup>

Thus, whatever the court determined a "common calling" was to have its prices or rates controlled rather than set by the market. Essential service with monopolistic tendencies was apparently the definition of such an industry and at that time, the spectrum of callings which were looked at and controlled in this way was quite wide.<sup>7</sup>

### America

Prior to the American Civil War, a very liberalistic philosophy was prevalent in the United States and the doctrine of public interest was in effect subordinated to the Fifth and Fourteenth Amendments to the American Constitution. These provided that no one should be deprived of property without due process of law. For this reason, the U.S. Supreme

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<sup>6</sup>Ibid., p. 53.

<sup>7</sup>It should be noted that, when talking about a "common calling", we should not be confused with the term "common carrier". A definition of the latter in a legal sense is as follows: "...one who holds himself out to the public as a carrier of goods for reward...the essence of the status "common" (as distinct from "private") is that such a carrier does not discriminate amongst those who request his services nor does he have the right to refuse an offer of goods for shipment", (Smyth, J.E. and D.A. Soberman, The Law and Business Administration in Canada, Toronto, Prentice-Hall of Canada, 1966, p. 303).

Court became deeply embroiled in public regulation. State price regulation, a matter which could be injurious to the private interests of a producer, was a sensitive and contended issue in those years, and the Court's definitions of industries "affected with a public interest" (or some such wording) was narrow indeed. It took a stepped-up pace of industrial and economic development to revive concerned interest in protecting the public from the competitive imperfections of the market. It could be safely said that railroads were mainly responsible for this renewed awareness in the necessity of regulating "common callings".

The railways, which expanded and flourished in the last quarter of the nineteenth century in the U.S., displayed very different economic characteristics and had a very different effect on the public than did traditional small scale, highly competitive industry up to that time. For one thing, the young railroads experienced no competition from each other in their own spheres. There were too few of them. Certainly, the competition from other modes was negligible, except in the Eastern barge areas. In addition, the pace of industrial development and population growth was making these monopolistic-type transport companies essential to the life of all Americans. There was no doubt that railroads were affected with a very strong public interest and could be potentially quite dangerous to the public unless rate controls were introduced.

The famous Granger movement of the 1870's was primarily concerned with gaining these controls. The success that the Grangers met with in establishing state regulatory commissions for control of railway rates and protection of the farmers' interests was due to be the harbinger of a much wider movement for public rate regulation into other areas and gradually a broader interpretation of what was a "common calling". In short, new industrial and technological developments were bringing about imperfections in the competitive conditions that society relied upon to guard its interests. Such imperfections required greater government involvement and an awareness by the courts that a laissez-faire philosophy was no longer in the public interest.

The history and rationale of government rate regulation over selected industries can best be traced by a number of "milestone" American court cases right from the days of the Grangers and their reaction to railway development. This legal history of regulation in the U.S. has significance for the entire Western world.

#### 1877-1934

During this period the U.S. Supreme Court allowed the government deeper and deeper into the regulation of private business. The first significant case came to the court in 1877 on the appeal of Munn in Munn v. Illinois<sup>8</sup> where the

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<sup>8</sup>Munn v. Illinois, 94 U.S., 113, 122 (1877), as quoted in Phillips, op.cit., p. 57.



former contested the right of the state to fix maximum charges on the operation of grain elevators. The basis of appeal was that the individual's right to private property was being interfered with contrary to the Fifth and Fourteenth Amendments. The Court ruled in favour of the state on the ground that:

...elevating facilities...may be a virtual monopoly  
...their business most certainly tends to a common  
charge and is become a thing of public interest and  
use...

and that according to Justice Hale (above):

...every such warehousemen ought to be under public  
regulation that he can take but a reasonable toll.<sup>9</sup>

The legislative power to regulate railroads and other "utilities" had been given a tremendous boost.

Throughout the last quarter of the nineteenth century, Munn v. Illinois was cited repeatedly for similar cases concerning rate regulation over storage, lading and unloading facilities. The first significant expansion of the interpretation came in 1914 with German Alliance Insurance Company v. Kansas.<sup>10</sup> Here the court ruled the insurance business had sufficient public interest attached to it to merit public regulation of the rates it could charge. Not a monopoly nor an indispensable commodity, the fire insurance business was found "practically a necessity", and thus the state's right to reduce a set of charges was upheld. Although the court still held to the public interest "doctrine", its interpretation of this was already expanding.

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<sup>9</sup> Ibid.

<sup>10</sup> German Alliance Insurance Company v. Kansas, 233 U.S., 389 (1914).

The first court case which attempted to define and classify, for future reference, those industries which were clothed with a public interest and were thus regulable for rate purposes was Wolff Packing Company v. Industrial Court of Kansas.<sup>11</sup> Although this was a decision unfavourable to the regulator, the three categories of so-called common callings that the court enumerated and which, it said, should be legally rate regulable were quite significant. The first were those industries such as railroads, utilities and other common carriers who carried on business under a grant of privilege by the public. Such a grant imposed a clear responsibility to the public.

The second class was composed of those industries regarded as "exceptional" in which "public interest had been recognized from earliest times". Examples here were given as "keepers of inns, cabs, gristmills, etc.". The third class were those businesses

...though not considered public at their conception, may be; fairly said to have risen to be such and have become subject in consequence to some government regulation.<sup>12</sup>

The rationale of placement in the third category could not be defined simply, but rested entirely in the lap of judicial inquiry. As the case said:

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<sup>11</sup>As cited by Phillips, C.F., The Economics of Regulation, Homewood, Ill., R.D. Irwin Inc., 1965, p. 64.

<sup>12</sup>Phillips, op.cit., p. 65

...the thing which gave the public interest was the indispensable nature of the service and the exorbitant charges and arbitrary control to which the public (in the court's opinion) might be subjected without regulation.<sup>13</sup>

With the Wolff Packing case, the court had made it clear that to a very large extent no set standards would exist by which an industry could be classed regulable or non-regulable. Henceforth, for concerns not easily placed in one of the first two categories, only the court could decide whether regulation was called for. Nor did the court have to justify its future decisions on any other basis than that of its own judgement as to the potential danger to public interest inherent in a particular situation. This decision is far more significant than it might first appear. It serves to explain how even today the layman is often unable to understand why some industries are subjected to rate regulation while others, with similar economic features and to some degree a similar effect on the public, are left uncontrolled. The logic (or lack of it) has rested throughout the years purely in the minds of the Justices of the U.S. Supreme Court. The effect of this Court's logic has by no means been confined only to the United States.

In 1934, the decision in Nebbia v. New York<sup>14</sup> in signalling a return to heavier government restriction over indus-

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<sup>13</sup>Ibid., p. 66.

<sup>14</sup>Nebbia v. New York, 291 U.S., 502 (1934).

trial price setting, expanded upon and finalized the philosophy aired in Wolff.

...there can be no doubt that upon proper occasion and by appropriate measures the state may regulate a business in any of its aspects, including the prices to be charged....a state is free to adopt whatever economic policy may reasonably be deemed necessary to promote public welfare and to enforce that policy by regulation.<sup>15</sup>

In other words, the court was sounding the death knell to the necessity for proving an industry was affected with a public interest. It was the state's right to regulate where and when it saw fit and any considerations of common calling or public interest were to be purely in the court's own mind when it passed judgement on the state's action. Thus,

...the phrase 'affected with a public interest' can in the nature of things mean no more than an industry, for adequate reason, is subject to control for the public good.<sup>16</sup>

For all intents and purposes, Nebbia v. New York and the cases leading thereto have been a sufficient basis for state rate regulation to proceed upon. Right up to the present day, the U.S. Supreme Court has allowed the state to enter many fields of rate regulation additional to pure utilities and railways. The justification for such allowance often cites Nebbia or, if not, similar reasoning is applied. Whether or not the court has discarded the doctrine of public interest is a moot

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<sup>15</sup>Phillips, op.cit., p. 67.

<sup>16</sup>Ibid., p. 68.

question. Irrespective of whether the term does or does not appear in legal decisions today, it should be clear that the public interest has to be at the root of the court's thoughts when it looks on a case involving state rate regulation.

### Summary

By way of summarizing and trying to answer the initial question of this section, viz. why are some industries regulated while other similar ones are not, we have no choice but to turn to Wolff Packing Company and Nebbia. It is the accepted philosophy today, and has been the accepted philosophy since those years, that the state does have the right to regulate as long as the court considers it to be in the public's best interest. Western society has placed great reliance and confidence in its courts in matters of industrial rate regulation. As a result, there is no better answer to our question than to say that the logic of regulation has rested with the high courts and this logic is based purely and simply on their interpretation of what is in the best public interest.

## CHAPTER II

MOTOR CARRIER RATE REGULATIONAims

In statements of transportation policy and in legislative preambles both for Canada and the United States, numerous aims are given for rate regulation (as distinct from other public controls) over the various modes of transportation. Such can usually be associated with one of five principal objectives:

1. To assure the shipper or passenger of reliable service from the carriers under the regulator's jurisdiction, thus...
2. allowing the regulated carriers to conduct reasonably profitable operations and maintain financial viability, yet...
3. protecting the shipper or passenger from being forced to pay excessive rates.
4. To prevent unjust discrimination by the carriers between individuals or groups of the public.
5. Finally, to bring about the most efficient allocation of traffic among modes so that each will operate within its own sphere of demonstrated inherent advantage and the total transportation resources of the economy will suffer minimal wastage.<sup>1</sup>

Insofar as rate regulation of the common or contract motor carrier is concerned, the aims of the legislator and the duties of the regulator are no different from the general case.

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<sup>1</sup>Note: No particular source is herein cited for these aims. One sees evidence of them, however, both spelled out and understood in most literature dealing with regulation of transport. Our own Canadian Transportation Act (R.S.C., 1952, as amended 1967) perhaps emphasizes No. 5 more than the others.

Despite a little more or less emphasis on certain of the five points above, the regulatory commission will apply the same objectives in attempting to control the rates of all types of common carriers of property.

### Justification

As pointed out in Chapter I, utility rate regulation, railway rate regulation, and other rate regulation have in common the same economic and social justifications. In the opinion of not a few critics, the practice of rate regulation over the motor carrier industry does not. In fact, a reasonable case is put forward that there is no justification for state regulation of trucking rates. We shall examine some of such reasoning after looking into the economic characteristics of the industry.

### Economic Characteristics of the Industry

In the general case, the motor carrier industry exhibits a very different set of economic characteristics from the utilities examined in Chapter I. In the first place, few motor carriers require substantial fixed or sunk investment in facilities. Unlike the railroad or public utility which may not succeed in turning over its capital in three or even five years, a healthy trucking firm will generate gross revenues three or four times the size of its fixed asset investment each year. The largest class of assets for a trucking firm is mov-

ing equipment. This has a relatively short life and is readily saleable. The vast majority of expenses are, therefore, operating costs - variable directly with the volume of activity.

One issue that should be reviewed here for the motor carrier industry is whether or not it might exhibit economies of scale. Clearly, this is significant. If economies do exist, then there is a danger of concentration, possibly even a monopolization by two or three large firms coming about. In such a situation as this, a natural monopoly can soon develop and adverse pricing practices ensue. On the other hand, should studies show that the small firms display efficiency of operations equal to that of the much larger firm, then the imperative of minimum rate regulation would again be questionable. A number of respected American cost studies have concluded just this -- that no positive relationship exists between unit operating costs and firm size. A trucking cost study of some note was that of Robert A. Nelson in 1959.<sup>2</sup> Taking a sample of slightly over one hundred carriers of freight in New England, Nelson set out to discover what, if any, relationship existed between the size of the motor carrier and the efficiency of the operator. Annual revenue was taken as the best available measure of carrier size and this, in turn, correlated with:

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<sup>2</sup>R.A. Nelson, "The Economies of Scale in the Transport Industry: A Reply", Land Economics, Vol. XXXV, May, 1959.



1. Cost per ton-mile;
2. Cost per vehicle mile;
3. Cost per average haul;

led the researcher to conclude elsewhere that:

...size of firm bears little relation to operating costs. Consequently it can hardly be maintained that there are economies of scale available in the industry, or a tendency toward monopoly stemming from that cause.<sup>3</sup>

Of some interest to this thesis are the coefficients of rank correlation that Nelson developed from his sample:

#### Coefficients of Rank Correlation<sup>4</sup>

(102 carriers operating within  
and domiciled in New England)

Cost per vehicle mile to Annual Revenue	0.07
Cost per ton mile to Annual Revenue	0.33
Cost per average haul to Annual Revenue	0.45

A less recent but better known motor carrier cost study was performed by M.J. Roberts in 1956 (see Chapter V as well).<sup>5</sup> Although Roberts' evidence was not as conclusive as that of Nelson's, he was able to suggest that it was not the size of

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<sup>3</sup>U.S. Senate, Report of Select Committee on Small Business, Competition, Regulation and the Public Interest in the Motor Carrier Industry, Washington, D.C., U.S. Government Printing Office, 1956, pp. 312 - 316.

<sup>4</sup>R.A. Nelson, "The Economies of Scale in the Transport Industry: A Reply", Land Economics, Vol. XXXV, May, 1959, p. 183.

<sup>5</sup>M.J. Roberts, "Some Aspects of Motor Carrier Costs: Firm Size Efficiency and Financial Health", Land Economics, Vol. XXXII, No. 3, May, 1956, pp. 228 - 238.

a carrier, but rather certain operating characteristics such as utilization of equipment and average length of haul that determined the efficiency of a carrier. These points will be examined in greater detail in Chapter V.

The bulk of Roberts' evidence might be summarized simply and effectively in the following manner:

EXHIBIT 1

Relationship Between Assets (Measure of Size) and  
Vehicle-Mile Costs - Percentage in Each Class

Carrier Size (Assets -  
Hundreds of Thousands \$)

	Small (0-3)	Medium (5-6)	Large (6-22)
Low Cost - 0-50 ¢ per vehicle mile	14.6%	7.1%	6.1%
Medium - 50-80 ¢ per vehicle mile	28.7%	15.8%	10.3%
High Cost - 80-180 ¢ per vehicle mile	12.9%	2.6%	1.9%

Source: M.J. Roberts, Land Economics, Vol. XXXII, p. 231.

Certainly, the above grid does not purport to be conclusive evidence that economies of scale did not show up in Roberts' study. It may, however, be observed that a low cost carrier was more often extremely small than extremely large. By the same token, an extremely large carrier was more often low cost than high cost. As for the extremely small carrier in Roberts' study, it was just as likely to be high cost as low cost. Some evidence of large-scale economies might be

evidenced, however, by the fact that high cost carriers were almost exclusively the extremely small carrier. On the whole, however, Roberts' evidence did indicate that large-scale economies were not a notable characteristic of the motor carrier industry.

Thus, two respected cost studies have borne out one assumption that we are able to make from certain obvious economic characteristics of the motor trucking industry, that is, economies of scale are not likely to be found. On the other hand, there is an increasing awareness today that there are other factors which might bring about economies for the large-scale trucker.

For one thing, large-scale trucking today is being forced more and more to automate its operations as much as possible. Modern terminal facilities, data processing equipment, automatic materials handling devices are all necessitated as soon as the trucker enters large-scale operations. The employment of such facilities is not necessarily that mark of a comparatively economical or efficient service however, but merely a development occasioned by growth and entrance into a volume operation. Yet it is possible that the shipping public may come to consider that these imperatives of large-scale operation actually are service advantages. Should this bring about a loss in patronage for the smaller carrier (who cannot afford such automation and service due to volume deficiency),

then concentration is likely to develop in the industry - a concentration brought about by certain advantages of scale which could be labelled "economies".

Also, it is more likely that the large operator may experience greater ease in financing his operations than the small trucker. Whether this is actually due to a better credit worthiness or, more likely, because of poor understanding of small carrier operations on the part of the financing institutions, is not relevant. The fact is that the large carrier is likely to be in an advantaged position.<sup>6</sup>

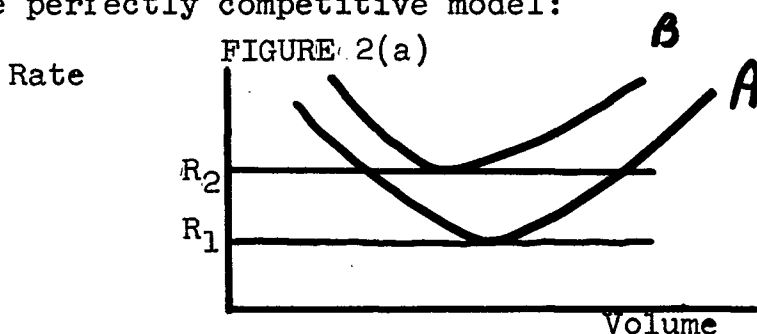
For both these reasons, it is possible that economies, or, more properly, advantages, of scale could well exist in the motor carrier industry. If such a possibility did exist then on the basis of the discussion about economies of scale and natural monopolies springing from such economies, one might be able to justify trucking rate regulation much in the same way as utility and railway rate regulation is justified. The type of advantages of scale that have been examined here, however, are not in any way peculiar to the motor carrier industry. If one were to justify motor carrier regulation on the above grounds, then surely he could accept rate regulation over any industry. Economies or advantages of scale is not the answer.

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<sup>6</sup>Our industry has traditionally been one of small, independent operations with relatively few large companies. Being small...financing was accomplished out of retained earnings. Acquisition of other carrier property and operating rights (other than simply revenue units) has been mainly limited to the larger carriers who can resort to other than earned surplus for resources". Roland N. Reedy, Secretary Treasurer, Great Southern Trucking Company, Financing Motor Carrier Operations, 1958.

We must search deeper before finding a satisfactory justification for motor carrier rate regulation.

In a rather concise article, The Economic Basis of Public Policy for Motor Transport,<sup>7</sup> D.F. Pegrum asks some pointed questions as to why motor carriers are, in fact, regulated. He does not contrast the economic structure of the motor carrier to that of the railroad or utility and conclude that the trucker displays none of the features of a natural monopoly. He cannot, therefore, justify rate regulation for this mode on any such grounds. Competition, he feels, provides an adequate safeguard to the public from discriminatory pricing and ruinous competitive practices. The motor carrier with its small asset base is "economically mobile",<sup>8</sup> and when economic mobility is in evidence in any industry, that industry is approaching perfect competition. This is a basic lesson of economic theory. In theory at least, it is simple to demonstrate how the motor carrier industry does resemble the perfectly competitive model:



<sup>7</sup>R.A. Nelson, "Pegrum on the Economic Basis of Public Policy for Motor Transport", Land Economics, Vol. XXVIII, August, 1952, pp. 245 - 263.

<sup>8</sup>Ibid., p. 256.

Firm "A" is a trucker whose major investment is its power unit and trailer at the prevailing per ton rate over a certain route ( $R_1$ ). "A" is earning a reasonable profit. Should the demand for trucking service increase and shippers bid up the rate to  $R_2$ , "A" will be earning more than a sufficient profit. Firm "B", sensing this profitable market, quickly buys another unit and enters the route. With demand and supply thus again in equilibrium, the rate falls back to  $R_1$ . Should the new rate fall below  $R_1$ , either "A" or "B" can easily leave the market. Entrance and departure is thus facilitated due to the fact that the major expense of doing business here is represented by variable costs. The fixed investment (i.e. the unit itself) is not substantial relative to the revenue it will create in a year of business. In addition, such a fixed asset, unlike a railroad right-of-way and structures, can quickly change hands in a used market at a good portion of its factory price.

Such mobility acts as good protection to the consumer or shipper as well. The rate  $R_1$  is not only most stable, but as it should gravitate to the level of the truckers' long-run marginal cost, it should be extremely reasonable. "The theory of regulation", as Pegrum notes, "grew out of the unique economic characteristics of the railroads".<sup>9</sup> How, then, does this theory apply to motor carriers?

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<sup>9</sup>Ibid., p. 247.

