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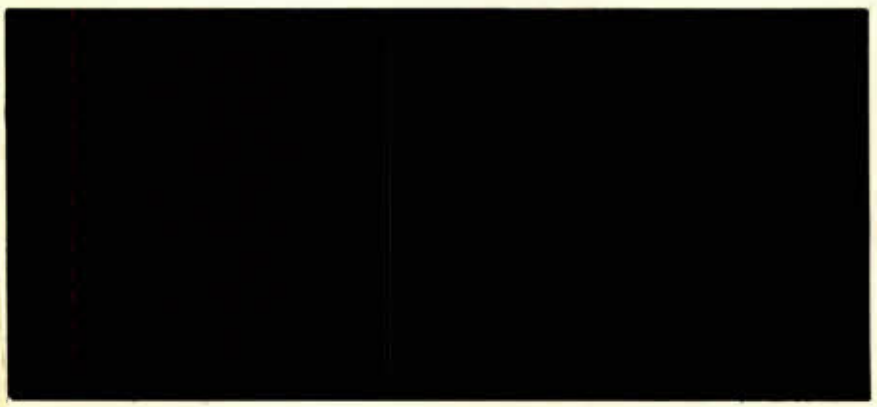



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WORKING PAPER NO. 26

# TRUCKING REGULATION IN CANADA: A REVIEW OF THE ISSUES

by

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## Résumé

La présente étude porte sur la nature et les répercussions des réglements du camionnage au Canada. L'abondante documentation dans ce domaine y est mise à contribution pour faciliter la compréhension des effets, sur la concurrence, de la technologie du transport par camions, et aussi de l'incidence de la réglementation sur la structure des marchés, les prix et les coûts. L'auteur essaie d'identifier les contradictions qui découlent du fait que le camionnage commercial, au Canada, présente certaines caractéristiques tant d'une industrie concurrentielle que d'un oligopole. Il étudie le rôle du camionnage en rapport avec le transport ferroviaire et présente de nouvelles estimations de l'importance relative du camionnage commercial et du camionnage privé.

L'étude montre que le camionnage commercial est une industrie passablement concurrentielle et que les préoccupations au sujet du genre de concurrence que susciterait l'absence de réglementation sont en grande partie injustifiées. Les restrictions à la délivrance de permis qui pruvent grandement limiter la liberté d'action des transporteurs se sont soldées par des pertes d'efficacité technique et autres. Bien que l'incidence des contrôles réglementaires ait diminué beaucoup dans certains domains, par suite de difficultés d'application, les frais d'exploitation des transporteurs à charge multiple, dans les provinces où il existe une réglementation, ont, semble-t-il, beaucoup augmenté. On constate aussi que les prix de ce genre de service sont relativement élevés dans les provinces qui limitent l'accès au camionnage, mais n'en contrôlent pas efficacement les tarifs. L'auteur accorde une certaine attention aux raisons plus générales invoquées à l'occasion pour justifier la réglementation -- comme les préoccupations au sujet des tarifs des services assurés aux petites localités -- mais trouve qu'elles ne résistent pas à un

examen critique. Par conséquent, il propose que la réglementation soit assouplie et que l'on confie aux forces du marché un plus grand rôle dans l'orientation et l'évolution de l'industrie canadienne du camionnage.

## Summary

This study examines the nature and effects of trucking regulation in Canada. The extensive literature in the field of trucking regulation is drawn upon to help answer questions about the competitive implications of trucking technology, and about the influence of regulation on market structure, prices and costs. The study attempts to sort out contradictions that have arisen due to the fact that for-hire trucking in Canada bears some characteristics both of a competitive and an oligopolistic industry. The role of trucking is examined in relation to rail carriage and new estimates are made of the relative importance of for-hire and private trucking.

The study finds that for-hire trucking is a workably competitive industry and concerns that have been raised about the competitive environment which would emerge in the absence of regulation are largely unwarranted. The application of licensing restrictions which may severely limit the operating freedom of carriers has resulted in technical and other efficiency losses. While the influence of regulatory controls has been significantly reduced in some areas as a result of enforcement problems, higher operating costs are evident among the less-than-truckload (LTL) segment of the industry in regulated provinces. There is also evidence of relatively high prices for LTL service in those provinces which restrict entry but do not effectively control trucking rates. The study gives some consideration to the broader concerns that have been used from time to time to justify regulation -- the concern over rates for trucking service to small communities, for example - but finds that these rationales do not stand up to critical examination. Accordingly it is proposed that regulatory controls be relaxed and market forces accorded an expanded role in determining the course and direction of events in the Canadian trucking industry.

# Chapter I

## INTRODUCTION

The general subject of trucking regulation has been one of the most heavily debated regulatory issues in both Canada and the U.S. in recent years. In the U.S. the debate recently culminated in the passage of legislation which substantially reduces the control the Interstate Commerce Commission has exercised for more than 40 years over the U.S. for-hire trucking industry. The Motor Carrier Act of 1980 reduces the barriers to entry facing new applicants, allows greater rate setting freedom, and provides for the elimination of a number of important restrictions on motor carrier activity. The U.S. reforms add a new element to discussions which are continuing in Canada at both federal and provincial levels. Already on the table are a number of reports and studies including: recent legislative committee reports on trucking in Ontario and Alberta; an investigation of trucking regulation in B.C. by the B.C. Department of Economic Development; and an examination of trucking in Newfoundland by the Commission of Inquiry into transport in this eastern-most province. There is now, in addition, an important contribution to the debate at the federal level from the work of the Interdepartmental Committee for the Study of Competition and Regulation in Transport.

While the specific issues and concerns vary between provinces and while the factors influencing transportation are quite different in Canada and the U.S., a number of familiar arguments run through the various inquiries and reports. Those favouring the maintenance of existing controls point to indicators of the efficiency and growth of the for-hire industry. In the idealized conception entry controls assure essential common services, encourage investment, contribute to improved safety, to greater stability and to higher general standards of service. Those on the other side of the issue just as consistently respond

by challenging the desirability of some of the perceived benefits (i.e., price stability, increased investment in trucking), by questioning the appropriateness of price and entry controls for the achievement of other benefits (i.e., safety, regional development) and by attempting to establish the high economic costs associated with economic regulation of the trucking industry. Trucking very often is portrayed by the opponents of regulation as a virtually perfectly competitive industry, in which market forces, left on their own would automatically produce an optimum output in the most efficient possible way.[1]

These arguments will be explored in the paper, but some preliminary observations can be made as a prelude to the more detailed discussion. It should be recognized, first, that evidence on the performance of the trucking industry is not in itself very helpful in analyzing the effects of regulation. The critical question is whether the industry's record of growth and productivity gains has been achieved <u>because of</u>, of <u>in spite of</u> regulation.[2] Secondly, the characterization of trucking as perfectly competitive neglects certain important aspects of the industry's structure and operations - particularly the existence of joint costs, the significant capital requirements of certain segments of the industry, and the heterogeneous nature of trucking output. At the same time it's necessary to appreciate that regulation itself is a highly imperfect mechanism. Some general concerns that have been expressed about regulatory decision-making are relevant in this respect - concerns about the close relationship that often develops between regulator and regulated, about the extent of the involvement of non-elected officials in policymaking, and about the inadequate opportunity regulatory hearings may provide for representations from concerned individuals and groups.[3] Aside from these issues there are the immense problems that are inherent in any attempt to apply conduct-related regulation to a complex multi-faceted industry composed by thousands of producers.[4] As George Wilson [1977] has stated, "a single firm monopoly is administratively easy to

regulate...; an industry with 11,000 to 12,000 separate entities in Ontario alone, now subject to route and entry authorization plus thousands more not yet regulated, creates administrative and enforcement problems of the first magnitude"".

A basic objective in trucking, as in all other industries, is to increase efficiency - to reduce the value of the economic resources that must be expended to produce a given value of service. There may also be non-economic objectives to be considered, such as the assurance of trucking service to small communities and the maintenance of high standards of road safety. It is necessary to evaluate the impact of regulation in the context of these general objectives. The specific question that must be addressed is whether there are alternate mechanisms which can contribute to improved efficiency and are, at the same time, consistent with society's broader social objectives.

In coming to a policy assessment it is necessary to weigh the problems that are likely to arise as a result of basic failures in the market for trucking services against the costs that are associated with what must inevitably be highly imperfect efforts to regulate this industry. A start on this is made in Chapter II, where the heterogeneity of the for-hire trucking industry along with the nature and complexity of provincial regulatory regimes are described. Chapter III focuses more directly on the central question by looking at the technology of trucking and what this suggests about the competitive environment in trucking in the absence of regulation. Chapters IV, V and VI look at the effects of regulation by examining respectively; market structure, prices and profits, and efficiency in the Canadian trucking industry. While Chapter III attempts to assess concerns about the inadequacy and inherent instability of trucking markets, Chapters IV, V and VI examine the relevance of concerns on the other side about the costs of trucking regulation. Chapter VII looks at the relationship between regulation

and some broader concerns which include: the provision of trucking service to small communities; the quality of for-hire trucking service; and the issue of motor carrier safety.

Notes

1 For example in a recent article Josephine Olson (1972) claimed that, "without the existence of regulation the motor carrier industry would appear to be one of the best examples of a perfectly competitive industry".

2 This is a criticism, for example, of the attempt by the Interstate Commerce Commission (1977) to gauge the benefits of regulation from the relative movement of the U.S. Wholesale Price Index for common carrier freight. The Commission noted that the WPI increased by 64.2 per cent between 1969 and 1975 while during the same period the common carrier freight rate index increased by only 41.0 per cent. This divergence was incorrectly translated into a saving of $3.7 billion in 1975 attributable to ICC regulation.

3 William Jordan (1972) has attempted to show that evidence on the effects of motor carrier regulation in the U.S. is consistent with the implications of the producer-protection hypothesis. The latter suggests tht effect of regulation is to increase or sustain the economic power of an industry.

4 David Gillen (1977) has noted the difference between structure-related regulation which simply defines the limits of a market and does not require a separate regulatory agency; and conduct-related regulation which requires judgements on market behaviour and performance. Only regulation in trucking is on the latter type.

## Chapter II

## THE TRUCKING INDUSTRY AND THE REGULATORY ENVIRONMENT

### a) The Canadian Trucking Industry

The Canadian trucking industry has grown rapidly in the post-war period and it now constitutes the country's most important mode of freight transport. Table 1 illustrates something of the nature of this growth and the dramatic change that has occurred in the importance of the rail and highway modes since the mid-sixties.

Table 1

Operating Revenues of Canadian Domiciled Freight Carriers

| | 1966 | 1976 |
|---|---|---|
| | - percentages - | |
| Rail | 55 | 41 |
| For-hire trucking | 30 | 44 |
| Water | 14 | 13 |
| Air | 1 | 2 |
| | 100 | 100 |

Source: CTC, Transport Review, March 1979

It is significant that though the highway mode accounts for almost half of the total operating revenue of all Canadian freight carriers it is responsible for only about 1/3 of the ton-miles being handled. While trucking revenue is significantly higher than rail freight revenue ton-mileage produced by the highway mode amounts to only about 20 per cent of that for rail. This serves to highlight the difference in the quality of service provided by these two modes, and the fact that the demand for trucking services represents a demand not just for carrying capacity, but for carrying capacity with certain distinctive characteristics.

The Canadian trucking industry consists of a diverse range of firms which individually and in aggregate produce a multiplicity of outputs. This diversity in production gives rise to a variety of possible systems of classification. Table 2 is based on Statistics Canada's procedure for segregating trucking establishment according to their operating revenue. (Data are

Table 2

Trucking Establishments and Revenue by Class - 1974

| Class | Operating Revenue of Class | % of Establishment | % of Operating Revenue |
|---|---|---|---|
| Class 1 | $2 million or more | 1.5 | 52.1 |
| Class 2 | $500,000-$1,999,999 | 4.6 | 19.3 |
| Class 3 | $100,000-$499,999 | 18.2 | 17.2 |
| Class 4 | $25,000 -$99,999 | 41.8 | 9.2 |
| Class 5 | less than $25,000 | 34.0 | 2.3 |
| | | 100% | 100% |

Source: Statistics Canada, Motor Carrier Freight and Household Goods Movers, Cat. #53-322.

provided for 1974 because more recent surveys exclude carriers with less than $100,000 in operating revenue.) This Table indicates that the industry consists mainly of small establishments with operating revenue of under $100,000 but that the relatively few very large establishments (with $2 million or more in revenue) account for over 50 per cent of total motor carrier operating revenue.

Almost 70 per cent of the operating revenue of the trucking industry is generated by firms which earn over 50 per cent of their revenue from general freight (based on published data for 1979). Dump truck operators and firms specicalizing in the carriage of forest products, and bulk liquids account for

just over 15 per cent of the industry's operating revenue. General freight tends to consist of smaller-sized shipments and it consequently involves greater handling and higher administrative expenses than specialized freight. A major element of expense for the general freight carrier is the terminal system required for the consolidation of these small shipments. Terminal costs are particularly significant for the large Class I carriers of general freight; a recent study by the CTC (Diamond, 1980) indicates that terminal costs as a proportion of total operating costs are twice as high for Class I general freight carriers as for the industry as a whole.

Another significant distinction is between common carriers and those carriers who provide services under contract to one or more shippers. In 1979, more than 45 per cent of trucking establishments were classified as contract carriers, but this segment of the industry accounted for only about 20 per cent of total operating revenue. This is a reflection of the lower costs of contract carriage which is due to the lesser market uncertainty in this segment and the tendency for contract shipments to be larger and less costly to handle.

An alternative approach to analyzing the industry is to focus not on carriers, but on trucking markets. Since even very similar carriers produce a very different mix of products, distinctions based on appropriate market definitions may be more meaningful and operationally more useful. A recent report issued by Transport Canada (1980) provides a profile of Canadian trucking markets in terms of some of their more important dimensions. For-hire trucking markets may be defined according to the type of commodity being shipped, the size of shipment, the distance the commodity is being moved, and the location of the movement and particularly whether it's intra-provincial or inter-provincial. Table 3 looks at inter- and intra-provincial shipments in terms of the distance commodities are being shipped. The table indicates that while over 50 per cent of the revenue

from intra-provincial shipments comes from movements of under 150 miles, the major portion (almost 40 per cent) of revenue on inter-provincial shipments is derived from shipments moving over 1,000 miles. The distribution of total shipments by distance reflects the greater importance of intra-provincial trucking; intra-provincial shipments account for over 85 per cent of truck tonnage and over 60 per cent of total carrier revenue.

Table 3

Inter- and Intra-provincial Shipments by Distance
(1975/77 average)

| | Intra-Prov. | | Inter-Prov. | | Total | |
|---|---|---|---|---|---|---|
| | % of Tons | % of rev. | % of Tons | % of rev. | % of Tons | % of rev. |
| 0 -150 | 73.4 | 50.4 | 17.0 | 4.7 | 65.8 | 33.2 |
| 151-300 | 19.1 | 27.8 | 11.1 | 4.8 | 18.0 | 19.1 |
| 301-500 | 6.3 | 13.5 | 30.7 | 26.1 | 9.5 | 18.2 |
| 501-1000 | 2.0 | 7.0 | 22.9 | 24.6 | 4.8 | 13.6 |
| 1000 + | 0 | .6 | 17.6 | 39.3 | 2.4 | 15.2 |
| All Distances | 100 | 100 | 100 | 100 | 100 | 100 |

Source: Transport Canada, 1980.

Table 4 divides trucking shipments according to their size. The distinction between inter- and intra-provincial shipments isn't as marked in this case, but inter-provincial shipments do fall more heavily into the smaller weight classes. The higher values attached to movements of small-sized shipments is apparent; while less than 10 per cent of all shipments are 5 tons and under, this type of output generates over 40 per cent of total revenue. The major portion of tonnage carried by the industry is comprised of shipments of between 20 and 50 tons.

Table 4

Inter- and Intra-provincial Shipments by Weight
(1975/77 average)

| | | Intra-Prov. | | Inter-Prov. | | Total | |
|---|---|---|---|---|---|---|---|
| | | % of Tons | % of rev. | % of Tons | % of rev. | % of Tons | % of rev. |
| 0-5 | tons | 8.7 | 39.9 | 16.3 | 44.3 | 9.7 | 41.6 |
| 5-20 | tons | 21.7 | 24.4 | 31.4 | 29.7 | 23.0 | 26.4 |
| 20-50 | tons | 63.1 | 33.3 | 49.7 | 24.7 | 61.3 | 30.1 |
| 50 + | tons | 6.4 | 2.5 | 3.3 | .9 | 5.9 | 1.9 |
| Total | | 100 | 100 | 100 | 100 | 100 | 100 |

Source: Transport Canada, 1980.

The higher price that is attached to small shipments is a reflection of the increased handling that is required and the greater expense that is associated with this type of carriage. A particularly important distinction in this regard is between shipments of truckload size which can be moved directly from origin to destination, and smaller shipments which must be consolidated and thereby require the use of terminals and their related operating facilities. Whether or not a shipment is truckload (TL) or less-than-truckload (LTL), will depend on the size of the shipment, its density, and the size of the vehicles in use. The Interstate Commerce Commission defines small shipments (a rough proxy for LTL carriage) as those under 10,000 pounds, and this definition is adopted in the Transport Canada study. The importance of terminal costs to firms specializing in small shipments (i.e. who earn 50 per cent or more of their revenue from shipments under 5 tons) can be clearly seen from the data in the Transport Canada study; while almost 1/3 of such firms had terminal costs of over 10 per cent of total costs, this was the case for only 5 per cent of the firms specializing in large shipments.

Table 5 examines the relative importance of small and large shipments in various geographic markets. It can be seen that large shipments are of greatest relative importance with respect to intra-provincial movement in Alberta and the Atlantic provinces. Small shipments are of most relative importance in inter-provincial motor carriage.

Table 5

Small and Large Shipments by Geographic Areas
(1977 data)

| | % of Revenue | | | % of Ton-Miles | | |
|---|---|---|---|---|---|---|
| | Small Ship. | Large Ship. | Total | Small Ship. | Large Ship. | Total |
| Intra-prov. Atlantic | 26.5 | 73.5 | 100 | 8.9 | 91.1 | 100 |
| Intra-prov. Quebec | 42.6 | 57.4 | 100 | 13.6 | 86.4 | 100 |
| Intra-prov. Ontario | 43.1 | 56.9 | 100 | 10.7 | 89.3 | 100 |
| Intra-prov. Manitoba | 42.2 | 57.8 | 100 | 14.9 | 85.1 | 100 |
| Intra-prov. Saskatchewan | 38.7 | 61.3 | 100 | 13.6 | 86.4 | 100 |
| Intra-prov. Alberta | 28.2 | 71.8 | 100 | 8.3 | 91.7 | 100 |
| Intra-prov. B.C. | 41.4 | 58.6 | 100 | 10.7 | 89.3 | 100 |
| Inter-prov. | 44.1 | 55.9 | 100 | 18.8 | 81.2 | 100 |
| Total | 41.5 | 58.5 | 100 | 14.9 | 85.1 | 100 |

Source: Transport Canada, 1980.

It has been noted that terminal costs constitute a major expense for Class I general freight carriers - much more so than for smaller carriers. The greater concentration of Class I carriers on small shipments can be seen from the data on inter-provincial movements in Table 6. A high proportion of small shipments have not been matched and therefore the relative importance of small shipments to each class of carrier is underestimated. Nonetheless the table does highlight considerable importance of small shipments to the large Class I carriers. It can also be seen that the emphasis on small shipments varies generally with size and it is the small carriers who derive the least proportion of their revenue from shipments under 5 tons.

Table 6

Inter-Provincial Shipment by Size and Carrier Class
(1977 data)

| | % of Revenue | | | % of Ton-Miles | | |
|---|---|---|---|---|---|---|
| | Small Ship. | Large Ship. | Total | Small Ship. | Large Ship. | Total |
| Class I | 44.4 | 55.6 | 100 | 20.2 | 79.8 | 100 |
| Class II | 25.9 | 74.1 | 100 | 8.8 | 91.2 | 100 |
| Class III | 19.3 | 80.7 | 100 | 6.2 | 93.8 | 100 |
| Unmatched | 73.5 | 26.5 | 100 | 55.0 | 45.0 | 100 |
| Total | 44.1 | 55.9 | 100 | 18.8 | 81.2 | 100 |

Source: Transport Canada, 1980.

b) Trucking Regulation in Canada

Development

The primary focus of this paper is on the economic regulation of trucking. This consists principally of rate and entry contols, but it extends to a range of related restrictions on the terms and conditions of transport which may have a very substantial impact on costs and on the efficiency of truck transport. Governments have attempted to influence the activities of participants in the trucking industry in a variety of ways, (some of the more important regulations are listed in Table 7) and the dividing line between "economic" and other rules and restrictions, such as those related to health and safety, industrial relations and macro-economic objectives, is often far from clear. Health and safety standards can have a very significant economic impact. At the same time economic regulations may have a significant safety component and economic controls on entry could facilitate the enforcement of safety regulation. This paper concentrates on price and entry controls and on those regulations which accompany and support price and entry control. Health and safety regulations, labour-related regulations, taxation and macro-economic regulation are largely ignored though in particular cases the interconnections between these controls and "economic regulation" are acknowledged and addressed.

The basic legislative framework for regulation of the trucking industry was established in the 1920's in some provinces, but it was generally around the mid-1930's that economic regulation of trucking began in a significant way. By the 1920s a significant road network had been put in place and trucking was experiencing a strong growth as shippers came to appreciate the highway mode's flexibility and its superiority to rail for many types of services. One of the earliest and most influential voices for regulation was that of the railroad interests who were concerned about the "unfair competition" rail

## Federal and Provincial Regulations Applying to Motor Carriers

Table 7

| Type | Level | Common | Contract | Private | Household |
|---|---|---|---|---|---|
| Entry, etc. | | | | | |
| Proving need | P | X | X | | X |
| Operating permit | P | X | X | | X |
| Arrange interline agreement | P | X | | | X |
| Acquistion permit | FP | X | X | | X |
| Subsidies | F | X | X | | X |
| File Tariffs | P | X | X | | X |
| Revise published tariffs | P | X | X | | X |
| Insurance | P | X | X | X | X |
| Labour Regulations (age etc.) | P | X | X | X | X |
| Vehicle Licences | P | X | X | | X |
| Operations | | | | | |
| Permit limits - routes | FP | X | X | | X |
| - interline | P | X | | | |
| - LTL-/TL | P | X | X | | |
| - dangerous | FP | X | X | | |
| - good | | | | | |
| - livestock | FP | | X | X | |
| - weight | FP | X | X | X | X |
| - dimensions | P | X | X | X | X |
| - load size (oversize) | FP | X | X | X | |
| - federal labour code | F | X | X | | X |
| - provincial labour code | P | X | X | X | X |
| - safety code | FP | X | X | X | X |
| - Lord's Day Act | F | X | X | X | X |
| - license reciprocity | P | X | X | X | X |
| - regulatory reporting | FP | X | X | X | X |
| - customs | F | X | X | X | X |
| - agricultural regulation | F | X | X | X | X |
| - health regulation | FP | X | X | X | X |
| - sales and fuel tax | FP | X | X | X | X |
| - municipal by laws - | | | | | |
| - hours | M | X | X | X | |
| - weights | M | X | X | X | X |
| - noise | M | X | X | X | X |
| - pollution | | | | | |
| - zoning | M | X | X | X | |

X - regulation applies
F - federal
P - provincial
M - municipal

Source: Transport Canada, Competition in Trucking Industry Conduct, August 1979.

was facing from the highway mode. The 1932 Report of the Royal Commission into Railways and Transportation (the Duff Report) reflected these concerns, claiming that "because (the railways) are essential and because the railway rate structure implies conditions approximating to a quasi-monopoly, the railways require, if they are to continue to operate efficiently, a measure of protection from long distance road competition and an equalization of the conditions under which short distance traffic is carried".[1] The Duff Commission recommended both the filing of tariffs and the application of a test of "public necessity and convenience".

The recommendations of the Duff Commission and the urgings of the railroads reinforced the pressure of the trucking industry for provincial governments to introduce controls on entry into the industry. The concern of the industry about the large numbers of small inexperienced operators entering the industry and creating conditions of "excess competition" were brought into sharp focus in the early 1930's. During this period, the erratic movement in various rates , the deterioration in service standards, the high rate of failures and exceptionally high level of turnover confirmed many of the worst fears of these who saw the need for some type of controlling influence. The entry restrictions which were imposed in the mid-30's in a number of provinces, including Quebec, Ontario, B.C. and Manitoba represented an attempt to provide greater stability and reduce the extreme uncertainty that was a concern to both carriers and shippers. In Ontario, for example, the Public Commerical Vehicles Act (which was originally proclaimed in 1928) was amended in 1933 to require applicants for a PCV licence to obtain a certificate of public convenience and necessity, in response to the perceived problem of excessive entry. In its 1934 Annual Report the Ontario Muncipal Board explains that, "it became quite apparent that truck licences were being granted by the Department of Highways in excess of the public demand, and as a result a policy was adopted to grant only such licences in the future as the service of the public required".

Provincial policies directed towards the regulation of the highway mode evolved in the absence of any federal initiative in the area. While explicit reference is made in the British North America Act to federal control of railways and water transport, there is no similar reference to highway transport; to some, provincial regulation of motor carriage was seen as a logical extension of the provincial responsibility for the construction of roads and highways. The presumption of provincial jurisdiction was successfully challenged in 1954. The Winner case established that "not only did the federal government have jurisdiction over extra-provincial motor transport --, but also that the intra-provincial operations of a company engaged in extra-provincial transport could not be seperated from the extra-provincial operations. Such operations were 'one and indivisible' and accordingly were under the exclusive jurisdiction of the federal government".[2] The federal government's response was to delegate its responsibilities to existing provincial regulatory agencies. The Motor Vehicle Transport Act of 1954 provided the provincial boards with the required authority to licence extra-provincial operations, and in so doing it left administration requirements essentially the same as they were prior to the Winner decision.

The practical effect of the federal delegation of responsibility, was that a carrier desiring to provide service from Nova Scotia to British Columbia had to justify his application for an interprovincial route authority before eight provincial regulatory boards. This creates obvious difficulties and there were to become more apparent with the continued rapid expansion of the motor carrier industry over the subsequent decade. The Canadian Trucking Association was unequivical in its criticism of the 1954 Act:

> We...emphasize that as an efficient method of administering control over the extra-provincial trucking industry, the Motor Vehicle Transport Act is a failure. Instead of promoting orderly healthy

> development of ... industry, the Act has fostered conflicting and inconsistent regulatory policies by the ten federal controlling bodies [the provincial transport boards]. The Act has militated against uniform and long-run continuity in extra-provincial regulatory policy. It has encouraged, rather than removed, parochialism in a geographical sense. It is an Act which today is removed from the realities of the extra-provincial trucking development of the past decade.[3]

Partly in response to such concerns the National Transportation Act of 1967 included a provision for the federal exercise of its jurisdiction over interprovincial road transport. Part III of the Act containing the relevant provision was proclaimed in 1970 but it has not yet been implemented (the CN Roadcruiser Case in Newfoundland, constituting a minor exception). Some provinces have attempted to work out agreements among themselves to reduce the impediments facing carriers crossing provincial boundaries and the federal govenment has been working with the Canadian Conference of Motor Transport Administrators to try and bring about unformity generally in important provincial regulations, affecting extra-provincial transport. At any rate, and notwithstanding the possible federal influence through such mechanisms in the shaping of povincial regulatory policies, the regulation of both inter-provincial and intra-provincial motor carriage continues to be a provincial responsibility. An analysis of the current state of trucking regulation in Canada, therefore, requires an examination of the policies of the ten provincial regulatory agencies.

## Provincial Regulations

Provincial regulatory regimes are described in detail in R.K. House (1977), Nix and Clayton (1979), and in Part I of the Transport Canada study (1979) on the The Institutional Framework of the Canadian Trucking Industry. The general approach of the provinces to rate and entry control is summarized in Table 8.

Table 8

| | REGULATORY AGENCY | ENTRY REGULATION | RATE REGULATION |
|---|---|---|---|
| NEWFOUNDLAND | Board of Commissioners of Public Utilities | intra and inter-provincial for-hire motor transport requires a certificate of "public convenience and necessity" | a few rates are prescribed; most others - both intra and inter-provincial - must be filed and approved |
| PEI | Public Utilities Commission | " | all tariffs must be filed with Commission |
| NOVA SCOTIA | Board of Commissioners of Public Utilities | " | tariffs must be filed (new rates must be on file within 15 days of change) |
| NEW BRUNSWICK | N.B. Motor Carrier Board | " | " (") |
| QUEBEC | Quebec Transport Commission | " | rates for both intra and inter-provincial carriage must be approved by the Commission |
| ONTARIO | Ontario Highway Transport Board, Minister of Transportation and Communications | " | tariffs must be filed (tariff change do not become effective until 30 days after filing) |
| MANITOBA | Manitoba Motor Transport Board | " | intra-provincial rates are prescribed by the Board; there is no regulation of extra-provincial rates |
| SASKATCHEWAN | Sakatchewan Highway Traffic Board | " | minimum and maximum rates are prescribed for intra-provincial general freight; a large number of commodities shipped intra-provincially are exempt from rate control; there is no regulation of extra-provincial rates; |
| ALBERTA | Alberta Motor Transport Board, Minister of Transport | intra-provincial trucking is not subject to effective entry control; extra-provincial trucking is regulated as in other provinces | there are no requirments with respect to rates |
| B.C. | B.C. Motor Carrier Commission | usual licensing requirements apply to intra and inter-provincial for-hire truck transport | most intra-provincial rates must be filed and approved by the Commission; rates on extra-provincial carriage are not regulated |

Among the more important features of provincial regulatory policy are the following:

(1) All provinces except Alberta control entry into intra-provincial for-hire trucking; all provinces control entry into inter-provincial trucking. (Exemptions from licensing requirements, are generally extended to private trucking intra-urban trucking, and the initial for-hire movement of unprocessed products of the farm, forest, mine or sea.)

(2) Licensing restrictions may extend to one or more of: origination and destination points for shipments; routes that may be followed; intermediate points that can be served, freight to be carried; equipment to be used; persons to be served; and frequency of service.

(3) Any changes, including amendments to a license, sale or transfer of a license and discontinuation of a service, require approval by the provincial regulatory board.

(4) All provinces except Alberta impose some requirements on rates applying to intra-provincial transport. The most modest requirements are in Nova Scotia and New Brunswick where rate changes can be filed subsequent to their introduction. In Ontario a rate change must be filed 30 days before becoming effective. Quebec, B.C. and Newfoundland generally require that rates be filed and receive approval of the relevant authorities. Saskatchewan prescribes minimum and maximum rates for general merchandise but excludes a number of important commodities including grain, gravel, lumber and livestock from any rate control. Manitoba, with the most rigid requirements, prescribes the rates that are applicable for intra-provincial freight, according to a standard tariff of tolls; exceptions to the standard rate have been approved for specific commodities and certain specialized shipments.

(5) Newfoundland and Quebec are the only provinces that require rate approval for extra-provincial freight. There is a theoretical possibility for a conflict to arise on rates applicable to shipments between these two provinces, though the minimum attention accorded extra-provincial rates makes this unlikely.

To understand the extent and nature of regulation in the trucking industry, it is necessary to look not just at the "form" of regulation, but also at the manner in which provincial powers are exercised. Such an examination is complicated by the differences between provinces and by the fact that the regulatory approach of individual provinces may change significantly over time. In interpreting "public convenience and necessity" and other matters, the courts have made it clear that provincial regulatory boards possess complete descretion. Cole (1971) has noted that in Ontario the public necessity and convenience criterion "is nowhere defined and unfortunately there is a paucity of case law, if not a total lack of it, as to decisions of the Board".[4] The regulatory climate within a province is determined not just by provincial legislation and the manner in which boards exercise their wide powers to interpret and apply that legislation, but also by the rigor with which regulations are enforced. When these factors are considered there may well be important differences between de jure appearances and de facto realities.

