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Performance Under Regulation:

The Canadian Intercity Bus Industry

G. B. Reschenthaler



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THE CANADIAN INTERCITY BUS INDUSTRY

G.B. Reschenthaler

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The analysis and conclusions of this study do not
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FOREWORD

A principal objective in the Research Branch is the preparation of policy-oriented studies in the fields of industrial organization and competition policy. Such research is intended to contribute to informed discussion and effective policy formulation. Publication of the research is further intended to provide businessmen, government officials, academics and other interested persons an opportunity to examine and comment on the direction and quality of research produced. The resulting series of research monographs, it is hoped, will serve as a recognized focal point for policy-oriented micro-economic research in Canada.

This examination of intercity bus operations in Canada was undertaken as one contribution of Consumer and Corporate Affairs Canada to the Interdepartmental (Transport Canada, Canadian Transport Commission and Consumer and Corporate Affairs) reference on regulation/competition in transportation. It synthesizes elements of bus industry structure and conduct to reach an assessment of industry performance and draws inferences concerning the effects of regulation on that performance.

Among its more important findings, the study identifies significant overinvestment in operating equipment and relates the existence of this phenomenon to regulation. Notwithstanding underutilization of vehicles and related upward influence on costs, the study shows that rates of return on intercity bus operations are higher than those estimated for most other sectors of the Canadian economy.

With a view to upgrading industry efficiency, leading to lower fares, the author recommends phased removal of provincial regulations currently governing this industry.

The results of this study take on additional importance for two reasons. First, they reveal the potential for substantial efficiency gains in a transport mode whose average passenger, by reason of income and age, can be characterized as less advantaged. Second, the study's

recommendations call for particular attention from policy makers in light of the fuel efficiency characteristics of the bus in relation to those of its principal rival -- the automobile.

A handwritten signature in black ink, appearing to read "D.F. McKinley". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

D.F. McKinley,
Research Branch,
Bureau of Competition Policy.

SUMMARY

The economic impact of government regulation continues to be a major concern of economists, policy makers and the general public. In recent years, attention has been focused on the regulation of transportation industries. As a consequence, regulation of railroads and airlines has been liberalized in both Canada and the United States. While economists have focused on the economic effects of the regulation of the trucking, rail and airline industries, they have paid little attention to the intercity bus industry. This study examines the performance of the intercity bus industry in Canada.

The Canadian intercity bus industry is composed structurally of regional monopolies. With the exception of Greyhound Lines and its subsidiaries, which account for one-fourth of bus service in Canada, other carriers provide scheduled service in only one or two provinces. In the very few instances in which duplicative service is provided by two carriers, the provincial regulatory agencies invariably set identical fares.

The study explores the nature of demand for intercity bus service. In general, the primary users of intercity bus service are identified as members of lower socioeconomic groups. Bus is found to be unable to compete with air travel for distances exceeding 400 miles. It competes mainly with automobile and rail. Though it has experienced a declining market share, there are indications that bus can be made more competitive with automobile and rail in the future. The study finds the demand for intercity bus service in Canada to be very sensitive to price. It also suggests that, if properly priced and marketed, bus may appeal to more affluent travellers taking trips up to 200 miles.

The rationale for regulation of the industry is examined critically. Much of the study then focuses on testing the validity of arguments for economic regulation. The review of provincial regulatory systems reveals a common highly protectionist and passive approach to economic regulation. Regulatory agencies do not seriously examine system efficiency and provide little more than superficial inspection of financial performance. In general, regulators permit fare increases in response to evidence of system cost increases without considering the reasonableness of the cost increases themselves or the extent or propriety of cross-subsidization.

The issue of intermodal competition between bus and rail is analyzed in some depth. The study concludes that given the inability of unsubsidized rail to compete with bus, except in the highest-density corridor areas, and given very high capital outlays required to make rail competitive even in those corridor areas, an optimal regulatory policy for intercity bus systems is imperative. The study reveals that the present level of rail fares is the major restraining force on bus fares in central Canada and the perceived cost of operating an automobile is the major constraining force in western Canada.

The analysis of intercity carrier performance in Canada concentrates on Greyhound Lines of Canada. In this sense, this is a case study. In addition, however, the study draws on data for other Canadian carriers, a recent econometric study of costs for all large carriers in Canada, as well as American research. Ultimately, the study focuses on Greyhound's operations in the Alberta market, and the regulatory policies of the Alberta Motor Transport Board. The Alberta market is treated as representative of Canadian bus markets.

In order to provide insight into the regulatory process, two applications for competitive operating authorities are analyzed. These are the only two major applications of this type pursued successfully anywhere in Canada in the period from 1960 to 1980. In both cases, one in Alberta and one in Ontario, Greyhound was involved. And in each case the operating authorities were issued under very restrictive terms.

The study explores the question of economies of scale and scope in the industry. Case studies, data on other Canadian carriers and other studies provide no evidence of significant economies of scale in the industry. Consistent with this conclusion is the finding that the preponderance of costs are variable.

In one of the more important sections on performance, the study estimates the extent of cross-subsidization in the industry as not exceeding one to three per cent of carrier revenues. Available evidence provides no support for the proposition that carrier regulation is necessary in order to ensure maintenance of service to most relatively small communities currently served.

The study reveals overinvestment in vehicles. Regulation is found to have resulted in -- not prevented -- gross underutilization of vehicles and the selection of an inappropriate mix of vehicles. Consequently, regulation has resulted in inflated costs per passenger mile.

In the section on the financial performance of the industry, the study reveals that prices are substantially higher as a result of regulatory policy. Rates of return and profit margins are found to exceed levels for almost all major Canadian industries. The analysis of the economic effects of regulation in the industry suggests that, during the period 1975-1977, a reduction of fares exceeding 26 per cent would have resulted from an elimination of economic regulation in the industry.

A program of regulatory reform for the industry is proposed. The program calls for a plan of phased deregulation and provides a system to ensure provision of a socially acceptable minimum level of service.

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INTRODUCTION

There are few industries in Canada in which firms operate in a more regulated environment than the intercity bus industry. However, there has not been -- until now -- a major study of the impact of regulation on the performance of firms in this industry published in Canada. This study explores such questions as: What is and what should be the role of the intercity bus industry in Canada? What are the economics of the industry? Why is it regulated? Does regulation as it is currently practised accomplish its objectives? How has regulation affected the efficiency of resource utilization? How has it affected price levels? What are the costs of regulation relative to its benefits?

The study commences by examining the structure of the industry regionally and nationally. The first chapter also explores the nature of the demand for intercity bus transportation.

The second chapter poses the question, What kind of regulation do we have in practice? The regulatory process in Canada as found in the ten provinces is reviewed by analyzing the objectives of regulation, as set out in provincial legislation, and regulatory procedures.

The third chapter takes a close look at the intercity bus industry in the United States. In both countries, the industry is dominated by the same intercity carrier and uses identical equipment produced by the same suppliers. Thus, further insight can be gained into the economics of the Canadian industry and the implications of regulatory policy by examining the American environment.

The fourth chapter examines the impact of intermodal competition in the industry, in particular the interface between intercity bus and rail and the impact of passenger rail subsidization on the development of the intercity bus industry. What are the economic implications of changes in the dimensions of rail competition in the absence of changes in regulatory policy toward the intercity bus industry?

Three case studies are presented in the fifth chapter to obtain additional insight into the Canadian operating and regulatory environment. First, the operations of Canada's largest intercity carrier, Greyhound Lines of Canada, and its corporate subsidiaries are examined. Greyhound is also involved in the other two case studies

analyzed, the only two successfully contested applications for competing operating authorities on major routes in Canada in the last two decades.

Building on the conclusions drawn in the case studies, the sixth chapter moves into an analysis of the performance of the industry under regulation. Fare levels, tapers (the rate at which the fare per mile declines with distance) and trends are considered first, followed by operating expenses, investment in rolling stock, the economics of parcel express and the economics of bus charters. The seventh chapter expands the analysis of performance by examining plant utilization, load factors, cross-subsidization and financial performance in the industry. It ends with a discussion of externalities and technological change.

The economic effects of regulation are measured in terms of economic and social costs and benefits in the eighth chapter. Finally, the ninth chapter offers an alternative regulatory approach to the industry.

The analysis relies heavily on financial and operating data for Greyhound Lines of Canada. Whenever possible, however, an attempt is made to generalize the study's findings by reference to conclusions drawn in a technical cost study of the bus industry prepared by Professors D.W. Gillen and T.H. Oum (1981). In their study, production and cost functions are estimated for the industry using confidential data provided by Statistics Canada for 17 intercity bus systems in Canada from 1974 to 1978. With few exceptions, the conclusions of this study on economic facets of the industry, drawn using an essentially inductive approach, are verified by their analysis.

Chapter I

INDUSTRY STRUCTURE AND MARKET DEMAND CHARACTERISTICS

The Industry Structure

Eighteen major bus firms and numerous smaller lines serve Canadian intercity bus passengers. The 18 large Class I and II intercity bus lines -- those with over \$500,000 annual revenues -- provide service to most major Canadian cities but rarely compete directly against each other. With the exception of Greyhound, these systems are regional. There are other intercity scheduled carriers in Canada but they are very small and include some operators which provide little more than scheduled taxi service between isolated communities. Additionally, over 100 companies provide various types of charter service. Many of the scheduled service bus lines, as well as the charter carriers, offer industrial and school bus services.

This study focuses on the 18 Class I and II bus lines, with particular attention to the 13 privately owned lines. These 18 Class I and II intercity bus systems (hereafter IBSS) had operating revenues of \$217,672,779 in 1978. As a group, they serviced over 3,400 communities. The analysis of these companies covers the years 1974 to 1978, a period which includes some very good years as well as one notably bad year -- 1976.

For practical purposes, carriers enjoy exclusive franchises to serve select markets and have interlining arrangements to facilitate long-distance travel. Only Greyhound provides scheduled service in a large number of provinces.

The bus lines operate in a tightly regulated environment. Each province maintains a regulatory board with authority to review and/or set fares, to grant operating authorities and to determine the frequency of service to communities as well as the extension of new service and the termination of existing service. There is no economic regulation of interprovincial bus fares or frequencies.

Table 1 lists most Class I and II carriers in Canada as well as their total route miles and primary markets for the year 1978. The principal markets served by the major lines are briefly delineated here, beginning on the west coast.

In 1978, Greyhound Lines of Canada dominated the intercity bus industry in British Columbia. Pacific Stage Lines, a small subsidiary of British Columbia Hydro, served

Table 1
Route Miles by Bus System, 1978

	Miles	Miles	Percentage (provincial)
British Columbia	5,941		
Greyhound Lines		3,723	62.67
Pacific Coach Lines		663	
ten others			
Alberta	5,881		
Greyhound Lines		5,758	97.91
two others			
Saskatchewan	5,671		
Greyhound Lines		1,229	21.67
Sask. Transport Co.		3,755	66.21
four others			
Manitoba	4,353		
Greyhound Lines		1,377	31.63
Grey Goose Lines			
& MMT		2,842	65.29
three others			
Ontario	9,545		
Greyhound Lines		2,479	25.97
Gray Coach		1,656	17.34
Voyageur Colonial		1,501	15.73
Ontario Northland		990	10.37
Grey Goose		619	6.49
Charterways		454	
Canada Coach		435	
Travelways		423	
United Trails		353	
Chatham Coach Lines		58	
six others			
Quebec	4,173		
Greyhound Lines		175	4.28
Voyageur Colonial		267	6.40
Voyageur Inc.		3,652	87.51
Pontiac Bus Lines			1.89
New Brunswick-P.E.I.	919		
SMT (Eastern)		919	100.00
Nova Scotia	1,075		
Acadian Lines		757	70.42
Mackenzie Bus Lines		318	29.58
Newfoundland	562		
C.N. Road Cruiser		562	100.00

Source: AMTB, 1978b, Exhibit 86.

Note: Only intercity bus lines with routes listed in the Official Canadian Bus Guide are included in this table. Some of the smaller Class II Quebec lines are not listed.

three major routes in the lower mainland region. Vancouver Island Coach Lines served the Victoria-Nanaimo area. These two carriers have now been merged into Pacific Coach Lines. In addition, there were 50 very small intercity carriers.

Greyhound Lines of Canada, which has its headquarters in Calgary, Alberta, is the primary intercity carrier in Alberta. Sixty per cent of its employees are based in Calgary, including all major mechanical service staff. Greyhound and its two Alberta subsidiaries, Brewster Transport and Canadian Coachways, had, until 1979, 97.7 per cent of scheduled service in Alberta and virtually all major routes. Greyhound Lines of Canada and its subsidiaries, including Eastern Canadian Greyhound Lines, provide transcontinental service between Vancouver and Toronto. It interfaces with most carriers in central Canada at North Bay and Toronto. In addition to serving Alberta and British Columbia regionally, it serves routes in the Yukon and Northwest Territories. Eastern Canadian Greyhound provides regional service to major corridors in the Toronto area connecting with the United States. Greyhound dominates the interprovincial bus roadmap of Canada.

All scheduled service between major cities in Saskatchewan is provided by Saskatchewan Transportation Company, a provincial crown corporation. Greyhound provides intraprovincial intercity service on corridor routes through major cities in Saskatchewan but does not service intermediate communities. This is called "closed door" service.

Grey Goose Corporation provides most major intercity bus service in Manitoba through its three wholly owned subsidiaries. It also services communities in western Ontario. Greyhound is the only other major bus line with operating authority in Manitoba. Although its system includes routes through Manitoba corridors, it provides no local service.

Ontario's intercity bus service is provided principally by Eastern Canadian Greyhound Lines, Ontario Northland, Gray Coach Lines, Canada Coach Lines and Voyageur Colonial. Eastern Canadian Greyhound serves major corridors out of Toronto in southwestern Ontario. Ontario Northland is a government-owned carrier which provides scheduled service to major communities in northern Ontario. Gray Coach Lines is a subsidiary of the government-operated Toronto Transit Commission and provides interurban service between Toronto and major communities in southwestern Ontario as well as service to Sudbury and North Bay. It has operating authority to transport passengers to and from the Niagara Peninsula but not within the Peninsula. Thirty per cent of its

revenues are attributable to suburban commuter runs. Canada Coach Lines is government-owned and services the Niagara Peninsula and the region between Lake Erie and Hamilton. Charterways, a smaller company, serves London-Sarnia, and Chatham Coach Lines mainly serves Chatham-Sarnia.

The major intercity operators in Quebec are Voyageur and its subsidiary, Voyageur Colonial, both owned by Canada Steamship Lines which, in turn, is controlled by Power Corporation. Voyageur Colonial's operations are centred around Ottawa. It connects major points in eastern Ontario with communities in Quebec. Voyageur is the largest Quebec operator. Other Class II companies with routes in eastern Quebec include Autobus Drummondville, Autocars Fournier and Autobus A Drolet, which was purchased by Voyageur in 1977. These small carriers rely heavily on revenue from commuter services.

S.M.T. (Eastern) provides service to most of the New Brunswick market and Acadian Lines serves most of Nova Scotia. Canadian National Railways provides most of the service in Newfoundland. However, it faces limited competition from small, privately owned carriers which provide strictly local service between small communities located on the Trans-Canada Highway. MacKenzie Bus Lines, the only other major carrier in the Maritimes, provides service between Halifax and Yarmouth.

In terms of relative importance, Greyhound and its subsidiaries, Grey Goose, Gray Coach, Voyageur and Voyageur Colonial dominate the Canadian system. Greyhound is the largest of the group and the only one to provide extensive interprovincial passenger and package express services. As indicated in Table 1, Greyhound accounts for about 39 per cent of the route miles in the five provincial markets in which its operations are concentrated. It has only a very small percentage of the Quebec market which is served without local stops (i.e., closed door service).

The market shares which are shown in Table 1 are based on route miles of scheduled service, the only publicly available data on individual intercity bus companies in Canada. Route miles is clearly not the best measure of provincial market shares since the frequency of scheduled service and the average load factors are very important. Ideally, operating revenue measures by province would be used. Unfortunately, however, these data are not made public by the companies or the federal government. The author has had access, on a confidential basis, to that data. Nonetheless, for the purposes of measuring order of magnitudes the route miles measure is generally useful. The greatest distortions arise with Greyhound, which accounts

for only 26 per cent of total Class I and II carrier revenues but 39 per cent of route miles. Another less serious distortion arises with Chatham Coach Lines in Ontario which, on the basis of operating revenues, is classified among the Class I and II intercity bus lines in Canada but offers service on only 58 route miles. Finally, three of the very small companies operating in eastern Quebec place among the Class I and II lines by reason of their total operating revenues. They do not appear in Table 1, however, since their routes are not listed in the Official Canadian Bus Guide, a public document.

There are a few routes in Canada where two intercity bus lines offer similar service, mostly due to Greyhound's interprovincial system. Table A-1 in the Appendix lists major routes where duplicate operating authorities exist. Though the regulatory statutes do not prohibit competition, it is rarely permitted by authorities. Where parallel routings do exist, regulatory policies have resulted in identical fares being established. Open entry and open price competition are never permitted.

The Demand for Intercity Bus Service

The discussion has so far focused on the supply side of the intercity bus industry. Equally important, from a policy standpoint, is the nature of demand for intercity bus service. In terms of total passengers, the intercity bus is second to the automobile as a transportation mode. However, in terms of total miles of transportation service provided, it is a distant third to automobile and airlines, though ahead of rail. Table 2 provides data on the distribution of travel by modes for 1975.

The relatively small role of intercity bus as a mode is attributable to the impact of the automobile and air modes (Interstate Commerce Commission (ICC), 1978, p.28 and 1979, p.2). For many travellers, the automobile has advantages over the bus since it provides privacy and comfort as well as flexibility and transportation at destination. The automobile also has cost advantages over the bus on short distances if only the perceived cost and not the full cost of operating a vehicle are considered or if there are two or more passengers in the vehicle.

Bus tends to lose out to air on all travel requiring more than seven or eight hours. Even at relatively high prices, air has advantages to those who place a high value on time or who have limited time for holiday travel and must travel long distances. On trips of over 500 miles, bus loses out to air as well because passengers must incur the extra cost of stopovers or sleep while riding. Increased

Table 2
Mode Shares of the Intercity Passenger Transport Market,
1975 Estimates

Mode	<u>Intercity passengers</u>		<u>Intercity pass-miles</u>	
	million	per cent	billion	per cent
Auto- mobile	190.6	88.4	18.9	56.6
Bus	9.7	4.5	2.4	7.2
Air	11.6	5.4	9.8	29.3
Rail	3.6	1.7	2.3	6.9
Total	215.5	100.0	33.4	100.0

Source: Canadian Transport Commission (1976b), p.3.

Note: These data are based on 94 transportation nodes in Canada. This sample may understate the importance of the intercity bus mode. For example, 13 privately owned carriers transported in excess of 20 million passengers in 1975.

This table suggests an average bus trip distance of 247 miles. Mr. H. Segal, Executive Director of the Canadian Motor Coach Association, points out that the correct figure for all of Canada is substantially less.

competition within the airline industry has also tended to undermine the competitive position of the bus mode.

Rail is a competitor with bus in only a few select corridor areas. It is at a disadvantage in competing with bus in North America due to slow speeds, high operating costs and relatively low frequencies of scheduled service.

Intercity bus service has been forced into a defensive position, particularly with declining air fares in many North American markets. Given the value of his time, the business traveller cannot justify using the intercity bus. The cost of renting an automobile is sufficiently low that his short-distance travel demand is also lost. There is some evidence that much of the long-distance travel by rail is not at the cost of the bus industry. The clientele seems attracted to rail for intrinsic reasons (Comptroller General, 1979).

Thus, who rides the bus? The simplest answer, in recent years, has been those who do not own automobiles, those who cannot drive, the very old, the very young, the unemployed and those who are in lower socioeconomic groups (Alberta Transportation (AT), 1977; Canadian Transport Commission (CTC), 1975c; Dodd, 1979, ch.2). Not surprisingly, these studies reveal that people ride buses mainly because of economic considerations. Indeed, one 1976 survey found that over 50 per cent of bus users cited economic reasons for using the bus as a mode (AT, 1977, p.190). The profiles of typical passengers for bus and other modes as gleaned from Canadian and American studies appear in Table 3.

Over the next few years, as the price of fuel continues to rise rapidly and the size and comfort of automobiles decline, the comfort and relative fuel economy of intercity buses may make them much more attractive to more affluent intercity travellers going distances up to 400 or 500 miles. There is some evidence that the industry can appeal to a more affluent clientele. For example, the traveller profile changed markedly on Voyageur's corridor routes in recent years. A 1979 survey by Transport Canada revealed that professional, executive and managerial travellers accounted for 30 per cent of passengers on the Montreal-Ottawa and Montreal-Quebec City routes. If teachers, sales and military people are included as professionals, then the percentages rise to 44 per cent (Montreal-Ottawa) and 49 per cent (Montreal-Quebec City). The survey results suggest that there is a market among middle-income businessmen and professionals for bus service offered for short distances in quality vehicles from modern terminals on convenient schedules.

Table 3

User Profiles by Mode

Predominant characteristic	<u>Mode</u>		
	Bus	Rail	Air
Sex	slightly more females	both	male
Age	young / old	all ages	middle-age
Income	low	low / medium	high
Occupation	students / house- wives / blue collar	very mixed	managerial / professional
Purpose	social - recreational	social - recreational	business
Group travel	alone or pair	all group sizes	alone or pairs

Source: Adapted from AT (1977), p.188 and other studies.

Note: Recent fare competition for commercial air passenger service is causing the socioeconomic profile of air travellers to change dramatically. CP Air's user surveys reveal equal mixes of travellers by age group, sex and income.

The characteristics of the group which currently uses intercity bus service on most routes should cause a heightened public sensitivity to its performance. If costs and prices are unnecessarily inflated, lower-income groups will mainly bear the burden. Both from a purely economic standpoint and from an equity standpoint, it is critical that intercity bus services be offered at as reasonable a set of prices as is economically possible.

The characteristics of intercity bus service users raise questions about their priorities and sensitivity to price changes. There have been a number of surveys of consumer demand for intercity bus service during the past decade; they provide some equivocal answers to the questions of priorities and price elasticity. Most of them suggest that consumers are particularly concerned by price, frequencies and amenities, in that order (AT, 1977, pp.180-190; ICC, 1978, ch.2). Various studies have found that the bus is not used mainly because of the time problem. In addition, the confined and cramped quarters, stuffiness, rough motion of vehicle and the possible presence of undesirable fellow travellers for long time periods make intercity bus travel unattractive for distances over 400 miles to anyone but the most price sensitive. Typical of the surveys is an Alberta study (AT, 1977, p.186) in which an overwhelming proportion of users questioned ranked fewer stops (24 per cent) the first in needed improvements and more comfortable seats (21 per cent) second. Earlier departures (13 per cent) and inadequate terminal facilities (13 per cent) were the only other significant concerns which drew complaints from more than 10 per cent of those surveyed (AT, 1977, p.187). Respondents did not complain about fare levels.

Given the importance of economic factors in the decision to take a bus and the close substitutability of automobiles, consumers could be expected to be very sensitive to price changes. In a recent empirical study of travel demand characteristics in Canada, Oum and Gillen (1981) found the demand for intercity bus service to be very sensitive to price changes. For 1976, they estimated the price elasticity of demand at approximately -1.5 (a reduction in price of ten per cent will cause a 15 per cent increase in passengers). They found the elasticity measure had been remarkably stable over a 16-year period.

In their 1975 study of transportation demand in Canada, Rea, Wills and Platts (1975) also found a very high price elasticity of demand for intercity bus service. Based on a multimodal analysis of travel between 94 Canadian communities, they estimated the price elasticity of demand for bus for travel up to 700 miles to be -2.08 (a reduction

in fares of ten per cent will lead to a 20.8 per cent increase in passengers). Collateral evidence supporting these high measures of price elasticity is found in a recent study on the impact of a change in gasoline prices on intercity bus demand. The author of that study on pricing and network strategies estimated that if the price of automobile gasoline was increased in 1979 from 86 cents to \$1.50 per gallon (U.S. gallon), bus travel would increase to 20 million passengers, or twice the actual 1979 level (CTC, 1976a, p.22).

These studies show that the demand for bus service in Canada from the current clientele is highly price elastic. The possible response to price changes of middle- and upper-middle-income travellers who currently eschew the intercity bus for all travel for price and non-price reasons is a matter of speculation. Under a different delivery system, with a variety of different quality services offered, easier ticketing and with gasoline prices rising and automobile size shrinking, how many of these customers could be attracted to intercity bus? If that untapped market is very large, then the price elasticity of demand estimates may be grossly understated. This is particularly true if the dimensions of the service were to change simultaneously with a relative price change.

Chapter II

THE REGULATORY FRAMEWORK

A Rationale for Regulation

There are many reasons why the public chooses to regulate an industry (Stanbury, 1978); most of these have little relation to the bus industry. Five possible reasons why the public has opted for regulation of this industry are to: (a) ensure safe service; (b) prevent overcharging in a "naturally" monopolistic industry; (c) prevent destructive competition; (d) ensure the availability and continuity of service; and (e) ensure efficient plant utilization.

Is economic regulation necessary to ensure safe service? Experience with economic regulation in many industries has revealed that neither is it necessary nor does it guarantee safe operations. Safety can be ensured through a combination of frequent intensive inspections and large criminal or administratively imposed penalties for violations of safety regulations. Safety is, therefore, not a valid argument for economic regulation.

Another rationale traditionally used to justify economic regulation of an industry is the natural monopoly argument. If economies of scale are very great in an industry, then the unit costs of a single firm in the industry may be lower than average unit costs for all firms if there are two or more producers. Regulation is introduced to ensure that production or service levels are not unduly restricted, that prices are not inflated and that particular customer groups do not become the victims of unfair price discrimination. In these circumstances, from an economic standpoint, it is preferable to have only a single regulated producer.

As will be seen in Chapters VI and VII, there are only slight economies of scale in the intercity bus industry for passenger service. Some possible economies of scope are associated with parcel express. However, on balance, there is no evidence that costs -- measured in terms of passenger or vehicle-passenger or vehicle miles -- decline as the size of the intercity bus firm rises. This conclusion is consistent with all other studies of the industry which were examined (Fravel, Tauchen and Gilbert, 1980) and is accepted by major regulatory agencies (ICC, 1979; Alberta Motor Transport Board (AMTB), 1978a).

Regulation of the industry is often defended as a necessary response to economic conditions that, if left alone, will lead to destructive competition. Competition may

be potentially destructive if there are conditions present in an industry which would likely lead to prices being driven below average costs for an extended period of time. Destructive competition might present a problem in an industry in which fixed costs are very high and where there is very little factor (resource) mobility. Under these conditions, prices may fall very far below average total costs, yet producers will not leave the industry since it is in their interest to minimize losses by continuing to operate. In the long run, such a situation will likely result in either a monopoly or a conspiracy among those with the greatest staying power. Alternatively, firms under extreme financial pressure may be tempted to curtail necessary safety outlays. However, ways to cope with this problem have already been noted.

The bus industry does not possess the characteristics necessary for competition to be destructive. The capital outlay is relatively small and specialized, variable costs are a high proportion of total costs and there is extremely high labour and capital (factor) mobility.

The only potentially valid arguments for economic regulation of the industry are to ensure the availability and continuity of service to small communities and to ensure efficient plant utilization. These arguments will be critically examined in Chapter VII.

Irrespective of the merits of these arguments, they have been used to justify regulation of the industry in every province. The types of regulation which result are briefly examined.

Regulatory Jurisdiction

While the federal government has the authority to regulate interprovincial bus transportation, it has failed to promulgate a policy (Schultz, 1980). The National Transportation Act makes no reference to the role of intercity bus transport. Responsibility for the issuance of operating authorities, the review of fare levels and the review of proposed changes for intercity bus service within provinces is delegated to provincial regulatory agencies. All of the provinces have adopted substantively identical regulatory approaches; they have given their regulatory agencies broad discretion in granting operating authorities and in reviewing proposed fare levels.

The regulatory agencies will approve an operating authority if an applicant can demonstrate that a proposed service will serve the "public convenience and necessity."

Determination of what constitutes public convenience and necessity is left to the regulatory boards, though some provinces provide a set of criteria which must be considered in addition to the public interest.