In a word, it does not. It is the opinion of this writer that rate regulation of motor carriers cannot logically spring from theoretical economic arguments such as "the theory of regulation". Rate controls over motor carriers were introduced at the same time as entry controls in this industry. The application of these two, moreover, came not as a result of long meditation, nor after reference to economic theory, but simply as ad hoc remedies to a perilous competitive situation in an embryonic transport industry, an industry which was growing at a colossal rate.

#### Brief History

Although regulation of motor carriers may not be necessary for exactly the same reasons that require railroads to be regulated, it does not follow that regulation of motor carriers is undesirable. A study of motor carrier transportation as it existed prior to the establishment of effective regulation reveals certain undesirable and objectionable features for which a remedy was sought. Some of these practices were similar to railroad practices considered objectionable; others were peculiar to the motor carrier industry.<sup>10</sup>

Prior to passage of the first motor carrier acts, conditions in the American trucking industry were chaotic. The internal combustion engine was perfected, roads were under construction, shippers were demanding more and more in the way of fast transportation. Thus, the possibility of getting into a booming transportation revolution with but a

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<sup>10</sup>D.P. Locklin, op.cit., p. 668.

very small investment began to attract thousands of would-be carriers virtually overnight. In the period 1915-1930, however, it was evident that more motor carriers were becoming available than the traffic warranted.

This surplus of operators, coupled with a general ignorance by these small businessmen of how to set remunerative rates, resulted in a mad scramble for business. The result was a situation where even the larger operators were unable to secure a stable position.<sup>11</sup> The public could not expect adequate service under these unsettled competitive conditions which persisted for more than a decade in some states of the U.S., nor were the authorities or carriers willing to wait until the industry settled into equilibrium. Before long, most responsible carriers, ably assisted by the railroads, were appealing to state legislatures to restrict the entrance of truckers into the industry.

Between the years 1915 and 1928, therefore, most states in the United States entered the field of motor carrier regulation. The initial intention was only to protect the public and, most important, the industry itself from a severe overcapacity which was developing as a result of inordinately rapid growth.

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<sup>11</sup>"Prior to regulation, new truckers entered business at will, slashed tolls to get freight, paid inadequate wages ...maintained their trucks so badly that they endangered other highway users....Certification forestalled 'wild-cattling' and ensured a reasonably high standard of service along the route concerned." A.W. Currie, Economics of Canadian Transportation, 2nd Ed., Toronto, University of Toronto Press, 1959, pp. 493-494.



Even beyond the necessity of protecting an embryonic motor carrier industry from itself, regulatory philosophy was forced to become concerned for the first time about the transportation field in its entirety:

By 1920, although competing carriers had not yet substantially invaded the railroads' province, the pattern was becoming evident. The Congress, realizing that unbridled competition in a field so vital to the national economy might well be destructive of the industry, began to shift the emphasis of regulatory legislation...to the continued welfare of the industry itself.<sup>12</sup>

That motor truckers had to be limited in number by route, by region and by state was soon an accepted fact. That rate controls must accompany entry controls was a logical corollary. In the absence of rate controls, "authorized" truckers would be free of the full competitive force attendant upon other industries and thus at liberty to adjust rates to what the traffic would bear. By restricting competition, state regulators had incapacitated forever the economically mobile trucking industry from stabilizing itself eventually to a position of perfect competition. One might say that the motor carrier was destined as early as the first entry controls of 1920 to be an "artificial monopoly". Any monopolistic economic unit, of course, whether natural or contrived, could expose its consumers to excessive rates, discrimination or inadequate service. The logic of applying rate controls to

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<sup>12</sup>Domestic Land and Water Transportation, Progress Report of the Committee on Interstate and Foreign Commerce, Senate Report No. 1039, 82nd Congress, 1st Session, Washington, D.C., 1951, p. 5.

take the place of the market price mechanism was thus no different in its application to truckers than to railroads or to utilities.

### Powers and Duties of the Motor Carrier Regulator

Thus far, there has been no discussion of what form rate regulation actually takes. In this section, therefore, we shall look at the various powers and duties of the regulator in relation to rate setting.

### Minimum Rate Regulation

The establishment and maintenance of minimum rate levels over particular routes is one aspect of motor carrier rate regulation in the United States. To the extent that competition does exist within the imposed entry limitations, the regulator is concerned that excessive rate-cutting practices not go on. Indeed, even where entry controls are enforced, some degree of competition will face the regulated carrier.

State trucking regulators in the United States have usually reserved themselves some authority over the minimum rates such carriers might set in the face of this competition.<sup>13</sup> In jurisdictions where entry controls are less strict, the importance of policing minimum rate levels looms larger again.

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<sup>13</sup>D.U. Harper, Economic Regulation of the Motor Trucking Industry by the States, Urbana, University of Illinois Press, Ch. IX, 1959.

Such power, of course, acts as a more direct method of preventing destructive competition.

The mechanics of minimum rate regulation will not be explained in this Chapter. The difficulties imposed upon a commission in determining what a minimum rate level or minimum rate for a particular haul should be are extremely complex and, as we shall see, unsettled, to say the least. In fact, one facet of these difficulties; i.e. how to distinguish whether or not a trucker is earning "a fair return" with his rates, is the subject of later Chapters. Suffice it to say that most regulators are empowered to set or to determine minimum rate levels in order to satisfy the objectives they are charged to seek as listed at the beginning of this Chapter.

#### Maximum Rate Regulation

In that shippers are theoretically free to engage private trucking should common carrier rate levels become too high, excessive rates should not be a danger to the public. However, such a statement would be of little solace to the small volume shipper. In addition, the restricted entry characteristic of the industry indicates that there may well be many captive shippers reliant upon one highway carrier. Essential to the protection of such small and captive shippers is the vesture of maximum rate powers with the regulator.

Maximum rate regulation usually goes hand in hand with the aforementioned minimum rate powers to a commission with jurisdiction over truckers. In many ways, the criteria of what constitutes an unreasonably high rate are the same as those employed to study minimum rate levels. Again, therefore, we shall defer discussion of such considerations until later chapters.

### Rate Discrimination

Although maximum and minimum rate regulation are the terms of reference for all regulatory commissions with authority over truckers, often regulatory power slightly beyond this is given to prescribe and hold carriers to specific rate structures. Not only does this take care of the abuses of unreasonably high and non-compensatory rates, but also it allows a commission to prevent unjust discrimination as between shippers or groups of shippers. In many cases, rate discrimination is specifically dealt with in statutory provisions or commission rules as well. Clearly, this is a significant problem and one meriting the attention of the regulator.

Thus, minimum and maximum rate regulation, or the more sweeping power of setting specific rates along with provisions to prohibit discrimination, are the principal considerations or the basic forms of common carrier rate regulation. The approach to each of these problems is by no

means standard throughout North America, nor do all regulators share the same philosophy about how this kind of regulation should be administered. The next and final section of this Chapter will briefly review some of the powers and structures of carrier rate authorities and how the various types of rate regulation are carried out therein.

### The Regulatory Environment

At this point, it would be desirable to state just how trucking rate regulation has evolved in our continent. What is its history? What are the organs and methods of enforcement? In that the United States pioneered in the practice of administering controls over trucking rates, it might be best to begin in that country.

### The United States

In the United States, regulation of trucking by the states began in 1914. In 1935, the Federal Motor Carrier Act was passed. Since passage of this Act, moreover, the role of the federal government, as administered by the Interstate Commerce Commission, has been the one emphasized by students of the industry. This is despite the fact that a great deal of the onus of rate and other regulation still falls on the states' utility commissions.

On the state level, early regulation of motor carriers was a matter of stretching the existing state public

utility laws and commissions to include economic oversight of this new development in transportation. Over a period of fifteen years, the courts around the country gradually approved such rate regulation by the states of common and contract motor carriers. Even by 1935, motor carriage was well bound by practically every state in the union.

As far as rate control is concerned, every state except New Jersey has either maximum-minimum powers, minimum powers alone, or, more usually, control over the precise rates charged by carriers operating intra-state. Each state employs similar criteria for determining rate adequacy or unreasonableness. All U.S. states have their own motor carrier act or a section on motor carriers within a transportation or public utilities act. The administrator of such an act is usually called the state Utility Commission.

The federal government entered the field of motor carrier regulation in the midst of the thirties as it was then apparent that a great gap was developing in the regulation of this industry and, indeed, in the total transportation sphere itself. That gap was, of course, interstate operations.

The Motor Carrier Act of 1935, now Part II of the Interstate Commerce Act, placed all American carriers operating interstate and into foreign countries under the juris-

diction of the Interstate Commerce Commission. In the area of rate regulation, the stipulations are relatively severe. The Commission may prescribe the maximum, minimum, or actual rates to be charged by any carrier or group of carriers in any area or for any particular haul that the Commission has cause to inquire into.

Section 204 of the Act states the general duties and powers to be exercised by the Commission over motor carriers. To enable effective rate regulation to be carried out, the Act allows the Commission to establish reasonable requirements with respect to filing records and reports, keeping a uniform system of accounts, etc. With regard to administration of the Act, Division II of the I.C.C. is responsible for dealing with rates, tariffs, agreements between carriers, valuation of firms, and the handling of formal complaints about rate and tariff matters.

Section 216(b) is the one requiring foreign and interstate operators to:

establish, observe and enforce reasonable charges, rates and classifications, just and reasonable regulations and practices.<sup>14</sup>

The I.C.C. has two general approaches to determining whether, indeed, reasonable rates are being charged. The first is the

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<sup>14</sup>Interstate Commerce Act, Sec.2 U.S., as cited by C.B. Aitchison, Fair Reward and Just Compensation, Common Carrier Service - Standards Under the Interstate Commerce Act, Washington, D.C., 1954, Association of Interstate Commerce Practitioners, p. 19.

general revenue case. Here, one or more carriers, possibly represented by their rate bureau, show the Commission that an emergency exists for the parties concerned. Existing revenues are tabled, the character of the need of the carriers for additional revenue is displayed, and present and foreseen operating expenses are stated. In addition, sometimes evidence as to book investment and the required present rates of return thereon are shown. A concluding statement is made to the Commission by the applicants as to what revenue changes are required to earn reasonable profits and the consequent general rate changes called for. Opposing witnesses are heard as well.

By the same token, a general revenue case can be initiated by the shipper(s). Here, it is demonstrated that need exists for a lightening of the general rate burden.

In the general rate case, neither the Commission nor the appellants are concerned with the general level of rates, rather their internal structure - specific charges which someone feels are out of balance with the general reasonableness of the rate level. The same type of data is filed by carriers for a general rate case with the addition of more specific cost and revenue figures for the hauls under investigation. Profit ratios, return on investment, determination of the out-of-pocket cost level are all pertinent considerations for both cases. This information, all of



which pertains to determination of a fair return, is the subject of the next chapters.

As stated, the I.C.C. has absolute power of ruling on rates for any interstate carrier. This includes the majority of truckers in the U.S. The Commission can respond to an appeal regarding rates or it can initiate proceedings itself. Clearly, common motor carrier rate regulation is scrutinized rather closely in the U.S. even though, as we shall see, some of the mechanics of rate and rate level examination are far from perfect in their use and development.

### Canada

In Canada, it has often been said that the federal government has control over all facets of extra-provincial motor carrier operations, but for the time being has "loaned" its regulatory powers to the provinces. By virtue of passage of the recent Transportation Act<sup>15</sup>, however, the federal government has given indication that it will take its powers back and set up a committee of the new Transportation Commission to administer them. Even with this recent move, it is somehow difficult to imagine that Ottawa really wants the headaches of trucking regulation, and most observers are curiously and skeptically awaiting some definite action.

### History

Prior to 1949, the provinces enjoyed exclusive and

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<sup>15</sup>R.S.C., 1952, C. 271, as amended 1967.

relatively uncontested control over the activities of motor carriers insofar as any regulation existing at that time was concerned. This was by virtue of Section 92 of the British North America Act which gave the junior governments jurisdiction over "property and civil rights" and "local works". This is not to say that such exclusive rights were not contested from time to time. In 1937, and again in 1940, bills were introduced into the federal parliament urging federal controls over interprovincial operations. Since, at the time, such operations amounted to only three to five per cent of total intercity business,<sup>16</sup> the opposition to federal regulation and opposition by truckers and shippers outweighed the arguments in favor of such legislation no matter how compelling. The railways and other interests who vehemently called for federal controls similar to those in the U.S. simply had to wait until the volume of interprovincial trucking merited the time and expense of senior government administration. Moreover, since the Canadian federal government had contributed but minimally to highway investment up to this time, there was another contrast to the American situation.

Another feature of the regulatory environment for motor carriers until mid-century was that although most provinces had some sort of motor carrier act or public utilities act which in some way took care of safety and entry matters, and stipulated measures to protect the

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<sup>16</sup>A.W. Currie, Ibid., p. 499.

provincially-owned roads, rate regulation even to the extent of filing was neglected by the state. In the thirties alone some weak but unsuccessful attempts were made by the industry itself to regulate rate setting.

In 1949, a significant court case turned the course of motor carrier rate regulation history in Canada.<sup>17</sup> A motor coach operator in doing business in Maine, New Brunswick and Nova Scotia challenged a ruling by the New Brunswick Motor Carrier Board (the authority for motor carrier and motor bus operations in New Brunswick). An appeal to the Supreme Court of Canada brought about the decision that a provincial government had no right to regulate any facet of interprovincial or foreign motor carrier operations. Several provincial appeals simply served to affirm the decision and suddenly the federal government was faced with the task of passing legislation as to how it proposed to handle its new-found yet unsolicited responsibilities. The result was the passage of the Federal Motor Vehicle Transport Act of 1954.

Of little surprise to anyone, the federal government simply used this act to set up the various provincial regulatory agencies as federal control boards, vested with all powers legally held by the senior government to regulate

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<sup>17</sup>A.G. Ont v. A.C. Winner, 541; 4 D.L.R., 657, 71 C.R.T.C., 225.

the trucking and bus industries. From that time until very recently, therefore, regulation of motor carrier operations in Canada has been entirely under provincial administration. The growing interprovincial operations were being administered, however, under the authority of a federal statute.

### Present Situation

As a result of the provincial monopolization of trucking regulation, Canada is characterized by a marked lack of uniformity in the content of its motor carrier administration province to province. It is not the task of this thesis to draw attention to the vast differences that exist between certain jurisdictions, nor to point out what serious problems these differences can bring about. As far as rate regulation is concerned, however, there is merit in reviewing various provincial approaches to the problem. It should readily be apparent, moreover, that the same tight administration of rate control existing in the U.S. via the I.C.C. and state commissions does not exist in Canada.<sup>18</sup>

All provinces in Canada (with the exception of Newfoundland) have a board or commission which administers regulatory powers over motor truckers. Each regulator possesses some administrative power over freight rates, and only

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<sup>18</sup>As Currie notes, the philosophy toward regulation of trucking is far more reserved in Canada than in the U.S. "Some provincial governments oppose regulation of rates because they consider that unrestricted trucking will keep down transportation tolls of both rail and highway carriers. ...enforcing regulations could cost too much money...The industry (here) tends to police itself." Currie, A.W., Ibid., p. 498.

one province, Alberta, fails to exercise this power. In the case of Nova Scotia and New Brunswick, the regulators' authority consists only of requiring the operators to file their schedule of rates. In the remainder of the provinces, the regulatory commission enjoys a degree of direct influence over trucking tariffs. In Alberta, and also in Ontario, the regulator does not actually utilize its authority to establish or maintain rates and rate levels. This is a remarkable contrast to American state regulators and the Interstate Commerce Commission. The latter, as we shall see, are deeply involved in rate cases at all times.

In British Columbia, the Motor Carrier Branch of the Public Utilities Commission must approve every rate published by any motor carrier in the province. Any schedule considered unreasonable can be altered or suspended. In order to maintain the integrity of the overall rate structure, the Commission has power to adjust any particular rate as well. In B.C., where rate hearings are not uncommon,<sup>19</sup> and an active carrier association seems to be encouraging research into the difficult area of trucking rate and entry controls, it would appear that some of the most effective regulation, regulation similar to that in the U.S., may be developing.

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<sup>19</sup>For example, during the Spring of 1967, a hearing was in progress before the P.U.C. of British Columbia wherein all Vancouver Island truckers were opposing a contention by a number of municipalities that rates on common carriers were excessive.

## Summary

This Chapter has been concerned with both the justifications and arguments against rate regulation over trucking. After some review was made of the theoretical aspects of the problem, the actual history of how rate regulation came into being in this industry both in the United States and in Canada was outlined. It would seem that there are substantive arguments on both sides of the issue. In actual practice, rate regulation seemed to come as a necessary partner to entry controls in the United States when the industry was young and growing quickly.

In addition, this Chapter has introduced certain of the terms of reference that trucking rate regulators deal with. The rate "case" is a term that will be frequently dealt with in subsequent chapters.

CHAPTER III  
DETERMINATION OF A FAIR RATE OF RETURN  
IN MOST REGULATED INDUSTRIES

In Chapter I a review was made of the economic justifications for state regulation of certain industries. At the same time, some of the legal rationale behind public control over business was sketched out. It was found that the U.S. Supreme Court will condone rate controls over an industry which, if left unfettered, could be harmful, in the Court's opinion, to the best public interest. Further, the decisions of this august body have had great influence even beyond U.S. jurisdiction.

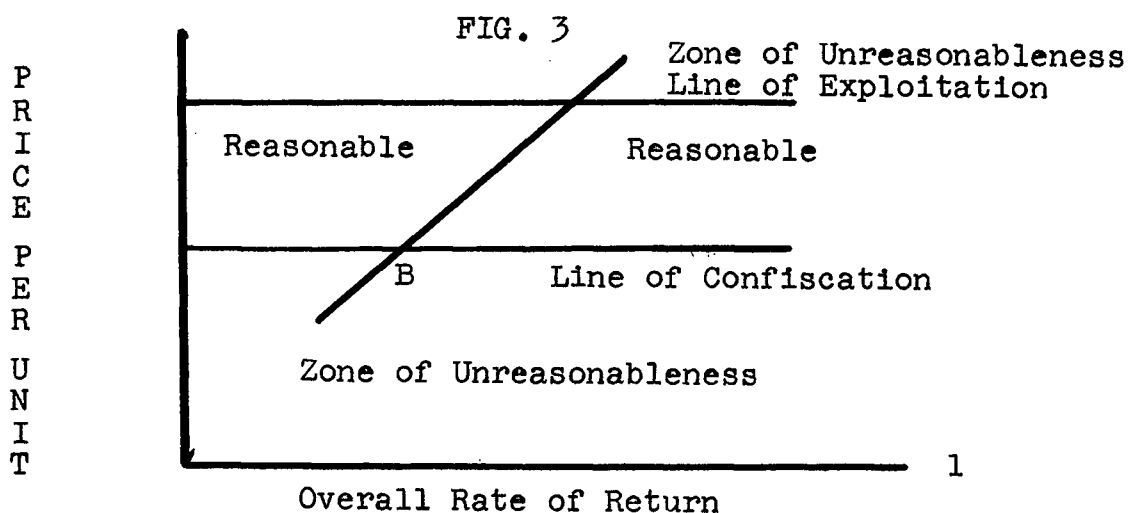
In Chapter II it was seen how the motor carrier was introduced to state regulation both in the United States and in Canada. Some review was made of the economic characteristics of the motor carrier industry so as to suggest that the justification for regulation of rates in this field rests on different grounds than those of most other regulated industries.

The intent of this Chapter is to indicate briefly what form rate regulation will take in the general case, then to introduce and examine in detail the issue usually considered the thorniest for rate regulators. The issue is that of deciding how to measure the return on investment being earned by the industry or firm and then choosing

criteria for judging the adequacy or "fairness" of his return. In the subsequent chapter, the motor carrier industry will be examined in light of the discussion of this chapter.