There is limited data suggesting that at least for some provinces the approval rate on applications for motor carrier licences tends to be fairly high. In Ontario the percentage of applications refused in 1975 and 1976 was below 20 per cent in all but a few classes.[5] A study of applications in Ontario over 1977/78 (Manouchehri et. al., 1981) found a slightly higher refusal rate of about 25 per cent. In British Columbia an examination of the applicants disposed of over a 4 month period in 1977, came up with an approval rate of over 90 per cent.[6]

The success rate on all applications, which takes into account applications withdrawn and not pursued is somewhat lower, but still rather favourable for an industry which is presumed to be characterized by significant regualtory barriers to entry. These data, however, exclude all those potential entrants that are deterred from applying for licences by the costs and delays of the regulatory process, and the difficulty of meeting regulatory requirements. Since the costs of making an application and responding to the opposition of existing carriers can be substantial (as will be discussed in a later chapter) the data on licence applications provide a highly misleading impression of the extent of barriers to entry in trucking. The data also do not convey the extent to which "successful" applicants have been denied thier original preferences through the imposition of licencing restrictions. It is significant, moreover, that a very high percentage of applications tend generally to come from existing firms. This is the case in both the B.C. and Ontario examples; in Quebec close to 85 per cent of all new permits are issued to existing firms. In Ontario, despite the apparently high rate of licence approval, there were fewer licenced carriers in 1975 than in 1965, in about half the designated classes of carriage. The important "A" class in Ontario, which allows the licencee to operate a general merchandise shipping operation over named routes, had 355 carriers in 1975, only slightly more than the 325 carriers first recorded back in 1928; over the same period the number of licenced vehicles in the "A" class increased from 945 to 13,544 to deal with the greatly increased volume of traffic.[7]

An examination of the interpretation given to the "public convenience and necessity" criterion tends to support the view that provincial regulations have constituted a substantial impediment to entry into the industry. While there are some differences in the attitudes of the different provincial boards there seems to be a fairly common perception that the regulator's primary responsiblity is to ensure stability in the

industry and, especially, to prevent a recurrence of the conditions that led initially to the introduction of regulation. The boards are generally concerned about the adequacy of service to various regions, but this is mainly secondary to their concern over the impact of new entry on the financial health of existing carriers. The boards' sensitivities to the concerns of existing carriers is reflected in the general tendency to place the onus of proof on applicants to establish that the entry criteria are satisfied. The British Columbia Motor Carrier Commission has maintained, for example, that "the burden is upon the applicant -- to establish by substantial evidence that there is a need for this service and that the existing facilities are inadequate to meet such needs".[8]

As a result of their concern over the consequences of entry for existing firms the boards have tended to take a fairly restrictive view of what constitutes proof that there is a demand for an aspiring entrant's services. An applicant's ability to provide a unique service can provide an important advantage, but if this service could impact significantly on existing firms the latter is likely to weigh more heavily on the board's decision. In its 1966 decision an application of Trans-Provincial Freight Carriers Limited for a service between Toronto and Sudbury, the Ontario Highway Transport Board suggested that the most important consideration was whether "the shippers and consignees in Sudbury and Toronto (were) receiving a satisfactory and adequate service from the presently licensed carriers"[9]; the implication of the decision is that where existing service is judged to be adequate other considerations, including the uniqueness of the service being offered, are of little consequence. In a more recent decision the Manitoba Motor Transport Board rejected an extra-provincial carrier's application to replace existing interline arrangements with a direct freight service from Eastern Canada to rural Manitoba; though the new service offered the promise of lower rates the Board was concerned about the "erosion of freight from short-line carriers and the consequent threat to

their viability".[10] New entry can have a beneficial impact on cost and prices and thereby on the demand for for-hire services, but this source of increased demand tends to be rejected as an element of "public convenience and necessity". The B.C. Board has indicated that "the question of rates is not a determining factor in deciding whether the public convenience and necessity require additional service".[11] The Ontario Board has made it clear "that rates are not a factor in determining public necessity and convenience, unless it is established that the existing rates are unreasonably high or exorbitant".[12] Boucher (1980) has noted the Quebec Transport Commission may view lower rates as a negative factor since "this tactic could endanger the financial stability of (existing) firms". The stongest case for new entry can be made in those cases where existing carriers are providing clearly inadequate service. The growth of economic activity in a region is often a justification for new entry; however it would appear that the increase in the number of carriers does not bear a fixed relationship to the growth in economic activity, but rather is subject at least in part to the efforts of existing carriers to expand their operations.

A recent study (Manouchehri et. al., 1981) in which logit analysis is applied to the decisions of the Ontario Highway Transport Board over 1977/78, provides support for the view that the boards are highly protective of existing carriers. The analysis found that one of the main factors explaining a negative decision by the Ontario Board was the strength of existing carrier opposition, as indicated by the number of respondents to an application. Those applicants who are willing to amend their application in response to an intervention by an existing carrier would appear to stand a better chance of obtaining a licence. The probability of a successful decision also bears a positive relationship to the size of the applying firm. The study suggests, on the other hand, that witnesses who appear to help demonstrate the need for a new service have virtually no influence on the probability of a licence being granted.

A further piece of evidence, and one which puts a somewhat different perspective on the extent of barriers to entry, comes from the available information on enforcement. A number of provinces have been notoriously lax in their enforcement efforts. The fair probability that violations will go undetected combined with what are often insignificant fines on conviction have made the so-called "back door" a reasonably attractive means of entry into some segments of the industry. The Ontario experience is instructive. The Select Committee noted that in 1975 there was 639 convictions in the province for operating without a licence and 293 convictions for operating contrary to the terms of a licence; the average fine for these convictions was only about $70. For the licenced operator the real sanction arises from the likelihood that a conviction will prejudice his application for a new authority, and the much more serious danger that a series of convictions will put his existing operating licence in jeopardy. These penalties are thought to provide a reasonably effective deterrent against violations by licenced carriers.[13] The efforts of the Ontario Ministry to prevent violations by unlicenced carriers, however, are generally regarded as being much less successful. The major danger faced by an unlicenced carrier is that repeated violations could lead to a cancellation of his licence plates; however, illegal operators have largely been able to avoid the consequences by simply transferring the ownership of the offending vehicle. The enforcement problem has been exaccerbated by the ability of unlicensed carriers to undertake activities which violate the intent though not necessarily the terms of the legislation. Most concern has focussed on the so-called leasing operations, which lease vehicles along with drivers; while the law requires licencing for this type of operation individuals have evaded this requirement by establishing the leasing and driver pool facets of the business as distinct legal entitles. An altertative form of circumvention has involved the carrier purchasing the freight at origin and selling it at the destination after he has made the delivery as an exempt private carrier. A recent amendment to the

Public Commercial Vehicles Act of Ontario (Bill 89) includes a number of provisions designed to respond to these problems and facilitate enforcement; the new Bill allows licence plates to be issued to individuals rather than to vehicles, it provides a specific penalty for operating without or outside the terms of an operating licence, and it makes shippers liable for the knowing use of unlicenced services.

Enforcement problems have not been unique to the province of Ontario. Attempts to circumvent legislation through "pseudo-private" and "pseudo-leasing" activities have been of great concern in B.C. There is also some indication of the failure of enforcement efforts in B.C. to prevent the development of considerable illegal carriage.[14] Boucher has noted that in Quebec the minimal fines for violaters - averaging about $50, and lax surveillance have helped to make illegal trucking a significant competitive element in the peripheral zones of the province's urban centres. In both Manitoba and Saskatchewan, though the broad scope of formal licencing requirements in these provinces facilitates enforcement and though here as in other provinces the complaints of licensed carriers support official surveillance efforts, there is a general view that the resources devoted to enforcement are inadequate to the task.

The effects of unlicensed entry are concentrated on a certain segment of the trucking industry: TL carriers of general commodities, and mainly that sub-group of TL carriers operating between main urban centres. Unlicenced trucking is not a factor in the LTL market where the need for terminal facilities gives rise to a more permanent and more visible type of trucking operation. While it is difficult to determine the true extent of unlicenced trucking, it would appear that illegal and quasi-legal activities have considerably eroded the control of the boards over entry into the TL general commodity segment of the industry.[15] To the extent that illegal activities do entail a cost, however, regulation still impedes entry into TL trucking.

A rational calcualation based on expected gains and expected costs of violating the law would attach some weight to recent concerns over illegal activity in the industry and to the probability in the future of both increased enforcement and much higher fines (extending quite possibly to the loss of the vehicle); such a calculation would also take into account some of the potential longer-term consequences of a convinction, including its effect on the individual's future ability to obtain an operating licence. Illegal entry both because of its costs and because of its differential impact on individuals with differing risk propensities is not a perfect substitute for free entry. Nonetheless it would appear that this alternative has very substantially reduced the control of regulatory boards over entry into TL general commodity trucking.

Similar questions about regulatory practice arise in connection with rate regulation. The main interest here centres on those provinces which appear to be attempting to exert some control on tariff levels. Rate filing, such as required in Ontario, limits the flexibility of carriers and the speed by which they can respond to market developments, but it does not constitute a serious restriction on the ability of carriers to establish their own rates. Tariff bureaux (which are discussed in Chapter IV) are perhaps a more serious limiting influence in Ontario, but neither do they represent a rigid constraint in the sense of preventing carriers from setting whatever rates are deemed appropriate. In the provinces of Nova Scotia and New Brunswick where a rate change can be filed up to 15 days after it is in effect, the filing requirement is an even less important factor. The situation would appear to be quite different in those provinces, such as Manitoba and Saskatchewan, which prescribe rates on some intra-provincial shipments, and in provinces, such as Quebec, Newfoundland and B.C. which require filed rates to be approved. While Quebec and Newfoundland require rate approval for inter-provincial as well as intra-provincial motor carrier freight it is the latter which is the main focus of provincial efforts at rate regulation.

In Manitoba the Board prescribes rates for intra-provincial shipments in the form of a "single price structure" (SPS), while approving of adjustments to this standard weight-distance density tariff for specific commodities and certain specialized shipments. Submissions for an adjustment to the SPS tariff are considered in a public forum. While there is some concern about adherence to the prescribed rates by carriers handling the goods of very small shippers, there is an important element of policing which is undertaken by the large shippers who are familiar with the prescribed rate structure, by shipper associations and by the tariff bureaux. It would appear that for the most part the Board is quite effectively regulating intra-provincial rates in this province.

Like Manitoba, Saskatchewan has traditionally been an active regulator of intra-provincial trucking rates. Over the 1970's this province has moved from rate prescription to the present system of establishing minimum and maximum rates for general merchandise and allowing a large number of exceptions and exemptions. General merchandise carriers have virtually complete freedom in setting and changing rates as long as their changes are within the range established by the Board. The Board has approved filed rates different than the prescribed tariff for such things as bulk movements, petroleum products, steel pipe and brewery shipments of beer. In addition a large number of commodities, including grain, gravel, livestock, certain chemicals, eggs, concrete blocks, cement, etc., are exempt from any rate control. Rate control is therefore, both more limited in coverage and less rigid in Saskatchewan than in Manitoba. The existing system, however, provides the Saskatchewan Highway Traffic Board with effective control over rates on most intra-provincial general merchandise shipments; and, indeed, since the present rate system is relatively easy for shippers to understand it provides for more effective rate control in this limited area than the earlier system of firmly prescribed rates.

The situation in the three provinces which emphasize rate approval is more difficult to assess. It would appear that a very high percentage of rate applications are approved in these provinces. In B.C. generally over 90 per cent of the rate applications receive acceptance; the applicants for rate amendments tend to be recontacted by Board personnel in only a small minority of the cases and rate hearings in B.C. are very rare. The Quebec Transport Commission similarly approves an extremely high percentage - generally over 90 per cent - of the requests received for rate changes. The attention given by the Newfoundland Board to rates would appear to have increased in recent years, and this Board does give active consideration to a significant portion of rate proposals. It is conceivable that the regulatory boards in all the "rate-approving" provinces influence, both directly and indirectly, the nature of the rate applications themselves, but there is no evidence that this is a major factor. Notwithstanding their generally permissive approach to rates, the boards in Quebec and B.C. may take a particular interest in certain types of carriage, where particular vulnerable groups are involved. In B.C., for example, the Board evaluates with some care the submissions of household goods movers. The enforcement of established tariffs, however, is generally agreed to be a major problem in these provinces; minimal resources are devoted to enforcement and the complexity of the rate structure makes unofficial surveillance by shippers and carriers themselves difficult. It would appear that, with the possible exception of Newfoundland, rates are not being very effectively regulated in the "rate-approving" provinces.

The conclusions of this section can be briefly summarized:

(1) The interpretation given by the boards to the test of "public convenience and necessity" makes the licencing requirement a very major obstacle to entry into for-hire trucking.

(2) Regulatory control over entry in TL general commodity trucking has been substantially eroded by lax enforcement. For this segment of the industry the effective barriers to entry have been greatly reduced - though not completely eliminated.

(3) Rates on intra-provincial shipments are effectively regulated in Manitoba and Saskatchewan except where there is a provision (as there is in a number of cases in Saskatchewan) specifically exempting a commodity from rate control. The rate-approving provinces of Quebec and B.C. do not for the most part effectively regulate rates, though these provinces may have limited success in controlling certain specific types of rates which are of particular concern to the regulators.

1 Canada, Royal Commission of Inquiry into Railways and Transportation in Canada, Report, 1931.

2 Schultz (1976), p. 186.

3 Canadian Trucking Association, "The Need for New Federal Legislation to Control Extra-Provincial Highway Transport", December 1965, p. 2. Quoted in Schultz (1976), p. 189.

4 Cole (1971), p. 114.

5 This is based on data published in the Ontario Highway Traffic Board Annual Reports. About 60 per cent of the applications are disposed of at public hearings, the remainder being heard in chambers.

6 This is based on an unpublished study prepared by the Centre for Public Sector Studies, University of Victoria.

7 The source for this is Appendix P of Ontario Select Committee final Report.

8 The Bonny Taxi decision of July, 1974, quoted in Nix and Clayton (1979), B.C.-p. 30.

9 Appendix 2G to the Submission by the Ontario Trucking Association to the Select Committee on Highway Transportation of Goods.

10 Quoted in Nix and Clayton (1979), Manitoba-p. 28.

11 Quoted in Nix and Clayton (1979), B.C.-p. 30.

12 Quoted in Nix and Clayton (1979), Ont.-p. 39.

13 This is the view of the Ontario Ministry of Transportation and Communication as expressed in its testimony before the Ontario Select Committee (Part II, p. 82).

14 It has been noted that over a particular period in 1978 when there were increased resources devoted to detecting illegal activity, the number of violations increased substantially. This suggests that there is considerable unlicenced activity which is undetected and undeterred by normal enforcement practices in the province.

15 The Ontario Trucking Association has claimed that the revenue going to illegal trucking is about 10 per cent of that earned by licenced motor carriers. The basis for this estimate is not known. (Canadian Transportation and Distribution Management, Nov. 1976, p. 21).

# Chapter III

## MARKET STRUCTURE AND COMPETITION IN AN UNREGULATED TRUCKING INDUSTRY

The argument for regulation of trucking arises in large part out of concern about the structural characteristics of the industry and the inherent threat these structural features pose to the development of reasonably stable, workably competitive markets. The threat of destructive competition is frequently put forward as the key rationale for regulation of trucking, and as noted in the previous section, this concern was a significant factor in the decision by the provinces to introduce regulatory controls. As opposed to the concern over destructive competition, government intervention may be prompted because it is feared that the cost characteristics of an industry are likely to lead to a monopoly or to market dominance by a few large firms. Trucking is not generally regarded as a natural monopoly, but some observers have suggested that economies of scale are significant in this industry and that the realizatiuon of these economies could lead to a non-competitive structure in certain markets. This section will focus on the issues of "destructive competition" and "economies of scale" with a view to determining in a general way if structural characteristics may impede the performance of the trucking industry. The failure of a market to perform efficiently does not of course in itself provide a justification for regulation. What an examination of structural traits can provide is some indication of the scope of any economic gains (excluding, for now, economic costs) that are potentially attainable from government intervention.

### a) Destructive Competition

The features of a destructively competitive market were portrayed in lurid detail by the 1962 Newfoundland Royal Commission on Truck Transportation (as quoted in McLachlan 1972):

> The virtue which truck transportation has of requiring a relatively small investment per unit becomes with lack of proper regulations, a vice. Too many people go into the truck business for hire. Cutthroat competition follows, rates are slashed far below the cost of service, some operators work their drivers beyond a safe limit of hours and others are compelled to follow suit or lose business; equipment deteriorates to the accident point, and proper depreciation is not provided for, with the result, ultimately, that the public gets poor service, the operators go into bankruptcy; the employees are inadequately paid; regrettable accidents happen, and everyone concerned suffers. The bankrupt operator emerges from bankruptcy only to go into business again, or someone else takes his place, making a small down payment on new equipment and goes through the same demoralizing process again.

It is possible that as a part of the normal course of adjustment in a dynamic economy prices in some markets will temporarily move below the long run costs of production. Certainly if the competitive process is working it is to be expected that prices will move below the costs of the most inefficient producers and that failures will result. What is disturbing in the destructive competition scenario is the implication that the market has a tendency to excess capacity and that this is likely to result in prolonged and recurrent outbreaks of ruinous price competition.

Scherer (1970) identifies two chief prerequisites for destructive competition: capacity substantially in excess of current and probable future demands, and rigidities which retard the reallocation of capital and/or labour toward growing industries. If firms are to operate at a loss for an exteneded period of time it is also necessary that fixed or sunk costs comprise a large percentage of total costs. Excess capacity may arise as a result of unstable or declining demand, but it is imperfections in the market which exaccerbate the problem and

prevent normal adjustments from occuring. The more notable imperfections are, immobility of capital and labour, and imperfect knowledge leading to unrealistic expectations on the part of investors. Inadequate consumer knowledge can permit a deterioration in service quality and contribute to the chaotic conditions observed above by the Newfoundland Royal Commission.

Kahn (1971) considers in some detail the question of whether trucking has the attributes of an industry subject to destructive competition. His conclusion is "that it would be difficult to find (an industry) less qualified". Trucking firms have a relatively high ratio of variable to total costs which means that price cannot fall below average costs for extended periods of time. Diamond (1981) indicates that the Canadian industry conforms to the general characterization of trucking as having relatively low fixed costs. The main revenue equipment assets of the industry, moreover, have some unique advantages in terms of allowing firms to adjust capacity to demand: trucks, have a life of about 7 years, so investment decisions can be reassessed within relatively short periods of time[1]; the investment in any one piece of equipment is small in relation to total capital thereby permitting capacity to be increased in small increments; trucks are mobile and in the absence of regulatory restrictions capacity could be easily transferred from one market to another.

The destructive competition of the 1930's is attributed by Kahn to the severely depressed economic conditions of that period which made the supply of inputs to the trucking industry inelastic and even negatively elastic. Workers who had no alternative employment opportunities became owner-operators of service stations, farms, trucks etc., and in these industries the supply of labour expanded in spite of declining remuneration. The supply of trucking service thereby became highly inelastic with prices and output reacting to the fall in demand much as in the case of industries characterized by heavy fixed investment.

It is clear that the conditions that emerged under these unique set of circumstances are an inappropiate guide to the nature of competition within the trucking industry. Employment conditions are very much different today, and unionization and comprehensive unemployment compensation have removed the possibility that the supply of labour could again come to be characterized by extremely high inelasticity.

The prevalence of joint costs in trucking - the fact that the provision of capacity for a one-way shipment inescapably involves the provision of similar capacity for the return haul - has been pinpointed as a possible source of destructive competition. This argument focuses on the low level of marginal costs and rates (under competitive conditions) that are likely on a return haul; with the back haul of one carrier being the front haul of another, the contention is, front haul rates can be pushed towards unremunerative levels. As Kahn points out, this situation is that of a joint product and there is a determinant competitive solution to the prices of the two joint services. How the joint costs between forehaul and backhaul are distributed depend on the relative intensity and elasticity of the two demands. The equilibrum prices will be equal to the respective marginal opportunity costs of the two products. The distinction between front and back haul gets determined by the preponderant flow of traffic and under competition, "front" and "back" become the same for all carriers. Any tendency for aggregate revenues for carriers' round trips to fall below joint costs would arise from excess capacity; however, the ready adjustability of capital (as described above) makes chronic excess capacity unlikely in this industry.

It has been contended - most notably by Spychalski (1975) - that Kahn's characterization of trucking ignores the nature and importance of the capital requirements of certain segments of the industry. Less-then-truckload carriers may

require a substantial investment in terminals, intermediate point handling facilities, sophisticated computer and information systems as well as their fleet of trucks and trailers. These firms, as well as some of the specialized carriers may have substantial threshold costs and a much higher ratio of fixed to total costs than indicated by aggregate industry data.[2] The capital of these firms would be much more durable and much less mobile than in the case where vehicles constitute the firm's major capital asset. These supply function traits are most relevant for the large less-than-truckload carriers who are faced with meeting the capital requirements of a complex network extending over a wide and, in some cases a greatly extended, geographic area. High fixed costs, however, are not a sufficient condition for destructive competition. The large LTL firms are not unique because of their relatively high capital requirements; the ratio of fixed assests to total assets extends above 50 per cent for the major firms in a number of industries, which are not characterized by destructive price wars. The sophisticated technology and management skills which support market decisions in these industries are also inputs into the decision process of large LTL carriers. Moreover, the fact that individual terminals do not in themselves constitute a major investment and terminal locations can be extended or reduced gradually, provides the LTL carrier with a greater flexibility than most capital intensive firms which require large lump sum capital outlays.

More generally, there is no reason to expect the trucking industry to be particularly prone to excess capacity. Demand is not declining - indeed it has grown over time at a fairly rapid rate - or unstable. (Particular segments of the industry are subject to cyclical variations in demand, but these movements are predictable.) Competitive conditions may have been influenced by "ignorance and exaggerated ideas of possible profits" during the depression, but it is unreasonable to expect that this "infant" industry has not matured over time. While the supply of potential entrants remains fairly elastic for segments

of the industry with easy entry and low capital requirements, the great mobility (and short durability) of the assets of firms in this segment of trucking removes the threat of prolonged or pronounced excess capacity.

The evidence that is available from foreign experience and from the record of unregulated intraprovincial firms in Alberta supports the contention that trucking is not subject to destructive competition. While it's necessary to exercise caution in interpreting the relevance of foreign experience it's significant that in a number of countries which have deregulated their industries to some degree there was also concern about destructive competition. To the question of whether the trucking industry is in this respect inherently different from other industries in these countries, subsequent experience would suggest the answer is, 'No'. In the U.K. where entry restrictions were removed in 1968 (but where capacity restrictions and rigorous safety standards are enforced) the industry is generally regarded as stable. Indeed, there is some evidence that even in the inter-war years when there was supposedly chaotic conditions in the industry the rate of failure in trucking was below that of many other industries (MacLeod and Walters, 1965). In Australia all forms of interstate transport were freed from regulation by a 1954 decision of the Judicial Committee of the Privy Council. Immediately after regulation was lifted there was a temporary period of rate wars as established operators attempted to fight off intruders; by 1957, however, "a state of uneasy equilibruim has been obtained". In looking generally at Australia's experience Joy (1964) reports that "the instability and destructive and wasteful competition so frequently forecast by established road haulage interests as being the inevitable outcome of free entry have not been apparent. While there is an inevitable turnover of haulers, the road haulage industry in its dealing with users is stable and efficient". In Alberta the information that's available depicts a highly competitive industry but one which is able to provide shippers in that

province with a very satisfactory level of service. The evidence on profits and on service quality in Alberta, which is reviewed in later sections of the paper, is not at all consistent with the destructive competition scenario. What is perhaps most significant is the fact that in none of these jurisdictions has it been necessary to reimpose entry regulation.

b) Economies of Scale

Quite distinct from the concern over destructive or excessive competition is an alternative contention - that trucking markets may be subject to too little competition. Trucking is clearly not a natural monopoly in the strict sense in which there is decreasing unit costs over the entire extent of the market. Nonetheless if there are important economies of scale in trucking - that is, if long run unit costs of production can be significantly reduced by increasing the "size of plant" - there may be reason to be concerned about the tendency towards concentration that would arise in particular markets. To come to terms with this issue it is necessary to look at the nature and extent of available long-run economies in trucking, and the relationship between the output produced at minimum efficient scale and the total level of output demanded in various trucking markets.

Most of the important work on economies of scale has focused on the experience of the U.S. trucking industry. These studies are nonetheless highly relevant, for they can indicate what the technology of trucking implies about optimal production scale in the industry. Along with this work we will examine recent efforts to estimate cost structures in the Canadian trucking industry, and we will look at what the results imply about the competitive environment in an unregulated trucking industry.

Cost Studies of the Industry

The principle sources of economies of scale are indivisibilities in factor inputs (which allow larger firms to utilize cost-saving machinery which cannot be profitably introduced by smaller firms), and reductions in uncertaintly (deriving from the increased ability of larger firms to spread risks). It has be pointed out, for example, that there are certain economies associated with increased truck size since the larger vehicle allows greater ton-miles of output with minimal increases in driver and fuel costs. In this connection there has also been some emphasis on the relatively high fixed costs of LTL carriers who must maintain a complex network of terminals and the requisite staff, vehicles and equipment to serve this network. These aspects of trucking costs, however must be interpreted with care. The economies deriving from indivisibilities in operating trucks and terminals are minimal. The high terminal and related capital outlays of the large LTL carriers have important implications for short run costs (and the size of the cost penalty for underutilizing facilities), but they do not in themselves suggest that unit costs are lower for firms with larger operations and a more extensive network of terminals (i.e. that there are long run economies of scale). What these general considerations suggest is that there is probably some minimal level of output required to exhaust the economies associated with operating large trucks and efficiently utilizing minimuim size terminals; very small trucking firms that cannot take advantage of these basic economies would be likely to have significantly higher unit costs of production.

There may be economies of scale associated with production beyond this minimal level, but it is not at all obvious why the long run average cost curve should continue to move significantly downward as output increases. Several possible bases for falling costs have been put forward. The ability of larger firms

to utilize computer technology and advanced communications systems could be a significant source of economies. Wyckoff (1974) has singled out the influence of management style and structure claiming that the relatively informal organization and procedures adopted by firms in the middle size range (with between $1 and $5 million in revenue in the U.S.) has increased their costs relative to both small firms (which are suited to the more informal organization) and large firms (which have already made the transition to a more formal and structured management system). Lawrence (1978) has emphasized the sophisticated management approach of larger organizations and the benefits such as higher average truck loads, that could be derived therefrom. There is also, as was mentioned, the general capacity of large organizations to spread risks and reduce the costs of uncertainty. As the number of shippers being served increases, expected fluctuations in demand will diminish and the requirement for reserve capacity to meet sudden spurts in demand will decline accordingly.

It's necessary to consider not only the significance of any available economies but the point at which they are likely to be offset by the diseconomies of large scale production: very large organizations are likely to be faced with extra costs of control and co-ordination; large LTL carriers with break-bulk operations must incur the higher costs associated with rehandling freight; and carriers with larger terminals may have added expenses resulting from the need to move freight a greater distance within their terminals.

Attempts to empirically document the nature and extent of economies in trucking have been seriously complicated by the heterogeneous nature of trucking output. As indicated previously, the output of a TL carrier is quite different from that of a LTL carrier. For each major type of carrier, moreover, the costs and nature of the service that is provided will vary substantially depending on the commodity that is being

transported. The size of the shipment and the length of the haul will also influence the production of transport services: the resources required for the movement of 1000 ton-miles will be quite different when this involves hauling 100 tons a distance of ten miles, and hauling 10 tons, 100 miles.

A number of the U.S. studies have been criticized for their failure to adequately adjust for these differences in product mix. This criticism has been applied to the work by Mark Ladenson and Alan Stoga (1974)[3] and to the earlier attempts by Roberts (1956)[4], Emery (1965)[5] and Robert Nelson (1956)[6] to divide firms into homogeneous groups, and analyze the relationship between costs and output. Most of the recent work on economies of scale has involved the use of multiple regression analysis in an attempt to control for quality differences in the outputs of different carriers. Typical of the U.S. studies in this vein is the research by Klem (1978) in which carrier costs are regressed against number of shipments carried, average length of haul, the average weight of a shipment, and a set of dummy variables to represent geographic differences. This study draws on earlier research by Warner (1965) and is similar to recent studies by Chow (1978), Lawrence (1976) and Kroenker (1977).

In a recent paper Spady and Friedlaender (1978) argue that the approach taken by Klem, Chow and others is inappropriate for output, such as trucking services, which are characterized by a continuum of qualities. Instead of treating quality levels as separate goods in the usual way, Spady and Friedlaender treat output as a function of a generic measure of physical output and its qualities. The general hedonic cost function estimated in this study has important advantages in that it allows consideration of continuous qualities and non-homethicities in the structure of trucking firms' production (i.e. the flexible form of the cost function allows factor shares to change as output changes).

These studies of the U.S. trucking industry do not provide strong evidence for the existence of economies of scale. There seems to be general agreement that economies are not present in the TL segment of the industry. With respect to LTL carriage, however, the evidence is mixed. Warner found significant but weak economies for LTL and his findings are generally supported by the work of Lawrence and Chow. The study by Chow suggests that within the LTL segment economies of scale are most significant for short and medium-haul carriers. The research by Spady and Friedlaender, Koenker and Klem , suggest on the other hand, that significant economies of scale do not exist beyond a very low level of output, and that larger firms may in fact be subject to mild, diseconomies of scale. The latter studies point to a minimum efficient scale for Class I carriers of general freight of something over 5 million ton-miles per year of output; this size range corresponds to the smallest Class I carriers in the U.S. According to Spady and Friedlaender the main advantage of larger firms is their ability to achieve greater "economies of density and utilization"; when appropriate adjustments are made for the different characteristics of the shipments handled by small and large carriers, - including particularly length of haul and load size - economies largely disappear. The greater ability of larger firms to realize these economies of utilization is attributed to their more complete and more favourable system of route and operating authorities. In other words the economies of scale which have been observed in the U.S. industry are largely a result of regulatory restrictions, not of trucking technology.

It should be noted that none of the studies attempt to adjust for potentially important quality distinguishing variables, such as speed and delivery of service, extensiveness of coverage, loss and damage experience, etc. If large carriers produce a superior service, as some have suggested, failure to account for the additional costs of providing this service would reduce observable economies of scale. It may also be the case, as Roger Noll (1978) has stated, that the "data is too weak to

allow detection of any aspect of the production process that does not have extremely robust, consistent effects of great magnitude".

This same reservation applies to recent attempts by Chow (1981), Cairns and Kirk (1981), and McRae and Prescott (1981) to estimate economies of scale in the Canadian trucking industry. All three studies focus on intraprovincial carriers in Alberta, Ontario and Quebec. The studies employ very different methodologies but in each, as in the U.S. research, considerable effort is devoted to standardizing the data for differences in traffic characteristics so as to isolate the relationship between output and costs. These studies find much stronger evidence of economies of scale than suggested by the U.S. research. McRae and Prescott, for example, find the sum of the elasticities of cost with respect to LTL and TL output at the sample means to be 0.91, 0.88 and 0.82 for Quebec, Ontario and Alberta respectively (i.e. in Quebec a one per cent increase in output of both LTL and TL would increase costs by 0.91 percentage points). The Canadian studies also find that most sample carriers in the three provinces are operating at less than optimal scale.

These cost studies of the Canadian industry are discussed in greater detail in Chapter VI, where the need for a cautious interpretation of the results is emphasized. Part of the reason that economies of scale are found to be more important in Canada than in the U.S. is due to the much smaller average size of the carriers being examined. While Canadian carriers tend to be smaller than their U.S. counterparts the disparity has been accentuated by the attempt in the Canadian studies to concentrate on purely intraprovincial carriers. For example, while large Class I carriers account for over 75 per cent of the revenue on all extraprovincial shipments, they earn only 45 per cent of the revenue on intra-Alberta shipments (Transport Canada, 1980). Since there is general agreement that economies of scale are most substantial at relatively low levels of output and that

in most cases they decline rapidly thereafter, the studies may substantially underestimate the extent to which Canadian carriers have exhausted available economies of scale. The studies also leave unresolved the question as to whether and to which extent regulation has contributed to the perceived economies of scale. The fact that the studies find carrier cost curves to slope downwards in all provinces including Alberta suggests that economies of scale are to some extent a function of trucking technology, but they do not eliminate the possibility that regulation may also be an important influence. In the study by Cairns and Kirk economies of scale are found to be mainly due to the ability of larger carriers to achieve high rates of capacity utilization. Given the more successful experience of larger carriers in obtaining new permits and in overcoming the restrictions imposed by the regulatory system (as noted in Chapter II), it is not reasonable to dismiss regulation as a factor in explaining rates of capacity utilization.[7] While the capacity utilization variable turns out to be less important in the studies by Chow and McRae and Prescott (and especially in the latter), there is reason to suspect that some of the quality-distinguishing variables that affect carrier costs in these studies are also influenced by regulation.

Implications

The evidence from both the U.S. and Canadian studies suggests that carrier costs drop rapidly as scale is expanded beyond very low levels of output and that further gains as output continues to expand are relatively modest. The finding that a significant portion of carriers in Canada are operating at a scale which provides for relatively high average costs could be explained by a number of factors: 1) it could be a temporary phenomenon reflecting market adjustments that were taking place at the time of the studies; 2) in Alberta and Quebec, the existence of high cost firms could arise from constraints and incentives within the regulatory system; regulation may not only

create cost differentials between carriers, it may reduce competition and thereby allow rates to be maintained at a level which will sustain the existence of high cost carriers (this is explored in Chapter IV); and 3) it could reflect the importance of economies of scope which arise where there are complementarities in production which make it more efficient for a single firm to produce two or more outputs than for individual firms to produce each output separately. Where economies of scope are important it is difficult to draw any conclusion about the optimal scale of production. If, however, the existence of high cost producers is merely a transitional phenomenon, or if it is due to the influences within the regulatory system, there would be very strong pressure in an unregulated environment for firms to expand beyond the minimum levels of output which are characterized by sharply declining costs.