Broad discretion is permitted the agencies in deciding whether existing and proposed fares are fair and reasonable. The provincial boards rarely hold public hearings on proposed fare increases; they principally consider fare trends in other jurisdictions and demonstrated system-wide increases in operating costs. There is no evidence that any board is an active regulator; they simply do not examine cost control, efficiency, load factors, cost of capital, propriety of equipment mix, efficiency of route systems and costs of cross-subsidization. They seldom review profit rates. While the boards do consider cost trends in reviewing fare applications, they rarely study the reasonableness of any company's costs. Judging by a review of hearings and decisions in a majority of the provinces, it is clear that the primary concerns of intervenors and of regulatory boards are frequency of service, maintenance of schedules, claims service and types of equipment used. These are the very same dimensions of service which, as previously noted, were rated most important by users.

The author has contacted senior administrators associated with most of the provincial boards and has benefitted from the findings of unpublished Transport Canada studies on the operations of boards in all ten provinces. The findings of these surveys are briefly reviewed here but the reader who is satisfied with the generalizations of the preceding paragraphs may proceed to the next chapter without loss of continuity.

The Alberta system is reviewed first since it will be the focus of the case study considered later. As well, it is representative of the other provincial systems.

In Alberta, intercity bus systems are regulated by the Alberta Motor Transport Board. The Motor Transport Act does not provide the board with guidance on the criteria it is to apply in considering the issuance of an operating authority. The board decides what constitutes public convenience and necessity. In practice, it considers: (a) the need or demand for the service; (b) the adequacy of the existing service, if any; (c) the ability -- managerially and financially -- of the applicant to perform the service; and (d) the effect on the public interest. The board has never granted a duplicate operating authority for scheduled service of similar quality. Holders of certificates are expected to publish timetables, adhere to schedules and offer the quality of service promised. They may refuse

service only if a vehicle is filled to capacity or with just cause. Just cause exists if a prospective passenger is intoxicated, is disorderly or uses obscene language. The board allows carriers to reduce and eliminate service; however, it usually requires a period of reduction in service frequency before service is terminated.

The Alberta Motor Transport Act (S.Alta. 1977, c.80) provides no specific criteria for consideration by the board in reviewing an application for a fare increase. This leaves the board largely on its own in determining the criteria for setting fair and reasonable rates. In practice, regulation of fares is passive. A maximum fare per mile is set for the entire province. If there is evidence that bus system costs are rising or that fares have risen in other provinces, then the board will permit fare increases.

A recent fare increase application and a recent operating authority application provide insight into the comprehensiveness of the fare-setting process in Alberta. A submission by Greyhound to the Alberta Motor Transport Board in September 1979 requested an increase in fares of nine per cent (AMTB, 1979a). A careful review of this submission as well as transcripts and exhibits from six months of hearings in a 1978 operating authority case reveal a striking common, missing element: the board was never provided with the information it would have required to calculate a rate of return on invested capital or common equity on operations in Alberta. In each case the board was provided only with data on system-wide -- not Alberta -- operating costs. Even more striking is the failure of the board to ask for these kinds of data. When an attorney for a company requesting a competitive operating authority attempted to force Greyhound to completely disaggregate its consolidated income statement and balance sheet, he had no support from the board.

The board does not interest itself in the reasonableness of individual fares, efficiency of operations or rate of return. A review of procedures followed in other provinces and an internal review prepared but not published by Transport Canada suggest that this is typical.

The regulatory approach followed by the Motor Carrier Commission in British Columbia is essentially the same as that found in Alberta. However, the board's limited resources are spread very thinly because of the large number of small bus companies which it is charged to regulate. The commission does not monitor the operating systems or financial performances of bus companies. It usually approves fare increases without formal hearings. As in Alberta, the main criteria for determining the reasonableness of a proposed fare increase are movements in fares in other

jurisdictions and increases in system costs. Operating authorities are issued when an applicant can prove public convenience and necessity; however, direct competition is not permitted. The commission has cancelled operating authorities when companies have not provided promised service.

In Saskatchewan, intercity bus systems are regulated by the Highway Traffic Board. It judges applications for operating authorities on the basis of whether or not the operation will promote the "public business." In practice, public business promotion reduces to "public convenience and necessity." The legislation does not provide the board with specific guidelines for determining whether or not proposed fares are reasonable. Periodic increases in fares are approved if carriers can demonstrate that system input costs have risen.

The Saskatchewan board, like Alberta's, sets a maximum fare -- on a cents per mile basis -- to be applied province-wide. Greyhound and Saskatchewan Transport normally make a joint application for identical fares for routes which they share.

The statutory terms of reference of the Manitoba Motor Transport Board are also comparable to those of the Alberta board. It may suspend or terminate present operating authorities and issue new operating authorities if existing service is deemed insufficient or nonexistent. Unfortunately, the Manitoba Highway Traffic Act provides no guidance for determining insufficiency. The test applied is the same as that used in Alberta. Nor does the Act offer criteria for determining when service is sufficiently inadequate to justify suspension or termination.

The Manitoba legislation does provide for rate-of-return regulation and public hearings must be held on applications for fare increases. Manitoba claims to undertake sophisticated financial analysis of each application for a fare increase. However, there are several reasons to be skeptical about the validity of this claim. First, no printed transcripts are available of rate cases for recent years. Recorded tapes for some hearings are available at the board's office. Second, all financial documents are confidential; the board allows neither the regulated companies nor intervenors to examine the financial analysis done by or for it by its one economist. If the board ever overruled a company request for a fare increase, the company would surely appeal to the courts maintaining that lack of access to the analytical documents constituted denial of natural justice. Moreover this may account, in part, for the failure of any consumer group to oppose fare

increases. Only Purolator Courier Service has appeared as an intervenor in recent years, and its intervention involved rates on package express. The board also refuses to indicate what rates of return on investment have been permitted. Third, since Greyhound's senior executives have testified that costs are not broken down by route, it is clear that Greyhound does not provide very detailed route operating data to the board. Fourth, the board sets a uniform maximum fare for the province which suggests a simplistic approach to fare regulation. Finally, it allows Greyhound and Grey Goose to make joint fare applications.

The board does consider service frequency. One recent case, unreported, involved the application to terminate a Sunday service where monthly traffic had averaged ten passengers. That route and all others served by Grey Goose -- the province's principal carrier -- are serviced by buses with at least a 39-seat capacity. This suggests that the board does not consider appropriateness of equipment (i.e., prudent investment) in reviewing applications for fare increases.

In Ontario, regulation of intercity bus systems is vested in the Ontario Highway Transport Board. As in the other jurisdictions, the issuance of an operating authority is contingent upon the applicant demonstrating public necessity and convenience (S.26, Public Vehicles Act, R.S.O. 1970, c.316, amended by S.O. 1971, c.50, S.62 and 1972, c.1, S.101). Unlike the procedures followed in other provinces, the Minister of Transport in Ontario must review and approve proposed fare changes. In practice, he relies on the advice made by the board following its review or hearing. Normally, a carrier files a list of proposed fare changes with the minister. If he has objections the minister refers the proposed fares to the board which then holds a hearing and submits its recommendations to the minister. In practice, there are very few rejected applications.

An analysis of the regulatory system in Ontario reveals that the Ontario Highway Transport Board, like other provincial boards, assumes an essentially passive and reactive posture. There is no rate-of-return analysis and no ongoing financial analysis of company performances. The board does not review cost control, system efficiency, rate structures, load factors, cross-subsidization or the stock of capital utilized. In reviewing applications for fare increases, it considers increases in system costs in general and fare levels in other jurisdictions. System-wide fare increases are usually set as one percentage. The board does not undertake periodic reviews of company performances.

Palmer's (1980) analysis of the fare-setting

procedure in Ontario led to conclusions similar to those of this paper. As is typical, the ministry refused to allow Palmer to see its rate case files. The ministry has, as noted above, the decision-making power in fare applications; legally, the board is merely advisory. However, Palmer reviewed rate applications for the period from 1973 to 1979 and found that "the Minister always adopts the board's recommendations in rate cases" (p.23). In almost all cases the rate applications were granted in full, and in virtually all cases no written justification was given for decisions.

Palmer observed that only about ten per cent of the Ontario board's caseload involved matters related to bus carriers (1980, p.14). He noted that "most of the board's caseload involves applications for extensions or modifications of existing licences" and that the board is particularly concerned with avoiding "a destructive oversupply of carriers" (p.15). Executives in the industry "have observed that the Board is generally unreceptive to arguments for entry based on the potential for price competition" (p.17). He noted further that in Greyhound's applications in 1976 and 1977 for duplicative operating authorities, it carefully avoided any discussion of lower fares.

Quebec takes a similarly passive approach to regulation. As in Ontario, public hearings are rarely held on fare increase applications and published transcripts usually are not prepared. Recordings are available for some hearings. Since the passage of an Order in Council in 1974 which directed the commission to issue no new operating licences except for extension of services, there have been no new applications for licences to provide scheduled service. For practical purposes, no new entry is possible.

The Quebec commission possesses the authority to set maximum and minimum fares. Applications for fare increases usually emphasize system-wide cost increases. Hearings are rarely held. Charter rates are set uniformly by the commission. Management of Voyageur and Voyageur Colonial has complained about lengthy delays experienced in obtaining small fare changes and their inability to secure other than across-the-board fare changes.

In New Brunswick, the Motor Carrier Board exercises regulatory authority. In issuing operating authorities, the board is directed to consider only public convenience and necessity. Rate-of-return regulation is not required and the board does not undertake detailed financial and operations analysis. In its reviews of applications for fare increases, it focuses on system cost increases and fare levels in other provinces.

The Board of Commissioners of Public Utilities is assigned responsibility for regulation in Nova Scotia. Under Section 11 of The Motor Carrier Act, the board, in reviewing an application for an operating authority, must consider: (a) the adequacy of existing service and the presence of competitive modes; (b) the quality and permanence of the proposed service; (c) the effect on the public interest; and any other factors that it may feel are important. The statute does not provide the board with detailed guidance on the criteria to be considered in determining whether existing or proposed fares are reasonable.

The Public Utilities Commission regulates the intercity bus system on Prince Edward Island. It issues operating authorities when justified by public need and convenience. The statute provides criteria similar to those used in Alberta. The commission evaluates fare increase proposals on the basis of whether they are "economically reasonable and viable." There is no rate-of-return regulation.

In Newfoundland, the Board of Commissioners of Public Utilities possesses regulatory authority. Before issuing a new operating authority, it must consider the adequacy of existing services and available alternatives, the need for the proposed service, the general effect on the public interest, and the safety, quality, permanence and propriety of the proposed service. Fare increases reflect system cost increases and fare level changes elsewhere.

Conclusion

Canadian companies offering scheduled intercity bus service face a regulatory environment which is both protectionist and passive. They are protected from competition from other bus companies since entry of new bus companies offering standard service is not a serious threat anywhere in the country. Regulatory agencies do not seriously examine system efficiency and carry out little more than a superficial review of financial performance. In general, regulators permit fare increases in response to evidence of system cost increases without considering the reasonableness of the cost increases themselves or the propriety of cross-subsidization. Finally, where routes are served by two carriers, regulators usually insist on joint fare submissions and identical fares.

Chapter III

AN AMERICAN INDUSTRY PROFILE

Similarities in Operating Environments

Given the far-reaching implications of some of the conclusions in later chapters of this study, it is appropriate to develop as broadly based an understanding of the intercity bus industry as possible. A brief review of the principal findings of some recent studies on the intercity bus industry in the United States can provide a better perspective on the industry in general which will be useful in assessing the performance of the Canadian industry. It is not, however, the purpose of this study to evaluate the performance of the American industry.

There are many similarities between the American and Canadian industries. The American industry is large relative to the Canadian industry, but the carriers share the same operating characteristics in terms of the type of capital, labour and labour-capital mix they use. The same carrier, Greyhound, dominates both markets. In many ways, the regulatory frameworks are also similar. Based on a review of Canadian regulatory agencies and recent American studies (ICC, 1978), it can be concluded that new operating authorities could not readily be obtained during the period of this study in either country if they involved duplicative service. Barriers to entry, therefore, were absolute. The same rules applied in the United States to Greyhound for obtaining operating authorities as applied to Greyhound Lines in Canada. While Greyhound and Trailways connect many of the same major American cities, they usually follow different routes. Direct competition is not encouraged.

Differences in Operating Environments

There are some fundamental differences in the industries in the United States and Canada from both supply and demand standpoints. In the United States, most fare regulation is undertaken for the entire country by the federal Interstate Commerce Commission. In Canada, as has been noted, regulation is in the hands of provincial authorities for intraprovincial services and, for practical purposes, interprovincial services are not directly regulated. For a number of reasons, the competitive environment for Greyhound in the United States is different from that in Canada. First, Greyhound in the United States faces more indirect competition on some of its major routes from other bus lines -- mainly Continental Trailways -- than do its Canadian lines. Second, Greyhound, perhaps, faces stronger competition from rail in the United States in

corridor areas served by Amtrak than is presented by VIA in Canada. Third, more effective automobile competition may arise in the United States due to relatively lower automobile prices and the relatively high quality of the interstate highway system in contrast with the quality of the Canadian intercity roadway systems. Fourth, the air mode is more competitive than in Canada on long haul service. In some submarkets -- for example, Texas, California and Florida -- relatively liberal regulation of airlines has resulted in air fares on some short haul service at off-peak times which are as low as some bus fares on a per passenger mile basis. The bus industry in Canada did not face comparable competitive pressures from the airlines between city pairs less than 500 miles apart during the period of this study. Finally, higher income levels in the United States have made other transportation modes relatively more attractive to travellers.

Studies of price elasticity of demand in the United States suggest that demand is price inelastic in prevailing price ranges in contrast to a relatively high elasticity found in Canadian studies (Comptroller General (CG), 1979. p.97). The share of the travel market held by intercity bus lines in the United States is less than one-third that enjoyed by Canadian carriers. The authors of the American demand studies maintain that Americans who can afford to use other modes avoid buses. Hence the low sensitivity of travellers to price changes and the very low market share of the industry.

It is also clear that in the United States the fare review procedures applied by the Interstate Commerce Commission (ICC), and the public reporting procedures are more rigorous than any applied by provincial regulatory authorities in Canada. Consequently, financial and operating data routinely available in the United States are usually treated as confidential in Canada.

The American Industry

Like Canada, the United States first introduced regulation during the early years of this century to ensure safety, prevent deterioration of roadways and bridges and correct the social consequences presumed to result from unregulated fare and route selection. By the mid-1920s, all states regulated carriers and the regulation focused on economic aspects of the operations.

As in Canada, regulation soon took the guise of public utility regulation. This occurred despite the presence in several markets of viable competitors and the fact that new entrants did not need to undertake large

capital commitments in order to enter the industry. The assumption seems to have been that competition would result in wasteful duplication of services, lower load factors and, as a result, higher unit costs. This is surprising since, in the absence of significant economies of scale, the net social loss from competition should not have been large. The possibility that the social benefits from competition in the form of better service and lower prices might have outweighed even the assumed social loss does not seem to have been seriously considered (ICC, 1978, p.2). Regulation was also seen as providing stability in operating conditions (Crandall, 1954).

By the mid-1920s, state grants of public convenience and necessity had effectively insulated the American industry from new entry. In 1925, however, the U.S. Supreme Court found economic regulation unconstitutional. Ten years later, in 1935, federal regulation was introduced and several states later reintroduced regulation on intrastate routes. From 1935 until 1973, one study finds that the federal regulatory agency, the Interstate Commerce Commission, simply accepted proposed industry association fare increases (ICC, 1978, pp.6-7). Generally, in setting fares the commission focused on the operating ratio for all lines taken together; an operating ratio before federal taxes of .85 was apparently sought through 1969. While a broader approach has been used since 1969, it is true "that the bus industry's recent requests for fare increases have generally been approved without significant delay" (ICC, 1978, p.7). Those increases have been based, in large measure, on changes in industry-wide -- not firm -- average operating costs. The ICC Bureau of Economics' study concludes that: "few new intercity operations have been authorized over the years and the bus industry has now developed to the point where the Greyhound and Trailways systems dominate most of the long-distance intercity bus markets" (1978, p.10).

In the United States, the Interstate Commerce Commission has never:

undertaken to require filing or approval of schedule changes by regular route carriers. As far as interstate traffic is concerned, the carriers are free to adjust the volume and frequency of their services as they see fit, and even to discontinue service completely over a number of their routes without having to obtain prior approval by the Commission. (1978, pp.11-12)

The Interstate Commerce Commission does, however, have the authority to specify service levels should it see the

necessity. In practice, very few proceedings have arisen dealing with inadequacy of service levels. Most carriers currently have operating authorities for dormant routes.

Most state regulatory agencies review closely all proposed route discontinuances and changes in operating schedules or frequencies on intrastate routes. Intrastate routes can constitute segments of interstate routes.

American bus companies rarely compete directly against each other. New entry by competitors has been exceptional until recently. Generally, the Interstate Commerce Commission has prohibited two lines from serving the same exact route; however, in the period 1978-1980, the commission approved 97 per cent of applications for new operating authorities. In some states, entire intrastate markets have been protected as the exclusive preserve of particular companies. An example is Arizona where the regulatory agency has prohibited Trailways from carrying intrastate passengers on the two primary bus routes. Greyhound's corporate headquarters are in Arizona.

Federal regulation has not involved significant innovations, nor has it resulted in important research. The Interstate Commerce Commission's Bureau of Economic Research concluded in its study of intercity bus service that "knowledge of the relationship between industry costs and pricing is relatively unsophisticated. The bus industry's rate structure may not be well related to underlying costs and/or satisfactorily priced for various services" (1978, p.125). The "uniform mileage formula does not consider differences in operating costs and demand characteristics among routes and regions" (p.122).

It has become clear from studying the American data that, in the American setting, short-distance travel -- under 200 miles -- is rarely more competitive than Canadian. Competition in the American airline industry has probably permitted the airlines to take virtually all the over-400-mile business from the bus industry. In addition, in the northeast corridor, Amtrak provides effective competition on many routes. However, the main competitor, to the extent that one exists, is the automobile.

The American industry is dominated by Greyhound Lines and Trailways. In 1976, Greyhound earned express revenues of \$87.6 million, regular route intercity passenger service revenues of \$378.5 million and total passenger revenue from operations of \$540 million (ICC, 1978, p.142). Greyhound's average loads during the years 1974 to 1976 were, respectively, 22.4, 21.6 and 20.7. In 1976, Trailways earned parcel express revenues of \$44.8 million, regular

intercity passenger service revenues of \$135.7 million and total revenues of \$224.9 million (ICC, 1978, p.144). Trailways and Greyhound enjoyed profitable American operations during the years 1974, 1975 and 1976.

In 1976, the 75 large Class I intercity bus passenger carriers in the United States (i.e., those with operating revenues over one million dollars) had total revenues of \$989.8 million. Regular route intercity passenger service revenue was \$645.8 million and parcel express service revenue was \$152.5 million. For all Class I intercity bus carriers in the United States, the average loads for the years 1971 to 1976 were respectively 19.4, 19.2, 19.7, 20.2, 19.2 and 18.5 (ICC, 1978, pp.128 and 137).

Profit levels of the industry in the United States have tended to be relatively low. The 1978 Interstate Commerce Commission study revealed that the bus industry's after-tax rate of return on stockholders' equity was 8.3 per cent. Its pre-tax rate of return on investment was 10.2 per cent. Nineteen seventy-six was clearly a bad year financially for the American carriers. The 1976 rate of return on equity ranks the bus industry only seventh from the bottom among a large cross-section of major American industries (ICC, 1978, pp.88-89).

The relatively low profit levels -- in comparison to those in Canada -- found in the United States for intercity bus companies may be attributable to a number of factors. First, the higher average income level in the United States may result in a higher value being placed on travel time. Second, the low discount air fares and the greater capacity committed to those low fare seats during the study period may have resulted in more effective intermodal competition. Third, the Amtrak rail system is extensive and very competitive with the intercity bus systems. Fourth, the higher quality interstate highway system in the United States combined with a milder climate and lower automobile prices make the automobile very attractive as a mode of intercity travel. Fifth, fare regulation in the United States is concentrated in the hands of a single central regulatory agency: the Interstate Commerce Commission which may have been a more active and restrictive regulator than is commonly believed (ICC, 1979). Finally, the frequency of service and fares on intrastate routes in many states are determined by state regulatory commissions. These commissions may have caused inflated costs by requiring carriers to maintain uneconomic routes and frequencies. It is also alleged that Americans love their cars and dislike common carrier transit.

Exactly why profits are relatively low in the

United States intercity bus industry is not known. The explanation may be found in a mix of marketing, competitive and regulatory factors.

A brief review of some of the American system operating characteristics concludes this section. The industry is dominated by Greyhound Lines. It is subject to route and fare regulation by the federal government and to route regulation on intrastate routes by state agencies. The cost structure and operating characteristics of the industry are very similar to those found in Canada. Parcel express and charter business are of increasing importance and provide the extra revenue necessary for profitable operation given present passenger revenues.

The average intercity bus, in 1976, had a capacity of 43 seats and the average load factor was under 50 per cent. The average passenger trip was 115 miles (ICC, 1978, p.126). In brief, Americans use large, less than half-full buses for short-distance travel.

Problems in the industry have led the presidents of both Greyhound Lines, U.S. and Trailways to advocate some form of deregulation in the United States (Loving, 1978, p.60). Similarly, a recent report prepared by the staff of the Interstate Commerce Commission (1979) recommended deregulation.

Chapter IV

INTERMODAL COMPETITION

The Transportation Market

The availability of substitute services or products offered by firms in other industries significantly affects the conduct and performance of firms in regulated industries, as in unregulated industries. In the case of intercity bus service, air, rail and automobile present significant competition. This chapter examines the nature of that competition and its impact on the performance of the intercity bus industry in Canada.

Table 2 showed the mode shares of the intercity passenger transport market in 1975. While intercity bus transports almost as many passengers as air and three times as many as rail, bus passengers typically travel much shorter distances. The intercity bus industry only accounted for 7.2 per cent of the total intercity passenger miles in contrast to air which accounted for 29.3 per cent of passenger miles.

The importance of the bus relative to automobile and air travel has declined long term, but the decline has been slower in Canada than in the United States. In 1977 in the United States modal shares of the intercity transportation market, measured in terms of passenger miles, were as follows: automobile, 85.3 per cent; intercity bus, 1.8 per cent; rail, .7 per cent; commercial air, 11.3 per cent; and private air, .8 per cent (CG, 1979, p.5). Clearly in Canada the public transit modes -- air, rail and bus -- continue to play much more important roles than in the United States. As noted earlier, this in part explains the greater profitability of intercity bus lines in Canada.

The commercial airline industry has succeeded in capturing almost all the long distance -- over 500 miles -- travel market from bus. Given the increasing value of time to most Canadians, the growing percentage of women in the workforce and the high cost of overnight stopovers, the intercity bus industry should view this market as permanently lost. Currently, about 85 per cent of bus travel is for distances under 500 miles -- short hauls (CTC, 1976b, p.29). There are very few optimists in the industry, such as Paul Martin of Voyageur, who believe there will be a market for long-distance service.

The introduction of special fares by the major airlines, even though capacity commitments are limited, places a new constraint on the ability of bus carriers to

attract or retain long-haul passengers. Air Canada's "nighthawk" fares to Florida alone caused a reduction of 50 per cent in Voyageur's Canada-Florida charter business. If additional competition, including new entry, was allowed in the airline industry, then the ability of the bus carriers to compete on distances over 400 miles would be further constrained. Regulation of bus fares has become a meaningless exercise on long-haul service.

The automobile has proven to be an equally formidable competitor for bus for shorter distances. It provides greater mobility and route flexibility than the bus. Also, the perceived or incremental costs of the automobile are frequently as low as, or lower than, the bus fare for one traveller. Indeed, as will be seen later, Greyhound sets fares in Alberta just under perceived automobile costs. For two or more travellers, the total cost per mile per passenger of operating a car will usually be less than prevailing bus fares. Of course, automobile travellers have privacy and comfort, avoid frequently unpleasant bus terminals and have greater route flexibility.

In a social context, however, the relative fuel efficiency of buses per passenger mile is impressive. American studies have found that "intercity buses are two to seven times as fuel efficient as alternative modes" (ICC, 1978, p.18).

Intercity bus should possess competitive advantages over air and rail modes on distances up to 300 miles for many classes of travellers. These advantages are based on the ability to offer eight-hour service at low cost from downtown terminals with frequent departure times.

Some intercity bus lines have begun to closely examine the market demand for short-distance travel and to offer luxury-type services designed to appeal to special market segments. These VIP services offer reduced seating densities and other special amenities. The demand for premium service is still to be determined; the market response so far to these services, offered by Voyageur, Gray Coach, Greyhound and others, has been weak. The services have been offered, however, only in a tightly regulated environment.

The Rail-Bus Interface

The availability and pricing structures of intercity rail service are important determinants of the pricing policies of bus firms in many markets. There can be little doubt that the modes are competitive, particularly in the Quebec City-Windsor Corridor. Data available in studies

performed over the last five years for the Science Council of Canada and for other federal agencies in Canada and in the United States provide insight into the nature of this interface.

The interface was highlighted in a recent CTC study which concluded that "rail fares appear to be an important determinant of the level of bus excursion fares in competing markets" (1975c, p.41). During the last decade, Voyageur and Voyageur Colonial set their A, B and C plan fares almost identically to CN's old Red, White and Blue fares. The CTC study reviewed the fares between 29 city pairs serviced in the Quebec-Windsor corridor. With one exception, the bus fares were lower throughout the year. In general, midweek bus fares in winter were found to be 14 per cent lower than rail. During the summer months they were approximately 22 per cent lower. Another Canadian study on rail-bus competition concluded that:

The major governing factor for bus fare levels seems to have been the pricing policy of the number one competitor -- rail. The bus companies have tended to keep their fares just below those of rail. With the round trip discount same-day excursion, the gap becomes wide enough to impress many price-sensitive customers. (CTC, 1975e, p.56)

For reasons not identified, the close relationship between bus and rail fares broke down in the period from September 1979 to May 1980. During that period, rail fares on most route segments in the corridor rose substantially above bus fares. Frequent complaints, publicly voiced, from executives in the bus industry may account for the change. The industry has become increasingly sensitive to rail price competition in recent years. Statements by Paul Martin, of Canadian Steamship Lines (owner of Voyageur) in May 1979 leave little doubt that the fares set by Via have constrained pricing by the competing bus lines. Indeed, Martin labeled Via's pricing policies as "predatory." In Martin's view:

Via has dropped its fares as Amtrak has done in the U.S. and is seriously threatening the viability of the bus industry. What makes this threat particularly severe is the fact that Via is concentrating its efforts on the Quebec-Windsor corridor, the life blood of our system. The Montreal-Quebec City route accounts for nearly half of our Quebec division's total contribution to overhead. (Science Council of Canada (SC), 1979, p.77)

The impact of rail fares in corridor areas on bus pricing should not be underestimated. The impact of rail is clear as well from the American experience. A 1979 study by the Comptroller General's Office concludes that:

A review of Greyhound fares shows that on many routes where Amtrak service is relatively infrequent or inconvenient, and Greyhound service is better, Greyhound fares are higher than Amtrak's. On other routes where Amtrak is more competitive in terms of schedule frequency and travel times, Greyhound fares are lower. (CG, 1979, p.17)

From early in this century, intercity bus lines competed with the railroads effectively for many passengers. A 1928 Interstate Commerce Commission study attributed the success of bus lines to convenience and service in the case of short-haul travel and to lower fares on longer-distance travel. The American railroads recognized early the possibility that many passengers might be serviced at a lower passenger mile cost by bus than by rail. One recent study points out:

By the early 1920s, many railroads...were operating some unprofitable branchline passenger operation....The railroads sought a way out of the dilemma by substituting bus operations....Even if the railroads lost money through their motor passenger operations -- as was often the case -- financial losses were invariably smaller than they would have been if rail service had been continued. (CG, 1979, p.23)

The railroads are well aware of the advantages of servicing some of the corridor routes in Canada by bus. For example, during April 1980 the opportunity arose for VIA to establish a closer link with an intercity bus carrier on service between Calgary and Edmonton. Pacific Western Transportation (PWT), which operated a luxury bus service between the two cities, proposed joint use of the VIA Edmonton terminal and the assumption by VIA of responsibility for bus ticket sales in exchange for a standard commission.