### Setting the Rate Level

As stated in Chapter I, a rate regulator is saddled with responsibilities both to the public and to the producer or carrier that it is regulating. For the public, it attempts to ensure reasonable rates as well as adequate and reliable service. For the firm or industry, the regulator will try to guarantee a rate level whereby reasonable profits can be earned and financial stability maintained. The setting of such a rate level is not a precise science by any means. Clearly, all the authority can aim for is to have its rate level fall within a "zone of reasonableness" at all times.



Although this "zone" within which the regulator sets the rate level is not well defined, its upper and lower limits are usually the subject of close scrutiny. As the

<sup>1</sup>"Zone of reasonableness" is a term one may expect to encounter in any source concerned with public regulation. It derives from a ruling in Federal Power Commission v. Natural Gas Pipeline Co., 315 U.S. 575 (1942).



exhibit points out, moreover, the only way of judging whether a rate level (or price per unit in unit terms) is "confiscatory" or "exploitive", and hence without the bounds of reasonableness, is by examining the rate of return the industry is earning with that particular rate level. It is conceivable that other criteria might exist for making such judgements. For one thing, the reasonableness of a rate level could be examined from the standpoint of what society would be willing to pay for the product or services. This might be a justifiable means for evaluating a product or service which is not essential to society. In that most regulated concerns are producing something essential, or practically essential, however, this approach would soon be discredited as rate levels set in this way would have no upper limit.

Throughout the years, therefore, regulatory commissions and "courts" of appeal beyond them have come to attach great importance to the rate of return on investment to the regulated firm or industry. Once a commission has established its own standards of when a return is too high or too low, it can then examine and make expeditious judgements on the rates being charged by industries under its jurisdiction. Only with a relatively clear idea of what is "exploitive" to the customer and "confiscatory" to the firm or industry can the commission judge whether an industry is charging "just and reasonable" prices. In turn, the commission can judge whether its regulation is adequately simulating the

natural controls of the market that have been removed and replaced for that industry.

To set rates within bounds of reasonableness, regulatory commissions are faced with two overriding tasks. The first is that of measuring, or setting, standards for measurement of the firm's asset base upon which the rate of return will be computed. The second problem involves finding yardsticks for judging how reasonable the return is once computed.

Important as these two facets of rate regulation are, neither has been clearly standardized nor settled in the minds of economic and accounting theorists. Like so much of the practice of public business regulation, the problem of setting "a fair return on a fair value" for rate-making purposes is most controversial. The next two sections will look at some of these unsettled matters and attempt to show how the regulator handles them.

### The Rate Base

In setting out to determine what is a fair return on a fair value for a regulated concern, the regulator's first task is to derive what it considers to be a fair and reasonable valuation for the subject firm. Throughout the years, valuation of the rate base has, in fact, received far greater attention on the part of commissions than has

the return itself.<sup>2</sup> In this section we shall look at some of the measures of valuation.

### Measures of Valuation

Usually when one examines a dispute over matters of valuation, he expects to find a controversy between economists and accountants. To the former, of course, value can only be represented by the discounted sum of all estimated future net returns of the industry or firm under study. To the latter, a firm's value means something more concrete such as might be represented on a balance sheet by the periodic amount of net asset or equity accounts. The elements of corporate value to the accountant are basically only two:

1. Tangible assets (land, buildings, equipment, cash, securities, etc.).
2. Intangible assets (goodwill, patents, etc.).

Hence, any controversy between accountants as to how a firm might be evaluated will revolve around methods of valuation rather than what items might be included in the analysis.

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<sup>2</sup>Most of the I.C.C. Rate Cases that are discussed later in this Chapter are concerned principally with rate base rather than with the return on the base. For example:

- (i) McCardle et al. v. Indianapolis Water Company;
- (ii) Los Angeles Gas and Electric Corporation v. Railroad Commission of California;
- (iii) Natural Gas Pipeline Company v. Federal Power Commission.

Only one case, Bluefield Water Works and Improvement Company v. Public Service Commission of West Virginia, delves very deeply into rate of return itself.

In placing a value on the property of a rate-regulated firm, however, the economists' concept of value is clearly inapplicable. Since discounted future profits are the measure of value, the regulator could place any value on the firm it wanted merely by adjusting the allowable future rates.

The issues involved in evaluating the rate base of a regulated firm are, therefore, mainly those of accounting theory. The various measures of value used by the regulators can be divided into two categories:

1. Original Cost Value.
2. Reproduction Cost Value.

Phillips breaks these two broad classifications down in the following manner:

1. (a) "Actual" or Original Cost

This is the amount actually paid for installing the original plant and equipment, plus additions, when first devoted to public service.

(b) Book or "Investment" Cost

The amount actually paid for installing the present plant and equipment, plus additions as shown in the investment accounts on the books of the company.

(c) Historical Cost or "Prudent Investment"

The original cost minus any fraudulent, unwise, or extravagant expenditures.

(d) Capitalization Cost

The capital invested in the business as measured by the outstanding bonds, stock and other securities.

2. (a) Current or Reproduction Cost: Price Level Accounting

The cost of plant and equipment, plus additions, estimated at price levels prevailing at the date of valuation.

(b) Split Inventory Value

The original cost (reproduction cost) of plant and equipment installed before a specified date, and the reproduction cost (original cost) of property installed thereafter.

(c) Taxation Value

The value of property assessed for taxation purposes.

(d) Exchange or Purchase Value

The value of a company as determined by the price another party is willing to pay for the property.<sup>3</sup>

Although it is not the intent of this Chapter to resolve which of the above valuation methods would be the "fairest" for the purpose of deriving a rate base, there is some value in reviewing the theoretical arguments in favor of both original and reproduction cost measures.

The most compelling argument for evaluating a company on the basis of its assets' original cost is that this is the simplest and most accurately objective method. So long as the accounting has been complete and honest, a commission can tell at a glance what the rate base is and how

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<sup>3</sup>C.F. Phillips, The Economics of Regulation, Homewood, Ill., R.D. Irwin Inc., 1965, pp. 216-217.

much it may have diminished or increased from one year to the next. A periodic summation of asset accounts, accounts composed of items costed at simple acquisition price, minus depreciation, is shown in the standard balance sheet. Hence, the simple balance sheet is all the commission would require as long as it was assured of the integrity of the accounting system employed by the firm.

A second argument in favor of actual cost is that it will make for a more stable rate level over a period of time. Unless major changes are made in invested capital, the rate base will remain unaltered, and hence the public can be assured that it will not be subjected to rates or prices which are continually fluctuating. We might recall that the maintenance of stable as well as reasonable rates is a prime objective of rate regulation.

The third favorable feature which attaches to original cost valuation relates to attraction of capital. As Locklin points out:

There is no better way of inducing people to put money into an industry than by paying them a stable return on what they have already put in... On the other hand, the cost of reproduction basis would pay investors a return, not on what they have put in but on what they would have to put in to construct a plant at the present time.<sup>4</sup>

Of course, in an environment where price levels are going down temporarily, the investor would be rewarded more than propor-

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<sup>4</sup>D.P. Locklin, Economics of Transportation, Chicago, R.D. Irwin Inc., 1960, p. 408.

tionately for his investment, while, if the value of the dollar is decreasing, the return to equity and debt holders would be less than proportionate. As Locklin notes, the latter situation might appeal to a speculator, but not to the serious investor that management wants to attract.

In this writer's opinion, reproduction cost valuation and "price level" accounting would be the only acceptable cost approach to the rate base of a regulated industry. The economist's chief objection to original cost valuation of assets is, of course, related to income. Even if he can be persuaded to accept the accountant's "computed amount" concept of income, he will insist on price level accounting. During periods of extended inflation, such as the world has experienced in the post-war years, to value older assets at original cost, he feels, is ludicrous. The problem springs in large part from under-depreciating (i.e. computing depreciation on a low-valued asset base), and hence overstating profits. The dislocating effects both to the company and to the economy at large from such a practice would apply not only to a regulated concern, but equally to the firm operating in a competitive market.

Although the chief objection of economists and other critics opposed to original cost valuation is centred on the misleading indication it gives of net income, there are other supporting arguments for reproduction cost valuation. The one Bonbright cites has to do with optimal allocation of the

nation's resources.<sup>5</sup> According to his argument, the rates of non-regulated industries tend to reflect reproduction costs in times of inflation. If the rates of the regulated concern are not predicated upon an inflated reproduction cost as well, their rates will be lower than those of competitive industries. Therefore, there will be an unjustified increase in demand for the regulated industries' product or services relative to the demand for the competitive industries' output. The increased demand will, in turn, trigger unmerited expansion of facilities and investment therein. This does, of course, assume that there will be some degree of substitutability between the spheres of regulated and unregulated industries.

This reasoning is not convincing. In the writer's opinion, there is no clear indication that the prices of unregulated firms reflect reproduction costs of assets any more than do the prices of regulated concerns. For one thing, no accounting body has sanctioned any method of depreciation other than that based on the original cost of the asset.<sup>6</sup> Certainly, most regulated industries such as utilities and

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<sup>5</sup>J.C. Bonbright, Principles of Public Utility Rates, New York, Columbia University Press, 1961, pp. 267-270.

<sup>6</sup>The most progressive thinking that is being done with regard to changing the method of depreciating comes from the United States. Although a number of reports have been produced and submitted by the Accounting Research Division of the American Institute of Certified Public Accountants, the Accounting Principles Board of this body has yet to issue any significant opinions, nor has it taken any specific action.



railroads will have a larger proportion of their fixed assets tied up in old, long-lived equipment. For this reason, that type of firm will feel the brunt of inflation more than another when it has to replace a large, old piece of equipment. On the other hand, unregulated, private industry contains many organizations with large amounts of old, fixed equipment.

One justification of reproduction cost valuation is that it maintains the investor's real income. Only when profits are set on a base which moves with the price level will the investor be able to keep up with the cost of living. As pointed out above, however, the average investor looks for a return on what he has invested, not on what his investment is worth in terms of the prevailing price level.

Having reviewed the conflicting accounting theory, we are soon aware that a regulatory commission is by no means bound to how it should, or could, in terms of the cost approach, evaluate a rate base. It is not difficult to imagine that a regulator might change its attitude from period to period depending on the prevailing economic conditions or the philosophies of its members.

### The Fair Rate of Return

Although it has received less attention than the problem of determining a rate base, the question of what con-

stitutes a fair rate of return on that base is equally important. In fact, the net income of the industry under regulation will likely show large magnitudes of change in response to slight allowed changes in the rate of return. Again, looking only at theory, let us examine the standards and criteria which might be used by the regulator to set an allowable return for an industry.

Any standard of what is a "fair" return to a company must take reference to those parties which have a financial interest in the firm, either as owners or as creditors. The regulator must recognize that the concerns it is regulating are in competition for financing with the unregulated sector. Thus, in addition to meeting annual operating expenses, including depreciation, the rate level will have to account for dividend payments, interest payments and a certain contribution to surplus in line with what an investor would expect from any firm with securities in the market. Failing this, the regulator and the state would be saddled with the additional responsibility of financing regulated concerns themselves.

One way of computing the minimum return that investors will consider fair and respond to is by figuring the firm's cost of capital. The cost of capital to any firm might be defined as that minimum rate of return which any investment or, for that matter, any going concern must earn in order to attract the funds it requires. The standard manner in which a company will calculate this cost is by adding up and averag-

ing its annual dividend and interest rates of payment. This might be illustrated as follows:

<u>ESTIMATED COST OF CAPITAL</u>			
	<u>Percentage of Capital Structure</u>	<u>Annual Cost</u>	<u>Weighted C Cost</u>
Bonds	50%	4.0%	2.000%
Preferred Stock	15%	5.5%	0.825%
Common Stock & Surplus	35%	11.0%	3.850%
Overall Cost of Capital	100%		6.675% <sup>7</sup>

The above might be, in other words, the "out-of-pocket" costs of financing faced by the regulated firm or any other firm. If contractual payments are not met each year and the "optional" common stock dividends paid with some regularity and with a suitable return to the investor's equity, then the industry or firm will eventually lose its source of financing. In this case, the regulatory authority must allow a rate level which will return at least this weighted average of financing costs - 6.675%. Only a rate of return which will accomplish this can be considered a "fair return on a fair value" for that particular concern. Anything less would be confiscatory to the owners and creditors.

Another way in which a fair return can be calculated

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<sup>7</sup>Phillips, op.cit., p. 279.

is by the use of what is often referred to as "the comparable earnings standard".<sup>8</sup> This is defined as the rate of return that will meet contractual payments and then allow the equity investor a return on his funds equal to that displayed by other businesses in the private sector which have corresponding risks.

The major objection to this standard is that it is quite impossible to find an industry with risk characteristics identical to those of certain regulated industries. How, for instance, would one compare the risks attached to steel-making with those of an electric utility?

In the final analysis, a regulatory commission is most likely to refer to the cost of capital of the utility or carrier under regulation in order to rule what the allowable "fair return" will be. In addition, a great deal of subjective judgement will be utilized. For one thing, an actual determination of cost of capital will be far more complicated and, to some degree, "subjective" itself. The exercise is not as simple as that of calculating the out-of-pocket cost of financing indicated above. The crux of the problem is determining the cost of equity financing.

The cost of equity capital, according to a definition in any standard finance text, is actually a "required

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<sup>8</sup>C.B. Aitchison, Fair Reward and Just Compensation, Common Carrier Service - Standards Under the Interstate Commerce Act, Washington, D.C., Association of Interstate Commerce Practitioners, 1954, pp. 14-17.

earnings rate"<sup>9</sup> or an opportunity cost. It is based on what amount the stockholders would deem sufficient to encourage them to leave their funds in that investment. In other words, the "cost" is that necessary at least to maintain the price of the stock on the market. Going further, this required earnings rate really depends on what other opportunities are available to the investor.

This thesis does not purport to solve the question as to how this cost of equity capital should be measured. It must be pointed out that the issue is perplexing to financial analysts apart from those in public regulatory commissions. Suffice it to say, however, that the cost of equity capital is dependent on the market's valuation of the firm and, as a result, the regulator has no course but to let the market dictate what "costs" it will demand for financing. The parties of the market will, of course, be employing their own standards of "comparable earnings" to the regulated firm for the risk class in which they place it. Therefore, this matter should not have to be of concern to the regulator.

Thus, the cost of equity capital, and even the cost of debt financing (because of the risk element it introduces into the capital structure), is inextricably linked to the market's valuation of the firm. The availability of financing

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<sup>9</sup>G. David Quirin, The Capital Expenditure Decision, Toronto, Richard D. Irwin Inc., 1967, p. 13.

determines whether a firm, regulated or not, will survive. Should not then the regulator refer solely to the existing and projected state of the capital market in setting a rate level for its utility or carrier? A financial analyst, or, indeed, the financial vice-president of the regulated firm, would undoubtedly think so.

As mentioned, the regulator does refer to the cost of capital to the utility or carrier when setting rates. When one reviews the history of rate of return cases, however, he detects a reluctance on the part of the Interstate Commerce Commission or the U.S. Supreme Court to set it up as an official standard. The emphasis seems to be on seasoned judgement and there is an obvious reluctance to become involved in any specific technical approach such as the cost of capital "standard" would be. This should be evident further on in the Chapter.

#### The Legal History of Rate of Return Determination

The United States Supreme Court has long been an integral part of the rate setting process of United States' regulatory commissions. Indeed, its judgements have been an authoritative source of precedent and legal opinion for Canada and other western countries concerned with rate level determination. The main concern has been to guard against the legislative-appointed commissions setting rates confis-

catory to the private property of regulated industries while giving the public non-exploitive prices. (The two considerations the court has dealt with on appeal since the mid-nineteenth century have been, of course, rulings on fair value of rate "base" and fair return on that base.) As noted earlier, the former has consumed the major share of the court's attention.

The first attempt to set a judicial standard for a public utility rate setting was in 1898 in the famous Smyth v. Ames case.<sup>10</sup> The appeal by Ames, an officer of the Union Pacific Railroad, was that no regulatory authority had the right to prohibit the railroad or any utility from maintaining rates adequate to meet operating expenses, regular interest upon all obligations, and to justify a dividend on all of its stock. Thus, the court was faced with ruling:

1. Whether the legislature of the state concerned was confiscating the carrier's property; i.e. taking it for public use without just compensation, when the rate level was held below this full measure demanded by the railroad. Further, if such a level was not maintained, should due process of law be instituted as a matter of course?
2. What the carrier's reward should be.

In the court's opinion, Ames' contention was weak in that "...it makes the interests of the corporation maintaining a public highway the sole test as to the lawfulness

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<sup>10</sup>Smyth v. Ames, 169 U.S. 466 (1898).

of the rate". This "...omits altogether any consideration of the right of the public to be exempt from unreasonable exactions". Hence, it should be the prerogative of the regulator, or, on appeal, the court itself, to determine "the fair value of the property being used by the corporation for the convenience of the public".<sup>11</sup> Although the court did not offer any definite formula for determining what the true or fair value of this property should be, it did state several distinct standards that should be "considered". Even at this, the court was being far more specific than later courts were to be. The criteria of value to be considered in arriving at a rate base were as follows:

1. The original cost of construction of the corporation.
2. The amount expended in permanent improvements.
3. The amount and market value of its stock and bonds.
4. The present, as compared with the original, cost of construction.
5. The probable earning capacity of the property under particular rates prescribed by statute.
6. The sum required to meet operating expenses.<sup>12,13,14</sup>

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<sup>11</sup>Aitchison, op.cit., p. 15.

<sup>12</sup>Justice Brandeis attacked the "so-called rule" of this case in 1923. "Legally and economically unsound", he said. The decision directed a tribunal to consider all those "and other relevant facts" in making judgements. "What, if any, weight shall be given to any one must practically rest in the judicial discretion of the tribunal which makes the determination."

<sup>13</sup>Aitchison, loc.cit.

<sup>14</sup>Southwestern Bell Telephone Co. v. Missouri Public Service Commission, 262 U.S. 276, (1923), as quoted in Phillips, op.cit., p. 225.



Although the court never had to enquire too deeply into an actual valuation for Union Pacific at the time, the case seemed to set a trend to consideration of these factors. The cost of reproduction was given a great deal of weight, presumably because of the court's philosophy at the time and because of the compelling arguments given by the state commissions. At the turn of the century, price levels had fallen a great deal since the era of initial railroad construction and, in addition, reproductive cost measures were seen as one way of "checking against the excesses that frequently took place in the earlier periods of construction and were manifest in the financial structures of the companies".<sup>15</sup>

Throughout the first quarter of this century, fair value of rate base continued to be the prime issue in rate case appeals to the Supreme Court. With the deflation following the First World War, the regulated corporations began to call for reproductive cost standards in order to maintain their plants. In fact, reproductive cost of assets became almost the entire issue. The case usually considered to be the high water mark of the reproductive cost thinking was McCardle et al. v. Indianapolis Water Company in 1926.<sup>16</sup> Here, a divided court stated:

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<sup>15</sup>Smyth v. Ames, as quoted by Aitchison, op.cit., p. 17.

<sup>16</sup>McCardle et al. v. Indianapolis Water Company, 272 U.S. 400 (1926).

...the reasonable cost of a system of waterworks, well planned, and efficient for the public service, is good evidence of its value at the time of construction...so long as there is no change in the level of prices...(in which case)...then the present value of lands plus the present value of constructing the plant, less depreciation, is a fair measure of the present value of the property.<sup>17</sup>

During this embryonic stage of judicial standard-setting as to measures of fair reward and just compensation, there was very little mention of the rate of return feature. The first case dealing with this at any length was Bluefield Water Works and Improvement Company v. Public Service Commission of West Virginia.<sup>18</sup> The main principles the Supreme Court considered applicable to rate of return hinted at the "comparable earnings" doctrine as well as the cost of capital standard reviewed in the previous section.

A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties.<sup>19</sup>

In addition,

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<sup>17</sup>Ibid., p. 411.

<sup>18</sup>Bluefield Water Works and Improvement Company v. Public Service Commission of West Virginia, 262 U.S. 679 (1923).

<sup>19</sup>Ibid., p. 683.