The implications of economies of scale for concentration in an industry depend on the extent of the economies relative to the size of the relevant market; the larger the market and the greater the number of firms of minimum efficient scale that can be accommodated the less concern there need be about high levels of concentration. A key question concerns the definition of the relevant market: Is it a specific group of commodities within a particular weight band moving between two cities? Or, at the other extreme, is the market based on the national demand for for-hire trucking services? Under regulation where markets are highly segmented by the restrictions placed on individual carriers there is a strong argument for adopting the very narrow definition. But in an unregulated environment it is necessary to take account of the very high cross elasticity of supply. While the distinction between TL and LTL would continue to have some relevance, the distinctions between one commodity and another and one city pair and an adjacent city pair have little meaning where a carrier can easily extend his service to cover new commodities and new geographic areas. A more reasonable definition of a market

under these circumstances would be all for-hire freight of a given type (i.e. TL or LTL) within a region. This is analogous to the definition applied by Carlton, Landes and Posner (1980) to an examination of the unregulated U.S. airline industry. It recognizes the high elasticity of supply in adjacent markets, but the difficulty that carriers may have, at least in the short run, in deploying their equipment in more distant markets. Where markets are regional the evidence on economies of scale does not translate into a tendency towards high levels of concentration. Most regional markets are large enough to accommodate many carriers of minimum efficient scale, and there is no reason to expect these markets to be dominated by a few large carriers.

The exception, where undesirably high levels of concentration could result, are trucking markets in small communities which are relatively isolated geographically. The important question in these circumstances is whether and to what extent the concentration would be likely to give rise to the exercise of market power. In fact there are a number of actual and potential sources of competition which make this less of a concern in trucking than most other industries. In an unregulated trucking industry the potential for new entry is likely to be a major deterrent to the exercise of market power. In some areas the existence of effective intermodal competition would limit the freedom of carriers to manipulate the price and quality of their services. The opportunity available to many carriers of implementing their own private trucking operations would also help to put a ceiling on for-hire rates. In an unregulated industry there would be no general tendency to high levels of concentration, but in those markets in which there may be only a few participants there would nonetheless be some significant constraints on carrier behaviour.

Notes

1 The average age of trucks in use in the U.S. was 7 years in 1977, as estimated by the U.S. Motor Vehicle Manufacturers Association. The average age of trucks has varied from a low of 5.6 years in 1941 to a high of 8.1 years in 1963 and 1964.

2 Spychalski points out that plant and equipment other than rolling stock has come to represent about 50 per cent of carriers' total noncurrent assets in some instances.

3 Ladenson and Stoga infer the behaviour of the cost function by estimating a Cobb-Douglas production function. This approach is inappropriate for regulated industries. They also omit length of haul and weight variables from their analysis.

4 Roberts attempted to put carriers into relatively homogenous groups and then compared average cost for different sized firms in each group. This approach is invalid because it does not hold all of the many variables besides size which affect cost constant.

5 Emery's methodology was similar to Robert's and is subject to the same criticism.

6 Nelson used rank correlation to test the relationship between cost and size and then examined a small sample adjusted for the "other factors" which could have influenced his results. Nelson's sample was too small to yield convincing results.

7 While the Cairns and Kirk study does not find more pronounced economies of scale in Alberta than in Quebec and Ontario, it does find the cost curve to flatten out more slowly in the two regulated provinces, which is perhaps suggestive that there are additional elements contributing to the cost advantage of larger carriers in these provinces. It is also quite possible that many of the smaller carriers in Alberta would be able to improve their rates of capacity utilization if they had a licence which would allow them to also serve points outside the provinces; in other words the configuration of the cost curve for "unregulated" intra-Alberta carriers is probably also being affected by regulation. In interpreting the results on this question, moreover, it is necessary to keep in mind Noll's general caution with regard to the limited explanatory power of the data.

# Chapter IV

## MARKET STRUCTURE AND COMPETITION IN THE CANADIAN TRUCKING INDUSTRY

### a) Introduction

Chapter II highlighted the restrictive nature of regulatory control in the for-hire trucking industry. The rigid controls on entry and on the activities of carriers, however, do not in themselves suggest an absence of effective competition. It is significant in this regard that the regulatory boards do not control the supply of trucking services. While regulators in all jurisdictions have the power to limit the number of vehicles used by licencees, the application of capacity restraints is more the exception than the rule. Entry regulation in trucking differs in this respect from production controls such as in the case of agricultural quotas. In the case of trucking, as distinct from the case in regulated agricultural markets, the nature of regulation at least allows for the possibility of competition among carriers desiring to take advantage of the available opportunity to expand their market shares.

The nature of regulatory control is only one factor, albeit a very important one, bearing on structure and competition in the trucking industry. A further consideration relates to the degree of concentration in particular trucking markets. The specific concern is that by limiting the number of carriers serving particular markets and restricting the opportunity for new entry, entry regulation may create a very favourable environment for the adoption of a form of ologopolistic pricing. Concerns of this nature are reinforced by the way in which prices are set in the trucking industry and, more specifically, by the important role of tariff bureaux in the establishment of for-hire tariffs. These factors and their influence on the degree of intra-modal competition in trucking will be examined in the following sub-section.

Another element influencing the competitive structure is the availability of substitutes for the services of the for-hire carrier. The existence of favourable substitutes can greatly reduce the opportunity for the exercise of market power and overcome the effect of regulatory controls which give rise to a concentrated market structure. The availability of inter-modal and private trucking alternatives to the services of the for-hire carrier is also examined in this chapter.

b) Concentration

Concentration levels in trucking may raise particular concern because the threat of new entry, which can be an important deterrent to monopolistic pricing, is absent in its usual form in regulated trucking markets. Table 1 provides some general information on concentration based on the proportion of revenue generated by the top four firms in a number of broad geographic markets. While there are some relatively concentrated areas, such as the market for live animals in the Atlantic region, the markets for food and fabricated materials in Saskatchewan and Manitoba, and the market for miscellaneous freight in Manitoba, the four-firm ratios are not high in most cases.

Given the nature of the route and commodity restrictions in the trucking industry it is more appropriate to focus on the degree of competition with specific, more narrowly defined markets. One distinction of significance is between the market for TL and LTL carriage. In Chapter 2 we noted the importance of small shipments, which approximate LTL carriage, to the large class 1 trucking firms. Further data collected by Transport Canada highlights the dominance of the class 1 firms in the small shipment market: class 1 carriers account for about 80 per cent of the revenue earned carrying small shipments within Ontario, and almost 75 per cent of the small shipment revenue within Quebec; in the interprovincial small shipment market between

Table 1

FOUR FIRM CONCENTRATION RATIOS BY GEOGRAPHIC MARKET AND COMMODITY GROUP

| GEOGRAPHIC REGION | LIVE ANIMALS | FOOD | CRUDE MATERIALS | FABRICATED MATERIALS | END PRODUCTS | MISCELLANEOUS FREIGHT | TOTAL |
|---|---|---|---|---|---|---|---|
| Atlantic | 77.79 | 44.60 | 5.65 | 5.52 | 31.58 | 18.44 | 25.66 |
| Quebec | 8.31 | 11.03 | 37.01 | 12.49 | 8.20 | 14.43 | 14.06 |
| Ontario | 0.0 | 17.89 | 0.88 | 7.98 | 16.65 | 38.03 | 14.69 |
| Manitoba | 1.48 | 56.97 | 0.21 | 52.73 | 38.67 | 71.25 | 45.49 |
| Saskatchewan | 0.0 | 66.83 | 5.50 | 61.08 | 44.61 | 41.25 | 51.53 |
| Alberta | 0.0 | 4.57 | 3.45 | 36.38 | 7.81 | 7.07 | 17.95 |
| B.C. | 0.10 | 15.12 | 3.25 | 36.21 | 21.00 | 28.45 | 24.62 |
| Interprovincial | 4.17 | 9.12 | 6.85 | 9.92 | 10.25 | 14.34 | 10.07 |

Source: Transport Canada, Definition and Characteristics of the Trading Markets: A Statistical Analysis, January 1980.

Quebec and Ontario, class 1 carriers captured 85 per cent of the revenue, and in the Alberta/B.C. market their earnings amounted to about 80 per cent of the total. Since there are a large number of class 1 carriers in each of these market segments, this data does not portray the picture of a highly concentrated industry. However, the data does suggest the possibility of high levels of concentration in some small shipment markets when these are defined on a more narrow geographic basis.

Tables 2 and 3 attempt to fill in some of the missing data on trucking markets by looking at the number of carriers operating between selected origins and destinations in 1975. Only direct service connections are covered and this will provide a misleading indication of the degree of competition in some cases -- as for long inter-regional hauls of TL shipments where interlining is likely to be important. Table 3 is also subject to obvious limitations because it doesn't tell us anything about the relative size of carriers on a given route and the nature of their licence authorities. Carriers with Ontario Class "E" certificates for the transport of milk and cream, and those with Class "T" licences for the transport of bulk commodities in a tank vehicle, may travel between the same points, but they do not compete with each other or with the holders of Class "A" licences who transport general merchandise and tend to specialize in LTL shipments. Similarly Class "C" carriers who engage in truckload operations are not direct competitors with the LTL carriers who may be carrying like commodities along the same route.

The complexity of the issue and the limitations of the available data make it difficult to draw precise conclusions. The data in Table 2 suggest that the major centres tend to be served by a number of large and medium-sized carriers with general merchandise authorizations. Table 3 covers several origins and destinations which would be covered largely by interlining. Excluding these points and concentrating on the elements of the matrix where direct connections are important

Table 2

NUMBER OF COMPETITORS BY LICENCE CLASS

| CLASS | NUMBER, SIZE, EXTENT |
|---|---|
| **Toronto/Hamilton: Total = 31** | |
| A | 3Lr 4Ln, 5Mr, 5Sl 7Sr* |
| C | 2Lr 1Ln, 1M4, 2Sl 5Sr |
| E | 1Mr, 1Sl |
| K | 2Sr 1Sl |
| T | 1Ln 1Lr, 1Mr, 1Sl |
| **Toronto/Kingston: Total = 3** | |
| A | 1Ln 1Mr 1Sr |
| C | 1Mr |
| E | 1Mr |
| T | 1Ln |
| **Toronto/Ottawa: Total = 10** | |
| A | 2Lr 2Mr 1Sr |
| C | 1Mr 2Sl |
| T | 1Mr |
| **Toronto/Sarnia: Total = 7** | |
| A | 2Lr 1Ln, 1Mr |
| C | 2Sr |
| T | 1Sr |
| **Toronto/Sudbury: Total = 8** | |
| A | 3Ln, 1Mr, 4Sr |
| C | 1Sr |
| T | 1Ln 1Mr |
| **Toronto/Windsor: Total = 9** | |
| A | 1Ln 3Lr, 2Mr |
| C | 2Ln 1Lr, 1M4, 1Sr |
| T | 1Lr 1Ln |
| **Toronto/Winnipeg: Total = 10** | |
| X | 3Ln, 1Mn, 4Sr |
| **Toronto/Montreal: Total = 11** | |
| A | 1Ln |
| X | 2Ln, 1Mr 4Mr, 3Sr |

| CLASS | NUMBER, SIZE, EXTENT |
|---|---|
| **Toronto/Vancouver: Total = 4** | |
| X | 1Ln, 1Mn, 2Sn |
| **Thunder Bay/Hamilton: Total = 3** | |
| A | 2Ln, 1Mr |
| C | 1Ln |
| T | 1Ln, 1Mr |
| **Sault Ste. Marie/Hamilton: Total = 7** | |
| A | 3Ln, 2Mr |
| C | 1Sl |
| T | 1Ln, 1Mr |
| **Sault Ste. Marie/Sudbury: Total = 6** | |
| A | 3Ln 1Mr 1Sr |
| T | 1Ln |
| **Hamilton/Montreal: Total = 11** | |
| A | 2Lr 3Ln 1Li, 1Mr, 1Sr |
| X | 1Mr, 2Sr |
| T | 1Mr, 1Ln |

* L-Large - 600+ trailers
M-Medium - 300-600 trailers
S-Small - Less than 300 trailers
n-National
r-Regional
l-Local
i-International

NOTE:

Not all carriers listed plant and terminal locations.
Some licence classes are too numerous or too specialized to include.

Source: Transport Canada, Workshop Presentation, 1976.

Table 3

DIRECT COMMON CARRIER TRUCK CONNECTIONS FOR 22 CMA'S

(number of licensed, for-hire carriers serving each city pair directly)

| | MONTREAL | TORONTO | VANCOUVER | OTTAWA | WINNIPEG | HAMILTON | EDMONTON | QUEBEC | CALGARY | NIAGARA | LONDON | WINDSOR | KITCHENER | HALIFAX | VICTORIA | SUDBURY | REGINA | CHICOUTIMI | ST. JOHN'S | SASKATOON | THUNDER BAY | ST. JOHN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MONTREAL | - | 11 | 7 | 10 | 7 | 11 | 8 | 13 | 8 | 6 | 8 | 7 | 8 | 3 | 4 | 5 | 9 | 7 | 1 | 6 | 1 | 6 |
| TORONTO | 11 | - | 4 | 10 | 11 | 31 | 7 | 4 | 7 | 6 | 8 | 9 | 8 | 5 | 4 | 8 | 9 | 1 | 3 | 5 | 4 | 5 |
| VANCOUVER | 7 | 4 | - | 3 | 8 | 5 | 8 | 2 | 8 | 2 | 3 | 3 | 3 | 1 | 4 | 3 | 7 | - | - | 4 | 1 | 1 |
| OTTAWA | 10 | 10 | 3 | - | 9 | 8 | 4 | 3 | 4 | 7 | 6 | 6 | 7 | 1 | 1 | 4 | 5 | 1 | - | 5 | 3 | - |
| WINNIPEG | 7 | 11 | 8 | 9 | - | 10 | 10 | 3 | 10 | 8 | 9 | 10 | 7 | 2 | 5 | 8 | 13 | - | - | 11 | 4 | 2 |
| HAMILTON | 11 | 31 | 5 | 8 | 10 | - | 5 | 2 | 6 | 10 | 14 | 9 | 15 | 3 | 3 | 6 | 8 | 1 | - | 8 | 3 | 2 |
| EDMONTON | 8 | 7 | 8 | 4 | 11 | 5 | - | 3 | 13 | 6 | 5 | 6 | 6 | 3 | 4 | 5 | 6 | 2 | - | 12 | 5 | 3 |
| QUEBEC | 13 | 4 | 2 | 3 | 3 | 2 | 3 | - | 3 | 2 | 3 | 3 | 3 | 1 | 1 | 3 | 5 | 1 | - | 5 | - | - |
| CALGARY | 8 | 7 | 8 | 4 | 11 | 6 | 13 | 3 | - | 6 | 6 | 6 | 6 | 3 | 5 | 5 | 6 | 1 | - | 8 | 5 | 3 |
| NIARAGA | 6 | 6 | 2 | 7 | 8 | 10 | 6 | 2 | 6 | - | 11 | 7 | 11 | 1 | 3 | 4 | 7 | 1 | - | 7 | 3 | 1 |
| LONDON | 8 | 8 | 3 | 6 | 9 | 14 | 6 | 3 | 6 | 11 | - | 11 | 19 | 2 | 2 | 5 | 7 | 1 | - | 7 | 2 | 2 |
| WINDSOR | 7 | 9 | 3 | 6 | 10 | 9 | 6 | 3 | 6 | 7 | 11 | - | 13 | 2 | 2 | 5 | 8 | 1 | - | 8 | 3 | 2 |
| KITCHENER | 8 | 8 | 3 | 7 | 7 | 15 | 6 | 3 | 6 | 11 | 19 | 13 | - | 2 | 2 | 5 | 7 | 1 | 1 | 7 | 3 | 2 |
| HALIFAX | 3 | 5 | 1 | 1 | 2 | 3 | 3 | 1 | 3 | 1 | 2 | 2 | 2 | - | 1 | 1 | 2 | - | 3 | 3 | 1 | 5 |
| VICTORIA | 4 | 4 | 4 | 1 | 5 | 3 | 4 | 1 | 5 | 3 | 2 | 2 | 2 | 1 | - | 3 | 7 | - | - | 6 | 3 | 1 |
| SUDBURY | 5 | 8 | 3 | 4 | 8 | 6 | 5 | 3 | 5 | 4 | 5 | 5 | 5 | 1 | 3 | - | 5 | - | - | 5 | 3 | 1 |
| REGINA | 9 | 9 | 7 | 5 | 13 | 8 | 6 | 5 | 6 | 7 | 7 | 8 | 7 | 2 | 7 | 5 | - | 8 | - | 4 | 5 | - |
| CHICOUTIMI | 7 | 1 | - | 1 | - | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | - | - | - | - | - | - | - | - | - |
| ST. JOHN'S | 1 | 3 | - | - | - | - | - | - | - | - | - | - | 1 | 3 | - | - | - | - | - | - | - | 2 |
| SASKATOON | 6 | 5 | 4 | 5 | 11 | 8 | 12 | 5 | 8 | 7 | 7 | 8 | 7 | 3 | 6 | 5 | 4 | - | - | - | 5 | 3 |
| THUNDER BAY | 1 | 4 | 1 | 3 | 4 | 3 | 5 | - | 5 | 3 | 2 | 3 | 3 | 1 | 3 | 3 | 5 | - | - | 5 | - | - |
| ST. JOHN | 6 | 5 | 1 | - | 2 | 2 | 3 | - | 3 | 1 | 2 | 2 | 2 | 5 | 1 | 1 | - | - | 2 | 3 | - | - |

Source: Transport Canada, Workshop Presentation, 1976.

yields basically similar results in terms at least of the significant number of carriers of all kinds serving major city pairs. At the same time the data do not allow us to dismiss concerns that competitive forces may be extremely feeble in some trucking markets. The data in Table 3 leaves this as a distinct possibility in the case of some long-distance LTL markets, where there are few direct trucking connections and where interlining (because of its high cost in the case of LTL) is unlikely to be an important factor. Other evidence suggests that shippers in small towns and rural locations tend to have less favourable experience with trucking service than do shippers in major centres and that this is due to the limited degree of carrier competition in many of these markets. While the lack of competition in smaller centres is largely a function of the limited volume of freight traffic -- rather than of regulation -- entry control does increase concerns about the opportunity for the exercise of market power by carriers in these markets.

The Creation of Dominant Carriers

In assessing the impact of regulation on market structure and competition it is necessary not only to consider the influence of entry control on the number of carriers in specific markets, but also any influence that regulation may have had on the competitive position of different carriers. There are a number of ways regulation may affect the competitive position of for-hire firms. Where a trucking authority has a substantial value disparities will often arise between those carriers who purchase the licence from other carriers at market value, and those who obtain their authority as a result of a successful application to a highway board. The costs of a successful application can be substantial, particularly in a province such as Ontario (as we discuss more fully in Chapter VI). But since the licencing process limits the degree of competition among potential applicants, only a portion of the rents associated with a licence are likely to be dissipated through licence applications.

Carriers who obtain their licences from a regulatory board are therefore likely to be in an advantageous position over those who purchase their licence from existing carriers at its market value.

Another potential source of disparities is the difference in the type of regulatory constraint on different carriers. In Chapter II we described the detailed nature of licencing restrictions in the trucking industry. The specific nature of the restrictions attached to trucking licences suggest that carriers competing in the same market are likely to be subject to somewhat different constraints. More important than the difference in the terms attached to specific licences, however, is the difference in the entire set of restrictions applying to competing carriers, each of whom will have assembled distinct licencing systems. Carriers that have been successful in acquiring new licences to overcome the deficiencies in their route and commodity authorizations, or to respond to changes in economic conditions over time, will have a very different cost structure from firms that must operate according to the terms of a narrow and restrictive operating right. The nature of the licencing system in trucking, therefore, creates the potential for substantial differences to emerge in the efficiency of which carriers can produce a given type and level of trucking service.

The indication that such disparities in performance exist must reinforce scepticism about the degree of competition in some trucking markets which have been seriously affected by regulatory controls on entry and the operating freedom of for-hire carriers. The ability of relatively high cost carriers to maintain a foothold in these markets suggests that trucking rates in some markets are probably at a level which provides the more efficient carriers with an element of monopoly profits. In markets where the disparities in performance are substantial, those firms which have been successful in overcoming restrictions imposed by the licencing system will be in the position of

dominant carriers. Economic theory suggests that tariffs in most of these markets would be based on the conflicting desires of the dominant carriers to maximize short-run profits and to reduce the incentive for less efficient carriers to expand output. This is likely to lead to prices which allow the fringe producers to just cover their costs, and which allows the dominant firms to earn substantial though not maximum short-run profits.

c) Tariff Bureaux

Tariff bureaux have emerged in all parts of the country to assist carriers in rate-filing. The role of tariff bureaux and the extent to which these organizations may facilitate rate-making co-ordination is a matter of considerable importance and one which bears directly on the issue of intramodal competition.

In Part 1 of its study of the institutional framework of the trucking industry, Transport Canada (1979) describes the organization and operations of the seven major tariff bureaux in Canada. These consist of: Western Tariff Bureaux (WTB), Western Transportation Association (WTA), The Canadian Transport Tariff Bureau Association (CTTB), Pacific Tariff Services Ltd. (PTS), Quebec Tariff Bureau Incorporated (QTB), Alberta Provinces Motor Carrier Tariff Bureau Ltd. (APTB), and Canadian Household Goods Carriers Tariff Bureau Association (CHGTB). Some of the bureaux, such as CTTB and CHGTB are non-profit associations owned by, and operated on behalf of its carrier members. Others, such as WTB and PTS are privately owned public-oriented organizations. While the filing of tariffs before the appropriate provincial regulatory body is their major role, the bureaux often fulfill a number of related functions, including: the provision of a tariff publishing service for its carrier members; the provision of information on consolidated tariffs to shippers; the provision of a referral service to help shippers locate carriers with the appropriate operating authority; the provision of services for

interline arrangements; the provision of a venue for the discussion of rates; and the provision of an information system whereby individual carriers are alerted to rate changes by their competitors. The CTTB also conducts continuing tariff and cost studies and circulates the summaries of quarterly financial statements that are obtained from some carrier members. While some bureaux have no disciplinary powers, other - CTTB again being the notable example - will audit member's records and report violations to the regulatory boards.

The procedure for a rate change varies slightly between bureaux, but is basically the same whether the bureau is member- or privately-owned. A proposal for a rate change can be initiated by a member, a shipper, or the bureau itself acting for a carrier that desires anonymity. Notice is sent to members and interested shippers, and the proposal is subsequently heard before a carriers rate group within the bureau. Shippers and carriers that do not sit on the relevant rate committee may attend meetings where the items affecting them are being discussed. If endorsed by one of the rate committees (either a Standing Rates Committee or the larger General Rate Committee) the rate change is passed and the membership at large advised of the decision. If the proposal for rate change is rejected by the members, the orginator of the proposal is free to adopt the new rate on his own. Notice of the independent action would then be sent to other members, who, if they wish, may inform the bureau of their intention to "flag in" (i.e., to follow the independent rate).

The important role of bureaux in the establishment of rates gives rise to the concern that these organizations could become vehicles for collusion. Those who dismiss this possibility emphasize the significance of shipper participation in bureaux rate hearings and of carriers' rights for independent action. Shippers can make their views known at meetings, but the rate-making process does not require or encourage negotiation; rates

are voted on and shippers who do make an intervention can easily be overruled by the bureau members. The significance of independent filing is more difficult to assess. The Ontario Select Committee indicated that 43 per cent of the rates of the CTTB covering general commodity movements in Ontario were independent filings. At the same time the Committee noted that "the concept of independent action is in a sense misleading". While class rates are available for virtually all points in the province, commodity rates are filed only where there is a shipment of sufficient size to warrant these lower rates. A commodity rate filing would appear as an independent action since it would only apply to one or a few carriers, but, as the Committee points out, "such a commodity rate gives the shipper his due; it does not necessarily reflect high degrees of competition to move the shipper's product; neither does it necessarily reflect any competition on the cost side amongst carriers" (Ontario, 1977, p. 9).

A more important check on collusive behaviour, would seem to be the significant number of competitors in many trucking markets. It is exceedingly difficult in a competitively structured industry to enforce a pricing structure inconsistent with the maximization of each individual competitor's income. In his classic article on "Price Discrimination in Medicine" Kessel (1958) demonstrates the importance of strong sanctions to enforce a pricing arrangement in this type of market situation. In Kessel's study it is the medical society's important influence over hospital staffing, specialty training and related professional perquisities which provides it with the powerful sanctions that are required to enforce price discrimination. While rate bureaux and carrier associations fulfill some important functions and can be very useful to their members, it's clear that these organizations do not have the control and influence necessary to enforce behaviour at odds with the welfare of individual members.

There are indications that at least in some markets rate cutting does take place. Palmer (1974) found industry members in Ontario concurring that rate chiseling occurs in the province. Indeed, there tends to be general agreement that undercutting occurs, and is particularly important, in the TL segment of the market. There is also the potentially important competitive influence of those carriers who remain outside the bureau. The latter exist in all provinces though they are more important in some regions and some markets than others. Within Alberta, where there are many small carriers and where published rates do not have to be registered with the government, the Western Tariff Bureau, the main rate filing organization, represents only a small proportion of the market. It's also the case in this province that published rates "are used primarily as a base for negotation and are seldom adhered to" (Transport Canada, 1979).

In assessing the impact of tariff bureaux it's necessary to distinguish highly competitive markets, such as exist generally in Alberta and exist for TL services in most other regions, from markets where the number of competitors have been effectively limited. In the latter circumstances where the limited number of competitors in conjunction with the regulatory restrictions on new entry make rate co-ordination a feasible and often attractive option, the tariff bureaux could play a significant role in facilitating this co-ordination. While it's difficult to determine whether and to what extent the bureaux have in fact impeded competition, significant concern to this effect has been expressed by some shippers. In their brief to the Ontario Select Committee, the Ontario branch of the Canadian Industrial Traffic League - a group which was generally supportive of the existing regulatory system in the province - stated that, "although the members did not advocate the abolition of these bureaux, they felt that the tariff bureaux discourage independent filing by members and generally inhibit price competition within the motor carrier industry" (Ontario Select

Committee, Part IV, p. 47). In their individual submissions to the Ontario Committee a number of shippers echoed this concern, describing their inability to negotiate rates with carriers once the relevant tariff had been filed.

The legality of tariff bureaux with respect to the Combines Investigation Act has yet to be tested. At least some tariff bureaux may qualify for the general exemption which applies to those activities subject to government regulation. In those provinces where rates are not effectively regulated by a Highway Board and where this exemption would be less likely to apply, the courts may be required to determine if the activities of the bureaux are in violation of section 32 or of some of the reviewable practices provisions of the Combines Act. It has been indicated that in some circumstances the issuance of a suggested list of charges could constitute a price agreement as defined under section 32 of the Act:

> If, for example, it was issued by arrangement - among those providing the service in question in the area, in the expectation that it would be followed or substantially followed, there would be a strong possibility that the arrangement could be held to be one that violated the Act. That possibility would be strengthened if in fact the suggestions were substantially observed.[1]

d) Private Trucking

The alternative which is available to a shipper of supplying his own trucking services, can be an important constraint on the pricing of for-hire carriage. Private trucking is generally excluded from economic regulation (i.e., entry and price controls), though some requirements may be imposed by the provincial regulatory board as a way of ensuring that for-hire transportation is not conducted under the guise of private

carriage. To this effect Manitoba requires private carriers to operate pursuant to a licence obtained from the provincial Registrar. Provincial regulations also often prevent shippers from carrying the goods of their related or affiliated companies (unless specifically licenced to do so). This latter provision was a major source of contention for many shippers who appeared before the Ontario Select Committee.

There has been no available published data in Canada on the size of private trucking since 1967 when Statistics Canada terminated its Motor Transport Trucking Survey. Over the period 1960-63 (when the data from this survey was believed to be reasonably reliable) private inter-city and urban carriage accounted for about one-third of the total non-agricultural ton-miles transported by motor carriers. More recent estimates are available for Ontario from three special surveys for 1971, 1975 and 1978. (Ontario, 1971, 1975a, 1978). The 1971 survey reported that of the total tonnage moved by trucks in the province 58.6 per cent was by common carrier, 4.3 per cent by contract carrier and 37.1 per cent by private carrier. The 1975 study is not directly comparable; some 9,250 vehicles were surveyed in 1975 and of this total 57 per cent were for-hire, and 43 per cent were private. When the numbers from the survey are combined with data on the medium weight of private and for-hire vehicles the results are that private carriers accounted for 42.5 per cent and for-hire carriers 57.5 per cent of total tonnage. The 1978 survey found private trucking accounting for 41 per cent of total tonnage. Given the differences in coverage and approach these results are roughly consistent with those from the 1975 survey.

The Ontario survey results have a number of shortcomings and must be accepted cautiously. One of the problems that has been pointed to is "the probable underrepresentation of truck traffic on secondary and tertiary highways". This could lead to the underrepresentation of short haul intraprovincial truck traffic and it could thereby downwardly bias the estimation

of private trucking. A recent attempt to estimate the size of private trucking activity on the basis of the quantity of gasoline and diesel fuel consumed by non-transport industries (Skoulas, 1981) suggests that this is indeed the case. Skoulas works out the operating revenue implicitly earned through private carriage and estimates on this basis that private cariage accounts for 65.4 per cent of total trucking activity and for-hire carriage the remaining 34.6 per cent. While the Ontario survey appears to underestimate private trucking, the Skoulas study probably exaggerates its importance. The assumption that all gasoline and diesel fuel used in manufacturing and forestry goes to trucking activities would impart an upward bias to the estimates of private trucking. Perhaps more important is the assumption that the relationship between BTU's and operating revenue which is derived from an examination of for-hire trucking can be applied to private carriage. Since private carriers have a higher proportion of empty backhauls and significantly lower load factors than for-hire carriers this approach would tend to inflate the estimates of private trucking activity.

Another indication of the relative size and importance of private trucking can be obtained from data on the number of truckers employed outside of the truck transport industry. In Table 4 we have estimated the proportion of truck drivers in for-hire and private trucking on the basis of the data contained in the 1975 occupational employment survey.[2] In columns C and D we attempted to adjust the employment shares to take account of the relatively lower output per employee in private trucking. The two output weights used in these estimates were calculated from employment data in the 1961 census, and 1961 ton-mile estimate available from the Motor Truck Transport Survey. In using 1961 weights we are not assuming that productivity has not increased, but only that the difference in productivity growth between the private and for-hire sectors has not been so significant as to make the 1961 weights unrepresentative; this seems reasonable since the two sectors would be

# Table 4

## ESTIMATED DISTRIBUTION OF EMPLOYEES AND OUTPUT BETWEEN FOR HIRE AND PRIVATE TRUCKING, 1975

| Region | (A) Truck Drivers in For-Hire trucking[1] % | (B) Truck Drivers in Private Trucking[2] % | Total | (C) Estimated Share of Output, For-Hire Trucking[3] % | (D) Estimated Share of Output, Private Trucking[3] % | Total |
|---|---|---|---|---|---|---|
| Atlantic | 28.4 | 71.6 | 100 | 46.4 | 53.6 | 100 |
| Quebec | 28.8 | 71.2 | 100 | 46.7 | 53.3 | 100 |
| Ontario | 30.7 | 69.3 | 100 | 49.1 | 50.9 | 100 |
| Manitoba | 34.0 | 65.0 | 100 | 53.9 | 46.1 | 100 |
| Saskatchewan | 39.0 | 61.0 | 100 | 58.2 | 41.8 | 100 |
| Alberta | 44.7 | 55.3 | 100 | 63.7 | 36.3 | 100 |
| British Columbia | 39.6 | 60.4 | 100 | 58.8 | 41.2 | 100 |
| Canada[4] | 32.4 | 67.6 | 100 | 51.0 | 49.0 | 100 |

1. The number of truck drivers in truck transport (for-hire trucking) alone is not available for 1975. The best attainable approximation is the number of truck drivers in the group "truck transport, bus transport, (interurban and rural), taxicab operations, highways and bridge maintenance and other services incidental to transport and other transportation" (which corresponds to 1960 S.I.C. codes 507, 508, 512, 516, 517, 519, respectively). Exclusion of truck drivers in these latter industries would not materially affect the percentages in columns A and C.

2. The number of truck drivers in private-trucking is defined as the total number of truck drivers less those employed in agriculture, public administration and defense and truck transport (as defined above).