The link with PWT offers VIA, in the long run, a way out of the unprofitable Edmonton-Calgary service. The rail service currently is longer than that of the intercity bus and operates with very low load factors. The rail route suffers from a poor quality roadbed which will not withstand high-speed trains, a serpentine track system which will not support high speeds and a large number of level crossings

which are incompatible with high-speed service. VIA does not believe that upgrading the system to accommodate high speed trains will be economic until the populations of Edmonton and Calgary each reach one million, which is not expected for at least 20 years. Thus it may very well be in the interest of VIA and the public to encourage the development of an alternative service mode which might assume responsibility for the Edmonton-Calgary service in the future.

It is, of course, possible that VIA may wish to reconsider the viability of an Edmonton-Calgary high speed rail link. The Alberta Department of Transportation now has survey data which indicates that as many as 40 per cent of drivers on the Edmonton-Calgary route would use a high speed train service if it was available at a reasonable price. Provincial transportation planners cannot ignore the potential roadbed presented by the existence of a wide divider zone on a divided highway over a flat terrain between the two cities.

Bus and rail clearly may both compete and complement each other. As a 1973 CTC study concludes: "It is quite obvious that for low density routes, bus can viably offer a much superior frequency of service than rail for any given level of demand. Furthermore, bus can cater for low flow situations without subsidy and yet can handle surges in demand" (1973a, p.37).

A 1979 Comptroller General study of the impact of Amtrak on bus systems in the United States concluded that bus ridership would definitely be greater if Amtrak service was reduced or terminated. It was estimated that a complete termination of Amtrak passenger service would increase bus revenue passenger miles by 11 per cent. However, in the northeastern corridor area, which is particularly competitive, the increase in revenue passenger miles would be between 15 and 30 per cent.

On-train surveys of Amtrak passengers reveal that, depending on the region, between 15 and 42 per cent of respondents stated that they were riding the train as a novelty. When asked what mode they would use if Amtrak service was terminated, from 11 to 53 per cent, depending on the market, responded they would take the bus (CG, 1979, p.62). These findings suggest that there is substantial intermodal substitution. Most Canadian studies of modal substitution -- cross elasticity of demand -- find high substitutability (Rea, 1975).

There are some defenders of rail transport who argue that rail and bus are not competitive and appeal to

different groups (CTC, 1976a and Rea, 1975). A recent U.S. study concluded that "train riders have more education and are more likely to have a job classified as professional, technical, or managerial than average intercity (bus) travelers" (CG, 1979, p.51). This may be the situation outside of the central corridor and with existing technology; however, it is clear from other studies, as well as from statements of U.S. industry officials on the impact of Amtrak that, in many markets, rail and bus are substitutable. It is true also that bus and rail can be complementary. Rail schedules which are synchronized with bus schedules at common terminals can result in higher utilization levels on both modes.

Railroad Passenger Service Subsidies

Intercity bus is clearly unlike the air and rail modes in one critical respect. It has been observed that "on average, the air passenger is subsidized to the extent of about 38 per cent of his air fare; the bus passenger is not subsidized at all; whereas the government's support for rail passengers amounts to about 150 per cent of the fare" (Gelman, 1978, p.3). As Gelman has pointed out since, this is not entirely correct. The Canadian government has provided \$250,000 in development assistance for the design of an articulated intercity bus and has assisted in the construction of terminals in the Maritimes as part of a \$125 million Atlantic Region Transportation Program. Governments also subsidize highway construction and maintenance including snow removal. Nevertheless, subsidies are relatively small.

Clearly the very large subsidies provided to the rail companies operating in the Quebec-Windsor corridor, in particular, have resulted in their charging prices below fully allocated costs. Indeed, there is no unsubsidized rail service offered anywhere in Canada. There can be little doubt that in those markets the availability of rail as an alternative mode has probably had a greater depressing effect on bus fares than has regulation by provincial agencies.

These subsidies may have resulted in major economic distortions and an inhibition in the rate of growth of intercity bus service. This issue will be explored in some depth since this study recommends, as have Gelman and others, that either a major investment in the corridors in high-speed rail service should be undertaken to change the nature of the rail product or the government should cease subsidizing most intercity rail passenger service and encourage the growth of intercity bus service. With rising energy prices, there is a need to reach decisions on this

policy issue. While bus service will grow either way, if rail passenger service is reduced the need to adopt optimal regulatory policies will become more pressing.

In recent years, the Science Council of Canada has sponsored a number of studies on Canadian transportation. Among these is a set of studies on the intercity bus industry and rail in eastern Canada in the Quebec City-Windsor corridor. In general, these studies suggest that passenger rail service in the corridor should either be discontinued in favour of buses or, alternatively, a very large investment should be made to upgrade roadbeds and rolling stock in order that rail service at very high speeds -- in excess of 120 kilometers per hour -- can be offered.

These studies provide insight into the economics and conduct of both industries and are suggestive about the future role of the intercity bus industry. Since rail currently provides considerable competition to bus service in the central corridor area, its removal would raise critical questions about the effectiveness of regulation of the intercity bus systems in that area. If, as is suggested in this paper, those systems of regulation are not comprehensive (i.e., little detailed economic analysis occurs), then the removal of this one inhibiting force would dramatically inflate prices and profits in the market.

The Science Council studies begin where the 1961 Royal Commission on Transportation left off. The commission had called for the phasing out of all uneconomic rail passenger service over a five-year period except where alternate surface transportation was unavailable. In 1958, the operating deficit of passenger train services was in the order of \$78 million and was expected to rise dramatically in the 1960s and 1970s. Several writers have traced these developments in the rail industry and the detail of their analysis is not repeated here (Lukasiewicz, 1979, p.520). With time, rail service as presently constituted simply lost out in the marketplace. Lukasiewicz comments:

The other modes offered flexibility, higher frequency of service, comfort and privacy; the limited comfort of the bus was compensated by the low fare. For pleasure and family travel, the car became extensively used even for the longest transcontinental trips. The airplane took over public carriers' long-haul market, outperforming in speed and economy all other modes. The transcontinental train passenger all but vanished. In Canada, only 3 to 4 per cent of transcontinental passengers travel the whole length of the Montreal/Toronto/Vancouver run. (1979, p.521)

While speed is frequently pointed to as the principal cause of the failure of rail to continue to attract passenger demand, other factors such as the quality of service, measured in terms of frequency of service, punctuality of service, comfort of trains, terminal quality and location, and the quality and condition of rolling stock have clearly played a role.

Between 1971 and 1977, the public provided subsidies totalling in excess of \$1 billion for the maintenance of rail passenger service. This figure may be contrasted with the \$166 million that the MacPherson Report estimated would have been the cost of phasing out the service between 1962 and 1966. The losses on transcontinental service are of such proportions that it would be less expensive to provide rail passengers with free bus tickets. For example, Lukasiewicz estimates that in 1974 the subsidy per passenger mile would have been reduced from 9.3 cents per passenger mile to 4 cents per passenger mile (1979, p.523). Savings would even have been realized by providing free airline tickets, since the average fare per passenger mile for economy air service in 1974 was about 7 cents.

The Science Council studies conclude that rail cannot be competitive with bus given the existing type of service. The government's subsidies per passenger mile of service generally exceed the full cost per passenger mile of bus service. Lukasiewicz describes recent efforts to improve the demand for rail passenger service as "no more than superficial manipulation of the existing system: new logos and bright colors on old equipment" (1979, p.525).

Gelman, in one council study (1978), points out that in 1977, 71 per cent of the routes serviced in Canada by rail were also serviced by bus. In total, given the availability of good roadways, 85 per cent of the routes served by rail are or could be served by buses. In addition, bus lines currently offer frequencies two to four times those of rail where both offer service. The bus offers average speeds about twice those of rail. In the central corridor, the average speed of bus service is 51 per cent faster than rail. Finally, according to Lukasiewicz's studies, diesel buses are about twice as fuel efficient as existing Canadian trains on a seat mile basis.

The Science Council studies estimate that substituting bus service for rail passenger service would eliminate 80 per cent of total rail subsidies, reduce passenger costs, raise load factors and improve average

travel times where the two are substitutable. One study on the possible use of 320-seat trains that would operate at speeds in excess of 121 km. per hour on improved roadbeds, concluded that the service could, in principle, be provided in corridor areas at losses which had a present value of slightly less than the present value of anticipated subsidies of rail passenger service under the existing system (Lukasiewicz, 1977). Estimates of subsidies for such an upgraded system ranged from \$65 to \$200 million (1975 dollars) per year. As traffic builds and fuel costs rise, the attraction of a modern rail system using electrical power may increase. The size of the required investment would be very large, and it is not clear that there would be fuel efficiency advantages over bus on most routes (Kahn, 1980a, b, c). To the extent that a modern electrified rail system should be superior in attracting air and automobile passengers, Lukasiewicz argues that it might prove fuel efficient. Unfortunately, the Lukasiewicz study understated energy losses in transmission and underestimated the inflation rate. The Science Council has observed that for "any number of...reasons we accorded little credence to the desire for or need to electrify trackage for passenger service" (1979, p.12). Recent simulations by Kahn provide little encouragement for passenger rail service except in the highest-density corridor areas (1980a, b, c).

The question of upgrading rail passenger service has not been resolved and is not likely to be in the near future. The capital outlays would be very large. The actual decision will likely hinge on fuel conservation considerations, the availability and sources of different fuels and the peculiar nostalgic affinity which a small (but politically important) segment of the population seems to have for passenger rail as a mode. It may be as much a political as an economic decision. In the short and near term, as the Science Council confirms, the least expensive and efficient solution is to terminate most passenger rail service, at least as offered in its present technologically obsolete form in Canada, and to substitute intercity bus service. Subsidies may be used to ensure continuation of rail service to that small number of communities now served by rail which cannot be serviced by bus due to the lack of adequate roadways.

As Lukasiewicz, Gelman and Swinton observe, "all of the current attempts to improve the situation of passenger rail in Canada amount to no more than a rather superficial manipulation of the existing system" (1978, p.6). They conclude that "not one of the proposed measures is aimed at remedying the basic deficiency of the traditional rail: a speed that is no higher than attainable on freeways" (1978, p.4). VIA is expected to fail because

"without sufficient capital needed to improve roadbeds and signalling, VIA's schedules will not be significantly shortened and rail's competitive position will not be bettered" (1978, p.5).

Conclusion

The pricing conduct model that emerges from this chapter may be summarized as follows: since direct bus competition is not allowed by regulators, intraindustry competition does not affect prices. The intercity bus industry has given up all but the very low-income long-haul passengers to airlines. For short distances, pricing is constrained by the prices of automobile and rail service. In central corridor areas, heavily subsidized rail sets the fare ceilings. In other areas -- as will be noted in the Alberta case -- the perceived cost of operating an automobile determines the fare ceiling. Should subsidies to rail be ended, the importance of adopting an optimal regulatory approach for the bus industry will increase. The case studies in the following chapter provide insight into the efficacy of existing systems of regulation.

Chapter V

PROVINCIAL CASE STUDIES

The Case Study Approach

This study has adopted an inductive approach. Very early on in the research, it became obvious that detailed operating and financial information was not publicly available. The carriers, moreover, would not make available the kinds of data required. Some financial and operating data were made available on a confidential basis by Statistics Canada. While those monthly and annual reports were useful, they did not provide revenue, scheduling and cost information for specific routes or regions. Furthermore, the Statistics Canada data could not be used in other than aggregate form.

Therefore, it was necessary to identify a province in which records of a recent set of hearings revealing detailed financial and operating data were retained in a usable form by a regulatory agency and where some key decisions were published. Also helpful would be data which might have been produced in existing studies of intercity bus systems. Only two provinces, Alberta and Ontario, come close to meeting these criteria and Alberta enjoys several advantages over Ontario. First, for practical purposes only one scheduled carrier exists: Greyhound Lines of Canada (GLC). It is also the largest carrier in Canada. Greyhound and its subsidiaries account for almost 25 per cent of the intercity bus revenue generated in Canada. Greyhound's corporate headquarters in Canada are in Calgary and 60 per cent of its employees are based in Alberta.

The data base for Greyhound's Alberta and national operations is, in addition, much more detailed than is the information available in Ontario. The Ontario data base is found in a record of hearings and studies which resulted from an application by Greyhound for operating authorities to provide service on some routes served by Gray Coach. The Alberta data base resulted from a request for an operating authority by Pacific Western Transportation of Alberta.

The Alberta model is easy to work as well since a single major traffic corridor exists. The vast majority of cities not in that corridor radiate out from the corridor and have highway connections to the corridor. There are also many existing studies of the Alberta intercity bus industry.

Finally, analysis of the Alberta Motor Transport Board, the relevant regulatory agency, suggests that in theory (i.e., in statute) and in practice the board is

representative of other provincial regulatory boards in Canada. Consequently, this study examines closely the operation of Greyhound in the Alberta market. Discussion of Greyhound is followed by two case studies: a successful application for a competing authority filed against Greyhound in Alberta in 1978 and an operating authority application filed by Greyhound in Ontario. The three studies provide insight into the operations of Canada's largest carrier and the mechanics of the regulatory procedures as they apply to applications for competing operating authorities.

The Alberta Market

Two recent government studies have focused on the Alberta system. The first was a study in 1975 of the Edmonton-Calgary corridor (AT, 1976); the second was a study of the remainder of the system undertaken in 1977 (AT, 1977). The most important source of insight into the operations of Greyhound Lines is found in the 3,000 pages of transcripts, 200 exhibits and a 60-page decision which grew out of a six-month hearing over an operating authority application in 1977 and 1978.

The operations of Canada's largest carrier in its primary market may not be representative of the operation of other Canadian carriers. Nonetheless, it has been difficult to identify any substantive reasons why the operations of Greyhound in Alberta should be perceived as significantly different from the operations of other companies. In terms of equipment, provincial route structures, number of routes and composition of city populations served, Greyhound is very representative of other carriers.

Clearly, there are some differences. Rail does not provide effective competition for intercity bus in the Alberta corridor which is the main market. In the east, rail fares constrain bus pricing; in the west, the main constraint is the perceived cost of operating an automobile. The presence of rail in the Quebec-Windsor corridor raises questions of a different nature from those addressed here and does not negate the validity of the conclusions reached using Alberta as a microcosm. It can be argued, however, that to some extent the rail link between Edmonton and Calgary raises the same questions as the rail service in the eastern corridor. Indeed, the Science Council studies treat the situations as comparable. The level of air fares in Alberta is sufficiently high that the air mode is unlikely to be competing with bus for most passengers. Population density is greater in eastern corridor areas; however, greater population density should increase the probability that the bus mode will be viable financially. Parcel express

revenue is more important for Greyhound than for other carriers, but this results largely from their failure to seek the business. Fares are lower in Alberta than elsewhere, but this should only force more cross-subsidization in Alberta.

The analysis will focus on Greyhound's operations within Alberta, and not nation-wide. A single provincial system is being considered with 50 routes. It should be emphasized that there seems to be no reason, a priori, to believe that Greyhound's operations in Alberta should be substantively different than those of carriers in other jurisdictions. However, later in the study there will be occasion to compare many of the key findings on operating characteristics with the findings of an econometric cost analysis of 18 large Canadian carriers.

The author is keenly sensitive to the problems engendered in attempting to generalize about all companies from the operation of Greyhound in Alberta. The reader will have to judge for himself whether the generalizations are reasonable. We believe they are.

During the 1974-1976 period, ten technical reports were prepared as background documents for the Edmonton-Calgary Corridor Transportation Study. Technical report no. 5 involved an analysis of bus services in the corridor area. The intercity bus report was prepared by DeLeuw-Cather Consulting Engineers and Planners (AT, 1976). This corridor study focused on the heart of the Alberta transportation market, the Edmonton-Calgary corridor, a 49,000 square kilometer area in south-central Alberta which includes six of Alberta's largest cities and 68 per cent of the provincial population. The corridor is centered on Highway 2 which connects Calgary in the south and Edmonton in the north.

The recommendations of the technical report on the bus mode focused on market characteristics and operating and service problems. It did not formally consider the questions of adequacy of competition, impact of competition or impact of regulation on performance within the corridor. The recommendations centered on schedules, route coverage, connections, fare equalization, seat mile taxes, smoking on buses, availability of express service to smaller centres, rail-air-bus interface, bus size restrictions and the importance of parcel express traffic. In addition, the study considered the need to develop a regional bus service policy defining desirable minimum levels of service for Alberta communities and support for operating costs where necessary to meet social objectives. Unfortunately, it failed to develop any objective norms by which to evaluate service;

all measures were arbitrary. Bus service was found "in general...to provide good coverage" (AT, 1976, p.40); frequency was "adequate"; operating speeds were "acceptable."

The corridor study, for reasons known only to its consultants, concluded that "from a social objective it is desirable that rates should be uniform throughout the corridor and based on a fixed amount for booking and terminal charges plus a cost per mile" (AT, 1976, p.46). It noted existing disparities in fares and observed that "rates...also reflect load factors, operating costs and competing fares by other modes" (p.46). Apparently these were not viewed as acceptable reasons for different fares since it was recommended "that discussion be held with the operator...to examine the need to equalize fares" (p.47).

The study did reveal the existence of a highly profitable corridor market, a market not unlike other corridors in Canada except for the relative insignificance of rail. On a typical summer day in 1974, there were 30 express, or one-stop, scheduled bus runs between Edmonton and Calgary and Greyhound -- with the exclusive operating authority -- operated five to eight extra overload buses. The average load factor was 64 per cent; if the extra buses are ignored, the average load factor was 93 per cent.

The average loads varied widely -- from 13 to 44 passengers -- among the 14 routes in the corridor which were examined. In each of those cases, at least a six-day-a-week service was offered with a 39- to 47-seat coach (p.11). Additionally, it was found that 12 communities with populations exceeding 3,000 generated 87 per cent of all corridor bus passengers.

A second important study of the intercity bus market in Alberta was prepared by the Alberta Transportation Department's Planning and Services (TPS) Division (AT, 1977). This study of transportation demand concluded, not surprisingly, that "travel patterns within Alberta are dominated by travel to and from the major cities...(and) ...local travel between smaller communities...is quite insignificant in terms of total provincial travel" (p.57).

A typical pattern of traffic density begins to emerge upon a close examination of the corridor and TPS analyses of major routes. Bus accounted for only 3 per cent of travel demand from Alberta communities east of Calgary on Highway 1 (Trans-Canada). In 1975, on Highway 1 west of Calgary to the British Columbia border, the bus mode accounted for only a 1.5 per cent share of total travel demand. Almost 90 per cent of this traffic had Calgary and

Banff-Lake Louise as its termini. On Highway 2, which connects Calgary to Lethbridge, bus accounted for only 4.5 per cent of travel demand, of which 60 per cent had Calgary and Lethbridge as termini. On the alternative route between Calgary and Lethbridge, Highway 23, the bus mode had only a 2.5 per cent market share and the number of bus trips to most of these communities was found to be "quite insignificant" (p.82). On Highway 3, connecting Lethbridge and Medicine Hat, the bus mode accounted for only 1 per cent of non-commuter travel demand. There were the exceptions to this pattern of light usage. For example, the bus captured 39 per cent of travel demand for travel between Brocket and Calgary. The bus market share for all travel to and from Bashaw, Alberta was 66 per cent and the bus market share between Edmonton and Camrose was 27 per cent. The study found utilization rates high on Highway 16 connecting Edmonton and Jasper Park where the bus enjoyed 21 per cent of travel demand (p. 127). In northern Alberta, bus travel demand accounted, in all cases, for less than 7 per cent of total travel demand.

These two studies demonstrate that the Alberta intercity bus market is dominated by major city services. In this respect it is like most other provinces. These studies considered only market characteristics; they did not examine the nature of regulation or the economics of Greyhound Lines. These regulatory and economic questions will be considered in the next section.

The Regulatory Framework

Chapter II discussed the regulatory frameworks found in Canada; this section briefly reviews and expands upon the comments on regulation in Alberta. Discussions with staff of the Motor Transport Board in Alberta elucidated the operation of the board, as did a review of recent decisions, including the 1978 Pacific Western Transportation (PWT) case referred to previously. In considering applications for fare increases, the board does not examine the operating efficiency of a company. Nor does it review route systems or consider the fare structures or bus fleet composition. There is no individual route analysis. Public hearings are not usually held. Greyhound had a fare increase in 1976 and did not apply for another until 1979. The 1979 application, in the form of a letter to the board, called for a nine per cent increase. In essence, the letter pointed to system-wide (i.e., national) cost increases which justified a fare increase. The board does not undertake rate-of-return analysis and does not have a system for disaggregating bus company assets in order to determine a reasonable rate base for Alberta.

The board's passive approach to regulation is illustrated by its failure to hold hearings on fare increase applications and by a 1979 episode involving the decision of the provincial government to eliminate a provincial seat tax on buses. The taxes were removed; however, no hearing was held to determine whether the benefit of the tax reduction should be passed on to bus company customers. Indeed, the board did not even undertake an internal study of the question.

Several factors may explain the board's passivity. Staff members point to the provincial regulatory policy on trucking as a partial explanation. Since the board does not engage in economic regulation of the intraprovincial activities of the trucking industry -- the industry which occupies most of its time -- it has little interest in detailed financial regulation of bus firms. This is a plausible explanation; however, regulators in other provinces, with responsibility for economic regulation of trucking, have been equally passive. An alternative explanation for the passivity is the inability of the board to regulate interprovincial fares.

Senior research staff attribute the failure of the board to consider operating and system design questions to the budgetary limitations on staff size. Clearly, the board has no senior financial analysts or financial accountants.

To simplify regulation, the board several years ago adopted a policy of setting a maximum province-wide fare per mile. During 1980, the highest fare which could be charged in the province was six cents per mile. Thus, rather than considering operating and demand characteristics or the competitive characteristics of individual routes, the board simply sets a maximum overall rate.

While this approach may simplify regulation, it raises several economic and social questions. Clearly, it invites cross-subsidization. The board sets fares so high that on some routes Greyhound finds it desirable to charge substantially less than the maximum allowed. On the highly profitable Edmonton-Calgary route, it has charged up to two dollars less than allowed in recent years.

The Operating Company -- Greyhound Lines

In 1976 and 1977, 97.9 per cent of all scheduled intercity bus service in Alberta was provided by Greyhound Lines of Canada and its subsidiaries. The author has benefitted from a data bank assembled on Greyhound's operations during public hearings in 1977-1978 (AMTB, 1978b). Except where noted otherwise, the transcripts and

exhibits from those hearings are the sources of the data used in this chapter.

Greyhound Lines of the United States owns 61 per cent of the shares of Greyhound Lines of Canada; Canadian investors own the remaining 39 per cent. Brewster Transport and Canadian Coachways were purchased by Greyhound in 1965 and 1970 respectively. Eastern Canadian Greyhound Lines is fully owned by Greyhound Lines. Greyhound U.S., Greyhound Lines of Canada's parent, is a \$4.4 billion conglomerate with 150 subsidiaries that pack meat, sell consumer goods, finance exports, issue money orders, insure residential mortgages and conduct sight-seeing operations, among other activities. The company is the largest intercity carrier in Canada and the United States. It accounts for 50 per cent of carrier revenue in the United States. In 1978, Greyhound's load factor in the United States was 50.9 per cent, or about the same as that of the Canadian subsidiaries.

Motor Coach Industries (MCI), a subsidiary, is the largest manufacturer of intercity buses in North America and has its main plant in Manitoba. MCI produces the standard highway cruiser which seats 47 passengers and cost \$145,000 in 1979. In 1977, MCI grossed \$44 million from Canadian production. Of this, \$32 million was attributable to export sales.

In 1977, Greyhound enjoyed a net income of \$9.5 million on Canadian operations. Over the period 1971-1976, dividends averaged 41 per cent of after-tax profits (pp.2595-2599 and ex. 94); in 1977, it paid dividends of \$2,637,213 to its American parent. In 1977, Greyhound employed slightly in excess of 50 per cent of its 1,550 Canadian employees in Alberta. Greyhound serviced over 14,000 miles of bus routes in Canada in 1977; of these, some 5,758 route miles were in Alberta.

Greyhound's Canadian bus fleet totalled 363 vehicles as of February 1, 1978 (p.1171) and the book value of vehicles accounted for 66 per cent of capital employed. The average age of the vehicles was 6.93 years (p.1171). Greyhound's fleet included 187 buses with a capacity of 47 passengers and 23 cargo or combo buses without seating or with reduced seating. The average bus had between 43 and 44 seats (p.1527). All buses in the fleet have Alberta licences and receive major servicing in Alberta. The company's policy in 1978 was to buy 35 new 47-seat coaches and to sell 20 coaches each year. In 1976, the average bus was used for 126,924 miles (ex. 96).

The economics of the industry result in Greyhound operating 100 of the vehicles to handle overloads on regular

schedules. Its executives maintain that Greyhound must have a minimum of 300 drivers nationally who are on guarantees to operate these 100 standby coaches (p.2637). It is conceded, however, that overload demand is fairly predictable with experience. Low passenger loads on the overload services distort overall load factors. It is difficult to believe that in 1977 Greyhound required 100 vehicles to handle overloads. On its worst day in summer 1977, Greyhound required 10 overload buses on its Edmonton-Calgary route. Given that this is its busiest route in Canada, it seems unlikely that 100 buses -- one-fourth of its fleet -- are on overload.

Table 1 listed the market shares held by Greyhound in five provinces. During 1977, approximately 30 per cent of Greyhound's passenger revenues involved interprovincial or international movements. Clearly, any regulatory board faces a serious problem in disaggregating financial and operating data. There is no evidence that the boards have attempted to design financial control systems to deal with the problem.

Parcel express revenue has become increasingly important to Greyhound in recent years. This is illustrated by comparing 1972 and 1976 operating data. In 1972, intercity passenger revenue accounted for 73.3 per cent of Greyhound's operating revenue, mail and express accounted for 20.44 per cent and charter services accounted for 5.52 per cent (p.1810). In 1976, parcel express accounted for 27 per cent of revenues.

Parcel express revenue is very important to most Canadian intercity bus operators. Parcel express revenue per passenger mile equalled 19 cents in all of North America in 1976. A senior executive of Greyhound has noted that neither Greyhound nor any of the other lines calculates the value of parcel express revenue by individual route (p.1537). This is remarkable, if true, and there is no reason to doubt his testimony. System wide, in 1976, package express contributed 30.2 cents per vehicle mile (p.1537). Actually, the figure is higher. Greyhound allocated express revenue to charter operations as well as to scheduled service. By calculating the system average of 30.2 cents including charter vehicle miles, it thus understated revenue for scheduled vehicle miles (p.1543). If related only to bus miles where express is carried, parcel express revenue for Greyhound accounted for 34 cents per vehicle mile in 1976 (pp.1543-1544). Testimony by Greyhound's senior executives has been contradictory on the question of the importance of package express in Alberta relative to the system. They have stated that package express is about average in Alberta (p.1879) and that it is better than average (pp.1117 and 2403). It is safe to conclude that parcel express revenue in Alberta

accounted for at least the system-wide 30.2 cents per vehicle mile.

Nationally, parcel express accounted for about 26 per cent of Greyhound's total revenue during the years 1975 to 1978. In 1976, package express accounted for \$9,052,704 outside Alberta and \$3,875,145 in Alberta (ex. 93). In 1976, based on a study of a sample of 6,000 bus bills, Greyhound concluded that it received about 25 per cent of its Alberta parcel express revenues (\$968,786 of \$3,875,145) from intraprovincial express traffic (p.1121). In contrast, in 1977, 70.64 per cent of passenger traffic originated and remained in the province (p.1122).

Tables in the Appendix derived from submissions or statements by Greyhound executives during the PWT hearings provide financial information on Greyhound Lines of Canada for Alberta and for the remainder of operations in Canada. They do not provide data for Eastern Canadian Greyhound Lines or some tour service operations. During 1976, Greyhound's system, including all subsidiaries, generated operating revenue of \$54,000,000. Of that, transportation expenses were \$43,987,971 (ex. 92 and 93).

System wide, Greyhound enjoyed an average passenger load of 22.1 in 1975, 22.5 in 1976 (p.1864) and 20.96 in 1977 (p.1905), with the load factor hovering around 50 per cent. In 1976 on the Edmonton-Calgary route, Greyhound experienced an average load of 26.4 passengers for an average load factor of 60.4 per cent. The average load on the Edmonton-Fort McMurray route was 22.5 passengers for an average load factor of 51.48 per cent (ex. 86 and 87). The load factors on those routes were much above system averages for the years after 1972. These were both very profitable routes. Table 4 provides a complete listing of Greyhound's 50 operating route divisions in Alberta in 1976. The company maintained that 61 per cent of these routes operated unprofitably based on passenger revenue.

