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K1P 5V6

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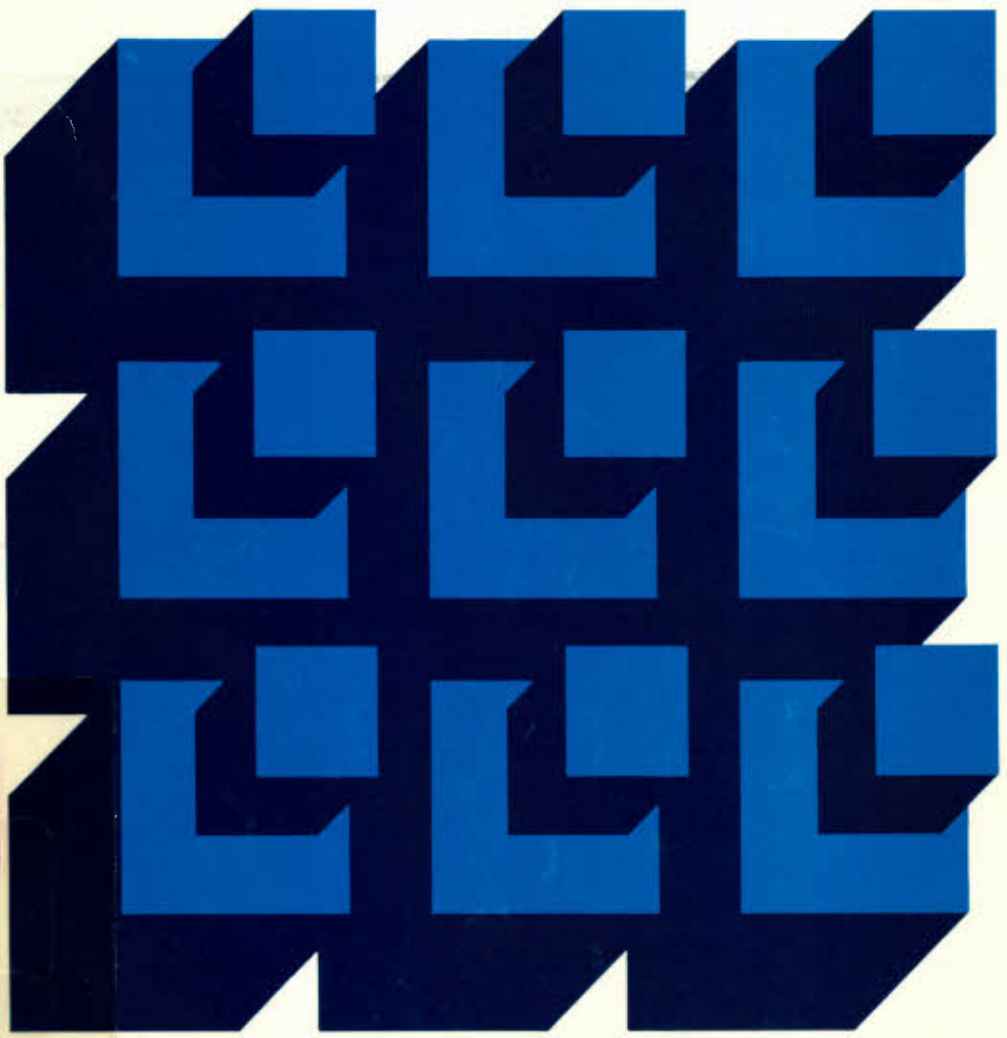

DISCUSSION PAPER NO. 269

# Old Myths and New Choices: Railway Freight Rates and Western Economic Development

by Thomas T. Schweitzer



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RÉSUMÉ

L'auteur tente de résumer les recherches et les discussions qui ont eu lieu au cours des dernières décennies concernant les tarifs du transport ferroviaire et le développement économique de l'Ouest canadien. On a prétendu que les tarifs du transport ferroviaire sont fixés de façon discriminatoire à l'égard du secteur manufacturier de l'Ouest et nuisent ainsi à la diversification économique des provinces de l'Ouest. L'auteur conclut que ces effets sont très faibles, s'ils existent de fait. De même, l'opinion selon laquelle les sociétés ferroviaires, en tirant profit de leur position monopolistique, feraient monter le coût de la vie dans l'Ouest n'est guère fondée. La récente solution apportée au problème du tarif du Nid de Corbeau a écarté l'éventualité d'une crise concernant la capacité des transports au cours des années 90, mais elle perpétue certaines inefficacités au sein de l'économie canadienne. Le versement de la subvention du Nid de Corbeau aux agriculteurs plutôt qu'aux sociétés ferroviaires permettrait d'éviter ces inefficacités. Les subventions aux tarifs de l'Est présentent une autre importante source éventuelle d'inefficacité. L'auteur conclut en observant que les questions de transport ne sont plus aussi importantes qu'elles l'ont déjà été pour le développement économique de l'Ouest.

ABSTRACT

This paper attemps to summarize the research and debate of the recent decades on railway freight rates and Western economic development. It was claimed railroad freight rates are set in a way that discriminates against Western manufacturing and thus hinders the economic diversification of the Western provinces. We conclude that any such effect is very small, if it exists at all. The view that the railways, by exploiting their monopoly position, raise the Western cost of living, is also weakly founded. The recent resolution of the Crow-rate problem has dispelled the danger of a transportation capacity crisis in the 1990s, but has resulted in a solution which perpetuates inefficiencies in the Canadian economy. Payment of the Crow benefit to the farmers rather than to the railways would avoid the inefficiencies. Another major source of future inefficiencies is the At and East subsidy. The paper concludes that transportation questions are no longer as important to Western economic development as they were in the past.

ACKNOWLEDGMENTS

I wish to acknowledge the benefits I have received from the comments of N. Swan, and the helpful discussions with L. Auer, J. Campbell, L. Churcher, T.D. Heaver, J.S. Merrett, V.M. Stechishin, and W.G. Waters II. I am responsible for all remaining shortcomings of this paper.

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# 1 INTRODUCTION

Transportation plays an important, but often misunderstood, role in regional economic development. High transportation costs tend to keep the size of the market relatively small, prevent specialization, and thereby hold the material standard of living low. They also have an effect on local industry comparable to a protective tariff.

In Chapter 2 of the present paper we shall attempt to quantify the size of the transportation industry as a whole in Canada and in the West and the East of the country. We shall also draw a comparison between the importance of transportation in Canada and in the United States. This chapter will also discuss the importance of the various modes of transportation in the West and the East.

Some Westerners have claimed that the railway freight rate structure has hindered the economic development, and diversification into manufacturing, of their provinces. Chapter 3 discusses the basic principles of railroad freight rate setting and the history of the rates in the Canadian West.

During the Western Economic Opportunities Conference of 1973 the governments of Alberta and Manitoba proposed freight rate setting methods which would have resulted in a freight rate structure

different from that which arose as a consequence of the 1967 National Transportation Act. Chapter 4 describes these proposals, and the findings of research studies which conclude that the proposed freight rate systems would not improve the competitive position of Western manufacturing vis-à-vis the East.

The layman has difficulties in understanding the economics of railway freight rate setting, because it frequently involves the problem of recovering big fixed costs under conditions of surplus capacity, i.e., when marginal cost is below average cost. One proposed solution to the problem consists of the nationalizing of the railway roadbed and leasing it - most likely below cost - to operating companies. Chapter 5 discusses the size of the subsidy such a policy would entail, and also its likely deleterious influence on economic efficiency of the railways.

Between 1921 and 1983 the freight rate on grain from the Prairies to the Lakehead was fixed by government statute at approximately 0.5 cents per ton-mile (the so-called Crow Rate). With the passage of time and rising prices this rate ceased to cover even the variable cost of grain shipments. Service deteriorated and, in spite of substantial and growing government subsidies, the railways lost large amounts of money on grain transportation. Chapter 6 discusses the history of the Crow Rate, the recommendations of Dr. Gilson for the Crow reform, the

subsequent debates, the main features of Bill C-155, and the advantages and disadvantages of the Act as finally adopted.

Subsidies tend to cause economic inefficiencies, and should be resorted to with great caution. Often subsidies remain in force long after their original justification has disappeared. The Feed Freight Assistance was originally introduced in 1941 in order to stimulate meat production in Eastern Canada as part of the war effort. It is still in force today. The At and East rates, which subsidizes the grain freight rates between Georgian Bay elevators and East Coast export harbours in such a manner as to freeze the rates at the 1960 level, were originally adopted in order to prevent the diversion of such shipments to U.S. ports. Today they divert the shipments from cost-efficient Canadian water routes to relatively cost-inefficient railway transportation.

There was a possibility that the losses of the railways incurred by transporting statutory grain would harm Western economic growth. Chapter 7 discusses railway capacity in the West and expected growth of freight traffic over Western lines. There is reason to believe that such traffic would surpass current capacity before 1992. Also, a strong argument could be made that the statutory grain freight rates in force prior to the passage of Bill C-155 would have enfeebled financial resources of the railroads to such a degree that they would not have been able to raise the very substantial capital needed for the capacity expansion

either on the market or from internal resources. With the reform of the statutory grain freight rate this danger has passed and railway capacity constraint is not likely to inhibit Western economic expansion.

Chapter 8 summarizes our main findings.

# 2 AN HISTORICAL SURVEY OF TRANSPORTATION

The purpose of this chapter is threefold. It attempts to gain quantitative information on:

- the importance of Transportation as a whole in Canada, and its historical development;

- the importance of Transportation as a whole in the West, and its historical development;

- the importance of the various modes of Transportation and their historical development.

## 1. The Importance of Transportation as a Whole in Canada and its Historical Development

One possible way to gain an impression on the changing importance of Transportation in Canada is to calculate gross domestic product of Transportation as a percentage of total gross domestic product of Canada. In Chart 2-1 the lower solid line represents this concept. For the period 1926-43 Statistics Canada provides gross domestic product only for Transportation, Storage and Communications (TSC) as a whole; from 1944 to date Transportation is also available separately. In Chart 2-1 we charted an overlap of the two concepts for the 1944-50 period. The shaded area represents the gross domestic product of storage and communications.

The chart indicates a declining trend. Between 1926 and 1950 TSC as percentage of total GDP declined from 12.9 per cent to 9.2 per cent. Transportation as percentage of total GDP declined from about 8 per cent in 1944 to 5.5 per cent in 1982.

Perhaps a more useful concept would be to compare the GDP of Transportation with that of transportable goods (called henceforth Tradables and defined as the GDP of Agriculture, Forestry, Fishing, Hunting and Trapping, Mining, and Manufacturing). The upper solid line in Chart 2-1 represents Transportation (or TSC for the 1926-50 period) as a percentage of GDP of Tradables. For TSC/Tradables the percentage declines from 28.5 per cent in 1926 to 20.2 per cent in 1950. There is no trend discernible in the Transportation/Tradable ratio; it stood at 17.1 per cent in 1944 and at 20.0 per cent in 1982. In the following text we shall designate the Transportation/Total GDP and Transportation/ Tradables GDP as the transportation intensity of Total Output and of Tradables Output respectively.

Such figures do not mean much by themselves. Is, say, 20.0 per cent much or little? With 95 per cent of Canada's 24 million inhabitants spread over a 7000 km long and 300 km wide strip of land one would expect Transportation to play a relatively important role in the life of the economy. We calculated the transportation intensity of Total Output and of Tradable Output for the United States and entered them as dotted lines in Chart 2-1. We found that these intensities were on the average

some 40 per cent higher in Canada than in the United States over the 1947-80 period. The approximatively 40 per cent differential held also true during the 1976-80 quinquennium.

## 2. Transportation as a Whole in the West Versus in the East

Statistics Canada does not provide a regional breakdown of Transportation GDP, but the Conference Board does provide estimates of provincial Real Domestic Product and of RDP for air-, rail-, water-, trucking-, and pipeline-transportation by province from 1961 on. This Transportation concept differs from the Statistics Canada concept in the sense that the Conference Board does not include Buses, Urban Transit, Taxis, Highway and Bridge Maintenance and Miscellaneous Transportation Services, while Statistics Canada does include them.

Chart 2-2 indicates that transportation intensity of total output has moved in the 3.8 - 4.3 per cent range for the East, with no discernible trend, while the corresponding measure has grown from 6.2 per cent in 1961 to 7.5 per cent in 1980 in the West. The difference becomes even more pronounced when we observe the transportation intensity of Tradables Output. Here the East climbs from 12.2 per cent to 14.1 per cent, while the corresponding West figures are 23.1 per cent and 30.5 per cent. The Transportation intensity of Total Output is 70 per cent higher

in the West than in the East (177 per cent in the 1976-80 quinquennium) while the corresponding intensity of Tradables is 96 per cent higher (108 per cent in 1976-80). However, these data should be regarded with caution, for reasons which will become obvious in the next section dealing with the various modes of transportation.

## 3. The Importance of Various Modes of Transportation

The top line in Chart 2-2 depicts the transportation intensity of Tradables in the West and indicates a 7.4 percentage point increase over the 1961-80 period. Chart 1-3 disaggregates this total transportation intensity into five components: rail, air, truck, pipelines, and water. We find that the air transport intensity has increased from 1.3 per cent to 7.1 per cent or by 5.8 percentage points. So almost 80 per cent (5.8/7.4) of the increase in the transportation intensity of western tradables was due to the increase in air transport intensity. We must consider, however, that the importance of freight traffic versus passenger traffic varies according to the mode of transportation. In truck, pipeline and water transportation all, or almost all, traffic is freight. On the other hand, looking at 1980 we find that in rail transportation freight accounted for 88.5 per cent of operating revenues and in air transport for only 17.3 per cent. It is evident that the strong growth of air transportation (which has a small freight component) tends to lend an exaggerated and

misleading growth to the total transport intensity of tradables in the West. Assigning a freight component of 100 per cent to truck-, pipeline-, and water transportation, 88.5 per cent to rail, and 17.3 per cent to air throughout the 1961-80 period we find that the adjusted transport intensity of tradables increased from 20.8 in 1961 to 23.5 in 1980 or 2.7 points -- almost two-thirds less than the unadjusted intensity growth from 23.1 in 1961 to 30.5 in 1980 or 7.4 points.

Chart 2-3 also indicates that in the West the rail transport intensity of Tradables is some 80 per cent higher that of truck transport. In the East (Chart 2-4) rail transport intensity is some 10 per cent lower than truck intensity. These figures constitute a legitimate comparison, in the sense that they suggest that trucking plays a more important role in the economy of the East than in the West. They do not give a legitimate answer to the question how much more important is road- versus rail-transport in either geographic area.

The Statistics Canada and the Conference Board data referring to trucking deal only with for-hire trucking. However, nontransport businesses also do own trucks and do a vast amount of "own-account" trucking. N. Skoulas [1981, p. 57], using fuel consumption data, estimated that in 1974 nearly two-thirds of Canada's total trucking was produced by such "private" trucking, which does not appear in the GDP/RDP statistics as Transportation at all, but is included under the industries which have performed

the "own-account" trucking. These data suggest that competition between rail- and road-transport of Tradables is sharp. A further indication of the strong intermodal competition is provided by revenue data: in 1980 total freight operating revenues of the Canadian railroads were $4,134 million, that of for-hire trucking $5,224 million.

Do these indications of intermodal competition hold true for the West as well as for the East? Motor truck registrations indicate that there are more trucks per thousand population in the West than in the East (Chart 2-5). This has been true at least since 1931. In recent decades there have been about twice as many trucks per capita in the West than in the East. Even if we exclude trucks on farms from our calculations, we find that the number of trucks per 1,000 population is about 50 per cent higher in the West than in the East. It is therefore reasonable to surmise that "own-account" trucking relative to "for-hire" trucking is at least as important in the West as it is in the East.

This being so, we must conclude that in recent decades the trucking intensity of Tradables Output has been three times bigger than the railroad intensity in the East, and about 1.5 times bigger than the railroad intensity in the West. If we consider, further, the small but rapidly growing air transport intensity of Tradables, it becomes obvious that since World War II the monopolistic position of the railways has been undermined even on the Prairies.

Table 2-1 compares the percentages of railway freight carried in the 1954-58 period (the earliest consistent quinquennium for which we have data) in various parts of Canada, carried under the rate groupings of

A) Class

B) Commodity, noncompetitive

C) Commodity, competitive

D) Agreed charges

E) Statutory grain rates (Crow's Nest Rate)

In the East of Lakehead area about 60 per cent of the tonnage was noncompetitive (A+B) and 40 per cent competitive or statutory (C+D+E). Shipping into, out of, or within the West of Lakehead area the percentages were 44 and 56 per cent. If we exclude statutory grain, the West of Lakehead percentages change to 69 for (A+B) and 31 for (C+D). No shipping under statutory rates exists within the East of Lakehead area. Table 2-1 indicates that on the whole relatively more goods were shipped under competitive or statutory rates to, from, or within the West than within the East, but if we exclude grain, the Eastern area enjoyed more competition. Furthermore, shipping into the West 44 per cent of freight went under competitive rates, from the West 35 per cent and within the West 30 per cent.