3. The number of drivers in truck transport (see column A) are weighted by load-ton miles per truck driver in truck transport as calculated from the 1961 census of Canada (Labour Force Occupations by Industries, Canada; catalogue No. 94-552) and the Motor Transport Traffic Survey. A similar procedure was carried out for the private trucking segment. This analysis suggested that (annual) ton- miles per driver are slightly more than twice as high in for-hire trucking as in private trucking. The percentage output figures indicate the output in each segment (for-hire and private)as a percentage of total output calculated on the basis of the estimated 1961 weights.

4. Includes Yukon and Northwest Territories.

Sources: "Occupational Distrubution of Employment, Canada & Provinces, 1975" Statistics Canada Catalogue No. 72-515; Private Trucking Report, Statistics Canada, January 1978; 1961 Census of Canada, "Labour Force: Occupations by Industries", Statistics Canada Catalogue No. 94-552.

subject to many of the same sources of productivity growth. The figures in Table 4 support our expectation that private trucking is more important than indicated by the Ontario surveys but more modest in size than suggested by the Skoulas study. About two-thirds of all truck drivers are estimated to be employed outside of the trucking industry, with these workers responsible for almost half the ton-miles of freight transported by truck. There are significant differences in the relative importance of private trucking in different provinces, and it is significant that in Alberta, the one province without entry control on intraprovincial trucking, private carriage accounts for a substantially smaller proportion of trucking output than in other provinces.

As a result of regulatory restrictions which prevent them from soliciting business for a return haul private carriers are much less likely than for-hire truckers to secure balanced two way loads. One recent U.S. study (Tye, Roberts and Altonji, 1978) reported the proportion of empty miles for for-hire carriers at 19 per cent as compared to 30 per cent for private carriers. The average load factor for ICC regulated for-hire carriers was estimated to be 74 per cent, as compared to 62 per cent for private carriers. Private carriers, however, have some important potentially offsetting advantages. The absence of a terminal system can result in substantially lower costs on short distance and small weight shipments, where terminal costs constitute a large share of for-hire costs. As distance and/or weight increases and line haul costs become relatively more important, the increased costs resulting from greater empty miles and lower average load factors will tend to offset the savings available to private carriers in the terminal area. The relative costs of private and for-hire trucking will depend as well on the significance of other potential cost savings available to the private carrier. Sigg (1974) emphasizes a number of sources of such cost savings:

> Because the private carrier can schedule vehicles and drivers precisely to conform to the needs of only one distribution system, they are able to reduce the delay at docks and terminals and thereby increase productivity and lower costs per vehicle mile substantially. They may take the shortest practicable route and are not restricted by ICC grants of operating rights or routes. The cost of solicitation, advertising, and price (rate) quotation are completely eliminated by the private carrier. Because there is less handling of shipments there is less loss and damage and because the all inclusive corporate blanket insurance policy provides lower rates, the resulting insurance and safety expense of the PMT (private motor transport) Division is considerably less than that of the for-hire carrier. In the administrative and general cost area, the for-hire carrier must provide a full range of corporate management while the PMT Division, avails itself of these services (law, personnel, etc.) only when required, with the resulting lower cost.[3]

For many shippers the main attraction of private carriage is that it allows transport services to be tailored to their particular needs and preferences. Goods can be moved to multiple shipping points according to rigid time schedules; one truck can be used for hauls where the for-hire alternative would involve interlining; loss and damages can be strictly controlled; and transport by private carriage can be used to serve the firm's marketing and advertising objectives. Lord (1980) refers to the experience of one large private fleet that found that "deliveries that take a week via the in-house fleet take 2 or 3 weeks by common carrier". This shipper also indicated difficulty in obtaining reliable common carrier service to points off the main shipping routes. The transportation manager at Loblaws has noted (Financial Post, April 7, 1979) that in his business where prompt overnight delivery is essential the use of a private fleet allowed him to maintain delivery schedules 99 per cent on time. By

providing a reliable consistent delivery service, Simpsons-Sears nationwide fleet plays an important role in supporting the growth of the firm's catalogue business (Financial Post, April 7, 1979). These are similar to what Drake Sheahan (1975) found to be the motivations behind the shift of many U.S. shippers to private carriage.

In some cases cost savings will reinforce service advantages, making the decision to use private carriage natural and obvious. For other firms private carriage would involve major inefficiencies in terms of unutilized and underutilized vehicles and equipment, and inordinately high overheads; in this case private carriage can only be justified when the firm attaches an exceptionally high value to the expected improvement in transport services. In their classic study of private trucking Oi and Hurter (1965) found that firms with many shipping points that require many short hauls to be the largest users of private carriage. The incentive for private carriage based on the divergence between rates and own-shipping costs is greatest for short hauls of relatively high-value commodities of relatively low shipment weight. The Ontario surveys confirm the greater concentration of private carriers on short-hauls, although they suggest that substantial medium and long distance trucking also takes place; the 1971 survey indicated that 40 per cent of the freight hauled by private carriers moved between 301 and 1000 miles and 11 per cent moved 1001 or more miles. This suggests that the desire to improve service quality and to reduce the high costs of shipping high value goods on middle to long-hauls is exerting an important influence in Ontario.

Oi and Hurter found that the incidence of private carriage increases with firm size up to the very large firm sizes. This is largely a reflection of the fact that larger firms have more shipping points and a higher proportion of small hauls, and are thus able to more profitably utilize a trucking fleet. Very large firms typically use both private and public

carriage, with the latter being employed quite often for long-hauls, irregular shipments, and peak-loads. Some firms have emphasized the importance of a private fleet as a bargaining lever in negotiating rates with common carriers. The capacity to call on one's own transport resources has also been seen as an important safeguard against labour problems in the trucking industry.

Some firms may be inclined to transport their own freight - regardless of the length of haul - because they can do so highly efficiently. Firms with a large volume of freight, with a high proportion of truck load shipments and a traffic balance that provides for two-way hauls may be able to achieve load factors and utilization rates as good as or better than most for-hire carriers. For the most part, however, line haul costs will tend to be higher for the private carrier; this is highlighted by the much higher output per driver attained by common carriers (as indicated by the weights in Table 2). The attraction of hauling one's own goods often comes from the savings in terminal and related overhead costs - which will tend to more than offset higher line haul costs for the short-haul carrier, the substantial mark-up on the for-hire transport of particular goods, and the (apparently considerable) advantages of being able to tailor transport services to meet a firm's specific needs.

e) Inter-modal competition

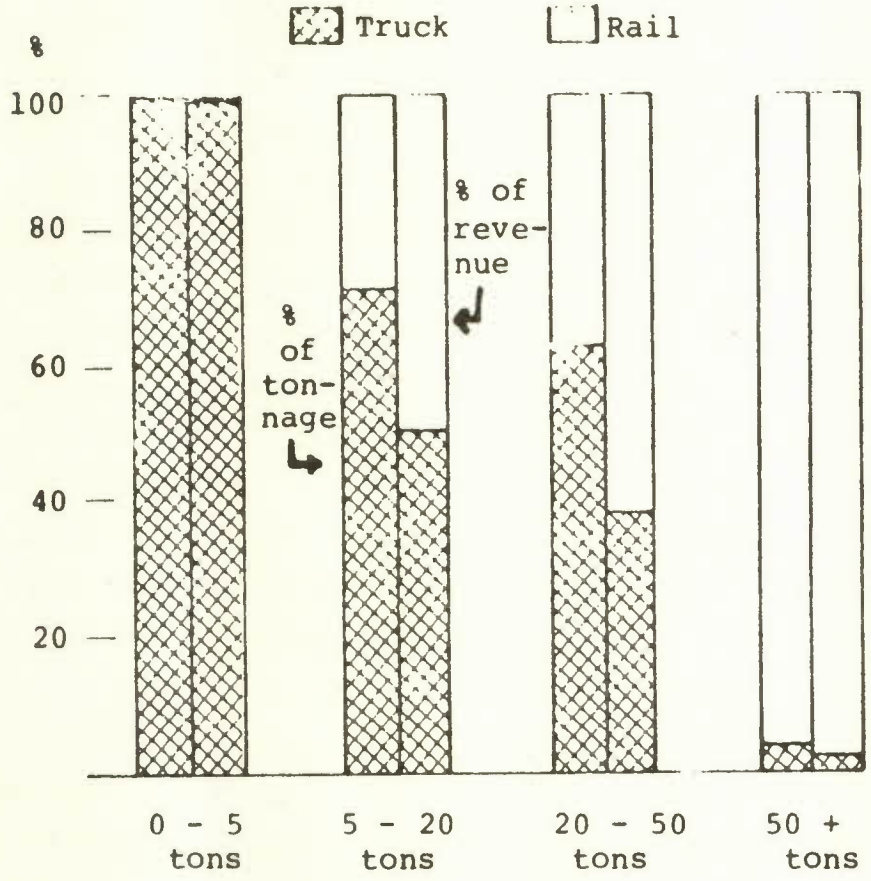
Where intra-modal competition is weak or lacking inter-modal competition can be a potentially important influence on the conduct and performance of motor carriers. As in the case of private trucking this constraint is more real in some circumstances than in others. Direct rail truck competition exists for medium to long-haul transportation of general cargo in most parts of the country, though of course competition is more effective for some commodities and in some regions than others. The

choices facing the shipper in a major metropolitan area seeking to transport his goods along a high volume route are quite different from those facing the shipper in a rural area who would be fortunate to have a rail line in the vicinty (a problem which has been exaccerbated in recent years by the frequent abandonment of rail lines.) Given the availablity of the two modes the shipper's choice will be determined by relative costs, and by the firm's particular service needs. Most of the earlier literature on freight allocation emphasized the inventory cost savings that truck offered relative to rail because of faster average transit times and smaller average lot sizes (see, for example, Harbeson, 1969). In more recent literature there is a recognition of the wider service advantages of truck transport. Levin (1978) notes that in addition to the inventory cost savings they offer "trucks typically have smaller variation in both pick-up and arrival time, a superior loss and damage record, and an ability to tailor service to meet the needs of shippers or recipents". A shipper's particular preferences will determine the weight he attaches to each of these aspects and the differential in rates required to compensate for the service disadvantages of rail.

Boyer (1977) makes a similar argument in the context of a highly attractive model of shipper choice. Each shipper has a perception of the value of truck service ($S_T$) and a perception of the value of rail service ($S_R$). As a given rail rate ($R_R$) changes, holding the truck rate ($R_T$) constant, or as a given truck rate changes holding the rail rate constant, shippers will make different choices as to whether to ship by truck or by rail. Shippers following a decision rule to minimize total transport costs will choose rail if $S_T - R_T < S_R - R_R$. Conversely they will choose to ship by truck if $S_T - R_T > S_R - R_R$. Since shippers almost always perceive the quality of truck service, $S_T$, to be higher than the quality of rail service, $S_R$, it is unlikely that most traffic will move by rail if the rail rate $R_R$, is greater than or equal to the truck rate. With the

Figure 1

Truck and Rail Shares of Freight
by Shipment Weight




Source: Data was calculated from Transport Canada, Definition and Characteristics of the Trucking Markets: A Statistical Analysis, January, 1980.

rail rate slightly below the truck rate shippers who perceive little difference between the quality of the two modes will switch to rail. As the rail rate moves lower relative to the truck rate shippers with a stronger perference for trucks will gradually be induced to switch to rail.

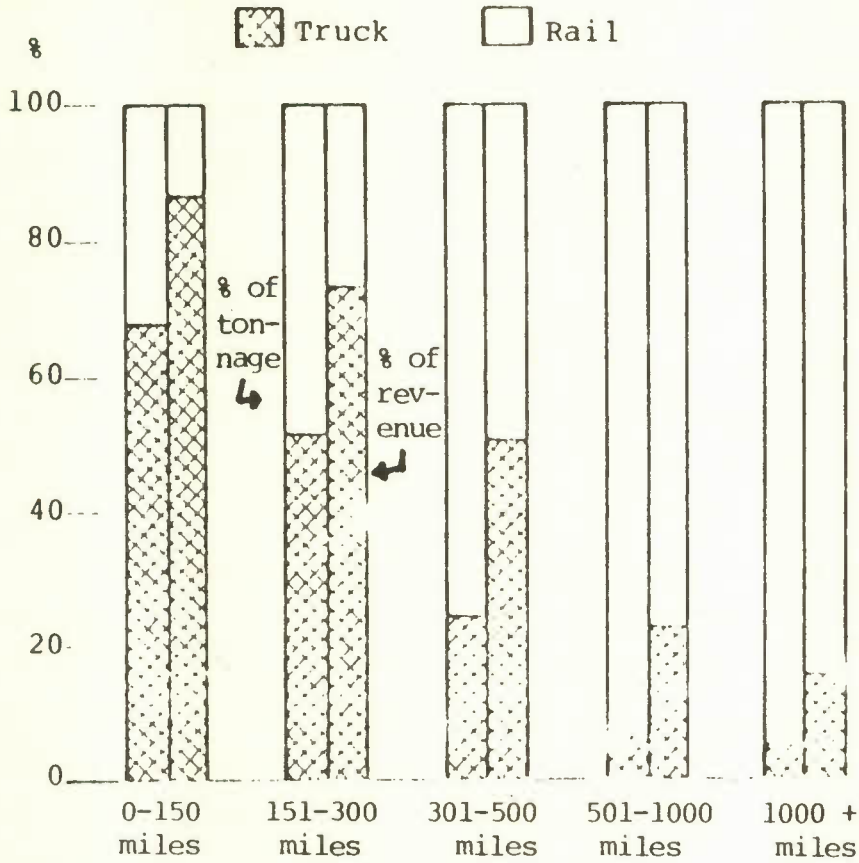
Among the more important variables affecting relative rates ($R_R$ vs $R_T$) are shipment size and shipment distance. The nature of the commodity of being shipped will be a major determinant of both relative rates and shipper's perception of the quality of the two modes ($S_R$ vs $S_T$). The comparative advantage of rail for the transport of very large shipments in reflected in its domination of this market segment. Rakowski (1976) indicates that in the U.S. the rail share of freight increases very gradually to a shipment size of 40,000 pounds, after which it rises rapidly before levelling off at near 100 per cent for shipments in excess of 70,000 pounds. Motor carriers move the major portion of tonnage for shipment sizes below 40,000 pounds, after which the truck share declines rapidly.

The relative share of freight carried by rail and truck in Canada is indicated in Figure 1. Motor carriers move the major portion of tonnage in Canada for all shipment weight classes below 50 tons. Even for shipments between 20 and 50 tons motor carriers account for almost 65 per cent of total tonnage and almost 40 per cent of total revenue. The lower share of revenue going to trucking is due to the fact that truck shipments are being carried a shorter distance than rail shipments falling into the same weight class.

The second variable, shipment distance, is examined in Figure 2, which provides an estimate of the relative share of traffic carried by rail and for-hire carriers in various mileage blocks. While verifying the traditional wisdom that trucks are most efficient for short-hauls and railroads are most efficient for long-hauls, the Table indicates at the same time that the two

Figure 2

Truck and Rail Shares of Freight
by Shipment Distance




Source: Data was calculated from Transport Canada, Definition and Characteristics of the Trucking Markets: A Statistical Analysis, January, 1980.

freight carriers have a significant presence in both long haul and short haul markets. Rail, for example, accounts for about 14 per cent of the revenue earned on shipments going under 150 miles. At the same time motor carriers earn about 16 per cent of the revenue generated by shipments moving over 1000 miles. In this case the share of revenue going to trucking is higher because of the concentration of trucks on smaller shipments, which have a higher revenue per ton.

In terms of commodity type, the most important distinction is between goods with a low retail value per pound in which transportation costs loom very large, and goods with a relatively high value in relation to size and weight, in which transportation charges account for only a small portion of the total delivered price. Shippers of relative bulky, heavy loading goods such as paper and crude materials will be much more responsive to the lower relative rates offered by rail, than shippers of high-valued goods, such as apparel and instruments; in the latter case the service advantages of truck transport would weigh more heavily in the distribution decision and it would take a much larger rate differential to affect these perceived advantages.

What this has meant in effect is that while the trucking share of market declines as shipment size and shipment distance increases the decline is more rapid for some goods than for others. Table 5 looks at inter-provincial shipments over 20 tons, moving over 1000 miles of commodity class. Motor carriers tend generally to have a small share of the shipments falling into this weight and distance class, but it can be seen that this is much less so for relatively high valued end products than for heavy loading goods such as crude materials.

Table 5

Truck shares of Intra-provincial Freight for Shipments Over 20 Tons Moving Over 1000 miles
- percentages -

| | Food | Crude Materials | Fabricated Materials | End Products |
|---|---|---|---|---|
| % of tonnage | 4.2 | 2.8 | 6.1 | 13.7 |
| % of revenue | 16.3 | 3.0 | 8.4 | 11.2 |

There is, thus, a significant area of actual or potential competition between the rail and truck modes. The 1967 amendments to the Railway Act which allowed railways greater pricing freedom has contributed to the degree of effective competition between the rail and truck modes. There are, at the same time important areas where due to the absence of rail links or the characteristics of the shipment and/or the commodity competition is non-existent or virtually non-existent. And there are markets where the natural preference for truck transport is sufficiently strong that the availability of a rail alternative only serves to establish a rather high ceiling on the pricing freedom of motor carriers.

The significant degree of inter-modal ownership in Canada which is unique by international standards has also tended to reduce the effective degree of truck-rail competition. The Ontario Select Committee (1979) identified eight trucking firms operating in the province owned by Canadian National Railways, and an equal number owned by Canadian Pacific Railways. The Committee noted that "if one total transportation market existed, and one considered Canadian National and Canadian Pacific's rail freight with their truck freight, one would see that they clearly dominate this total market". Similarly, Sparks and Shaw (1974) indicate that in Saskatchewan truck-rail competition for general freight LTL is not purely intermodal since two of the largest trucking companies in the province are owned by railways. While there may be economies associated with horizontal combinations of

this nature, their nature and extent remain unclear. The CTC has the power under section 27 of the National Transport Act to disallow intermodal acquisitions that are prejudicial to the public interest, but, as Chambers et al. (1980) point out, the criteria which would allow for the effective use of this provision have yet to be developed.

While rail is the main source of inter-modal competition for motor carriers other forms of transport have become of increasing importance in recent years. In the long haul markets there has been significant growth in air freight - though this mode still serves a very mimium share of the total market. Operating revenues of air carriers account for only about 2½ per cent of the revenues of all domestic freight carriers. In the short to medium haul markets increasing competition has come from bus parcel express and from the Post Office. Bus parcel express provides fast, reliable delivery of small freight and has become an important transport mode in many small towns where air and rail express are not practical alternatives. The Post Office derives in excess of $50 million or about 10 per cent of its total revenues from 4th class mail consisting of parcel post and post pak, and has become a significant element in the small freight segment of the market.

f) Conclusion

The evaluation of market structure and competition is complicated by the inadequacy of the data with respect to specific trucking markets and by the contradictory evidence on the competitive environment in trucking. A number of indicators point in the direction of strongly competitive trucking markets: the significant number of carriers serving many major markets; the freedom of most licence holders to expand their output and compete for an increased market share; the threat of competition from illegal entrants as a results of the weak enforcement of regulations in some areas; and the significant competitive threat

in some markets of alternatives to for-hire carriage, including particularly private trucking. At the same time trucking bears some of the earmarks of a concentrated industry in which the participants bear a substantial degree of market power: trucking licences have a significant scarcity value (as we discuss more fully in the next chapter) suggesting that some carriers who have been granted a licence by a board are earning more than the opportunity cost of capital; the available information on numbers of carriers does not refute the suspicion that entry control has contributed to a high degree of concentration in some markets; the indication that there are significant regulatory-related disparities in the competitive position of carriers in some markets suggests the existence of some instances of oligopolistic pricing; and the activities of the tariff bureaux reinforce the impression that prices in trucking markets are not always and entirely the result of independent market forces.

The conflicting evidence is not entirely surprising in view of the discussion in Chapter II which highlighted the heterogeneity of the industry and the differences in the regulatory constraint on various segments of the industry. Differences in the competitive environment reflect differences in the influence of regulation on different segments of the industry and on specific trucking markets. Many of the main trucking markets, accounting probably for the major portion of trucking activity, have the characteristics of a competitive industry. Where there are well developed trading links between major centers the significant number of carriers serving these markets combined with the freedom of most carriers to expand their market share is sufficient to ensure a high degree of competition notwithstanding the existence of entry controls. The activities of tariff bureaux would be most unlikely to thwart the working of competitive forces in these markets. In other markets, including that for LTL shipments on some of the longer and less heavily travelled routes, it would appear that regulation has had a more serious impact on the competitive environment. Entry controls have been reasonably effective in the LTL segment and the limited number of

general freight carriers serving many long-distance LTL markets, combined in some cases with the disparities that exist in the competitive position of these carriers, suggests that competitive forces may well be extremely feeble in this sector. In highly concentrated markets of this nature tariff bureaux could indeed facilitate a co-ordinated approach to pricing. And since private carriage tends to be relatively costly on longer routes and rail is for the most part a very imperfect substitute to for-hire carriage, the availability of these alternatives does not preclude the exercise of considerable market power by LTL carriers. This differs from the likely situation in the absence of regulation where, as we indicated in Chapter 3, there would be a tendency to broader regional markets which would be unlikely to be dominated by a few large carriers.

An examination of the nature of regulation in the trucking industry suggests not only that the competitive environment is likely to be different within various trucking markets, but also that the structural characteristics of trucking markets are more varied than indicated by the basic distinction between competitive and highly concentrated markets. The mix of participants in a given market will be quite different depending on the effectiveness of entry control, the way in which trucking licences have been acquired, and the amount invested by individual participants either in purchasing an authority from an existing licence holder or in putting their case for a licence before the regulatory board. The possibilities are indicated in Table 6. A competitive market may result because entry control has been highly ineffective, (case A) or because the board has allowed a significant number of carriers to enter the market under terms in which each may compete for an increased market share (cases B and C). In the latter situation, it is important to distinguish between markets where at least some firms have been able to gain entry at very little cost (case B), and markets where all participants have made a substantial investment to acquire the requisite authority (case C). It is similarly

Table 6

Structural Characteristics of For-Hire Trucking Markets

| Case | Effectiveness of Entry Control | Industry Structure | Mix of Participants |
|---|---|---|---|
| A | Highly Ineffective | Competitive | - unlicenced carriers<br>- carriers who obtain licence from board with minimal expenditure<br>- carriers who purchase licence from other firms at very low cost |
| B | Effective | Competitive | - includes at least some carriers who have been able to acquire their licence with very little investment |
| C | Effective | Competitive | - all carriers have invested substantial sums to acquire their licences, whether they purchased the assets of previous licence holders or obtained their authority from a regulatory board |
| D | Effective | Oligopolistic | - all firms have essentially same cost structure: costs of acquiring licence and/or nature of regulatory constraint do not confer an advantage on any carrier in market |
| E | Effective | Oligopolistic with dominant firm(s) | - firms have different cost structures: one or more firms are in an advantageous position as a result of lower investment costs to obtain licence and/or more efficient routing system. |

misleading to group all highly concentrated markets into one group. There is a significant distinction between markets in which all participants have essentially the same costs (case D), and those in which there are significant disparities in the competitive position of the participating firms (case E). In the former case improved operating efficiencies would offset any disadvantages participating firms may incur because of their increased expense in acquiring a licence. In the final case both the costs of gaining entry and the efficiency of a firm's routing system are possible sources of the disparity between carriers.

While many of the important markets for TL carriage would come under case A, and many of the other major markets between large centres would be covered by cases B and C, the evidence that is available, incomplete as it is, must lead one to believe that cases D and E are not unimportant. What emerges more generally is the picture of a complex industry and the consequent need for a broad perspective if one is to fully appreciate the impact of regulation on for-hire trucking.

Notes

1 The Department of Consumer and Corporate Affairs Application of the Combines Investigation Act to Services, April 1976, p. 2.

2 Some questions have been raised regarding the reliability of the 1975 occupational employment survey. To check the reasonableness of the employment estimates we looked at the results for comparable categories using the 1971 census. the latter yielded estimates of 34.7 per cent for truck drivers in for-hire trucking in Canada, and 65.3 per cent for trucking drivers in private trucking. The slight difference from the percentages in Table 2 could be explained by different survey techniques and, perhaps, by the relative growth of private trucking in the intervening 4 years. At any rate 1971 Census results suggest that in this area the occupational employment survey is reasonably reliable.

3 Sigg (1974) pg. 439-441.

# Chapter V

## PRICES AND PROFITS IN REGULATED TRUCKING

### a) Prices

In Chapter IV we suggested that, notwithstanding enforcement problems, regulatory controls do effectively reduce entry into many trucking markets. While alternative modes of transport are sometimes available, these are generally imperfect substitutes for the services of the common carrier. The description of provincial regulation in Chapter II moreover, indicated that regulatory requirements have a broad influence on the operations of trucking firms. In the absence of price regulation it's reasonable to expect that these types of regulatory restriction would have an upward influence on the price of trucking services. The accumulated evidence that's available from studies of a variety of regulated markets suggests that effective regulatory controls applied to a competitive industry do indeed tend to result in significantly higher prices.[1]

While economists are in general agreement on the nature of these relationships they may not place much confidence in particular attempts to establish the precise magnitude of the expected impact. In the case of trucking regulation, a number of studies have compared the rates for intraprovincial motor carriage in Alberta with those in other provinces in an attempt to estimate the rate differential which is attributable to regulation. Most of these studies, however, have serious shortcomings and the available estimates are not conclusive. This uncertainty is partly a product of the multitude of variables at play and the difficulties of estimation in this industry. In the discussion of economies of scale the importance of accounting for differences in product mix was emphasized. In analyzing rates it is necessary to go beyond this and try to

examine the range of factors affecting both the supply and demand for trucking services in different markets. Considering the heterogeneity of trucking output and the diversity of trucking routes with respect to such important factors as backhaul opportunities and intermodal competition, isolating the impact of regulation becomes an exceedingly complex exercise.

The frequently cited studies by McLachlan (1972), Palmer (1973), and Sloss (1970, 1975) illustrate the difficulties and the pitfalls associated with attempts to estimate the impact of regulation on rates. The three authors employed the same data base (covering the period 1957-63) and essentially the same approach - fitting a multiple regression equation with revenue per ton mile as the dependent variable, and average length of haul (or its inverse), average weight carried (or its inverse) and various measures of provincial factor input costs as the independent variables. The effect of regulation was tested either by the inclusion of a dummy variable (McLachlan, Palmer) or by analysis of the residuals from the equation for regulating and nonregulating provinces (Sloss). The general finding was that regulation raised rates by between 0.68 cents and 2.5 cents per ton mile. Maister (1978) has examined these studies in detail and found them deficient in a number of respects. His criticisms are in three general areas: the authors employ a data base of highly questionable quality (this being reflected in the decision by D.B.S. to discontinue publication of the source document); in their treatment of regulation they don't distinguish between entry and rate regulation and in some cases misrepresent the nature of provincial regulation; and in the specifications of their models they omit a number of variables which could have a potentially significant influence on revenue per ton mile.

In a series of papers, Maister (1977, 1978a, 1977b) attempted to improve upon the estimations by Sloss, McLachlan and Palmer. The much improved data on truck shipments which became

available in 1976 allowed for a more reliable and precise accounting of the differences in output produced by carriers in different provinces. The availability of micro data, moreover, made it possible to capture some important differences in product mix which are obscured by the aggregate figures (the macro data was utilized in Maister's unpublished 1977 paper). By using better data, increasing the number of explanatory variables and defining regulation more appropriately Maister attempted to provide a more adequate representation of the factors influencing trucking rates. In their paper for the Economic Council, McRae and Prescott (1980) provide a thorough discussion of Maister's work. They find that in the attempt to develop a more appropriate specification the equations in the cross sectional studies (1978a and 1977) became overloaded with more explanatory variables than the data could support, and this resulted in exact multicollinearities and a breakdown of the least squares estimation procedure. Maister's failure to detect significant differences in trucking rates between regulated and unregulated provinces was therefore based on the use of spurious regressions. McRae and Prescott also criticize Maister's attempt to expand his number of observations by combining interprovincial with intra-provincial shipments (Maister 1978a and 1978b); this procedure involves some strong and very questionable assumptions about the nature of the factors influencing interprovincial trucking rates.

In their study McRae and Prescott (1980) make a new attempt to estimate the difference in trucking rates between provinces using the micro data from the 1975 and 1976 for-hire trucking survey. To determine the impact of regulation on rate levels they regress revenue per ton mile on shipment distance, shipment weight, labour cost and a set of provincial dummy variables. The equation was fitted to the pooled shipment data for 1975 and 1976 and run separately for each of six commodity groups. The data was then further disaggregated for an analysis

of the rates applying to TL and LTL shipments. The use of micro data permitted trucking outputs to be defined more precisely than in previous studies (with the exception of Maister 1977). McRae and Prescott also attempted to improve upon previous models by using a double-logarithmic specification which allows for a nonlinear relationship between revenue per ton mile and shipment weight and distance. (This reflects the fact, for example, that a 1000 lb. increase in weight will affect unit prices quite differently when the initial load is 1000 lb. as opposed to 50,000 lb.) Provinces were grouped according to the form of regulation to which they were subject: no regulation (Alberta); entry control with rate prescription (Manitoba and Saskatchewan); entry control with rate approval (British Columbia and Quebec); and entry control with rate filing (Ontario). Some commodities are not adequately represented in all provinces and the most meaningful estimates were obtained for three commodity groups: Food, Fabricated Materials and End Products. The results, which are given in Table 1, are very different from those obtained by Maister. For a given commodity, of a given weight, carried a specific distance by workers earning a set amount, trucking rates would tend to be significantly higher in Ontario, B.C. and Quebec than in Alberta. On the other hand, in Manitoba and Saskatchewan, the two provinces where rates are regulated, adjusted unit prices are significantly lower than in Alberta.

Table 1
Provincial Prices As A Proportion of Alberta's Price
1975/76 Average

| | Food | Fabricated Materials | End Products |
|---|---|---|---|
| Ontario | 1.27 | 1.09 | 1.24 |
| B.C. & Quebec | 1.26 | 1.05 | 1.11 |
| Manitoba & Saskatchewan | .82 | .82 | .81 |

This study also documented the substantial differences between rates on TL and LTL shipments. British Columbia was found to have very high TL rates, but in Ontario and Quebec the relatively high carrier revenues were determined to be almost entirely due to the level of LTL rates. The latter results are consistent with the discussion in Chapter II which indicated the extent of the difficulties in enforcing regulation in the TL segment of the industry.

In the second part of their analysis McRae and Prescott fitted separate regressions for each commodity to data from each of the six provinces. The results of this exercise in terms of relative rate levels were consistent with those obtained in the equations using provincial dummy variables. Prices within each commodity group were found to be substantially less variable in Manitoba and Saskatchewan and a good deal more variable in Alberta -- as one would expect given the very different regulatory environments in Alberta and the other two provinces.

In an extension of the original study McRae and Prescott looked in greater detail at the rate differentials between Saskatchewan and Alberta, utilizing the fact that in Saskatchewan there is a large number of commodities which are exempt from intraprovincial entry and price controls. A regression of the same basic functional form as in the previous analysis was fitted to data for a group of regulated and unregulated commodities in Saskatchewan and to a matched group of commodities in Alberta. Specifically, revenue per ton-mile was related to the weight of the shipment, the length of the haul, the commodity being shipped, the province, and in the case of Saskatchewan, a dummy variable indicating whether or not the commodity is subject to economic regulation. The specification allowed the height of the weight and distance curves (specifying

the relationship between these variables and rate per ton mile) to vary between commodities, but it constrained the shape of the curves and the ratio of the distance between commodity curves in Alberta and those in Saskatchewan (i.e. the ratio of revenue per ton-mile between Alberta and Saskatchewan was constrained to take one value where the comparison is with regulated commodities in Saskatchewan and one value where the comparison is with non-regulated commodities in Saskatchewan). This analysis provides a useful check on the earlier results since in this comparison there are far fewer unaccounted factors which could influence the value of the regulatory dummy. The very reasonable assumption that cost and demand factors would have a similar general influence on the rates of regulated and unregulated commodities in Saskatchewan, leads quite naturally to the conclusion that any difference in rates per ton mile - aside from that which is due to the particular characteristics of the commodities being moved - is attributable to the activities of the Saskatchewan Highway Traffic Board.

Table 2 presents the results of this analysis for separate regressions based on three distinct groups of regulated commodities in Saskatchewan. The estimated unit prices are averages for 1975 and 1976, and in all cases the Saskatchewan rates are expressed as a percentage of those in Alberta. These results support the previous finding that regulation in Saskatchewan has supressed rates and they suggest that the magnitude of this effect is quite substantial. As McRae and Prescott note, these results could reflect a failure of regulated rates in Saskatchewan to match recent factor cost increases, and the effects of this "regulatory lag" could be relatively short-term. Important questions that arise as to the general length of such lags and the extent to which this is a recurring phenomenon cannot be answered with the few years of data presently available.