Charter business accounted for about nine per cent of total revenue for Greyhound, which is comparable to its importance for other Canadian carriers. Charter revenue accounted for 9.03 per cent of operating revenues of the seven largest Class I and II carriers as a group and 9.39 per cent for all Class I and II carriers in 1976.

Brewster Transport Company, a Greyhound subsidiary, is exclusively in the business of providing charter and tour service through Jasper and Banff National Parks. Brewster Lines started as a family business over 80 years ago. Its vehicles were among the first to service Banff in 1914. By 1946, through mergers, Brewster emerged as

Table 4
Greyhound Lines of Canada
Profit and Loss by Alberta Division, 1976

Divi- sion	Total miles	Operating cost (103.3)	Average load	Passenger revenue (cents per mile)	Passenger revenue
500	1,023,630	1,057,409	22.9	101.0	1,033,866
501	76,752	79,285	16.5	73.4	56,336
502	80,351	83,002	10.6	46.1	37,042
503	1,704,804	1,761,062	29.6	124.3	2,119,071
605	176,309	182,127	22.3	84.2	148,452
612	227,843	235,362	24.1	99.3	226,248
613	113,012	116,741	21.5	92.9	104,988
616	19,636	20,284	5.1	22.6	4,438
617	148,072	152,958	20.5	84.8	125,565
622	333,156	344,150	26.2	113.6	378,465
623	165,134	170,583	14.3	62.4	103,044
650	12,626	13,043	7.8	31.5	3,977
651	35,822	37,004	11.9	48.1	17,230
652	25,516	26,358	25.7	108.0	27,557
1101	1,280,904	1,323,174	24.4	90.8	1,163,061
1102	128,644	132,889	21.3	86.3	111,020
1103	135,788	140,269	19.6	83.0	112,704
2002	507,705	524,459	27.7	110.8	562,537
2008	131,625	135,968	20.2	95.6	125,834
6002	332,339	343,306	21.4	88.4	293,788
6009	84,029	86,802	14.3	63.5	53,358
6900	704,199	727,438	27.0	111.8	787,294
6902	19,294	19,931	36.5	108.9	21,011
7000	856,851	885,127	25.4	105.1	900,550
8700	28,958	29,914	10.0	46.4	13,437
8702	52,152	53,873	12.9	57.2	29,831
8703	133,369	137,770	18.1	83.3	111,096
8704	286,196	295,640	23.3	104.4	298,789
8705	116,543	120,389	17.9	81.3	94,749
8706	271,203	280,153	24.6	117.8	319,477
8707	89,215	92,159	12.3	53.4	47,641
8708	115,090	118,888	17.1	81.1	93,338
8709	91,908	94,941	12.1	50.7	46,597
8710	159,389	164,649	14.2	62.0	98,821
8711	138,416	142,984	10.3	41.4	57,304
8712	152,016	157,033	11.7	47.4	72,056
8713	105,426	108,905	15.2	73.2	77,172
8715	142,092	146,781	18.8	89.8	127,599
8717	98,490	101,740	11.8	53.5	52,692
8718	88,106	91,013	9.0	40.1	35,331
8800	886,657	915,917	18.5	85.7	759,865
8801	125,811	129,963	10.6	50.8	63,912
9100	353,409	365,071	18.7	89.5	316,301
9102	103,354	106,765	6.1	27.8	28,732
9400	98,436	101,684	14.8	64.5	63,491
9401	116,895	120,752	14.9	64.6	75,514
9402	117,002	120,863	7.9	33.5	39,196
9500	258,027	266,542	23.6	110.3	284,604
9501	246,122	254,244	11.7	53.6	131,921
9502	133,283	137,681	9.2	42.0	55,979
Total	12,831,606	13,255,045		92.8	11,912,881

Source: AMTB, 1978b, Exhibit 90.

the sole tour operator serving Banff-Jasper. The company operates a variety of bus services within the parks and between the parks and Edmonton and Calgary. Greyhound bought the line in 1966. Approximately 50 per cent of the company's revenues come from transportation services. In 1978, Brewster operated 98 vehicles (pp.2180-2190).

Greyhound executives have testified that in 1976 and 1977 the company either lost money or barely broke even on charter business in Canada. For example, Greyhound maintained that in 1976 its system-wide revenue per bus mile from charter tours was 103.4 cents. In Alberta, charter tours yielded revenue of \$1,444,963. Using the system-wide cost of 103 cents per vehicle mile, Greyhound only earned a profit of \$1,397 on charter tours. However, certain costs are lower for charter service and profits are earned on the business (pp.2493-2496). Indeed, close analysis by the Alberta board suggested that the break-even cost in 1976 should have been closer to 95 cents per vehicle mile (p.2502), and Greyhound's profits nearer to \$111,000.

In 1977, the pricing strategy of Greyhound was described, following a comprehensive study of all routes in the province, as follows:

The bus mode is very consistent in its pricing of services throughout the province, and seems to have a well considered pricing strategy. In consistently pricing its services at the same level as the perceived auto cost,...the operator has assumed...that the automobile is the bus mode's prime competitor, and that people consider only the perceived auto cost in making their modal choice. The only segment where this did not hold true was between Edmonton and Jasper, where the bus fare is less than the perceived auto cost, and was probably a conscious decision on the part of the operator to help stimulate demand. The deviation from the norm...also demonstrates that the bus mode can be flexible in its pricing, and that pricing strategies can be used as a marketing tool. (AT, 1977, p.55)

Greyhound has consistently held the fare on the Calgary to Edmonton service 15 to 20 per cent below the fare level allowed by the Alberta Motor Transport Board. This can be explained in one of only a very few ways. First, it may be constrained by intermodal competition which, at the present time, can only be coming from the automobile. There is evidence in the corridor study that Greyhound sets its fares at slightly under the perceived cost of operating an automobile. Although there is evidence of this type of

pricing behaviour in eastern Canada by other carriers, the role of rail as a competing mode in the east has been demonstrated to be of far greater importance than in Alberta where, for practical purposes, it may be ignored.

It is also possible that, given the importance of parcel express to Greyhound (it may constitute 40 per cent of revenue on the Calgary-Edmonton route), to charge the fares allowed by the board would so inflate profits as to create an embarrassment of riches which could jeopardize long-run profitability by inviting regulatory changes. The regulated firm must carefully consider the special relationship which it has with passive regulators. To abuse the relationship which has been achieved with regulators is to risk a complete alteration of the rules.

It should also be noted that the yield per passenger mile is usually less than the fare charged. This reduction in average yield results from the large number of special fares which are offered by many of the carriers. In 1976, Greyhound offered special fares for children, the blind, the disabled, the clergy, senior citizens, mid-week travel, Canada pass and Ameripass holders (ex. 76). Thus, even though the maximum allowed fare was 5.5 cents per mile in 1977, the average yield in Alberta was only 4.66 cents per mile (ex. 76).

Through 1978, Greyhound enjoyed a virtual monopoly on intercity bus service in Alberta. Prior to 1978, Greyhound was threatened only once by serious competition and it quickly eliminated the threat. This occurred in the late 1960s when Canada came close to having a second transcontinental bus system after a tentative agreement was reached between British Columbia carriers, Coachways (Alberta), Saskatchewan Transport, Grey Goose (Manitoba) and Gray Coach (Ontario) to establish a new trans-Canada system (CTC, 1969). The linchpin in the system was Coachways which had an operating authority to serve major Alberta cities and, most importantly, to connect Alberta and British Columbia by the Yellowhead highway. The proposal -- and competitive threat -- collapsed when International Utilities, which owned Coachways, sold it to Greyhound. The CTC held a special hearing on the merger in Calgary but refused to act to prevent the merger.

The Red Arrow Experiment in Competition

In May 1979 a landmark decision was made by the Alberta Motor Transport Board which permitted limited competition on the lucrative Calgary-Edmonton-Fort McMurray route. Although the competition was to be extremely limited, the hearings and decision provided revealing insight into

the operation of the largest intercity bus carrier in the country and into the thinking of regulatory authorities.

In its decision of June 30, 1978 the board approved an application of Pacific Western Transportation Ltd. (not related to Pacific Western Airlines) to provide a luxury bus service between Calgary, Edmonton and Fort McMurray (AMTB, 1978a). A second application to provide a charter service with pickups in Jasper and Banff National Parks was denied. In its original application, PWT did not propose to merely "skim" the market but to offer a scheduled service between Calgary and Edmonton with daily service at least once to 18 intermediate points. It also applied to provide service between Edmonton and Fort McMurray with service to 11 intermediate points. Not surprisingly, the application was opposed by Greyhound and its two subsidiaries. The board sat for 26 days in late 1977 and early 1978 and received 197 exhibits and evidence amounting to some 3,025 pages of transcripts. Over 100 witnesses appeared. In its scope, this was an exceptional case; PWT was challenging time-tested regulatory principles in the province.

Pacific Western Transportation is a holding company which controls Diversified Transport and four other bus companies which provide a wide range of busing activities including charter, school, tour and some scheduled service. Diversified was formed in 1957 and provided primarily charter and industrial services. At the time of the application, Diversified, which was to operate the service, had a bus fleet which included 61 Class A motor coaches that were 1970 and newer, 30 Class A motor coaches older than 1970, 74 Class B motor coaches for industrial service and 38 Class C motor coaches for school bus service (pp.33-36). Most of the Class A coaches were used in the charter business. The company was extensively involved in industrial contracting in which it transported workers between worksites and urban centres. For example, in the Fort McMurray area alone, Diversified was receiving revenues from industrial busing in excess of \$500,000 per month in 1977 (p.329).

There can be no doubt that, in the long term, PWT wanted to become a scheduled carrier. To succeed, it adopted the following strategy. Its management apparently concluded that the only way into the scheduled business was through the charter door. A nucleus of operating and maintenance personnel was first assembled and a fleet of buses was built up simultaneously. But people and buses are not enough. Operating authorities are vital. Unfortunately, at least initially, operating authorities can only be obtained if an applicant can demonstrate public need and convenience.

Unless the existing carrier is inept (it happens) such authorities are impossible to obtain for identical service in Alberta. The applicant must offer something different and hope that not too many caveats are attached to any authority. The special touches are also essential -- in PWT's case, a promise to provide some service to 18 very small communities.

PWT proposed a "first class approach to bus transportation" between Calgary, Edmonton and Fort McMurray. The new Red Arrow service was aimed not at that segment of travelling public then using buses but at air mode users. The service was to be provided in specially designed Prevost Mirage buses with a seating capacity of 28 instead of the normal 44 configuration. The buses would be equipped with custom interiors, the aircraft type of reclining seats (at \$1000 per seat), drop-down slideout trays, individual reading lamps, light refreshments and piped-in music. In addition, a separate cloakroom would be provided. Instead of using conventional bus terminals, clerks at special desks in major local hotels and bus drivers would manage ticket sales and no reservations would be possible. PWT proposed both express and local service over the routes with a premium to be charged for express service. It also proposed special container parcel express service. A related part of its application called for expanded charter operating authority in the national parks.

PWT's proposal was not revolutionary; many companies in North America had previously offered premium bus service (pp.1186-1189, 1563-1579, 2336-2346, 2393-2395). A notable example was the Charterways Executa-Bus service offered in 1976 and 1977 connecting London and Toronto. At the time of the hearing, Greyhound was offering a similar service connecting Brandon, Manitoba and the Winnipeg International Airport. Gray Coach was operating a premium bus service connecting Toronto and North Bay and Toronto and Sudbury. Voyageur also offered a luxury bus service: the Voyageur Grand Express between Montreal and Quebec City.

Voyageur consistently lost money on its luxury bus service between Montreal and Quebec City (O'Connor, 1979). It offered amenities in addition to those found on Red Arrow, including hot meals and alcohol served by a stewardess. Voyageur offered that service at a higher fare than it charged on the same route for conventional service and viewed the service as complementary to its conventional service and not directly competitive. The failure of the service has been attributed to the labour cost of the hostess and to the competition presented by the enhanced marketing and scheduling by Rapidaire beginning in 1979. Greyhound offered a VIP service connecting Lethbridge to

Calgary to Edmonton from 1971 to 1973 and then suspended it as being uneconomical (p.32).

The experience with VIP quality services has not been encouraging. They have not attracted riders from other modes but have simply been competitive with other bus services. In general, the luxury bus concept has not been financially successful to date in Canada or elsewhere (CTC, 1975e, p.111). However, even if the service loses money, it may have political value when offered by an existing holder of a scheduled operating authority, since it reduces the probability that a competitor can get a foothold in the industry.

Although PWT's management was well aware of the record of failure of luxury services, it went ahead. As do all applicants, PWT first faced the requirement to demonstrate need: public convenience and necessity. In Canada, this means showing that the existing carrier is not providing the service or, if it is, that the service is deficient in some material way. PWT met this test by proposing to provide not just another bus service but a luxury service which would complement, not detract from, the existing service. A new type of customer would be attracted. PWT was compelled to differentiate the service it proposed to offer. To simply be competitive, to offer the consumer a choice, was not enough. In the board's view:

The Applicant does not seek to provide the same service as that of the Respondent's in respect of scheduled service. Instead, he proposes to offer a differentiated product, one that is sufficiently different in the existing market that a preference for his service is created in the minds of the consumer. (AMTB, 1978a, p.29)

An analogy can be found in the restaurant business. Under a similar regulatory regimen, an entrepreneur wishing to start a new hamburger business would be compelled to demonstrate that he would not duplicate existing business offerings, that he would offer perhaps a "Red Arrow" hamburger, not presently available.

In Alberta, the second part of the process involves an examination of the financial position of the applicant: its financial ability to provide the service. In the case of Diversified's application, the company refused to provide the detailed financial information requested by the board; however, the application was still considered. PWT employed a chartered accountant to testify as to "whether or not Pacific Western Transportation (the holding company) as a group could properly be described as able

financially or fit to do certain things that they were contemplating doing" (p.232). The accountant indicated that the costs of starting up the new service would be \$950,000. Of that amount, \$600,000 was required for six coaches. Premise modifications, parcel handling containers and other equipment would add an additional \$199,200 in costs. The accountant testified that PWT did have the financial ability to undertake the investment. Indeed, he saw PWT as able to invest at least \$1,500,000 if necessary.

PWT then faced the hurdle of demonstrating that it had the ability to operate the system: operational ability. Discussions followed over such questions as the need to maintain a spare luxury vehicle should one of the six scheduled coaches break down or require preventative maintenance, or should overload capacity be required. PWT proposed the use of non-luxury vehicles on those occasions. Criticism also was directed at the plan to load customers at hotels and the facilities -- or lack of facilities -- for handling package express.

Finally, questions were raised about the viability of the service given the proposed fares. PWT's feasibility studies were based on an average load factor of 53 per cent -- 15 passengers on a 28-seat coach -- and parcel express revenue equal to 25 per cent of total revenue.

Further understanding of the regulatory process is gained in noting the compulsion the board felt to determine, in the charter authority application (AMTB, 1978a, p.40), whether it could envision substantial harm to existing carriers or to the public as a result of granting the application. Consideration of a cross-subsidization issue ultimately decided the charter question. Brewster argued that it required its excess revenue in the summer peak months to be able to afford to develop and maintain some service in "shoulder periods." The board expressed doubts about the magnitude of the accounting losses which Brewster alleged it incurred in non-peak months (AMTB, 1978a, p.40, and AMTB, 1978b, pp.2160-2184). However, PWT's charter application was refused.

Greyhound opposed the scheduled service applications and maintained that its monopoly was in the public interest. Furthermore, it offered evidence that only 10 of its 50 Alberta "divisions" made a profit and that 61 per cent of its passenger miles were operated at a loss (pp.2069-2117). The board rejected this argument; its analysis of Greyhound's revenue and costs led to very different conclusions. When parcel express revenue was considered, as well as passenger revenues on the 50 Alberta routes, the analysis revealed that rather than 61 per cent

of passenger miles being unprofitable, only about 16 per cent of passenger miles were unprofitable (AMTB, 1978a, p.42).

PWT's application asked permission to share Greyhound's two most lucrative routes which, together, accounted for 50 per cent of gross Alberta profits. The board, in its decision, considered the impact of granting the applications on Greyhound-Coachways' ability to cross-subsidize other divisions. It prepared estimates of the financial impact of PWT's new service under a variety of assumptions. Given the worst scenario, the board estimated substantial effects during the first two years of the service but estimated that, with normal market growth, after two years "the net revenue position (before tax) is returned to nearly the same position (if not better) as existed in 1977 without the entry of Diversified [PWT's subsidiary]" (AMTB, 1978a, p.45). In its final analysis, it reasoned that Greyhound-Coachways would continue to grow in the long term, but at a slightly slower rate. It foresaw no long-term significant impact on the growth and general prosperity of Greyhound.

It is revealing to consider the effects which spokesmen for Greyhound pointed to as likely if even limited competition was permitted. These included reduction of overload capacity, slower acquisition of replacement equipment, reduction of schedules and an increase in fares (Volume XXII, and AMTB, 1978a, p.46). The board rejected these arguments and found that the probability that they would occur was very low. They deserve attention, nonetheless, for what they reveal about the thinking of management of a regulated carrier.

The board listed three primary criteria which it applies in determining the "public interest": demand or need, adequacy or otherwise of the existing service and ability of the applicant. In this case, the board implicitly applied a fourth criterion, an assessment of whether granting the application would adversely affect the public interest by adversely affecting Greyhound's interests (AMTB, 1978a, pp.51-52).

The board accepted the argument of the counsel for PWT that it is "free to consider and in fact has an obligation to consider matters of public policy such as the advantages or disadvantages of competition in the market place and the desirability of consumer choice" (AMTB, 1978a, p.52). Whether it would give these considerations much weight was to be another question.

Most importantly, the board noted that "if the

Applicant was applying merely to add more of the same type of service now provided by the Respondents, the board would be unable to grant any part of the scheduled service applications" (AMTB, 1978a, p.54). This is a revealing statement, particularly in the light of comments made later by the board on the value of competition and choice. Competition to the regulatory board has meaning only in the context of the offering of very different services. If the service is very similar, the majority says that even if there are benefits in terms of increased consumer choice and increased efficiency, they will not justify permitting competition. Fortunately for PWT, in the board's view "the Applicant proposed a service not then offered by the Respondents, a service that represented a superior form of bus transportation" and at a surcharge of almost 20 per cent" (AMTB, 1978a, p.54).

The board then proceeded to argue for competition (remember that it had already stated that this argument could not stand alone). The following lengthy excerpts from the decision are included since they represent a classic statement of the rationale for competition. Since the board previously rejected the argument, it is not board policy and is merely indicative of the three to two majority decision. The board saw it as:

in the best long term interests of the public of Alberta that a certain degree of competition exist in bus transportation in Alberta. Monopolies arise for a number of reasons, but they are continued or condoned by society for few, and even then under regulation. When the conditions of production are such that the economies of scale necessary for efficient and economical production can only be achieved by a single company, or when the limited size of the market allows the participation of only one company, a monopoly is allowed to continue with some degree of protection (and some degree of regulation).

In the opinion of the Board, these conditions are not now present in respect of the scheduled bus service market in Alberta. After an examination of all the evidence, the Board is of the opinion that while the Alberta market is insufficient to support an unlimited number of carriers, it is sufficient to support two carriers on the requested routes. And the conditions of production are such that no one company can be said to have or need exclusively the means or resources to operate efficiently. (AMTB, 1978a, p.54)

In effect, the industry is not a natural monopoly, and the public will benefit from competition. Of course, the market will not support an unlimited number of competitors. Few markets will. The board was not inclined to allow the market to determine the optimal number of suppliers: to it, one for each type of service is optimal.

The decision continues:

While the Greyhound group is presently possessed of competent, experienced management, who have taken their social and public responsibilities seriously, and who have shown some innovation and initiative over the history of the companies, there is no guarantee that that will remain so forever.

The Board is entitled to assume, based on past performance, that the company will continue to take its public service responsibilities seriously and that it will retain its corporate integrity. However, in a monopolistic circumstance, there is no automatic check on efficiency, no strong financial incentive to improve efficiency over time, no continuous pressure to encourage management initiative. In short, the absence of competition may in time lead this management or the management that replaces it as present personnel retire, to adopt a complacent or conservative approach to scheduled bus transport in Alberta.

The Board must examine the present applications, not just in the context of short-term impact, but in the context of the long-term future needs in the Province. The Province will require efficient bus transportation for many years in the future, and the Board feels that the closest guarantee of efficiency possible for future needs is that provided by the pressures of competition. The Board therefore deems it expedient and proper to allow the entry of another carrier into the scheduled bus service market on the subject routes. (AMTB, 1978a, p.55)

The application to provide charter services into Banff, Jasper and Waterton Lakes National Parks was denied less than three pages after the defence of competition quoted above was made. The board recognized the inconsistency in its decision:

While the same considerations of monopoly are

present in respect of charter service in the National Parks as they are in the scheduled service applications, some significant differences exist, including:

1. The absence of any credible evidence of demand for the Applicant's service, coupled with a failure to convince the Board that such demand could be developed.
2. No convincing proof that the service proposed would be better than or even as good as the service now offered by Brewster Transport Co. Ltd.

It may be argued that service in the Parks would benefit from high quality direct competition. In this application, however, the Board was not convinced that a market for the proposed service exists or could be developed. Nor was it convinced that the quality of service proposed would be useful competition, or that this Applicant is the one to provide it. (AMTB, 1978a, p.58; emphasis added)

The board supports "useful competition."

Further evidence that the board was well aware that granting an operating authority to PWT did not constitute an endorsement of open competition is found in an exchange of correspondence between the board and PWT's management in March and April of 1979. In a letter of March 28, 1979 PWT requested permission to use conventional coaches to provide overload service and service in the case of mechanical problems on its Prevost luxury buses. Greyhound uses conventional coach backup on its luxury service between Brandon and Winnipeg. PWT further proposed to charge a much lower fare to customers forced to use the conventional bus. In its letter of April 18, 1979, signed by Mr. Parkin, Secretary for the Board, the board denied PWT's application on the grounds that to permit the use of conventionally equipped buses would "amount to direct competition with Greyhound." Thus, rhetoric aside, the board recognized that the authority granted to PWT was so restrictive as to prevent direct competition.

PWT introduced the Red Arrow service during the summer of 1979. Instead of six 28-seat buses, seven 22-seat buses were used. The Edmonton-Calgary one-way express fare in August 1979 was \$12. This fare competed with Pacific Western Airlines' \$33 airbus fare and Greyhound's fare of \$9.50. The running time from downtown Edmonton to downtown Calgary was three hours and fifteen minutes on a good day.

PWT did not offer the full-course meals and wine served by hostesses found on the Montreal-Quebec City luxury buses. After 18 months of operation, PWT, as a competitor with Greyhound for scheduled service customers, was able to provide considerable insight into the operation of the business.

First, through 1980 the Red Arrow service provided service five times a day in each direction between Edmonton and Calgary. In addition, it provided service between Edmonton and Fort McMurray. The service was provided with nine 22-seat luxury coaches. Its Calgary-Edmonton fare was raised to \$15 one-way in November 1979 to \$18.50 in November 1980. The service broke even for the first time in December 1980 -- a peak month. In earlier months, passenger loads between Edmonton and Calgary fell short of expected levels and it was unable to develop the anticipated parcel express revenue. While PWT projected 25 per cent of total revenue from express, it realized less than 5 per cent during its first year of operation. By December 1980, parcel express had risen to 10 per cent of total operating revenue and passenger load factors, on average, exceeded 50 per cent.

From the time that it commenced service, the Red Arrow service faced problems associated with its exclusive reliance on hotel lobbies as terminals. In April 1980, the operators of the Plaza Hotel in Edmonton -- its principal terminal -- notified PWT that it would have to move its ticket desk from the hotel because the crowding in the hotel foyer was unacceptable. PWT was given less than 30 days notice to move. This eviction of PWT led to the establishment of a new partnership between Red Arrow and VIA which had implications for both bus and rail transport in Alberta. PWT entered into an agreement with VIA to use the grossly underutilized VIA rail terminals in downtown Edmonton, Red Deer and Calgary. The agreement also provided that VIA would sell tickets for the Red Arrow service. The arrangement had considerable advantages for both parties. PWT gained access to modern terminals, links with rail passengers, elimination of the ticket selling function, possible access to a reservations system and the opportunity to perhaps eventually assume VIA's rail service between Edmonton and Calgary which currently loses in excess of \$1 million annually.

Several valuable economic lessons are suggested from PWT's experience. First, PWT executives maintained throughout the hearing, and in interviews later, that the only economy of scale which Greyhound enjoys is in finance and interlining. Most costs are variable. Both lines pay their drivers by miles driven. There is no shortage of drivers seeking employment. Fuel costs are directly related

to equipment usage irrespective of fleet size. Terminal costs are nominal as a part of the whole. For a company such as PWT, these costs are no higher per passenger than for Greyhound. Economies of scale are believed to be negligible in the area of maintenance. PWT's view is that the minimal efficient scale for an intercity bus firm is very small.

Second, size can be important within the context of a given economic region in permitting a new competitor to develop a parcel express service. PWT was unable to achieve the hoped for 25 per cent revenue contribution from parcel express for several reasons. The main problem was the small number of runs which limited the flexibility of shippers. Additionally, many shippers in a market such as Alberta ship parcels to many locations which PWT is not allowed to service. To ship some parcels by PWT required having an employee deliver some parcels to Greyhound's depot and then some at a second stop at PWT. This involved obvious extra costs and many shippers would not bother. Contracting to provide service to such couriers as Purolator proved difficult because of the need to coordinate the pickup and expediting of cargo service with an acceptable passenger service timetable. Finally, the location of express terminals presented problems. The carrier believes these problems were overcome by late 1980. It is interesting to note that PWT very early decided to maintain separate parcel express and passenger depots.

Third, in order to obtain an operating authority, the carrier may be forced to accept conditions that will threaten its economic viability. PWT could not provide overflow service with conventional buses. Thus, if anything went wrong at peak service time, the line was in deep trouble. If overflow service could have been provided with regular road cruiser service, the line would have broken even in 1980. Regulatory restrictions also forced the carrier to offer a local service between Calgary and Edmonton which departed late in the evening to arrive in Edmonton at 2:30 a.m. The service rarely attracted more than two or three passengers and imposed a large financial burden. After a year of operation, PWT was allowed in August 1980 to discontinue the nightly local service.

Fourth, break-even load factors appear very low. To operate a bus between Edmonton and Calgary one way cost PWT approximately \$250 in 1980. Greyhound's costs were probably slightly but not significantly less. Thus, the break-even load factor for Greyhound, given that its express revenue was about 25 per cent of total revenue, was under 17 passengers on a 47-seat coach or a load factor of under 36 per cent.

Fifth, express business is becoming very important for scheduled carriers. During December 1979 Greyhound leased trucks and provided intercity parcel express service using its own drivers at a regular 34 cents per mile rate because of demand. Most of this business originated with disgruntled former customers of the Canadian post office.

PWT did not break even in 1980 -- though it did make a profit on Fort McMurray -- and termination of the Red Arrow service is possible. Given the very strong demand for buses in the resale market, PWT could sell the Prevost buses for substantially more than their book value. Since other investment is inconsequential, PWT could terminate the Red Arrow service at a substantial profit. The company feels inhibited by the regulatory apparatus from experimenting with a complex fare structure in order to increase profitability.

The PWT case study suggests that economies of scale are slight and that non-regulatory barriers to entry are of little consequence. It also suggests that the process of obtaining an operating authority, if contested, is long, complex and expensive. To obtain a competing authority requires demonstration of failure by the existing authority or the offer of a different type service.

Duplicate Operating Authorities: The Ontario Experience

Duplicate operating authorities have been allowed in other provinces in Canada. However, authorities rarely permit direct competition. Besides the PWT case, there is only one other example of a competing authority being granted when contested by the established scheduled carrier. This other case involved Greyhound and Gray Coach (the country's largest government-owned carrier). While Grey Goose Bus Lines and Greyhound both provided service between Winnipeg and Thunder Bay for several years, Greyhound had been forced to interline with Gray Coach between Sudbury and Toronto. In 1977, following a lengthy hearing and appeal, Greyhound obtained a licence from the Ontario Highway Transport Board (OHT) to operate two express trips every day between Toronto and Sudbury in competition with Gray Coach Lines (OHT, 1976).