During the next twenty years the situation changed substantially. In the 1973-77 quinquennium (the last one for which

there are published data) non-competitive rates applied to 32 per cent of Within East of Lakehead tonnage and 68 per cent went under competitive rates. This was an almost exact reversal of the 1954-58 distribution for this area.

Freight traffic involving the West of Lakehead area showed much less change. Here 46 per cent went under noncompetitive rates and 54 per cent under competitive and statutory rates. Excluding grain 62 per cent of the tonnage was noncompetitive and 38 per cent competitive -- a slight improvement from the 1954-58 period, but nowhere close to the change enjoyed by the Within East of Lakehead area. The share of competitive traffic into the West grew even more than within the East (from 44 to 95 per cent) and the share of competitive traffic from the West also grew (from 35 to 76 per cent), but the distribution of the huge Within West tonnage remained practically unchanged. Table 2-1 confirms that competition from alternative modes of transport and/or market competition was less intensive West of the Lakehead than east, even towards the mid-1970s.

Table 2-1

Percentage Distribution of Railroad Freight Tonnage, 1954-58 and 1973-77

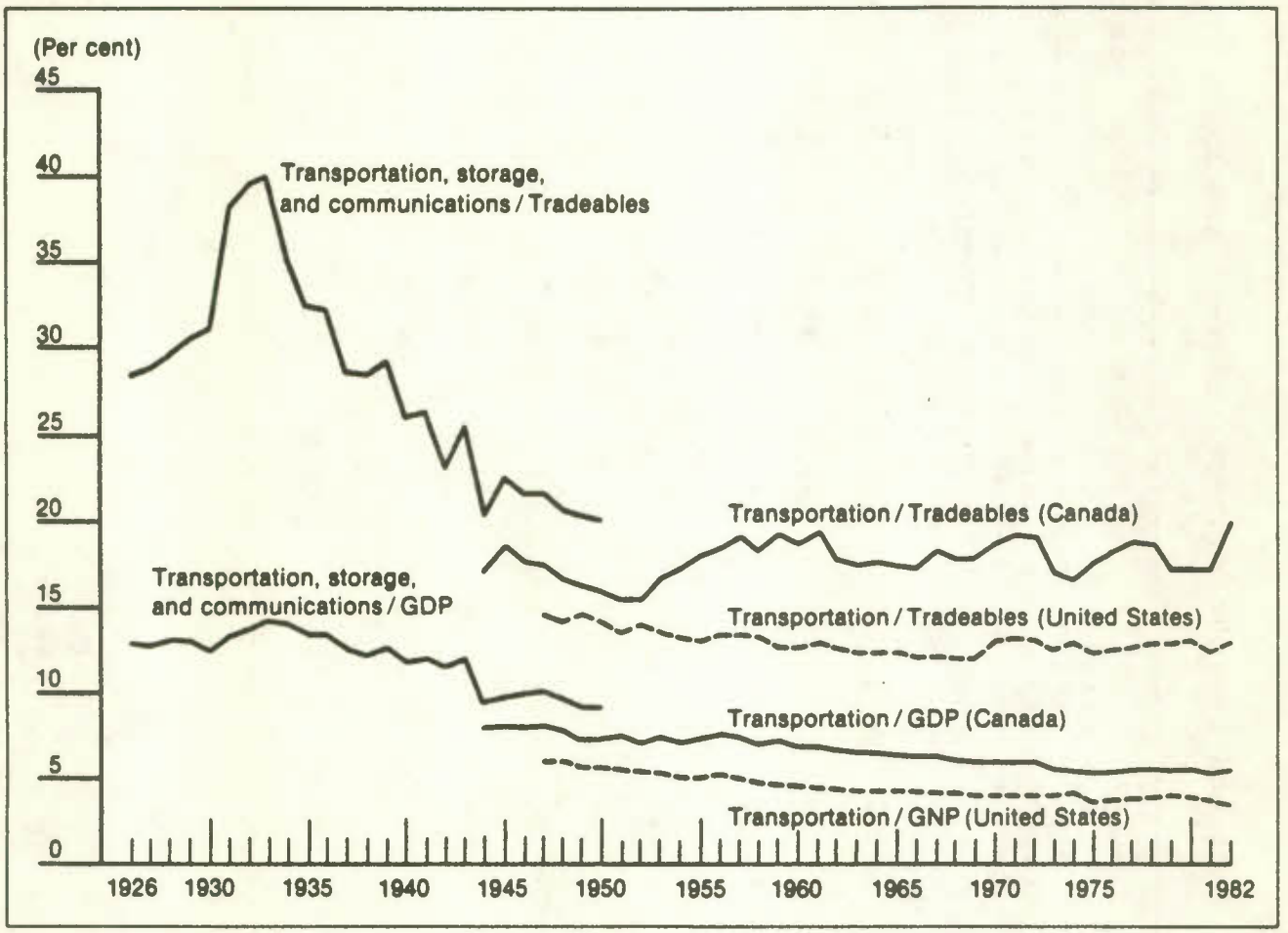
| | Total Freight | Freight Excluding Statutory | Share of Total Tonnage | | Share of Tonnage Excluding Statutory | |
|---|---|---|---|---|---|---|
| | | | A+B | C+D+E | A+B | C+D |
| | | | (Thousand Tons) | | | |
| 1954-58 | | | | | | |
| Within East of Lakehead | 2,551 | 2,551 | 60.2 | 39.8 | 60.2 | 39.8 |
| Into West of Lakehead | 78 | 78 | 55.9 | 44.1 | 55.9 | 44.1 |
| From West of Lakehead | 109 | 106 | 62.9 | 37.1 | 64.6 | 35.4 |
| Within West of Lakehead | 1,702 | 1,022 | 42.3 | 57.7 | 70.4 | 29.6 |
| Total involving West of Lakehead | 1,889 | 1,207 | 44.1 | 55.9 | 69.0 | 31.0 |
| 1973-77 | | | | | | |
| Within East of Lakehead | 3,170 | 3,170 | 31.5 | 68.5 | 31.5 | 68.5 |
| Into West of Lakehead | 258 | 258 | 4.6 | 95.4 | 4.6 | 95.4 |
| From West of Lakehead | 261 | 261 | 24.3 | 75.7 | 24.3 | 75.7 |
| Within West of Lakehead | 3,750 | 2,651 | 50.4 | 49.6 | 71.3 | 28.7 |
| Total involving West of Lakehead | 4,269 | 3,170 | 46.0 | 54.0 | 62.0 | 38.0 |

A: Class Rates
B: Commodity - Non-competitive
C: Commodity - Competitive
D: Agreed Rates
E: Statutory Rates
Detail may not add up because of rounding.

Source: CTC 1 per cent waybill analysis, Historical Summary 1949-1977.

Chart 2-1

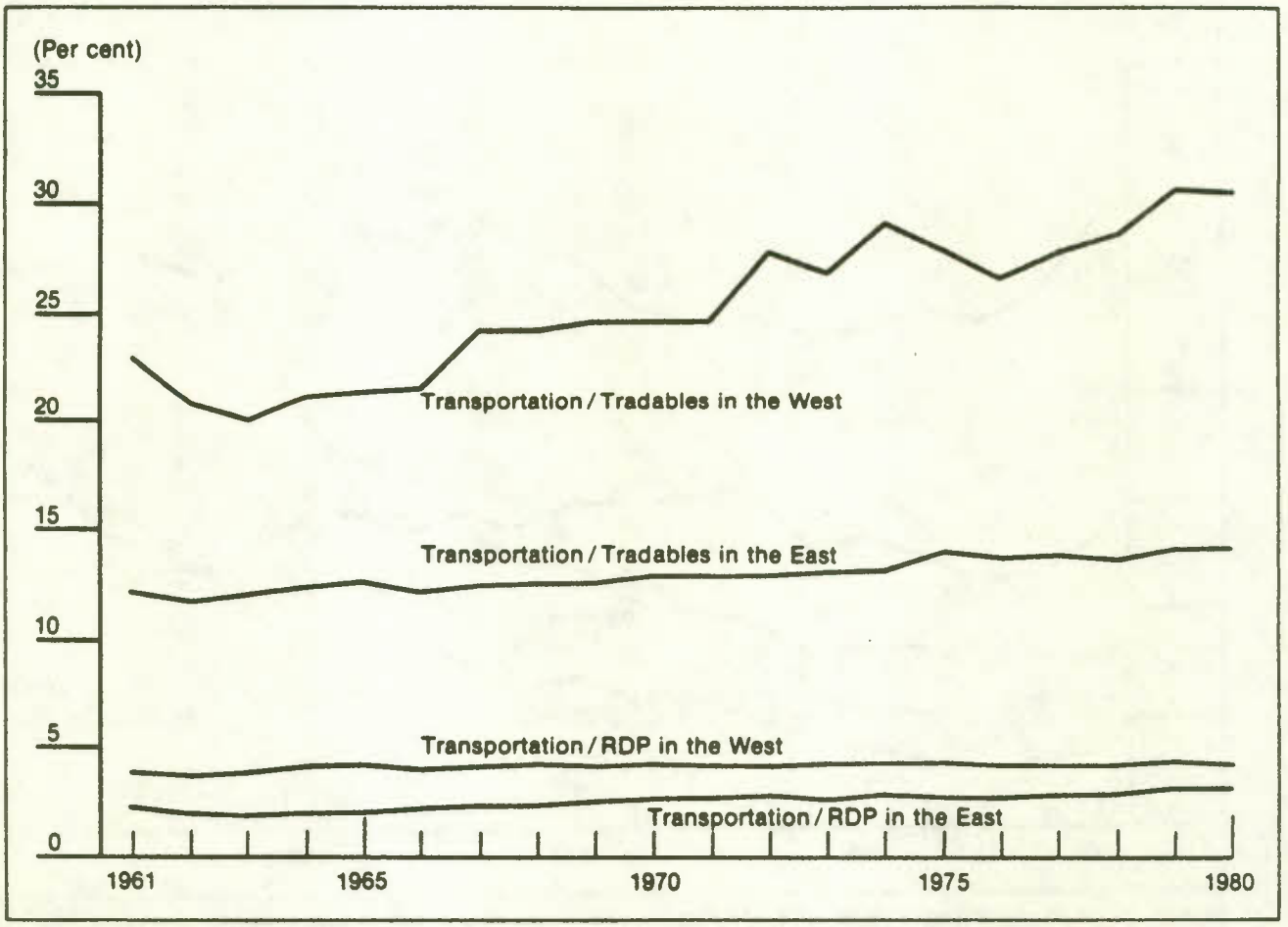
**Transportation Intensity in Canada Compared with That in the United States, 1926-82**




NOTE Tradables are defined as agriculture, forestry, fishing, mining, and manufacturing products.
SOURCE Based on data from Statistics Canada and from U.S. Department of Commerce, *Survey of Current Business*, July 1983.

Chart 2-2

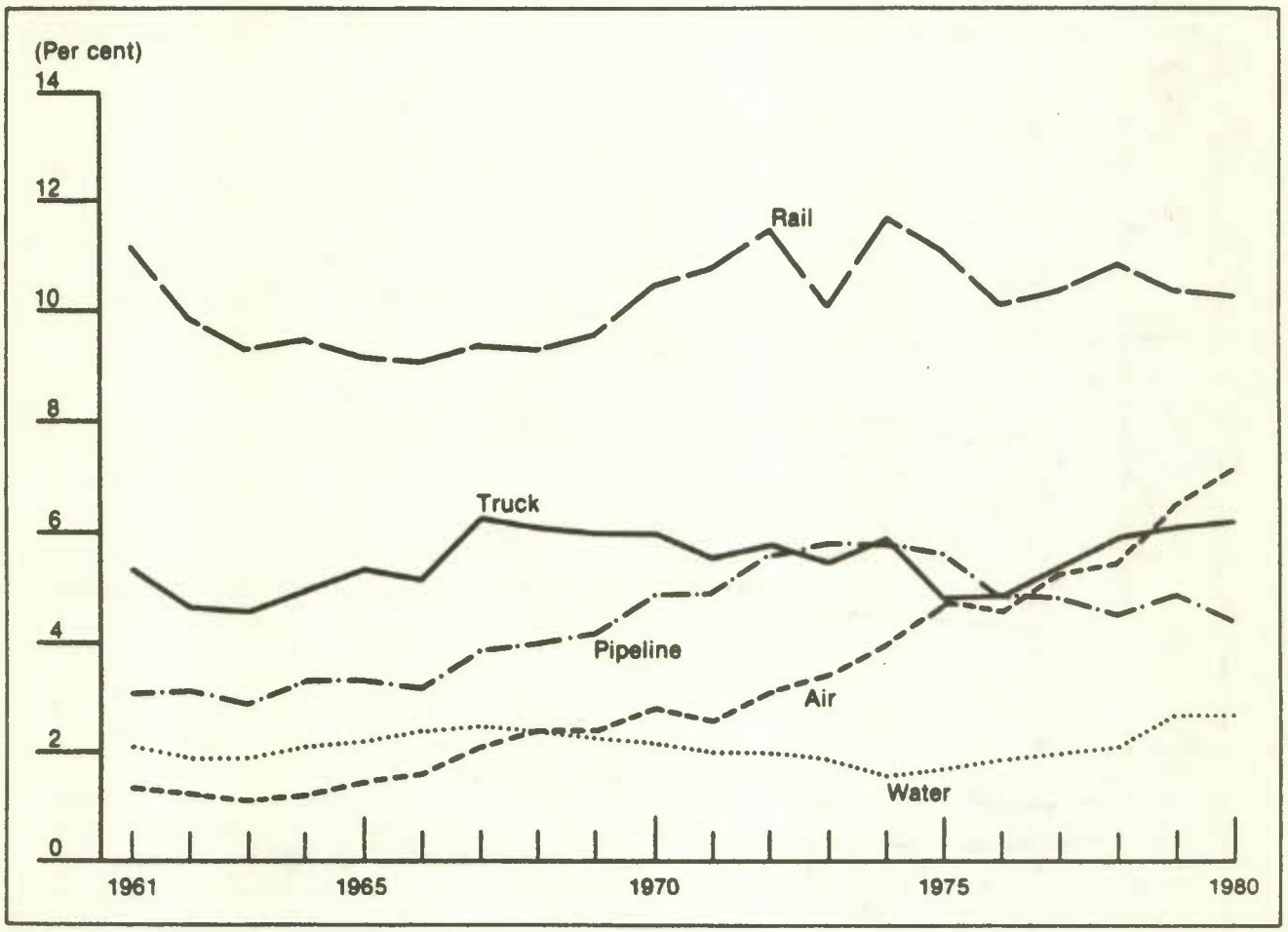
**Transportation Intensity in the West Compared with That in the East, Canada, 1961-80**




SOURCE Based on unpublished data from the Conference Board of Canada and from their publications *The Provincial Economies: 1961-1980 Data*, and *A Supplement to the Quarterly Provincial Forecasts*, 1981 Edition.