...the return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate under efficient and economical management to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties.<sup>20</sup>

Of some significance was a recognition by this court that:

the rate of return may become too high or too low by changes affecting opportunities for investment (elsewhere in the market), the money market, and business conditions generally.<sup>21</sup>

In the early depression years, as most students of history are aware, the composition of the U.S. Supreme Court changed a great deal. With this change in personnel, a very different approach to determination of rate bases came about as well. The case, Los Angeles Gas and Electric Corporation v. Railroad Commission of California<sup>22</sup> represented a turning point as, with it, the court upheld the state commission's use of historical cost for setting a rate base. The reasons for this decision are numerous. Not the least important was the fact that a depression and declining prices were setting in. The real significance of this case, however, was not the fact that a new formula was established, for none was, but the statement of the court that it was not the commission's charge to apply a formula nor to prescribe arbitrary criteria, but to:

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<sup>20</sup>Ibid., p. 683.

<sup>21</sup>Ibid., p. 684.

<sup>22</sup>Los Angeles Gas and Electric Corporation v. Railroad Commission of California, 289 U.S. 287 (1933).

examine the end result of the legislative action in order to determine whether its total effect was to deny the owner of the property a fair return for its use.<sup>23</sup>

In other words, the court was heralding a new era where rate-setting was to be even more subjective in nature than it was previously.

The "End Result" doctrine of the California case was clarified in Federal Power Commission v. Natural Gas Pipeline Company of 1942.<sup>24</sup> In the I.C.C. Annual Report of that year, this case was referred to as "one of the most significant decisions in the history of utility regulation".<sup>25</sup> The idea of any strict quasi-formula such as Smyth v. Ames had produced came to an end as a unanimous court stated:

The Constitution does not bind rate-making bodies to the service of any single formula or combination of formulas. Agencies to whom this legislative power has been delegated are free, within the ambit of their statutory authority, to make the pragmatic adjustments which may be called for by particular circumstances....If the (Federal Power) Commission's order, as applied to the facts before it and viewed in its entirety, produces no arbitrary result, our inquiry is at an end.<sup>26</sup>

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<sup>23</sup>Federal Power Commission v. Natural Gas Pipeline Company, 315 U.S. 575 (1942).

<sup>24</sup>Ibid., p. 288.

<sup>25</sup>Interstate Commerce Commission, Annual Report 1942, as quoted in Aitchison, op.cit., p. 32.

<sup>26</sup>Federal Power Commission v. Natural Gas Pipeline Company, 315 U.S. 575 (1942, as quoted in Pegrum, op.cit., p. 676.

The message here is clear. In the future, commissions would not be required to give any weight to specific elements of value as laid down in the 1898 case.

In 1944, another significant case having to do with determination of fair value of a rate base, Federal Power Commission v. Hope Natural Gas Company,<sup>27</sup> met the issues of original cost versus present value head-on. Indicating again that the commissions of the future were not to be bound by either measure, the court stated:

Rates which enable the company to operate successfully, to maintain its financial integrity, to attract capital, and to compensate its investors for the risks assumed certainly cannot be condemned as invalid, even though they might produce only a meager return on the so-called 'fair value' rate base.<sup>28</sup>

Clearly, what the court was saying here was that it now saw the two problems of rate base and rate of return on that base as less distinct considerations one from the other. Again, the "end result" of a rate level should be the criterion of whether or not the rate was reasonable (i.e. how did it affect consumer and producer?), not some vague adherence to a rate base determined by means of strict accounting and economic quanta. The regulator was, in effect, free to employ whatever method it saw fit to determine rate levels.

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<sup>27</sup>Federal Power Commission v. Hope Natural Gas Company, 320 U.S. 591 (1944), as quoted in Pegrum, op.cit., p. 677.

<sup>28</sup>Ibid., p. 677.

Thus, as far as determination of a rate base is concerned, in the eyes of the U.S. Supreme Court a regulatory commission is free to take into consideration whatever measures and standards it desires. The majority of U.S. and Canadian commissions are, therefore, most subjective in their approach to particular cases. "Fair value" has come to mean value established by a regulator in this manner according to the philosophy laid down in Hope Natural Gas and Natural Gas Pipeline. This valuation is likely to lie within the range of other more objective valuations, such as a strict reproductive or original cost might give. Fair value today can best be expressed as a "feeling" on the part of the authority.

In that setting a rate base has, since the early forties, been a rather subjective exercise, it is difficult to imagine that most regulators would look at the determination of rate of return on that base as being any more exact. It might safely be said that the approach of most boards is similar to that espoused in Bluefield Water Works and the rate that is set with a reasoned judgement as to what is necessary to attract capital.

By way of a quick sketch of what criteria some selected regulators do employ as a matter of course to set rates, we might look at a few practices.

According to Pegrum, the Federal Power Commission and the Federal Communications Commission use actual or his-

torical cost to set a rate base.<sup>29</sup> Some state regulators, such as California, Massachusetts, and Wisconsin, use the "prudent investment" as a base. Another uses cost of reproduction as a greater source of reference. In Ohio, the state utility commission is supplied with a set of up-to-date index numbers for valuation of assets. For the regulators employing a low base "formula", of course, the rate of return must be set higher.

In Canada, all utility and transport regulators seem to adhere to the attitude expressed by the U.S. court in Hope and Natural Gas Pipeline. In other words, there is no apparent effort to utilize one formula of rate base determination. Until 1961, however, the Public Utilities Commission of B.C. held appraised value of B.C. Electric Co., to mean depreciated original cost.<sup>30</sup> The Canadian Board of Transport Commissioners has long had an open mind on all factors affecting valuation. As far as rate of return is concerned, it is evident that most regulators in Canada have referred primarily to the attraction of capital standard.

### Summary

At this point, a brief summarization of the foregoing Chapter and an indication of how it leads to Chapter IV

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<sup>29</sup>Pegrum, op.cit., Ch. 26.

<sup>30</sup>Marko, D.H., Determination of Fair Rate of Return in Regulated Industries, (Term paper, Commerce 544, U.B.C., 1967, p. 22). Mr. Marko's study of the Public Utilities Act of B.C., (Sec. 16, Sub-Sec. 1) and the actions of the B.C. Electric Company under this Act led him to this conclusion.

is in order.

The purpose of the Chapter has been to outline the problem areas connected with establishment of a "fair return" to regulated industry in the general case. Secondly, some history was outlined as to how regulatory commissions have dealt with such problems throughout the years. As indicated, the two considerations for the regulator are:

1. Establishing a valuation or "rate base" for the industry concerned.
2. Judging what an allowable return on that base might be after consideration of the needs of the industry itself, and, secondly, the requirements of those who will use the services of that industry.

The tools and terms of reference of regulators appear somewhat out of place, however, when one alters the course of his research from that of regulation of a utility or a railroad to regulation of the motor trucker. As Chapter II stated, the economic characteristics of a trucking firm, indeed the industry itself, are substantially different from those of a power utility or a railroad with their large investment in fixed assets.

The task of the next Chapter is to explore the problems of rate regulation in the motor trucking industry. Particularly, these problems will be exposed to the theories and tools of rate regulation outlined in some detail in Chapter III. In this way, the examination to follow should provide



the reader with an idea of just how different and difficult is the trucking industry to regulate in its rate-setting practices.

## CHAPTER IV

DETERMINATION OF A FAIR  
RETURN IN THE MOTOR CARRIER INDUSTRY

It was established in Chapter II that motor carrier rate regulation shares the same twin purposes of rate regulation as utilities and other transport modes. Nowhere are these twin aims stated more authoritatively than in Section 216(i) of the U.S. Interstate Commerce Act - often referred to as the "Rule of Rate-Making":

...(the commission)...shall give due consideration to the need of adequate and efficient service at the lowest cost consistent with the furnishing of service... and the need of revenues sufficient to enable the carriers, under honest and efficient and economical management to provide such a service.<sup>1</sup>

Thus, in attempting to set a just and reasonable rate level, the regulator of trucking concerns, like any other rate regulator, must refer both to the interests of the consumer and to those of the operator. The "zone of reasonableness" between what is exploitative to the public and confiscative to the motor carrier should be set in the same manner as a rate "zone" for a railroad or a telephone company. In that trucking is regulated under the same terms of reference as any other concern, that is, in the court's opinion "affected with a public interest", one would expect that the thorniest

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<sup>1</sup> Interstate Commerce Act, Section 216(i), as cited by C.B. Aitchison, Fair Reward and Just Compensation, Common Carrier Service - Standards Under the Interstate Commerce Act, Washington, 1954, Association of Interstate Commerce Practitioners, p. 7.

issue in setting truck rates is that reviewed in Chapter III, "setting a fair return on a fair value".

Certainly, the major problem of motor carrier rate regulation lies in determining what rate level brings the carrier(s), or more specifically, those financially involved in the operation of the carrier(s), a just and reasonable reward for their services placed in public use. However, because of the economic characteristics of the motor trucking industry, features which have been examined briefly in Chapter II, rate-setters for this industry have looked to somewhat different criteria for judging what constitutes a just "reward" to the operator(s). Historically, as shall be seen, commissions have shied away from determination of a fair reward on a fair value in order to set reasonable or even non-confiscatory rates. This Chapter will examine in depth the criteria that have been used.

#### The Inapplicability of Return on Investment As The Rate-Setting Criterion

For most regulated concerns such as a railroad or a utility, the "key variable" that the regulator must consider in setting a rate level and, in effect, providing future revenue to the firm is the enormous amount of capital that the firm has tied up in "fixed" facilities. Why is this the key variable? Because the major cost that management faces is that of servicing the equity and debt holders that

have provided the vast amounts of capital necessary for operation. Indeed, the major risk facing the management, the owners, and the creditors of such a firm is that a suitable return on investment will not be earned from year to year. If this risk is not overcome, the firm's life-blood in the form of plentiful, low-cost capital will stop in a matter of a few years. For this reason, a suitable return on investment to suppliers of financing has to be the term of reference of a regulatory commission setting rates for a "normal" regulated industry.

Quite clearly, investment in fixed facilities is not the key variable to successful operation of a trucking firm. As we recall from Chapter II, the distinguishing economic characteristic of the trucking industry is its relatively small amount of fixed assets. With asset turnover ratios some twelve or more times greater than a railroad,<sup>2</sup> the motor carrier displays a very large proportion of variable costs in its fully-allocated unit expenses. The major costs that management must be concerned with are, therefore, variable operating costs. Thus, the major risk attached to operation of a motor carrier business is that of not meeting these costs with operating revenues. Moreover, the major risk to management of a motor carrier is far more immediate than the major risk to the railroad. The latter's key consideration is that

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<sup>2</sup>See Table I , as contrasted with ratios on pages 7 and 8.

TABLE I

ASSET TURNOVER RATIOS - SELECTED MOTOR CARRIERS1966

<u>Carrier</u>	<u>Operating Revenue</u> \$	<u>Net Property &amp; Equipment</u> \$	<u>Ratio</u>
Overland Express	6,503,000	2,076,000	3.13
Gill Interprovincial	8,724,000	1,516,000	5.76
Transmountain Express (U.S.)	20,619,000	7,733,000	2.70
Viking Freight Company (U.S.)	20,642,000	8,203,000	2.52
Yale Express System (U.S.)	65,983,000	26,025,000	2.53
Consolidated Freightways	184,348,000	89,500,000	2.06
Pacific Inter- mountain Express (U.S.)	155,753,000	41,247,000	3.77

Source: Moody's Transportation Manual, 1966.

of attracting and maintaining investment capital to establish long-life facilities. The former, however, must concern itself more with the day-to-day imperative of paying wages, purchasing fuel, maintaining and servicing its highly mobile and short-lived equipment. This is not to say that a firm with heavy fixed costs does not have to give first consideration to variable operating expenses. Such variable operating expenses, however, represent only a minor share of operating revenue. Looking at the problem from the standpoint of the owner(s) of the motor carrier, moreover, it is highly doubtful that he would be primarily interested in what the return on his small investment would be for the year. Rather, his concern would again be with that risk of not meeting the substantial variable operating expenses year by year or even month by month. This is the primary reason that rate base/return on investment is not used to regulate trucking rates.

There is another reason as well. Because of the economic characteristics of the motor carrier, any rate of return on fixed investment in that industry that would be low enough to have meaning to a capital market accustomed to evaluating returns varying no more than one or two percentage points from the range between a "prime" lending rate and conventional mortgage rates (currently 7 to 9 per cent), it is this writer's opinion that such a return would be just too small a figure both in absolute terms and relative to

operating costs to be of significant value to the rate regulator. If a regulatory agency were to set a rate level based on a "normal" return on investment, say, six per cent, the regulator would be giving the trucker only a very small margin between revenues and expenses, perhaps as small as one per cent of cost.

Clearly, a slight miscalculation of estimated revenues or expenses would leave the operator with operating losses. This kind of a risk is too heavy for the operator. He needs more breathing space than one per cent of cost in order to undertake the risk of entering and operating in the industry. With a breathing space of, say, five to eight per cent of cost, perhaps the owner's return on investment will be a mammoth ten to twenty per cent. Because of the insignificant size of the rate base, however, the operator will need this kind of a return in order to have a presentable profit in absolute terms. The following illustration shows how a two per cent expense underestimate could be fatal to a firm with an asset turnover ratio of 4:1.

## EXHIBIT 2

CASE I - Expense Estimated Low

Value of Carrier's Tangible or Operating Property (Estimate)	\$20,000.
Total Operating Expense (Estimate)	80,000.
Total Operating Revenue (with rates set to return 6% on tangible property) before interest and taxes - \$90,000. - .06 (20,000)	<u>81,200.</u>
Projected Net Income Before Interest and Taxes	1,200.
Net Projected Income/Total Expense	1.33%

CASE II - Actual

Value of Property	\$20,000.
Total Expense (Actual)	81,600.
Total Revenue	81,200.
Net Income (Loss) Before Interest	(400)

The preceding argument, of course, is vulnerable to the assertion that risk is an element of great consideration in the motor carrier industry and of far less concern to the vast power companies and railroads who, with their large investment in fixed facilities, are not likely to be forced out of operation due to a short-term (even two or three years) economic set-back. This was discussed in Chapter II. As a result, why should not a motor carrier rate regulator be able to evaluate this risk and, having established the carrier' "rate base" set a high rate of return which reflects this risk differential relative to



the utility or railroad?

A suggested reason is that the trucking industry displays very peculiar risk characteristics and, in order to determine what a reasonable return would be for the industry, the regulator would have to find many industries with similar characteristics and use the return on investment therein as a guide for the motor trucking field. This writer finds it very difficult to think of any industry which is similar to motor trucking - similar in the degree and type of risk with which it confronts the would-be investor/operator. On the other hand, it might be suggested that the railroad industry, the electric, gas and telephone utilities are similar in their risk characteristics to most heavy fixed investment industry - manufacturing and service. At any rate, the risk is sufficiently low and, as has been suggested above, familiar enough to the average investor that the capital market can evaluate it relative to the same low risk in other heavy fixed investment fields. The more uncertain is the future of an undertaking, the higher is the degree of risk and the less capable will any authority be of evaluating it accurately.

At this point, it must be pointed out that this thesis is not suggesting the trucking industry, which does exhibit a high return on investment, should not be allowed such a return. Certainly, the element of risk is very

prevalent in the industry, far more so than it is for a railroad, gas or electric company. As Chapter II has suggested, a motor carrier is far more susceptible to sudden competition, indeed, competition so strong as to force him out of operation. Firms can, and do, move in and out of a service very rapidly. A basic rule of investing is, of course, that the greater the risk present, the greater is the return required of the party or firm soliciting the funds.

Table II on page 84 indicates that the Canadian trucking industry does, in fact, display a high return on invested capital relative to most other regulated industries.

### The Operating Ratio

In recent years, there has been an increasing awareness on the part of motor carrier regulators that rate of return on investment is an inappropriate standard for examining rate adequacy. The I.C.C. has never, in fact, employed the "fair return on fair value" concept for a motor carrier case. Ever since the very early days of motor carrier regulation, the "operating ratio" has gained the greater confidence of critics as an index of revenue requirement. The operating ratio is that percentage figure arrived at when one divides total operating revenue by total operating cost. In the case of Exhibit 2 , the

TABLE II

CANADIAN IMPERIAL BANK OF COMMERCE -  
"SELECTED CORPORATE RATIOS"

<u>Selected Industry</u>	<u>% Return on Invested Capital</u>
Air Transport	9.8
Water Transport	7.2
Railways	3.4
Truck Transport	13.2
Bus Transport	12.6
Pipelines	9.2
Telephones	5.6
Electric Power	5.6
Gas Distribution	4.9
Total Transportation	5.6
Total Utilities	5.2
Total Communication	6.0

Source: Canadian Imperial Bank of Commerce, May 1967  
Commercial Letter, "Selected Corporate Ratios",  
based on Taxation Statistics for the year 1964.

operating ratio is 80,000/81,200 or 98.52 per cent.

The first time the operating ratio was relied upon to make a significant decision about the adequacy of motor carrier rates was in 1943 in Increased Common Carrier Truck Rates in the East.<sup>3</sup> This case had to do with an application by carriers of a region for a 4 per cent increase in rates. After making a detailed cost study of all unit costs (per vehicle-mile) and other pertinent financial considerations such as dividends paid, increases in surplus, fixed investment and working capital, the Commission agreed with the carriers' contention that operating expenses and the projected increases in these expenses should be the prime criteria for judging revenue requirement. Having reviewed the economic features of the trucking industry and the problems attached to use of rate of return on investment therein, we can now appreciate the Commission's reasoning when it stated in "discussion":

...theirs is primarily a service industry in that the value of their operating property is only 15 to 20 per cent of their annual gross revenues. They contend that, in determining whether a general increase in rates should be approved, consideration be given solely to the need of the industry for sufficient revenue to enable them to meet their operating expenses and earn a profit after the payment of income taxes, and that no attempt be made to fix a rate of return based on the value of their operating property or of their net worth.<sup>4</sup>

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<sup>3</sup>Increased Common Carrier Truck Rates in the East, 42 M.C.C., pp. 633 - 657.

<sup>4</sup>Ibid., p. 655.

In its statement, the Commission made the significant departure from rate of return that the motor carriers were waiting for. This paragraph is as oft-quoted in I.C.C. Motor Carrier cases as is Hope Natural Gas<sup>5</sup> in utility and railway cases, both in I.C.C. and in the Supreme Court:

The carriers' operating ratios are a convenience in determining the extent by which their total expenses are less or greater than their operating revenue. Because truck lines have few outstanding obligations in comparison with the railroads, the fixed charges of truck lines are relatively low, and there is a smaller spread between a motor carrier's net operating revenue and its net income before income taxes than in the case of the railroad.<sup>6</sup>

The decision:

Many respondents are, and have been existing on too narrow a margin between revenues and expenses; others are operating at a loss. The respondents as a whole are not strong enough financially (on the basis of their operating ratios) to undergo extended periods of unprofitable operation. Some increase is reasonable and necessary to accomplish the purpose of the national transportation policy.<sup>7</sup>

Thus, it is not difficult to understand what prompted the Commission to employ the operating ratio as a test of revenue need. In this respected body's own words, the operating ratio test is a "convenience". Aitchison, a careful student of the Commission and the economic and legal grounds

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<sup>5</sup>Federal Power Commission v. Hope Natural Gas Company, 320 U.S. 591 (1944), p. 3.

<sup>6</sup>Increased Common Carrier Truck Rates in the East, 42 M.C.C., p. 635.

<sup>7</sup>Ibid., p. 657.

upon which it works, refers to the operating ratio as a "formulatory short-cut". Not entirely convinced of its merit, however, Aitchison describes the operating ratio in this manner:

...This test has been resorted to from the necessity of resorting to a simple, generally reliable, inexpensive means of determining expeditiously the general financial situation of such carriers... this test is wholly empirical, and is based on the assumption, impossible of statistical proof, that some given percentage--say 93 per cent--is the breaking point between a fair and an unfair body of rates.<sup>8</sup>

Indeed, the operating ratio is extremely simple to use. All a commission need do is examine the operating expenses to judge if they are reasonable and then set a rate level which will produce a certain operating ratio that is considered adequate.