Table 2
Unit Prices as a Percentage of Comparable Alberta Unit Prices
1975/1976 Average

| | Run 1 | Run 2 | Run 3 |
|---|---|---|---|
| Alberta | 100.0% | 100.0% | 100.0% |
| Saskatchewan-Unregulated | 101.5% | 101.2% | 103.0% |
| Saskatchewan-Regulated | 77.3% | 76.8% | 91.2% |

The recent work by McRae and Prescott indicates that there are statistically significant differences in rates between provinces; and the direction of these differences is consistent with what one would expect given the nature of price and entry control in various provinces. With the possible exception of the latter comparison of rates in Saskatchewan and Alberta this work does not provide an estimate of the impact of regulation on trucking rates, and the authors are careful to point out that, given the potentially significant factors that have been excluded from the analysis, it would be inappropriate "to attribute the unit price differences to regulation exclusively". There could well be significant differences between provinces, for example, in intermodal competition, in traffic balance on intraprovincial routes and in the quality of the trucking services being provided (as indicated by frequency of delivery, losses and damages, etc.). There is no a priori reason to expect that the size and direction of these differences -- at least those that are not themselves a result of regulation -- are such that their inclusion would substantially reduce the importance attributed to regulation; however because of the factors it omits the model used in this study cannot provide a precise estimate of the impact of regulation on prices. It's important to note, that while the model may be attributing to regulation what could partially be due to other unacknowledged factors, it's equally open to the opposite criticism; that is, it may be attributing to the independent variables in the model part of what is in fact

due to regulation. Regulatory restrictions on commodities that can be carried, on routes, points or origin and destination, and on vehicle capacity may influence both average shipment distance and average shipment weight, two independent variables in the model. In treating shipment characteristics as exogenous rather than endogenous variables the model fails to account for the full direct and indirect impact of regulation. It's quite possible, therefore, that the full influence of regulation on prices is substantially greater than suggested by the unit price differentials estimated in the study.

One way to come to terms with some of the independent variables excluded by McRae and Prescott is to undertake a detailed analysis of commodity rates in markets which are comparable in terms of such factors as traffic balance and intermodal competition. This is the approach adopted by Lord and Shaw (1980), who compares rates for transporting a given bundle of commodities on selected traffic lanes in Alberta and Ontario. The major disadvantage with this approach -- and indeed with all studies of this nature -- is that the results obtained from a small number of observations cannot be said to have any general applicability. Moreover, since it is extremely difficult to identify similar routes, the possible advantage of being able to adjust for this variable may not be realized. These general problems would confront any attempt to compare rates in specific markets. The Lord & Shaw study is open to more serious criticisms since rather than comparing actual rates on commodities carried in the two markets, the reference is to published rates for an arbitrarily selected group of commodities. The use of published rates is particularly misleading in the case of Alberta since, as mentioned previously, the Western Tariff Bureau covers only a small proportion of the carriers in Alberta, and published rates are seldom adhered to. As the study acknowledges, the published rate data which is used for Ontario has also been critized. Specifically it has been pointed out that general merchandise rates in Ontario are higher than indicated in this

study because a number of rules and exceptions applicable to the published rates weren't taken into account. These omissions would impart an upward bias to the Alberta data used in Lord's study and a downward bias to the Ontario data; and they help account for the study's finding that rates in Alberta are higher than those in Ontario.

Other selective comparisons which use actual freight charges incurred (as distinct from the published rates) have come up with very different results. In their submission to the Alberta Select Committee, for example, the Alberta Members of the Meat Packers Council of Canada (1976) provide a comparison of the freight charges incurred by Burns Foods Ltd. for similar shipments in Alberta, Manitoba and Ontario. Rates are shown to be lowest -- by a considerable margin -- in Manitoba where freight rates are prescribed, and highest in Ontario. The relatively high rates in Ontario are attributed to the fact that only two carriers provide the bulk of the for-hire refrigerated delivery services in South Western Ontario: "it seems that restrictions on the number of carriers licenced to haul has resulted in a higher level of charges and encouraged private trucking". While regulation may well be a factor contributing to these results, it is possible that there are cost factors which help to explain the higher Ontario rates. This analysis serves nevertheless to indicate that selective comparisons may lead to very different results from those suggested by Lord and Shaw.

The assorted evidence that is available from the experience of other countries is instructive of the general nature of the impact of regulatory controls on an industry with the structural characteristics of trucking. In the United States a number of comparisons have been made of the rates of ICC regulated carriers with those of carriers in particular unregulated sectors or zones. When poultry and frozen fruits and vegetables were reclassified as exempt commodities in the mid-fifties, trucking rates in the United States dropped over a 2-year period by an

average of 33 per cent on poultry and 19 per cent on fruits and vegetables (Snitzler and Byrne, 1959 and Hilton, 1969). While the methodology and relevance of these studies of the United States agricultural exemption have been questioned, (Spychalski, 1975 and Flott, 1973) the general finding that prices fell after the commodities were deregulated is not disputed. Breen (1978) examined the exemption in the state of Maryland on the activities of intrastate households goods movers, and found that as a result of this exemption there was a considerable difference in rates applying to comparable intrastate and interstate moves. Similar evidence of a significant differential favouring the rates of exempt carriers comes from Allen's studies (1978a and 1978b) of the exempt commercial zone in Philadelphia. In the case of the U.K., Moore (1980) claims that the relaxation in entry control helped to contain the trend in trucking rates over the early seventies. Joy has referred to "the availability of regular service at low cost" as an important aspect of Australia's experience with unregulated trucking. And in Belgium, the liberalization which came into effect after 1966, seems to have contributed to the maintenance of highly competitive trucking rates; in this respect, it is significant, as the Ontario Select Committee (1977, Appendices) notes, that Belgium road transport has been able to increase its market share notwithstanding the low rates of the heavily subsidized state-owned railway.

Given the different environment in other countries, the distinctive aspects of foreign regulatory controls, and in some cases, the particular features of the segment of trucking being examined, foreign experience is not very useful in helping us determine the magnitude of the impact of regulation on trucking rates in Canada. The cumulative evidence, however, strongly supports our expectation, based on theoretical considerations, that, given the structural characteristics of trucking, entry controls will result in higher prices. Regulatory controls may impact on trucking rates through their influence on the number of for-hire motor carriers in particular markets, and/or through

their influence on the costs of providing a given bundle of trucking services.

In considering the impact of regulation it is important to distinguish between the possible effect of regulation on prices and the impact suggested by a comparison of rates in 'quasi-regulated' and 'quasi- unregulated' jurisdictions. We have referred to enforcement problems, which reduce the effectiveness of entry controls particularly in the truckload segment of the industry. Hence, the use of the term 'quasi-regulated'. At the same time, the fact that many competitors in the Alberta market are required to confine their operations to the relatively artificial markets and routes established by provincial boundaries means that carriers in this so-called unregulated province are also influenced by regulatory restrictions. The problem arising from the fact that the control groups used for comparison are generally to some degree affected by regulation is a general one and applies as well, for example, to studies of the United States agricultural exemption, and the recent experience of motor carriers in the U.K.

Notwithstanding data deficiencies, it is clear that there are systematic differences in unit prices between provinces, and, taking account of theoretical and related empirical findings, there is a strong basis to suspect that regulation is an important factor underlying these differences.

b) Profits

While entry control unaccompanied by price regulation tends to be associated with higher prices it does not necessarily follow that carrier profits will be higher as a result. Higher prices could reflect the higher costs of operating in a regulated jurisdiction. Indeed since the discussion of market structure (Chapter IV) suggests that many of the major trucking markets are competitive one should not expect to find widespread evidence of excess profits in the regulated trucking sector. The significant

number of carriers on the main trucking routes and the freedom provided to most carriers to compete for an increased market share should force the rate of return in the major markets to about the level available from other pursuits. At the same time, however, the indication that there are some highly concentrated trucking markets suggests that we may find some evidence of excess returns, or positive economic profits, being earned in regulated trucking markets.

There are a number of difficulties that confront attempts to compare the profit rates of firms under different regulatory regimes. Accounting conventions may differ between firms; it has been noted, for example, that smaller firms quite often seem to have a better performance because the wages of the owners are not included as an expense item. There is also a need to adjust the profit data to account for the different degree of risk faced by carriers in different environments; an important effect of regulation may in fact be to reduce the element of market risk and uncertainty. The most important factor clouding comparisons of profit rates is the tendency for excess profits to become capitalized. The balance sheet data on operating performance, for example, may indicate normal profits while the firm's assets reflect its higher earning capacity. Where excess profits have been capitalized the fact that the firm is earning a return above the competitive level may only indicate that the full extent of the positive economic profits has been unanticipated.

The operating ratio (total operating costs over total operating revenue) is the most commonly used measure of performance in the trucking industry. This measure excludes interest and capital gains and losses, so it is less subject to particular difference in the financial structure of firms, including in particular differences in relative assets and liabilities that may arise due to the capitalization of excess profits. Tables 3 and 4 are derived from the Transport Canada study on market

definitions (Transport Canada, 1980), where the performance of carriers who earn 50 per cent or more of their revenue in distinct markets defined by shipment size and geographic region is examined. The special tabulation allows us to compare the profits of carriers operating mainly within Alberta with those of carriers serving the regulated provinces. Table 3 indicates the proportion of revenue generated by highly profitable carriers in each market; for example, of the revenue earned by carriers specializing on larger shipments (5 tons and up) within Alberta, just over 35 per cent is attributable to the activities of very profitable firms with an operating ratio of .9 or less. The table suggests that in 1975 the performance of intra-Alberta carriers was in fact very favourable relative to that of firms operating in other geographic markets. At the other extreme are the carriers operating within Manitoba and B.C.; an exceedingly small proportion of revenue was generated by highly profitable carriers specializing on intra-provincial shipments within these two provinces.

Table 3

Proportion of Revenue Within Geographic Shipment Size Markets Attributable To Firms with an Operating Ratio of .9 or Less (1975 data)

| | Small Shipments | Large Shipments | Total |
|---|---|---|---|
| Intra-prov. Atlantic | 12.9 | 29.7 | 24.2 |
| Intra-prov. Quebec | 11.0 | 36.9 | 23.8 |
| Intra-prov. Ontario | 9.1 | 18.2 | 13.4 |
| Intra-prov. Manitoba | 2.1 | 1.4 | 1.7 |
| Intra-prov. Alberta | 8.8 | 35.1 | 30.6 |
| Intra-prov. B.C. | 0 | 5.8 | 2.3 |
| Inter-provincial | 6.8 | 1.3 | 3.1 |

Note: Total revenue earned by small shipment specialists within each geographic market equals 100%; the same applies to large shipments within each province and in interprovincial markets.

Source: Transport Canada, 1980.

Table 4 looks at the opposite dimension, the proportion of revenue within each shipment size - geographic market generated by unprofitable carriers. The favourable performance of Alberta carriers is again evident; unprofitable carriers generate a substantially smaller proportion revenue in Alberta than in most other provinces. Ontario carriers have also fared well, in the sense of being less prone to an operating ratio in excess of 100 per cent. Table 4 provides another perspective on the weak financial position of carriers specializing in large shipments within B.C. The high rates prevailing on TL shipments within B.C. have apparently not prevented carriers in that province from incurring substantial losses.

Table 4

Proportion of Revenue Within Geographic Shipment Size Markets Attributable to Firms with an operating ratio of I.O or More (1975 data)

| | Small Shipments | Large Shipments | Total |
|---|---|---|---|
| Intra-prov. Atlantic | 29.8 | 9.5 | 16.1 |
| Intra-prov. Quebec | 24.4 | 9.9 | 17.2 |
| Intra-prov. Ontario | 10.3 | 15.7 | 12.8 |
| Intra-prov. Manitoba | 25.4 | 4.6 | 14.5 |
| Intra-prov. Alberta | 20.1 | 11.9 | 12.0 |
| Intra-prov. B.C. | 8.3 | 45.9 | 23.7 |
| Inter-provincial | 6.8 | 25.9 | 19.4 |

Source: Transport Canada, 1980.

The two tables indicate that outside of B.C., large shipments tend to be more profitable then small shipments - though the observed difference may be partly influenced by the tendency of smaller firms who concentrate on large shipments to understate their expenses. The data on operating ratios suggests that the very high level of LTL rates in Ontario is helping to reduce the level of losses among firms specializing in small shipments in this province. The data is also consistent with the low level of observed trucking rates in the provinces with entry and rate regulation. In particular, the tables suggest that rate regulation has reduced the extent of profits, and increased the extent of losses on small shipments in Manitoba. Supporting evidence on this aspect comes from another set of tables in the Transport Canada study which highlights the exceptionally low solvency ratio (again in 1975) for firms specializing in intraprovincial shipments in Manitoba.

Intraprovincial carriers in Saskatchewan were omitted from the analysis because of the insignificant number of observations on the performance of specialized carriers of small and large shipments. As a part of their study of for-hire rates in Alberta and Saskatchewan, however, McRae and Prescott (1980) attempted to determine if the relatively low rates prevailing on intra-Saskatchewan shipments were reflected in the financial performance of Class III carriers located in that province. The financial data led them to conclude that there had indeed been "an accentuated downtrend in the economic health of Saskatchewan-based Class III carriers when compared to other provinces, especially Alberta".

Another perspective on profits in the trucking industry can be gained looking at the value attached to operating authorities. There is evidence that in the U.S. motor carrier operating authorities command a substantial price. Data supplied by the American Trucking Association indicate that operating authorities in the U.S. sell for about 15 per cent to 20 per cent of the

annual revenue they produce. Kafoglis (1977) has noted moreover, that operating authorities in the U.S. have been appreciating at a rapid rate, providing their owners with substantial capital gains. The high value attached to operating licenses suggests that the expected stream of excess profits associated with for-hire carriage in the U.S. is considerable. The continous rise that has been observed in the value of U.S. operating rights suggests that the actual level of "excess profits" has, moreover, been continually exceeding expectations.

While there is no similar information available in Canada on the value of trucking licences (since trading in trucking licences per se is prohibited), there are indications that some licenses in the rate-regulating provinces do have a significant value. The Ontario Select Committee, which had access to confidential firm data, agreed that this was the situtation in Ontario:

> Economists argue that in a market place where entry is controlled monopoly profits can and do accure to the licensees. They argue further that the price of a sale will reflect the "monopoly rent" allowed and/or achieved by the holder of the existing licence. Many economists have argued that this theory applies to the sale of Ontario-based and licensed for-hire trucking firms. This issue was of great concern to the Committee, based on the principle that licences issued under the Public Commerical Vehicles Act are the property of the Crown. The Committee believes that substantial values are attached to some licences. It believes that there is a market for some Public Commerical Vehicle Licences. (Part VI, p. 118)

More recently, a standing committee investigating the activities of the Ontario Highway Transport Board provided some evidence that trucking licenses are actively traded in the province. Testimony before the committee provided several

examples of permits being sold in Ontario for many thousands of dollars. While carriers often tend to incorporate the value of their operating authorities under "goodwill" or to distribute it among their other assests, the operating license is sometimes listed as a seperate item on balance sheets. It has been noted, for example, that Laidlaw Transport Ltd., values its operating authorities at over $2.5 million. Boucher (1980) has examined the financial statements of some Quebec companies and noted that the market value of some permit clauses varies between $3000 and $15000. Permits in Quebec that change hands through a merger or transfer may obtain a value of $25,000 to $125,000. This is generally similar to the information on permit values in Ontario gathered by Palmer (1974). In the next chapter we will provide information on the expenditures incurred by carriers in applying for a licence. The significant, and at times very substantial, expenditures by applicants provide a further indication that trucking licences are in some cases a very valuable asset.

If there is a competitive market for trucking licences the value of a licence will come to approximate the degree of excess profits (or more specifically, the present discounted value of the expected future stream of excess profits) to which its owner is entitled. This does not necessarily mean that every carrier with a positively valued licence is earning more than a competitive rate of return. The investment to acquire a licence could conceivably raise a firm's average cost to the point where all extraordinary profits (or positive economic profits) are eliminated. The existing licenceholder, for example, may have purchased the authority from another carrier at a price which approximates the present value of all future excess profits. Taking into account the institutional environment in trucking, however, and the limited opportunity for carriers to compete for the acquisition of new licences, the evidence on licence values strongly suggests that some carriers are indeed earning substantial economic profits. The more fortunate have incurred relatively little expense in applying to the board and have acquired an asset of substantial value.

The data on licence values does not suggest that the majority of carriers in Ontario, Quebec and B.C. ("the" provinces with entry but not effective rate regulation) are earning substantial excess profits. Average licence values do not seem to be anywhere near the magnitude indicated for the U.S. Calculations performed by Boucher for a sample of Quebec firms, for example, have put the value of operating permits (along, perhaps, with some elements of goodwill) at only around 5.2 per cent of operating revenue. Inclusion of data for B.C. would most likely reduce estimates of the average value of licences in the main provinces with effective entry but not rate regulation. What the data suggest is that there are big differences in the value of operating permits; while some permits have a nominal value, other operating authorities can command a very substantial price. For many, though not all carriers, the rents inherent in their trucking authority which have not already been dissipated through licence-seeking activities, would seem to be extremely small.

At the beginning of the discussion on profits we postulated, based on the structural characteristics of trucking markets, that we would find some, but not widespread, evidence of excess profits. The data on operating ratios of specialized intraprovincial carriers and on the value of operating permits supports this conclusion. The data does not suggest that major segments of the trucking industry in Ontario and Quebec, the provinces in which higher unit prices were identified, are enjoying profits well above those which would exist in a competitive environment. At the same time, the data lead one to suspect that some carriers in these provinces are earning substantial economic profits. In the provinces with both effective entry and rate regulation profits have been depressed presumably as a results of the low unit prices prevailing under these regimes. In other words, while many and probably most carriers would seem to be in a similar financial position under regulation, a number of carriers are significantly worse off, and some carriers are very much better off than they would be in the absence of entry or the combination of entry and rate regulation.

c) Conclusion

It was found that after adjusting for differences in shipment characteristics and factor costs, prices exceeded the level in Alberta in those provinces with entry regulation but no effective rate control. Rates were being effectively regulated in Manitoba and Saskatchewan over the 1975/76 period being examined, but, with a few exceptions this was not the case in other provinces. The higher prices in regulated provinces do not for the most part reflect higher profits. While some carriers in Ontario and Quebec, for example, appear to be earning very substantial economic profits, most carriers operating in these two provinces are not more profitable than carriers specializing on intra-provincial shipments in the unregulated province of Alberta. Profits have been restrained by the significant degree of competition that tends to prevail in major trucking markets notwithstanding entry regulation. The indication, however, that there are some highly concentrated markets in the LTL segment of the industry, corresponds with the finding that some regulated carriers are earning significant excess profits.

The results of this section can be put together with the earlier analysis of structural characteristics to derive a consistent picture of the effects of regulation in different trucking markets. Table 5 outlines the possibilities for markets, such as in Ontario, Quebec and B.C., where the main regulatory restraint is on entry (and not price). In all cases, except in the TL markets where entry control has been very substantially eroded by weak enforcement (case A), prices are higher than in the unregulated market of Alberta. Where markets are competitive, however, (cases B and C) these higher prices will not be reflected in positive economic profits. The extent to which prices will be reduced in competitive markets depends on carrier costs and particularly those costs associated with gaining entry to the market. Where all entrants have incurred a substantial cost to gain entry (case C), prices will tend to be held at a level which compensates for these higher

Table 5

Market Structure, Prices and Profits in For-Hire Trucking Markets

| Case | Effectiveness of Entry Control | Industry Structure | Mix of Participants | | Prices | Economic Profits | Value of Trucking Licences |
|---|---|---|---|---|---|---|---|
| A | Highly Ineffective | Competitive | - unlicenced carriers<br>- carriers who obtain licence from board with minimal expenditure<br>- carriers who purchase licence from other firms at very low cost | → | Prices in unregulated markets | →0 | →0 |
| B | Effective | Competitive | - includes at least some carriers who have been able to acquire their licence with very little investment | ↑ | Prices in unregulated markets | →0 | →0 |
| C | Effective | Competitive | - all carriers have invested substantial sums to acquire their licences, whether they purchased the assets of previous licence holders or obtained their authority from a regulatory board | ↑ | Prices in unregulated markets | →0 | Positive |
| D | Effective | Oligopolistic | - all firms have essentially same cost structure: costs of acquiring licence and/or nature of regulatory constraint do not confer an advantage on any carrier in market | ↑ | Prices in unregulated markets | Positive or →0 | Positive |
| E | Effective | Oligopolistic with dominant firm(s) | - firms have different cost structures: one or more firms are in an advantageous position as a result of lower investment costs to obtain licence and/or more efficient routing system. | ↑ | Prices in unregulated markets | Positive for low cost carriers | Positive |

costs and protects the value of firms' capital investments. In other cases where some carriers have incurred very little expense to enter the market (case B), prices will be forced towards the lower average cost of these carriers, and in the process the value of the requisite licences will gradually be eroded.

Cases D and E describe non-competitive markets which are characterized by higher prices, trucking permits which command a substantial price and, quite often, positive economic profits. Case D represents a situation in which prices have initially been established at a level to provide positive economic profits, taking account of the average costs of participating firms including the initial investment to acquire the trucking authority. One would expect the value of the licence to appreciate to take account of these profits, so that recent entrants who have purchased their permit from a previous licence holder would in fact be earning no more than a competitive rate of return. Case D refers to a situation, however, in which there is no such disparity in the competitive position of different carriers. This implies that if there has been any recent entrants into these types of markets they must have benefitted from some advantage: they may have acquired their licence from the regulatory board or from a previous carrier at a cost well below the value of the subsequent amount of positive economic profits; or they may enjoy lower operating costs than existing market participants as a result of having assembled a highly efficient licencing system. Alternatively all carriers in the market might be recent entrants who have purchased their permits at a price which reflects the opportunity for excess profits. In this case, although prices exceed the level that would prevail under competition, none of the market participants would be earning supra-normal profits.

Case E allows for the possibility that only some carriers in concentrated markets have purchased their authorities at a price which allows for no more that a competitive rate of

return. In markets depicted by case E there is a disparity between participants as a result of the differing costs of entry, and/or differing sets of regulatory restrictions which lead in turn to differences in the costs of providing given trucking services. In this situation the lower cost, and dominant, firms will be earning positive economic profits, while the higher cost participants may have earnings which merely reflect the opportunity cost of capital.

Notes

1 See for example, Jordan (1972) and Joskow and Noll (1977).

# Chapter VI

## EFFICIENCY CONSIDERATIONS

### a) Costs of the Regulatory Process

Whenever regulations exist costs are necessarily incurred to make, administer and enforce these regulations. Real economic resources are absorbed by these functions which in the absence of regulation, could go towards the satisfaction of some unmet consumer or societal needs. The direct costs of maintaining the regulatory process are seldom the most important costs of regulation, but they can be significant and they merit consideration. This is particularly so in the case of trucking regulation, where ten provincial regulatory bodies are involved; where the form of regulation is conduct rather than structurally-oriented; and where the controls are directed at a complex industry consisting of thousands of individual producers.

The direct "process costs" we are concerned with in this section consist both of the public sector expenditures to operate a regulatory agency and enforce trucking regulations, and the private sector costs of dealing with that agency and participating in the regulatory process. Government expenditures vary considerably from province to province, with the costs related in large part to the size of the trucking industry and the extent and complexity of regulatory restrictions. It is difficult to obtain precise data on public sector expenditures because the administration of trucking regulations (or some aspects of this activity) is often carried out by government agencies or divisions with broader functional responsibilities. In Newfoundland, for example, the board of Commissioners of Public Utilities which regulates trucking also regulates telephone and electrical utilities. In Ontario, a full accounting of public expenditures must include the operating budget of the Highway Traffic Board, and also the significant costs incurred by the Ministry of

Transportation and Communicationss in connection with its participation in the administration and enforcement of trucking regulations. In Alberta and B.C., the relevant regulatory functions are performed by branches of the provincial departments of transport.

It is estimated that annual provincial expenditures associated with the administration and enforcement of trucking regulations totalled slightly over $10 million for 1979/80. The most costly provincial regulatory body would appear to be the Quebec Transport Commission (Q.T.C.). Boucher (1980) has noted that the operating budget of the QTC is over $7 million and that over half of this total is devoted to the administration of provincial rules and regulations on trucking (the Q.T.C. also has responsibility for taxis and buses). The budget of the Ontario Highway Traffic Board is just under $1 million but inclusion of the activities of the Ministry of Transport more than doubles total spending on trucking regulation in this province. The Saskatchewan Board has a budget of about $1.5 million to cover all regulatory-related activities, including inspections, investigations and prosecutions, and research. Regulatory institutions in the Atlantic provinces are substantially less costly and for example, expenditures to cover the trucking regulatory functions of the New Brunswick Board are under $50,000 (this excludes enforcement costs).

While costs to the taxpayer of supporting regulatory institutions and mechanisms are significant, the main burden associated with the regulatory process falls on the producers of trucking services. In applying for a new licence, for an amendment to an existing licence, for a rate change, and in making a representation to oppose the issuance of a license for-hire firms must necessarily participate in the regulatory process. For some activities, such as rate filing, costs are minimal, but for other activities, including particularly appeals for the grant of an operating authority, the commitment of

resources can be substantial. In Chapter II, we noted how the delegation of federal responsibility for extra-provincial truck transport to the provinces had complicated the administration of controls over interprovincial carriers. In this chapter we also noted the broad control exercised by the regulatory boards over the terms and conditions by which goods may be transported, and we gave some indication of the complexity of the regulatory decision-making process. These aspects have all tended to increase the resources that trucking firms must expend to influence regulatory decisions.

To the extent that trucking activities do give rise to excess returns, or rents, potential entrants will be strongly motivated to commit resources to the pursuit of a trucking licence. Existing carriers who are threatened with a possible erosion in the value of their own licences will be similarly motivated to invest in efforts to forestall entry. Posner has argued that under certain circumstances where rents are available competition to obtain the resulting benefits will be carried to the point where the costs of that competition are equivalent to the discounted future stream of excess profits. Posner's implied assumption that the competitors correctly anticipate the benefits that will be forthcoming from a licence or related privilege has been strongly critized. Moreover, since competition for trucking licences is constrained to proceed according to the terms and within the procedural framework established by individual regulatory boards, the relevance of Posner's model to trucking is limited. Nonetheless it does serve to highlight the very substantial social costs that can be associated with processes, such as the regulatory process in trucking, which hold the promise of major gains and losses.

In a study for the Council Norm Bonsor (1980) has attempted to estimate the costs to producers of for-hire trucking services of participating in the regulatory process. Bonsor surveyed a sample of approximately 600 carriers, distributed such

that the respondents represented at least 10 per cent of the revenue generated by for-hire carriers in each province. The results of this survey suggests that annual costs to the trucking industry of entry seeking and forestalling activities are in the order of $40 million (based on 1977-78 data). Bonsor found that the costs varied considerably between provinces due to the different regulatory procedures adopted by individual boards. In British Columbia costs of the regulatory process to carriers (calculted as a proportion of operating revenue) are very low due to the infrequency of public hearings, and the minimal input of the legal profession. This is very different from the situation in Ontario where the regulatory process has become highly judicialized and where there is very heavy involvement by the legal profession. The Ontario board will only accept verbal evidence and hearings tend to be lengthy, with a large number of witnesses typically being called by both applicants and intervenors. The outstanding example of regulatory costs in this province is the recent application by United Parcel Service Ltd. (UPS) for a class "D" licence. It is estimated that the 110 day hearing cost UPS approximately $1.5 million, and that those opposing the application spent between one-half and three-quarters of a million. More generally, Bonsor has estimated that the regulatory process in Ontario involves annual costs to carriers of around $30 million. In Manitoba, Saskatchewan and the Maritime Provinces, regulatory procedure is similar to that in Ontario, but costs to the carriers tend to be lower; this is attributed to the lower average legal fees in these provinces, and to the smaller size of the trucking industries, which results in there being fewer objectors for individual licence applications. Quebec carriers indicated that their major expense was not legal fees, but the time delays and administrative costs involved in making and opposing licence applications; it is estimated that average annual costs of participating in the regulatory process in this province are about $8 million.

Bonsor's study focuses largely on the costs of entry seeking and entry forestalling activities by existing carriers. It therefore excludes the costs incurred by for-hire firms for other regulatory-related activities, including the pursuit of a change in the terms and conditions of an existing licence. It also does not account for the costs incurred by applicants who unsuccessfully sought to obtain a licence and become a carrier for the first time. By far the largest element of costs is associated with licence applications, and the major proportion of applications for licences come from existing carriers. Nonetheless, these omissions suggest that Bonsor's estimate is downwardly biased and that the total annual costs of the regulatory process, including the costs to both private and public sectors, are somewhere in excess of $50 million.

b) Technical Efficiency

A production process is technically efficient if, through appropriate selection and combination of inputs, the given rate of output of a given quality is produced at the lowest total cost.[1] Regulatory policies may affect technical efficiency in a number of ways. Rules and restrictions along with the distinct pattern of incentives that may emerge in a regulated system can influence both the selection of inputs and the manner in which these inputs are combined and processed. Technical efficiency is related to the degree of competition in a market and this can be influenced by regulations with respect to entry and pricing. The overall level of technical efficiency in an industry may be more directly affected if firms more efficient than average are restrained from entering markets or if firms less efficient than average are restrained from leaving.

Technical efficiency in trucking requires the utilization of labour and capital equipment so as to minimize the combination of linehaul costs, terminal costs and pick-up and delivery costs associated with producing a given level and

quality of transport services. Truck scheduling, truck routing, the location of terminals, the selection of drivers and vehicles, and related decisions will have an important bearing on the efficiency and costs of production. These same decisions are crucial in both a competitive market and in a regulated system, but in the latter case the decisions are of a very different character; the objective of a regulated firm is not to minimize costs per se, but to minimize costs subject to the constraints arising from the terms and conditions of its license. One would generally expect minimum cost conditions to be higher in this 'constrained system' than they would be in an unconstrained system. And the more restrictive the terms attached to the license the more will tend to impinge on technical efficiency.

The evidence on prices and profits suggest that regulation does lead to higher costs. This is the implication of the fact that the higher prices found to exist in the provinces with entry regulation are not associated with consistently higher profits. Alternatively if we return to our conclusion in Chapter V, what is of significance is the existence of markets of the type described by case B. In this case prices are above the level in the competitive province but this cannot be accounted for either by higher profits or the costs associated with efforts to obtain a licence. The existence of markets of the type described by case B, supports the view - though it cannot establish conclusively - that regulation reduces technical efficiency. Further indications to this effect are provided below, where we examine the nature of regulatory restrictions and the ways in which they impinge on technical efficiency in trucking, and where we review recent studies attempting to assess the impact of regulation (as it is exercised in Ontario and Quebec) on the operating costs of for-hire firms.

## The Effects of Regulatory Restrictions on Carrier Operating Efficiency

Most trucking licenses issued in Canada involve major limitations on the carrier's freedom of action, and more particularly, significant restrictions on the options that are available to reduce empty miles, to increase load factors, to control mileage and to minimize idle truck time. Chapter II described the general nature of the restrictions on commodities that can be carried and routes that can be used. Provincial regulatory bodies tend to have wide powers to (as in Ontario) "prescribe terms and conditions to govern the transportation of goods -- and to approve the conferring by the licence of special, exclusive or limited rights with respect to the operation of public commercial vehicles ...". Some specific illustrations of how these powers have been exercised to control the operations of for-hire trucking firms are provided in an appendix to this chapter.

There are indications that for-hire trucks in Canada move with relatively low load factors and a significant proportion of empty loads. A survey undertaken by the Ontario Trucking Association, for example (Ontaro Select Committee, 1977, Part V, p 30-35) estimated that 22 per cent of all miles driven by Ontario for-hire carriers are empty with the proportion extending to over 50 per cent for some specialized carriers. The 1978 Western Canada Truck Origin - Destination Survey (Transport Canada, 1978) reported that on only 45.8 per cent of the surveyed trips did trucks contain full loads, and on 30.0 per cent of the trips vehicles were empty. Empty miles are partly due to trade imbalances between regions and communities. In 1975, for example, 50 per cent of all trips of for-hire carriers originated in Quebec and Ontario, but these two provinces were the destination for only 48 per cent of the trips. Empty miles are also a product of the need for highly specialized vehicles, which by their very nature have extremely limited backhaul opportunities.

And in some circumstances light and empty miles may not so much reflect inefficiences as the attempt to provide very frequent and very reliable transport service.