Chart 2-3

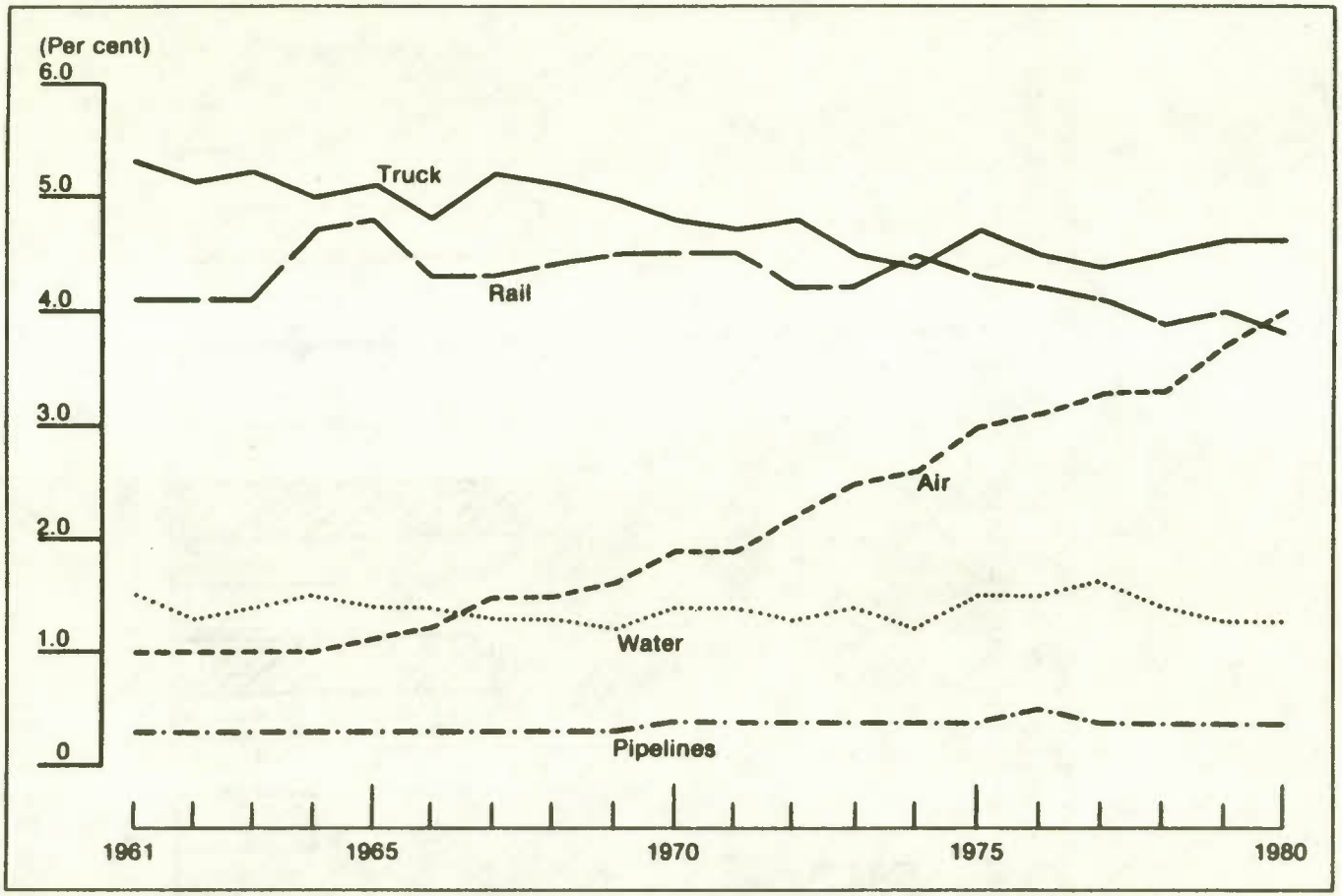
**Transportation Intensity of Tradables, by Mode, Western Canada, 1961-80**




SOURCE Based on unpublished data from the Conference Board of Canada and from their publications *The Provincial Economies: 1961-1980 Data*, and *A Supplement to the Quarterly Provincial Forecasts*, 1981 Edition.

Chart 2-4

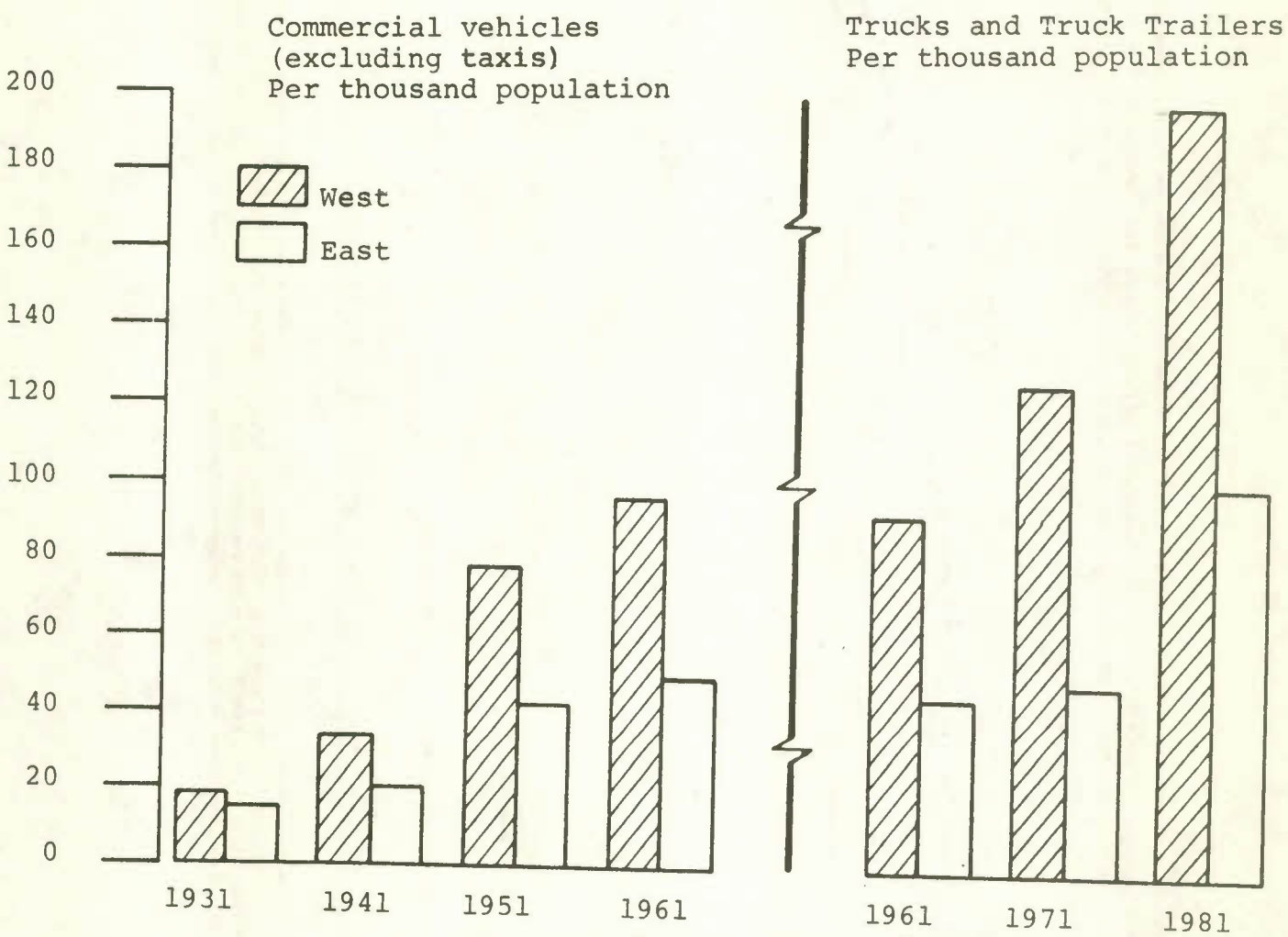
**Transportation Intensity of Tradables, by Mode, Eastern Canada, 1961-80**




SOURCE Based on unpublished data from the Conference Board of Canada and from their publications *The Provincial Economies: 1961-1980 Data*, and *A Supplement to the Quarterly Provincial Forecasts*, 1981 Edition.

Chart 2-5

Truck Registrations per Thousand Population, West and East




Source: Canada Year Book, Statistics Canada Cat. #53-219, and Census of Canada

## 3 THE FREIGHT RATE ISSUE

Ever since the late 1890s the Western provinces have been complaining about the railroad freight rates. In the early years the West was essentially a grain producing economy, importing most of its necessities from the East. Early complaints centred on the issue that the monopoly position of the railways kept the cost of transporting goods into the west unjustifiably and inequitably high. In more recent years the emphasis has shifted to the accusation that the existing rate structure prevents the diversification and industrialization of the Western economy. At the Western Economic Opportunities Conference in 1973 the Prairie Premiers unanimously blamed the freight rate structure for their problems:

> Premier Blakeney (Saskatchewan) "... What are the factors which are holding back the development of secondary processing in the West? ....the prime factor which is holding us back is a national transportation policy which perpetuates an unjust freight rate system..." (Western Economic Opportunities Conference, p. 23)
>
> Premier Schreyer (Manitoba) "... What is fundamental to the case ... is that freight rates do indeed militate against the establishment of manufacturing industry on the Prairies. (op. cit., p. 32)
>
> Premier Lougheed (Alberta): "...the greatest single impediment standing in the way of the development of Western Canada's full potential is transportation freight rates which discriminate against the West." (op. cit., p. 67)

The discussion of freight rate economics has to begin with certain basic characteristics of the railroad industry. The most important of these is that very heavy fixed expenditures (building of the lines, yards, and stations) are made before the first ton of revenue-producing freight is transported. Also, when constructing a line, it is reasonable to anticipate substantial growth of traffic; therefore there can be much surplus transport capacity in the early years of a railway. This was a very pronounced problem during and after the construction of the Canadian Pacific Railway, where the building of the railroad actually preceded the settlement of much of the Prairies. Huge fixed costs had to be incurred during the construction phase and the Dominion Government subsidized the CPR with a cash subsidy of $25 million, a land grant of 25 million acres and by giving to the company free of charge portions of the line built between 1874 and 1881 as public works, valued at $37.8 million. Later 6.8 million acres were returned to the government in exchange for a further cash subsidy of $10 million.

In addition to the fixed costs of a railway there are the variable costs of operating it. It is not easy to agree on the definition and magnitude of variable costs and some arbitrariness is unavoidable. The cost of transporting an additional pound in a boxcar is minuscule. Adding a freight car to a train costs little. The costs of running an additional train may no longer be negligible, even in terms of cost per pound shipped. Whichever definition we choose, as long as there exists surplus capacity,

additional freight will tend to reduce average cost, provided that the unit variable cost is not increasing. Also, average total (fixed plus variable) cost will be higher than marginal cost. In the first half of this century railway economists estimated that 65 per cent of all expenses of a typical railway were fixed and 35 per cent were variable [Jackman, W.T., 1935, pp. 94-102]. More recent calculations, based on methods recommended by the McPherson report, indicated that 70-75 per cent of the CNR and CPR total expenses were variable [Purdy, H.L., 1972, p. 247].

Railways have to contend with two types of competition. One arises from other modes of transportation: trucks, airplanes, ships, and pipelines. We can illustrate this with an outdated but instructive example. In the 1800s the Great Trunk Railway had a lower tariff in summer, when traffic could move by water on lakes, rivers and canals, and a higher one in winter when the waterways were frozen. As long as the summer tariff remained at or above the variable cost of the railway, it was worth while to accept the freight, even though the freight rate did not suffice to cover all the average fixed cost of transportation as well.

The other types of competition railways are subject to is market competition. To illustrate: let us assume that Japanese widgets can be laid down in Vancouver at $100 a widget. Let us assume that widgets can be produced in Montreal at $85 f.o.b. and the average transportation cost plus railway profit to Vancouver is $20. At $105 the Montreal widget is not competitive and no

shipment will occur. If the railroad accepts as competitive rates of $15 or below, the Montreal produced widget will become competitive and the shipment will be sent. If the accepted competitive rate more than covers the variable cost, the fixed cost of the railroad will be spread over a wider base and the profit of the railroad will increase. Market competition may induce the railroad to accept special, competitive rates. In such a case the freight rate of widgets to Vancouver may be lower than the rate to, say, Regina, leading to the frequently discussed "long haul - short haul" problem.

Finally, as in all other industries, total revenues of the railways must cover total expenses, including the necessary remuneration of capital.

These facts explain why railroads can and do charge rates at or just above variable cost when confronting intermodal or market competition. In order to cover their total cost plus profits, they have to and do charge considerably higher rates in regions where there is not such competition. The technical term for this phenomenon is "cross-subsidization." It is, however, fallacious to believe that shippers of the "no competition" region are necessarily losers of such "rate discrimination." If the railroads would lose the business which they can retain only by quoting competitive rates, the traffic carried at noncompetitive rates would have to shoulder even higher rates, because now all the fixed costs would fall on the non-competitive traffic.

At this point attention must be drawn to Baumol and Bradford's classic article "Optimal Departures from Marginal Cost Pricing" (American Economic Review, Vol. LX No. 3, June 1979, pp. 265-283). In this article the authors demonstrate that in the case of decreasing marginal cost, and in the presence of an added constraint to make up a deficit resulting from a marginal cost pricing arrangement, socially (Pareto) optimal pricing requires that the prices deviate from marginal costs in the inverse proportion of their demand elasticities with respect to their prices. (This rule assumes zero cross-elasticities). Thus the time-honoured practice of the railways of changing according to "value of service" is shown to be at least approximately socially optimal - provided government subsidization of railroad operations is rejected. There are good reasons to object to such subsidies, the most important being their disincentive effect on railroad management efficiency. However, we shall show later, there have been precedents in Canada to subsidizing railroad operations. Some of the most outstanding transportation experts have questioned the wisdom and effectiveness of these subsidies.

At this stage a few additional points relating to western freight rates should be noted. A small open country (to which, for our purposes, the Canadian West can be compared) is essentially a price-taker, i.e., it has to absorb the transportation costs of the goods it buys or sells. High transportation costs increase the small open country's cost of living (when added to the price of imported consumer goods), and also increase its

production costs (when added to the price of imported goods which become inputs to western finished goods). High transportation costs also render western manufactured goods less competitive in the East.

At the same time high transportation costs act as a protective tariff for western manufacturing within the western market, increasing the competitive strength of western manufacturers vis à vis eastern or foreign manufacturers. The importance of these points will become obvious in the following pages.

Railroads and politics have always been intertwined issues in Canada. Prior to Confederation railway construction proceeded only sporadically and on small scale. With Confederation the situation changed substantially. In the East a pledge was given to the Maritime provinces that the construction of a railway line between Halifax and the St. Lawrence River would begin within six months of Confederation. This line was completed in July 1876. Confederation also stipulated that British Columbia be connected with the rest of Canada within ten years from the date of the union. This stipulation was, of course, not the only political reason for the construction of the transcontinental railway. Fear of the Prairies falling into the United States orbit and desire of opening up the vast stretches of open land to settlement also played important roles.

Regarding freight rates: prior to Confederation rate setting was left, in accordance with the prevailing spirit of laisser

faire, to competition. Some attempts were made to set upper limits on the rates, and providing for lower maxima when dividends or net profits exceeded certain percentages stipulated in the charters of the railway companies.

The first Dominion Statute (1869) made the freight rates subject to approval by Government in Council. The Parliament of Canada could reduce the rates, but not without the consent of the companies, and not so as to produce less than 15 per cent annual profit on the capital actually invested. This was reduced to 10 per cent in 1881 for the CPR, but for the other lines the 15 per cent limitation remained the general rule.

In the period up to the Second World War the foundation of the freight rate structure was the "classification," which grouped the many articles and commodities tendered for shipment. Rates differed according to class (the most valuable goods being grouped in the highest class), distance to be carried, and "territory" (i.e., Maritimes, Quebec-Ontario Central, Ontario Superior, Prairies and Pacific.) In general the Maritime rate was the lowest, followed by Quebec-Ontario Central, Prairie (with its low population density), Superior (with even sparser population and less freight), and Pacific (with the fuel-consuming obstacle of the Rocky Mountains). It is impossible to compare freight costs of the regions because no information is available on what tonnage moved at which class rate over how many miles, but a very rough impression can be gained by comparing the class 100 rates for 100

miles for each of the territories. (Graph 3-1). In this instance, we find that prior to 1914 the Prairies rate was some 30 to 50 per cent higher than that of Quebec-Ontario Central, and the Pacific rate 65 to 85 per cent higher. During and after World War I the Board of Railroad Commissioners (created in 1903), permitted horizontal (across the board) rate increases to compensate for higher operating costs of the railways, but the permitted increases were in general lower in the West than in the East (e.g., in 1917 15 per cent in the East, 10 per cent in the West, in 1920 40 per cent in the East, 35 per cent in the West). Also the Mountain Differential applicable to British Columbia was successively reduced in 1914, 1922, and finally abolished in 1949, when the class rates of the Prairies became applicable to British Columbia as well. By 1939 the Prairie class 100 rate for 100 miles was only about 6 per cent higher than the Ontario-Quebec rate, and the Pacific rate 25 per cent higher.

In 1951, following the Turgeon Report, an amendment to the Railway Act declared "...to be the national freight rate policy that...every railway company shall...charge tolls to all persons at the same rate, whether by weight, mileage or otherwise...". Equalization of class rates cost west of Lévis except over the White Pas and Yukon was achieved on March 1, 1955.

In addition to the class rates there also existed rates for low-valued, voluminous goods, which had to be transported in large volumes and to distant markets (e.g., coal, sand, lumber). For

this type of freight commodity rates have been published. Their history is similar to that of the class rates described above. We shall deal with the question of statutory freight rates on grain in a later chapter.