...Now the old battles about 'prudent investment' versus 'reproduction cost' can be forgotten as may the intricate controversies over such nice matters as depreciation methods or accounting for extraordinary obsolescence.<sup>9</sup>

Many economists have, however, searched for more compelling arguments in favor of the operating ratio than merely its "convenience" and "simplicity". The fact that a return on investment percentage is not deemed so suitable for motor carrier regulation as it is for utilities, does not impress

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<sup>8</sup>Aitchison, C.B., op.cit., p. 77.

<sup>9</sup>A. Wright, "The Operating Ratio - A Regulatory Tool", Public Utilities Fortnightly, 24, 1953, p. 28.

them greatly. As Aitchison notes:

Writers on transportation economics...are unanimously of the view that operating ratios, standing alone, mean nothing...(they) may be useful only as guides to change or trends which may be significant.<sup>10</sup>

One criticism of the operating ratio is that it affords unwarranted protection to the motor carrier. In that a "normal" rate of return would look too small in absolute terms to the owner of a trucking line, the latter has, so say some critics, persuaded the I.C.C. and other commissions to give him a much higher rate of return. Because this rate of return is far too high to be allowed by traditional rate-base-fair return language, the truckers have succeeded in concealing the rate actually being earned. The fact is, however, that:

...every operating ratio is equivalent to some rate of return...and the rate can always be computed.<sup>11</sup>

Certainly, the operating ratio does give better protection to the owners of a highly volatile industry where earnings are apt to fluctuate widely from year to year. Knappen's criticism is, however, this:

Assuming that 'better protection' were the only test, then there would be no stopping the raising of rates short of the point at which the industry itself may voluntarily forego any further increases; i.e. the monopoly price level...At that point the investors would have maximum protection, but the patrons would have minimum protection.<sup>12</sup>

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<sup>10</sup>Aitchison, C.B., op.cit., p. 73.

<sup>11</sup>L.S. Knappen, "The Transit Operating Ratio - Another View", 53 P.U.F., 485 (1953), p. 68.

<sup>12</sup>Ibid., p. 72.

Clearly, the criticism here is that the operating ratio is merely a tool for disguising the fact that the motor carrier industry could be allowed a higher rate of return than what the risks might warrant and that, in effect, other modes of transportation might be discriminated against. Perhaps the basic criticism of the operating ratio test is that, contrary to what is usually claimed, the ratio is not at all an "accurate gauge" of revenue requirement. There are not any clear objective criteria for judging what a ratio should be. What does constitute a reasonable margin between revenues and expenses? Although the Interstate Commerce Commission has adopted a certain formula which we shall look at in the next Chapter, it is somewhat unclear as to what standards were used to arrive at it. Knappen recalls Justice Jackson's dissent in Hope Natural Gas, a dissent about the loss of objective standards for evaluating utility rate base, as how he feels personally about the operating ratio as an "accurate gauge".

We need not be slaves to a formula but unless we can point out a rational way of reaching our conclusions they can only be accepted as resting on institution or predilection. I must admit that I possess no instinct by which to know the 'reasonable' from the 'unreasonable' in prices and must seek some conscious design for decision.<sup>13</sup>

In other words, the criticism is that the operating ratio is no more objective, simple, or accurate than the "fair value" criterion.

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<sup>13</sup>Federal Power Commission v. Hope Natural Gas, 320 U.S. 591 (1944), as quoted by Knappen, L.S., op.cit., p. 70.



Indeed, despite the Supreme Court's reluctance to adopt clear, set standards, the fair return concept does have meaningful and fairly objective bases. The conventional 6, 7 or 8 per cent rate of return on net investment has great significance to prospective investors throughout the economy. An allowed rate of return can be based on evident money market conditions and can be adjusted as those conditions change. Depending on investor reaction to a return, the regulator can soon tell fairly accurately how fair the allowed rate is to the owner. What meaning or significance attaches to an operating ratio of 93 per cent as far as the public, investors, or even trained financial analysts are concerned? No independent market of transactions can judge an operating ratio such as a securities market does rates of return for bonds and stocks.

Knappen also takes issue with the I.C.C. conclusion in Middle West Increases that the risk inherent in motor carrier operations is attached to expenses rather than to invested capital:

It seems a strange use of words to attribute risk to a company's expenses. Those are its debts and it is an old saying that while a company's accounts receivable may not be 100 per cent good, its accounts payable always are. That is, there is no uncertainty, no risk about such obligations to the debtor. The risk, whatever it is, is the risk of the creditor.<sup>14</sup>

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<sup>14</sup>L.S. Knappen, op.cit., p. 71, in reference to the following quote: "Where the amount of investment is relatively small in relation to total costs, investment is not the primary factor in determining revenue needs...the owners of motor carriers can hardly be expected to look to the return on the amount of their investment as an incentive where the principal risk is attached to the substantially greater amount of expense." Middle West General Increases, 48 M.C.C., p. 542.

## Summary

Despite its many faults, the operating ratio has been adopted widely as the best means available for determining a motor carrier's revenue requirement and setting a rate level therefrom. It is difficult to claim that it provides an accurate standard whether it be 99 per cent or 80 per cent. Especially in an industry as diverse as the motor trucking industry, it is impossible to be precise in stating what a ratio should be in order to provide adequate yet non-exploitive profits.

In the final analysis, however, the operating ratio appears to be the only tool that can enable a regulator to satisfy the demands of rate regulations with regard to a motor carrier. In that a trucker lacks the "lasting power" of a heavy fixed investment utility, even for a year of unprofitable operation; i.e. a year where operating revenues fail to meet operating costs, the regulator must concentrate its full attention on keeping the firms of its jurisdiction in business year to year. Otherwise the user of trucking services can in no way be assured of stable and reliable service. Thus, the regulator's purpose must be that of providing a margin of revenues over expenses that is not in danger of disappearing entirely if economic or sales conditions effect a decrease in revenues or an increase in costs year to year. An adequate "return" on capital invested, or a profit sufficient to out-

weigh the "risks incurred in operating expenses" is really not the crux of the matter and, in fact, has little relation to this immediate problem of truck regulation. That is, simply allowing the operator sufficient profits that will encourage him to stay in business without allowing the consumer to be exploited.

At this point of the thesis, we might pause briefly to review the material that has been examined thus far. Piecing together and organizing this background should provide us with the background necessary for the examination of some more specific considerations of motor carrier rate regulation.

In the first place, some review has been made of the justifications and aims of rate regulation for utilities and railways. Then, the motor trucking industry was examined in the same context. While it was found that the aims of motor carrier rate regulation were essentially the same as those for regulation of any industry, the economic justifications were somewhat different. Mainly because of its economic characteristics, the motor trucking industry has to be treated as an exception by a regulator such as the Interstate Commerce Commission.

Next, a substantial amount of time was spent looking at how the rate regulator sets rates for the industry under its control. Never a precise science at any time, rate-setting was nonetheless found to rest on the time-tested and logical, if

not too often objective, criterion of a "fair return on a fair value" of the producers' property. It was shown how this concept, albeit a thorny and contested issue, has constituted the standard approach of all regulators setting adequate rate levels for regulated industries. We are left with the impression that fairly objective economic and accounting criteria do exist whereby one might make his own judgements as to the reasonableness of a rate. This is despite the fact that the U.S. Supreme Court seems to be avoiding as much as possible adopting set formulae for measuring rate bases or returns on those bases.

When, in the last section, examination was made of the problem of determining a fair return in the motor trucking industry, it was found that, again due to economic characteristics different from those of other regulated concerns, the fair rate of return on a fair value principle is not employed by a trucking rate regulator. Instead, the "operating ratio", simply the percentage of total operating costs to operating revenues, is the tool that most regulators use to determine the revenue requirement for motor truckers. In that trucking is a relatively young regulated concern, it has not merited as much attention on the part of such standard setters as the U.S. Supreme Court, the U.S. Interstate Commerce Commission and the various U.S. state commissions. In Canada, moreover, trucking has been for some time in a rather ambiguous regulatory environment. It is understandable, therefore, that the

operating ratio, the tool with which regulators set trucking rate levels, is still a very rough and badly understood instrument. For the next section of this thesis, therefore, an examination will be made of the operating ratio as it is used today by motor carrier regulators, of its accuracy as an indicator of rate adequacy, and finally of the conditions that must be brought about if the operating ratio is to be more accurate, meaningful and reliable for the purposes of rate regulation.

## CHAPTER V

THE OPERATING RATIO AS A WORKABLE  
STANDARD OF REVENUE REQUIREMENTAcceptability

The major objection to employment of the operating ratio as a standard of revenue need, we might recall, was that no objective criteria seem to exist for setting a standard. More basic again, however, is the problem of determining conditions wherein this simple ratio "...merely the relation between two highly variable sums of money"<sup>1</sup> will have comparable meaning when calculated for two or more firms exhibiting markedly different cost characteristics. Any industry, especially one as diverse as motor trucking, is composed of many units who not only operate differently and incur cost patterns peculiar to themselves, but might account for those costs in very different ways. Clearly, a crude relation of revenues to "operating costs" for each operator throughout the industry will produce some very diverse results both in the size of the ratios and in the items each ratio includes.

Items Included in Operating Cost

The first problem that will have to be overcome before the operating ratio can be accepted as an "accurate

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<sup>1</sup>C.B. Aitchison, Fair Reward and Just Compensation, Common Carrier Service - Standards Under the Interstate Commerce Act, Association of Interstate Commerce Practitioners, Washington, 1954, p. 77.

gauge" of revenue requirement is that of standardizing those items to be included in "operating cost". This is, of course, very basic.

The most important items of operating cost for a motor carrier are, of course, variable and semi-variable expenses such as drivers' wages, fuel, oil and grease, vehicle maintenance and other expenses incurred directly with the volume of business. There is no disagreement on these items. The second category of operating costs are those fixed and nearly fixed expenses such as terminal overhead (indirect labor, maintenance, etc.) and general overhead (including selling and administrative expenses). Although the items included in "overhead" are apt to vary somewhat from firm to firm, the greatest problems for the regulator, it might be suggested, will be these three:

1. Taxes
2. Depreciation
3. Financial Costs.

### Taxes

One principal difficulty in attempting to make a universal definition of "operating ratio" for a regulated industry lies in treatment of taxes, especially income taxes. Clearly, an operating ratio will appear quite different if all taxes have been included either as a deduction from operating revenue or as another item of operating cost, different, that

is, from a ratio where taxes have been excluded from consideration.

There has really never been too much problem as far as the Interstate Commerce Commission is concerned about how to treat direct taxes against property, taxes upon payrolls, or purchase taxes. They have always been included as items of operating cost, necessary for maintaining the carrier's property and conducting business incidental to transportation. Indeed, such tax accounts are included in the I.C.C. Uniform Account Classification.

With regard to inclusion of both state and federal income taxes, however, there has been some disagreement throughout the years. In Increased Common Carrier Truck Rates In The East, the Commission could not agree

...that the rates of respondents as a whole should be fixed sufficiently high to permit them to pay income taxes, surtaxes, and excess profit taxes and retain a normal profit.<sup>2</sup>

The problem is that motor carriers are owned by different kinds of proprietors, viz. partnerships, corporations, individuals, each of which has different income tax liabilities. Often, Commission decisions in the years since 1942 left it quite unclear in the reader's mind as to whether or not income taxes had or had not been considered as part of the operating ratio used to judge revenue need.

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<sup>2</sup>Increased Common Carrier Truck Rates In The East, 42 M.C.C., p. 647.



Today, in the United States the I.C.C. at least seems to have resolved the issue of income taxes. In 1952, in Increases, Pacific Northwest,<sup>3</sup> a division of the Commission ruled in favour of the carriers' contention that:

Federal income taxes and surtaxes were a proper charge to operations in determining a reasonable rate level for the carriers as a whole.

This case has been cited frequently with the result that the Commission seems to be satisfied that it has settled the problem of income tax.

The Commission now apparently regards the rule as well settled that income taxes are to be taken into account as other operating disbursements are.<sup>4</sup>

When one examines I.C.C. motor carrier cost studies, however, he finds that income tax has been excluded very pointedly from consideration in computing revenue need:

...the amount of revenue need is based on a procedure which involves the use of an operating ratio which is computed before payment of both Federal and State corporate income taxes....<sup>5</sup>

It is, therefore, unclear as to how the operator, or any interested observer (for whom the costs studies are intended), can share the same understanding as to what an "operating ratio" is. Clearly, the income tax problem is a rather significant issue which begs clarification before the operating ratio can

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<sup>3</sup>Increases, Pacific Northwest, 54 M.C.C., p. 127.

<sup>4</sup>Aitchison, op.cit., p. 88.

<sup>5</sup>Interstate Commerce Commission, Bureau of Accounts, Cost of Transporting Freight by Class I and Class II Motor Common Carriers of General Commodities, Washington, D.C., I.C.C., September, 1966, p. 5.

be universally employed as a meaningful regulatory tool.

In Canada, official understanding of the operating ratio has apparently always assumed inclusion of income tax as part of operating costs. Although, to this writer's knowledge, the issue has never arisen in regard to motor carrier regulation, the Board of Transport Commissioners made the following statement about a railroad rate case in 1948:

Income tax payable in respect to railway operating income is, I think, properly chargeable to railway operating expenses.<sup>6</sup>

### Depreciation

The problem about depreciation expense is not a question of whether or not it should be included as an operating cost, but how it should be calculated. Depreciation, an unavoidable expense of doing business, is an operating cost. And yet, if it is not measured in the same manner for all carriers, clearly great disparities could arise in operating ratios.

Depreciation expense for a motor carrier is both a fixed burden and a variable cost directly variable with volume. The first type of depreciation is related to fixed facilities, classified as Plant and Equipment in most accounting systems. The second type, likely to be a much larger consideration in the motor trucking industry, is depreciation on vehicles, both

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<sup>6</sup>Aitchison, op.cit., p. 90.

power units and trailers. The three standard ways of computing annual depreciation expense in any business are: (1) Straight-line method, (2) Declining Balance method, and (3) Sum-of-the-years-digits method.

Since the methodology of these various methods is well known, it is not necessary to offer an explanation. An example of the disparities that could arise in operating cost due to different ways of depreciating might be fruitful however.

### EXHIBIT 3

#### Depreciation Expense for 50 Power Units Acquisition Price of \$20,000 each

- First Year of Operation
- Projected 10-year life each

	<u>Straight Line (10%)</u>	<u>Declining Balance (Double)</u>	<u>Sum-of-the-years-digits</u>
Undepreciated Capital Cost	\$1,000,000	\$1,000,000	\$1,000,000
Depreciation Expense Year 19xx (1st year)	\$ 100,000	\$ 200,000 (20%)	\$ 181,818 (10/55)

The idea of leaving management of a firm with a wide range of choice as to how it must depreciate its property is quite acceptable in the realm of private, competitive enterprise. For an industry such as motor trucking, however, where the element of regulation is present and where the regulator seeks to set rates on the basis of a relationship of costs to revenues, this philosophy is quite unacceptable. Disparities

such as the above, indeed greater than that, can be exhibited between various firms in a single year due to the method each chooses to depreciate. Clearly, some standard must be set even if such an action will undoubtedly bring cries of "over regulation" from the carriers involved. Otherwise, the operating cost cannot be comparable from firm to firm and the operating ratio will be unsatisfactory as a measuring gauge.

### Financial Costs

Undoubtedly, the most difficult item to calculate and include in a statement of "operating costs" used to determine revenue need are the financial expenses of the firm.

Financial expenses, of course, derive from the capital structure of a business. Because the trucking industry is so diverse in nature, capitalizations vary considerably from firm to firm. Thus, to make a general definition or to attempt even a standard classification of what constitutes financial costs throughout this industry would be an impossible task. We shall have to examine the items one by one.

The most general and easily understood financial expense is, of course, straight interest on borrowed funds. Even the very unsophisticated small operator will know with some accuracy how much interest he is paying every year on, say, a bank demand loan or a debt instrument such as a bond or equipment trust certificate. It is suggested here that

such charges are expenses of operation and classified as fixed costs and should be included fairly easily in any estimate of revenue need.

As soon as a carrier becomes large enough that he can enter the field of common stock financing, the problem of determining total financial costs becomes considerably more complex. As mentioned in Chapter II, the cost of floating and maintaining an issue of common stock on the market is very difficult to determine. What the analyst is attempting to measure is the percentage of return on the shareholder's dollar that the market considers necessary at a particular time to at least maintain the value of that stock with its peculiar risk characteristics. In addition to the return that the company displays for each dollar of net investment, many analysts feel that the actual "payout" or yield that goes to the stockholder from that return is also a value-making consideration. Thus, the cost of equity money that is

...at any time the result of the interaction of the company's return on investment, the yield to investors, the history of both of these and a host of other factors which can be summed up as 'the current attitude of the market'...

is a very difficult item to calculate with any accuracy at all even for financial economists of the Canadian National and Canadian Pacific Railroads, let alone the truck operator just large enough to get into equity financing.

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<sup>7</sup>Canadian Royal Commission on Transportation, Volume III, 1961, p. 310.

Clearly, we have come again to the problem of cost of capital. The cost of common stock financing, like the costs of all other "equity" financing is not represented by a clear-cut, out-of-pocket sum of money. All the money or "capital" that is tied up in a business (even though in the trucking business this sum will be small relative to that of a utility or railroad) could presumably be invested elsewhere by its suppliers. Thus, the money tied up in working capital, revenue-producing vehicles, plant and equipment, etc., irrespective of whether it came in the course of business from retained earnings, depreciation accruals, initial contribution of owner-manager, or from the equity market outside, this money has a certain "opportunity cost" which will have to be met. If this cost cannot be met, and it can only be met from profits, clearly the investment of this capital in this carrier represents a misallocation of resources.

Although it is difficult for even some of the larger carriers to understand, any firm will have to include as part of its cost of doing business a certain return or profit on each dollar that has gone into the assets of that business--irrespective of where that dollar came from. As The Highway Research Board views it:

Although it is true that not all of the trucking industry's property is purchased with bank loan funds, nevertheless those who supply the funds want some return, whether they be stockholders, banks, finance companies, or individual owners. The element of profit is a recognized cost in

...American industry.<sup>8</sup>

The Interstate Commerce Commission has always recognized that return or "interest on investment" is a clear item of cost that should be considered along with operating costs when calculating revenue need. Other than the straight interest charges on borrowed money, however, the required return on property or "interest on investment" is not included in operating cost, rather added onto the final operating cost figure in order to maintain the desired operating ratio.

Because interest on investment is not included in the computation of operating ratios...the out-of-pocket costs should be increased by the following percents to provide revenue need....<sup>9</sup>

Although this wording leaves the reader a little confused as to how the required return on capital should be applied to the operating ratios, the latest I.C.C. Policy Statement on general rate proceedings makes it quite clear that this is very definitely an item of consideration for determining revenue need:

...respondents (i.e. carriers appearing in general rate cases) shall produce evidence of the sum of money, in addition to operating expenses, needed to attract debt and equity capital which they require to insure financial stability and the capacity to render service. This evidence should include, without limiting the evidence that should

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<sup>8</sup>Highway Research Board: Bulletin 301, Line-Haul Trucking Costs in Relation to Vehicle Gross Weights, N.R.C. publication No. 929, Washington, D.C., 1961, p. 75.

<sup>9</sup>I.C.C. Bureau of Accounts, op.cit., p. 5.

...be presented, particularized reference to the respondents' reasonable interest, dividend and surplus requirements.<sup>10</sup>

Again, the Highway Research Board's statement might be inserted: "...the element of profit is a recognized cost in American industry".