While empty miles are inevitable in trucking and can never be totally eliminated, certification restrictions clearly compound the backhaul problem. It is wrong to argue, as does the Ontario Select Committee, that entry control is not a limiting factor and that "a rationalization of authority may only serve to shift rather than reduce empty miles" (Part V, pg. 30). It is necessary to look not just at the immediate effect of a change in licensing restrictions but at the adjustments which would occur in the market and the ultimate impact of these developments on efficiency. While expanding the operating authority of one group of carriers would affect others in the industry, the latter group of carriers would be compelled to improve their rates and/or service or leave the market. For example rationalizing the licence of carrier 1 so that he can carry a return load from point B to point A would intensify the competitive pressures on carrier 2 who works points B to A, but the situation would resolve itself with the withdrawal of the inefficient carrier and the elimination of two empty backhauls. The net effect would be a gain in efficiency and a reduction in transport costs.

In designating routes and defining operating authorities the provincial regulatory boards often take explicit account of the importance, particularly on the longer routes, of achieving balanced two-way hauls. Lord (1980) notes that the Ontario carriers in his study were not compelled by their licenses to follow illogical routing systems, but rather "operated on the basis of some geometrical pattern, whether it represented a circle, square, rectangle, or triangle". It's unreasonable to expect, however, that any regulatory body, regardless of its ability and good intentions, could possibly keep abreast of the myriad of shifts in transportation demand which constantly occur in a growing economy. In fact it would appear that the delays and uncertainties associated with attempts

to seek new authorities or amend existing ones tend to make required adjustments very difficult.

The restrictions on where carriers can travel, as well as affecting load factors and backhaul opportunities, may increase costs by preventing use of the shortest and most direct route. The restriction on routes and on the points of origin and destination that can be served by a single carrier will also increase the need for interlining and thereby influence both the costs and quality of transport services being provided. A joint line shipment, for example, which may be necessary because of the restricted operating authority of the originating carrier would entail two extra platform handlings plus a crosstown transfer run between the docks of the two carriers. Sweeney and Stuart (1978) have indicated that as a result there is a difference of about 30 points in operating ratios as between single line and joint line shipments of the same distance. While interlining may represent an efficient division of transport tasks in some circumstances, it is aften a response not to potential cost-savings, but to the carrier's limited operating authority and his inability to provide single line service.

It is, indeed, inevitable that over time initially prescribed routing patterns will tend to become outmoded and increasingly circuitous, and operating restrictions less and less appropriate to existing transport requirements. Since the ability of a regulatory body to respond to these complex changes as they affect individual carriers is naturally limited, routing restrictions will almost certainly impinge to some degree on the technical efficiency of the industry. Sparks and Shaw (1975) in one of the few examinations of this problem note that the "Saskatchewan general merchandise rural distribution network has been characterized by a basically outdated and outmoded route and operating authority situation". The Ontario Ministry of Transportation and Communication (1976) was for a time concerned that many Northern Ontario communities are served via circuitous

Southern Ontario gateways and that the truck freight rates did not reflect direct route mileage between origin and destination. More generally, the concerns raised by shippers - and particularly those who have switched to private trucking - about the lack of adequate single line service, and the efforts by carriers to modify and extend their routing systems suggests that there are substantial potential efficiency gains in this area.

While regulatory restrictions are primarily directed at for-hire motor carriers they may significantly affect the performance of private carriers who are prohibited by provincial law from hiring-out the services of their vehicles and drivers. This restriction, which in most cases extends to carriage of the goods of related or affiliated companies, makes it exceedingly difficult for private carriers to obtain balanced two way hauls. Surveys indicate that partly as a result private carriers have a substantially higher proportion of empty miles than for-hire carriers. In their study of private carriage in the U.S., Drake Sheahan (1975) found that a minimal relaxation allowing private fleets to engage in intracorporate hauling would reduce the total mileage of private fleets by around one percent.

It was noted at the beginning of this section that the degree of competition in a market will have a major influence on technical efficiency. Liebenstein (1966) has highlighted the tendency of management and labour to work less intensively and to pursue cost-saving improvements less vigorously when competitive pressures are weak or lacking. The problem of 'x-inefficiency', as it has been christened by Liebenstein, has come to be recognized as a potential source of substantially higher costs which could result in losses for the economy well in excess of those arising from resource misallocation. While the evidence which was reviewed previously did not indicate that trucking firms are in general effectively sheltered from competition, it did suggest that competitive pressures were weak in some markets. 'X-inefficiency would not seem to be a pervasive problem in

trucking, but there is reason to be concerned that this aspect of technical inefficiency could be a source of substantially higher real resource costs for certain parts of the industry.

Cost Studies

Recent cost studies by Chow (1981), and Cairns and Kirk (1981), and McRae and Prescott (1981) provide a further perspective on the relationship between regulation and technical efficiency in the Canadian for-hire trucking industry. All three studies use the same primary data sources - Statistics Canada's 1975 Motor Carriers Freight Survey (MCF) and 1975 For-Hire Trucking Origin and Destination Survey (OD) - and attempt to compare the performance of carriers operating largely within the unregulated province of Alberta with those operating in Ontario and Quebec, but each employs a distinct research methodology. Chow focuses on general freight carriers and attempts to compare performance through models in which the sample carriers in Ontario and Quebec are respectively pooled with those from Alberta; a dummy variable represents the influence of regulation while other variables take account of differences in shipment characteristics and in factor costs. Cairns and Kirk attempt to determine the influence of regulation through the estimation of single-output and multiple-output cost functions. McRae and Prescott examine provincial cost structures through a joint output hedonic cost function, and also run tests on a pooled model similar to that employed by Chow.

The weight of the evidence from these studies is supportive of the conclusion that regulation reduces efficiency and contributes to higher costs of production. Cairns and Kirk find that Alberta carriers tend to have the lowest average costs in their initial single output model which adjusts for differences in factor costs and shipment characteristics; but further investigation leads them to conclude that these observed differences can be explained by differences in traffic characteristics

between provinces. Chow and McRae and Prescott, however, find that the superior performance of Alberta carriers cannot be completely accounted for by exogenous variables which distinguish the type of trucking activity carried on in Alberta from that in Ontario and Quebec; the implication is that regulation has had an important bearing on the high operating costs of Quebec and Ontario carriers. The operating costs of carriers in these two provinces would include those direct costs which firms incur as a result of their participation in the regulatory process - in other words the costs discussed in the previous section. However, the work by Chow and by McRae and Prescott indicate that the cost disparities between regulated and unregulated carriers are much greater than could be explained by these direct process costs. These studies suggest, in other words, that regulaton in Ontario and Quebec has indeed contributed to a substantial degree of technical inefficiency.

Applying his pooled model to different carrier groups Chow finds costs to be substantially higher in the regulated provinces; the most marked differrences apply to LTL carriage in which costs in Ontario and Quebec are estimated to be respectively 100 per cent and 45 per cent higher than in Alberta. In a further test Chow includes a variable for capacity to pick up the influence of possible exogenous differences in demand patterns and traffic balance that were not previously captured; this somewhat reduces the size of cost differences but it does not change the general results of the analysis. McRae and Prescott using a pooled model also find that Alberta carriers are the most efficient, although the estimated cost differences are not as marked as indicated by Chow; costs in Ontario are found to be about 20 per cent above those in Alberta and the results in this case are not affected by the inclusion of a capacity utilization variable. McRae and Prescott also compare performance by computing the effects of applying the cost function developed for each of the provinces to the data on output and factor costs for the other provinces. This approach, which is prompted by the

fact that average cost is not well-defined for multi-product firms, shows, for example, how Ontario costs would differ if the same bundle of output could be produced using the cost function developed for Alberta. The results of this exercise support the conclusion that Alberta firms are relatively efficient at producing LTL output, while also suggesting that Ontario firms may have some cost advantages in the production of TL output.

The studies by Chow, and Cairns and Kirk are discussed by Consumer and Corporate Affairs Canada (1981), the Interdepartmental Committee (1981), and McRae and Prescott (1981). Some of the comments that are made apply as well to the cost analysis by McRae and Prescott and it's clear that the results of the three studies must be interpreted cautiously. The more important questions and concerns can be briefly indicated:

(i) Problems with the basic data: Questions arise with respect to data coverage, particularly as applies to intra-Alberta carriers, and with respect to data reliability. In regard to the latter, it has been noted, for example, that there are sometimes important differences in the revenue estimates derived from the MCF and OD surveys.

(ii) Questions about sample selection: Chow concentrates on general freight carriers which are thought to employ a common production technology, but in fact all the studies include carriers involved in widely differing activities. Moreover, all studies include among their Alberta firms, carriers that earn a significant portion of revenue from interprovincial activity (and hence are subject to regulation); and they include among their Ontario and Quebec firms carriers that earn a significant portion of revenue from purely local activities (and hence are largely unregulated).[2] Notwithstanding the addition of such carriers the samples employed are in some cases very small; in their multi-output measure, for example, Cairns and Kirk

use a sample containing only 51 firms, only 34 of which produce all shipment miles in ranges common to all the provinces.

(iii) Questions about the appropriate form for the model: One of the main questions is whether or not it's appropriate to pool provincial data. Chow's test results suggest that there are not differences in cost structure which make such an approach inappropriate, but some questions remain. Questions also arise with respect to Cairns and Kirk's multi-output function which segregates LTL, TL short-haul and TL long-haul, but does not otherwise distinguish between different shipment characteristics.

(iv) The problem of distinguishing between exogenous and endogenous variables: If differences in capacity utilization primarily reflect the influence of regulation then this variable should not be treated as an exogenous variable, as it is in Cairns and Kirk and in Chow's second model. Further, if shipment characteristics such as the length of haul, are influenced by regulation, the process of standardization would tend to submerge some of the impact of regulation.

(v) The problem of accounting for quality differences: None of the models have been able to account for possibly significant differences in the quality of service being provided.

(vi) Questions relating to the influence of regulation on intra-Alberta carriers: As we noted in Chapter V, the "unregulated" Alberta carriers also are constrained to operate within arbitrary provincial boundaries and are not completely free from the influence of regulation; comparisons based on the performance of Alberta carriers may therefore understate the full influence of regulation.

These considerations underline the observation that none of the recent cost studies are definitive, and that their general findings are best viewed in conjunction with other evidence relating to the performance of for-hire trucking. In this regard it's significant that the results pointing towards the poor performance of LTL carriers is consistent with theoretical considerations, and with information on the nature of regulation and the impact of regulation on prices and profits in for-hire trucking.[3] The cost studies provide one more link in the chain of evidence connecting the existence of regulation with lower levels of efficiency in for-hire trucking.

c) Allocative Effects

The effect of regulation on the efficiency of resource allocation has traditionally been the major concern of economists. The major question in this context is whether the goods and services produced within a regulatory environment appropriately reflect the desires of consumers. The implication of much of the general analysis in the regulatory area is that a different mix of output or output quality and/or a different distribution of goods and services could often increase overall economic welfare in the sense of improving the position of some market participants without diminishing that of others.

Economists have attempted to estimate the losses due to misallocation by comparing price and outputs in the regulated market with the equilbrium values that would be likely to prevail in the absence of government intervention. In general the greater the divergence in price and output between the actual and free market outcome the greater is the estimated welfare loss associated with the misallocation of resources.[4] For consumers the loss consists of the decline in consumer surplus, defined as the maximum sum purchasers are willing to pay above the amount they currently spend on the particular good or service.

This general approach relies on a number of simplifying assumptions. There is an important presumption that in the absence of regulation the market would generally tend towards a competitive outcome in which prices are equal to all the costs (private and social) of producing one more unit of output (i.e., the marginal cost). This need not be the case, and an unregulated market may be subject to imperfect competition, significant externalities, and tax-related and other distortions, all of which will weaken the link between prices and costs. It may also be the case that the competitve model which is used as norm is inappropriate because optimum pricing conditions are not being adhered to in the rest of the economy. Under these conditions the theory of the second best indicates that optimal resource allocation requires a divergence between price and marginal cost so as to compensate for the divergence in other sectors and particularly in the market for closely related goods and services. If, for example, prices in the economy were generally greater than marginal cost, some departure from marginal cost pricing is required if the particular sector being studied is not to overutilize resources. Imperfections in the specific market or in the economy generally could conceivably lead to distortions exceeding those which may arise as a result of regulation. On the other hand, economists have often found that imperfections in the economy are not so significant that they jeopardize the relevance of the competitive model and its appropriateness as a norm for optimal resource allocation.

A further qualification applying to the traditional approach for measuring allocative effects is that it is extremely partial and does not take into account the distortions and misallocations which are likely to follow in other markets and other sectors. The losses that are represented by the traditional welfare triangle are only the first round effects of deviations from optimal pricing. Where the prices for intermediate goods and services are set inappropriately, this will influence production decisions and the resulting allocation

of resources in other markets and sectors. The distortions arising from these second and third round effects will in some cases greatly exceed the initial misallocation.

While some of these qualificatons are relevant to the trucking industry and require explicit consideration, it can be noted as a starting point that regulated trucking markets in Canada appear to deviate significantly from the requirements for optimal resource allocation. In the section on prices we observed the systematic differences in adjusted rates between provices subject to different regimes, and we noted the more general evidence suggesting that regulation, where it is effective, does indeed impact on prices. The evidence assembled in subsequent sections on licence values, profits, and costs, allow us now to talk with greater certainty about the relationship between regulation and prices in the Canadian for-hire trucking industry. Both the relatively low level of rates in Manitoba and Saskatchewan - which appear in some cases to have led to an inappropriate rate of return on the capital employed in trucking - and the relatively high rates in Ontario and Quebec are potentially significant sources of allocative inefficiency.

The extent of allocative inefficiency will depend both on the effects of regulation on for-hire rates, and the elasticity of demand for trucking services. While estimates of demand elasticity vary, there is no question that demand in the for-hire industry is sensitive to rates. An elasticity of unity has been adopted in a number of studies, based on estimates for the U.S. trucking industry developed by Benishay and Whitaker (1966). A more recent and detailed analysis of the U.S. industry by Friedlaender and Spady (1979) has provided elasticity estimates in the area of unity for the transport of durable and non-durable manufacturers, significantly above one for mineral, chemical and related products, and below one for petroleum and

related products. Evidence of a different nature on the effect of higher trucking rates comes from the reports of users of for-hire trucking services. Imperial Oil (1980) has reported, for example, that it could transport its own goods at a cost well below for-hire rates in Ontario, but not in the unregulated province of Alberta; and the company considered this disparity in for-hire rates to be the reason that its own fleet moved 75 per cent of the firm's transport volume in Ontario, and 25 per cent in Alberta. The impression that regulation, at least in part because of its impact on trucking rates, has contributed to the growth of private carriage is shared by other transport managers. The perspective of users of for-hire services, as reported, for example, by Consumer and Corporate Affairs Canada (1981 p. 29-34) and the Ontario Ministry of Transport and Communications (1973c), supports the conclusion that for-hire trucking demand is significantly responsive to price and that regulation has thereby had an important allocative effect.

To develop a more precise notion of allocative inefficiency, consideration should be given to the possibility that some of the differentials that were identified may be due to differences in the quality of trucking services between regulated and unregulated provinces. The McRae and Prescott study adjusted for basic differences betwen provinces in output mix, but it could not take account of such qualitative differences as in the speed and frequency of service, the extent of direct as opposed to interlined movement, etc. There is some evidence to suggest that regulation does exert some influence on the type of trucking services produced and, therefore, that the distinction between regulated and unregulated markets is not just in prices but, more accurately in the price-quality combination of services being provided. Expanding the analysis to take account of quality differences doesn't eliminate the problem of allocative inefficiency, though it does change the nature of some of the required calculations of welfare loss.

The maximization of economic welfare requires that the quality as well as the mix of goods and services produced correctly reflects the desires of consumers. In the case of U.S. airlines, for example, Douglas and Miller (1974) present a persuasive case that the inflexibility of rates due to regulation led carriers to compete on the basis of quality (primarily, through more frequent scheduling) and that this forced consumers to purchase a significantly higher quality of airline service than they would have preferred. Canadian truckers are in a quite different position since the existing regulatory structure does not for the most part effectively prevent them from competing on rates. Nonetheless the regulatory system in Canada does not have a neutral influence on the quality of trucking service. In some cases specific conditions relating to the frequency and type of trucking service are attached to the licence permit. In the provinces with effective rate regulation conditions of service are prescribed in an attempt to prevent rate control from being undermined through a deterioration in service quality. In all provinces carriers have been encouraged to offer new types and levels of service as a way of strengthening their application for a new licence. There are also indications that carriers have at times chosen to compete by offering new service features because of institutional rigidities and delays associated with requirements for the rate filing and rate approval.[5]

In their comparative study Lord & Shaw (1980) found some evidence that small communities in Ontario tend to receive a higher quality of service than their counterparts in Alberta. In Alberta the inter-city carriers tend to ship from the main centres to their terminals, leaving the final distribution of goods to small communities to local trucking firms. In Ontario, however, Lord & Shaw observed that the inter-city carriers often run direct to these communities: "Many carriers operate 'pedal runs' where freight for several communities is loaded on a trailer and then distributed as the trailer moves from community

to community. And, these pedal runs are offered on a regular schedule, even if the trailer is not full".[6] The suspiscion that the benefits associated with the single line service provided by inter-city carriers in Ontario are incommensurate with the costs receives some support from the indication by the Ontario carriers in the study that "they would rather hold freight and tranship if it were not for regulation".

While in this discussion we are focussing on distortions in the market for motor carrier outputs, a further misallocation of resources may result from price distortions in the market for factors of production. Of particular interest in this connection is whether and to what extent labour earnings in trucking are higher than they would otherwise be due to regulation. To the extent that regulation does lead to higher earnings and these cannot be justified as a payment for a "higher quality" of labour service significant allocative inefficiency may result. The impact of regulation of earnings has received some attention in the literature but the evidence is far from conclusive. David Schwartzman (1969) examined the general question of whether workers in monopolistic industries receive economic rents by comparing earnings in Canadian and U.S. industries with markedly different structural characteristics; he concluded that there was "little ground for believing that monopolistic firms either exploit their employees or distribute excess profits to them". Two studies focussing specifically on the impact of trucking regulation in the U.S., however, found after adjusting for demographic variables, that workers in regulated firms did receive significantly higher compensation. Moore (1978) estimated the combined impact of regulation and unionization on compensation in trucking to be between 37 per cent and 55 per cent. Hendricks (1977) found that regulation had a significant positive effect on the earnings of truck drivers even if no account is taken of the indirect effect of regulation in contributing to unionization and to industry structures more condusive to high wages. The relationship between regulation and earnings in the Canadian trucking

industry is more problematic. Truck drivers in Alberta do not receive less than their counterparts in regulated provinces after adjusting for overall provincial wage differences, even though a somewhat smaller proportion of industry workers are unionized in Alberta. The limited Canadian data available, however, does not permit satisfactory analysis of this issue.[7]

To summarize, the available evidence indicates that regulation has had a potentially important allocative impact. Through its influence on the price and, to some extent, the quality of for-hire trucking service, regulation appears to have had the effect of denying some consumers their preferred market choices and thereby creating a significant welfare loss. These conclusions may have to be qualified to take account of other distortions in the economy which could perhaps have an offsetting influence on resource allocation. Moreover, the costs of regulation in terms of allocative inefficiency would not appear to be nearly as high as its costs in terms of technical inefficiency. While in the former case the focus is on the deadweight losses associated with the familiar "welfare triangle", in the latter case the concern is with resource waste and higher production costs over the entire output of the for-hire industry. These considerations, however, should not lead one to dismiss the allocative effects of trucking regulation; unless related distortions in the economy are such as to make the results derived from an analysis for an unfettered competitive market completely irrelevant, the evidence suggests that regulation does indeed have significant costs associated with its impact on allocative efficiency.

## A Digression on Other Market Distortions and Second Best Considerations

Transport markets in Canada are in fact subject to a number of distortions in addition to those which are attributable to regulation. In this broader framework in which all deviations

from optimal conditions are brought into the analysis the net impact of regulation on resource allocation becomes much more difficult to discern.

Contrary to what is sometimes alleged, market distortions are not a problem because of the nature of the trucking industry and the characteristics of its output. Previous sections suggest that in the absence of regulation the structure and competitive characteritics of the trucking industry would be generally consistent with the requirements for optimal resource allocation. Some observers have emphasized the significance of joint costs in trucking and the problem this presents in terms of marginal cost pricing, but joint production does not preclude efficient resource allocation. While a front haul and a corresponding backhaul are jointly produced and neither output has a separate cost function in the true sense, each of these joint products does have a competitive supply function. As Kahn (1970) points out, the intersection of these supply functions with the respective demands yields an economically optimal set of separate prices for the joint products that will equate each price to the corresponding marginal opportunity cost of production (while at the same time equating the total of the two prices to the composite marginal cost). Competition can therefore produce an efficient solution in markets with joint products.

The intervention of governments in transport markets raises difficulties of a different nature. Government taxes and subsidies affect the relationship between costs and prices and can significantly influence the allocation of resources between trucking and other transport modes. There are a number of aspects to this problem,[8] but particular concern has focussed on the extent to which governments assist in the provision of highway infrastructure and the distinction that thereby arises between motor carriers and rail freight carriers who must finance most of their own infrastructure. What is important in terms of

optimal pricing is that prices reflect all the additional costs that are imposed on the economy by the production of one extra unit of output. While sunk costs which are not a function of use should not enter into the pricing decision, economically efficient pricing does require that account be taken of the wear-and-tear to transport facilities and the maintence and operating expenditures that do vary with use.[9] The marginal cost of a motor carrier shipment includes the additional repair and replacement costs to the roadbed which are attributable to the shipment and a rate which does not reflect this aspect of costs contributes to a misallocation of resources.

While the available data does not permit a precise accounting, the disparity between user charges and expenditures on the highway mode by governments (particularily provincial and municipal) suggests that motor carriers have not been made to recognize the full additional costs associated with the provision of their services. In 1975, for example, user charges, levied mainly through license fees and fuel taxes, allowed recovery from commercial motor carriers and private automobile users of only about three-fifths of total government costs in that year on the highway mode (Canadian Transport Commission, March 1979).[10] The data is deficient for our purposes since it does not distinguish between commerical motor carriers and other users of highway facilities, and it refers to all costs incurred by government, only some of which are variable and enter in to the determination of the short run marginal costs of trucking services. While, for example, a significant portion of the depreciation included in the calculation of government costs is a variable expense related to extent of highway use, a portion of depreciation represents an allowance for the influence of other factors (including time and the elements) and does not bear on the marginal opportunity cost of trucking output. Notwithstanding these limitations the data indicates that road users have been heavily subsidized and they suggest that as a result motor carriers probably have not had to bear the full costs of maintaining and repairing highway facilities.

Haritos (1973) attempts to provide more precise data of the type required for this kind of analysis in his study on rational road pricing. The analysis of road charges in this study refers to a single province (Ontario) and only covers the year 1968. While Haritos calculates road user charges to cover both 'inescapable' and 'escapable' road costs, it is only the latter variable costs which are relevant in terms of optimal pricing. Comparing the actual fuel tax in Ontario in 1968 with Haritos' estimation of the required fuel or vehicle-mile charge to cover escapable road costs (and using the most realistic assumption in the study[11]) indicates that truckers in the province of Ontario operating the larger vehicles (i.e., 12,000 pounds and over) were significantly undertaxed. Motor carriers employing vehicles over 32,000 pounds and diesel-fueled vehicles were paying well below the appropriate level based on the additional costs associated with their activities. Some early studies in the U.S. have raised similar concerns that heavy diesel trucks were not bearing the full costs attributable to their use.[12] It is significant, moreover, that these studies exclude social costs from the analysis; taking into account the costs of congestion and pollution would raise the appropriate charge substantially for many types of trucking activity.

These studies suggest that motor carriers have traditionally been significantly undertaxed. Very recently there have been some sharp increases in provincial taxation as a result of the increase in oil prices and the general shift to an ad valorem system of provincial taxation. Recent increases, however, have only partly offset the decline in the real level of provincial gasoline taxation over the 1970s, and they have not as yet eliminated the problem associated with an inadequate level of user charges. One effect of the resulting subsidization is to provide motor carriers with an incentive to minimize operating costs rather than total system costs; the incentive for motor carriers to increase vehicle size, for example, is not offset by the increased social costs this may involve in terms of more

rapid deterioration of highway surfaces. The undertaxation of motor trucks also affects the competitive position of motor carriers and the allocation of freight between different transport modes. Governments assist only marginally in the provision of railway infrastructure, and provide minimal subsidization to the transport by rail of general freight.[13] Therefore quite independent of regulation, the division of traffic and the allocation of resources between rail and truck would differ from that which would result from adherence to the rules for efficient pricing.

In general, while the undertaxation of the highway mode encourages a greater than optimal use of motor carrier services, regulation of entry into trucking contributes to a reduced utilization of for-hire trucking. The distortions introduced by governments through subsidization and regulation of trucking output thus work in opposite directions, although there is no basis to presume that the net offset on the allocation of resources between rail and truck transport is anywhere near optimal. Moreover, there is no offset to the important distorting effect of regulation on the allocation of resources between for-hire and private trucking.

The issue of optimal pricing becomes more complex when allowance is made for the possible existence of scale economies in rail transport.[14] The introduction of scale economies doesn't alter the optimal conditions; maximizing the combination of consumer and producer surplus still requires that price equal marginal costs for each mode and for each type of output. However, application of this rule would lead to deficits for the railroads, since marginal costs are necessarily below average costs in a declining cost industry. While the resulting deficit could be financed through taxes, this raises new problems of an efficiency and equity nature.[15] And so consideration has been given to "second best" optimization conditions, which would maximize welfare subject to the constraint that the railroads

should be allowed to derive sufficient revenue to cover all costs. Braeutigam (1979) has extended the work of Baumol and Bradford (1970) on efficient pricing with a multiproduct monopoly to develop a set of rules for second best pricing in such circumstances. The solution to the problem requires railways to price their services in excess of marginal cost, with the percentage markup over marginal cost for any commodity being proportional to (the inverse of) the elasticity of demand for rail services (and with the factor of proportionality being equal across commodities); competing modes - such as truck transport are required similarly to establish prices above marginal cost, the mark-up for particular commodities in this case being determined in part by the responsiveness of rail prices to changes in the quantity of the commodity transport by the alternate mode. In effect, efficiency declines in truck transport due to the departure from marginal cost pricing, but this is more than offset by the gain in efficiency resulting from the associated increase in demand for rail services.

It is interesting that this second best result leads to supernormal profits in truck transport (though not rail) and to the possibility of entry regulation to maintain prices above marginal cost. The results are also consistent with value of service pricing in which higher rates are applied to commodities with more inelastic demands. However, the analogy between existing practices and Braeutigam's second best solution is more apparent than real. The regulatory authorities do not possess, and would have enormous difficulty obtaining, the data required to give expression to these rules. Indeed, "the information required on the numerous cross elasticities of demand alone is enough to make the outlined program quite unwieldy".[16] Moreover, even if the derived results could be reproduced, they do not provide a justification for entry regulation. The rules were addressed at a specific problem (optimal pricing with economies of scale in one mode) and worked out within a limited frame of reference. It is necessary to weigh any allocative

benefits that may arise from attempts to comply with the second best rates against the other costs - the implementation costs and the effects on technical and dynamic efficiency - associated with entry regulation.

Within a broader context in which we look beyond the effects of the prescribed pricing rules on the division of traffic between truck and rail, even the allocative benefits of the proposed solution become questionable. One important element omitted from this analysis is private trucking. Allowing common carriers to price their services in excess of marginal costs and earn supernormal profits can be expected to lead to a continuing longer-term growth in private haulage. Since private haulage tends to be more costly in real resource terms than common carriage the resulting longer-term welfare losses must be weighed against any more immediate gains that may arise from a more appropiate division of traffic between truck and rail. Roberts and Simmie (1978), who have attempted to adjust Brauetigam's results to take account of private carriage, have highlighted the policy tradeoff that's involved in the balancing of present welfare gains against future losses. They suggest that an optimal policy would lead to the establishement of rates which would slow but not prevent the growth of private carriage.

In assessing the allocative impact of any of these second best solutions it's also necessary to consider the distortions that may arise in other sectors of the economy from pricing signals which do not appropriately reflect the cost of transport services. Production, location, and consumption decisions throughout the economy may be very significantly influenced by a policy which leads to rail and truck prices in excess of their respective marginal costs. The second best requirement for higher tariffs on commodities with more inelastic demands, for example, could cause manufacturing firms to locate too close to consuming centres and inappropriately far from raw-material centres. The extent of these distortions in the

rest of the economy, which are also a product of the existing system of motor carrier regulation are exceedingly difficult to estimate. Friedlaender (1969) and Moore (1975) both emphasize the potential importance of these second and third round effects, while noting the near impossibility of pinning down the magnitudes involved. (Friedlaender speculates, however, that in the U.S. the rate structure has possibly exerted a greater impact on locational decisions than on basic production and consumption decisions.)

Consideration of the interconnections between for-hire trucking and private trucking and of the implications of transport rates for decisions taken in other sectors of the economy reinforces the case for prices which reflect the marginal costs of trucking services provided. The resulting prices would not coincide precisely with those which would result from a sophisticated attempt to develop second best rules, in which - following the procedure established by Green (1961) - trucking rates for particular commodities are set so as to compensate for the departures from marginal cost pricing in related industries and sectors (including private trucking, all competing modes, and industries which are major suppliers of inputs to, or buyers of outputs from for-hire motor carriers).[17] However, the important interrelationships between for-hire trucking and other industries which are basically competitve suggest that marginal cost pricing would not involve a major departure from second-best optimality. And given the enormous difficulty of computing second best prices, marginal cost pricing for trucking becomes a highly attractive option notwithstanding the possible need for rail freight rates to exceed their competitive levels. Brauetigam has pursued this line of thought and highlighted the advantages of an approach which leaves at least constant cost modes, such as trucking, unregulated. It is necessary to recognize, however, that the introduction of marginal cost pricing would require some adjustments to be made for the inadequacy of user charges (noted previously) and their failure

to reflect the full additional costs to the public sector associated with the provision of both private and for-hire trucking services.

When the allocative effects of regulation are examined in this general context, the impact of entry control on rates is still a matter of concern, though some adjustment in view is required. The departure of trucking rates from their true competitive level (i.e., the level that would prevail in the absence of regulation) compensates to a limited extent for other distortions in the economy, including particularly the under-taxation of trucking activities. While regulation leads rates in most provinces to rise above the desired level in terms of allocative efficiency, and contributes to the production of a non-optimal quality of trucking services, the resulting distortion is not as substantial as suggested by the simple model of the trucking market described in the previous section. At the same time, however, the full impact of any distortion in the trucking market is much greater when account is taken of the implications for all related industries, including especially major users of trucking services.

d) Dynamic Effects

Investment Instability and Excess Capacity

While trucking does not qualify as a destructively competitive industry, there is no reason to expect that it would be immune from the problems of investment instability and periodic excess capacity which confront other competitive industries. It has long been recognized that the competitive market has no built-in mechanism to convey to existing and potential participants how much investment is required by each. Excess profits are a signal of the need for additional investment but they do not provide the guidance required to ensure that subsequent investment will not be either inadequate or excessive.

G.B. Richardson (1959) has argued on this basis that some type of restraint, either "natural" (i.e., arising from market imperfections) or "contrived" (i.e., arising from monopolistic practices), is necessary if the economy is to respond to demand changes with the correct amount of investment. It can be claimed that regulation helps fulfill this role and that, as a result, one of its more important effects is to reduce the degree of investment instability in the trucking industry.

In the absence of controls it seems just as likely that the market could generate inadequate investment as excessive investment. However, it is the latter which is of most concern to those who argue on behalf of the need for regulation in this industry. The potential for investment to overshoot and lead to excess capacity is often the major concern of those who argue for entry controls on the basis of "economies of scale" and "economies of utilization" in trucking. The economies generally referred to in this context are not the long run economies of scale addressed in Chapter III, but rather relate to the tendency for average costs to increase as production is reduced and fixed costs must be spread over a smaller quantity of output. In the absence of entry restrictions, the argument goes, new entry would reduce the demand facing each firm causing production to occur at a relatively high point on each carrier's short-run average cost curve. Similarly, the increased competition for traffic would reduce the opportunity for backhauls and lead to lower average load factors and higher average operating costs for each carrier.

To treat the related phenomenon of investment instability and excess capacity as short-run and largely transitional problems is not to dismiss their potential significance. Some parts of the industry - particularly the TL segment - are faced with a fairly elastic supply of potential entrants, and, though trucking is not unique with respect to its entry characteristics, these aspects can significantly complicate the problems of adjustment to a change in market conditions. Entry into trucking

is facilitated by the low capital requirements to establish a basic trucking operation,[18] and by the fact that most trucking assets, and trucks in particular, can be used as collateral in securing a loan. As a result of the ability of most carriers to use debt financing based largely on chattel mortgages, the riskiness of the investment has little effect on the amount of debt a firm can secure or the interest expense associated with that debt. There is often a tendency to exaggerate the ease of entry into trucking; new entrants may in fact, face significant difficulties in contending with the general preference of shippers for experienced carriers with a proven record of reliability. It is significant, however, that financing poses much less of a constraint to new investment in trucking than in most other industries.