The long and laborious journey towards equal freight rates was propelled more by political than economic forces. During most of the 19th century the railway was such a big improvement over available alternative modes of transport that the Westerners were glad to have the railroad and did not complain about West-East rate differentials. Also, it is noteworthy, that the concept of regional development and of reasonableness and equity entered the arena of rate-making at an early date. In 1883 Collingwood Schreiber, Chief Engineer of Goverment Railways, prepared a new and revised tariff for the Minister of Railroads and Canals. In the accompanying letter he wrote:

"In accordance with instructions received from the Honourable Minister I have prepared for his consideration a freight tariff for the Western Division of the Canadian Pacific Railway. This it will be observed is higher than tariffs of the Railway in Eastern Canada, but I think it is only in proportion to the comparatively greater cost of operating a railway in the North West...the line runs for hundreds of miles through a district which, if not wholly unsettled, is very sparsely settled indeed, and which will yield but a very light traffic for some time to come...I have, however, borne in mind the express wishes of the Honourable Minister, that

the tariff be framed with the view to the settlement of the country and the promotion of its trade. (Quoted in Henry, R.A.C. and Associates, 1939, pp. 90-91) (our emphasis).

In 1903 the Board of Railway Commissioners was created. The Railway Act provided that:

> "The Board may disallow any tariff ... that it considers unjust and unreasonable (our emphasis) ... and may change and alter rates as changing conditions or cost of transportation may from time to time require ..."

In 1901 the Manitoba government provided a subsidy to the Canadian Northern Railway and the latter agreed to a rate reduction of 15 per cent between Winnipeg and the Lakehead. Competition forced the CPR to follow suit. This raised complaints of unjust discrimination from the other provinces. In 1914 (the Western Rates Case) the Board of Railway Commissioners ordered a reduction for Saskatchewan and Alberta, achieving equality of rates across the Prairies. At the same time the Board also reduced the Pacific rates. The Manitoba rate was left unchanged, the Board arguing that the high density of Manitoba traffic was due to traffic originating from or destined for the other Prairie provinces. This was in a sense an ironic outcome. The Western Rate Case was, to some extent, triggered by the Winnipeg Board of Trade's resolution addressed to the Dominion Minister of Railroads and Canals, in which the Board of Trade complained that in spite of the substantial increase of Western traffic there had not been

any decrease of freight rates. The Board of Trade therefore petitioned the Government of Canada "that the rates allowed to be charged by the railways in the Western provinces shall not exceed those charged in Ontario and Quebec for a similar service to a greater extent than necessary to cover any excess there may be in the cost of operation in the West than in Ontario and Quebec..." (our emphasis). (Darling, 1980, p. 38). The Board of Trade's submission is a good example of the "cost of service" approach to rate making, while the railroads, within the limits of government regulation, followed the "value of service" or "what the traffic will bear" approach.

In connection with the Western Rates case Darling [1980, p. 43] adds: "While admitting higher cost of operation within the Pacific territory, but rejecting any "smearing" of these costs over the entire West, the Board, without leaving any trace of its reasoning process within the judgement, in effect did "smear" some of the costs over the Prairies by reducing the Pacific scale.

This is of great significance in the freight rate issue. Economic arguments could indeed be used, but they were uncertain alibis since any particular economic premise adopted had the uncomfortable faculty of applying in areas and in ways that undermined any united regional appeal for justice."

During World War I railroad costs increased and in 1917 the Board of Railway Commissioners allowed a 15 per cent horizontal

(across the board) increase followed by another 25 per cent increase in 1918. These applied to all Canada equally. A third increase in 1920 however permitted 40 per cent in Eastern Canada and 35 per cent in the West, to be dropped back the next year to 35 and 30 per cent, respectively. Manitoba and Saskatchewan unsuccessfully urged a smaller increase to 20 per cent in 1921. In 1922, British Columbia requested the abolishing of the Mountain Differential and succeeded in having it reduced from 1.5 times the Prairie scale to 1.25 times. In effect the Board did not give any economic reasons for the reduction, thereby indicating that the change was essentially due to the political pressure exerted by the British Columbia government. In 1949 the Board completely abolished the Mountain differential. It is noteworthy that only about 16 per cent of the traffic moving in Mountain Territory was subject to the differential -- the rest presumably moving under competitive or agreed rates. (Darling, H., 1980, p. 161). Finally, following a recommendation the Turgeon Commission, the 1951 amendment of the Railway Act directed the Board of Railway Commissioners to equalize all class and noncompetitive commodity rates throughout Canada -- except for traffic moving westward from the Atlantic provinces, to which we shall turn shortly. The class rates were equalized in 1955 and of commodity rates in practice equalized in 1959. However, this equalization soon proved to be of little significance.

During World War II and its immediate aftermath freight rates were frozen by the Wartime Prices and Trade Board. After the war

and during the following two decades the railways applied for a series of horizontal freight rate increases, citing increased costs as justification. The Board's method of calculating the allowed increase can be illustrated with the 15 per cent case of 1958 [Currie, A.W., 1967, pp. 67-68]. The Board first calculated the permissible level of net rail income for the "yardstick" railway, the CPR. The Board chose the CPR as the yardstick, because, as a private company, it had to raise capital on the market. The method of calculation was as follows:

| | |
|---|---|
| Fixed charges of the rail portion of the corporation | $13 million |
| Dividend on preferred stock (4 per cent) and on paid-up ordinary stock (5 per cent) | $20.6 million |
| Surplus (for net additions and betterment of railway property) | $15.2 million |
| Additional allowance for reclassification from nonrail to rail investment | $2.4 million |
| Total permissive level of net rail income | $51.3 million |

| | | | |
|---|---|---|---|
| Actual net rail income in 1957 | | $48.1 million | |
| Allowance for depreciation formula | $0.4 million | | |
| Less income tax (47½%) | $0.2 million | | |
| Decrease in net rail income | | $0.2 million | $47.9 million |
| Deficiency in net rail income | | | $3.3 million |
| Allowance for income tax (47½%) on additional revenue yield requirement | | | $3.0 million |
| Revenue requirement from increased rates | | | $6.4 million |

In order to permit the increased revenue of $6.4 million to which, of course, no increase on the statutorily fixed grain freight rate could contribute, the Board permitted a 15 per cent increase in the other rates. Similar calculations formed the base of the numerous other horizontal increases between 1948 and 1958. By 1958 freight rates stood at about twice the 1947 level. The horizontal increases caused many complaints. One of the loudest of these emphasized that a flat percentage increase raises the absolute magnitude of already existent rate differentials.

In the postwar years Canada's truck stock increased by leaps and bounds and the road network was improved and expanded. As a consequence trucking made serious inroads into the railroads' share of revenues (Table 3-1). As Curry pointed out in 1967 (p. 69) "at no time since 1945 has the Canadian Pacific been able to earn the full permissive income allowed by the Board under the formula." Intermodal competition, increases in costs, and the time lags caused by the hearings of the Board kept their actual net earnings below what the Board judged to be appropriate and just.

In November 1958 the Board awarded a further 17 per cent rate increase. The federal government decided to roll this back in several steps to 8 per cent and also passed the Freight Rate Reduction Act by which it provided a subsidy to compensate the railroads for the rollback. Also, in 1959 it appointed a Royal Commission on Transportation (which, after the retirement for health reasons of its first Chairman, Mr. McTague, became known as

the MacPherson Commission). The terms of reference charged the commission to investigate:

a) inequities of the freight rate structure, their incidence upon the various regions of Canada ... and the ... changes that can and should be made, in furtherance of national economic policy, to remove or alleviate such inequities;

b) the obligations and limitations imposed upon railways ... and what can and should be done to ensure a more equitable distribution of any burden...

c) the possibility of achieving more economical and efficient railway transportation...

d) whether, and to what extent ... assets and earnings of railway companies in businesses and investments other than railways should be taken into account in establishing freight rates;

e) such other related matters as the Commissioners consider pertinent...

Among the announced principles and numerous recommendations of the Commission as incorporated in the National Transportation Act of 1967 the ones most pertinent to this chapter can be summarized as follows.

The monopolistic position of the railways has been undermined in the post-World War II years by competition from other modes of transportation. It is in the interest of the national economy that competition between the various modes of transportation be pursued on equal footing. Rate control should not attempt to influence the level of railroad earnings. The railroads should be free to set the freight rates subject to two major exceptions:

1) "...all freight shall be compensatory ... A freight rate shall be deemed compensatory when it exceeds the variable cost of the movement of traffic concerned as determined by the Commission." (Railway Act, Section 276 (1) and (2)) This rule prevents predatory pricing that would drive competing modes of transportation out of business.

2) "In respect of those goods (for which) there is no alternative, effective and competitive service by a common carrier than a rail carrier ... the Commission may ... fix a rate equal to [250 per cent] of the variable cost..." (Railway Act, Section 278 (1) and (4)). This "captive shipper rule" serves to protect shippers from the railroads excessive monopoly power. The shipper has to apply to the Commission for setting the rate and has to commit himself to use the rail service exclusively for at least a year. It is noteworthy that there have been very few appeals against the railways' rates under Section 278. Most appeals have been made under Section 23 of the National Transportation Act which decrees that appeals can be made "where a person has reason to believe ... that the effect of any rate ... may prejudicially affect the public interest..." (National Transportation Act, Section 23(2)). The public interest is defined in Section 23(1) as the National Transportation Policy as contained in Section 3 of the National Transportation Act. Because of its great importance we quote this section <u>verbatim</u> and in its entirety:

National Transportation Policy

3. It is hereby declared that an economic, efficient and adequate transportation system making the best use of all available modes of transportation at the lowest total cost is essential to protect the interests of the users of transportation and to maintain the economic well-being and growth of Canada, and that these objectives are most likely to be achieved when all modes of transport are able to compete under conditions ensuring that having due regard to national policy and to legal and constitutional requirements

(a) regulation of all modes of transport will not be of such a nature as to restrict the ability of any mode of transport to compete freely with any other modes of transport;

(b) each mode of transport, so far as practicable, bears a fair proportion of the real costs of the resources, facilities and services provided that mode of transport at public expense;

(c) each mode of transport, so far as practicable, receives compensation for the resources, facilities and services that it is required to provide as an imposed public duty; and

(d) each mode of transport, so far as practicable, carries traffic to or from any point in Canada under tolls and conditions that do not constitute

(i) an unfair disadvantage in respect of any such traffic beyond that disadvantage inherent in the location or volume of the traffic, the scale of operation connected therewith or the type of traffic or service involved, or

(ii) an undue obstacle to the interchange of commodities between points in Canada or unreasonable discouragement to the development of primary or secondary industries or to export trade in or from any region of Canada or to the movement of commodities through Canadian ports;

and this Act is enacted in accordance with and for the attainment of so much of these objectives as fall within the purview of subject-matters under the jurisdiction of Parliament relating to transportation. 1966-67, c. 69, s. 1.

As pointed out by A.W. Currie [1967, pp. 25-26] the Act "...shows the same balancing of objectives as in the past. Modes of transport are simultaneously to be economically viable organizations and means for carrying out national objectives... Moreover, throughout the entire legislation runs a common thread: the need to satisfy the political and economic aspirations of various parts of Canada."

Since the National Transportation Act it is essentially competition (or the lack of it) that determines Western freight rates. Following the Commissions' recommendations, the Board prescribed new, improved techniques (including multiple regression) for establishing variable cost. The Commission also concluded that the statutory freight rate for grain no longer covered variable cost, causing losses "...which must of necessity now be recovered from other shippers..." These losses "...should in future be borne by the Parliament of Canada, who in its wisdom sets the statutory rate." (MacPherson Committee Report, 1961, Vol. 1, p. 49) In effect, the Commission, and following its recommendations, the National Transportation Act, attempted a substantial reduction in rate-setting by regulation. The rate- setting regime preceding the National Transportation Act continuously raised such difficult -- in effect insoluble -- questions as what constitutes equity, how can it be reconciled with the earnings requirements of the railways, what are the appropriate earnings levels of the railways, and how can these problems be reconciled with the economic interests of the nation. The Act attempts to let

competition do the rate-setting and thereby the allocation of national economic resources.

This solution did not satisfy the premiers of the Western provinces. In their joint submission to the Western Economic Opportunities Conference they complained that;

"The underlying philosophy of the National Transportation Act (1967) is to rely on carrier competition to control rates. The lack of competition in certain regions of the West places railways in a position of significant monopoly, leading to rail rates and pricing policies which are a major barrier to economic development and diversification..." (our emphasis).

They also requested that ... "Section 3 of the National Transportation Act should be restated to clearly place regional economic development as one of the basic objectives of national transportation policy." (Western Economic Opportunities Conference, p. 203). The significance of this request, which generated extensive heated discussion during the conference, is in the fact that Section 3 defined the "public interest" under which appeals against rates can be made. The federal government rejected this extension of Section 3, arguing that the regulatory, non-elected nature of the Canadian Transport Commission renders it an inappropriate organ for setting policy for regional economic development, a policy that is, and should remain, the prerogative of the elected Parliament of Canada.

During the Western Economic Opportunities Conference the Western Premiers , for the first time in the history of Western complaints about freight rates, submitted comprehensive alternative rate-making proposals. They maintained that these proposals would promote Western economic development and diversification, in particular by eliminating unjustified differences in the freight rates of raw materials vs. finished goods, and by abolishing anomalous situations in which short hauls are charged more than long ones. The proposals will be the subject of the next chapter. We must, however, mention at this place that they implied very heavy federal subsidies of the railroads. Subsidization of railways is by no means unprecedented in Canada. Quite apart from the subsidization of railway construction, which was almost universal, that of operations has a long history as well. The traffic within, or moving westward from, the "select territory" of the Maritimes has been enjoying a 20 per cent subsidy since the passing of the Maritime Freight Rates Act in 1927. The Canadian National Railways suffered a long series of deficits, which is not surprising if we recall that "few companies ever began operations under greater handicaps than the Canadian National. It was a conglomeration of several lines, ill-co-ordinated, often competitive with each other, poorly equipped, sometimes poorly built" (Curry, A.W., 1967, p. 416) which the federal government kept alive for political reasons. In 1951 the Turgeon Commission recommended equalization of class and commodity rates across Canada; at the same time the Commission recognized that very

little traffic was generated in the Ontario-Superior territory. Therefore it suggested a "bridge subsidy" to the CPR, equal to the annual cost of maintaining its track between Sudbury and Fort William. Finally, the MacPherson Commission having concluded that "Parliament in its wisdom" has forced upon the railroads a statutory grain freight rate that no longer covered variable cost, recommended that the railroads be subsidized for the hauling of statutory grain. So there was ample precedent for a rate system that would need railway subsidization -- providing that "Parliament in its wisdom" decided that the subsidy's effect on Western economic development and diversification justified the size of subsidy arising from the Western Premiers' freight rate proposal.