If this statement is true, and the modern thinking on corporate finance indicates that it is, then surely we have not succeeded in our attempt to introduce more objectivity and accuracy into the practice of truck rate-setting by discarding the fair return on fair value principle and substituting the operating ratio tool in its stead. For indeed, how is a regulator to judge what a reasonable return on investment (now as an item of "cost") would be for the motor carrier any more than he could judge for a railroad? Certainly this item will be insignificant in size relative to that of the railroad, but the principle remains the same. Apparently the Commission still has to oversee insertion of a cost element for return on invested capital of the motor trucker. What criteria will it use to judge the acceptability of the evidence that the respondents will present? This evidence, which we have already classified somewhat loosely as the "financial cost" element, is going to be weighed in a fairly subjective and non-uniform manner by the various regulators, observers and operators. Again, the operat-

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<sup>10</sup>Interstate Commerce Commission, Order No. 34816: Increased Minimum Charges Between Points In Central States, April 28, 1967, p. 2.



ing ratio, because of the problematic elements it is composed of, loses a little more of our confidence as a potential objective, accurate, universal gauge of motor carrier revenue requirement.

### Diversity of The Industry

Some truckers in this province are losing money with 'compensatory' operating ratios. Others, with identical ratios, are realizing very good profits. You have to be very careful when you try to read anything into this ratio.<sup>11</sup>

The above statement, the writer gathers, is representative of the attitude the Canadian trucking industry has toward the use of operating ratios either for setting rates or for any other purpose.<sup>12</sup> The reason is that each firm in the motor carrier industry is likely to operate under very different conditions. What might be an item of considerable expense to one trucker might not even exist for another. The type of route an operator services, the kind of product he hauls, the equipment he uses, the frequency and density of his hauls, indeed his policy towards leasing of facilities and equipment, are just a few variables that can greatly affect the magnitude of his ratio between operating costs and revenues. Let us examine a few of the major issues in some detail.

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<sup>11</sup>Statement to writer by a management official of one of the country's largest truckers, July, 1967.

<sup>12</sup>This impression was gained by the writer after talking to management of some six major truckers in British Columbia.

According to Hudson and Constantin,<sup>13</sup> the average load factor that a carrier exhibits is the most critical operating characteristic affecting the operating ratio. This index, crucial to any mode of transport, and most likely to differ greatly between individual carriers depending on the type of operation, is a good indicator of utilization. In the case of motor trucking, it is arrived at by making the following calculation:

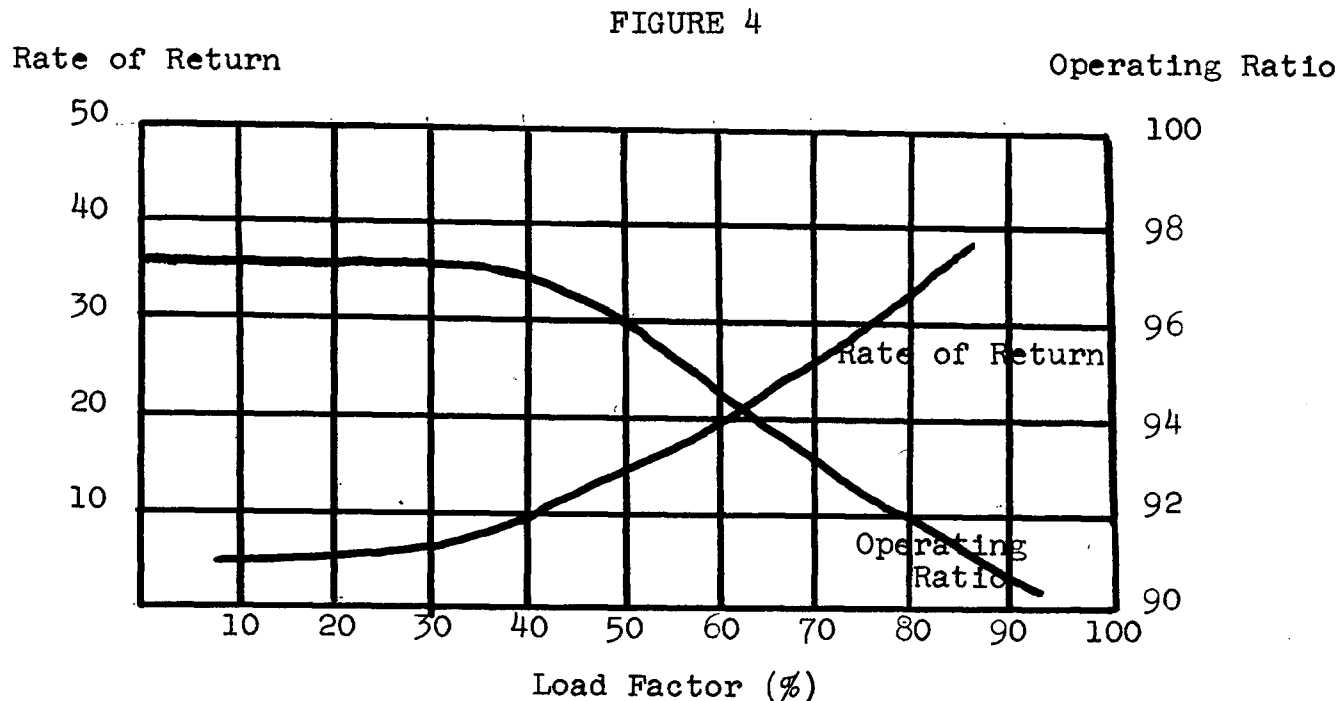
		<u>Total Loaded Ton Miles</u>
		<u>Total Capacity Ton</u>
		Miles of Fleet
EXAMPLE:	Total Loaded Ton Miles for period	500,000
	Total Normal Capacity Ton Miles for period	750,000
Load Factors - $\frac{500,000}{750,000} = .67$		

These authors made a study of the relationship between the load factor with motor truckers' operating costs and revenues. Using data derived from a sample of 70 Class I interstate commodity carriers (all large operators) in one region of the United States in 1953, they demonstrated that the operating ratio improved very quickly after a 50 per cent load factor was reached. Indeed, a very strong correlation is seen between load factor and the operating ratio. The results

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<sup>13</sup>W.J. Hudson and J.A. Constantin, Motor Transportation: Principles and Practices, N.Y., N.Y., Ronald Press Inc., 1958.

are demonstrated by the following:



Relation of load factor to operating ratio and rate of return for 70 Class I motor common carriers of general commodities, 1953.

Source: Hudson, W.J., and Constantin, J.A., Motor Carrier Transportation, Principles and Practices, Ronald Press Company, New York, 1958, p. 169.

The result of Hudson and Constantin's analysis would not be too significant for the purposes of this thesis if the load factors of firms within a certain size category or even a certain region could be expected to be similar. As Hudson and Constantin note, however, there is probably no more volatile feature in the trucking industry than the load factor. Depending on the type of service rendered or the kind of operation being solicited, the load factor will vary greatly among individual operators.

General commodity carriers as a group may be expected to experience a lower load factor than special commodity carriers and contract carriers. Likewise common carriers operating on regular schedules may have lower load factors than carriers which conduct non-scheduled operations.<sup>14</sup>

And yet there are other factors influencing the load factor that are not connected with any classifications such as the above. These could easily be listed:

1. A low load factor could result from an overexpansion of a carrier's fleet. Conversely, fortuitous or extremely efficient routing and scheduling would bring about a very high load factor.
2. A very common problem in transportation, directional imbalance, would produce a very low load factor unless the carrier can induce return haul traffic from another source.
3. The physical characteristics of the traffic carried will greatly affect the load factor that a carrier can generate. "Low density" freight (in terms of ton miles per route mile) cannot produce high load factors for the trucker unless his tariff is based on considerations other than weight.

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<sup>14</sup>Ibid., p. 168.

4. Undoubtedly a carrier's managerial efficiency has a very great effect on the load factor. As mentioned, the skill with which the operator is able to solicit, schedule and route his traffic will have a direct and significant effect on the utilization he gets from his vehicles and the capital he has tied up in the business. True, some carriers are not able to reach the same level of efficiency in terms of utilization because of factors such as the first three points mentioned. Others, however, can only have themselves to blame if their load factor does not compare favorably with that of their competitors.

Thus, the load factor is one highly volatile characteristic of trucking operations and it is an index which the operating ratio seems to reflect rather closely. Because of the volatility of this factor, we would have to be very wary of using the operating ratio by itself. It would be meaningless to try to apply one ratio to two trucking firms which, because of different operating characteristics and consequent differences in load factors, might have wide discrepancies in cost per unit (e.g. ton-mile, vehicle-mile, vehicle year, etc.).

The greatest danger, therefore, in attempting to apply a rate level that will bring every carrier in the industry an operating ratio of at least 93 per cent, for instance, is that the regulator will be subsidizing the carriers which, due to operating inefficiencies, exhibit low load factors under normal operating conditions. Certainly, when a carrier displays a low load factor not because of inefficiency or poor utilization, but because of the character of his business (points 1-3 above), the setting of a minimum operating ratio might be a very satisfactory way of bringing all carriers reasonably compensatory

and fair profit levels. By setting an arbitrary ratio for all carriers when wide discrepancies in efficiency are known to exist in the industry, however, the regulator is actually allowing the efficient firms too high a profit level and, at the same time, is defeating its entry policy by keeping inefficient firms alive.<sup>15</sup>

In this situation, the consumer of transportation services is forced to pay higher rates due to the inefficiencies of some operators. In a regulated environment where entry of competition is limited, such a situation can be perpetuated quite easily. The regulator, we recall, must simulate as much as possible the forces of competition. Yet, by protecting an inefficient operator, the regulator is ignoring the most basic duty that competition does accomplish. It dispatches the inefficient very quickly.

What danger is pointed out by use of the load factor? The fact has simply been underlined that the operating ratio

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<sup>15</sup>"If fair profit is determined by the requirements of the least efficient...entry will have to be restricted. Under such circumstances, the incentive for efficient production is missing and public policy becomes that of keeping an umbrella over existing producers and excluding others from its shelter. This, of course, is the reason for the resistance of occupants to new entrants and the reluctance of public agencies to accede to the request for admission tendered by new occupants."

Pegrum, D.F., The Economic Basis of Public Policy for Motor Transport, P.U.F., Aug., 1952, Vol. XXVIII, No. 3, p. 255.

should never be referred to without a great deal of supporting data. Any prudent rate-making agency must look rather carefully at the nature of the carrier's business before making judgements based upon the operating ratio. Some factors that the regulator might consider would be variations in volume and character of tonnage, variations in length of haul, the extent to which sales effort is directed at the most desirable traffic, the proportion of small shipments, proportion of return hauls and availability thereof, traffic and competitive conditions for the carrier. Consideration of such items might give an indication as to whether or not the load factor of that particular trucker comes as a result of the conditions to which he is subject or whether he should clearly be doing better. We have found that the load factor is one element of trucking operations which has great influence over costs and the operating ratio. In that it is a highly variable element, we must be careful to examine it closely at any time the operating ratio is referred to.

In 1956, Dr. M.J. Roberts of the University of Florida completed a study of trucking costs which was intended to demonstrate that economies of scale did not exist in the motor carrier industry (see Chapter III).<sup>16</sup> One "by-product" of this study of significance for this thesis was some rather arresting findings about the operating ratio. It was discovered that this ratio,

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<sup>16</sup>M.J. Roberts, "Some Aspects of Motor Carrier Costs: Firm Size Efficiency and Financial Health", Land Economics, Vol. XXXII, No. 3, (August, 1956), pp. 228-38.

albeit an accepted measure of firm efficiency, could very well be far from the mark as an indicator of carrier financial health. Again, because of the diversity of the motor carrier industry, two operating characteristics, viz. efficiency and financial or operating health, were not necessarily related.

Roberts took a sample of 114 Class I carriers of general commodities operating over similar routes and all in the same territory. He felt, therefore, that terrain, load factors, traffic density and equipment size would be quite similar for all his carriers. Using the vehicle mile rather than the ton mile as his basic unit of measurement, Roberts set up as an indicator of efficiency the average cost per vehicle mile. The initial relationship of costs to operational characteristics is shown in the table on page 28.

According to this analysis, 61 companies maintained a normal relationship where high costs combined with high operating ratios and low costs with low ratios. It was the 51 companies that deviated from this expected pattern that were of interest to this writer. Clearly, Roberts' efficiency measure (cents per vehicle mile) does not agree with the measure given by the operating ratio. Why is this?

For one thing, the efficiency measure employed in this study shows only costs, whereas the operating ratio is derived from both costs and revenues. The obvious explanation for such an anomaly would seem to lie in differences in load factors.



According to the analyst, however, the low cost, high-operating ratio group (IV) handled 9.2 ton miles of freight for each vehicle mile as opposed to a 7.3 loading for the group that managed a low operating ratio despite high costs (I).

Despite their revenue disability, firms in the former group had a distinct advantage in vehicle utilization over those that were unusually strong in revenue-generating capacity.<sup>17</sup>

Thus, we have to look elsewhere for an explanation as to why some firms were producing more revenue per vehicle mile than others, firms, that is, that were selected with an eye to having as much homogeneity in operating characteristics as possible. The answer had to lie in differences in type of traffic carried.<sup>18</sup> In other words, the rate and traffic structure, even in one region and for one relatively homogeneous group of carriers, was sufficiently diverse to allow some carriers with low costs to display high operating ratios and some carriers with high costs to show low ratios. The revenue being generated by various firms varied considerably.

The point to be made from Roberts' analysis is simple. Although the operating ratio might give a good indication of how well a carrier is managed under a certain rate level, it cannot be labelled, as it usually is, an index of

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<sup>17</sup>Ibid., p. 235.

<sup>18</sup>Note: "According to this evidence, the efficiency-operating ratio discrepancies which were traced to differences in revenue-generating ability are associated with the revenue-producing character of the traffic handled." Ibid., p. 235.

efficiency. For that reason, even when such problems as the load factor are considered, the operating ratio still does not indicate the same thing about different carriers. An arbitrary ratio set at 93% or 95% with the understanding that it will bring compensatory rates to all in the region is not going to affect all participants in the rate in the same manner. Some low cost deviates, operating extremely efficiently, will be hard-pressed to gain a fair reward for their efforts with that standard. Others (high cost deviates), because they haul more lucrative traffic even though they incur higher costs over similar routes, will reap profits higher than their "efficiency" warrants.

Another feature of the motor carrier industry that makes the use of the operating ratio quite difficult is the diversity in asset makeup of different carriers. One most serious consideration relates to leasing of equipment. For as far as the proportion of leased versus owned equipment and facilities is concerned, there is no general standard in the industry (see Table on page 116). Some carriers own all their revenue units and plant while others lease as much as possible, including their tires. One page 117 is a contrived illustration of how the operating ratios might be an entirely misleading tool for evaluating the efficiency of two different trucking firms with different leasing policies.

This problem is of concern to regulators and econo-

TABLE III

SAMPLE OF CARRIERS INDICATING BREAKDOWN  
OF OWNED VERSUS LEASED EQUIPMENT

<u>No. of Carriers Providing Fleet Information for Class</u>	<u>Power</u>		<u>Trailer</u>		<u>% of Total Units</u>	
	<u>Own</u>	<u>Lease</u>	<u>Own</u>	<u>Lease</u>	<u>Own</u>	<u>Lease</u>
1	2	6	10	2	60	40
1	16	0	6	0	100	0
1	19	0	19	0	100	0

Note: Only three of thirteen responding carriers offered this type of information, hence no conclusions may be drawn about the industry in B.C., nor even about firms circularized. The information here may be of interest however.

Source: U.B.C., - A.T.A. of B.C. Trucking Survey, Summer, 1967.

TABLE IV

COMPARABILITY OF LEASING VERSUS OWNING

	Firm A \$	Firm B \$
Gross Revenue	1,000,000	1,000,000
Operating Expenses (Total)	958,000	998,000
Equipment Maintenance	101,000	101,000
Terminal	129,000	129,000
Traffic	30,000	30,000
Insurance and Safety	45,000	45,000
Administrative and General	66,000	66,000
Operating Taxes and Licences	52,000	52,000
Transportation		
Wages, Fuel	498,000	498,000
Equipment Rents	-	65,000
Depreciation		
Plant	12,000	12,000
Revenue Equipment	30,000	-
Operating Ratio	95.8	99.8 <sup>20</sup>

Firm B leases thirteen trucks at \$5,000 apiece, thus incurring its equipment rental charge of \$65,000. Firm A owns thirteen (well depreciated) units valued at a cost of \$31,000 apiece. The depreciation ratios of the two firms are entirely different. Firm B looks to be in a far more critical state of revenue need.

Actually, Firm A is in an identical situation. The units it owns represent an investment of \$403,000. A reasonable return on this investment might be figured at the cost of capital. If this cost is in the neighborhood of ten per cent, \$40,300, then the operating ratio for Firm A is the same as it is for Firm B.

	Firm A
Operating Cost	\$958,000
Financial Cost	40,300
TOTAL	998,300
<u>Operating Ratio</u>	<u>99.83</u>

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<sup>20</sup>Source: Representative Cost figures - Hudson Constantin, p. 101, from American Trucking Assoc., Inc. Trends (Wash.1956), p. 12.

mists. As William B. Saunders, the noted transportation consultant, stated in a rate hearing in 1965:

...a company with no investment at all can produce handsome profits to suppliers of capital with an operating ratio of as much as 99 per cent; such a case arises whenever the reporting carrier leases all property and equipment and charges back capital costs as a routine operating expense. Automatically, such a carrier needs a much smaller percentage of net revenue than does a carrier who owns all of the property and equipment in his motor carrier operations. In its simplest terms....the operating ratio is not a satisfactory measure of revenue need.<sup>19</sup>

Certainly if a regulator is attempting to set a compensatory rate level for two motor carriers who have different policies about leasing, he is going to have to look well beyond the simple operating ratio to judge revenue requirements.

In the example above, the issue is very clearly that of the regulator referring to, and including an accurate allowance for "financial cost" in the calculation of revenue need. As noted earlier, the Interstate Commerce Commission does this even though it apparently does not make this item a part of the operating costs. It is included after costs are computed and figured into the operating ratio. Again, we see the imperative of recognizing the financial return on invested capital as a cost of business. As long as the regulator makes allowance for this and as long as the respondents to a rate hearing supply the regulator with financial information so that he can make a full and accurate allowance, there should be no

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<sup>19</sup>Source: Canadian Industrial Traffic League Notes, February 12, 1965, (Issue 4222), p. 4. Reference to N.I.T.L. Statement to Interstate Commerce Commission re: Increased Rates Between Colorado, Wyoming and Southwest, Dockett No. 34444.

great problem of disparity in the operating ratios of two firms because of different policies about leasing equipment. Saunder's criticism (above) comes at a time, however, when respondents are still supplying very poor and incomplete financial information.<sup>21</sup>

At this point, we have reviewed some of the more important considerations a regulator must take account of if he is to employ the operating ratio effectively. We have noted that there are two basic problems involved in using it. For one thing, regulators and carriers alike must agree on some standard manner of including items in operating cost. Income tax, method of depreciation and calculation of financial costs are the three most difficult areas at present. The second obstacle in the way of a more universal use of the operating ratio in the motor carrier industry has to do with the extreme diversity in that industry. Disparities in load factors, managerial efficiency, type of haul, character of freight carried and policies about equipment leasing are only a few of the variables that greatly affect this highly volatile ratio. The only way that a regulator can take account of the differences in such items from firm to firm is to ask for and analyze a great deal more data and financial information from the carriers that he regulates. This will be the subject of a later section.

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<sup>21</sup>Ibid., p. 3, "An examination of the papers filed by the carriers...clearly reveals, unfortunately, the inadequacy of the data made available...only sixty-six of the one hundred and twenty-four filed reports of any kind".