The kind of competition permitted was extremely limited. As is typical on other routes in Canada on which there is service by more than one carrier, prices are identical and consumers do not receive the potential economic benefits which might be associated with open competition. Robert Norman Parke of Greyhound has observed that "there are no bargains when there are two carriers on one route, passenger fares are exactly the same, the

distance is the same, and in a lot of cases it's exactly the same model bus" (OHT, 1976, p.1085). Fares are the same because "they are set the same by boards in Manitoba...as well as in Saskatchewan and Ontario...they don't want to create a price war; they want good service with the public at a reasonable rate and I don't think they will allow us to come in and undercut the other carrier" (OHT, 1976, p.1085).

Interlining agreements exist among most of the major companies in central Canada. Interlining and pooling permit passengers to travel long distances without changing buses. Under these arrangements, carriers use each others' equipment and drivers. Thus, prior to 1977, some Gray Coach buses were driven from Toronto to Sudbury and on to Calgary. Under a pooling arrangement, the carriers with duplicative authorities agree to pool total passenger and parcel express revenues with the split of revenues determined by negotiation. A pool may be viewed as a cartel.

In 1975, Greyhound applied to the Ontario board to provide closed door (no stops) service between Toronto and Sudbury. Greyhound maintained that its original pooling agreement with Gray Coach was no longer acceptable because it allowed Gray Coach a disproportionate share of passenger revenue. Why the deal was made was never satisfactorily explained in the 1975 hearings (OHT, 1976, pp.430-434).

In 1963, Greyhound offered Gray Coach a 50-50 split on parcel express revenues because "package express was...heavy in 1962...and to get the service going" (p.436). Though a slight change to a 44-56 split was made, fundamentally Greyhound was "never able to get them (Gray Coach) to change" (p.437) and that was the problem. Perhaps the real conflict was over parcel express originating in Toronto. Since shipments west originated with Gray Coach, it was able to take a very large commission. For example, on a freight shipment from Toronto to Grand Prairie, Alberta, Gray Coach would receive one-third of the revenue as originating shipper. Parcel express shipments had risen at an average annual rate exceeding 20 per cent in the years 1970 to 1975. There were other problems with parcel express as well. Priorities were set by Gray Coach on handling package express from Toronto which worked to Greyhound's disadvantage. In a notice to drivers, Gray Coach directed that first priority on shipments from Toronto was to be given to shipments destined for Sudbury; second priority was to be given to shipments to other Ontario destinations; and all other shipments beyond Ontario were to be loaded last to the capacity of space available. Consequently, parcel express destined for cities on Greyhound's western routes was alleged to sit frequently in Toronto for extended periods.

Rail competition had early on jeopardized the expected revenues, as illustrated by testimony in 1975 by Floyd L. Mogen, Vice-President of Sales and Traffic for Greyhound Canada. Mr. Mogen observed that:

Now just about this time (1962) C.N.R. comes along with red, white and blue fares, so we (Greyhound and Gray Coach) naturally had to get together and try and decide how we are going to compete. It meant that all of us had to take a lot less money dividing out these lower rates. (OHT, 1976, p.401)

The effect of the CNR competition in 1963 was to force Gray Coach-Greyhound to reduce the Toronto-Sudbury pool fare from \$8.30 to \$6.55.

Another related problem was Ameripasses. Gray Coach had insisted upon -- and had written into a contract -- a fee of three cents per mile, while most cooperating carriers received only two cents. Additionally, Gray Coach had insisted on a 15 per cent selling commission versus the usual 10 per cent. Greyhound executives felt that on the Sudbury-Toronto pool between 1962 and 1975 they had paid Gray Coach Lines \$225,843 more than was appropriate.

The application was viewed as particularly threatening by Gray Coach since the most profitable routes were the Toronto-Sudbury and Toronto-Buffalo routes. Other carriers in central Canada intervened in the hearings and opposed the issuance of duplicate operating authorities between main headline points in the absence of a pooling agreement.

It should be noted that Voyageur Colonial operated pooled services with both Greyhound and Gray Coach (p.477). In 1975, Voyageur pooled service with Greyhound on three trips a day from Montreal to Ottawa to Sudbury and on a service from Montreal through Ottawa to Sault Ste. Marie. A pool arrangement was operated with Gray Coach on service from Montreal through to Toronto to Niagara Falls.

The Toronto-Sudbury application involved the first instance of duplicate permits between major ports in Canada where no pooling arrangement was envisioned. A director and former president of Voyageur Colonial, Mr. Charles Belford, opposed duplicate authorities in the absence of pooling agreements and argued that "one of the most important factors in the industry which has contributed to its growth is the fact that we do share customers, we make connections with other companies" (OHT, 1976, p.482).

Mr. Gordon Thompson, the operations manager of

Acadian Lines, the principal bus operator in Nova Scotia, and then President of the Canadian Motor Coach Association (CMCA), also testified at the Sudbury-Toronto route hearing. He referred to the principle of "non-duplication" of licences and pointed out that the CMCA had regularly and successfully opposed applications for duplicate operating certificates on major routes when opposed by the existing operator. In Mr. Thompson's view, the CMCA had been successful through 1976 and "there (had) been no real duplicating of licences" (OHT, 1976, p.508) on major routes.

It is revealing that in each of these interventions, as well as in Greyhound's presentation, reference is made to duplicating and not competing authorities. In neither of these cases does competition occur in a pricing sense. Joint applications for fare increases are usually submitted by the carriers with duplicate authorities. In almost all instances, one of the carriers operates a closed door service. Greyhound owns one of the duplicate authorities for most of these routes.

The Ontario government ultimately directed that Greyhound be given the duplicate authority on the Toronto-Sudbury route. Of no small importance in the decision were arguments and evidence to the effect that Gray Coach was considerably less efficient than Greyhound and could use the competition. However, it should be noted that the competition allowed was, as in the PWT case in Alberta, very restricted. Greyhound was allowed to offer only a very limited number of buses, on a closed door -- express -- basis at fares identical to those charged by Gray Coach.

Chapter VI

PERFORMANCE INDICATORS: PART I

Measuring Performance

In traditional industrial settings, economists have standard measures which are applied in evaluating industrial performance. The first of these, technical efficiency, measures the effectiveness of resource utilization and, consequently, the actual level of costs for any given level of production. The second, allocative efficiency, measures the relationship between cost and price levels. It provides an indicator and measure of supra-competitive profits and of any restrictions on output and employment. An additional measure of allocative efficiency involves what economists call welfare effects. When market restrictions result in supra-competitive prices, consumers lose in three ways. First, prices rise, causing a transfer of income (purchasing power) from consumers to producers. Second, a restriction of output is likely to raise average unit costs of the producer. Thus, the consumer pays a higher price which goes for higher unit costs and higher unit profits. The consumer also loses because, as the price of the product rises, he reduces his consumption of the industry's product or service and is compelled to buy alternative goods and services which he would not otherwise purchase. By being forced to make these second best choices, the consumer is worse off and, consequently, suffers a welfare loss. There is a third form of efficiency which is an important consideration in measuring industry performance: dynamic efficiency. Dynamic efficiency is a measure of an industry's technological progressiveness. Is the industry innovative managerially and technically? Does it offer an improved quality product or service over time?

Finally, in measuring performance in an industry the question of externalities or spillovers should be considered. Externalities arise when there are disparities between private costs of production and public or social costs of production. They also arise when individuals benefit from the production of goods or services even though they do not actually purchase the goods. An example of an externalized cost is environmental pollution. By passing on some of his costs to the non-consuming public, the producer is able to sell his product at a lower price; he and consumers of his product receive a free ride on the backs of these non-consumers. External or social benefits are associated with many publicly provided goods, such as education or roadways, which produce benefits for many who never make direct use of the service.

In the case of a regulated industry, it is also necessary to consider the extra costs which the regulatory process imposes on producers and, consequently, on consumers. This becomes a measure of the performance of an industry under regulation.

The analysis of performance has been divided into two parts. This chapter focuses on prices, economies of scale, the behaviour of costs in general, the behaviour of specific types of costs and the use of operating ratios. Chapter VII considers other performance measures, including the extent of cross-subsidization which occurs in a typical bus system, the financial performance of the industry and the efficiency of utilization of plant.

Fare Levels and Trends

Fare levels and structures vary widely across Canada. In part, this is purely a reflection of regulatory policy. It is also a reflection of different operating characteristics in the different markets. The approaches to fare regulation vary among the provinces. For example, Alberta, Saskatchewan and Manitoba set province-wide maximum fares for each company. In 1976 Alberta set a maximum of 5.5 CPM (cents per mile), while the others set a maximum of 5.0 CPM. Ontario, Quebec and British Columbia allow different fare maximums on different routes. Ontario's maximums averaged (unweighted) 5.96 CPM, and British Columbia's maximums averaged 5.6 CPM (AMTB, 1978b, ex. 75).

In most markets, the fare taper -- measured in cents per mile -- is found to be very modest and, at times, in Ontario and in British Columbia perverse. In three of the five British Columbia markets served by Greyhound, fares are lower per mile on the shorter than the longer distances. This slight taper in part reflects the high percentage of costs which are variable. The pricing system used for interlining also causes the taper to be slight (CTC, 1975c, p.47). Most interlining in Canada is based on transportation to a main or headline point. Quoted fares are then determined by adding fares between headline points, of which there were 50 in 1976. Thus, the long-distance fare is simply a sum of its headline to headline parts. It should be remembered, however, that the carriers are not seriously seeking the long-distance travel and available studies suggest air and bus do not compete.

Table 5 reveals tapers found in a CTC study to exist in 1975 based on regressions using a sample of 1075 one-way, mid-week, adult fares drawn from five regions in Canada and from the national network. While there is noticeable taper, the study observes that "fare taper is not

Table 5

Bus Fare per Mile Estimates, 1975

Trip length (miles)	Fare per mile (cents) by region					National Network
	Atlantic	Quebec	Ontario	Prairie	Pacific	
100	6.10	5.36	5.21	4.34	4.46	5.27
150	5.60	5.06	4.92	4.29	4.37	4.78
200	5.37	4.88	4.76	4.27	4.28	4.48
300	5.11	4.74	4.62	4.25	4.25	4.26
500	5.00	4.64	4.53	4.24	4.19	4.09
750	4.42	4.41	4.38	4.19	4.28	4.09
1000	4.22	4.58	4.20	4.26	4.30	4.04
2000	-----	-----	-----	-----	-----	3.35
3000	-----	-----	-----	-----	-----	3.19

Source: Transport Canada (CTC, 1976b).

as important a feature of fare structure for the bus mode as it is for the other modes" (CTC, 1976b, p.30). Of particular interest is the conclusion that:

In the two western regions, the taper is insignificant. It is not possible to relate this observation to the cost structure of the carriers in these regions; the taper is more likely to be associated with their marketing philosophy. The fact that the taper is more apparent in the other regions is probably a reflection of the different marketing and regulatory practices adopted by carriers operating in these regions. (p.30)

In general, bus fares have risen at a much slower rate than the costs of travel by other modes. Fares increased more slowly than fares for other modes and more slowly than the Consumer Price Index over the 1961 to 1975 period (Oum and Gillen, 1981). Other data provided by the CTC reveal that fares on bus travel over 500 miles rose slightly faster than fares for shorter distances. The behaviour of bus fares has, no doubt, reflected fuel costs and the competition presented by other modes, with the impact of fuel costs becoming noticeable after 1972.

A 1976 CTC study of Canadian and American fare levels, based on a sample of 32 Canadian and U.S. city pairs, found Canadian fares in 1975 consistently below those in the United States (CTC, 1976b). That study, however, was influenced by a general fare increase of about 30 per cent which the Interstate Commerce Commission had allowed for most bus routes over the preceding 12 months. In addition, as the CTC study acknowledged, comparisons are made difficult by the availability of many discount fares in the United States, particularly the Ameripass excursion fares on longer trips. Differences in gasoline prices were not considered, nor was the question of comparability of routes.

The industry and the regulators frequently point to these statistics and similar statistics for Greyhound as indicative of good performance (AMTB, 1978b, ex. 79). However, these statistics do not seem particularly meaningful. The major improvements in intercity highway systems in the United States in the 1950s and 1960s, as well as the decline in the quality of rail service and the improvement in the quality and availability of air service make comparisons dangerous. Additionally, even slight differences in load factors can have a very large impact on profits. It is not surprising that intercity bus fares in the 1965-1975 period should have increased at a slower rate than the Consumer Price Index, particularly given the high price elasticity measures noted in the second chapter.

Improvements in intercity roadways between 1960 and 1975, as well as corridor rail competition, placed continuous pressure on bus pricing, as did low priced gasoline.

It should also be recalled that the Consumer Price Index is nothing more than an average. Consequently, the relevant question isn't whether or not the average fare for bus service has increased at a rate more or less than the Consumer Price Index has increased, but whether the average fare has increased faster than would have been the case under different regulatory and competitive conditions.

Operating Expenses of Intercity Bus Systems

In regulated industries, inflated operating expenses present a much greater threat to consumer welfare than does profit inflation. Normally, rate-of-return regulation will limit profit taking. This, by itself, can encourage management and employees to be less than conscientious in controlling costs since if costs rise they will be covered by increased fares. As has been seen, the motor transport boards are extremely accommodating in Canada in permitting fare increases to cover system cost increases. They seem to have little concern for actual profit rates or for cost control.

Costs in the industry have been examined in a number of Canadian and American studies. Some of these will be reviewed but the conclusions are basically the same. For the intercity bus industry, variable costs represent an overwhelming proportion of total costs. Average variable costs per bus mile do not appear to differ significantly from incremental or marginal costs. However, clearly the incremental cost of one additional passenger mile is much lower than is average variable cost. Indeed, PWT estimated that on its Alberta operations, one additional passenger on a vehicle added less than one cent per mile in 1980.

The three most important components of the costs of bus operation are drivers' wages, fuel and maintenance. Drivers account for between 45 and 70 per cent of employees for major carriers and they are paid on the basis of miles driven. Therefore, for major carriers this cost outlay is directly related to output: miles driven. Fuel costs and maintenance per bus mile are also linearly related to vehicle miles driven, as is a high proportion of accounting depreciation. While the carriers apparently view depreciation as a fixed cost, a substantial portion of depreciation should be considered as a variable cost since the expected life of a bus in service by a major carrier is more closely related to passenger miles driven than it is to the length of time the bus is owned.

Table 6

Percentage Distribution of Operation and Maintenance Expenses
(Class I Carriers)

	1960	1965	1970	1976
Equipment, maintenance, and garage	20.2	17.7	18.0	15.6
Transportation	43.8	43.9	41.7	42.1
Station expense	16.3	18.6	20.2	19.7
Traffic, solicitation and advertising	4.3	4.1	3.9	4.4
Insurance and safety	5.1	5.1	4.2	4.5
Administrative and general	10.3	10.7	12.1	13.6

Sources: "Transport Statistics in the United States" (various years), and American Bus Association, America's Number 1 Passenger Transportation Service.

A 1978 Interstate Commerce Commission study based on 75 American intercity lines broke down expenses for the bus industry in 1976 as follows: operation and maintenance, 87.2 per cent; depreciation and amortization chargeable to operations, 3.9 per cent; operating taxes and licences, 7.1 per cent; and operating rents, 1.9 per cent (p.48).

Operation and maintenance expenses were then allocated as shown in Table 6, which also shows the distribution for 1960, 1965 and 1970. The ICC study concluded that:

A very large percentage of total carrier expenses can be thought of as variable. And while the concept of variable cost has many different dimensions (e.g., a larger proportion of costs becomes variable the longer the time period), between 80 and 90 per cent of carrier expenses can be thought of as variable over a short time span. For example, in 1976 operational and maintenance expenses made up an estimated 87.2 per cent of total operating expenses of class I carriers. And while operation and maintenance expenses do contain some fixed cost components, other major expense categories are composed of costs which can be thought of as variable (e.g., certain taxes and licenses). Many of these variable costs are contingent on the absolute number of bus miles operated by the carriers. The most prevalent of these expenses are drivers' wages, fuel costs, and general maintenance and upkeep expenses. These costs are subject to nearly proportionate increases (decreases) depending upon increases (decreases) in the number of bus miles a carrier operates. (ICC, 1978, p.54)

Canadian studies by the CTC have suggested that variable costs are 75 per cent of total costs. Gillen and Oum's study produces a similar ratio (1981, p.124). Table 7 presents an operating cost structure derived for the four largest carriers in 1978.

Apparently, regional differences are not seen as critically important in explaining differences in operating costs. A 1976 CTC study concluded:

It was apparent that unit operating costs were not dependent upon the area of carrier operation. There was no discernible difference between the unit operating costs of carriers providing frequent service in densely populated corridors, and those of carriers providing less frequent

Table 7

Typical Operating Cost Structure of Major
Intercity Bus Companies, 1978

Operating cost component	Per cent of total (range)
A. Transportation expense: drivers	20 - 36
Sub-total transportation expense	47 - 59
Total line haul expense	63 - 79
B. Terminal expenses	8 - 29
C. Traffic and sales, insurance and claims, administration and general	7 - 15
Total operating cost	100%

Source: Data supplied by Statistics Canada
(based on 1978 for 5 privately owned carriers)

service in more remote regions. (CTC, 1976b, p.26)

Thus, all evidence from all studies on the nature of expenses in the industry is consistent on one point: most costs in the industry are variable. Having established this important aspect of the industry's economics, the specific costs can be examined. A bus company's operations can be divided into eight categories: (a) purchase and operation of buses; (b) operation of terminals; (c) administrative functions of management; (d) marketing of tickets; (e) plant maintenance; (f) marketing of bus services; (g) physical and administrative operation of baggage or express service; and (h) provision of charter and tour service. Each of these are examined in the remainder of this chapter.

Investment in Rolling Stock

The investment in rolling stock (vehicles) represents the primary plant investment for the carrier; the major fixed costs of the carriers are related to the investment in vehicles. In 1976, investment in buses accounted for 70 per cent of total investment for the Class I and II Canadian companies. The percentage has remained stable over the last decade. This financial investment is modest, and the large number of charter lines in existence demonstrates that the problems of raising funds for the purchase of a fleet of minimal efficient scale are not great. Even the depreciation of buses is manageable since much of that depreciation is related to use, not time, and the bus fleet may readily be expanded or contracted in a resale market.

Since the labour-capital ratios are fixed for operation, operators face few labour-saving economies in increasing the number of buses in a fleet. Small operators indicate that the advantages are negligible and econometric analysis by Gillen and Oum confirms the operators' perception (1981, pp.122-123). There are discounts for volume purchases of buses reported by small buyers which benefit larger buyers. However, these savings can be achieved by several smaller carriers if they pool their purchases. Executives of PWT maintain the savings are minor.

The Operation of Terminals

In most cities in Canada, and in the United States, bus terminals seem to enjoy a richly deserved reputation. They are generally old, poorly maintained, located in older and -- all too frequently -- seamier areas, and have a serious problem with loiterers. It is important to note that these conditions have resulted under a system, in most cases, of restrictive regulation. In Canada, use of a

terminal is normally limited to the company which owns it. Regulatory agencies or municipal governments have not allowed other companies' applications to share terminals or to construct and operate their own terminals. Thus, in general, existing carriers enjoy the exclusive use of the terminals they operate or they share the terminals on a very restricted basis. New companies face the problems of obtaining operating licences and of obtaining municipal permission to construct and operate terminals.

In the American case, a 1957 consent decree prohibited Greyhound from discriminating against or evicting a bus operator tenant who entered into competition with Greyhound (ICC, 1978, p.15). However, the consent decree does not require Greyhound to take into its terminal as a new tenant any carrier who enters the market.

It is, however, easy to exaggerate the terminal problem. Economies of scale in operating terminals are not significant, though capital costs are increasing; indeed, it was noted earlier that PWT uses a number of hotels as its terminals and shares VIA terminals. While there are some problems with the hotel terminal system, particularly when parcel express service is considered, the economies of scale in operating terminals appear slight. Until 1980, the Edmonton terminal of Greyhound occupied less than a quarter of a city block and was only a two-storey structure. The new \$nine million structure (erected in 1980-1981) is only a two-story structure, though Greyhound may be keeping the facility small to ensure that it will never be forced to share it with another carrier.

Regulatory authorities rarely specify standards for terminal facilities. For example, the Ontario Public Commercial Vehicle Act fails to specify standards for bus depot terminals under the authority of the Ontario Highway Transport Board.

In major metropolitan areas, new bus lines face major -- but not prohibitive -- outlays in establishing conventional terminal facilities. In some communities, such as Edmonton and Calgary, the problem is particularly severe. In 1978, a consultant's report for PWT found that the cost of constructing a modest terminal capable of handling four or five buses with a minimum site area of 12,000 square feet and a building of 2,000 square feet would have been in the order of \$1,200,000 (AMTB, 1978b, ex. 193). Operating costs for such a plant would have been \$108,000 per year and the imputed rent of the facility would have been \$60,000 per year if it was amortized over ten years. Given the need to provide central and convenient locations, the problem is serious in many communities.

Generally, as has been noted, established lines oppose sharing facilities with other lines. For example, in Alberta, Greyhound has resisted efforts by other carriers to use its facilities. This is unfortunate since if competition is seriously considered for this industry municipal governments may have to require existing companies to share facilities. The facilities are frequently so small that they simply cannot serve many lines. Thus, in the American case, recent moves have been made to provide municipally owned terminal facilities.

For small companies serving local markets, the importance of control of terminals is easily exaggerated. There is no evidence that, in the absence of regulation, new firms would find problems associated with the establishment of terminals an overwhelming barrier to entry. Of course, municipal authorities can act to create new problems.

While the quality of bus terminals does vary widely in Canada, at times the traveller must think that the bus companies do not want his patronage. In Alberta, the relatively new structure in Calgary, built in 1973, could have been contrasted with the relatively run-down structure in Edmonton built in 1947 until the latter was replaced in 1981. In the east, Voyageur's relatively well-maintained terminal in Montreal stands in stark contrast to the dilapidated Greyhound-Voyageur terminal in Toronto.

The generally deteriorated condition of terminals can be attributed directly to the regulatory environment in the industry. Only in a regulated environment can dilapidated terminals have political appeal. How? First, they are indicative of low profits. Second, if bus operators believe that demand for most of their service is price inelastic and if they need not worry about losing "normal" passenger demand to other bus lines, they may ignore terminal conditions. Management seems to believe that those who can use a car will and that the long-distance rider is already lost to air. Given the condition of rail terminals and rolling stock, there appears to be little fear of losing travellers to the rail mode because of the condition of bus terminals. Since there is no need to fear new entry under existing systems of regulation, there is, all things considered, no absolute economic need to modernize the terminals. In Alberta, Greyhound agreed to modernize its Edmonton terminal only after the provincial government eliminated a seat tax and allowed the company to retain the revenue.

Administrative Functions of Management

The analysis of the relationship between managerial

costs and carrier size proved more complex than any other. Problems were encountered in distinguishing managerial costs from other costs as well as in distinguishing the costs of different management functions. The problem is inherent in the nature of management but it is compounded in this case by careless and apparently inconsistent reporting by different firms. Some managerial and supervisory costs and personnel must be allocated to each of the following: transportation expenses, maintenance and garage expenses, terminal expenses, traffic and sales expenses, insurance and claims expenses and administrative and general office expenses. Unfortunately, some carriers simply place all, or most, charges under the administrative and general category; others do not. Some carriers clearly attribute some supervisory functions to clerks, while others may do the opposite.

Taking these problems into account, an examination of 14 carriers for the year 1978 revealed that managerial expenses were not a significant portion of total costs -- usually under five per cent. Thus classification errors, in aggregate, may not be too important. However, the analysis was taken one step further and managerial costs were considered in relation to an output variable: vehicle miles. In doing that analysis, management costs attributed to maintenance and terminal operations were excluded since some carriers operate very few terminals and some contract out maintenance services. Ignoring those categories, it was found that in 1978 the 6 largest carriers, with between 14.5 million and 35 million vehicle miles, incurred average managerial costs of 3.8 cents per vehicle mile. In general, smaller companies had higher costs. There was, however, no consistent pattern. Four of the firms with fewer than 5 million vehicle miles had costs of 5 cents or less and 3 of these firms were under 3.8 cents per vehicle mile. Two of the smaller carriers had the lowest costs of the group of 14.

The evidence, therefore, suggests that relatively small carriers can enjoy management costs per vehicle mile comparable to the largest. At most, the very largest firms probably enjoy an advantage of only one to two cents per vehicle mile. This conclusion is consistent with the econometric analysis of costs by Gillen and Oum in which they found evidence of declining factor productivity with very large scale (p.89). If there are economies associated with management, they appear to be slight.

The Marketing of Tickets

From the available data on 17 companies and discussions with industry analysts, it is clear that the

economies of scale associated with ticket sales are minor. Bus drivers frequently sell tickets and handle baggage. Additionally, the ticket marketing function can be sub-contracted without significant incremental cost; the usual agent commission is ten per cent. There is no evidence that ticket marketing and schedule distribution cannot be performed as efficiently by very small as by very large lines. It is, of course, true that smaller lines must make arrangements for interlining. But even the importance of this is easily overstated since very few bus passengers (under 20 per cent) travel distances exceeding 500 miles. Under the anti-combines law, it may be possible to compel interlining; however, as Greyhound's experience on the Toronto-Sudbury route in the mid-1960s demonstrated, forced interlining is not a panacea.

The Marketing of Bus Services

Are there economies of scale in advertising and in marketing bus services? Again, the evidence available suggests there are none. As a group, the intercity bus companies do not spend large amounts on advertising their service. The 13 Class I and II privately owned bus companies together spent less than 1.5 per cent of their operating revenues on advertising in 1978. None of the private carriers spend large amounts on marketing; the lowest -- one of the smaller companies -- reported nothing and the highest -- one of the larger companies -- incurred marketing outlays equal to 2.22 per cent of operating revenues. In 1977, Greyhound spent \$402,900 on advertising: \$117,000 on broadcasting, \$229,000 on print media, \$36,900 on timetables and guides and \$20,000 on other miscellaneous categories (AMTB, 1978b, ex. 112). Total advertising accounted for approximately 1.5 per cent of Greyhound Lines of Canada's operating revenues in 1978.

It is clear that the carriers have not found it necessary to invest heavily in advertising. Open competition might lead some companies to use advertising as a barrier to entry, but this seems highly improbable given the nature of the service being offered. Advertising would more likely promote competition in this case in that it would readily permit a new competitor to communicate its existence to potential customers and to communicate the availability of a new and, possibly, superior quality service.

The Economics of Maintenance Services

Maintenance services on buses are usually centralized; hence the economies of scale associated with the operation of bus maintenance service should not be significant. Analysis of operating data for 11 privately

owned carriers in 1976 revealed that, as a group, the 5 largest carriers had maintenance costs per vehicle mile substantially lower than the 6 smallest. However, the carrier with the lowest cost was the second smallest. Two-thirds of its fleet was less than four years old.

Comparisons were complicated by the special fleet characteristics of the five other smaller carriers. In four cases, the percentage of each carrier's fleet built prior to 1968 was well in excess of 50 per cent. The fifth carrier had the smallest fleet and no new buses. In two cases, over 50 per cent of the vehicles were school buses with over 50 seats.

It is important to note that the age of a bus has a major impact on maintenance costs. A statement to the ICC by Greyhound in 1977 revealed that maintenance cost in 1976 for a bus purchased in 1968 was 9.3 cents per bus mile. The cost fell to 6.9 cents for a 1972 bus and to 2.0 cents on average for new buses purchased in 1976. Differences in the average ages of bus fleets operated by different companies clearly will affect fleet operating costs.

A small carrier does have the option of subcontracting its maintenance service, even for a small number of buses, without fear of significant economic penalty. PWT management notes that moving from one-half to double their present fleet size would not affect maintenance cost per bus mile. However, PWT's fleet is larger than any of the six smaller carriers.

Finally, the cost analysis by Gillen and Oum reveals no significant economies of scale in maintenance. Thus, there is no evidence that a small bus firm will be at a significant competitive disadvantage due to high maintenance costs.

The Economics of Parcel Express Service

Parcel express service has assumed increasing importance to the carriers. Currently in Canada parcel express service accounts for in excess of 25 per cent of carrier operating revenues. Greyhound's experience in Alberta and discussions with operators of smaller lines indicate that there are some economies of scale associated with providing parcel express service. These economies are not related to operations. Typically, shippers are responsible for dropping off and picking up parcel express shipments. The local facilities required are usually minimal, the staff frequently are the same as those selling tickets and the equipment is neither specialized nor expensive. A bus company providing intercity express service

can also affiliate itself with intraurban parcel delivery firms in order to provide door-to-door interurban service.