While data on capacity utilization are lacking, there are some indications of the problems of excessive investment to which an uncontrolled market may be subject. The Transport Canada Western Canada Truck Origin-Destination Survey 1978 compared the average payload to capacity ratio for trucks operating in each of the four western provinces. A similar survey produced partially comparable results for the year 1973. The 1978 survey indicated that the payload to capacity ratio was significantly lower in Alberta (based both on the ratio for intra-provincial trips and for points surveyed in the province) than in the other provinces surveyed (Saskatchewan, Manitoba and B.C.). The data which suggest that trucks are less fully utilized in Alberta due to some combination of lower load factors and a higher percentage of empty trucks are difficult to interpret. It is difficult in particular to determine if and to what extent, regulation, as opposed to traffic imbalances, have been responsible for the recorded differences between provinces in the ratio. Comparisons are further complicated by the reference in the survey to shipment weight, rather than shipment volume. At any rate, these two surveys suggest that a very substantial change occurred in trucking conditions within Alberta

between 1973 and 1978. In 1973 trucks surveyed within Alberta had one of the highest payload to capacity rates (70.8 per cent); in 1978 trucks surveyed in the province had the lowest utilization rate (50.9 per cent). It is unlikely that changes in traffic balance or the average volume of commodities being carried in the two periods could account for much of the drop recorded in the utilization ratio in Alberta. As the authors of the 1978 Report suggest, the drop in the ratio was probably in large part due to a substantial expansion of capacity in Alberta to meet the demands of a booming economy. The recent experience of the trucking industry in Alberta, therefore, would seem to provide an indication of the problems of excessive investment which could arise where there is unrestricted entry combined with an exceedingly buoyant investment climate.

While unregulated trucking markets are subject to the instability in investment to which highly competitive markets generally seem prone, there is nonetheless reason to question whether entry restrictions provide an effective restraining influence on investment activity. We have noted elsewhere that entry regulation in trucking primarily involves control over the number of firms in the industry, not the number of vehicles used by any one firm. This is similar to the situation that has prevailed in the U.S. where Friedlaender (1969) has concluded that "the [Interstate Commerce] Commission has failed to limit trucking capacity in any meaningful sense". In fact, there is reason for the opposite concern, namely that regulation may have encouraged some inappropriate capacity expansion. Carriers may be required to maintain a significant margin of reserve capacity to comply with the service requirements specified in their licence. Even where there are no particular service requirements, however, carriers are aware that their failure to adequately service all market demands, may create a strong argument for allowing increased entry. The failure of pricing systems to fully reflect the higher costs associated with peak and irregular trucking demands further contributes to the onus on the carrier to maintain significant reserve capacity.

There are other inflexibilities which contribute to excess capacity in regulated markets. Most serious are the general route and commodity restrictions which prevent the transferring of capacity from one market to another in response to changes in market conditions. The result is that there have been situations in which trucks are running with considerable unused capacity in one market, while at the same time there is a shortage of for-hire capacity in an adjacent market. Regulation changes the adjustment mechanism in trucking and in the process reduces the normal ability of trucking markets to rid themselves promptly of excess capacity.

Indeed, in considering the problem of excessive investment it is important to appreciate the low capital requirements of most segments of the trucking industry, and the speed which resources can be shifted in response to a change in economic conditions, or the realization by investors that they have made a miscalculation. These features distinguish trucking from industries which require a great deal of complex and very durable equipment and where adjustments tend to take place over a very long period of time. While in the latter situation errors in investment can result in substantial waste, in trucking the capital equipment can for the most part be readily transferred to other firms and the resource loss tends to be minimal.

These considerations do not suggest that regulation is likely to reduce excess capacity, but rather that its main impact is to alter the dynamic process by which excess capacity is generated and market balance is restored. By reducing that element of investment variability which arises from new entry (as opposed to capacity adjustments by firms already in the industry) regulation helps reduce overall investment instability. At the same time it encourages excessive capacity expansion by existing firms and impedes the ability of carriers to adjust to developments which push operating rates below the desired level. Utilization rates are likely to be subject to sharper fluctuations

in an unregulated market but there is no reason to expect that there would on average be greater excess capacity under these more dynamic market conditions.

Technological Change

One of the potentially most important, and at the same time one of the least understood effects of regulation is on innovation and the rate of technological change. Analysis of this aspect is severely complicated by the absence of any operational standard by which to gauge the performance of an industry. The critical question is how well has an industry performed relative to its potential for productivity growth; but there is no way to document possible or potential performance and so the norm by which the performance of industry is measured must be basically conjectural.

The trucking industry benefited from a range of technological advances through the 1950's and 1960's. Improvements in vehicle design and construction reduced vehicle tare weights and allowed larger payloads. The development of the gas turbine engine allowed a 50 per cent reduction in engine weight and a 30 per cent reduction in engine size over conventional diesel engines (CTC, 1975). Related improvements have increased fuel efficiency, reduced maintenance and extended the service life of vehicles. More recently the growing application of computer technology has facilitated the scheduling of truck movements and helped increase the efficiency of terminal operations. The lack of reliable trucking data prior to 1974 makes it difficult to measure the long-term trend in real output and productivity. Statistics Canada's measure of RDP divided by an index of labour growth suggests an annual average rate of productivity increase over 1961-78 of about 3.0 per cent per annum, which is below the rate for manufacturing but slightly in excess of the rate for all industries. The RDP index for trucking, however, is only an approximation which is constructed on the basis of the trend

amongst some assorted indicators of industry growth. Given the inadequacy of the available data it is impossible to be very precise in this area. Some U.S. studies have suggested that in the period from about 1945 to 1960 transportation was one of the most dynamic sectors in the U.S. economy, but that this was due to the performance of modes other than truck.[19] More recent evidence suggests that the high rates of productivity growth found for rail, water, etc. could be largely explained by changes in the composition of inputs (the substitution of capital for labour), deterioration in the quality of output, and changes in the composition of the output mix (i.e., more carload long-haul, traffic, etc.); these changes would all tend to raise a measure relating ton miles of output to manhours of labour input. Adjusting for these aspects and taking account the experience of the trucking industry through the more recent period when a number of important technological changes have been introduced produces a more favourable picture of the performance of motor carriers, relative to that of other transport modes and to other industries generally. It is difficult, however, to go beyond this general assessment that the industry has experienced significant technological change and a reasonable rate of productivity growth.

Notwithstanding these results there is reason to suspect that the industry has not performed as well as it could, and that regulatory rules and constraints have in some respects impeded the development and application of new technology. In discussing the regulatory environment that had existed in the U.S., a number of authors have emphasized the conservative bias of the Interstate Commerce Commission and its orientation towards preserving the status quo in U.S. transport industry. George Wilson has commented that "regulation -- as now practiced is obviously more effective in the negative role of preventing abuses of economic power or preventing the elimination of competitors -- than it is in the positive role of helping to identify and stimulate changes that would enhance efficiency".[20]

Aaron Gellman (1971), in a similar vein, has described the ICC as being of the prevailing view "that the public is best protected by maintaining stable, low-risk industry structures, in which quality and frequency of service, once established, will be maintained". While there are major differences between the trucking regulation which exists in Canada and had existed in the U.S., these comments are relevant to the operation of the provincial trucking boards. In Canada, as in the U.S., regulatory policy has been more concerned with maintaining the financial well-being of existing carriers, than with stimulating innovation and providing dynamic change.

Restrictions on routes and commodities, on fleet and load size, on frequency and level of service, etc., reduce the number of variable factors the motor carrier is free to manipulate and the available opportunities for the development and application of new technology. In the discussion of technical efficiency it was indicated that operating costs are higher than they could be were carriers less constrained in deciding how to produce trucking services of a given quality. New opportunities, relating particularly to routes that could be used and commodities that could be transported, would lower the costs of the average carrier from say $AC_1$ to $AC_2$. In a dynamic context, it's necessary to consider the further possibility that $AC_2$ could itself be reduced - to say $AC_3$ - given sufficient opportunity and incentive for innovation. In other words by focussing on the cost implications of regulatory rules and restrictions based on the existing state of technology, (i.e., by just comparing $AC_1$ and $AC_2$) we may significantly underestimate the full longer-term impact of regulation. In this context Gellman (1971) has singled out those regulatory restrictions affecting backhauls, which he regards as "probably the most severe regulatory constraint on innovation in highway transport". Gellman suggests that in the absence of a legal constraint on backhauls, the apparent physical constraint could often be overcome. General commodity carriers, for example, could use large collapsible rubber tanks to haul either dry or liquid bulk

cargoes as well as dry freight. Similarly, with appropriate operating authority, highway carriers of new automobiles could adapt their trailers to accommodate a range of commodities and thereby significantly reduce the proportion of empty backhauls. These examples emphasize the fact that while empty miles are inevitable in trucking, such wasteage could be considerably reduced in a flexible and dynamic economy. The more general concern which these examples highlight is that a wide range of potential opportunities for reducing costs are not being pursued because of the broad restrictions attached to the licenses of motor carriers.

In the U.S. considerable attention has focussed on the impact of regulatory restrictions on pricing. There are several examples of major transport innovations which were frustrated because the lower rates required to make them profitable could not be established. In one of the more widely cited cases the Southern Railway System encountered successive administrative and legal delays extending over 4 years before it was free to introduce its new more efficient Big John cars and lower rates appropriately.[21] The ability of motor carriers to file independently and to lower rates as desired in most provinces makes the situation within the Canadian trucking industry quite different. However, regulatory requirement for filing and, in some cases, approval, and the role and influence of tariff associations do reduce price flexibility in the trucking industry. For an activity such as innovation where success if often highly sensitive to timing, institutional delays associated with the introduction of a new price structure can significantly reduce profitability. While the impediments to pricing freedom are minimal by comparison to the Southern Railway example, they can nevertheless have a substantial bearing on the length of that critical period when the innovating firm gets a jump on its competitors. And in the process they can significantly alter the attractiveness of innovation in comparison with available alternative uses for capital.

One effect of the reduced pricing flexibility under regulation is to remove the incentive for shippers to introduce technology that could expedite the loading and unloading of shipments. There are a number of possibilities relating to dock design, loading machinery and packaging which could be exploited under more favourable conditions. The failure of the tariff structure to reflect differences in the costs of loading and handling the goods of different shippers was a major concern raised in some of the submissions to the Ontario Select Committee.

While there are a number of aspects of the regulatory process which are inimical to technical change it is extremely difficult to determine the size and pervasiveness of regulatory impacts in this area. If we focus on the general environment for technical change, for example, it is significant that for-hire trucking benefits less than other industries from the important stimulus which comes from the activities of innovative, aggressive, new firms. At the same time, however, most major trucking markets are competitive and most carriers have not been cut off from competitive pressures for the adoption of important innovations. Recent work on the relationship between market structure and innovation, as discussed in Kamien and Swartz (1975), gives rise for concern about the incentive for dynamic change in highly concentrated trucking markets, but it does not suggest that the structure of regulated trucking markets more generally is unfavourable to technical innovation.

The evidence on R&D and on the response of the trucking industry to new innovations is no more conclusive. Trucking enterprises and transport firms in Canada generally devote a very small proportion of their revenue to R&D,[22] relying instead on the developments which are an outgrowth of the research activity of equipment supplies. This is largely a reflection of the fact that innovations can be more economically purchased than developed by the carriers themselves. The evidence does not

allow one to assess, however, whether regulatory constraints have contributed to the low level of R&D by transport firms, and whether, as Wilson suggests, the reliance on transport suppliers "who are myopic as far as the total transport function" has led to developmental gaps and technological distortions. Similar questions arise when it comes to interpreting the fact, as noted by McLachhan (1972), that truckers in the competitive provinces have been the first to employ some of the most important innovations in the field. Long-distance refrigerated meat carriage originated in Alberta in the 1950s; in the more recent period Alberta has been the development ground for bulk hopper trailers, triple trailers and oil field hauling innovations. Further study is necessary to determine the importance of regulation relative to other variables that may have influenced the pace at which such innovations are introduced. Indeed, there is much to be learned generally about the relationship between regulation and technological change in the trucking industry. The assorted evidence suggests that regulation does indeed impinge on the normal dynamic process of technical change and development in the Canadian trucking industry, but the extent of that influence is a matter for further study.

e) Conclusion

The cumulative evidence strongly suggests trucking regulation reduces efficiency leading to higher costs for for-hire carriers and economic losses for the economy as a whole. The direct costs of participating in the regulatory process and the indirect costs involved in complying with the range of rules and restrictions attached to for-hire permits are the most obvious sources of regulatory-induced inefficiency. Whether we focus on the likely effect of specific regulatory restrictions or whether we compare the performance of motor carriers operating within the regulated provinces with those operating within the unregulated province of Alberta the indication is that regulation has an unfavourable impact on motor carrier operating costs. The

impact of regulation in Canada has been softened because of problems associated with the enforcement of entry controls and regulatory restrictions on carrier activity. The evidence suggests, however, that regulation has resulted in substantially higher operating costs for the LTL segment of the industry. Regulation gives rise to further welfare losses through its distorting impact on the allocation of resources in transport and related industries. While the losses due to allocative inefficiency would not seem to be as substantial as those due to technical inefficiency, there is nonetheless a significant cost associated with the apparent influence of regulation on the use of for-hire relative to private trucking services. There is less understanding of the issue of dynamic efficiency, but here again there is little to suggest that regulation has been a positive influence. While regulation reduces that element of investment variability which arises from new entry, there is no reason to expect that it reduces any tendency towards excess capacity in trucking; at the same time concerns have been expressed about the possibility regulation may significantly impinge on the normal process by which dynamic change and technological development occur.

Notes

1 Given an implicit production function of the form

$$h(X_1, X_2 \text{ ---}, X_n, a, b, c, \text{ ---}, m) = 0,$$

where $X_1$ $X_2$ ---, $X_n$ denotes the outputs and a, b, c, ---m, the inputs, and given input prices, it's possible to derive a function which gives the lowest feasible total cost for any rate of output. If the technically efficient cost equation is

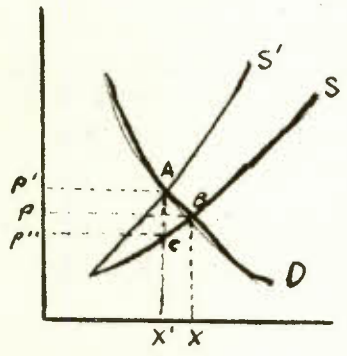
$$C_e = C(X_1, X_2, \text{ ---}X_n)$$

and the industry's total cost exceeds $C_e$ it is said to be technically inefficient.

2 Chow tested the sensitivity of his results to these factors by deleting from his sample a number of carriers with a significant proportion of interprovincial and local revenue. The revised regressions supported his earlier conclusions with regard to the superior performance of Alberta carriers.

3 Cairns and Kirk's finding that the marginal costs of LTL shipments in Alberta are many times the level of marginal costs in Quebec and Ontario must be questioned becaused they are so contrary to the implications of the data on rates and profits. The suggestion in the Cairn's and Kirk study that the marginal costs of producing a given type of output differs by several orders of magnitude between provinces - i.e., that the marginal cost of producing TL long-haul shipments in Quebec is a factor of four times the marginal cost in Alberta - is also contrary to expectations. The McRae and Prescott study, by contrast, found that, while there were differences, marginal costs were of the same general order of magnitude in each of the provinces.

4 A necessary condition for allocative efficiency is that the price of each output equal its marginal cost.




The deadweight loss is the triangular area ABC. In the competitive industry SS represents the summation of each firm's marginal cost curve and price and output are established at P and X. With the supply curve raised to SS' (so producers receive their marginal cost plus a percentage markup) price moves to P' and output declines to X'. So long as the supply and demand curves are reasonably linear over the relevant range the deadweight loss L is given by:

$$L = \frac{1}{2}\Delta P \Delta X$$

where $\Delta P$ is the divergence between actual price P' and the marginal cost at that output P'', and $\Delta X$ is the divergence between the competitive output X and the actual output X'. Defining the ratio by which the regulated price deviates from the competitive as $t=\frac{\Delta P}{P}$ and allowing E to represent the elasticity of demand the welfare loss can be rewritten as:

$$L = \frac{1}{2}PXEt^2$$

5 See, for example, Palmer (1974). Lord & Shaw (1980) also note the importance attached to service competition in Ontario.

6 Lord & Shaw (1980).

7 The data problem relates not just to the lack of demographic information (which is required to adjust for differences in thel "quality" of workers in different provinces), but also to the limited coverage of the basic data on earnings. The data which is available from the Motor Carrier Survey (cat. #53-222) excludes all carriers earning less than $100,000 annually. The small carriers who are excluded would constitute a significant proportion of intraprovincial carriers, and an important element within a test for provincial earning differences.

8 Some observers have emphasized the distorting influence of taxes. Corporation and property taxes are taxes on capital and they will weigh most heavily on production which is highly capital-intensive. If these taxes are shifted forward they will raise the price of rail and utility services by a greater percentage than the prices of products that use less capital relative to other inputs. Taxes, such as the commercial carrier licence fees, also affect the competitive position of common carriers, vis à vis less heavily taxes private carriers. For a full discussion, see for example, Benishay and Whitaker, Jr., "Tax Burden Ratios in Transportation", Land Economies (Feb. 1967).

9 Marginal costs also include the additional social costs of vehicle operation in terms, for example, of increased congestion and air pollution. A finely-tuned pricing system would reflect the fact that these costs vary according to the place and time of road use.

10 For this analysis government current and capital expenditures were put on an annual cost basis to avoid problems related to the lumpiness of major investments.

11 Haritos carries out his calculations on the basis of two assumptions: a) that all road capital stock is inescapable; and b) that 2/3 of road capital stock is inescapable and 1/3 is escapable. Since the amount of traffic certainly has a significant effect on the life of the pavement the second assumption has more appeal.

12 See Friedlaender (1969), pp. 105-6.

13 Railways do receive government assistance but mostly in the form of direct subsidies for uneconomic passenger services and uneconomic branch lines. The assistance provided to general freight movement is negligible by comparison to that provided motor carriers through government assistance in maintaining the highway infrastructure.

14 There is mixed evidence on the nature and significance of economies of scale in railroads. George Borts (1960) and Zvi Griliches (1972) find that economies of scale may be present for smaller railroads, but are not prevalent in larger ones. Keeler (1976) has argued that such decreasing costs as do exist are a result of excess capacity and constitute short-run economies of scale. However, Friedlaender and Spady (1979) contend that this view fails to differentiate between track, which represent common carrier obligations to haul traffic, and way and structure capital, which represents the capital embodied in the railroad; while virtually all railroads have some excess track, a large number of railroads appear to have insufficient capital. Friedlaender and Spady find evidence that U.S. railroads face long-run increasing returns to scale.

15 A favoured prescription is for a subsidy which would cover the deficit and be financed through lump sum taxes. However, since lump sum taxes - that is taxes which individuals cannot alter by changing their economic activities - do not exist (outside of economic texts), the financing of the subsidy would necessarily involve certain allocative costs. The required taxes can also be challenged on equity grounds, since they would require the general public to subsidize the purchases of rail services. Notwithstanding these problems, subsidization may provide the preferred solution in some circumstances. Mohring (1974) illustrates the type of balancing of social costs and benefits which is required.

16 Braeutigam (1978), p. 42.

17 Green establishes that the optimal divergence between price and marginal cost in a given sector depends on the divergence in other sectors and the degree of substitutability or complementary between the goods and/or services in question. If X is a close substitute to goods Y and Z both of which are priced above their marginal cost, then the ratio of price to marginal cost for X should be between one and the weighted ratio of price to marginal cost for Y and Z.

18 Diamond (1980) indicates that the total assets of an average Class III general freight carrier (with operating revenue of $256,000) amounts to $147,000 of this total $47,000 is in the form of net worth. Trucking operations can be established at smaller than average scale with substantially lower start-up costs.

19 Over the period 1947-61 Richard Barber (1964) estimated that productivity increased by 17.4 per cent for petroleum pipelines, 13.1 per cent for airlines, 9.7 per cent for railroads and only 2.9 per cent for motor trucking in the U.S.

20 George Wilson, (1975), p. 9.

21 This is discussed in Friedlaender (1969), pp. 92-99.

22 In 1975, for example, intramural R&D expenditures per $100 of sales was only $0.37 for transport firms. This was less than half the average for all industries and far below the level for manufacturing industries. There are no separate figures available on R&D expenditures by trucking firms.

## Appendix

Examples of the Terms and Conditions Attached to Operating Permits

Quebec: Boucher (1980) provides the example of the "restricted" trucking licence issued by the Quebec Transport Commission to Guilbaut Transport Inc. This firm holds a permit to carry animal fat in tank trucks from Quebec City to Montreal under contract for Legrade Inc; it does not have the authority to haul goods on its return trip to Quebec city.

Another firm, Champlain-Sept-Iles Express holds a "general" trucking licence permitting it to haul goods from Montreal to Quebec City. The firm's permit has two clauses - one restricting it to the transport of general commodities on a regular frequency by route 138, the second carrying the same stipulations with respect to route 116.

New Brunswick: Nix and Clayton (1979) provide the example of a simple intra-provincial general freight license - N.B. License No. 44 - authorizing carriage on the route "Saint John to Richibucto, N.B., via Moncton, N.B."

A more complicated licence - N.B. Licence No. 50 - for the carriage of intra-and extra-provincial freight includes a twenty-seven point list of routes, off-route points, corridor rights, intermediate points that can be served, and "restrictions".

Saskatchewan: A typical intra-provincial authority permits "the transportation of general merchandise from and to Prince Albert to and from Henribourg, Meath Park, Weirdale, Foxford, Shipman, Smeaton Snowden and Choiceland" The minimum frequency of service required is: Choiceland and Smeaton - Monday, Wednesday and Friday; Meath Park, Weirdale and Snowden - Wednesday and Friday; and Foxford, Shipman and Henribourg - as required.

British Columbia: The regulatory commission in B.C. as in other provinces, may attach virtually any conditions to a licence it deems appropriate. Nix and Clayton note that licenses granted by the B.C. Motor Carrier Commission are "normally characterized by varying combinations of stipulated commodities; areas of operation, routes and pickup and delivery points; allowable operating weight; named shippers; shipment size; nature of shipments; and equipment requirements".

Ontario: Licensing restrictions in Ontario often extend well beyond the specification of routes and commodities. The Ontario Select Committee provided the following examples of restrictions applied to licences issued by the OHTB:

> "Restricted to 12 commercial motor vehicle and trailer combinations"
>
> "Restricted to shipment not exceeding 16000 lbs and only when carried on top of a bulk load"
>
> "One person's goods only at a time to be carried on one trip...."
>
> "Movement of new boat, prohibited.
>
> "Restricted to two commercial vehicles only, each with a carrying payload of no more than 5000 lbs."
>
> "Restricted to gross weights which exceed 140,000 lbs"
>
> "No individual drum, pail, box, bin or bag of the said produce to weigh less than 25 lbs."

# Chapter VII

## SOME BROADER CONCERNS

### a) Trucking Service to Small Communities

While economic concerns related primarily to the stability of the industry were the major force behind the introduction of regulation in trucking, the role of government in trucking and in transport markets generally, has been traditionally cast in much broader terms. The MacPherson Commission looking into railway transportation observed in its report that "national transportation has been a great deal more preoccupied with the question of how effectively the transportation system was functioning as an instrument to fulfill national policy objectives, than with the question of how well it was functioning as an economic enterprise".[1] The perception of Canada's transportation system as an instrument for promoting national unity and supporting regional development has long exerted a strong influence on government policy towards the major transport modes. Most recently the emphasis on these broad policy objectives was reflected in proposals to amend the National Transportation Act of 1967. Bill C-33, the proposed legislation, had as its object, the provision of an "accessible, equitable, and efficient" transportation system. The Summary Report, describing the new policy referred explicity to the government's desire to see transportation in the role of an instrument of national policy, rather than as a passive support function.

Although much of the responsibility for forging the required transportation links to tie the country in an east-west direction has traditionally fallen on the railways and the airlines, motor carriers have been seen as having a contribution to make to the achievement of national goals. The Motor Carrier Act of British Columbia, which is one of the few provincial Acts to specify the purpose of regulation, states that, "it is the

duty of the Commission to regulate motor carriers with the objects of promoting adequate and efficient service...."[2] The Ontario Select Committee highlighted as one of the principles guiding its recommendations the view that "transportation as a development tool has the ability to assist in the bringing of equity to people, communities, to producers, and to our society in general".[3] More generally those who are concerned about the consequences of regulatory reform have emphasized the role of regulation in ensuring the availability of reasonably priced motor carrier service to small communities and encouraging and supporting regional development. In this vein entry regulation has been seen as necessary to ensure that the profitable routes provide the "cream" to support trucking operations on unprofitable routes. The concern over service to small towns has perhaps been most graphically portrayed by the American Trucking Association (1979) which in a report entitled Small Town Blues depicted the situation of a number of communities which it alleged could be seriously affected by regulatory reform in the U.S.

There are a number of levels at which one can address the issues that arise in connection which the attempt to use regulation to provide "adequate" and "equitable" service. At the most general level questions arise about objectives themselves. In the present climate, in which there is apparently considerable concern about efficiency and the level of costs and prices in the economy, it is legitimate to ask whether the weight attached to non-economic objectives in trucking continues to be appropriate. Do the values of the regulatory boards, which are implicit in the weighing of economic and non-economic factors, accurately reflect society's present social and economic concerns and aspirations?[4] A different challenge to regulatory objectives arises out of the view that the goals assigned or ascribed to regulation are only means to the achievement of more general objectives; the provision of subsidized trucking service to remote regions is seen in this sense as a factor designed to

contribute to the general objective of promoting regional development. On this basis one can question whether trucking subsidies do contribute to regional development and whether alternatives, such as an industrial development program could be more cost-effective. As W.G. Waters II (1976) points out "the causal link between transport and economic development is much more tenuous than was once believed". Indeed the distortions that arise in the decision to subsidize particular types of transport could have perverse effects on regional development objectives. Low rates applied to the raw material exports of a lagging region, for example, may discourage the establishment of processing industries by making it cheaper to transport the raw material than the final product.

At a different level of analysis it is presumed that for a combination of reasons - including, perhaps, the desire to link the country together, to reduce urban congestion, to redistribute income, or to capture perceived external benefits[5] - there is a legitimate public interest in the provision of subsidized transport services to small communitites. From this perspective by helping to ensure that "adequate" transportation is available at reasonable rates, the regulatory boards - whether they explicitly acknowledge the function or not - are successfully giving expression to social goals and values in this area. The question to be considered then is whether regulatory controls on entry and rates provide the most effective and least costly approach by which to achieve the desired objective.

The traditional response by economists is that if market rates are judged by society to be inequitable and special protection is desired for certain groups, this should be provided directly by government, not indirectly by private industry. The imposition of higher rates in one market, say, an urban market, to support lower rates in another, say a rural market, involves a net social cost; welfare will be reduced because some consumers

in the urban market who would purchase the service at the competitive rate are required to forego consumption, and because some production for the rural market occurs at a cost greater than its social value as measured by demand. However, as Posner (1971) has indicated this standard criticism is superficial since it is based on a comparison of regulation with some non-existent ideal. When we accept the objective of subsidizing certain types of service, the relevant comparision is between the use of regulation for this purpose and the use of some type of necessarily imperfect program of taxation-cum-subsidization. It is not clear on a priori grounds that the distortions associated with the use of income or other taxes would be less than those arising from internal subsidization through regulation.

Notwithstanding the difficulty of disentangling allocative effects when we enter into the realm of the "second best" there are important arguments for favouring the use of direct subsidies. The allocative cost of internal subsidization depends to a significant degree on the elasticity of demand in the market which is to provide the subsidy. The availability of substitutes in the form of rail and, especially, private trucking suggests that demand on many of the low-cost heavily travelled routes is far from inelastic and that the welfare costs in terms of reduced consumption of for-hire services would in many cases be quite substantial. Where regulation is the instrument for providing the subsidy there are also non-allocative costs associated with regulatory restrictions on the operating freedom of carriers and regulatory restrictions on entry to be taken into account. One of the most significant costs may arise from the impediment to the entry of local carriers who are particularly well suited to fill the transportation needs of small communities.[6] This is a disturbing aspect of the tendency that has been noted in Ontario for the inter-city carriers to run directly to small communities assuming, in the process, the role that generally falls to the local carriers. Cross-subsidization is also subject to the general criticisms that have been directed at

hidden subsidies; direct subsidies which are visible and subject to public scrutiny will tend to be evaluated and judged more thoroughly. The use of direct subsidies allows the public or the taxed group to have a more complete accounting of where its tax dollars are being allocated. To some the most troubling aspect of cross-subsidization is its redistributive effect; if there is a general public interest in the provision of subsidized service to certain communities, a strong case can be made that the burden of the subsidy should be borne by taxpayers generally rather than a particular class of consumers. Cross-subsidies, moreover, can't be as precisely targeted on specific groups, and in general the redistributive effect of the indirect subsidy is as likely to be regressive as progressive.

Probably the most telling criticism of cross-subsidies has come from studies casting serious doubt on the ability of regulatory bodies to carry out a program of taxation by regulation. Competition in terms of either rates or service on the low-cost routes can limit the carrier's ability to provide unprofitable service on high-cost routes. The tendency to compete away the profits required to provide the subsidy will be strengthened where entry is not firmly controlled. These factors will create an incentive to make high-cost routes profit centres in themselves. The regulatory board may attempt to strictly control rates, requiring in the process that unprofitable service be provided to the high-cost shippers and/or communities. In the latter circumstances, however, carriers would be inclined to provide the least service that's consistent with the fulfillment of their legal requirements. Rate control which imposes severe constraints on the opportunities for profits will also have serious longer-term consequences for the survival and growth of the common carrier industry.

Palmer (1974) observed a number of these features in his examination of the Ontario trucking industry. While the mix of high-cost and low-cost routes held by individual firms

suggested the possibilty of internal subsidization there were a number of factors at odds with the criteria for an effective system of taxation by regulation. Palmer noted, in particular, the significance of competition on the low-cost routes which takes the form of both "rate chiselling" (i.e., not adhereing to the filed rates) and the promotion of new service features. The growth of freight forwarding and "pseudo-leasing" operations (where truck leasing and driver pools are run as a single enterprise, though held to be legally seperate operations), helped to erode the position of regulated carriers and contributed to a deline in profit on many of the heavily travelled routes. This is consistent with the discussion in Chapter IV, which suggested that many major trucking markets are competitive in Ontario, as well as in most other provinces. Under these circumstances it is not surprising that taxation by regulation has not been an element of the regulatory approach in Ontario.

The study undertaken for the Council by McRae and Prescott (1979) raises further doubts about the significance of cross-subsidization in the Canadian trucking industry. Ideally to test for the existence of an indirect subsidy one would like to look at the relationships between prices and costs of different types of shipments with and without regulation. There is evidence that the costs of transporting small shipments on low-density routes significantly exceeds the costs of moving large shipments on high-density routes.[7] Prices may also be higher on the low-density route because of weaker competitive pressures. While these factors would cause the price for shipments to small communities to exceed rates on high-density traffic, the important question is whether the disparity in prices is significantly different from what would prevail in the absence of regulation. As Friedlaender states, "a cross-subsidy exists between traffic A and B if the price-marginal cost ratio of traffic A relative to traffic B is less than it would be in the absence of regulation".[8] McRae and Prescott lack sufficiently detailed cost data to analyze the relationship

between costs and prices of different trucking outputs. Their approach is instead to look at the relationship between provinces on the rates for intra-provincial shipments - standardized by major commodity type, by weight and by distance - from the main city in each province to communities of varying population size. This exercise involved adding a dependent variable for population size to the weight and distance variables in the general rate regression. Six regressions were run for each of the six provinces examined: one for TL shipments and one for LTL shipments in each of 3 major commodity groupings (food, fabricated materials, and end products). If we are prepared to accept the implicit, and seemingly reasonable assumption that excluded cost factors would be unlikely to significantly affect the influence of community size on trucking rates - or at least that it would not affect the general relationship found to prevail between the coefficients of different provincial population variables - this exercise provides a useful, albeit second-best, test for the existence of cross-subsidization.

This study found that the unregulated province of Alberta conformed to the general pattern one would expect of higher rates associated with declines in the population of the community of destination. Ontario showed a similar pattern but with the negative relationship between rates and community being most pronounced for LTL traffic. While the results obtained for British Columbia were somewhat less certain, they corresponded sufficiently to the results for Alberta to suggest that cross-subsidization is probably not an important aspect in this province as well. On the other hand, and quite contrary to the pattern in Alberta, unit prices in the entry and rate prescribing provinces of Manitoba and Saskatchewan tended to decrease as the population of the destination community declined; this suggests that a program of internal subsidization was in effect within these two provinces. The results for intra Quebec shipments were less certain; rates in this province did not appear to be influenced by community size, but the evidence pointing to cross-

subsidization was much less clear than in the case of Manitoba and Saskatchewan.