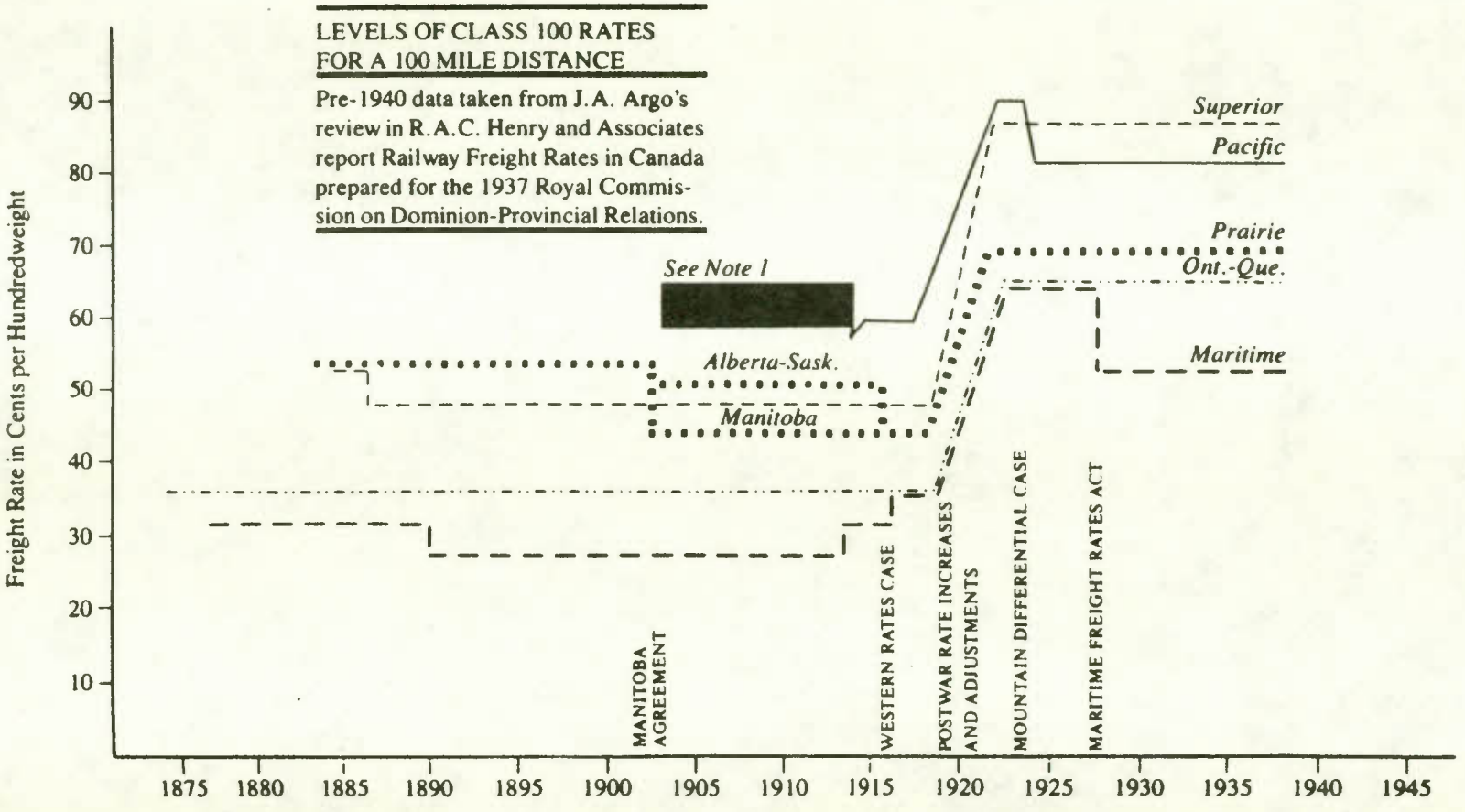
Table 3-1

Operating Revenues of Canadian Domiciled Carriers Engaged in For-Hire Freight Transportation by Mode of Transport

| | 1930 | | 1940 | | 1950 | | 1960 | | 1974 | | 1980 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Million$ | % | Million$ | % | Million$ | % | Million$ | % | Million$ | % | Million$ | % |
| Rail | 353.8 | 85.25 | 362.9 | 69.0 | 836.4 | 73.5 | 1043.6 | 47.5 | 2361.9 | 31.75 | 4718.0 | 34.2 |
| Water | 51.9 | 12.50 | 97.3 | 18.5 | 170.7 | 15.0 | 274.6 | 12.5 | 929.9 | 12.50 | 1825.0 | 13.2 |
| Truck | 9.3 | 2.25 | 57.9 | 11.0 | 113.8 | 10.0 | 648.1 | 29.5 | 305.0 | 41.00 | 4932.0 | 35.8 |
| Pipeline | - | - | - | - | 5.7 | 0.5 | 181.3 | 8.25 | 762.5 | 10.25 | 1631.0 | 11.8 |
| Other | - | - | 7.9 | 1.5 | 11.4 | 1.0 | 49.4 | 2.25 | 334.8 | 4.50 | 688.0 | 5.0 |
| Total | 415.0 | 100.0 | 526.0 | 100.0 | 11.36.0 | 100.0 | 2197.0 | 100.0 | 7439.0 | 100.00 | 13794.0 | 100.0 |

Source: Statistics Canada, Transportation and Communications Division

Chart 3-1




NOTE 1 – Prior to September 1914, Pacific rates depended upon which 100 miles freight was moved over

Source: Darling, H., 1980.

# 4 RATE-SETTING PROPOSALS OF ALBERTA AND MANITOBA

As mentioned in the previous chapter, the Prairie provinces submitted two railway rate-setting proposals to the Western Economic Opportunities Conference. These proposals were intended to eliminate inequities thought to be preventing the development and diversification of Western manufacturing. Alberta submitted the Equitable Pricing Policy (EPP) and Manitoba the Destination Rate Level (DRL) proposal. In order to investigate the impact of the proposals, the Federal-Provincial Committee on Western Transportation engaged a consortium of consultants to carry out the necessary research.

## The EPP Proposal

The Equitable Pricing Policy maintained that rate-making is equitable when users of "rail services pay the same mile for mile rates for the same kind of equipment in all parts of Canada" [Government of Alberta, 1973, p. 49]. In order to investigate the effects of such a policy the following method was adopted [Ross and Partners et. al., 1974, p. 4-4].

Eleven car types were chosen:

1) Box;
2) Open Hopper;
3) Covered Hopper;

4) Gondola;

5) Flat, other than Trailers and Containers on Flat Cars;

6) Flat, Trailers and Containers on Flat Cars;

7) Ore;

8) Refrigerator;

9) Automobile;

10) Stock;

11) Tank.

For each car type the ten shortest and ten longest hauls recorded in the 1971 One Percent Waybill Sample were plotted on a graph which had length of haul as the horizontal scale and revenue per carload as the vertical one. Statutory grain shipments were excluded. Revenues subject to Maritimes rate subsidy were appropriately adjusted. Choosing the second lowest revenue per carload among the shortest and among the longest hauls (second lowest in order to eliminate mistakes and obvious anomalies) a straight line was drawn between the chosen shortest and longest haul points. The resulting line was accepted as indicating the EPP rate for intermediate distances. All the shipments chosen from the One Percent Waybill Sample do presumably cover at least variable costs as prescribed by the McPherson Report and the National Transportation Act, therefore it is reasonable to assume that the rates derived for intermediate points as derived from the straight line would also at least cover variable costs.

It should be noted that the EPP would cover variable costs, but not much more. In the case of very short hauls the intermodal competition from trucks would be severe. In the case of very long hauls (presumably to the seacost) intermodal competition from shipping combined with market competition from foreign producers would act as restraint on freight rates in at least some cases. It is therefore reasonable to assume that freight rates under the EPP would not cover total costs of the railway system.

In order to investigate the effect of the EPP the following method was employed:

The study sponsors agreed on the choice of 48 three-digit industries "which were already of some significance to Canada as a whole and/or within specific regions and provinces, or as those with substantial potential which might be induced to locate in western Canada" [P.S. Ross and Partners et. al., 1974, p. 3-2]. The list consisted of 3 primary resource industries, 40 manufacturing industries and 5 wholesale industries. Table 4-1 contains the list of the 40 manufacturing industries together with their 1970 Standard Industrial Classification (SIC) number, subdivided into seven categories. We shall designate them as the "sample" industries.

The investigation centered on the forty manufacturing industries. In 1971 these industries accounted for about 60 per cent of all manufacturing in Canada as a whole, whether measured

by value added, number of employees, materials and supplies used, shipment of own manufacture, or salaries and wages. In the Western Provinces their relative importance was even bigger: e.g., their shipments accounted for 87 per cent of all manufacturing in the West. The following analysis was performed on each of the "sample" manufacturing industries.

Step 1. Using the Statisitcs Canada 1971 Census of Manufacturing the total weight and value of commodity inputs and outputs was estimated.

Step 2. The four most important (by weight) input commodities and four most important output commodities of the sample industry were established from the Census of Manufacturing. The basis of commodity classification was the Transportation Freight Classification (TFC). These commodities were designated as "sample" commodities. Fewer than four were chosen if their combined weight amounted to two-thirds of the total commodity input or output weight of the "sample" industry. There was considerable duplication among the "sample" commodities of the forty "sample" manufacturing industries. Altogether they numbered 106 TFC commodities.

Step 3. The Census of Manufacture gave value of own manufacture for each "sample" industry for each province (in case the provincial value was confidential, it was estimated on basis

of the number of establishments). The provinces of the Atlantic region were treated throughout the analysis as one province.

Step 4. The national tonnage of sample commodity inputs and outputs were distributed among the provinces in proportion to their value of shipments. "It was assumed that each industry in the Atlantic region and each other province in effect was a duplicate of the national industry in terms of the relative volume (in tons) of materials used and goods shipped. However, the volume of materials used and goods shipped was of a scaled down size proportionate to that province's share of the value of goods of own manufacture shipped by that industry in all Canada" (P.S. Ross and Partners et. al., 1974, Technical Appendices Vol. II, p. 5-17.

Step 5. Estimate of Intra- and Extra-Provincial Shipments of Inputs and Outputs. For inputs, the consultants used the unpublished detail of the 1971 One Percent Waybill Sample and of the Statistics Canada 1971 For-Hire Trucking Survey. The consultants calculated the Provincial origin-destination matrices for each "sample" commodity. This in turn was used to obtain the origin-destination of inputs for each industry. The origin-destination of the "non- sample" commodity inputs was assumed to be the same as the weighted average of the "sample" commodity inputs, except when special information was available on the origin-destination of "non-sample" inputs. This was frequently the case with containers and other packaging materials. (Mr. J.S. Merrett, Thorne, Stevenson & Kellog, Winnipeg, Verbal Communication)

For outputs the Statistics Canada 1967 origin-destination matrices of the Destination of Manufacturing Shipments was used.

Two important facts emerged from this step: 69 per cent of tonnages shipped was intra-provincial rather than extra-provincial; and with the exception of a few bulky input materials (for which special allowance was made in the analysis) intra-provincial tonnages shipped were predominantly by truck rather than by rail. In the subsequent work it was assumed that a lowering of freight rates would not cause inter-modal shifts between rail and truck in intra-provincial traffic but would cause a shift from truck to rail in extra-provincial shipments. (The method of calculating the magnitude of the shift is described in P.S. Ross and Partners et. al., Appendix Vol II, Chapter 4).

Step 6. Rail Origin and Destination Matrices of the "Sample" Commodities. For each of the 106 "sample" commodities two Origin-Destination matrices were derived from the One Percent Waybill Sample. The first matrix of each "sample" commodity contained the tons shipped, the second matrix contained the freight revenue. Dividing cell for cell the first matrix by the second, an Origin-Destination matrix of the freight cost per ton was calculated for each "sample" commodity.

Step 7. Estimate of Relevant Volume and Transport Charges at Existing Rail Freight Rates. In the preceding steps the transportation pattern of each sample commodity was established. In this

step the assumption was made that only interprovincial shipments (and intra-provincial shipments of certain bulky commodities) was sensitive to changes in freight rates. These shipments were designated as "relevant" shipments. It is worth noting that for the 40 "sample" industries only about 25 per cent of the total tonnage of inputs and outputs were "relevant". Multiplying the "relevant shipments" by the freight cost per ton obtained in Step 6, the "relevant" transportation charges of each "sample" commodity and each origin-destination pair was obtained. Applying the "relevant" transportation charges of the "sample" commodities to the "sample" industries, and assuming that the weighted average of each industries "sample" commodity was representative of each "sample" industry's total commodity input and output, it was possible to calculate the "relevant" transport charge of each "sample" industry.

Step 8. Estimate of Relevant Transport Charges Under EPP. Replacing the actual transport charges calculated in Step 6 by charges calculated using EPP and repeating Step 7 (assigning the rate of the appropriate freight car type to each "sample" commodity) the "relevant transport charge" under EPP of each "sample" industry was obtained.

## The Effects of the EPP Proposal

The EPP proposal would have reduced the relevant transport charges of the forty "sample" industries by substantial percent-

ages, both in the West and in the East. The actual and EPP relevant transportation charges (total for inputs and outputs) is listed in the first four columns of Table 4-2a and 4-2b. The two first columns indicate that in 1971 relevant transport charges in the forty sample industries ranged in the East from 0.13 per cent of Value of shipments (Women's Clothing) to 12.72 per cent (Concrete Products). In the West the range was from zero per cent for women's clothing to 12.39 per cent (Steel Pipe and Tube Mills). Colums 3 and 4 represent the corresponding percentages under EPP, and the values are (with the single exception of Women's Clothing) always lower than the corresponding values in columns 1 and 2. This is not surprising, because under EPP the rates are barely above variable cost. Columns 5 and 6 list the reduction in transport charges. They range in the East from zero (Women's Clothing) to 4.00 percentage points (Concrete Products) and in the West from zero (Women's Clothing) to 6.42 percentage points (Steel Pipe and Tube Mills). If in any particular industry the reduction between the Actual and EPP columns is bigger (smaller) for the West than for the East, then the adoption of EPP would improve (deteriorate) the West's competitive position versus the East in that industry. The relevant information is contained in the Column 7 of Table 4-2a and 4-2b. This column shows several interesting results:

a) the introduction of EPP would strengthen the West's position in 24 industries, leave it in one unchanged and weaken it in 15;

b) in 27 industries the absolute value of the change would be less than one percentage point of the value of shipments, in 10 industries it would be between 1 and 2 per cent and only in 3 industries above 2 per cent (Steel Pipe and Tube Mills, 4.57 per cent in favour of the West, Sawmills, Planning and Shingle Mills, 2.62 per cent in favour of the East, and Metal Stamping, Pressing and Coating, 2.50 per cent in favour of the West).

We can estimate the total effect of the EPP proposal by aggregating the forty sample industries. The result is tabulated in Table 4-3. This table indicates that the adoption on EPP would have reduced relevant transport costs by 40.1% in the East and by 40.5% in the West, with a minuscule advantage to the West.

In order to assess the importance of such a reduction, we shall perform a mental experiment. Let us assume a country where transportation costs are zero. Assuming other things equal we would expect that manufacturing would develop in a random manner, and manufacturing in every region of such a country would be highly diversified. If, then, we would find that manufacturing of every region is <u>not</u> diversified, we would have to conclude that forces other than transportation costs are preventing diversification. Such forces may be the presence of location-bound natural resources, agglomeration effects of population centers due to earlier settlement, climatic attractions etc.

Similarly, if relevant transportation costs are non-zero, but relatively small compared to the value of manufacturing output, it is reasonable to assume that the absence of diversification is not predominantly due to transportation costs, and the reduction or even complete elimination of such costs, would not lead to substantially increased diversification. Tables 4-2a and 4-2b indicate that relevant transportation costs amount to a very modest percentage of value of shipment. Therefore the alleged lack of diversification is not likely to be caused by the relevant transportation costs, nor eliminated by their reduction based on a freight-rate scheme like the EPP proposal.

EPP would result in a 0.4 per cent cost advantage to the West. How much would this change cost? P.S. Ross and Partners et. al. [1974, p. 9-1] estimate that the 1971 revenue reduction of the railways would have been $383 million or 0.41 per cent of GNP. In view of the fact that the return on capital in the railway industry was already quite low even under the actual rate setting regime (Table 3-4), the railway revenue shortfall would have to be covered by government subsidy. The $383 million was equivalent to 2.3 per cent of the 1971 federal government revenue.

The very big amount of work and needed confidential information ruled out on updated re-calculation of the effect of EPP. As a very crude first estimate we assume that the revenue reduction would be proportionate to the tonnage (excluding statutory grain)

hauled and to the GNE deflator. According to the Canadian Transport Commission, Canadian Carload All-Rail Traffic, the tonnage increased between 1971 and 1980 by 14.3 per cent and the GNE deflator by 125.2 per cent. The estimated revenue reduction due to the adoption of EPP would have been for 1980 $383 million * 1.143 * 2.252 = $986 million or 0.33 per cent of GNP. This would have been equivalent to 2.0 per cent of the federal government revenue.

The deficit could be avoided and the EPP principle still maintained by increasing all EPP rates by a fixed percentage the magnitude of which would be sufficient to cover the deficit (plus perhaps a socially desirable profit). It should be noted, however, that only if the elasticity of demand for all freight shipments is equal would such a procedure be socially optimal (Baumol, W.J. and Bradford, D.F., 1970, pp. 270-271). In fact, the elasticity for all shipments is not equal; it is, after all, the inequality of their elasticities which makes "value of service" pricing possible. Consequently an "equal percentage markup over marginal costs" freight rate policy would be socially inefficient.

The most important objection to the EPP, as well as to other freight-rate regulations which deprive the railroads of the freedom of rate-setting, is that, by covering the deficits of the railroads by subsidies, it would also abolish the incentive of the

railroad managers to reduce costs and to increase efficiency. In this respect it would operate like a "cost-plus" system.

## The DRL Proposal

The Destination Rate Level proposal observes that frequently the same commodity is shipped to destination D by producers from various origins, say A, B, and C. All shipments cover the variable cost but, depending on the place of origin, a different "percentage mark-up" to cover all or part of constant costs may be applied by the railroads. If the "percentage mark-up" on shipments from, say, A is lower than that on shipments from B and C, this gives, in the opinion of the authors of the DRL proposal an unfair advantage to the shipper from A. According to the DRL proposal the "percentage mark-up" on all shipments of the commodity to Destination D should be set at the lowest percentage mark-up of that commodity to D, whatever the location of origin.

Using again the 1971 One Percent Waybill Sample, the DRL transport charges were calculated by P.S. Ross and Partners et. al., [1974]. The results are summarized in the last five columns of Table 4-2.