## Use

The one motor trucking rate regulator that is successfully using the operating ratio both to set and evaluate rate levels as well as individual trucking rates is the U.S. Interstate Commerce Commission. The I.C.C. does not, of course, employ the operating ratio exclusively as a measure of revenue need, rather it uses it along with a great deal of supporting data and other information. Nor is the I.C.C. the only regulator that relies upon this ratio as a regulatory tool. Harper's research indicates that most state utility commissions in the U.S. employ the operating ratio, usually along with the rate of return criterion, to judge revenue need of carriers operating interstate.<sup>22</sup> The I.C.C., to this writer's knowledge, has never referred to the rate of return principle as an indicator of revenue need for motor carriers.

In Canada, the operating ratio is sometimes referred to by commissions involved in carrier rate hearings. To this writer's knowledge, no statement of what constitutes a reasonable or adequate ratio has ever been published as a result of any rate or entry case in this country. It might be concluded from this that the operating ratio is not accepted as being very meaningful for trucking rate regulation in Canada. This could easily be understood when one takes into account the lack

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<sup>22</sup>D.V. Harper, Economic Regulation of the Motor Trucking Industry By the States, Urbana, University of Illinois Press, 1959, pp. 194-196.

of cost information that regulators here are presented with. The most fruitful approach to seeing how the operating ratio can be used effectively is, therefore, to refer to the I.C.C. and its application. This is one of the tasks of the next chapter.

Since 1943, right up to the present decade, 93.0 has been consistently used in rate cases by the I.C.C. as the best available guide for judging the reasonableness of motor trucking freight rates. In Increased Common Carrier Truck Rates In New England, the Commission raised the appellants' rate structure five per cent so as to establish an operating ratio of 93% "which appeared to be reasonable".<sup>23</sup> In another New England general revenue case the Commission stated that 93.0 "appeared to be reasonable" in view of the average conditions confronted by the group proposing the general increase.<sup>24</sup> In yet another case, the I.C.C. ruled that the respondents' rates were earning "more than out-of-pocket costs"<sup>25</sup> in that they were maintaining a 93.0 ratio with the lower rates.

In view of the diversity of the trucking industry, a diversity which was reviewed to some extent in Chapter IV, the U.S. Interstate Commerce Commission seems to have arrived at a

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<sup>23</sup> Increased Common Carrier Truck Rates in New England, 43, M.C.C., p. 21.

<sup>24</sup> Increased Common Carrier Truck Rates in New England, 44, M.C.C., p. 17.

<sup>25</sup> Minimum Weight on Trisodium Phosphate, 44, M.C.C., p. 408.



remarkably precise standard of what constitutes a reasonable relationship between revenues and operating costs in this industry generally. Despite the apologies and qualifications which often accompany reference to 93.0 in the last twenty years of trucking rate cases, the observer cannot fail to be impressed by the fact that this respected body has continued to attach itself to one standard for so many years.

The analysis of the various influencing factors made in this chapter suggests, however, that the operating ratio as it appears presently to be employed in I.C.C. cases may be quite far from being a definitive solution to the problem of setting and regulating motor carrier rates. It might be suggested that the prime consideration in setting a rate level lies in determining whether the rate is compensatory yet non-exploitive over particular routes or movements of the carrier. A general operating ratio of 93.0 or, for that matter, any other level, might or might not indicate that a certain general rate level was returning fully allocated costs of operation plus a certain return to the operator. To the regulator, whose duty should be to see that all services of the carrier are being treated equitably, surely specific cost and revenue data relating to individual movements and routes should be of greater concern than the average conditions confronted by a carrier, or worse still, a group of carriers, proposing certain rate action.

This particular criticism of the operating ratio as

it has been employed in past years has not escaped the attention of certain dissenters to I.C.C. cases in recent years however. As one Commissioner in Candy, Drugs, Motors, Iron Bars, Valves Westbound noted:

System average expenses such as has been presented by both respondents and protestants are of little, if any, probative value in determining the compensatory character of rates on specific articles between particular points.<sup>26</sup>

More recently an I.C.C. statement would seem to indicate that indeed cost data on routes and individual hauls is more pertinent to rate regulation than average of system revenues and costs.

An operating ratio is the result of comparing the total operating expenses, taxes, licences, with the total revenues received from all rates, some of which may be much above the costs to the carrier, and some barely meeting or possibly below the costs....Since neither the average vehicle-mile cost nor the operating ratio of a carrier are measures of the cost of handling any one shipment, the cost evidence normally presented in rate hearings is of little value in determining the compensating nature of the assailed rates.<sup>27</sup>

### Summary

In this chapter we have criticized the operating ratio from more than one standpoint. It has been suggested, first, that there is some doubt as to what cost items might compose an operating ratio and, secondly, that in the extremely diverse

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<sup>26</sup>Candy, Drugs, Motors, Iron Bars, Valves Westbound, 54, M.C.C., 1952, p. 727.

<sup>27</sup>Interstate Commerce Commission, Reports, Vol. 313, 1961, p. 371.

trucking field a ratio such as this must be interpreted with the aid of a great deal of supporting data.

Finally, it has been pointed out that an operating ratio for the trucking firm as a whole could be entirely misleading as to the profitability and justness of rates over particular routes or services of the carrier. In the final analysis, the truckers' return should be no weightier a consideration to the regulator than the effect of his rates on individual shippers who may in many cases be "captive" and open to certain exploitation.

The next chapter will be an attempt to look more closely at the positive aspects of the operating ratio as a regulatory tool. Some suggestion will be made of what standardization in cost reporting must be brought about in the trucking industry before rate regulation based on an index like the operating ratio can be meaningful and accurate. An examination of the cost accounting procedures that must be engendered by the regulators and employed by the regulated firms in order to achieve this standardization can, hopefully, be brought to light. Finally, the chapter will explore briefly just what stage the trucking industry in Canada or, more particularly, British Columbia seems actually to have achieved in terms of its ability to collect and state a set of standard costs.

## CHAPTER VI

THE IMPERATIVE OF COST STANDARDS

The first step towards development and use of the operating ratio as a tool for measuring the profitability of motor trucking operations lies in collecting a great deal of accurate cost data from the carriers who are to be regulated. Indeed, costs must be collected intensively and, if necessary, repeatedly until the regulator may begin to formulate certain "yardsticks" or standards of what costs should be for a type of service and how these costs should change given certain variations in application, such as terrain, load densities, length of haul, etc.

Another essential step that must be taken before the operating ratio can be of value to the trucking rate regulator would involve standardizing very specifically the manner in which all truckers collect and report upon their costs of operation. Depreciation and capitalization policy, the manner of calculation of cost of capital, all such considerations would have to be approached in a uniform manner by all carriers under the same jurisdictions.

In the United States, costs and cost data have long been recognized as the cornerstone of rate regulation. In 1939, a cost section was added to the Interstate Commerce Commission for the purpose of collecting costs. It was realized that the only way in which a rate could be judged noncompensatory,

exploitive or prejudicial was to test the rate against a standard developed for that particular service by the cost section.

In cases when a proposed rate is protested, data on the cost of transporting the traffic are requested from our staff. If the rate clearly falls below the out-of-pocket cost it is usually suspended.<sup>1</sup>

The important factor of I.C.C. rate regulation is, of course, that the Cost Section has provided the Commission with the necessary cost data. Also, the carriers are being encouraged to report their costs in a standard manner so that this cost data can be continually up-dated, revised, and used to test proposed rates of carriers under I.C.C. jurisdiction.

...A carrier recently published a rate for a commodity moving over 1600 miles in 30,000 pound lots. A simple calculation indicated that the one-way trip would yield \$200. or about 12 cents per vehicle-mile. It was evident from studies prepared by our staff that the line-haul cost alone would approximate twice the revenue yield and adding to this figure the terminal cost and expense of returning the vehicle to the original point was unquestionably non-compensatory.<sup>2</sup>

The Interstate Commission's cost studies have aimed throughout the years to find the out-of-pocket cost of operating various classes of services performed by motor carriers in the thirteen trucking territories of the United States. The cost formula used separates total expenses among line-

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<sup>1</sup>Howard Freas, The Rate of Costs in Ratemaking, an address given by the I.C.C. Commissioner before the National Freight Traffic Association, February 14, 1956, p. 6.

<sup>2</sup>Ibid., p. 7.

haul, pick-up and delivery, billing and collecting, and platform handling, and arrives at a per unit cost for each of these categories of service. Adjustments are made for weight and for distance, adjustments based both on examination of reported costs, and on special time and motion studies of reporting carriers. As a result of the cost studies, the I.C.C. feels its calculation of total out-of-pocket cost of shipping a certain weight over a specified distance by one class of vehicle is fairly accurate.

The subject of most of the examination of the recent chapters of this thesis, the operating ratio, is not directly related to the out-of-pocket costs, rather to fully distributed costs; i.e. as a percentage of the total revenue necessary to cover all expenses, rents, taxes, interest on investment, as well as a return sufficient to attract capital. The costs collected by the I.C.C. Cost Finding and Accounts Bureau can be used by themselves to evaluate proposed rates and rate increases where there is reason to believe a rate is in the range of an out-of-pocket cost. On the other hand, the Accounts Bureau has done sufficient research that it is able to provide a set of factors by which the out-of-pocket cost for a region can be increased to arrive at a figure of revenue need based on the I.C.C. standard of a 93 per cent operating ratio. The following factors are presented in the 1966 version of the I.C.C. Territorial Cost Study Summary:

TABLE V

PER CENTS TO INCREASE OUT-OF-POCKET COSTS  
TO A REVENUE NEED LEVEL

<u>REGION</u>	<u>PER CENT</u>
1. Central	17.96
2. Eastern Central	18.18
3. Middle Atlantic	17.90
4. Middlewest	17.72
5. Within New England	18.01
6. Between New England and New York City and Beyond	18.33
7. Pacific	17.78
8. Rocky Mountain	17.58
9. Southern	17.49
10. East South	17.53
11. South-Central	17.74
12. Southwest	17.74
13. Transcontinental	17.66

Source: I.C.C. Bureau of Accounts, Cost of Transport-  
ing Freight By Class I and Class I Motor  
Commission Carriers of General Commodities -  
1965, September, 1966, p. 7.

The fully distributed cost per unit (i.e. per cwt., per shipment, per vehicle mile) which one would arrive at when adding the above percentages to the Cost Bureau's out-of-pocket findings would thus include an allowance for return on property invested. Part of the explanation for the variations in the above factors from region to region is explained by the difference in availability of capital in the various regions of the U.S. As the Bureau points out, the value of having a total or fully distributed cost, or as they call it, a figure of "revenue need", is that this provides "a degree of com-

parability with fully distributed costs for rail and water carriers when such costs included (as they usually do) an allowance for return in all property".<sup>3</sup>

Although U.S. cost studies have provided means for converting (or building up) to a fully allocated cost from an out-of-pocket figure, the main emphasis and aim of the Cost Bureau has been to find out-of-pocket cost levels. The unit at which the studies aim is total out-of-pocket cost per hundred weight shipped. Separate studies have been done as well to make adjustments for such considerations as:

1. Variations in average running speed.
2. Variations in density of shipment (pounds per cubic foot of space).

(VI)

The accompanying table gives an indication of the basic study results which may have to be subjected to the above adjustments (see Table V). As the table indicates, Motor Trucking Cost Studies are most sophisticated and indeed complicated to use. Their value is that they are able to provide a researcher with a precise figure of what a certain type of service should cost an operator to perform. The detail, of course, is more than sufficient for the regulator's primary purpose which is to judge the reasonableness of a rate. A regulator would need no such degree of detail to determine whether an established

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<sup>3</sup>I.C.C. Bureau of Accounts, Cost of Transporting Freight by Class I and Class II Motor Carriers of General Commodities - 1965, September, 1966, Washington, D.C., p. 5.



OUT-OF-POCKET EXPENSES, SERVICE UNITS AND OUT-OF-POCKET UNIT COSTS  
FOR COST STUDY CARRIERS FOR STUDY YEAR BROUGHT UP TO CURRENT YEAR LEVEL

Source: Interstate Commerce Commission, Bureau of Accounts, Cost of Transporting Freight by Class I and Class II Motor Common Carriers of General Commodities by Regions or Territories - 1965, Washington, D.C., September 1966, p. 27.

or proposed rate was in a range which would make it either compensatory , non-compensatory, or exploitative.

In setting out to develop a standard cost framework for Canadian regulatory purposes, however, we can benefit from the I.C.C. Accounts Bureau's studies. It is apparent, for one thing, that any collection of cost data should be done on a regional basis. Clearly, a mountainous terrain will occasion extremely different cost factors than a prairie or congested inter-city region.

Another consideration that the I.C.C. cost studies raise is that of how detailed a breakdown a Canadian cost-collecting team should aim at. Also, what units (i.e. ton-mile, vehicle-mile, etc,) should be our term of reference ?

It is the opinion of this thesis that, for regulatory purposes, a cost study should be as simple as possible. It is suggested that the most appropriate unit to use in cost-collecting might be a type of vehicle service and the total operating cost of that service (including a reasonable allocation of overhead) for an accounting period. In this way, we would be able to take advantage of the operating ratio tool more directly. With a statement of total operating costs and total operating revenues for a large number of carriers offering similar or very nearly similar vehicle services to the shipper, a regulator

would soon gain an appreciation of what an average operating ratio should be. Once a set of standard ratios was compiled for the many types of common carriage being offered in a region, the regulator would develop an intelligence of services offered by specific carriers which were not reasonably profitable.

As the situation stands today, a provincial regulator, when presented with a respondent's operating ratio, has no standard against which to judge that percentage whatever it may be.

Again, it should be emphasized that cost collecting should be done not on the basis of the total operations of a carrier, but on its various services. It might be recalled that the criticism of the I.C.C. rate hearings was that the famous 93 percent ratio has always been applied to total operations of respondents and that total operations cost may be most meaningless as an indicator of the profitability of individual rates under investigation.

On the other hand, it would not be wise to disregard the 93 percent standard from possible application to the Canadian situation. As it has in very many instances by very astute observers been considered a reasonable relationship between total operating costs and total operating revenues, this ratio should be considered relevant. The perplexing question which does remain is, of course, what to in-

clude in a statement of operating costs. As discussed in previous chapters, it is most optimistic to expect an unsophisticated carrier to know his financial cost of staying in business. By financial costs, the broader meaning is suggested; i.e. return sufficient to justify the effort and expense of operation. For this reason, it would be advisable to elicit only out-of-pocket data, including any tangible financial costs such as interest on borrowed funds and the earnings, growth, and dividends expected by outside investors in the case of equity financing. With such basic cost information, a researcher should formulate his own calculations of the operating ratio above which a carrier, if rational, would cease operations. In any industry such as trucking, where the smaller, less sophisticated units predominate, it is unlikely that there will be a general appreciation of the opportunity costs connected with staying in operation beyond a certain operating ratio level.

#### Collection of Cost Data

As indicated numerous times earlier, the initial stage in any program designed to make Canadian motor trucking rate regulation a more objective practice lies in getting into the field and collecting carrier costs in large samples. In a pilot study sponsored by the Automotive Transport Association of British Columbia in 1967, it was decided to isolate two types of vehicle service. Costs were to be broken down under

well defined headings for the two types of trailer combinations. If carriers could supply a figure of total miles operated by that trailer combination over an accounting period, conclusions could be based on total operations costs relative to the trailer combination mile. Hopefully, the carriers responding to the questionnaire could later be grouped according to annual operating mileage and cost standards could be developed for these groupings. The study was designed in the following manner:

1. Two most common types of trailer combinations were selected. A 74-76000 gross vehicle weight diesel-powered tandem axle tractor with a forty foot insulated dry box trailer was used in Questionnaire "A". Questionnaire "B" involved the same tractor hauling a forty foot flat deck semi-trailer in the same type of service.
2. The cost breakdown of the questionnaire was based most closely on that employed by the U.S. Interstate Commerce Commission Bureau of Accounts, Cost Finding and Valuation Report, A Simplified Procedure for Determining Cost of Handling Freight by Motor Carriers - 1959. This breakdown was essentially the I.C.C. Uniform System of Accounts.
3. A sample of British Columbia carriers was selected, forty-five in number. Some carriers were sent both "A" and "B" Questionnaires, while others were sent either one or the other. The basis of selection of carriers was not in any way scientific. Circulation depended, firstly, upon the A.T.A.'s practical opinion of which carriers would be capable of making the type of cost breakdowns the Questionnaires were asking for, and, secondly, which carriers would be willing to respond at all.
4. With regard to the problem of financial costs, the Questionnaires', question 6, specified "cost of borrowed money" only. In that those designing the questionnaires did not feel any more could be asked for at that time than this, the study had to be limited in this respect. As the thesis suggested

in earlier chapters, financial cost or "cost of capital" is certainly greater than straight out-of-pocket payments of interest. On the other hand, were the questionnaires to ask for an estimate of cost of capital from each carrier, the respondents' ignorance of a proper calculation could be far more damaging to the primary aim which was to collect accurate cost information.

5. Another area of significant weakness in this pilot study concerned question 10 which asked for a statement of "Average Overhead Expense per Mile". It is doubtful that the majority of respondents are sufficiently advanced in their budgetary methods that they would have an accurate allocation of the overhead expense detailed in the question.

In order to gain some appreciation of the carriers' degree of sophistication in cost accounting methods, Section 13 of the Questionnaires did ask some questions regarding budgetary and cost allocation procedures.

Questionnaires "A" and "B" were identical in all respects but their headings which indicated the type of trailer combination. Questionnaire "B" is reprinted in Appendix "A" for reference.

### Results

The results of the trucking cost Questionnaires were disappointing. From a total of forty-five firms circulated with either or both of the Questionnaires, only twenty replied at all. Of the replies, only thirteen firms were able to provide useful information. Nor did all of these provide complete data:

	<u>Questionnaire "A"</u>	<u>Questionnaire "B"</u>
Less than 50,000 miles/annum	1	3
50,000 to 100,000 miles/annum	4	1
Over 100,000 miles/annum	<u>1</u>	<u>3</u>
	<u>6</u>	<u>7</u>

Since the response was so thin and the data so incomplete, there was no sense in attempting to subject the results to any statistical analysis in order to arrive at standards for mileage classes. Nor was it possible to do any correlation between annual mileages and change in costs per mile. The variances between individual responses were in some cases incredibly wide. It is interesting, however, to table the information received. In some respects it might be optimistic to expect anything more than "interesting" results from a pilot study conducted in a diverse field such as trucking - a study, it might be added, that was researched by means of questionnaires rather than personal interviews.

It is very difficult to make any conclusions from the results of the two Questionnaires. A brief study of Tables **VII** and **VIII** makes this point most clear. The manner in which the tables are presented, however, does draw attention to what the researchers expected from the study - the great variations in reported cost. In the trucking industry for a region such as British Columbia, some carriers might operate in mountainous areas while others, operating transcontinentally from B.C., will experience a great deal of prairie miles. In such a situation, one would expect considerable cost discrepancies.

A second explanation for these results lies in the manner of cost collecting itself. Questionnaires are not the clearest form of communication. They do not permit the researcher and respondent to come together in order to fully understand what should be asked for nor, for that matter, what actually can be provided. As a Highway Research Board study in 1961 noted:

"The field data from this study were obtained by interviewers who called on the individual motor carriers ----it was presumed at the start and later confirmed that the degree of detail derived could not possibly have been obtained by mail questionnaire."<sup>4</sup>

This same study found that only by personal examination of the accounting systems of the carriers they proposed to question could the researchers decide whether or not it was worthwhile to use the information produced by the system.

"The accounting information which was kept by many carriers was such as would reveal the position of the business as a whole for top management, but would not show vehicular cost data. In those cases where a carrier's records could not be related to specific groups of similar vehicles, the interview was quickly terminated."<sup>5</sup>

In the A.T.A. study we, as researchers, did not take the naive view that all carriers circulated could provide the vehicular cost data needed. However, no examination of carriers'

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<sup>4</sup>Highway Research Board, Bulletin 301, Line Haul Trucking Costs in Relation to Vehicle Gross Weights, National Academy of Sciences, N.R.C., Washington, D.C., 1961, p. 42.