Bus express shipments are typically lightweight (80 per cent weigh less than 50 pounds), move only short distances (86 per cent move less than 400 miles) and are commercial (80 per cent). In the long run, the bus industry should face increased competition from firms specializing in parcels if the post office's monopoly on similar services is eliminated.

The economies of scale associated with parcel express are related to the size of the bus system. As noted earlier, local shippers are likely to be reluctant to deal with any one bus company unless it can deliver parcel express to most major localities in a region. This is one reason why parcel express revenue only contributed 10 per cent of PWT's total revenue in 1980, while it reportedly contributed 30 per cent or more of total revenue for Greyhound. With flexibility in scheduling, locations and frequencies, PWT management is convinced that a small firm can overcome system size disadvantages. If other bus companies are forced to interline parcel express, then most disadvantages can be overcome. Given the freedom to develop a regional system, a carrier can overcome the system barriers.

The Charter and Tour Industry

Since there are many operators in the charter and tour industry in Canada and since, in many provinces, entry is slightly easier than it is for scheduled service, they have been treated as separate industries. However, all the scheduled carriers are very active in the charter business and entry is not open. Most applications for operating authorities with top line coaches from major centres in Alberta have been denied in recent years. There are only three carriers with operating authorities permitting use of large numbers of coaches from major Alberta cities.

There is some limited evidence of cross-subsidization by scheduled carriers. In the 1978 Red Arrow hearings, Greyhound admitted losing money on charter service. This suggests it may cross-subsidize this service, thereby creating potential financial problems for all the charter lines. Similar evidence was presented by PWT in a recent hearing in which PWT and Greyhound successfully opposed an application by Yellow Lines (a subsidiary of Gray Goose Lines) for an expanded charter authority. However, this was not a central issue in that hearing; Yellow's charter fares likely were not below marginal cost.

The potential for cross-subsidization would cease to be a problem in the absence of regulation since excess profits on scheduled service would be promptly eroded. In general, applications for charter operating authorities are opposed on the grounds that a market is adequately serviced and too small for additional competitors.

Greyhound opposed the application for an authority by PWT to operate an expanded charter service, as well as to extend its service in Banff and Jasper National Parks in Alberta to include the right to pick up passengers in the parks, on the grounds that the service offered by Greyhound's subsidiary, Brewster Transport, was adequate and only marginally profitable. Greyhound contended "that the granting of the...charter application would result in a further decline in charter revenues which might jeopardize their ability to continue to offer a wide range of charter and tour service and the promotion of international travel to and from Alberta" (AMTB, 1978a, p.39). Indeed, Greyhound presented evidence showing that its charter operation in Alberta was only profitable due to "a rather arbitrary allocation of bus parcel express revenues" (p.39). Given the marginal profitability, it is surprising that Greyhound did not offer to give up the entire charter and tour service. Brewster insisted, in the words of the board, that "they are well established as part of the community in the National Parks, and that good and sufficient service was...being provided" (p.28). Brewster argued that since the hostelry accommodations in the park were limited, Diversified (PWT) would simply be competing for "Brewster's customers."

It is worth noting that five major tour wholesalers supported PWT's bid (p.28). In these hearings, both sides usually call as witnesses tour wholesalers and spokesmen of groups who have used the existing services in order to determine adequacy of existing service.

Operating a charter service does permit a carrier to utilize its fleet more efficiently. However, where allowed, independent charter operators have been able to compete effectively with scheduled carriers. This suggests that the benefits are minimal and is, in part, explained by the tendency of the demand for schedule and charter business to peak at the same time. It is also explained by the different characteristics which are sought by carriers in drivers used on long-distance charter as contrasted with those used on scheduled service. One American study does find that the addition of charter service by small carriers will reduce their vehicle mile costs substantially (Fravel, Tauchen and Gilbert, 1980).

Conclusion

In order to test further some of the conclusions of this chapter, Statistics Canada data were used for 11 large, privately owned Class I and II carriers. Relationships were analyzed between operating revenues, vehicle miles per driver and miles per vehicle; fare passengers per supervisor; terminal costs as a percentage of operating revenues; and marketing expenses as a percentage of operating revenues. The only statistically significant relationship was between size and vehicle miles per bus per year.

In 1976, the five largest privately owned carriers as a group recorded 93,963 miles per vehicle. The six smallest privately owned carriers as a group recorded only 41,121 miles per vehicle. From the Alberta PWT hearings it is known that Greyhound's 1976 fleet average, including Canadian Coachways (not included in the preceding figures), was 126,924 miles per vehicle (AMTB, 1978b, ex. 96). There are clearly economies available to a company from size in terms of intensity of fleet utilization. However, given that finance costs and depreciation related to time in 1976 represented only a very small part of total costs -- under five per cent -- the cost penalty of being a small carrier does not appear large. There is also little justification in this industry for relating depreciation to time, beyond accounting convention.

The larger companies do tend to use their drivers more intensively. But since most drivers are compensated on the basis of miles driven, little is saved by having drivers work extra hours.

The costs of terminal operations as a percentage of total operating revenue vary widely among the companies, ranging from 6.29 per cent to 17.53 per cent. Terminal costs per passenger also varied widely with no discernible pattern related to carrier size. Some of the smallest companies had the lowest terminal operating costs per passenger.

The carrier analysis suggests that there are no clear advantages to large size in this industry in the operation of terminals, use of drivers, use of supervisory personnel, marketing or maintenance. It is clear, however, that the larger carriers use their bus fleets much more intensively than do the smaller carriers. There is no evidence of economies of scale in the charter business and there are no economies in handling express which cannot be achieved by a relatively small regional carrier with the right to interline. The following chapter considers other critical facets of carrier operation.

Chapter VII

PERFORMANCE INDICATORS: PART II

Plant Utilization

Operating costs of intercity carriers are particularly sensitive to load factors and equipment utilization ratios. The number of hours per day a bus is used and the number of seats filled are both critical determinants of the cost per passenger mile. Obtaining utilization data, as opposed to load factor data, has proven particularly difficult. Neither the Statistics Canada nor the Alberta studies provide any data on bus utilization.

Obviously, no bus operator will use his entire fleet 24 hours a day seven days a week. However, under competitive conditions, an operator will have the maximum incentive to spread fixed costs over more passengers by optimizing the hours of utilization. The operator should also, under competitive conditions, have an incentive to adopt an innovative rate structure. He should at least be able to achieve the same structure that would be achieved under regulation and should be expected to adopt a structure which exploits the time of day, time of week and time of year preferences of different passenger groups.

Under regulation, restrictions on experimenting with pricing -- as in Alberta -- can prevent efficient utilization of equipment. In addition, as has been seen with the Red Arrow experiment, regulation can have drastic effects on utilization. These experiences may be contrasted with the situation in the airline industry in the United States and in Canada where relaxed regulation resulted in the development of a multiple of air fares to exploit these market characteristics.

The large overload fleet maintained by Greyhound, one-fourth of its fleet, as well as the overload fleet of PWT-Red Arrow, one-eighth of its fleet, is indicative of the effect of regulation on plant utilization. However, the level of utilization of capacity is more important as a measure of performance and is more easily appraised than is the appropriateness of fleet size.

Load Factors and Service

In preparing this study, load factors were considered to be a particularly important topic for investigation. Carrier management and regulatory officials frequently point out that, in the absence of regulation, enormous waste will occur since adding competitors will

simply result in a large number of underutilized buses filling the highways. Presumably, regulation ensures that the plant is efficiently utilized. It has been suggested previously that the economies of scale in the industry are slight or non-existent. Indeed, it has been argued that the industry should not be considered exceptional but as possessing economic characteristics comparable to those associated with competitive industries.

The load factor problem has been approached from several standpoints: existing system data, data from other studies, findings of studies performed in Alberta of Greyhound's operations, some individual route studies and the cost studies prepared by Gillen and Oum. What do they reveal?

First, they reveal, as will be explained later in this chapter, that when express revenue is considered, the break-even passenger load factor for a bus is about 34 per cent. In practice, most regulated bus companies experience load factors of under 50 per cent. Even on mainline service, the load factors are rarely as high as 50 to 60 per cent. And the private carriers have found these load factors to be consistent with very high profit rates.

This is surprising until closer analysis is carried out. The bus companies believe that one of the attractions of bus service to passengers is frequency of service. Increased frequency, they believe, should have the effect of increasing ridership. Clearly, other factors are important, but available user surveys suggest that the frequency of service is an important, but secondary, product characteristic. The frequency of service on most high-density routes is left by regulatory agencies to the discretion of the carriers. When Greyhound opts to operate 20 express bus trips daily between Edmonton and Calgary, it is not doing so because of a direct regulatory mandate. The important point to be made is that, as in the case of regulation of airlines in the United States and Canada, restrictive regulation of the carriers in Canada has not resulted in high load factors but in the reverse; load factors have been relatively low even on the high-density routes. And this is not a new phenomenon.

The Canadian Transport Commission's Canadian Passenger Services Project included an analysis of the costs and profits of five major IBSS: Greyhound, Voyageur Colonial, Voyageur, S.M.T. (Eastern) and Gray Coach Lines (CTC, 1975d). In 1972, Greyhound, Coachways and Eastern Canadian Greyhound had a system load factor of 47.7 per cent, Voyageur Colonial 50.9 per cent, Voyageur 41.5 per cent, S.M.T. (Eastern) 30 per cent and Gray Coach Lines 47.1

per cent. Every carrier, even those not making a profit on intercity passenger service alone, experienced a profit on overall operations due to the contribution of charter and express revenues.

Gelman, in his study for the Science Council, concluded, after a detailed analysis of 1972 operating data, that the average load factor per passenger mile in Canada for Class A and B bus lines was under 50 per cent (1978, p.5). The average bus load was 20 passengers and the average bus had 42 seats.

Analysis for this paper of operating data for the 13 Canadian Class I and II privately owned carriers from 1974 to 1978 revealed that system load factors rarely exceeded 50 per cent. In the United States, the two largest carriers had load factors under 50 per cent in 1976. The 75 large Class I and II carriers in the United States as a group experienced an average load factor of 44 per cent in 1976 (ICC, 1978, p.54).

Thus, regulation does not lead to high load factors or to efficient use of rolling stock. Why? The reason for this is at least twofold. First, high fares obviously restrict demand and, second, there is an awareness that, in the absence of a new entry threat, there is no need to adopt schedules and pricing structures which ensure that the plant is efficiently utilized. Regulation protects bad performance and inflates costs but also usually results in a ceiling being imposed on overall profits. Profit levels much above those of average competitive industries are permitted but they are constrained. In such an atmosphere, it is in the interest of the regulated firms to operate so as to maximize long-run profits. Service is an important dimension of the product. Since the level of service to be provided is not simply a matter of economics (it is administratively determined) and since few guidelines exist for determining whether fares are indeed reasonable (there is passive regulation), the carrier's greatest political and economic exposure is found in the level of service (i.e., the frequency) which is provided. Is a small town being served? Is it being served regularly? With what equipment?

Carriers must also be sensitive to charges of price discrimination. Partly because of this sensitivity and partly because of the system by which bus fares are quoted, particularly where interlining is involved, most routes display very slight fare tapers. It is true that the nature of the cost function also suggests that the taper should be slight given the significance of variable costs. The general inability to compete effectively with air for service distances exceeding 500 miles also causes a slight taper. In

Alberta, Saskatchewan and Manitoba, equalization of fares -- in terms of cents per mile -- across the provinces has been a conscious objective of regulatory policy to ensure that passengers travelling between any two points, irrespective of load factors, time or distances, pay the same fare per mile. This policy tends to minimize consumer complaints and eliminates the need for detailed economic regulation. It is in the interest of both the passive regulators and the regulated to minimize the taper.

Intelligent management practice and regulatory direction have, therefore, encouraged the carriers to emphasize frequency of service to the point that load factors are so low under regulation that most buses travel the roadways with fewer than fifty per cent of their seats occupied.

This analysis might suggest that there is a great deal of cross-subsidization occurring in the industry. This is explored in the next section along with the question of the desirability of cross-subsidizing routes.

The Cross-Subsidization Question

The monopoly positions of regulated IBSs are usually defended, in part, as necessary to ensure service to smaller communities. The provision of the service at less than full cost is justified on social and political grounds.

Simply defined, cross-subsidization involves the regulated firm charging some passengers prices which exceed costs and using those extra revenues to subsidize others who are charged prices which are less than costs. More precisely, it occurs when any class of customers is charged less than incremental cost and another class is charged more than incremental cost and is thereby forced to subsidize the first group. Cross-subsidization does not occur if prices are above incremental or marginal cost. If a service can be provided to any group for revenue which exceeds the extra cost incurred, then it will be in the interest of both the bus line and its other passengers for service to be provided to those customers paying less than fully allocated costs. In the long run, however, the average fare received per bus mile must exceed average cost per bus mile by enough to yield a normal rate of return on invested capital. In highly competitive markets this is not a serious problem since some producers are likely to specialize in each type of service.

In order to determine the extent of cross-subsidization of routes in the Canadian industry, it is necessary to determine the break-even passenger load for a given type of highway coach. Unfortunately, to some extent,

the question of cross-subsidization is only relevant if the type of equipment used is appropriate. The possibility will be considered later in this paper that service to very small communities in some instances may most efficiently be provided by feeder services provided by vehicles smaller than 47-seat road cruisers. In some instances, such as in some smaller communities in British Columbia, communities are currently serviced by taxi companies using nine-passenger station wagons.

It may also be found that the size of cross-subsidies to small communities may be so great that it would cost the high-density market travellers less if direct payments were made to users in very small communities to fully cover their taxi fares from their small communities to economically feasible feeder stations for intercity carriers. As an example of this type of policy in practice, Edmonton's transit authority in late 1979 adopted a new policy for some parts of its system. In effect, the bus company terminated evening and Sunday service into certain sectors of the city which normally generated insufficient revenue during those time periods to cover incremental costs. The City Council concluded it would be less costly simply to pay local taxi companies the fare for transporting affected customers from their homes to the nearest serviced bus stop.

This report's analysis of break-even load factors and cross-subsidization focuses on intercity bus systems with fleets composed almost exclusively of coaches with between 39 and 47 seats. Since most Canadian carriers rely exclusively or overwhelmingly on vehicles of these sizes, this study comes to conclusions similar to those of other recent studies in this area.

The analysis of carrier revenues found in a CTC report (1976b) on this question is of particular relevance here because its conclusions are supported by other analysis found in Alberta studies as well as the Gillen-Oum study. The 1976 study of 1972 operating data for nine major carriers revealed that the median value of revenue per bus mile was consistent with revenue generation by a bus system operating buses with an average load of 20 passengers. Given that mail and parcel express service revenues were estimated to account for about 20 per cent of total revenues for major carriers, express and parcel service must be seen as providing the equivalent of 2 to 4 passengers. The study concludes that "in other words, using median figures, it appears that, under typical conditions in 1972, a bus service was operated with an average load of between sixteen and eighteen passengers per bus mile plus mail and parcel express" (CTC, 1976b, p.31). Furthermore, based on its cost

estimates, the CTC study observed that "break-even operation required fourteen to sixteen passengers per bus mile with typical express and parcel express loads" (p.31, emphasis added).

Gelman's Science Council Study accepted the CTC study findings that the break-even load factor, with parcel express and mail service accounting for 16 to 20 per cent of revenues, was between 14 and 16 passengers per bus mile on 39- and 47-seat buses (1978, p.5). Thus, carriers break even with a load factor of 35 per cent. In the case of a company such as Greyhound with parcel express and mail revenue equalling almost 30 per cent of total revenue, the necessary break-even load factor falls to 30 to 33 per cent using Gelman's assumptions.

During the 1978 PWT-Red Arrow hearings, Greyhound submitted that its system passenger revenue was \$1.034 per mile and its system costs were \$1.03 per mile (AMTB, 1978b, p.2465). Given this estimate of the level of system costs per bus mile, it is possible to calculate the load required for Greyhound to break even. Since Greyhound conceded that its national average express revenue was 34.2 cents per mile (AMTB, 1978a, p.23), the company required 69 cents from passenger revenue. Given the system average revenue per passenger mile (AMTB, 1978b, ex. 75), it is possible to calculate a nation-wide break-even load for Greyhound of between 15 and 16 passengers. This implies an average load factor of 35 per cent on a 45-seat bus.

Were these 1976 relationships relevant in 1980? It is believed they were, but this position could only be supported by indirect evidence, again from Alberta.

In February 1980, Red Arrow charged a one-way fare between Edmonton and Calgary of \$15.00, and Greyhound charged a one-way adult fare of \$10.50. The 22-seat Prevost coaches cost \$165,000. Including finance charges on the coach, the average cost was \$1.18 per mile. For PWT, the break-even load was 16 passengers, or a 73 per cent load factor, at the existing fare given negligible express revenue. Greyhound's drivers are paid ten per cent more than the PWT drivers. However, Greyhound's MCI coaches had a lower purchase price -- \$140,000 -- and its older buses had much lower book values. Thus, it had lower finance charges. Greyhound probably enjoyed purchasing economies on fuel and materials and savings in finance costs. The costs were probably comparable per vehicle mile.

It is worth noting that Greyhound and PWT both charged a basic rate of \$1.35 per vehicle mile for the charter of a regular 47-seat coach. The charge was \$1.45 for

a Prevost 22-seat coach. Thus, costs per vehicle mile were probably lower on the standard 47-seat coach than on PWT's luxury buses. In 1980, with a recent nine per cent fare increase, Greyhound's maximum fare in Alberta rose to 6.0 cents per passenger mile. Its average yield per passenger in Alberta should have risen from between 4.30 and 4.66 cents per passenger mile in 1976 to well in excess of 5.2 cents in the first two months of 1980. Its operating costs per vehicle mile should have risen from the 1.03 average of 1976 to perhaps equal the Red Arrow luxury service vehicle cost of \$1.18. In 1976, if all parcel express revenue was allocated only to vehicles which carried passenger and express, or express alone, the package express per vehicle mile averaged 34 cents. It is certainly reasonable to assume that, with economic growth and fare increases, package express in the first quarter of 1980 provided 39 cents per vehicle mile. The broadly defined break-even revenue requirement for a 47-seat vehicle then was 79 cents from passenger revenue. The full cost break-even load then was about 15 passengers, even using a very liberal measure of costs and without considering the system economies discussed earlier.

There is, therefore, a large body of evidence to suggest that an intercity bus system breaks even with 14 to 16 passengers and average parcel express revenue. Note that the break-even point is being considered for fully allocated costs. Since it will be in the interest of the carrier to provide service when incremental costs are covered, the carrier may frequently find it profitable to provide service even if fully allocated costs are not covered. First, equipment needs to be repositioned. Second, passengers on some lightly travelled routes will continue on other routes and contribute to their profitability. Once a passenger has bought a ticket for one part of a trip on one carrier, it seems improbable that he will change to another carrier even if another carrier's service is available -- which it usually isn't. The service on one route may not break even in isolation but, when considered as part of a system flow, it will prove worthwhile. Third, there are system benefits for parcel express marketing which are not considered.

A closer look will now be taken at the detailed operating data made public in the 1978 PWT hearings in Alberta. The data will be used to estimate the extent of cross-subsidization in the Canadian system under regulation.

Table 8 provides system data on the company estimates of operating costs of Greyhound Lines of Canada, Eastern Canadian Greyhound and Coachways. It reproduces data submitted in a 1976 Ontario hearing, as well as in the PWT hearing in Alberta (ex. 197). Three columns appear: total

Table 8

1976 Greyhound System Cost Breakdown

	\$	CPM' (cents)	ICPVM ²
Transportation Expenses			
Salaries - supervisor	575,324	1.34	
other	105,494	.25	
Drivers' wages	11,370,213	30.32	
Fuel	2,054,003	5.96	
Oil	116,143	.27	
Transportation	68,377	.16	
Bridge tolls	40,296	.09	
Miscellaneous	3,969	.01	
Drivers' Expenses:			
room rents	607,057	1.42	
meal allowances	625,112	1.46	
charter expenses	80,716	.19	
other	73,608	.17	
Bus supplies	125,292	.29	
Other	<u>39,907</u>	<u>.09</u>	
Total transportation	<u>18,002,090³</u>	<u>42.04</u>	42.04
Insurance and Safety Expenses			
Including salaries, insurance, baggage and express claims.	<u>992,223</u>	<u>2.31</u>	2.31
Maintenance Expenses			
Including materials, labour lubrication, tires and tubes, washing and cleaning, overhead	<u>5,556,743</u>	<u>12.97</u>	12.97
Station Expenses			
Including			
salaries	2,504,372	5.84	
supplies	40,398	.09	
light, heat, water, other	345,572	.70	
commissions, ticket sales	2,690,664	6.28	6.28
commissions paid express	2,303,202	5.38	5.38
interline commissions paid	564,710	1.32	
fees and interline earned	(488,687)	(1.14)	
other expenses, including charter commissions	<u>304,676</u>	<u>.28</u>	
	<u>8,471,907</u>	<u>19.78</u>	
Imputed express and ticketing cost			4.00

General and Administrative
Expenses

Including office salaries,
office supplies,
pensions, welfare,
postage, stationery,
heat and light

	<u>4,557,048</u>	<u>10.64</u>	
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Depreciation Expenses

Including garage, stations,
revenue equipment,
furniture, garage
equipment

	<u>1,580,394</u>	<u>3.69</u>	2.00
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Traffic and Advertising Costs

Including salaries, publishing
schedules, printing
tariffs, direct
advertising

	<u>1,098,185</u>	<u>2.56</u>	
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Operating Taxes and Licence
Expense

Including fuel tax	1,168,149		
licences	522,652		
real estate	435,166		
operating rents	1,158,739		
other taxes	<u>699,434</u>		
	<u>3,984,140</u>	<u>9.30</u>	<u>8.28</u>

Recap

Transportation	18,002,090	42.04	42.04
General and Administrative	4,557,048	10.64	-
Depreciation	1,580,394	3.69	2.00
Traffic and Advertising	1,098,185	2.56	-
Insurance and Safety	992,223	2.31	2.31
Maintenance	5,556,743	12.97	12.97
Station	8,471,907	19.78	15.66
Licences, etc.	3,984,140	9.30	8.28
Gain on Sale of Assets	<u>(254,759)</u>		

Total Costs	<u>\$43,987,971</u>	<u>103.3</u>	<u>83.26</u>
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Source: Based on AMTB, 1978b, Exhibit 197. The costs include operating data for Greyhound Lines of Canada, Eastern Canadian Greyhound and Canadian Coachways.

- Notes:
1. CPM is Cost Per Vehicle Mile.
 2. ICPVM is Incremental Cost Per Vehicle Mile.
 3. This column totals \$15,885,511. See discussion in text.

dollar costs, system cost per mile (CPM) and an estimate of elements which should be included as incremental costs associated with offering any service on any given route. The first two columns were taken directly from exhibit 197.

There are some major mathematical errors in Table 8 which lead to an overstatement of cost per mile (CPM). The CPM column apparently is derived by dividing each total by 42,822,000 miles. This should yield 26.55 cents, not 30.32 cents, for drivers' wages and 4.80 cents, not 5.96 cents, for fuel. These costs are understated, therefore, by 4.93 cents.

However, there is another problem. The total for transportation costs of \$18,002,090 is incorrect. It should be \$15,885,511. Correspondingly, total transportation cost should be 37.10 cents, not 42.04 cents.

These errors cause Greyhound's system cost estimate of 103.3 cents per mile to be overstated by five per cent. It is a sad commentary on the regulatory boards in Ontario and Alberta that neither discovered this error. It is possible, of course, that the totals for drivers' wages and fuel were simply typed incorrectly. Nevertheless, the regulatory boards should have found the errors. In the analysis that follows, Greyhound's 103.3 cent per mile estimate of system-wide costs is accepted with reservation.

It should be noted that Greyhound defended the \$1.03 average cost per vehicle mile estimate in the PWT hearings as representative of costs in all districts. In its decision, the board expressed the view that these costs were probably overstated in the case of Alberta since fuel tax and licensing costs were substantially lower in Alberta. On the other hand, Alberta imposed a seat tax which was averaged into the \$1.03. The seat tax in part offset the advantages presented by the lower fuel and licence costs. The yields from the seat tax for the four years 1974 to 1977 were \$301,001, \$321,716, \$345,620 and \$357,067 (AMTB, 1978b, ex. 81).

These costs may not have been as low as they would have been under efficient management. Gillen and Oum conclude that Greyhound suffers slight diseconomies of scale (1981, p.89); however the question is left unresolved here. It is clear that under competitive conditions all carriers should be at least as efficient as Greyhound. The question of whether expenses per vehicle mile are as low as possible given the equipment mix and the route system is also left unresolved for now.

The third column is the most interesting and is

likely to be most controversial. If these 1976 data are simply taken at face value and all costs are considered, a break-even passenger load can be calculated given the average fare per mile yield for Alberta and the average revenue contribution from package express.

The board suggested that 73 cents per passenger mile of passenger revenue should be viewed as the maximum amount required for a route to break even. That figure is simply Greyhound's system-wide average cost per route mile of \$1.03, less their system-wide average package express revenue per mile of 30 cents. Using that generous test, the Alberta board estimated that Greyhound failed to break even on 16 per cent of its route miles. Table 9 replicates part of the board's study. Using that most generous method for estimating break-even revenue, Greyhound experienced a shortfall of \$507,504 in total on the 22 routes that failed to break even. Since Greyhound's total revenue from passenger ticket sales and package express in Alberta in 1976 was \$15,762,363, this subsidy represented only 3.2 per cent of total revenues. Indeed, the amount of revenue required for cross-subsidization was extremely small. Furthermore, the seat tax revenue collected from Greyhound by the provincial government in 1976 was \$345,620. The revenue from the seat tax covered over two-thirds the amount which should have been required to subsidize service in the province. Given that the highest average load on any of these routes was 14.90 passengers, it is likely that many of these routes could have been served profitably with smaller vehicles.

The preceding estimates are, however, probably above Greyhound's break-even figures if average variable cost is used and therefore overstate the extent of cross-subsidization. The important question for Greyhound is whether the service provides sufficient additional revenues to compensate for the additional or incremental costs which are incurred by offering the service.

The column headed ICPVM in Table 8 isolates reasonable measures of incremental costs per vehicle mile in Greyhound's system in 1976. All measures of total transportation costs, insurance and safety expenses and maintenance expenses have been retained. Since new service usually requires the use of a commissioned agent and does not add to terminal costs, terminal costs are not included. Commissions paid on ticket sales and on express are included as incremental costs. As well, ticket and express costs of 4 cents have been imputed to company-owned terminals. In all likelihood, no extra staff would be required for handling a given low-density route. Therefore, 4 cents is a generous estimate for 1976. Of the 3.69 cents per mile depreciation

Table 9

Routes in Alberta Possibly Incurring Losses, 1976

Route	Revenue required	Actual revenue	Loss
Red Deer - Calgary	\$58,656	\$37,042	\$21,614
Ft. Macleod - Lethbridge	14,334	4,438	9,896
Oyen - Calgary	120,548	103,044	17,504
Banff - Calgary	9,217	3,977	5,240
Calgary - Waterton	26,150	17,230	8,920
Calgary - B.C. border	61,341	53,358	7,983
Edmonton - Alliance	21,139	13,437	7,702
Edmonton - Barrhead	38,071	29,831	8,240
Edmonton - Hardisty	65,127	47,641	17,486
Edmonton - Lodgepole	67,093	46,597	20,496
Edmonton - Macklin	116,354	98,821	17,533
Edmonton - Marwayne	101,044	57,304	43,740
Edmonton - Slave Lake	110,972	72,056	38,916
Peace River - Grande Prairie	71,898	52,692	19,206
Red Deer - Rocky Mtn. House	64,317	35,331	28,986
Grande Prairie - B.C. border	91,842	63,912	27,930
Donnelly - B.C. border	75,448	28,732	46,716
Edmonton - Stettler	71,858	63,491	8,367
Calgary - Stettler	85,333	75,514	9,819
Red Deer - Consort	85,411	39,196	46,215
Peace River - NWT border	185,598	131,921	53,677
High Prairie - Peace River	<u>97,297</u>	<u>55,979</u>	<u>41,318</u>
	\$1,639,048	\$1,131,544	\$507,504

Source: Calculations based on AMTB, 1978b.

charge, 2 cents of revenue equipment is assumed to be a reasonable proportion of total depreciation charges. Since new terminals are not needed for incremental service, the real estate tax component in operating taxes and licence expense is deleted and that measure reduces to 8.28 cents per mile. Thus, total incremental costs per bus mile are estimated at 83.26 cents per vehicle mile.