## The Effects of the DRL Proposal

The DRL proposal would reduce the relevant transport charges of the forty "sample" industries by a much lesser amount than would the EPP proposal, (compare Table 4-2c and 4-2d, Columns 5 and 6

with the corresponding columns of Tables 4-a and 4-b). Tables 4-2c and 4-2d, Column 7 indicates: a) the introduction of DRL would strengthen the West's competitive position in 15 industries, leave it unchanged in one and weaken it in 24; b) in 36 industries the absolute value of change would be less than one percentage point of the value of shipments, in two cases it would be between one and two percentage points (Truck Body and Trailer Manufacturers, in favour of the West and Boat Building and Repair, in favour of the East) and in two cases between two and three percentage points (Sawmill, Planing and Shingle Mills, and Office Furniture, both in favour of the East).

As in the case of the EPP, we have aggregated the total effect of the DRL proposal over the forty "sample" industries. The result is tabulated in Table 4-5. According to this table the DRL proposal would have reduced relevant transport costs for producers in the East by 11.9 per cent and in the West by 8.7 per cent. The DRL would have deteriorated the competitive position of the West. The 1971 reduction in rail revenue would have been $115 million [P.S. Ross and Partners et. al., 1974, p. 9-4]. This amount would have been equivalent to 0.12 per cent of GNP and 0.68 per cent of the federal government revenue. Applying the same crude method of estimation as we did for the EDP proposal, we find that the railroad revenue reduction due to DRL in 1980 would have been $115 million * 1.143 * 2.252 = $296 million. This would have been equivalent to 0.10 per cent of GNP and 0.59 per cent of federal government revenues.

Table 4-1

Selected Industries for EPP and DRL Analysis

| | SIC | | |
|---|---|---|---|
| (1) | | Agricultural and Food Category | |
| | 101 | Meat and Poultry Products Industries | (2.83%)* |
| | 102 | Fish Products Industry | (2.49%) |
| | 103 | Fruit and Vegetable Processing Industry | (5.24%) |
| | 104 | Dairy Products Industry | (0.27%) |
| | 105 | Flour and Breakfast Cereal Products Industry | (4.83%) |
| | 106 | Feed Industry | (7.20%) |
| | 107 | Bakery Products Industries | (1.75%) |
| | 108 | Miscellaneous Food Industries | (1.72%) |
| | 109 | Beverage Industries | (2.12%) |
| | 172 | Leather Tanneries | (1.20%) |
| (2) | SIC | Energy, Chemicals and Refinery Category | |
| | 295 | Smelting and Refining | (2.88%) |
| | 365 | Petroleum Refineries | (4.41%) |
| | 373 | Plastics and Synthetic Resins Manufacturers | (6.84%) |
| | 375 | Paint and Varnish Manufacturers | (2.58%) |
| | 376 | Industrial Chemicals Manufacturers | (4.07%) |
| (3) | SIC | Wood Category | |
| | 251 | Sawmills, Planing Mills and Shingle Mills | (5.52%) |
| | 252 | Veneer and Plywood Mills | (9.23%) |
| | 254 | Sash, Door and Other Millwork Plants | (4.86%) |
| | 271 | Pulp and Paper Mills | (3.87%) |
| | 286 | Commercial Printing | (1.43%) |
| (4) | SIC | Iron and Steel Category | |
| | 291 | Iron and Steel Mills | (6.09%) |
| | 292 | Steel Pipe and Tube Mills | (7.20%) |
| | 302 | Fabricated Structural Metal Industry | (3.33%) |
| | 304 | Metal Stamping, Pressing and Coating Industry | (3.64%) |
| | 308 | Machine Shops | (2.52%) |
| | 309 | Miscellaneous Metal Fabricating Industries | (3.11%) |
| | 311 | Agricultural Implement Industry | (4.40%) |
| | 315 | Miscellaneous Machinery and Equipment Manufacturers | (4.41%) |
| | 324 | Truck Body and Trailer Manufacturers | (9.70%) |

Table 4-1 (cont'd)

Selected Industries for EPP and DRL Analysis

| | SIC | Regional Market-Based Category | |
|---|---|---|---|
| (5) | 162 | Rubber Products Industry | (2.95%) |
| | 261 | Household Furniture | (3.73%) |
| | 264 | Office Furniture Manufacturers | (4.26%) |
| | 328 | Boat Building and Repair | (2.85%) |
| | 335 | Communications Equipment Manufacturers | (2.17%) |
| | 336 | Electrical Industrial Equipment Manufacturers | (1.88%) |
| | 338 | Electric Wire and Cable Manufacturers | (1.69%) |
| | 354 | Concrete Products Manufacturers | (11.81%) |
| | 356 | Glass and Glass Products Manufacturers | (3.24%) |

| | SIC | Labour-Oriented and Footloose Category | |
|---|---|---|---|
| (6) | 244 | Women's Clothing Industries | (0.11%) |
| | 321 | Aircraft and Aircraft Parts Manufacturers | (1.36%) |

* The figures in parentheses are the "relevant" transport charges as per cent of value of shipments of goods of own manufacture. For explanation see text of this chapter.

Table 4-2 (a)

Relevant Transport Charges Under EPP and DRL Proposals, 1971

| SIC NO | Industry | Relevant Transport Charges as Per Cent of Value of Shipments | | | | Reduction in Transport Charges Per Cent of Value of Shipments | | Improvement in West's Competitive Position |
|---|---|---|---|---|---|---|---|---|
| | | Actual | | EPP | | EPP | | Per Cent |
| | | East | West | East | West | East | West | EPP |
| | **Agriculture and Food Category** | | | | | | | |
| 101 | Meat and Poultry | 2.41 | 3.43 | 1.86 | 2.33 | 0.55 | 1.10 | 0.55 |
| 102 | Fish Products | 2.56 | 2.34 | 1.86 | 1.81 | 0.70 | 0.53 | -0.17* |
| 103 | Fruit and Vegetable Products | 5.58 | 3.45 | 3.60 | 2.01 | 1.98 | 1.44 | -0.54* |
| 104 | Dairy Products | 0.28 | 0.29 | 0.21 | 0.18 | 0.07 | 0.11 | 0.04 |
| 105 | Flour and Breakfast Cereals | 4.42 | 5.93 | 2.63 | 3.21 | 1.79 | 2.72 | 0.93 |
| 106 | Feed Industry | 7.07 | 7.66 | 3.49 | 3.26 | 3.58 | 4.40 | 0.82 |
| 107 | Bakery Products Industry | 1.83 | 1.08 | 0.98 | 0.55 | 0.85 | 0.53 | -0.32* |
| 108 | Miscellaneous Food Industries | 1.34 | 3.48 | 0.64 | 2.33 | 0.70 | 1.15 | 0.45 |
| 109 | Beverage Industries | 1.95 | 2.89 | 0.79 | 1.58 | 1.16 | 1.31 | 0.15 |
| 172 | Leather Tanneries | 1.18 | 1.61 | 0.56 | 0.46 | 0.64 | 1.15 | 0.51 |
| | **Energy, Chemicals & Refining Category** | | | | | | | |
| 295 | Smelting and Refining | 2.65 | 3.73 | 1.63 | 2.11 | 1.02 | 1.62 | 0.60 |
| 365 | Petroleum Refineries | 3.75 | 5.28 | 2.69 | 3.79 | 1.06 | 1.49 | 0.43 |
| 373 | Plastics and Synthetic Resins | 7.15 | 5.09 | 3.25 | 1.82 | 3.90 | 3.27 | -0.63* |
| 375 | Paint and Varnish | 2.58 | 2.68 | 2.03 | 2.29 | 0.55 | 0.39 | -0.16* |
| 376 | Industrial Chemicals | 3.68 | 5.90 | 1.92 | 4.03 | 1.76 | 1.87 | 0.11 |
| | **Labour Oriented and Footlose Category** | | | | | | | |
| 321 | Aircraft and Aircraft Parts | 1.24 | 2.65 | 0.62 | 1.13 | 0.62 | 1.52 | 0.90 |
| 244 | Women's Clothing | 0.13 | - | 0.13 | - | - | - | - |

* Negative means deterioration of West's Competitive Position.
** Negative means increase in Relevant Transport Charges.

Source P.S. Ross and Partners et. al., 1974, Tables 5A-5E.

Table 4-2 (b)

Relevant Transport Charges Under EPP and DRL Proposals, 1971

| SIC NO | Industry | Relevant Transport Charges as Per Cent of Value of Shipments | | | | Reduction in Transport Charges Per Cent of Value of Shipments | | Improvement in West's Competitive Position |
|---|---|---|---|---|---|---|---|---|
| | | Actual | | EPP | | EPP | | Per Cent |
| | | East | West | East | West | East | West | EPP |
| | **Wood Category** | | | | | | | |
| 251 | Sawmills, Planing and Shingle Mills | 10.10 | 3.80 | 6.29 | 2.61 | 3.81 | 1.19 | -2.62* |
| 252 | Veneer and Plywood Mills | 6.84 | 10.12 | 4.24 | 6.21 | 2.60 | 3.91 | 1.31 |
| 254 | Sash, Door and Other Millwork | 5.88 | 3.02 | 4.02 | 1.77 | 1.86 | 1.25 | -0.61* |
| 271 | Pulp and Paper Mills | 4.17 | 2.94 | 2.08 | 1.40 | 2.09 | 1.54 | -0.55* |
| 286 | Commercial Printing | 1.46 | 1.25 | 0.72 | 0.60 | 0.74 | 0.65 | -0.09* |
| | **Iron and Steel Category** | | | | | | | |
| 291 | Iron and Steel Mills | 6.01 | 7.62 | 4.57 | 5.15 | 1.44 | 2.47 | 1.03 |
| 292 | Steel Pipe and Tube Mills | 5.23 | 12.39 | 3.38 | 5.97 | 1.85 | 6.42 | 4.57 |
| 302 | Fabricated Structural Metal | 3.00 | 4.15 | 1.39 | 2.10 | 1.61 | 2.05 | 0.44 |
| 304 | Metal Stamping, Pressing and Coating | 3.16 | 7.20 | 1.87 | 3.41 | 1.29 | 3.79 | 2.50 |
| 308 | Machine Shops | 2.36 | 2.81 | 1.10 | 1.10 | 1.26 | 1.71 | 0.45 |
| 309 | Misc. Metal Fabricating | 2.84 | 5.32 | 1.66 | 2.93 | 1.18 | 2.39 | 1.21 |
| 311 | Agricultural Implements | 3.75 | 6.45 | 2.19 | 3.52 | 1.56 | 2.93 | 1.37 |
| 315 | Misc. Machinery and Equipment | 4.59 | 2.94 | 2.15 | 1.76 | 2.44 | 1.18 | -1.26* |
| 324 | Truck Body and Trailer Manuf. | 8.35 | 11.64 | 4.93 | 6.50 | 3.42 | 5.14 | 1.72 |
| | **Regional Market Based Category** | | | | | | | |
| 162 | Rubber Products | 3.03 | 0.89 | 1.77 | 0.42 | 1.26 | 0.47 | -0.79* |
| 261 | Household Furniture | 3.85 | 2.81 | 2.41 | 1.53 | 1.44 | 1.28 | -0.16* |
| 264 | Office Furniture | 4.26 | 5.01 | 2.77 | 2.41 | 1.49 | 2.60 | 1.11 |
| 328 | Boat Building and Repair | 3.47 | 1.47 | 1.99 | 0.71 | 1.48 | 0.76 | -0.72* |
| 335 | Communications Equipment | 2.06 | 4.35 | 0.99 | 2.04 | 1.07 | 2.31 | 1.24 |
| 336 | Electrical Industrial Equipment | 1.90 | 2.03 | 0.53 | 0.57 | 1.37 | 1.46 | 0.09 |
| 338 | Electric Wire and Cable | 1.52 | 3.58 | 0.87 | 1.78 | 0.65 | 1.80 | 1.15 |
| 354 | Concrete Products | 12.72 | 6.09 | 8.72 | 3.10 | 4.00 | 2.99 | -1.01* |
| 355 | Glass and Glass Products | 4.19 | 3.76 | 2.51 | 1.68 | 1.68 | 2.08 | +0.40* |

* Negative means deterioration of West's Competitive Position.
** Negative means increase in Relevant Transport Charges.

Source P.S. Ross and Partners et. al., 1974, Tables 5A-5E.

Table 4-2 (c)

Relevant Transport Charges Under EPP and DRL Proposals, 1971

| SIC NO | Industry | Relevant Transport Charges as Per Cent of Value of Shipments | | | | Reduction in Transport Charges Per Cent of Value of Shipments | | Improvement in West's Competitive Position Per Cent |
|---|---|---|---|---|---|---|---|---|
| | | Actual | | DRL | | DRL | | |
| | | East | West | East | West | East | West | DRL |
| | **Agriculture and Food Category** | | | | | | | |
| 101 | Meat and Poultry | 2.41 | 3.43 | 2.31 | 3.30 | 0.10 | 0.13 | 0.03 |
| 102 | Fish Products | 2.56 | 2.34 | 2.34 | 2.34 | 0.22 | - | -0.22* |
| 103 | Fruit and Vegetable Products | 5.58 | 3.45 | 5.31 | 3.38 | 0.27 | 0.07 | -0.20* |
| 104 | Dairy Products | 0.28 | 0.29 | 0.27 | 0.25 | 0.01 | 0.04 | 0.03 |
| 105 | Flour and Breakfast Cereals | 4.42 | 5.93 | 3.84 | 5.85 | 0.58 | 0.08 | -0.50* |
| 106 | Feed Industry | 7.07 | 7.66 | 6.45 | 7.09 | 0.62 | 0.57 | -0.05* |
| 107 | Bakery Products Industry | 1.83 | 1.08 | 1.66 | 1.07 | 0.17 | 0.01 | -0.16* |
| 108 | Miscellaneous Food Industries | 1.34 | 3.48 | 1.24 | 3.27 | 0.10 | 0.21 | 0.11 |
| 109 | Beverage Industries | 1.95 | 2.89 | 1.87 | 2.71 | 0.08 | 0.18 | 0.10 |
| 172 | Leather Tanneries | 1.18 | 1.61 | 0.84 | 1.64 | 0.34 | -0.03** | -0.37* |
| | **Energy, Chemicals & Refining Category** | | | | | | | |
| 295 | Smelting and Refining | 2.65 | 3.73 | 2.40 | 3.69 | 0.25 | 0.04 | -0.21* |
| 365 | Petroleum Refineries | 3.75 | 5.28 | 3.16 | 4.63 | 0.59 | 0.65 | 0.06 |
| 373 | Plastics and Synthetic Resins | 7.15 | 5.09 | 5.59 | 4.49 | 1.56 | 0.60 | -0.96* |
| 375 | Paint and Varnish | 2.58 | 2.68 | 2.48 | 2.51 | 0.10 | 0.17 | 0.07 |
| 376 | Industrial Chemicals | 3.68 | 5.90 | 3.29 | 5.85 | 0.39 | 0.05 | -0.34* |
| | **Labour Oriented and Footlose Category** | | | | | | | |
| 321 | Aircraft and Aircraft Parts | 1.24 | 2.65 | 1.24 | 2.56 | - | 0.09 | 0.09 |
| 244 | Women's Clothing | 0.13 | - | 0.13 | - | - | - | - |

* Negative means deterioration of West's Competitive Position.
** Negative means increase in Relevant Transport Charges.

Source P.S. Ross and Partners *et. al.*, 1974, Tables 5A-5E.