<sup>5</sup>Ibid., p. 42.



cost accounting systems was done, with the exception of some preliminary interviews with two of the largest carriers circulated. These large carriers were capable of providing cost data of the type desired and employed cost accounting programs that reported such to operational management on a regular basis. Unfortunately, it appears that the vast majority of those circulated could not, and of those carriers who did provide data, some must have been making rather ill-based estimates. A scrutiny of the overhead expense per mile would have to lead one to such a conclusion.

#### Future Research

The results of this study, although incomplete and inconclusive from the standpoint of setting cost standards, do represent a beginning in a program to introduce objectivity and accounting accuracy into the process of setting truck rates in British Columbia. A number of important realizations have been made already as a result of this study.

First and foremost, the co-operation and confidence of the trucking industry must be gained by the regulator. For the regulator is going to have to engender (or impose) rather wide-sweeping improvements in cost accounting practices on the carriers individually. Carriers will have to be able to determine their own operating costs and report on them with accuracy.

In order to provide the cost/mileage data such as

was required in the A.T.A. study, carriers should be encouraged to maintain a master record for each type of trailer combination operated. The imperative of segregating service units according to the terrain they operate in, as well as their physical description, is, of course, obvious. These segregations of cost data may be accomplished in the following manner:

1. The accounting year of all carriers should be standardized and subdivided, perhaps, into quarters or months. Cost reports should be prepared as often as possible in the early period of vehicle cost determination.
2. Carriers could easily set up logs or expense sub-ledgers for each type of operation they maintain; i.e. each trailer combination. A control account would be used as well. There would be no need to maintain a separate account for each individual truck however.
3. All operating costs such as fuel, oil, tires and maintenance expense can then be charged into these logs, or sub-ledgers. As mileage is reported, it should be recorded in the accounts as well.
4. As drivers' wages should vary fairly directly with mileage (in fact, this is one point the cost study did make - per mile labor costs were fairly constant), a figure of total drivers' wages could be taken from such an expense account and allocated among the various trailer combination accounts according to the mileage total in the account at the end of the accounting period. The same allocation would apply to various supplemental employment benefits as well.
5. Depreciation should not present any obstacle to this suggested cost accounting program. Many trucking firms in the United States already depreciate on a units-of-service basis. The operator must be encouraged to make a reasonable estimate of the total mileage life of all vehicles in his fleet and allocate total depreciation on this basis. In this case, even

if the trucker had to use another method for tax purposes, he would at least have a ready figure to use for building up his expenses per mile for each type of vehicle service.

6. Certain costs which are fixed irrespective of mileage do present a problem for the cost determination system being suggested. The items termed "overhead" in the Questionnaires, as well as insurance and certain licence fees, are committed costs and must be allocated rather carefully between the various service sub-accounts in order to arrive at a total cost per mile over an accounting period. The question is, of course, upon what basis would these cost items be divided? A basic approach might be to assume that all units of product of the firm (i.e. the various types of trailer combination miles) consume equal amounts of administrative, sales, terminal and traffic expense and time in their production. Initially, therefore, each trailer combination could be allocated a portion of this overhead proportionate to the number of miles it operated by the end of the accounting period. If this assumption was wrong, the carrier could learn from observation and experience what a more equitable distribution would be. In having to rely on observation to set up proper overhead allocation, the trucker in our case would be no different from the manufacturer trying to allocate overhead among various products or the departments producing them. The main difference is, of course, that the manufacturer usually allocates overhead proportionately with direct labor cost, while we are suggesting the trucker allocate on a per mile basis as his measure of activity.
7. The cost of capital, including any direct financing costs incurred by the trucker once calculated, would have to be treated as an overhead item and allocated among the various trailer combinations as overhead. The manner of calculating cost of capital, as discussed previously, is a problem of a scope beyond this thesis.

In order to compile the type of vehicle cost data that is being discussed here, the smaller fleet operators will have to be encouraged to increase the number of cost reports that they are presently using. Three basic neces-

TABLE VII

QUESTIONNAIRE "A"

<u>Item</u>	Less than 50,000 miles <u>1 Reply</u>	50,000 to 100,000 miles per annum			Over 100,000 miles per annum
		<u>Minimum</u>	<u>Maximum</u>	<u>Median</u>	
Number of Vehicles in Fleet	16				
Average Mileage Operated	3.6000	8.0000	9.3000	8.4000	
Average Acquisition Price	3.8100	3.3000	4.1000	3.6200	
Basis of Depreciation	St.Line	St.Line	St.Line	St.Line	3.2518
Average Amortization Period	10				7
Projected Average Residual Value	<u>3810</u>	<u>7000</u>	<u>1.0800</u>	<u>1.0110</u>	<u>7000</u>
Vehicle (+trailer) Deprecia- tion Expense	0.1070	0.0450	1.0000	0.8230	0.0328
Average Cost of Capital	0.0350	0.0100	0.0520	0.0251	0.0072
Average Fuel, Oil, Grease Expense	0.0670	0.0660	0.0700	0.0685	0.0720
Average Tire and Tire Main- tenance Expense	0.0480	0.0173	0.0300	0.0225	0.0150
Average Vehicle Maintenance Expense - Own Shop	0.1050	0.0848	N/R	N/R	0.0555
Average Insurance Expense	0.0180	0.0070	0.0162	0.0145	0.0104
Average Labor Expense	0.1280	0.1115	0.1560	0.1255	0.1200
Average Overhead Expense	<u>0.0450</u>	<u>0.0170</u>	<u>0.2148</u>	<u>0.1170</u>	<u>0.3544</u>
Total of Reported Costs	<u>0.5530</u>	<u>0.3586</u>	<u>1.5390</u>	<u>1.1961</u>	<u>0.6673</u>
Estimate of Vehicle Main- tenance for those not able to supply a cost figure (same figure as minimum)	<u>          </u>	<u>          </u>	<u>0.0848</u>	<u>0.0848</u>	<u>          </u>
Total Costs Per Mile	<u>0.5530</u>	<u>0.3586</u>	<u>1.6238</u>	<u>1.2809</u>	<u>0.6673</u>

Note: 1. Firms are divided into three groups according to their reported average mileage operated by vehicles.

2. Where a number of carriers reported within one mileage class, tabulations of minimum and maximum costs were made. The minimum pertains to the firm for a cost item reported the least. The maximum pertains to the firm for a cost item reported the highest. Median costs were compiled as well in this case - the median simply being the middle firm's costs...cont'd.

TABLE VIII

## QUESTIONNAIRE "B"

Item	Less than 50,000 miles			50,000 to 100,000 miles 1 Reply	Over 100,000 miles		
	Minimum	Maximum	Median		Minimum	Maximum	Median
Number of Vehicles in Fleet							
Average Mileage Operated	2.0000	4.3000	3.60000		12.3000	17.5000	15.0000
Average Acquisition Price	8437	3.3000	1.8000	2.9000	3.0539	3.4390	3.3500
Basis of Depreciation	St.Line	St.Line	St.Line	St.Line	N/R	N/R	N/R
Average Amortization Period					N/R	N/R	N/R
Projected Average Residual Value	<u>2000</u>	<u>4650</u>	<u>3318</u>	<u>1.3960</u>	<u>2.1000</u>	<u>2.4000</u>	<u>2.3350</u>
Vehicle (+trailer) Depreciation Expense	0.0300	0.0810	0.0382	0.0380	0.0302	0.0434	0.0312
Average Cost of Capital	0.0180	0.0347	0.0316	0.0124	0.0070	0.0087	N/R
Average Fuel, Oil, Grease Expense	0.0470	0.0670	0.0650	0.0597	0.0700	0.0839	0.0720
Average Tire and Tire Maintenance Expense	0.0090	0.0480	0.0321	0.0060	0.0016	0.0150	N/R
Average Vehicle Maintenance Expense	0.2280	N/R	N/R	0.0318	0.0555	0.0740	N/R
Average Insurance Expense	0.0100	0.0227	0.0180	0.0046	0.0104	0.0273	0.0224
Average Labor Expense	N/R	N/R	N/R	0.0236	N/R	N/R	N/R
Average Overhead Expense	<u>0.0450</u>	<u>0.0646</u>	<u>N/R</u>	<u>0.1740</u>	<u>0.0159</u>	<u>0.6740</u>	<u>0.3544</u>
Total of Reported Costs	<u>0.3870</u>	<u>0.3180</u>	<u>0.1849</u>	<u>0.3501</u>	<u>0.1906</u>	<u>0.9263</u>	<u>0.4800</u>
Estimate of Expenses not Reported							
Cost of Capital (same as min.)							0.0070
Tire & Tire Maintenance (same as min.)							0.0016
Vehicle Maintenance (minimum)		0.2280	0.2280				0.0555
Labor (same as Questionnaire "A")	0.1280	0.1280			0.1200	0.1200	0.1200
Overhead (minimum)			<u>0.0450</u>				
Total Costs Per Mile	<u>0.5150</u>	<u>0.6740</u>	<u>0.4579</u>	<u>0.3501</u>	<u>0.3106</u>	<u>1.0463</u>	<u>0.6641</u>

Note: (cont'd.) 3. Total reported costs were totalled.

4. In order to provide a complete set of costs in each case, certain figures have been "plugged in" for those items where no cost was reported. Various figures were used as the tables indicate.

sities, as suggested by Mr. P.G. Anderson, a member of the Private Truck Council of America,<sup>6</sup> are:

1. Truck Defect Card - used for shop order and parts and labor used (on individual vehicles).
2. Periodic Truck Report - used for accumulating cost of each vehicle;  
- also to accumulate costs by classification for groups of vehicles (or as entitled here, "trailer combinations").
3. Daily Garageman's Report - used for fuel and oil dispensing and mileage driven by individual vehicles.

To convince the smaller operator that the extra expense and effort of preparing forms and hiring staff to maintain a system of data gathering (and totalling information from these forms at periodic intervals) is, in itself, a valuable exercise for him as well as for his regulator will not be at all easy. Nor is any amount of cajoling by the regulator and trucking association going to accomplish the task overnight. Quite frankly, a cost accounting system, although in the small operator's best interest in the medium and long run, will be an expensive and bothersome headache to him to initiate. Quite a selling effort will be called for! The positive points which might be stressed in encouraging management, however, are:

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<sup>6</sup>Canadian Industrial Traffic League, "Traffic Notes", Issue No. 4210, November 27, 1964, p. 5.

1. Detail as to individual vehicles or even groups of vehicles will show the operator immediately where possible defalcations or inefficiencies by his drivers and staff are hurting him.
2. The same detail will point out where his most profitable business lies.
3. The cost reports he is supplied with will give him better "on-line" control over his operations; i.e. he will be able to see and analyze results far closer to that time when the activities which produce his eventual results (the annual Profit & Loss Statement) occur. Corrective and/or re-inforcing action can be taken immediately.
4. A more specific consideration concerns warranties. Collection of money due from manufacturers of equipment would be greatly facilitated if the purchaser had a record, in some detail, of what he had to spend on his individual vehicles at various mileage levels.

As a summary to this section, reference might be made to the remarks of the aforementioned Mr. P.G. Anderson, Director of Safety, Quality Bakers of America, before the 25th Annual Meeting, Private Truck Council of America Inc., March 11, 1964:

"Justification for Compiling Cost Data" (by vehicle or vehicle type) - "Having determined the cost data we want, justifying the expense and effort of collecting and compiling it should be done not only to ourselves but to the Accounting Department. In general, accounting departments strive to keep both their staff and expenses to a minimum. When asked for additional data, their usual reaction is "we don't have the help" or "it's going to cost too much". Because their help and co-operation is needed to produce the cost statements,

they might be asked instead for their ideas and recommendations on how the cost information might be developed and what they estimate the expense to be. This can then be compared to the total fleet expense on a percentage basis. It should, in most cases, range between two and five per cent. A higher percentage of expense indicates that an excessive amount of detail is being collected for the number of vehicles involved. It is our experience that compiling and using vehicular cost data can result in reducing truck expense from five to over ten per cent."<sup>7</sup>

### Summary

Perhaps the main purpose served by this Chapter has been to provide the reader with an appreciation of the stark contrast existing between American and Canadian sophistication with regard to compilation and knowledge of trucking cost levels and standards. For the purpose of regulation of rates, it would appear that the Interstate Commerce Commission has an established determination system more detailed than is actually necessary.

In British Columbia, a Province felt by this writer to be at least typical of any Canadian Province, a crude pilot program failed to derive results which would convince any observer that even the trucking industry itself can generally

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<sup>7</sup>Ibid., p. 6.



provide accurate vehicular cost data.

It is this writer's opinion that compilation of accurate vehicular cost data will have to be the foundation of any program designed to improve the trucking rate regulator's ability to judge the reasonableness of proposed or existing freight rates. It is suggested that a regulator could take the same approach and the same breakdown as shown in the cost questionnaire designed for the Automotive Transport Association of British Columbia. Once the carriers are able to provide this information, the regulator must collect it repeatedly, in fact on a continuous basis, until some intelligence can be made of what it should cost to operate a given type of service over a given type of route, possibly subject to certain other conditions. There is simply no equitable way a body may sit in judgement of any kind of rate unless it has some standard to guide its thinking.

In Chapter V the suggestion was made that a ratio of operating costs to operating revenues is not as suitable a criterion for judging trucking rates as is a rate of return for railway or utility rate structures. The trucking industry, unfortunately, is too diverse, the services of the individual trucking firm too peculiar to themselves to permit a "total" financial ratio to have comparable meaning for the industry in general or, indeed, to have any meaning with respect to the results of an individual service performed by

the firm. This is not to say that the "total" operating ratio has not played a major role in American trucking rate regulation. Objections to its further use, however, are being voiced strongly today.

What must be strived for is a standard which can be applied to the similarities which do exist in this industry. These similarities, of course, are going to appear only as examination is made of the individual aspects of trucking - the routes, the services, the types of equipment, the cargo carried, etc. To apply the operating ratio to activities with common denominators such as these would make a great deal of sense. To apply it to any conglomeration of activities is going to produce misleading results, for as more and more activities are grouped, the smaller is the likelihood that the various syntheses will be comparable.

Clearly, it is being suggested that a trucking rate regulator should develop standard "operating ratios" for individual types of service - whether they be classified by vehicle type or by the type of cargo they carry and in what kind of terrain. The ingredient which is sadly lacking at this stage, which would permit certain ratios to be developed, is knowledge of the costs of operating these types of services. As this Chapter has attempted to point out, detailed costs of operation can only be provided by the carriers that incur them. In order to provide the necessary cost data, the carriers them-

selves must be encouraged to initiate relatively simple yet detailed vehicular cost accounting systems. A substantial sales effort is called for on the part of the regulators and the trucking associations.

APPENDIX "A"UNIVERSITY OF BRITISH COLUMBIACONFIDENTIAL QUESTIONNAIRE - B

THIS QUESTIONNAIRE RELATES ONLY TO:

A 74-76,000 G.V.W. DIESEL-POWERED TANDEM  
AXLE TRACTOR WITH A 40' FLAT DECK SEMI  
TRAILER USED IN OTHER THAN MAINLAND-  
VANCOUVER ISLAND OPERATION

THEREFORE PLEASE FILL IN THE FOLLOWING INFORMATION: (The objective is to learn your cost per mile for the above class of vehicle service)

1. NUMBER OF VEHICLES OF THIS SERVICE CLASS IN YOUR FLEET IN THE LAST ACCOUNTING YEAR . . . . .
2. TOTAL MILEAGE OPERATED IN THE LAST ACCOUNTING YEAR (To nearest thousand) BY ALL VEHICLES IN THIS CLASS OF SERVICE . . . . .
3. DEPRECIATION INFORMATION:
  - (A) BASIS OF DEPRECIATION (Straight line,  
Declining balance,  
etc.)  
 POWER UNIT . . . . .  
 TRAILER . . . . .
  - (B) AVERAGE ACQUISITION PRICE OF THE 74-76,000 G.V.W. VEHICLES PRESENTLY IN FLEET  
 POWER UNIT TRAILER  
 . . . . .
  - (C) AVERAGE AMORTIZATION PERIOD OF THE 74-76,000 G.V.W. VEHICLES PRESENTLY IN FLEET  
 . . . . .
  - (D) PROJECTED AVERAGE RESIDUAL VALUE OF THE 74-76,000 G.V.W. VEHICLES PRESENTLY IN FLEET  
 . . . . .
  - (E) VEHICLE DEPRECIATION EXPENSE PER MILE (Average for 74-76,000 G.V.W. Vehicles presently in Fleet)  
 . . . . .
4. AVERAGE COST OF CAPITAL PER MILE PER 74-76,000 G.V.W. VEHICLE IN FLEET (or, Cost of Borrowed Money) . . . . .
5. AVERAGE FUEL' OIL' AND GREASE EXPENSE PER MILE PER 74-76,000 G.V.W. VEHICLE IN FLEET . . . . .

- 2 -

- |   | POWER UNIT   | TRAILER                                    |
|---|--|--|
| 6. AVERAGE TIRE AND TIRE MAINTENANCE EXPENSE PER MILE PER 74-76,000 G.V.W. VEHICLE IN FLEET   | .....  | .....                                      |
| 7. AVERAGE VEHICLE MAINTENANCE EXPENSE PER MILE PER 74-76,000 G.V.W. VEHICLE IN FLEET (To include: (a) Parts (b) Labour (c) Garage Overhead)  | .....  | .....                                      |
| 8. AVERAGE INSURANCE EXPENSE PER MILE PER 74-76,000 G.V.W. VEHICLE IN FLEET (CARGO INSURANCE INCLUDED)  | .....  | .....                                      |
| 9. AVERAGE LABOUR EXPENSE PER MILE PER 74-76,000 G.V.W. VEHICLE IN FLEET (To include operator's wages, fringe benefits, statutory contributions)  | .....  | .....                                      |
| 10. AVERAGE OVERHEAD EXPENSE PER MILE PER 74-76,000 G.V.W. VEHICLE IN FLEET (To include expenses of terminal, sales, traffic, administration, property taxes, power, any rental on structures or on fixed equipment, property insurance on structures and fixed equipment, depreciation on structures and fixed equipment, general maintenance, amortization of improvements on leaseholds, etc.) |  |  |
| 11. LICENCE EXPENSE PER MILE  | This information will be inserted by the Accounting Analyst. |  |
| 12. GENERAL INFORMATION (Please check appropriate space)  |  |  |
| (a) We  | OWN ( )  | THESE POWER UNITS                          |
|   | LEASE ( )  |  |
| (b) We  | OWN ( )  | THESE TRAILERS                             |
|   | LEASE ( )  |  |
| (c) We  | OWN ( )  | THE TIRES FOR THIS EQUIPMENT               |
|   | LEASE ( )  |  |
| (d) We  | DO OURSELVES ( )   | THE VEHICLE MAINTENANCE FOR THIS EQUIPMENT |
|   | HIRE OUT ( )   |  |

- 3 -

13. BUDGETING AND COSTING

- (a) Budgeting, especially of operating overhead, must occur if one is to determine a full cost per vehicle mile. For each class of service offered by your company (such as the 74-76,000 G.V.W. with box trailer), do you prepare a budget for:

(a) Expected Labour expense YES ( ) NO ( )

(b) Expected vehicle maintenance expense YES ( ) NO ( )

(c) Expected operating overhead YES ( ) NO ( )

What is the length of your budgetary period . . . . .

- (b) If the answer to each question is YES, is each above expense normally computed per 74-76,000 G.V.W. vehicle-mile? YES ( ) NO ( )

- (c) Do you have cost reports that give you your cost per 74-76,000 G.V.W. vehicle mile for:

(1) Labour YES ( ) NO ( )

(2) Vehicle Maintenance YES ( ) NO ( )

CONFIDENTIAL

Questionnaire completed by

COMPANY \_\_\_\_\_

OFFICIAL \_\_\_\_\_

ADDRESS \_\_\_\_\_

TELEPHONE NUMBER \_\_\_\_\_

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