This compares well with Gillen and Oum's estimate of an industry-wide marginal cost per vehicle mile of 87.4 cents in 1976-1977 (1981, p.124). Given that in 1976 package express contributed an average of 34 cents per vehicle mile system-wide for Greyhound, on scheduled route buses carrying passengers, then the incremental passenger revenue required by Greyhound to break even on a given route was 49.26 cents per vehicle mile. However, Greyhound argues that system-wide -- including charter buses which carry no parcel express -- parcel express per bus mile in 1976 was 30.3 cents. Their lower figure is used here and the break-even point is defined as 53.26 cents per vehicle mile.

Greyhound faced uncovered incremental costs of only 53 cents per vehicle mile in 1976 if conservative estimates of parcel express revenue are used. At 4.3 cents per passenger mile, a conservative (low) estimate of Greyhound's average route yield in Alberta in 1976, Greyhound required only 12.4 passengers to break even on a route.

As revealed in Table 10, there were 13 routes which did not break even using this test of 53 cents passenger revenue per vehicle mile. The revenue shortfall was \$122,232. This represents less than one per cent of Greyhound's Alberta passenger and parcel express revenues. It also represents less than one-third of the revenue generated by the Alberta seat tax in 1976. Existing service could have been maintained with very small subsidies and competition could have been permitted on the entire system. No new taxes were required to maintain the existing service.

In these 13 cases, the average passenger load per trip measures were 5.1, 6.1, 7.8, 7.9, 9.0, 9.2, 10.0, 10.3, 10.6, 10.6, 11.7, 11.9 and 12.1. Clearly, these passenger loads did not require the service of a 39- or 47-seat coach. It is also clear that smaller buses could have serviced the 9 routes which had Lethbridge, Calgary, Red Deer or Edmonton as one of their termini. The use of smaller, more appropriate equipment could have made all 9 of these routes viable economically. It is also possible that service frequencies are higher on some of these routes than is necessary and this results in very low load factors.

Table 10

Unprofitable Alberta Routes, 1976

Division number	Route	Passenger revenue required	Actual passenger revenue	Distance (miles)
502	Red Deer - Calgary	\$42,586.03	\$37,042	81
616	Ft. Macleod - Lethbridge	10,407.08	4,438	29
650	Banff-Calgary	6,691.78	3,977	65
651	Calgary - Waterton	18,985.66	17,230	146
8700	Edmonton - Alliance	15,347.74	13,437	132
8709	Edmonton - Lodgepole	48,711.24	46,597	104
8711	Edmonton - Marwayne	73,360.48	57,304	171
8712	Edmonton - Slave Lake	80,568.48	72,056	176
8718	Red Deer - Rocky Mtn. House	46,696.18	35,331	52
8801	Grande Prairie - B.C. border	66,679.83	63,912	55
9102	Donnelly - B.C. border	54,777.62	28,732	120
9402	Red Deer - Consort	62,011.06	39,196	149
9502	High Prairie - Peace River	70,639.99	55,979	79
Totals	13 routes	\$597,463.17	\$475,231	-

Source: Calculations based on AMTB, 1978b, Exhibit 90.

There are good reasons for believing that Greyhound would not have terminated service on most of these routes even if it had had the option. The importance of repositioning equipment to Greyhound or to any operator has not received emphasis here so far. Very few companies today establish a schedule to service only one community. Scheduled operators want to use equipment as many hours per day as possible. This frequently requires linking several routes together into a master route system. It is then extremely expensive to terminate service on one segment since the bus would likely have to travel over that segment anyway. Additionally, while Coachways (purchased by Greyhound in 1969) had many routes which involved a bus being sent out from a major centre during the day and the bus and driver staying overnight at a small rural community, Greyhound early on established complete sub-systems which ensured that very few buses or drivers stayed overnight at the small town end of a route. After integration with Coachways, it tried to move Coachways' scheduled service routes into sub-systems. In some cases this was impossible; hence the Edmonton-Marwayne and Edmonton-Lodgepole routes.

Another factor which must seriously be considered is the frequency of service to some of these communities. While the Calgary-Waterton service was seasonal, as was the local service on the Division 650, Banff-Calgary, all other routes received at least once a day round-trip service six days a week and, in most instances, seven days per week. Service to many of these smaller communities -- links to major communities -- is frequently defended as a social necessity since older people in these communities need to come into the major cities for a day of shopping, medical or dental treatment or to see relatives. This is not the place to debate whether this is a necessary social service or whether this is the appropriate way to meet those needs. For the sake of discussion, these are accepted as legitimate social needs. However, they can be met with service frequencies of fewer than six or seven times per week. A three-day per week service would clearly be adequate. It is difficult to justify the commuter service which a very few workers enjoy from these routes. Indeed, it is doubtful that many of the passengers on these routes are commuting to and from work. With reduced service, it is questionable whether any of these routes would need to be terminated. Another alternative would be to service these communities more frequently with much smaller vehicles, including the possibility of a regular taxi service in one or two cases.

A brief examination of the specific routes listed in Table 10 is in order. The Division numbers are those used by Greyhound in its 1977-1978 submission to the Alberta Motor Transport Board and reproduced in Tables 4 and A-5.

How could the Red Deer-Calgary route have been unprofitable? It was one-half of the most profitable route in the province? Division 502 was unprofitable because it was one segment of a very complex routing system which had a bus leave Edmonton on a four-day cycle. Since that bus would have been forced to deadhead (travel empty) between Red Deer and Calgary if 502 was not offered, there is little likelihood that 502 would have been discontinued.

Fort Macleod-Lethbridge -- Division 616 -- was what is known in the industry as a connector route on the Southern Trans-Canada Highway. Again, it was an important part of a route which had to be transversed to reposition some buses coming from Toronto.

Banff-Calgary was a local service that was taken over from Brewster and became part of a larger system of routes extending into the Okanagan in British Columbia.

Calgary-Waterton was basically a loser. However, some charter fares may not be included in the revenue shown for this route.

The routes to Alliance, Lodgepole and Marwayne were all old Coachways runs and are not important parts of sub-systems. On these routes, frequencies could have been reduced.

The Red Deer-Rocky Mountain House route received two return trips per day. It was part of a larger system and if it was not profitable to service the route as part of a system, the frequency could probably have been reduced to once per day.

Red Deer-Consort does not seem to be a significant part of a larger system. It was, and is, a Coachways' service.

The Slave Lake, Grand Prairie, Donnelly and High Prairie services are all segments of a complex system of routes in northwest Alberta and northeast British Columbia. In each case, they are important components of complete systems.

This analysis has not considered the value to Greyhound of the revenue generated for other routes by passengers who travel on these money losing routes since the data base necessary to make these estimates was not available. Based on discussions with industry people, the feeder value seems small except for the northwestern Alberta routes.

Analysis of the 50 divisions or routes operated in Alberta by Greyhound and its subsidiaries indicates that there is very little evidence of cross-subsidization. There is clearly no cross-subsidization occurring on a large scale. It must therefore be concluded that the public subsidy necessary to ensure the maintenance of a high level of service to every community now serviced in Alberta by Greyhound would be nominal -- certainly well under \$100,000 in 1976 and less than half of one per cent of revenues.

It had been intended to replicate the Greyhound study for at least one other system. However, it was not possible to obtain data from other Canadian carriers comparable to that found for Greyhound in Table 4. Therefore, an alternative method was used to estimate the extent of cross-subsidization. For many routes some monthly data was obtained for vehicle miles per route, fare passengers carried and revenue earned.

The incremental revenue per vehicle mile necessary to justify Greyhound's offering service is estimated at 53 cents for 1976. Since many companies do not enjoy as high a revenue per vehicle mile from parcel express as Greyhound, 10 CPM is added to this 53 CPM. Conceding that some costs in other jurisdictions may be higher than Greyhound's (though Gillen and Oum suggest not much higher), any reasonable cost differences are more than compensated for by increasing 63 CPM by ten per cent to 70 CPM.

The analysis was based on September 1976, neither one of the worst nor one of the peak traffic months. Monthly reports were examined for seven carriers which served Ontario, Quebec and the Maritimes. Unfortunately, four did not report revenue by route as directed by Statistics Canada. Of the remaining three, the revenue shortfalls amounted to 1.9 per cent of passenger operating revenues from scheduled service. If these three firms are representative, then the subsidy required may need to be slightly greater than the estimate based on Alberta. It should be noted, however, that the incremental threshold break-even revenue figure (70 CPM) used for these carriers was 32 per cent higher than the Alberta figure (53 CPM). Also the carriers did not report data for all routes.

There are other reasons for believing that the results for Alberta are paralleled in other provinces. Regulatory boards in all provinces have usually allowed carriers to reduce the level of service on occasion or to eliminate service. The carriers have also found it possible to sell uneconomic routes. A typical case involves the carrier selling the authority for a route and a very old vehicle to an employee interested in going into business for

himself. If the new firm goes bankrupt, the large carrier has no continuing responsibility and service is terminated. It should be noted that selling off losing routes has not been common in Alberta.

Finally, in a recent study of Gray Coach, Canada's third largest carrier, John Palmer (1980) has concluded that the extent of cross-subsidization is likely far less than is commonly believed, though he does not measure it. He does note that in the Gray Coach-Greyhound hearings in 1976-1977, Greyhound spokesmen maintained that an average firm in the industry could realize a normal rate of return on most of the rural routes in Gray Coach's system.

The potential savings available from the use of smaller vehicles on routes with low passenger loads have also been studied. Detailed analysis of operating costs with senior executives of PWT leads to the conclusion that the differences in costs of operating different size vehicles are not large and the equipment options available are limited. It is now possible to buy a 30- to 32-seat bus, the Orion, which is a Canadian design produced by MCI in New Mexico. The purchase cost is substantially lower than a 47-seat MCI or Prevost; however, that purchase price differential -- \$85,000 versus \$135,000 in early 1980 -- is only part of the story. The fuel cost per vehicle mile and driver cost would be virtually the same. Some other costs would be lower. Clearly, as finance costs have become more important with rising interest rates in 1980 and 1981, these other costs cannot be viewed as insignificant. However, Greyhound is not buying this bus. PWT has concluded that the difference in cost per vehicle mile (CPVM) will be in the order of 10 to 15 per cent. For that saving, the bus company will sacrifice flexibility.

There are other mini-coaches available in the 20- to 30-seat capacity range but most of these are custom-produced coaches which are modified vehicles usually sold as motor homes or recreation vehicles. The operating cost savings have been estimated by PWT at 10 to 20 per cent per vehicle mile. For these modest savings the buyer loses flexibility and has a less reliable and less durable vehicle.

Small vans, such as the one used by PWT in servicing Fort McKay-Fort McMurray in Alberta, with a capacity of 14 to 16 obviously provide some savings or PWT would not be using them. However, the decision to use a van could, in part, have been a reflection of the tight market for coaches at the time when service was initiated. There are some operating and capital savings; however, these are partly offset by the higher costs of gasoline relative to

diesel fuel and the relatively short life of the vehicle. Mechanically, little work typically is done on a diesel until it has been used for 300,000 miles. PWT estimates that its van will have to be written off after two years and 150,000 miles. The use of a van also involves a sacrifice of parcel express capacity since these vehicles rarely have the space necessary for parcel express.

On balance, on smaller vehicles, fuel, driver and insurance costs per vehicle mile are comparable to coaches; however, the capital costs and other operating costs are lower. PWT suggests that the costs are 10 to 15 per cent less per vehicle mile. The author suspects -- but has not done the necessary studies to verify this -- that the cost difference is greater. Finally, it seems highly probable that the 10 to 20 per cent savings would have been sufficient to make service viable to many of the 13 communities in the previous study.

Financial Performance of the Industry

There are many methods available for measuring the financial performance of an industry depending on the purpose of the study at hand. Many measures that have considerable interest to investors may be of little use to economists trying to evaluate the performance of an industry in a social sense. Consequently, the focus here will be on a limited number of financial ratios which provide meaningful insight into industry performance.

A measure frequently used by regulators to determine the adequacy of fare levels is the operating ratio, which is simply total operating expenses divided by total operating revenues times 100. Unfortunately, this ratio is of little assistance in answering key questions. What is the appropriate ratio? Are total operating expenses reasonable? Are ratios for firms operating in different regulatory jurisdictions comparable? On balance, the only value likely to be derived from operating ratios is some guidance as to trends in profitability in the industry. However, much better measures are available to identify industry trends.

Measures of return on invested capital and return on stockholders' equity should provide insight into the operation of the industry over time and permit a comparison of the industry's profitability relative to other less regulated Canadian industries. Risk should be lower than in a competitive industry since entry is restricted -- indeed, it is effectively blocked. Therefore, it is reasonable to expect that the rate of return in the regulated industry should be lower than that experienced, on average, in

competitive industries. In the case of the intercity bus industry, comparisons can also be drawn with the American industry counterpart due to the similarities of the two industries and the dominance by Greyhound in both countries.

In an unpublished study, Rick Partridge of Transport Canada has undertaken an exhaustive comparative study of the financial performances of the Canadian industry with other Canadian and American industries. That analysis and calculations performed for this study from Statistics Canada reports confirm the earlier observation that the regulation of IBSs tends to be passive. The profit rates, however measured, of the privately owned bus companies in Canada are much above the levels found in other Canadian industries. It is no surprise that some of the carriers, such as Greyhound, on occasion charge less than allowed price fares. Assuming Greyhound is representative of the group of private carriers, its profits would become embarrassingly high if it charged allowed fares.

Tables 11 and 12 permit a comparison of rates of return after taxes on common equity and sales for the 13 privately owned Canadian IBSs, Class I for-hire truck firms, Greyhound U.S., Trailways U.S. and several other Canadian industries. The Canadian intercity bus companies are enjoying profit rates in most instances three times the level of the average Canadian firm in the representative industries included in the analysis. Clearly, these profit levels were not intended by provincial governments when they made a decision to regulate the industry. A quick reference to the statutes leaves little doubt that the companies were to earn a fair return on invested capital.

What is suggested by these data is that the protected monopoly positions of the carriers have been exploited to the detriment of Canadian consumers. This report's review of the regulatory approach in the industry suggests that this conclusion should not come as a surprise. Ignoring the impact on costs and welfare effects of monopoly in this industry, it is fair to conclude that there was a substantial transfer of purchasing power over the four-year period, 1974 to 1977. It should be recalled that the consumers involved tended to be predominantly the young, the old and the poor.

The findings of the financial analysis should be closely examined. It is fair to conclude that this enhancement of prices, in most instances, is possible only because of regulatory barriers. The analysis of costs relative to prices on specific routes should confirm these transfer measures.

Table 11

Rate of Return on Equity (After Tax)

	1975	1976	1977
Privately owned			
Class I and II IBSs (13 firms)	37.0	22.9	34.7
Class I truck carriers	25.0	22.7	19.7
All truck transportation	7.8	9.1	-
U.S. Class I carriers-IBSs	12.5	8.3	-
U.S. Trailways	12.6	6.7	-
U.S. Greyhound	12.3	8.7	-
Canadian:			
Total manufacturing	10.9	10.1	-
Transportation equipment	11.6	14.4	-
Metal fabricating	15.5	12.9	-
Mining	10.1	10.4	-
Wholesale trade	11.8	11.3	-
Retail trade	22.7	21.0	-
Finance	5.9	6.0	-
Services	11.5	11.5	-

Source: Statistics Canada data. Analysis by R. Partridge,
Senior Analyst, Transport Canada.

Table 12

Profits as a Percentage of Sales (After Tax)

	1975	1976	1977
Privately owned			
Class I and II IBSs (13 firms)	24.6	15.6	16.2
Class I truck carriers (all truck transportation)	3.1	2.3	1.5
U.S. Class I Inter-city bus lines	6.0	3.9	
Canadian:			
Total manufacturing	3.3	2.7	
Petroleum and coal	6.7	7.2	
Mining	12.1	12.5	
Wholesale	1.9	1.9	
Retail trade	3.6	3.2	
Services	5.6	6.0	

Source: Statistics Canada data. Analysis by R. Partridge,
Senior Analyst, Transport Canada.

The Size and Composition of Bus Fleets

It was not possible to develop a methodology appropriate for measuring optimal fleet size or composition. It was possible, however, to isolate qualitatively the impact of regulation on fleet size and composition.

Under existing regulatory systems, the scheduled intercity lines find it desirable to overinvest in coaches. Greyhound executives testified, for example, that in 1976 the company maintained a fleet of 100 buses for "overflow" use and a staff of 300 extra drivers for overflows. Most of these buses sit idle much of the time and typically operate with very low load factors. Since the bus drivers are paid, in part, for being available on a standby basis, their standby fees must be included in system-wide average costs.

Why does a company offer overflow service at such a high cost? It is not normally offered in competitive industries but regulated industries often operate under very different and very expensive rules. The answer to the question is found in the sensitivity of regulators and operating authority owners to charges of inadequate service. The provision of overflow service, even at high cost, insulates existing authority holders from the threat posed by potential competitors who are ever anxious to demonstrate the inadequacy of service capacity and thus the need for competitive authorities. The existence of very high profits in the industry permits this kind of waste.

Based on Greyhound's own measure of its overflow bus fleet size at 25 per cent, it can reasonably be inferred that at least half of these buses are not required for standby for use due to mechanical failure of operating vehicles. Thus, a conservative estimate of the regulation-induced overflow effect results in an inflation in the size of the bus fleet by 12 to 15 per cent.

The question of the effect of regulation on the composition of the bus fleet is more complex and problematic. In the first place, bus manufacturers respond to the equipment mix demanded by regulated companies. Furthermore, the only major manufacturer is owned by Greyhound. Thus, the equipment mix available is itself a function of regulatory mandate. The type of equipment which would have been made available to the industry in the absence of economic regulation could have been very different from that found under restrictive regulation.

As has been noted, under existing regulatory regimes the Canadian intercity bus companies have opted to service all communities with very large modern buses. Even

on routes where the average load is only seven to ten passengers, the companies have chosen to buy and operate 39- to 47-seat coaches. They have moved over the last decade to phase out all smaller and mini-buses. In effect, under regulation, the Canadian bus lines have opted to provide premium quality and quantity service, at least so far as the equipment is concerned.

This is, in part, a result of regulation. Under competitive conditions bus lines would be forced to adopt a mix of equipment. Since some of the low-density routes are also for relatively short distances, the need for 39- or 47-seat roadcruisers has to be questioned. It seems likely that, under competitive conditions, short routes with low traffic densities would be served by very different vehicles. The carriers would have to move to a mixed fleet or else competitors, using mixed or small specialized fleets, would quickly take over a substantial portion of many markets.

Under regulation, the major carriers have not found it in their interest to adopt mixed fleet strategies. Greyhound can again be taken as representative in that respect. Tables A-6, A-7 and A-8 in the Appendix provide statistics on the composition of Greyhound's bus fleet as of February 1, 1978. The 13 coaches with 16 to 20 seats were all purchased prior to 1966 and were used only for package express. Ten coaches with 30 seats were purchased in 1971 as combos (regular 47-seat MC7 coaches which were converted to permit more space for package express). They were designed and used principally for transporting cargo. Hence their use was not determined by passenger traffic considerations but by demand patterns for package express. The combos have 732 cubic feet of parcel space and were used only on select routes. During 1976-1977 they were used on Winnipeg-Vancouver, Calgary-Edmonton, Calgary-Winnipeg (night), Edmonton-Peace River and Edmonton-Radium-Vancouver (night) routes when parcel express demand was sufficient (AMTB, 1978b, ex. 105, 119 and 135).

The only coaches designated primarily for passenger use are 39 seats or larger. Greyhound purchased 171 passenger coaches between 1969 and February 1978. Of these, 12 were MC5Bs with 39- to 43-seat configurations. All of the remaining 159 coaches purchased were MC7s or MC8s with 47-seat configurations.

Of the 64 coaches owned and operated by Eastern Canadian Greyhound Lines Limited and Canadian Coachways (Alberta), none was smaller than 39 seats and none had a seating configuration of fewer than 39 seats. Eastern Canadian Greyhound has bought only 43- and 47-seat MC8s

since 1970. Coachways has only purchased 46- and 47-seat coaches since 1968.

Greyhound has been the focus of this report for reasons which have been outlined previously. However, confidential reports to Statistics Canada reveal that, in aggregate, Greyhound is representative of the Class I and II bus lines. They have all invested only in very large rolling stock. Why?

The economics of the industry do not adequately explain the equipment mix. The failure to use a wider mix of equipment is explained largely by regulation. First, with existing fare regulation, there is evidence, examined previously, that the 39- and 47-seat buses can break even with very low load factors. With profits very high, it might reasonably be asked why the lines should concern themselves with the selection of an economically optimal fleet. Second, the review of hearings and decisions on applications for operating authorities has revealed that regulators are particularly sensitive to the quality of service being offered; consumers rarely are critical of fare levels. Interviews with regulators leave no doubt that the main dimensions of service quality are type of vehicle, frequency of service, maintenance of schedules, courtesy of personnel and settlement of claims.

If this report is correct in contending that the number of routes serviced at a loss is very small, then it is not in the interest of a major line to risk the establishment of a competing operating authority. Competitors have a tendency to be allowed, with time, to expand. If a route is not serviced with a top-of-the-line vehicle, then an application may be made to the regulatory agency by a potential competitor for an operating authority. Public convenience and necessity can be demonstrated since the potential competitor can offer a different and "first-class" service to a community. In addition, the regulatory agency may face the political problems which are raised by frequent complaints from residents of smaller communities that they deserve first-class service. It is interesting to note that when PWT proposed a competitive service between Calgary-Edmonton-Fort McMurray, it also proposed a bus-van service between Fort McKay and Fort McMurray. That latter application was not opposed by Greyhound. Since the regulatory environments in most jurisdictions in North America are similar, it is not surprising that the bus manufacturers have adapted their production to meet the needs of the regulated firms. The regulatory priorities have determined the dimensions and essential characteristics of the product offered by manufacturers.

The regular use of 39- and 47-seat coaches on routes in the west where there is no rail competition suggests that those coaches are not used due to the intermodal competitive threat presented by rail. The actual size of the vehicle should not make a great difference to price-sensitive automobile users who might consider bus. Those who do not own automobiles clearly would not be influenced by bus size. Indeed, demand studies have not elicited comments on vehicle size, though some have elicited comments on leg room. The tendency of carrier management to perceive demand as very price inelastic would seem, other things staying the same, to lead them to select a mix of vehicles. However, they do not. Regulation dictates a top-of-the-line policy for major carriers.

Thus, this type of behaviour by firms with operating authorities is to be expected under regulation. Of course, all system costs are inflated as a consequence; fares are inflated needlessly and ridership reduced. Ironically, the excess capacity leads the regulatory authorities to believe that competition would only aggravate the situation.

Externalities

An analysis of externalities, or spillovers, constitutes an important component of any industry performance study. A review of the literature on the economics of the intercity bus industry suggests that externalities should not be an important consideration of industry performance in this instance.

By and large the carriers are not directly subsidized, unlike other modes of transportation. Indirectly, a subsidy is provided through the provision of publicly constructed and maintained roadways. The highway user taxes of various types -- mainly licences and fuel taxes -- which the carriers pay may not fully compensate the public for the cost of construction and the damage done to roadways. However, this is not clear; the incremental cost to the public of permitting the use of roadways by buses cannot be significant. And the roadway systems were not built, nor are they maintained, primarily for the use of buses. Indeed, the damage done to roadbeds by the buses is probably less than the costs which would be imposed if a substantial number of bus passengers used their personal vehicles in place of the bus.

From an environmental standpoint, buses are more fuel efficient per passenger mile than diesel rail or commercial jet, as shown in Table 13. They are -- depending on the number of passengers transported -- also more fuel

Table 13
Analysis of Comparative Fuel Efficiency

	(1) <u>Fea</u> Route passenger miles per gallon	(2) <u>Boeing</u> Great Circle passenger miles per gallon	(3) <u>Other</u> Route passenger miles per gallon
Mode:			
Airplane	15	18-28	14-21
Automobile	48	25-21	25-38
Intercity bus	118	90-162	78-125
Cross-country train	48	14-64	46-150+
Assumptions: Load factor	Unknown or various	Public modes: 60% load factor Automobile: Function of trip length	Unknown or various
Distance	Unknown	700 St. miles	Unknown

Source: The Boeing Commercial Airplane Company, Intercity Passenger Transportation Data, Energy Comparisons, Vol. 2, May 1975, p.71.

Notes:

1. Federal Energy Administration, Project Independence Report, November 1974.
2. Estimates made by The Boeing Commercial Airplane Company.
3. Estimates presented in Robert D. Nutter, A Perspective of Transportation Fuel Economy, Mitre Corporation, MTP-396, April 1974, References 1,2,4,5,6 and 11.

efficient than the average automobile on a passenger mile basis. In intraurban and interurban settings, buses reduce traffic density -- congestion -- relative to the automobile and are to be preferred from a social standpoint to the use of automobiles.

It must be concluded that the industry itself does not impose negative externalities on the public. Any consideration of externalities should focus on the regulation of the industry. Regulation has imposed negative externalities or social costs. If regulation has resulted in substantial inflation of fares, then the very low load factors on buses have meant an enormous waste of fuel and capital. The inflation of fares, by inducing travellers to use automobiles -- given that automobile usage is heavily subsidized -- has resulted in further fuel wastage and misallocation of productive resources in favour of automobile production.

Technological Change

The opportunities for technological innovation in the intercity bus industry appear to have been limited. The development of new vehicles is largely out of the hands of management of Canadian operators, with the exception of Greyhound. Innovation is possible in the interior design and seat configuration of coaches. Innovative scheduling opportunities no doubt exist as well.

As noted elsewhere, many of the Canadian bus lines, including Voyageur, Greyhound, Gray Coach and Grey Goose, have experimented with special luxury class service on their buses. In general, these experiments have been failures. There has not been a single case, to date, of luxury service being offered at a profit. This has also been the experience in the United States where both Greyhound and Trailways have made major efforts to develop a market for these types of service.

While some efforts have been made to upgrade the quality of bus service, the industry has been very slow to upgrade terminals. This has suggested, at times, that the bus companies were prepared to assume that their service only appealed to captive customers or to customers whose incomes were so low that the condition of terminals was not of consequence. It is revealing to note that when PWT initiated its Red Arrow luxury service in Alberta, it had no desire to share terminals with Greyhound. Its preference for passenger service was to use hotels which provided an entirely different image to the public of the nature of bus service. The difference is obvious when it is considered that some of the highest-income air travellers frequently

commute from airport to hotel and hotel to airport by bus.

Still, few major innovations have been undertaken by the intercity bus operators in Canada. Even the use of larger buses poses problems (Taylor, 1978). MCI in Manitoba, North America's largest intercity bus manufacturer, lost a substantial amount of money on a very large bus it built a few years ago due to its inability to obtain approval from state regulatory authorities in many of the American states for the larger vehicle. Larger vehicles are available from European manufacturers, but their economics are questionable. The increased per seat capital cost of most of these larger vehicles offset the savings from improved driver and vehicle utilization. Due to infrastructure and operational problems, most carriers have ruled out the use of anything larger than single-deck articulated vehicles. On many routes, the loads, as has been noted, are far short of those required to fill 39- or 47-seat coaches. These loads do not provide any incentive for the carriers to purchase larger articulated units. This reluctance is intensified by management's tendency to believe that frequency of scheduled service is the key to success. There is also concern on the part of management that the bus drivers' labour organizations would require extra staff on these vehicles, thus negating potential cost savings.

Nevertheless, on some routes, such as Voyageur's between Ottawa and Quebec City, at least one consultant has concluded that an annual operating cost reduction in the order of 17 per cent per seat mile would be possible with the use of 81-seat articulated coaches (Taylor, 1978, p.a-24). To date, given the lack of competition in the industry, there has been little need to explore the use of these larger buses which may be cost effective on high-density routes.