Table 4-2 (d)

Relevant Transport Charges Under EPP and DRL Proposals, 1971

| SIC NO | Industry | Relevant Transport Charges as Per Cent of Value of Shipments | | | | Reduction in Transport Charges Per Cent of Value of Shipments | | Improvement in West's Competitive Position |
|---|---|---|---|---|---|---|---|---|
| | | Actual | | DRL | | DRL | | Per Cent |
| | | East | West | East | West | East | West | DRL |
| | **Wood Category** | | | | | | | |
| 251 | Sawmills, Planing and Shingle Mills | 10.10 | 3.80 | 7.32 | 3.49 | 2.78 | 0.31 | -2.47* |
| 252 | Veneer and Plywood Mills | 6.84 | 10.12 | 5.77 | 9.91 | 1.07 | 0.21 | -0.86* |
| 254 | Sash, Door and Other Millwork | 5.88 | 3.02 | 5.23 | 2.83 | 0.65 | 0.19 | -0.46* |
| 271 | Pulp and Paper Mills | 4.17 | 2.94 | 3.52 | 2.56 | 0.65 | 0.38 | -0.27* |
| 286 | Commercial Printing | 1.46 | 1.25 | 1.27 | 1.13 | 0.19 | 0.12 | -0.07* |
| | **Iron and Steel Category** | | | | | | | |
| 291 | Iron and Steel Mills | 6.01 | 7.62 | 5.53 | 6.84 | 0.48 | 0.78 | 0.30 |
| 292 | Steel Pipe and Tube Mills | 5.23 | 12.39 | 4.49 | 11.84 | 0.74 | 0.55 | -0.19* |
| 302 | Fabricated Structural Metal | 3.00 | 4.15 | 2.79 | 3.82 | 0.21 | 0.33 | 0.12 |
| 304 | Metal Stamping, Pressing and Coating | 3.16 | 7.20 | 2.90 | 6.52 | 0.26 | 0.68 | 0.42 |
| 308 | Machine Shops | 2.36 | 2.81 | 1.62 | 2.51 | 0.74 | 0.30 | -0.44* |
| 309 | Misc. Metal Fabricating | 2.84 | 5.32 | 2.60 | 4.28 | 0.24 | 1.04 | 0.80 |
| 311 | Agricultural Implements | 3.75 | 6.45 | 2.79 | 6.26 | 0.96 | 0.19 | -0.77* |
| 315 | Misc. Machinery and Equipment | 4.59 | 2.94 | 3.81 | 2.79 | 0.78 | 0.15 | -0.63* |
| 324 | Truck Body and Trailer Manuf. | 8.35 | 11.64 | 7.00 | 8.49 | 1.35 | 3.15 | 1.80 |
| | **Regional Market Based Category** | | | | | | | |
| 162 | Rubber Products | 3.03 | 0.89 | 2.76 | 0.88 | 0.27 | 0.01 | -0.26* |
| 261 | Household Furniture | 3.85 | 2.81 | 3.52 | 2.41 | 0.33 | 0.40 | 0.07 |
| 264 | Office Furniture | 4.26 | 5.01 | 3.60 | 7.08 | 0.66 | -2.07** | -2.73* |
| 328 | Boat Building and Repair | 3.47 | 1.47 | 3.23 | 2.53 | 0.24 | -1.06** | -1.30* |
| 335 | Communications Equipment | 2.06 | 4.35 | 1.42 | 3.93 | 0.64 | 0.42 | -0.22* |
| 336 | Electrical Industrial Equipment | 1.90 | 2.03 | 1.78 | 1.27 | 0.12 | 0.76 | 0.64 |
| 338 | Electric Wire and Cable | 1.52 | 3.58 | 1.44 | 3.33 | 0.08 | 0.25 | 0.17 |
| 354 | Concrete Products | 12.72 | 6.09 | 12.21 | 5.96 | 0.51 | 0.13 | -0.38* |
| 355 | Glass and Glass Products | 4.19 | 3.76 | 4.06 | 3.64 | 0.13 | 0.12 | -0.01* |

* Negative means deterioration of West's Competitive Position.
** Negative means increase in Relevant Transport Charges.

Source P.S. Ross and Partners et. al., 1974, Tables 5A-5E.

Table 4-3

Effect of EPP on Relevant Transport Cost, 1971

| | Dollars Per Ton | | Index All Canada = 100 | |
|---|---|---|---|---|
| | Actual | EPP | Actual | EPP |
| East | 8.80 | 5.27 | 94 | 95 |
| West | 10.96 | 6.52 | 118 | 117 |
| All Canada | 9.32 | 5.55 | 100 | 100 |

Source P.S. Ross and Partners et. al., [1974], Table 6-C.

Table 4-4

Percentage Return on Total Assets, Selected Industries, 1969-1980

| | 1969 | 1971 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 |
|---|---|---|---|---|---|---|---|---|
| Agriculture, Forestry, Fishing | 5.4 | 4.4 | 5.9 | 7.3 | 7.7 | 9.8 | 10.4 | 11.0 |
| Mining | 7.0 | 5.2 | 7.6 | 8.3 | 8.5 | 8.4 | 11.8 | 11.3 |
| Manufacturing | 6.5 | 6.0 | 7.6 | 7.4 | 6.9 | 8.1 | 9.4 | 9.3 |
| Transport Equipment | 7.5 | 7.4 | 7.2 | 8.5 | 7.6 | 6.6 | 7.0 | 4.1 |
| Storage | 4.4 | 6.9 | 8.2 | 8.1 | 9.4 | 8.6 | 8.7 | 12.9 |
| Communications | 5.8 | 6.2 | 7.5 | 7.0 | 7.1 | 7.2 | 7.8 | 7.6 |
| Public Utilities | 6.2 | 4.7 | 6.4 | 7.0 | 8.2 | 8.6 | 9.0 | 8.9 |
| Construction | 4.8 | 5.0 | 7.0 | 6.8 | 6.0 | 6.1 | 7.0 | 7.5 |
| Wholesale Trade | 5.7 | 5.9 | 6.6 | 6.7 | 5.9 | 6.7 | 7.8 | 7.9 |
| Transportation | 4.1 | 4.3 | 4.9 | 5.2 | 5.4 | 6.3 | 7.0 | 7.3 |
| Air | 3.6 | 4.6 | 4.6 | 5.1 | 6.8 | 7.1 | 6.8 | 7.2 |
| Water | 3.8 | 3.7 | 4.4 | 2.4 | 0.5 | 3.9 | 5.5 | 6.7 |
| Rail | 2.6 | 2.6 | 2.9 | 3.9 | 4.2 | 4.8 | 6.3 | 6.4 |
| Truck | 7.7 | 7.6 | 6.2 | 6.9 | 7.8 | 8.3 | 9.2 | 9.3 |
| Bus | 9.0 | 4.3 | 6.1 | 4.2 | 3.7 | 5.9 | 5.3 | 11.3 |
| Taxicabs | 6.5 | 5.1 | 6.6 | 6.4 | 9.8 | 7.4 | 8.4 | 11.3 |
| Pipelines | 7.1 | 7.8 | 9.0 | 9.3 | 9.3 | 9.0 | 8.4 | 7.7 |
| Other | 6.3 | 3.5 | 5.7 | 6.1 | 5.5 | 6.4 | 6.7 | 6.5 |
| All Industries | 6.1 | 5.8 | 7.4 | 7.5 | 7.4 | 8.2 | 9.5 | 9.5 |

Source Canadian Imperial Bank of Commerce.

Table 4-5

Effect of DRL on Relevant Transport Cost, 1971

| | Dollars Per Ton | | Index All Canada = 100 | |
|---|---|---|---|---|
| | Actual | DRL | Actual | DRL |
| East | 8.80 | 7.75 | 94 | 93 |
| West | 10.96 | 10.01 | 118 | 121 |
| All Canada | 9.32 | 8.29 | 100 | 100 |

Source P.S. Ross and Partners et. al., [1974], Table 6-C.

# 5 NATIONALIZATION OF THE ROADBED

As we have seen in Chapter 2, many of the arguments about freight rate setting revolved around the question of how much of the overhead costs of the railroad system as a whole should be borne by specified individual shipments. (There is no argument about the desirability that each shipment - except perhaps those involving statutory grain, about which more will be said later, - should carry at least its own variable cost). One suggestion for solving the question runs something like this: nationalize the railway roadbeds, cover upkeep, repairs and future expansion from general govermment revenues (i.e., taxes), then lease the roadbeds, perhaps at a nominal fee, to the railroads.

If we wish to evaluate the desirability of such a policy we must consider at least three aspects of the proposal: a) the cost, b) the benefit, and c) the administrative implications.

a) A study on roadbed costs estimated that annual roadbed costs amounted to $821 million in 1972 [P.S. Ross and Partners et al., 1975, Chapter 9]. Applying the GNE deflator to this figure we obtain a rough estimate of $821 million * 2.252/1.05 = $1760.8 million for 1980.

b) The discussion of the EPP proposal described in Chapter 4 pointed out that transport charges amount nowadays to a relatively small percentage of the value of manufacturing output, and are

thus not likely to be an important impediment to diversification. In consequence, the reduction of these charges is not likely to increase diversification significantly [Waters, W.G. II, 1983, p. 78].

c) The problems of administration and of efficiency of the national railroad system would be extremely difficult. To our knowledge there are very few railroads in the world in which fixed investment in construction is owned by the state and all other investment and the operation of the railroad is managed by a private or crown corporation, thus separating the responsibiltiuy for the roadbed from all other responsibilities of railroad operation. This does not in itself prove that the nationalization of the roadbed is harmful or impractical, but it suggest that the dangers and difficulties involved are very great. The government organization would have to make decisions regarding the quantity and location of new construction without having an intimate knowledge of railway operations. The railway companies responsible for operations would be able to blame all financial losses or shortcomings of service on the organization responsible for the roadbed. In the railroad industry, as in most other industries, the services of investment in construction are substitutes for other inputs. It is the profit motive that induces managment to achieve the optimal combination of inputs in order to minimize the cost of the desired output - in this instance railroad transportation services. The separation of responsibility for the roadbed from all the other tasks of managing the railroads is an

almost sure-fire method of reducing the efficiency of the railroad system. [Waters, W.G. II, 1983, p. 95]

A variant of the proposal to nationalize the roadbed is that made by the task force of the Canada West Foundaiton, which recommended that "...a Crown Corporation be established that would own the infrastructure of the two major rail companies including roadbeds and yards lying west of Thunder Bay..." [Horner, W.H. et al, 1980, p. 220]. Such an arrangement would have all the administrative and efficiency-inhibiting disadvantages of complete nationalization of the roadbed discussed above, with the additional complication that the railways would retain the responsibility for about half the roadbed, namely that in the East. True, the government cost would be reduced by about one half [P.S. Ross and Partners et al, 1975, pp. 9-2 to 9-6]. On the other hand, this proposal is in complete contradiction to the repeatedly announced statements of the Western Premiers, that the Western provinces do not wish for preferential treatment but only for an equal and equitable one. As Premier Lougheed said "The real request of the West is not special privilege..." and it was echoed by Premier Schreyer "Western Canadians do not expect special treatment nor do I think they want it" [Western Economic Opportunities Conference, 1973, pp. 19-20]. Clearly, a policy under which the costs of the Western roadbed are financed by federal taxes and those of the East by the freight rates cannot be regarded either as equal or equitable.

# 6 GRAIN TRANSPORTATION AND RELATED PROBLEMS

## A Short History of the Statutory Grain Rate

"In the Canadian West ... the railway preceded almost all settlement except in the Red River Valley and on the Pacific Coast" [Darling, 1980, p. 14]. In 1891, six years after the completion of the Canadian Pacific Railroad, the total population of the West was less than 350,000. The fundamental economic idea behind the opening up of the West was that the settlers would become predominantly producers of agricultural output (mainly grain for export) and consumers of tariff-protected industrial goods made in Central Canada.

Migration to the West proceeded slowly during the first decade following the completion of the CPR. The world grain price was depressed, and the volume of Prairie grain traffic showed hardly any increase. The freight charge of wheat declined gradually from 33 cents per hundred pounds between Regina and the Lakehead in 1886 to 23 cents in 1893 (Urquhart, M.C. and Buckley, K.A.H., 1965, p. 548). In 1897 the federal government and the CPR concluded the Crow's Nest Pass Agreement for constructing a railway from Lethbridge through the Crow's Nest Pass to Nelson, B.C. The Railway received a subsidy of $3,400,000 and in return undertook to reduce the freight rate on "settler's effects" moving from Central Canada to the Prairies and, in the long run more importantly, on grain and flour moving eastward to Fort William

and Port Arthur. The reduction on grain and flour amounted to three cents per hundred pounds, (resulting in a rate of 20 cents from Regina to the Lakehead) effective September 1, 1899. Immigration grew by leaps and bounds in the early 1900's. Evidently the new, lower grain rate was still profitable, because when Manitoba and Saskatchewan negotiated a lower rate with the Canadian Northern Railway in 1901, the CPR followed suit and the rate fell to 18 cents. It remained at this level until 1918 when due to war-time cost increases, the Agreement was suspended under the War Measures Act and the grain rates were allowed to rise, peaking in 1920 at 32.5 cents. Weakening world grain prices resulted in 1921 in a reduction to 30 cents and in 1922 the rate came again under the Crow regime (i.e. 20 cents), where it remained until 1983. In 1927 the application of the Crow rate was extended to grain shipped to the West coast and in 1931 to that shipped to Churchill, Manitoba.

In 1885 Canada's railroad network consisted of 10,773 miles of track. After the Canadian Pacific had completed its transcontinental line it developed its branch network, other railroad companies were founded, and a veritable competition in branchline construction ensued. This led to bankruptcy of the Grand Trunk, Grand Trunk Pacific, and their consolidation with other privately or government owned lines into the Canadian National Railways. By 1932 the Canadian track mileage amounted to 42,409 miles. The rule in these days before the arrival of the gasoline-powered truck was that no farmer should have to transport his grain

further than four or five miles, so stations and grain elevators were spaced eight to ten miles apart.

Although overexpansion has led to difficulties for the railroad companies even before 1929, the really severe problems came with the Great Depression. In 1931-32 the Duff Royal Commission on Transportation suggested consolidation, reduction in the duplication of services and reduced competition as remedies for the financial losses of the railways.

The business recovery of 1933-39 and the war years 1939-45 increased the volume of railway traffic, but also the costs of the railway companies. These years witnessed the extension of the Crow Rate to specified by-products of milling, distilling and brewing and to certain feed grain products. Requests for the extension of the Rate was usually based on the argument that the "low" Crow Rate on grain resulted in "unfair" competition with related agricultural products. Evidently, the original policy of decreeing a moderate - but for the railroads still profitable - freight rate for export grain was beginning to have completely unforeseen consequences, which were dealt with by further administrative interference in railroad rate setting.

Financial Losses on Grain Transportation and Attempts to Deal with Them

In the 1948-61 period wage and other costs increased substantially and the Board of Transport Commissioners granted a series of substantial freight rate increases (for chronology see Darling, 1980, p. 185) but in 1949-50 the Turgeon Royal Commission on Transportation recommended that the freight rate of grain and related products and changes in their rates should remain under the control of Parliament.

A curious instance of well-intentioned subsidization leading to unintended distortions, and finally to further extension of subsidies occurred in 1961. In the late 1950's Western Canadian Seed Processors Ltd., after appropriate investigations of costs, located its rapeseed crushing plant in Lethbridge, Alberta. A few years later the Alberta government exerted pressure to have rapeseed included among the grains covered by the Crow's Nest Agreement and in 1961 succeeded in its endeavour. As a consequence the Alberta rapeseed crushers' competitive situation deteriorated relative to those in the East [McLachlan, D.L. and Özol, C. 1973, pp. 37-38] and the Alberta government requested the extension of the Crow rate to rapeseed oil and meal as well. In 1976 the federal government started a program of subsidizing Western rapeseed oil and meal, but this subsidy was not sufficient to offset the disparity of freight rates in favour of unprocessed rapeseed [Gilson, 1982, pp. II9-10].

1961 proved to be a momentous year in the history of Canadian transportation. The MacPherson Royal Commission recommended competition as the governing principle of freight rate setting. It emphasized the beneficial effects of intermodal competition on the efficient production of the National Product, and pointed out that subsidization of certain rates distorts the composition of output and reduces efficiency of production. The Commission in effect recommended freedom of rail freight setting, provided the rate covered variable costs, and added that, should Parliament in its wisdom set certain rates below variable costs, Parliament should cover the railways' losses with a subsidy. The Commission judged that the land and financial grants given to the railway companies were not intended to cover operating expenditures. "We find no evidence that either the donor or the receiver contemplated such action. Grants were made to get the railway <u>built</u> [our emphasis] ... We do not recommend that assets and earnings of railway companies in business and investments other than railways be taken into account in setting freight rates." [MacPherson Commission Report, 1961, Vol. II, pp. 74-75] The Commission judged that the variable cost of grain transportation had risen above the Crow rate (though with reservations of Commissioner A.R. Gobeil), and recommended the abandonment of uneconomical branchlines.