Concern over the implication of regulatory reform for trucking rates is frequently extended to the problems of the small shipper. The question here, as in the case of the small community, is whether rates are being subsidized under current regulatory approaches. McRae and Prescott examined this issue by comparing the relationships between TL and LTL rates within different provinces. Six regressions of the standard form (with shipment weight and length of haul as the dependent variables) were again run for each province. This study indicates that based on the relationship between TL and LTL rates in other provinces, LTL rates are exceptionally high in Ontario and this is especally so for short hauls. There was also evidence of a very low ratio of LTL to TL rates in Saskatchewan, and to a lesser extent in Manitoba, suggesting that favoured treatment was perhaps being provided to the small shippers as well as the small community in these provinces. It is possible that differences in the relative cost of handling LTL and TL shipments - differences not captured in this study - require these rates to bear quite a different relationship to one another in Ontario than in other provinces. The same could apply to the results obtained for Saskatchewan. However, as McRae and Prescott point out, "it would seem to be highly unlikely that cost differences could be as great as to account for the large differences cited".[9]

Notwithstanding its limitations, the empirical evidence raises serious doubts about the existence of an effective system of cross-subsidization within those regulatory regimes characterized by entry control but no effective rate regulation. The implication of the evidence is that those communitities likely to be significantly affected by a relaxation of regulatory restrictions would be relatively small in number and largely centred in the two provinces with rate prescription. These largely negative

findings concerning cross-subsidization correspond to the results of an extensive analysis of the impact of regulation on costs and prices in the U.S. trucking industry. The empirical evidence in this study leads Friedlaender and Spady (1979) to the following conclusion:

> .... this research finds no evidence that rates are held down on traffic generated by small cities and towns or by rural and agricultural areas. In particular, an analysis of the differentials that exist between prices and marginal costs for these carriers found no evidence that the price-marginal cost ratios were systematically related to operating or shipment characteristics in such a way that the price-marginal cost ratios were held down for short-haul, small-load, small-size, LTL traffic. Indeed, there was some evidence that the rate structure may actually reward carriers for transporting traffic of this nature. If, however, the rate structure adequately compensates carriers for short-haul, small-load, traffic so that the rate differentials fully reflect cost differentials, there is little reason to believe that rates on this type of traffic would rise in a deregulated environment. Hence shippers in light-density areas appear to have little reason to fear that deregulation would be accompanied by rate increases; this traffic already appears to be earning an adequate return.[10]

It is significant that in both Manitoba and Saskatchewan cross-subsidization has been pursued as a matter of deliberate policy. Sparks and Shaw (1974) note that in Saskatchewan, "the development of the rate and operating authority structures were directed toward a system of cross-subsidization on the basis of route, type of good, transport and shipment size. This was prompted by an effort to provide service to certain points and for various commodities which under normal conditions could not be supported by the rates in force for the entire system".[11] In Manitoba cross-subsidization is to some extent implicit in the "Single" or "Simplified Price Structure"

introduced in 1973. As noted, this involves the prescription by the board of a weight-distance-density tariff which is applicable to all commodities with the execption of those for which a different rate has been specifically approved. This is quite different from the approach in Ontario, for example, where a higher system of "class" rates is applied to small shipments. The study by McRae & Prescott, however, suggests that through exceptions and exemptions the province's rate structure has been further modified, so that it in fact discriminates in favour of small communities.

The Saskatchewan Board has relaxed its control over rates in the past few years. In the mid-70's rates were prescribed and there was only a "permissive zone" around the established rates; under current circumstances motor carriers have freedom to differentiate between shippers as long as rates on general freight fall within the minimum and maximum levels prescribed by the Board. Rates are not controlled in Saskatchewan for a range of important "exempt commodities". What's significant about the existing system is that despite the large number of exemptions, the Saskatchewan Board retains the ability to control the level of tariffs for general merchandise shipped to small communities.

The system of cross-subsidization in Manitoba and Saskatchewan functions - to the extent that it does function - as a result of the ability of these Boards to effectively regulate the relevant rates (with the assistance of the major shippers and the tariff bureaux) and to prevent the abandonment of unprofitable routes. For its long-run success such a system also depends on the ability of the boards to prevent profits on some of the allegedly more attractive routes from being eroded by service competition and illegal entry. The Saskatchewan and Manitoba boards would appear to have been much less successful in this latter respect and, as we have noted in Chapter V, there is some indication that carriers operating within these two provinces have experienced financial difficulties as a result. Nor does

the system of cross-subsidization in Manitoba and Saskatchewan adequately come to terms with the problem of service quality. Where rates are held below their competitive level, the incentive for carriers is to provide the minimum service necessary to fulfill their obligation. In both Manitoba and Saskatchewan the boards have attempted to prevent a deterioration in trucking service by applying "frequency of service" provisions and related service requirements to the operating authorities of provincial carriers. Given the multitude of service variables a carrier can manipulate, this is at best only a very partial solution, as well one that may involve significant cost in terms of increasing the size and complexity of the regulatory apparatus - and this would apply much more so in a province such as Ontario, than in Saskatchewan. There are indications that the two boards have in fact considerably relaxed service requirements, in recent years, as a result of the tenuous financial position of many of the carriers serving small communities.

The evidence on cross-subsidization has implications for the question of service "adequacy", as well the question of transport rates. Since small communities in all but the rate prescribing provinces would seem to be generally "paying their way" it is unlikely these communities would face a reduction in service in the absence of regulation. The present regulatory system generally includes restrictions on the carrier's freedom to discontinue particular services, but in a province without effective rate control these restrictions are extremely difficult to enforce. To terminate a service a carrier merely has to raise his rates to the point at which no traffic moves. The ex-chairman of the Ontario Highway Traffic Board has noted that in this situation, "when we are aware of a rate which has been filed, which is obviously too high, we are helpless".[12]

The expectation that adequate service would be available in the absence of regulation is supported by the experience of Alberta where carriers have adapted to the opportunties provided by open entry and are successfully servicing the province's

rural communities.[13] A similar conclusion is suggested by the experience of exempt agricultural carriers in the U.S. who are servicing that country's rural agricultural communities. A major survey undertaken by the U.S. Senate Committee on Commerce, Science and Transportation indicates more generally that carriers serving small communities in the U.S. tend to be satisfied with traffic in those markets:

> Seventy-five percent of those serving the smallest communities termed traffic to and from such communities desirable. This percentage increased to 93 percent for the largest small communities (10,000 to 25,00). Even in the smallest communities (1,000 to 2,5000) an average of 4.1 carriers (extrapolated) considered traffic desirable, of which an average of 2.6 offered more than three pickups and deliveries per week, with at least 25 percent of tonnage LTL.[14]

To determine the net result of a change in the existing system it's also necessary to take account of the fact that existing regulatory restrictions may impede service to small communities. For example, certificate restrictions which specify the actual highway a carrier must use prevent the servicing of communities off the main designated routes. Restrictions preventing trucks from making intermediate stops and serving towns between authorized points can similarly reduce service to small communities.

The general evidence on small shipments and small communities does not indicate that a subsidy is unnecessary or undesirable. While small communities are being adequately served without subsidization in a variety of circumstances, there may be a desire to provide special assistance to some communities - i.e. small, relatively isolated communities with no access to rail service - to ensure that rates are maintained at what are felt to be reasonable levels. The evidence on cross-subsidization doesn't challenge the validity of such an initiative; it does,

however, strongly suggest that a mechanism can be established to provide subsidies which is both more effective and less costly than "taxation by regulation".

b) Consumer Uncertainty and the Quality of Trucking Service

Trucking regulation was introduced in Canada during a period of great instability and much of its initial attraction derived from its potential to reduce the uncertainty that was of very considerable concern in the early 1930's to both the producers and consumers of trucking services. For producers regulation offered the promise of a reduction in the variablity of profits and the risk of bankruptcy. The expenses incurred to obtain an operating licence can, in a sense, be thought of as a premium the carrier is willing to pay to reduce his operating risk.[15]

For the consumer of trucking services regulation can similarly be thought of as providing a form of insurance - in this case against extreme variation in product quality. A regulatory licence is to a degree a guarantee to the consumer that trucking services will meet certain minimum standards and conform to some general guidelines. Since decision-making by consumers of trucking services can be a costly and time-consuming activity the "regulatory seal" offers some potentially significant benefits in terms of reduced risk and lower information-gathering costs.

In the case of the consumer of trucking services the insurance premium consists of the higher market price he must pay because of regulation. However, since regulation may reduce the need for consumer search and since there are potential economies to be realized in information-gathering activities, the risk-reduction benefits on the consumer side may in part represent real efficiency gains for the economy. The important aspect of information in this respect is its likeness to a public good,

since the "consumption" of knowledge by one individual does not diminish the availability of information to another. The marginal cost of transmitting information is often close to zero and therefore if the private sector was to look after its production and sale a less than optimal amount of information would often tend to be provided. These aspects suggest that there may be some gains to be realized by allowing government to assume some of the information gathering and search activities that would otherwise be undertaken by the consumers of trucking services.

In coming to an assesment of regulation it's necessary to weigh any efficiency gains that may arise from the savings in resources devoted to information gathering and search activities against the resources required to support the regulatory process and any production inefficiency that's attributable to regulation. To assess the significance of any potential gains regulation may offer it's necessary to determine whether, and to what extent, governments or government agencies can gather, assess and disseminate information more efficiently than the private market. If there are potential gains to be realized from public sector involvment there is the question as to whether regulation is preferable to alternatives such as directly providing information or publicly subsidizing information. An important consideration is that regulation, unlike the other two alternatives, assigns to government some of the consumer's decision-making role. If government is efficient at gathering and disseminating information but inefficient in its delegated role of "decision-maker", regulation would be more likely to lead to a loss in welfare. The test of government as a decision-maker is it's ability to make the choices that individuals would themselves make where they had accurate information. Efficient decision-making by government is clearly impossible where the individual preferences of consumers diverge significantly, so that any general regulation will necessarily impinge on the choice of many individuals. Even where consumers have fairly

uniform preferences, and the government is able to correctly perceive and give expression to this collective view, it may be that regulation is less desirable than some of the less restrictive alternatives for intervention; the public provision of information, for example, may be an effective means for realizing many of the economies associated with the public collection and dissemintion of information.

Goldberg (1976) has highlighted the role of regulation in absorbing uncertainty by focussing on the long-term relationships which are a feature of many economic transactions. Uncertainty takes on a new dimension when we are talking not about a discrete transaction - as is the assumption in traditional economic theory - but about an ongoing relationship in which the parties will have to deal with each other regularly over a long period of time, and in which there arises important commitments and responsiblities on both sides. Under these circumstances administered contacts become a potentially attractive mechanism for dealing with the risks that arise out of the mutual dependency of the two parties. Regulation can be viewed as an implicit collective contract which establishes the rights and obligations at a very general level and which offers minimum protections to the participants in individual transactions. The operating authority can in this sense be seen as a contract between the users of trucking services acting collectively through an agent and individual motor carriers. Users receive protection from the carriers commitment to maintain service to designated points according to the terms and conditions specified in his operating authority; the carrier is in turn protected by the restrictions that are imposed on entry and the resulting limitations on the degree of market competition.

The information-gathering function takes on heightened importance when the consumer's initial decision may limit his subseqent freedom of action and have significant longer-term consequences. Goldberg's emphasis on the ongoing nature of

market relationships suggests that the resources consumers would be prepared to devote to insuring themselves against poor and misinformed decisions may be higher than indicated by the general economic analysis of discrete market transactions. The basic questions about the desirability of government intervention and about the appropriateness of regulation, however, are essentially the same as in the narrower conception of market transactions. Again, the important questions relate to the government's ability to reduce the real resources devoted to search and related risk-absorbing activities, and to its capacity to give expression to the preferences of consumers. Where government cannot accurately reflect consumer preferences regulation remains a costly and inappropriate form of intervention. Where for example, shippers in a community have widely diverging views on the value of twice weekly trucking service, it is likely that any efficiency gains that result from having the government enter into a contract on behalf of all shippers through the establishment of frequency of service requirements, would be more than offset by the losses arising from government's necessarily very imperfect decison-making capacity under these circumstances.

More generally, the circumstances under which government regulation to "protect consumers" is likely to be desirable would have a number of features. There would be substantial consumer ignorance about service characteristics so that there are important potential benefits from government involvement. The nature of consumer ignorance would be such that less restrictive programs involving the direct provision or subsidization of information would be likely to be largely ineffective. And the similarity in consumer tastes and preferences would be sufficient to ensure that regulation would not significantly restrict individual choice, and that government could thereby act reasonably efficiently in making decisions on behalf of all consumers.

There are some matters in connection with truck transport which appear to conform well to the required conditions.

For example, the appropriate vehicle specifications for the carriage of goods subject to spoilage or loss is an item of tehnical knowledge which may be costly to be without but difficult to obtain for many users of trucking services. It is also a matter on which consumer preferences are likely to be generally consistent, so that regulation is very unlikely to involve significant restrictions on consumer choice. In this case there would appear to be efficiency gains from allowing the government to undertake the necessary research and establish the required regulations, acting in this respect on behalf of the consumers of trucking services.

The situation is quite different with respect to most qualitative aspects of trucking service. Individual shippers, depending on their particular needs, are likely to attach quite different values to such features as the speed and frequency of delivery, the extent of direct as opposed to interlined service, loading and unloading services etc. Government regulations designed to establish certain standards of service are therefore likely to impinge substantially on consumer choice; such standards are likely to contribute to inefficient price-quality offerings and to resulting allocative losses of the type described in Chapter VI. Morever, by comparision to most markets the lack of consumer knowledge and information in the trucking area is exceedingly minor. In trucking there is not the asymmetry of knowledge between producers and consumers which is a feature of many product markets. The important characteristics of trucking service in this respect, are the fact that performance can be judged by observation, it is an item which is frequently purchased, and it's main consumers tend to be highly knowledgeable consumers with fairly specific needs. These general considerations suggest that there is little opportunity for efficiency gains but a fairly high probability for welfare losses from government intervention in the trucking market to "protect consumers" from a deterioration in quality standards.

While we have related the issue of "uncertainty" to the problem of inadequate information it may stem from a different source. Goldberg puts some emphasis on the uncertainty concerning the continued availability of a service to a community; the "contract" between the regulatory agency and individual carriers is seen as responding to this concern by guaranteeing the carrier of his "right to serve" and ensuring particular communities of their "right to be served". The market failure that is at the root of this problem is that of "externalities"; there are external benefits from the mere availability of a service, and the guarantee of continued service, which are not reflected in market prices. Kahn has described the essential problem under what he terms, the "tyranny of small decisions". While individuals in the affected communities may be willing to pay a sufficient sum to guarantee that they have continued access to trucking services, the market does not give them an opportunity to express this demand; the short-term choices individuals are presented with as to whether or not to use the trucking service that is offered may not generate sufficient revenue to sustain the service and may not adequately reflect the true interests of the residents in the continued availability of the service. We referred to this type of market failure in the previous section as one of a number of possible justifications for subsidizing service to small communities. The essential point which emerged from that discussion, and which is highly relevant to the existing problem of externalities, is that the required subsidies can be provided both more effectively and at lower cost than through the mechanism of regulation.[16]

These general considerations suggest that regulation is not the appropiate mechanism to deal with most problems of uncertainty in the motor carrier industry. While regulation can lead to efficiency gains in some circumstances where there are substantial information problems combined with considerable uniformity in consumer preference, this applies to a very limited range of matters in the trucking area. Most important questions

relating to the quality of trucking service do not meet the criteria for regulatory intervention. The experience of various unregulated jurisdictions supports the conclusion that regulation is unnecessary to protect consumers of trucking services from a deterioration in quality standards. It is not to be expected that quality levels would necessarily be uniformly higher in the absence of regulation, since consumers who have the freedom of choosing the price-quality offering which most suits their needs may opt for a lower quality of service than that prescribed by regulation. However, where there is a workably competitive market and consumer information is adequate one would expect that the market would provide a reasonable choice of products to consumers and that the quality level of trucking service would at least be satisfactory. In Australia, both Joy (1964) and Nelson (1976), have judged the trucking service available to shippers to be of high quality; indeed there is some indication that trucking service has become more responsive to shipper needs since the removal of entry controls. Moore (1976) maintains that service quality in the British trucking industry "has been little effected" by the 1968 Transportation Act which eliminated effective entry controls. In their own discussion the Ontario Select Committee notes that trucking service in Great Britain "is obviously good".[17] In his analysis of the impact of deregulation in the Philadelphia Commerical Zone, Bruce Allen (1978) indicates that a number of shippers reported a very substantial improvement in service quality; these shippers pointed specifically to their greater choice in carrier selection, to the decline in recorded transit times (and thereby in inventory costs) and to reduced loss and damage claims.

The experience of Alberta is consistent with that of these other unregulated jurisdictions. The quality of trucking service in the province is quite satisfactory and indeed, it would appear that shippers have benefitted considerably from the greater flexibility of an unregulated trucking industry. The Alberta Select Committee on intra-provincial trucking regulations

looked specifically at the quality of trucking services in the province and concluded as follows:

> By combining the results of the consultant's study and the lack of concern expressed at Public Forums, the Select Committee has concluded that the service provided, even to out-of-the-way low volume communities, is adequate to meet present needs, and that route controls to ensure higher levels of service would be totally unwarranted.[18]

The concerns that have been raised about the quality of trucking service in an unregulated environment are frequently linked to a vision of trucking as a highly unstable industry. The more extreme form of this characterization sees the unregulated trucking industry as existing of fly-by-night operators who drift in and out of business, operate at below cost levels and cut service quality to the bare minimum. Some important questions about the relevance of this conception of the industry were raised in Chapter III. In their submission to the Alberta Select Committee, the Alberta Trucking Association (1976) provides evidence to suggest that the unregulated firms in this province are in fact highly stable. The Association noted that in 1955 there were 120 common carriers providing shortline transportation services to rural Alberta out of Edmonton; an analysis of the annual directory indicated that 10 years later 60 per cent were still operating, and 20 years later one-third of the orginal carriers were still in business. These data are very similar to the results obtained from an analysis of exempt agricultural carriers in the U.S. This latter study found that 75 per cent of the firms surveyed had been in operation over 5 years, 60 per cent over 10 years, 40 per cent for 15 years, and 8 per cent for as long as 30 years.[19] In citing the results of this latter study Richard Farmer (1964) notes that "these figures compare favourably with survival rates in many more concentrated economic areas, and they do not suggest that competition in this section has the effect of forcing prices below cost for long periods".[20]

These general findings are consistent with our expectations, that service standards would be at least satisfactory in the absence of regulation. As noted, there is no a priori reason to expect that service quality would be uniformily higher without regulation.[21]

Shippers in unregulated jurisdictions, however, would appear to benefit from the greater flexibility of unregulated carriers. A traffic supervisor for a major oil company in Alberta has made this point, as follows;

> Less regulation really does help. In times where activity in one area heats up lease operators are free to go where the action is. They don't need to get a licence for a new route or new product. This provides flexibility and serves our needs.[22]

This contrasts with the concerns raised by the Kent County federation of Agricultural in their submission to the Ontario Select Committee:

> At certain times of the year we find local elevators are clogged because of their inability to hire qualfied trucks to do the required moving of grain. There are firms with proper trucks available to move grain and could do so were it not for the restriction on PCV requirements. Removal of such requirements would make the industry more competitive rate-wise and at the same time free badly needed elevator space.

Other submissions to the Ontario Committee - most notably those by Hearst Lumberman's Association and Consumers Glass Ltd. - raised similar concerns about the responsiveness of regulated motor carriers to particular industry needs.

Regardless of whether the overall quality of trucking services is higher or lower in the regulated provinces, it is

clear that in the absence of regulation shippers do not suffer from a significant lack of information and the uncertainty which follows from this. Evidence on the standards of trucking service in Alberta and other unregulated jurisdictions strongly support the conclusion suggested on theoretical grounds that regulation is unnecessary and inappropriate to protect the consumers of trucking services from a deterioration in quality standards.

c) Highway Safety

There is general agreement that in the matter of safety, where there are major problems relating to externalities, inadequate information, and individuals' limited capacity to grapple with small probabilities, government regulation fulfills an important function. While questions have been raised regarding the appropriateness of particular safety standards, it is widely acknowledged that government has a legitimate role in establishing regulations with respect to driver and vehicle 'fitness', the 'conditions of transport', maximum hours of work, speed limits and related matters. Safety regulations can and do exist quite independently of price and entry controls, but it has been suggested that there is an important relationship between the two and that economic regulation contributes to the enforcement of safety standards. The linkages are alleged to run along a number of paths: economic regulation reduces the intensity of competition and it thereby lessons the pressure on firms to "compromise" on safety; economic regulation gives rise to larger firms which can devote more attention to driver selection, driver training, vehicle maintenance and related safety matters; and economic regulation facilitates enforcement by reducing the number of firms and increasing the incentive of carriers to comply with laws and regulations.

A closer examination indicates that the connection between economic regulation and driver safety is not nearly as clear as this suggests. If regulation contributes to larger and

more profitable firms with resources which they are willing to put into safety-prevention one would expect to find a relationship between safety and motor carrier profitability. However, as Dolan (1978) points out, no study has ever succeeded in finding such a relationship. While theoretically licensing increases the potential cost to motor carriers of safety violations, the threat of certificate withdrawal for safety violations is so remote as to make this a realistic consideration only in respect to the most flagrant abuses of safety laws and regulations. In general, one might expect that motor carriers would expend resources on accident prevention as long as the return is favourable relative to that available on alternative investments. While licensing considerations may influence this return in some cases, the more important consequences of improved safety are likely to be in terms of insurance and operating costs, and the carrier's reputation for reliable service - variables which are of equal importance to regulated and unregulated carriers.

While reliable evidence on this issue is lacking, the available studies do not substantiate the claim that unregulated carriers have worse safety records than carriers subject to entry controls. Some years ago the U.S. Supreme Court made the following assessment:

> The conclusion that highway safety may be impaired [by permitting trucks exempt from economic regulation to travel the highways] rests ... on informed speculation rather than statistical certainty. A road check examination conducted by the Bureau [of Motor Carriers] did not indicate any significant difference in the number of safety violations [between exempt and regulated vehicles] ..."[23]

The Geddes committee in Great Britain came to a similar conclusion. In its 1965 Report it noted that the evidence indicated that "the present licensing system ... has had no appreciable effect, directly or indirectly, on the prevailing

safety standards".[24] Standing against this evidence is a more recent study by Wyckoff (1978), which purports to show a significant correlation between economic regulation and motor carrier safety. The Wyckoff study is based on a very large survey of U.S. truck drivers which was explictly designed to get around the possible bias in previous studies as a result of the tendency of private carriers and owner-operators to underreport their accidents. However, Dolan has noted some possible biases in Wykoff's sampling technique and, has come to a quite different conclusion regarding the results of this study. After recasting Wykoff's data and introducing unionization as an explanatory variable Dolan finds that "the apparent correlation between regulation and safety largely disappears .... so that the significant correlation is actually one between unionization and safety". The implication is that unionization alters the driver's environment so as to significantly increase the payoff from accident-preventing activities.

Joy (1964) indicates that safety violations were a problem in Austrialia in the initial period of instability following the lifting of regulatory controls in 1954. Safety standards were one victim of the fierce competition that ensued in this transitional period as new entrants and existing carriers competed to establish their position under the new institutional framework. However, the situation had changed substantially by late 1957, through "a combination of economic attrition and a stricter enforcement of load limits and driving-hour regulations". Safety is not considered to be a problem presently in the unregulated Australian trucking industry.

While it's highly questionable whether regulation contributes significantly to the enforcement of safety regulation, it is clear that safety can be effectively regulated in the absence of economic regulation. Moreover, economic regulation is not a partial substitute for effective safety regulation. Truck safety does not just apply to the regulated sector; rules

and sanctions must be established that are also appropiate for private carriage. This is not just an incidental consideration, for as we noted in Chapter IV private carriage accounts for about 50 per cent of total trucking output. The Geddes Committee concluded in its Report that the way to ensure safety was not to regulate competition, but, instead, to issue revocable permits to all carriers and suspend or revoke those permits for failure to abide by safety regulations. In short, safety considerations do not argue for economic regulation; they do make a case for the establishment of appropriate safety standards, and the effective enforcement of these standards.

Notes

1 Canada, (1961), p. 30.

2 Nix and Clayton (1979), B.C.-p. 14.

3 Ontario Select Committee, Part I, p. 19.

4 The request by First Ministers for the Economic Council to undertake an examination of economic regulation is itself a reflection of recent concerns. In his letter to the Council, the Prime Minister noted "a strong concern that increasing government regulation might be having serious adverse effects on the efficiency of Canadian firms and industries and on the allocation of resources and distribution of income".

5 A positive "externality" exists where some individuals benefit from the actions of the industry, but do not make payments to the industry so as to influence its action. McManus (1972) notes that the concept is frequently subject to misinterpretation: "For example, the CTC may order the continuance of an uneconomic passenger service if it estimates the damages to train passengers to be higher than the loss incurred by the railway. But this is an incorrect use of the externality concept. The reason that the service is uneconomic is that consumers are unwilling to pay for the costs of the service, not that they are unable to pay in the sense of having no opportunity to trade with the railroad".

On the other hand, a railway or a trucking service could conceivably provide benefits to members of a community (including nonusers) by its mere availability; the option to use the transit facilities may be valued by members of the community, but not exercised with sufficient frequency to make the operation of the facilities economic. Kahn has referred to this as a type of market failure arising out of "the tyranny of small decisions". If individuals had the opportunity they may have been willing to pay a sufficient amount to keep the transport service in existence; but the individual short-run decisions as to whether or not to use the transport facility produces revenue short of the required amount. In this situation the exchange mechanism is deficient in relaying the preferences of consumers and there is a legitimate "external" benefit arising from activities of the transport facility.

6 R.L. Banks and Associates (1977) highlight the advantages of small carriers in their study for the U.S. Dept. of Transportation:

> "In essence, small carriers appear to be better equipped to handle shipments in small markets because their pick-up and delivery service, as well as terminal operations, are geared for small less-than-truckload

(LTL) shipments. Their managements maintain close relations with customers and tight control over their organizations, and they pay close attention to changing market conditions."

(MacAvoy and Snow, p. 141.)

7 There is evidence on this in a number of the cost studies reviewed in the section on economies of scale. See particularly Friedlaender and Spady (1979).

8 Friedlaender (1978 b) p. 404.

9 McRae and Prescott (1979), p. 65.

10 Friedlaender and Spady (1979) p. 369.

11 Sparks and Shaw, p. 14.

12 Shoniker, as quoted by Nix and Clayton (1979), p. 60.

13 This is supported by the Report of the Alberta Select Committee, which is discussed in the next section of this chapter.

14 U.S. Senate Committee (1978), p. 101.

15 The expenses incurred by the carrier to obtain a licence constitute the private premium he must pay to purchase "regulatory insurance". The premium society pays for increased stability consists of the real social costs of regulation. This includes the costs of maintaining the regulatory apparatus along with the short-term and long-term efficiency costs associated with regulation of the trucking industry.

16 If the only reason for subsidizing trucking services is the existence of a problem of externalities, there should be some attempt to limit the broad distributive consequences of the subsidy. This provides another argument against taxation by regulation; it argues for a direct subsidy combined with a special tax on those in the affected region who are the main beneficiaries of guaranteed trucking service. The latter will not necessarily be existing users, but rather it will be those who most value the option of being able to use trucking services when and if they wish.

17 Ontario Select Committee, Part VIII, Appendices, D-56.

18 Alberta Select Committee, p. 51.

19 Mildred R. DeWolfe, For-Hire Motor Carriers Hauling Exempt Agricultural Commodities: Nature and Extent of Operations, Washington, D.C., USDA, Marketing Economics Division, ERS, Marketing Research Report No. 585, p. 5.

20 Farmer (1964), p. 404.

21 Evidence such as that gathered by Lord (1980), which purports to show that Ontario shippers are receiving a higher quality of trucking service than their Albertan counterparts, therefore does not constitute a criticism of regulation. The Alberta carriers could be more accurately reflecting shipper preferences.

22 Quoted in "On the Move in Alberta" by Richard Osler, Financial Post Special Report, April 1979.

23 American Trucking Associations V. U.S., 344 U.S. 298, 305 note 7 (1953), quoted in Kahn, (1970).

24 Report of the Committee on Carriers' Licencing, Great Britain Ministry of Transport, p. 44-50.

# Chapter VIII

## CONCLUSION

This discussion began with a recognition that the relevant choice in trucking, as in most other areas, is between an imperfect system of market controls and an imperfect system of government regulation. The subsequent examination has attempted to provide a perspective on these problems, and to set out the basic considerations which would allow some conclusions to be drawn about the most appropriate form of social control for this industry.

An attempt to understand the consequences of relying on market controls in this industry must take account of the heterogeneity of trucking output, the ease of entry into many segments of the industry, and possible information problems on the demand side of the market. The study found that, notwithstanding these characteristics, trucking is a workably competitive industry. Concerns about destructive or excessive competition are unwarranted in view of the characteristics of the industry's assets and the general responsiveness of carriers to problems of excess capacity. At the same time there is no reason to believe that in the absence of regulation trucking markets would tend to be dominated by a few large carriers. The broad regional markets which would exist in the absence of controls on entry would, for the most part, be able to accommodate a significant number of firms of minimum efficient scale. An examination of the technology of trucking cannot allay concerns that the industry may be subject to temporary problems of excess capacity and lower earnings. And in an unregulated industry there would be some relatively small, geographically isolated markets that would probably continue to be characterized by relatively high levels of concentration. There is no reason to expect, however, that the problems associated with the competitive environment in trucking would be any worse than in industries which are unregulated.

The analysis of the effects of regulation is complicated by the heterogeneity of the trucking industry and the differences in regulatory controls across the country. Since there are important differences between provincial regulatory regimes -- with only a few provinces, for example, devoting more than minimal resources to rate regulation -- and since it is much more costly and difficult to enforce regulations affecting some types of carriers than others, regulation has impacted differently on various segments of the trucking industry. Many trucking markets are highly competitive notwithstanding the existence of entry controls, although carriers tend to be highly constrained in their ability to compete by the terms of their permit. Regulatory restrictions have had a more modest impact on some segments of the industry, however, because of enforcement problems. And in some markets competition would appear to be extremely feeble due to at least in part to the influence of regulation on the number, and/or the competitive position, of the participating carriers.

The cumulative evidence on the effects of trucking regulation in Canada is consistent with the general conclusion (suggested by theoretical and empirical work on a broad range of regulated industries), that regulatory restrictions imposed on a competitive industry lead to efficiency losses and higher costs for the economy. The additional costs arise out of the resources that governments must devote to administering the regulatory apparatus, and that firms must devote to participating in the regulatory process; they arise out of the effect of regulatory restrictions both in the immediate period and over time on the cost of producing a given level of quality of trucking output; and they arise out of the distorting impact of regulation on the allocation of economy's resources -- and, in particular, on the allocation of resources between for-hire and private trucking. The evidence suggests that at least in the LTL segment of the Canadian trucking industry, where enforcement is less of a problem, these impacts have been highly significant.

An examination of some broader concerns related to the provision of trucking services does not lead to a more favourable impression of the effects of trucking regulation. It was found that some concerns that have been raised in this context are largely unjustified. Consumers of trucking services, for example, are not subject to major information problems of the type which would justify regulations to guarantee a given standard of service. In some other cases there seems to have been a presumption that trucking regulation is fulfilling a certain social role, when there is little evidence that this is the case. This applies to the belief that regulation is geared to serving the needs of shippers in small communities. Moreover, there exist alternative mechanisms, which are more effective and more efficient than entry and price regulation, to achieve the desired objectives: trucking service to small communities can be effectively supported if this is desired, through direct subsidies; highway safety can be promoted through the imposition of rigid safety standards on both for-hire and private carriers.

The study leads to the general conclusion that we should be far more concerned about the cost of regulatory controls than about consequences of living with somewhat imperfect trucking markets. This conclusion is based on an examination of for-hire trucking in Canada, but it is also founded on theoretical considerations and foreign experience which suggest that the problems associated with trucking regulation in Canada are not unique. There are immense difficulties and substantial costs inherent in any attempt by governments or government agencies to apply detailed controls to an industry with the structural characteristics of for-hire trucking. The cumulative evidence strongly suggests that the social control achieved through economic regulation is inferior to what could be achieved through a greater reliance on the signals and natural controls of the market. And it provides a compelling argument for reforms which would provide for a relaxation in regulatory control and allow market forces to play an expanded role in determining the course and direction of events in the Canadian trucking industry.

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