The intercity bus industry has also been slow to move toward full reservation systems, preferring to use overload buses to meet demand. This is surprising and is explained only as a consequence of regulation. Greyhound and other major intercity bus companies simply promise anyone who shows up by departure time and buys a ticket at a major centre that he will have a seat. An extra bus and driver may be put on for one passenger. This is obviously unprofitable and results in very low load factors. It only makes sense in a regulated environment. Due to regulation and the management practices it encourages, the industry has been slow to develop computerized reservation schemes which will permit relatively inexpensive reservation systems.

The following chapter measures some of these effects of regulation on the industry's performance.

Chapter VIII

MEASURES OF REGULATORY EFFECTS

The preceding chapters have looked closely at the economics of the intercity bus industry in Canada and analyzed the effects of regulation. This chapter pulls together the threads of an economic theory of regulation in the intercity bus industry and makes some conservative measures of the economic impact of regulation on the industry.

It was noted early in the study that the industry structure is essentially monopolistic. When duplicate operating authorities are issued, price competition is not allowed. Thus, even where two firms exist in a market the provincial regulatory board serves as an industry secretariat to ensure that price competition does not occur.

Drawing on information provided by the regulatory boards and industry officials, various publications on the industry, an analysis of transcripts of hearings and a review of published decisions, some conclusions can be reached about the nature of the regulatory process and its probable effects. The data base was heavily weighted toward the operation of boards in Ontario and the four western provinces since little information was available on the Maritimes. However, there is no reason to believe that regulatory approaches in the Maritimes are, in practice, different from what is described here.

Provincial regulation, with the possible exception of that found in Saskatchewan, is passive. The economic and cost analysis is not sophisticated and rate-of-return analysis does not occur. It is fair to conclude that the regulatory agencies have a very limited interest in bus system performance beyond considering the frequency and type of service. The review of applications for fare increases, in all provinces, focuses on increases in system-wide costs and fare levels in other jurisdictions. In applying for a new operating authority, an applicant must promise to offer a new service or demonstrate that existing service in some way is inadequate.

Regulators are sensitive to consumer complaints. However, consumers typically lack the information and sophistication necessary to complain effectively about fare levels. Fares for a given route for one regulated company can only be compared with fares charged by other companies and on routes within the same system. The consumer knows nothing about costs. Comparisons among companies are difficult since consumers do not know the differences in

operating characteristics among companies. Nor do they know what regulatory differences exist among the provincial jurisdictions. They know nothing about differences in equipment utilized or differences in load factors. Finally, they face a major free-rider problem.

As a result, the consumer can only judge the reasonableness of the fare on a particular route on the basis of system-wide fares for a single company. Thus, to minimize complaints on fare levels, the intercity bus carrier has an incentive to minimize fare taper.

Consumers may also complain about frequencies. The solution to this problem has been to attempt to provide at least once a day service to most communities, whether economically justified or not.

Finally, consumers may complain about the type or condition of the vehicle being used. The carrier has an incentive to use modern 39- to 47-seat coaches, whether justified or not. It should be noted that bus travellers may be unusually passive due to the characteristics of lower-income groups from which they tend to be drawn at present. The activist consumer groups in North America do not draw their strength from lower-income individuals but from the more affluent middle class.

By adopting the preceding policies, the carrier contains the threat to stability presented by the consuming public and ensures that the regulators and elected officials have little to fear from the user groups. However, another type of threat is presented by potential competitors who must prove public convenience and necessity in order to be granted operating authorities. Once granted an authority, there is always the possibility that the new competitor will seek additional authorities. This threat is contained in much the same way as is the consumer threat.

Some service on all routes which promise to cover incremental costs will increase profits and ensure that a claim of absence of service cannot legitimately be made. If the service frequency is at least once a day, six days per week, complaints by applicants for competitive authorities about inadequate frequencies are not likely to stand up before regulatory boards.

If the service is provided by full size, top-of-the-line 39- to 47-seat coaches, then any applicant promising to provide service with better equipment will face a major hurdle. If a large overflow fleet is maintained, then applicants for new authorities will not be able to argue successfully that there is insufficient vehicle

capacity.

Consequently, the regulatory mandate results in 47-seat buses being grossly -- but profitably -- underutilized on a larger number of routes. Part of the problem is explained by the unavailability of an absolute measure of "good" service. Most products or services that can be sold in a market setting possess a mix of features which provide satisfaction to consumers. The decision to buy and the degree to which the customer views the product or service as "good," or a "good buy," is determined not just by this mix of satisfying characteristics but by the price as well. Thus, goodness in a market setting has no meaning except in the context of some price. Many of us would define a Rolls Royce as our first choice amongst cars; few would view it as the best buy or affordable. The regulatory process results in a very high quality service as far as equipment, fleet size and frequency of service are concerned.

There is in the bus industry what amounts to an understanding between the regulated and the regulators: qualitatively good service is to be provided at a price which does not generate an embarrassment of riches. To a limited extent, this type of relationship has been explored by specialists studying the behaviour of other regulatory agencies. It is what might be termed "subtle capture," but the author prefers the concept of a regulatory rapprochement: an understanding is achieved in which the needs of the regulators are appreciated by firms being regulated and the needs of the firms being regulated are appreciated by the regulators. Elected officials are not drawn into the process. The value of excluding them is appreciated by both the regulators and the regulated firms. A fair fare deal for the consumer is not part of the contract.

There is another cost to the consumer in that the policy dynamic at work in a regulated industry frequently prevents the industry from responding to a changing economic environment. For example, a market may only have permitted the operation of a single carrier at one point in time; however, with time, the economics change and traffic grows until, instead of 1 trip per week of scheduled service being offered, 4, 5, 6 or 20 or 200 trips are offered. Now there may be room for 4, 5, 6 or 20 carriers but the regulatory approach freezes the structure of the industry; the need to prove convenience and necessity straitjackets the regulatory authority even if it is inclined to permit a change in the industry structure. Elected policy makers have little incentive to intervene.

The major short-run costs of regulation in the intercity bus industry are related to underutilization of equipment (restricted output) and inflated profits. Analysis, in Table 14, of financial data for the four largest Class I privately owned bus lines (which accounted for 84 per cent of operating revenues of Class I and II privately owned carriers) reveals that these carriers earned after taxes 38.52 per cent on common equity in 1975, 24.37 per cent in 1976 and 40.5 per cent in 1977. As was shown in Table 11, the rate of return after taxes on common equity for the group of 13 privately owned firms was 37 per cent in 1975, 22.9 per cent in 1976 and 34.8 per cent in 1977. As is clear from Table 11, these profit levels are vastly in excess of those enjoyed by other major classes of Canadian industries during those years.

A review of Table 11 reveals that the service and manufacturing industries in Canada, as a group, in 1975 and 1976 averaged less than 11 per cent return on common equity. The American intercity carriers received only 10.4 per cent and Greyhound, U.S., only 10.5 per cent.

Analysis of the data base for Table 11 for 1975, 1976 and 1977 reveals that the after-tax return on equity for the 13 privately owned companies together was 31.2 per cent. A reasonable argument can be made that the profits of these firms were well over double the levels which would occur under competitive conditions. Certainly, an average rate of return after taxes of 15 per cent on common equity over those three years would have been well above average levels in almost all industries. Thus, at a minimum, regulation in the period 1975 to 1977 resulted in overcharging of \$36,311,192 (half of total after-tax profits of \$72,622,385). A halving of profits would also have had the effect of halving corporate income taxes for the three years from \$19,672,363 to \$9,836,181. Thus the average annual savings to consumers would have been \$15,382,457 (one-third of \$36,311,192 plus \$9,836,181. Looking at 1976, a relatively low profit year, consider the effect of halving the return on equity. After-tax profits would have fallen by \$9,840,571 and tax liability would have fallen by \$3,588,865. Operating revenues could have been \$12,429,436 lower. Thus, fares charged could have been reduced by about ten per cent.

However, consider the implication of a fare reduction of ten per cent. Reference was made earlier to the Oum and Gillen study which found a price elasticity of demand coefficient of -1.5 in Canada in 1976. Another study was also cited which made even higher estimates. The 1975 Transport Canada study by Rea, Wills and Platts (1975) of inter- and intramodal demand for intercity transportation

Table 14

Profit Measures for Canada's Four Largest Class I Private IBSs

	1975	1976	1977
Profit after tax	28,123,120	20,142,976	27,582,112
Share equity	72,993,766	82,651,208	68,055,492
Operating revenue	96,885,603	109,546,014	118,663,974
Profit/equity	38.52%	24.37%	40.5%
Profit/operating revenue	29.03%	18.39%	23.24%

Source: Data supplied by Statistics Canada:

Notes: Class I carriers have annual revenues exceeding
\$two million.

services in Canada found, using 1972 data for 72 communities, that the price elasticity of demand for bus service was very high in Canada. On short and intermediate-distance travel, the elasticity coefficient was -2.082.

These high measures of price elasticity conflict with conventional wisdom in the industry. They suggest a very large untapped market for the intercity bus lines. The lower estimate of Gillen and Oum is used in the following analysis.

Consider the chain of events that would occur as prices fell in response, perhaps, to allowing greater competition in the industry. Table 15 presents some calculations of the effect on Greyhound in Alberta. Using data in Table 4, it was calculated that the yield per passenger mile for Greyhound's 50 Alberta divisions was 4.30 cents. This estimate is low due to deficiencies in the way data was assembled for the table. Unfortunately, this is the only source of data for Alberta. System wide in Canada, Greyhound received a yield of 4.66 cents per passenger mile in 1976, but the fare yield in Alberta was less than the system average. Thus, the actual yield was between 4.30 cents and 4.66 cents. In the following analysis 4.30 cents is used. The results are essentially the same regardless of the initial fare level.

In Alberta, in 1976, the average load was 22.5 passengers and the system parcel revenue average was 30.2 cents per mile. Total passenger revenue yield per vehicle mile in Alberta was 96.75 cents. The final column (the constant yield column) in Table 15 shows the number of passengers required to yield 96.75 cents at an average yield per passenger mile of 4.30 cents.

Returning to column one, the fare is allowed to fall about ten per cent -- over the range -- from 4.30 CPM to 3.89 CPM. However, as the fare falls, the average load rises from 22.5 to 26.15. Since the elasticity of demand for parcel express service is unknown, it is left unchanged. Because more people are now riding the bus, total yield per bus mile rises. Similar effects of further reductions in fares to give yields of 3.52 CPM and 3.18 CPM are considered. At a fare yield of 3.18, the average load would be 35.3 passengers or 80 per cent on a 44-seat coach or 75 per cent on a 47-seat coach. It is probably not practical to expect load factors to rise very much above that level. Note, however, that the constant yield column reveals that a load of 30.38 passengers -- a 69 per cent load factor on a 44-seat coach or 65 per cent on a 47-seat coach -- would still yield the 96.75 revenue per vehicle mile with which this exercise started. Thus, the average fare could have

Table 15
Fare Yield Analysis for Greyhound Lines,
Alberta Divisions, 1976

Yield(CPM)	Passengers	Parcel revenue (CPM)	Total yield (CPM)	Load needed for 96.75 CPM yield
4.30	22.5	30.2	96.75	22.5
3.89	26.15	30.2	101.70	24.9
3.52	30.38	30.2	106.94	27.5
3.18	35.30	30.2	112.25	30.4

Table 16
Income and Welfare Effects of
Regulation on 13 Privately Owned Carriers

Year	Income effect	Welfare effect	Total costs
1975	\$21,272,813	\$4,536,895	\$25,809,708
1976	23,341,093	4,978,000	28,319,093
1977	28,236,850	6,022,128	34,258,978

Note: Based on analysis of 13 Class I and II privately owned Canadian intercity bus carriers, excluding Canadian Coachways.

been reduced by 26.07 per cent.

The potential average fare reduction from introducing competition rises dramatically when the high price elasticity of demand is considered. An analogous effect was witnessed in the American airline industry in the period from 1976 to 1978.

Will costs rise? In effect no new capital is required. Neither drivers' costs nor fuel costs will rise. Total handling costs will rise but PWT, among others, estimates the marginal cost of one additional passenger to be under one cent per vehicle mile (CPVM). Any increased handling costs can be more than offset by eliminating overflow service, less frequent service on some little used routes and developing better fleet mixes.

These estimates, derived from publicly available documents on Greyhound Lines, can be used to extrapolate for the group of privately owned lines. First consider the effects of deregulation on service on low-density routes. In Chapter VII it was estimated that, at most, a tax of one-half of one per cent of operating revenues would be required to subsidize uneconomic service. It was concluded that there was very little cross-subsidization.

Table 16 presents estimates of the effect of deregulation on operating revenues for the 13 large private carriers in 1975, 1976 and 1977. They generated 71 per cent of their total operating revenues from scheduled intercity service. Estimates of savings in Table 16 are based on revenues from scheduled intercity service alone.

A reduction in fares of 26.07 per cent would, by itself, have generated gross savings to consumers of scheduled intercity service from privately owned carriers of \$21,272,813 in 1975, \$23,341,093 in 1976 and \$28,236,850 in 1977. Savings from fare reductions for charter service or from reduced prices on express service have not been estimated. It is emphasized that these are all conservative (low side) estimates of savings.

To the extent that regulation results in the inflation of prices and profits, there is an income transfer effect which has been examined in the preceding paragraphs. However, when output is restricted and prices enhanced, welfare costs are imposed on society. Consumers are forced to make inferior second choices. Harberger (1954), in his classic article on this topic, proposed a method for measuring this deadweight welfare loss associated with monopoly. A number of economists, including Boyer (1977), Friedlaender (1971) and Levin (1978) have applied the

methodology to measure the social costs of regulation. Simply stated, the measurement involves calculating the value of a welfare triangle's area. The methodology is developed in depth elsewhere and the interested reader is referred to the articles by Harberger, Friedlaender, Boyer and Levin in the bibliography.

The methodology is first applied to the Greyhound-Coachways data in Table 15. Average cost after deletion of express revenue contribution and the Alberta seat tax is used as a proxy for socially efficient cost (marginal cost per vehicle mile). Thus, 72 cents per vehicle mile is used. It is a relatively high and clearly excessive measure of a socially efficient price. It also yields 3.2 CPM with the 1976 Greyhound average load of 22.5 passengers. The elasticity measure used is -1.5. Greyhound reported total vehicle miles of 12,831,606 for the 50 Alberta divisions in 1976. Using Harberger's method, the welfare cost is estimated as 5.56 per cent of passenger operating revenues. Applying this figure to passenger operating revenues for the 13 privately owned carriers gives an estimated welfare loss of \$4,536,895 in 1975, \$4,978,000 in 1976 and \$6,022,128 in 1977. Thus, the deadweight costs of these market restrictions were substantial.

In practice, the average fare yield would probably have fallen considerably lower than 3.18 CPM estimated in the Greyhound example. Thus, the income and welfare effects likely are understated.

Since yield per vehicle mile did not decline as fare yield fell, the extra-competitive profit position of the carriers might very well have continued. However, fares and yields would have continued to fall as new carriers entered the industry. And, as price fell, the price elasticity of demand should have declined. This would have adversely affected the growing load factors. Also, there are incremental costs associated with handling new passengers. While small and largely offset, they would have been rising.

By looking closely at the Greyhound-Coachways Alberta data, some conclusions can be drawn about exactly how far fares might have declined in 1976. On these routes, average yield per passenger mile was 96.75 cents. For the 13 private companies, excess profits and taxes are estimated at 9.86 per cent of revenues in 1976. Thus, a net of 9.54 CPM ($.0986 \times 96.75$) is conceivable, providing a fair profit yield of 87.21 CPVM in 1976. However, as the average load rises from 22.5 passengers to 35.3, incremental costs of 13 CPVM, at most, would have been incurred. Thus, the fair profit yield per vehicle mile with an average load of 35 passengers would have been 100.21 CPVM. The average fare per

passenger mile would have been 2.86 cents (100.21/35).

There is little doubt that an average fare yield of 2.86 CPM could have resulted under competitive conditions in Alberta. However, the analysis of the costs of market restrictions was undertaken using the much higher figure of 3.18 CPM.

The analysis suggests that the direct costs of regulation have been very high. However, there are indirect costs as well; some of these were considered in earlier chapters. Clearly, the use of automobiles would have been reduced by fare reductions of the magnitude projected. Additionally, national fuel consumption levels would have been reduced. Given these costs, the next chapter considers a program of regulatory reform in the industry.

Chapter IX

A PROGRAM OF REGULATORY REFORM

This study suggests that the costs of regulation have been substantial. Of greater importance, perhaps, is the demonstration that there is little need for economic regulation of the industry. The analysis of cross-subsidization is of particular significance. It is clear that little cross-subsidization occurs and that the tax revenues needed to fund that which does occur are nominal.

If an important objective of public policy is accessibility of transport at any price, then a case can be made for protectionist policy; it is, however, a weak case. It is not government policy to ensure that bus service is provided to every nook and cranny in the country. Government has also never seen fit to subsidize bus service directly in the same manner that it has subsidized air and rail service. It is not clear that it is desirable public policy to ensure a certain minimum of bus service to each and every community. If it is, then subsidies should be considered. The use of subsidies to ensure socially minimum service was considered favourably in the Alberta corridor study (AT, 1976, p.8). Other approaches to providing service on very low-density routes have also been proposed.

A CTC study in 1973 considered the substitution of school buses as an alternative method for connecting very low traffic communities to main bus terminals. The study went on to examine the use of "a system of trunk bus routes served by a feeder jitney system. By operating only when demand was present, the operation might be viable, particularly since the vehicle could be a specially licensed private automobile operated by a local resident" (1973b, pp.217-218).

This type of system may be complemented by the creation of a public authority which would oversee a system of subsidies where necessary to ensure the provision of a socially desirable level of service in very low traffic markets. There would be very few areas in the country where this type of subsidized service would be required.

Subsidies are used extensively in Canadian transportation industries, most commonly to support the rail mode but also to support the airline industry. They have not been used in Canada to support the bus industry as in the United States. For example, Michigan operates an elaborate program which includes direct assistance and loans to bus companies. Assistance is provided on a service by service basis to meet direct operating costs for limited time

periods. Service in the long run must be compensatory. Assistance is also provided to aid in the construction of intercity bus terminals. By 1978, two terminals had been constructed under the program and 15 were under construction. Iowa, New York, Oregon and Pennsylvania are other states with assistance programs. To date, these programs have been very limited in scope.

It is recommended that a program of deregulation be undertaken in the industry, preferably with the regulatory rules changed quickly by easing the conditions for granting operating authorities. New entry should be automatic unless an intervenor can show by a preponderance of evidence that permitting the firm to compete is not consistent with the public convenience and necessity. The burden of proof should be shifted from the prospective competitor to the existing monopolist -- that is, there should be a presumption in favour of competition. In the case of proposed fare reductions, there should be a presumption in favour of reductions.

In order to determine which routes would no longer be serviced, it might be desirable to require continuation of service for at least three days a week for a specified period. Carriers could be directed to identify all services they want to terminate. With those lists in hand, the regulatory authorities could undertake to find other firms willing to provide the service or, through a tendering system, determine the subsidy necessary to ensure socially acceptable service between smaller communities and major traffic hubs.

Such a program would alleviate the apprehension of elected officials about possible widespread service termination. It cannot be over-emphasized that this study suggests that the number of terminations will be inconsequential and that the subsidies required should amount to less than one per cent of carrier operating revenues.

An alternative approach might involve taking as given the service to communities which are currently on major bus routes. These communities would have a first claim to service. Existing bus companies would be required to continue service to these communities but would be allowed to terminate service to a set number each year. More could be terminated if a new line agreed to service the terminated point or if alternative service could be arranged by the existing carrier.

To allay concern about short-run monopoly pricing, interim regulatory rules might be adopted prohibiting the

charging of any fare in excess of some set percentage above a provincial average fare.

This study has not focused on the charter and tour business. While some competition exists for charter business, it is very limited and the issue of new or expanded charter authorities is usually successfully opposed by carriers with existing authorities. It is not evident that regulation of entry and exit into the charter business serves the public interest. It may be in the public interest to require that these carriers be required to post large surety bonds to protect charter groups against cancellation. The carriers should also be subject to particularly rigorous and frequent safety inspections.

APPENDIX

Table A-1

Routes with Duplicate Operating Authorities, 1977

Route	Miles	Carriers serving route
Buffalo- Toronto	101	Greyhound-Gray Coach
Toronto- Sudbury	247	Greyhound-Gray Coach
Windsor- Leamington	37	Greyhound-United - Trails Inc.
Sault Ste. Marie - Wawa	142	Greyhound-Ontario Northland
Hearst- Nipigon	261	Greyhound-Grey Goose
Nipigon- Thunder Bay	76	Greyhound-Grey Goose
Winnipeg- Portage La- Prairie	53	Greyhound-Grey Goose
Portage La- Prairie- Neepawa	62	Greyhound-Grey Goose
Neepawa- Ste. Rose	61	Greyhound-Grey Goose
Ste. Rose- Dauphin	29	Greyhound-Grey Goose
Neepawa- Minnedosa	18	Greyhound-Grey Goose
Minnedosa- Clear Lake	33	Greyhound-Grey Goose
Wawanesa- Brandon	31	Greyhound-Grey Goose
Regina- Moose Jaw	44	Greyhound-Saskatchewan Transportation
Saskatoon- North Battleford	87	Greyhound-Saskatchewan Transportation

Source: AMTB, 1978b, Exhibit 86.

Table A-2

Greyhound Lines of Canada Ltd.,
Summary of Profit and Loss in Alberta, 1976
Passenger Line Haul and Package Express

Total miles operated in Alberta		<u>12,831,606</u>
Total operating cost (based on system operating cost of 103.3 CPM)		\$ 13,255,045
Total passenger revenue		<u>11,912,881</u>
Gross passenger loss		\$ <u>1,342,164</u>
Total Alberta package express		\$ 3,875,145
Less gross passenger loss		<u>1,342,164</u>
Gross Alberta profit		\$ 2,532,981
Less income tax		
- Alberta	\$ 278,628	
- federal	<u>911,873</u>	<u>1,190,501</u>
Net profit		\$ <u>1,342,480</u>

Source: AMTB (1978b), Exhibit 92.

Notes: 1 Through extensive studies of busbills it is estimated that a minimum of 25 per cent of the Alberta package express revenue is received from interprovincial express traffic and, in Alberta, this source contributes \$968,786 to the total Alberta express revenues.

2 Ticket studies of all classes of tickets handled in Alberta indicate the following revenue sources:

Intraprovincial	70.64%
Interprovincial	28.74%
International (U.S.)	<u>.62%</u>
	100.00%

In the case of Alberta, 29.36 per cent or \$3,497,622 of all passenger revenues are involved in interprovincial and, to a lesser extent, international revenues.

Table A-3

Greyhound Lines of Canada Ltd. and
Brewster Transport Ltd.
Consolidated Bus Operations
Financial Information,
Alberta, 1977

	<u>Alberta</u>	<u>System Total</u>
Investments		
Equipment (460 coaches)	\$29,956,000	\$29,956,000
Land and buildings		
cost	\$ 9,377,000	\$13,161,000
1971 appraised value	15,078,000	19,385,000
current market value	45,234,000	58,155,000
Taxes and Licences		
Fuel taxes	287,000	1,151,000
Licences, registration and seat tax	407,000	614,000
Property taxes	357,000	533,000
Personnel		
Number of employees	883	1,540
Wages and salaries	\$13,239,000	\$25,615,000

Source: AMTB (1978b), Exhibit 190.

Table A-4

Greyhound Lines of Canada Ltd.,
Summary of Profit and Loss, 1976 (excluding Alberta),
Passenger Line Haul and Package Express

Total operating cost (based on system operating cost 103.3 CPM)	\$27,313,921
Total passenger revenue	<u>25,815,863</u>
Gross passenger revenue loss	<u>\$ 1,498,058</u>
Total package express revenue	\$ 9,052,704
Less gross passenger loss	<u>1,498,058</u>
Gross system profit (excluding Alberta)	\$ 7,554,646
Less federal and provincial income taxes	<u>3,685,200</u>
Net profit -- excluding Alberta	<u>\$ 3,869,446</u>

Source: AMTB (1978b), Exhibit 92.

Table A-5

Alberta Divisions -- Routes

Division	Alberta
500	Edmonton-Calgary Local
501	Edmonton-Red Deer
502	Red Deer-Calgary
503	Edmonton-Calgary, non-stop
605	Calgary-Coutts
612	Calgary-Lethbridge
613	Calgary-Lethbridge
616	Fort Macleod-Lethbridge
617	Calgary-Taber
622	Alsask-Calgary
623	Oyen-Calgary
650	Banff-Calgary (seasonal)
651	Calgary-Waterton (seasonal)
652	Calgary-Banff (seasonal)
1101	Calgary-Alberta/Saskatchewan border-Highway 1
1102	Medicine Hat/Fort Macleod
1103	Medicine Hat-Calgary
2002	Lloydminster-Edmonton
2003	Lloydminster-Edmonton local
6002	Calgary-Alberta/British Columbia border
6009	Calgary-Alberta/British Columbia border
6900	Edmonton-Jasper
6902	Edmonton-Alberta/British Columbia border
7000	Calgary-Alberta/British Columbia border
8700	Edmonton-Alliance
8702	Edmonton-Barrhead
8703	Edmonton-Chauvin
8704	Edmonton-Cold Lake
8705	Edmonton-Elk Point
8706	Edmonton-Fort McMurray-Boyle
8707	Edmonton-Hardisty
8708	Edmonton-Lac La Biche
8709	Edmonton-Lodgepole
8710	Edmonton-Macklin
8711	Edmonton-Marwayne
8712	Edmonton-Slave Lake
8713	Edmonton-Swan Hills
8715	Edmonton-Ft. McMurray-Athabasca
8717	Peace River-Grande Prairie
8718	Red Deer-Rocky Mountain House
8800	Edmonton-Grande Prairie
8801	Grande Prairie-British Columbia border
9100	Edmonton-High Prairie
9102	Donnelly Jct-British Columbia border
9400	Edmonton-Stettler
9401	Calgary-Stettler
9402	Red Deer-Consort
9500	Edmonton-Peace River
9501	Peace River-Northwest Territories border
9502	High Prairie-Peace River

Source: AMTB, 1978b, Exhibit 90.

TABLE A-6

Greyhound Lines of Canada Ltd., Combined
Average Age of Fleet' as of February 1, 1978 (1978=0)

Model year	Number of buses	Years old	Bus years
1963	9	15	135
1964	17	14	238
1965	18	13	234
1966	31	12	372
1967	53	11	583
1968	12	10	120
1969	18	9	162
1971	12	7	84
1972	24	6	144
1973	19	5	95
1974	30	4	120
1975	32	3	96
1976	48	2	96
1977	37	1	37
1978	<u>3</u>	0	<u>0</u>
	363		2,516

Source: AMTB, 1978b, Exhibit 96.

Note 1: Average age of the fleet equals 2,516 divided by 363 or 6.93 years.

Table A-7

Greyhound Lines of Canada Ltd., Combined
Seating Capacity, February 1, 1978

	Seating Capacity								
	<u>Total</u>	<u>16</u>	<u>20</u>	<u>30</u>	<u>39</u>	<u>41</u>	<u>43</u>	<u>46</u>	<u>47</u>
Number of buses	363	12	1	10	110	15	23	5	187
Per cent	100.0	3.3	.3	2.8	30.3	4.1	6.3	1.4	51.5

Source: AMTB, 1978b, Exhibit 96.

Table A-8

Package Express

Vehicle	Freight capacity
39 Passenger Motor Coach Industries	280 cu. ft.
47 Passenger Motor Coach Industries	340 cu. ft.
47 Passenger Prevost ¹	300 cu. ft.
47 Passenger General Motors Corporation ²	390 cu. ft.
30 Passenger Combo	732 cu. ft.

Source: Industry

- Notes: 1. The passenger Prevosts are used in varying seat configurations from 22 to 47.
2. General Motors Corporation (G.M.C.) no longer manufactures intercity coaches.

TABLE A-9

Alberta Licensing and Fuel Costs -- Greyhound Lines of Canada
Eastern Canadian Greyhound Lines, and Canadian Coachways, 1976

	<u>1976 licence expense</u>	<u>Licence cost per coach</u>	<u>Fuel tax per gallon</u>
British Columbia	\$54,522	\$302.90	.19¢
Alberta	9,258	27.39	.12
Saskatchewan	36,643	211.81	.19
Manitoba	17,825	103.03	.20
Ontario	52,963	287.84	.25
Canada	173,117	-	-
United States	5,276	-	-

Source: AMTB, 1978b, Exhibit 82, 165 and 166.

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