In 1967 the National Transportation Act incorporated many basic principles of the MacPherson Commission report. It decreed a subsidy for those uneconomic branchlines which should be kept in

operation in the public interest. Between 1971 and 1982 the federal government paid a cumulative amount of $12 billion in branchline subsidies, but, as we shall see, this was not sufficient to cover the loses incurred by the railways through grain transportation. The inflation of the 1970's, combined with the fixed Crow rate resulted in the railways transporting grain at ever-increasing losses. In consequence the railways were reluctant to invest in grain transportation and even properly to maintain the branchlines and boxcar fleet. The Government of Canada acquired over 11,000 grain hopper cars, the Canadian Wheat Board 20,000 at producers' expense, and the Prairie provinces bought or leased 2,400. Nevertheless, the Canadian Wheat Board claimed that it had to forgo or defer grain exports amounting to more than $1 billion over the 1977-79 crop years because of transportation difficulties. In 1977 the Commission on Grain Handling and Transportation headed by Judge Emmett Hall (appointed in 1975) recommended that 2,200 miles of Prairie branchlines be abandoned, 1,800 miles guaranteed as part of the basic network until the year 2,000) and the fate of another 2,300 miles to be re-examined at a later date to be established by the Prairie Rail Authority. (Of course, the uncertainty surrounding the future of so many branchlines rendered the improving and upgrading of the grain handling and elevator system along these lines impossible.) Next year the Prairie Rail Action Committee was established and it recommended that a further 1,000 miles be added to the basic network. Finally, on the recommendation of the Neil Report another 600 miles were added to the basic network. Thus, of the approximately

6,300 miles of Prairie branchlines 3,400 miles are guaranteed until the year 2,000 and 2,900 miles have been or will be abandoned. The basic principle of the Hall recommendation was that no farmer should have to truck his grain more than 25-30 miles to the nearest elevator. With broad improvements and gasoline-powered trucks this condition is in effect less onerous than the 8-10 mile distance of pre-automobile days. [Hall, E., 1977, Vol. 1, p. 151]

The Hall Report also investigated the supposedly deleterious effect of branchline abandonment on the social conditions of the smaller Prairie Communities. The Report pointed out that the smaller grain elevators, which would become redundant due to consolidation into bigger grain-collecting containers, employ relatively very few persons per elevator [Hall, E., 1977, Vol. 1, pp. 75-84]. Also, the ubiquitous automobile tends to reduce shopping in the smallest Prairie communities and attract the shoppers to bigger towns, where the variety of merchandise and services is bigger than what the market size of small communities can justify. [Stabler, J.C., 1973, pp. 69-70] Thus the decline of small communities sems to be an inevitable process caused by technological change and cannot be arrested by the perpetuation of small grain elevators.

In 1961 the MacPherson Committee could not agree with complete unanimity on the statement that the railways were losing money on transporting grain at the statutory rate. By 1976 any lingering

doubts in this respect were dispelled. In that year the Snavely Report found that as the joint effect of statutory rates, inflation and rising volume of grain shipments the railways lost about $105.5 million in 1974 on shipping grain even without contribution to the constant cost [Snavely, C., 1976, Vol. 1, pp. 212-214]. A more recent calculation by Gilson reported that in spite of the federal government branchline subsidy and rehabilitation payment of $170.2 million the loss was $214.9 million in 1980 (Table 4-1). Inclusion of an appropriate contribution to constant cost increases the loss to $299.3 million. Clearly, the situation was rapidly becoming unacceptable for the railroads, the government (whose payments under the branchline subsidy and rehabilitation program more than tripled between 1974 and 1980) and for the national economy. Because of the deterioration of the grain gathering, handling and transporting network and because of the uncertainty shrouding their future it was also becoming unacceptable for the Western grain growers themselves. The railroads claimed that the losses incurred on statutory grain transportation made the much needed capacity expansion of their Western network financially impossible. Early in 1982 the Federal Minister of Transport appointed Dr. J.C. Gilson to recommend, after suitable consultation with the interested parties, a reform of the statutory grain freight rate system.

## Some Features of a Desirable Reform of Grain Freight Rates

1) The proposed system should eliminate or substantially diminish any distortions in the composition of agricultural output. The

pre-1983 regime encouraged the production of grain subject to statutory rates and discouraged the production of other agricultural products (e.g., cattle).

2) The proposed regime should be "...making the best use of all available modes of transportation at the lowest total cost..." [National Transportation Act, Section 3]. The pre-1983 regime encouraged the use of railroad transportation and discouraged truck transport.

3) The proposed regime should make "each mode of transport, so far as practicable "receive compensation for the resources, facilities and services that it is required to provide..." [National Transportation Act, Section 3]. The pre-1983 regime resulted in a revenue shortfall of $470 million in 1980 and would have resulted in considerably higher shortfalls in the future.

4) The proposed regime should take into account that the federal government is prepared to bear a substantial part of the cost of grain transportation, but that its resources are limited. "An increased contribution of grain producers will be required" [Statement of the Minister of Transport, 8 February 1982, quoted in Gilson, J.C., 1982, p. I-2].

5) The proposed regime should contain performance and service guarantees on part of the railroads related to grain transportation [Statement of the Minister of Transport, 8 February 1982, quoted in Gilson, J.C., 1982, P. I-2].

6) The statutory freight rate has been in effect for 59 years without interruption. It has resulted in variable costs of transporting statutory grain surpassing corresponding revenues at least since 1958. [McPherson, 1961, Vol. 1, p. 64] A subsidy of such long standing cannot and should not be suddenly withdrawn, because the change would hit the beneficiaries of the subsidy in an unacceptable manner. The reform should be introduced gradually.

7) The producers of statutory grain should be protected against exorbitant future increases in freight rates.

The Main Recommendations of the Gilson Report

1) The Crow Benefit (i.e., difference between a reasonable compensatory rate for transporting statutory grain, including a contribution to fixed costs and the statutory rate) was calculated at $644.1 million for the 1981-82 crop year. [Gilson, J.C., 1982, p. V-13, VI-6] For Bill C-155 this was revised, on the basis of more up-to-date information, to $659 million.

2) The government of Canada commit itself by statute to the payment on an annual basis of an amount equal to the Crow benefit of 1981-82. [Gilson, J.C., op. cit., p. VI-6] This would guarantee to the producers in the future the amount of the present subsidy, whether they choose to produce statutory grain or not.

3) The contribution to constant costs be taken as 20 per cent of volume-related variable costs [Gilson, J.C., op. cit., p. VI-6]

4) The railway revenue shortfall payment include no contribution to constant costs in 1982-83, a 25 per cent contribution in 1983-84, increasing by 25 per cent steps annually to 100 per cent in 1985-86. [Gilson, J.C., op. cit., p. VI-6]

5) The Crow Benefit be paid totally to the railways in 1982-83, with an increasing proportion of this payment thereafter being paid to the producers, until 1989-90, when 81 per cent of the Crow Benefit would be paid to the producers and 19 per cent to the railroads. [Gilson, J.C., op. cit., p. VI-6] This would permit the prducers to choose between the use of rail transport or other transport media.

6) The individual producers should be permitted to elect their share of the Crow Benefit either as a cash payment or as a freight credit. [Gilson, J.C., op. cit., pp. IV 12-17].

7) The cost of transporting future volume increases beyond the 1981-82 base amount be borne by the producers of the commodities concerned. [Gilson, J.C., op. cit., pp. V 15, VI 7.]

8) The future cost increases of transporting the base amount be shared equally between the federal government and the producers up to a maximum of 3 per cent annual increase for the producers for

the 1983-84 to 1985-86 period; after 1985-86 the producers would pay the first 3 percentage points and share with the federal government the next 3 percentage points of cost increases, with an aggregate maximum increase of 4.5 per cent of the producers. The remaining cost increases are to be borne by the federal government. [Gilson, J.C., op. cit., p. VI-7]

9) A Central Co-ordinating Agency be established to monitor the railroads' performance. The railways should receive the first 12 per cent to constant costs as part of the rate structure. The remaining 8 per cent plus all line related variable costs be related to railway performance. [Gilson, J.C., op. cit., p. VI-8]

10) The Crow Benefit currently accrues solely to the producers of statutory grain. If, for reasons explained below, part or all of the Crow Benefit is paid directly to the producers, the benefit will be diluted among the producers of statutory grain and of feed grain and specialty crops excluded from statutory rates. To compensate for this dilution a temporary Agricultural Adjustment Payment should be made to all grain producers, phased down from $775 million in 1983-84 to zero in 1989-90. [Gilson, J.C., op. cit., pp. IV 10-11, V-17, V-25, VI-6]

11) Railway costs, the payment system, the branch line rehabilitation system, and the agricultural Adjustment Payment be reviewed in 1985-86 and every five years thereafter. [Gilson, J.C., op. cit., pp. V-38,39] The railway perfomance and service guarantees should be reviewed annually.

In general the Federal Government initially expressed willingness to accept the Gilson recommendations, with some modifications. The government proposed to implement the Gilson method of the Crow Benefit payment, until an approximate split of 50-50 between producers and the railways was achieved in 1985-86. Continuance of the progression would need to be approved by Parliament after a thorough review in 1985-86. The other major modification pertained to the question of future cost increases mentioned above under point (8). The Federal government proposed that producers pay no higher transportation costs during the 1982-83 crop year; from 1983-84 to 1985-86 they pay the first three percentage points of inflationary cost; after 1985-86 they pay the first six percentage points of inflationary costs. [Department of Transport, Press Communiqué, February 1, 1983]

Comparing the Gilson Proposals with the features of a desirable reform of the Crow Rate we find that the Gilson scheme satisfied most of the requirements. It should be noted, however, that the proposed scheme involved considerable adminitrative complications. A key objective of the reform was resource neutrality; i.e., the payment to a producer should not be dependent on his growing statutory grain in the payment period - otherwise the payment would act as an incentive to specializing in statutory grain. The desired "neutrality is achieved by relating the individual producer's payment to total cultivated acres in a base year, thereby eliminating any incentive under the payment to produce any particular crop". [Gilson, J.C., op. cit., p. IV-15]. In effect

the payment would have been made to the owner (or, in the case of lease, to the tenant) of a particular piece of land - the payment going, so to speak, with the land. "In order to correlate the individual's future payment to his current "Crow Benefit", there would have to be some recognition of the magnitude of the production/shipments from the land he owns and of the increase in the freight rate which applies to his grain. Therefore, the share of the total payment made to each quarter section of farmland would be related to the aggregate result of the increase in the freight rate to the nearest shipping point, the productivity of the land as determined by historic yields from crop insurance data, the crop rotation in the region (crop insurance risk area), and the total cultivated acres". [Gilson, J.C., op. cit., p. IV-16] (our emphases). Because all cultivated land in production does not produce statutory grain, the total benefit to the producers of grains shipped under statutory rates would be diluted to the extent that payment is based on all cultivated acres. Producers of statutory grain would share the Crow benefit with other producers. To compensate for this effect, the Agricultural Adjustment Payment should be made. The Gilson Report recommended that the Western Grain Stabilization Administration calculate and distribute the payments, an assignment that would constitute a major administrative task.

Bill C-155

The grain pools raised objections to the Gilson proposals already during the consultation stage. Their efforts were redoubled during the Parliamentary hearings and discussions of Bill C-155 and gained additional allies in La Coalition pour la survie agro-alimentaire au Québec. This organization consisted of the Quebec chapter of the Canadian Feed Industry Association, the Ordre des agronomes du Québec, the Association professionelle des meuniers du Québec, the Union des producteurs agricoles, the Coopérative fédérée du Québec, the Association des négociants en céréales du Québec, the Association des centres régionaux de grains, the Association des médecins vétérinaires practiciens du Québec, the Quebec Department of Agriculture, Fisheries and Food, the Quebec Department of Transport, the official opposition in Quebec, the Fédération nationale des associations des consommateurs du Québec, and the Association des abattoirs avicoles du Quebec. The Coalition was briefed by the Quebec government. The opponents of the Gilson proposals claimed that other countries would perceive direct payments of the Crow benefit to farmers as a subsidy to agriculture, not to transportation. Also they claimed that the Gilson proposals would be harmful to the Quebec livestock and meat industry. They maintained that the direct payment of the Crow benefit to the railways, and a corresponding reduction of the statutory grain rate below that needed to cover variable costs plus an appropriate contribution to constant costs would be administratively simple, would guarantee good railroad service,

would avoid the danger that the tax laws may make the net payment to farmers much smaller than gross payment, and would avoid the danger of highway congestion caused by switching grain shipments from rail to road transport.

As a result, the government changed its position on the Gilson report. On November 14, 1983, the House of Commons passed Bill C-155, an Act to facilitate the transportation, shipping and handling of Western grain and to amend certain Acts in consequence thereof. This Act adopts many of the Gilson recommendations, but it also differs from them in some important respects. As far as freight rates are concerned, it decrees that the railroads should receive a freight rate sufficiently high to cover variable costs plus a specified contribution to constant costs. This rate should be subsidized by the federal government through payment of the Crow Benefit to the railways. The Act also contains a "safety-net" provision, according to which the grain-shipper's share of the freight rate should amount to no more than 4 per cent of the grain price in 1984, the limit gradually increasing to 10 per cent in 1988 and thereafter. The purpose of this provision is to protect the grain-grower in times of depressed grain prices and high interest rates. The shortfall will be made up by the federal government. Section 59 of the Act empowers the Minister of Transport to enter into an agreement with companies other than the CNR and CPR for the carriage of grain by railway. This permits the extension of the Act to the provincially owned BC Rail, which transports grain from the Peace River region to the

Pacific coast. Prior to the Act statutory grain freight rates did not apply to provincially owned railways.

The Act provides for a review, during the 1985-86 crop year, of the method of calculating grain freight rate. Also, the Minister was to appoint, before April 1, 1984, a Committee to examine, and to report within one year, "all matters that, in its opinion, pertain to the method of payment in respect of grain transportation that would be most conducive to agricultural development in Canada". The Committee, headed by Judge Gordon Hall, has already been appointed.

The Act strengthens the financial health of the railroad companies. However, it still has major shortcomings. The Act subsidizes the rail transportation of statutory grain. The farm gate price of statutory grain is equal to the world price minus transportation cost to the market. Subsidized transportation raises the farm gate price of statutory grain and thereby encourages the growing of statutory grain, rather than other farm products. By raising the farm gate price of feed grain on the Prairies, the Act reduces the natural advantage of Western livestock producers. Also, the Act subsidizes rail transportation of statutory grain as against road transportation.

For these reasons, payment of the Crow Benefit to farmers rather than to the railroads would increase the efficiency of Canadian

agriculture. In our opinion the arguments in favour of the Crow benefit payment directly to the farmers outweigh the ones held by the advocates of the payment to the railroads.

Branch Line Abandonment and Highway Expenditures

Branch line abandonment increases the wear and tear of highways, as trucks drive from the farm to the next elevator. Repair and maintenance of the railway roadbed is the financial responsibility of the railroads. The corresponding expenses for highways are a provincial responsibility. The magnitude of the fiscal burden shifted to the provincial governments by branch line abandonments is difficult to estimate. The experiments on the effects of trucking on highway wear and tear have been mostly performed in the United States, and it is questionable to what extent their findings are applicable under Canadian climatic conditions. A recent paper estimates that the present discounted cost of additional highway wear and tear due to already accomplished branch line abandonment in Manitoba over the rest of this century is of the order of $20-30 million [Mason, G. 1983, p. 31].

According to the Canadian Transport Commission [1983 a] by Aug. 12, 1983

| | |
|---|---|
| Manitoba has abandoned | 517.0 miles |
| Saskatchewan | 810.3 miles |
| Alberta | 436.9 miles |
| for a Prairies total of | 1764.2 miles |

J.C. Gilson [1982, p. V-12] states that 946.8 miles were to be bandoned between 1982-83 and 1985-86, of which 346.5 miles have been abandoned by mid-1983, according to the Canadian Transport Commission [1983]. This leaves 600.3 miles for the period after mid-1983.

The total abandonment will, thereafter be 2364.5 miles (1764.2+600.3) or 4.5735 times what Manitoba has already abandoned by August 12, 1983. Assuming that the present discounted cost per mile abandoned is the same for the Prairies in general as is for Manitoba, the total cost for the Prairies would be $20-30 million times 4.5735 or $91.47-137.205 million of 1983 purchasing power. This - admittedly crude - calculation indicates that the burden shifted on the provincial governments by branch line abandonment is relatively small. Provincial road expenditures of the Prairie provinces amounted to $738 million in the fiscal year ended March 31, 1981 (Statistics Canada, Provincial Government Finance, 1980, Catalogue No. 68-207, Table 2).

## The Feed Freight Assistance Program

The Feed Freight Assistance Program is a textbook case of a government intervention that has outlived its usefulness and has now a completely different effect from what it was originally intended for.

This Act was introduced in 1941. After several excellent grain harvests, the federal government wished to increase meat production in Eastern Canada and British Columbia, as part of the war effort. A subsidy scheme was devised to equalize the price of feed grain across Canada. The plan was to end in June 1942 but has been extended, with modifications, ever since. What was intended to be a short-term war-time expedient has been now in force for more than forty years. It tends to reduce the comparative advantage of livestock production on the Prairies "By distorting the locational advantages in certain lines of animal production, the subsidy has deprived the Prairies of a much needed avenue for diversification without any apparent national gain" [Wilson, G.W. and Darby L., 1968, p. 43]. In 1976 the Assistance was reduced by $4 per short ton to British Columbia and by $6 per short ton to Ontario and Western Quebec. This change wiped out almost all of the Ontario and Western Quebec subsidy. After representations by the British Columbia government the Assistance to that province was restored to the pre-1976 level. The assistance to Northern and Eastern Quebec and to the Maritimes remained unchanged, allegedly because livestock feeders in these areas are more dependent on outside supplies of feed grain. In recent years the total shipment under the Act was about 2 million tonnes, the subsidy amounting to about $15 million annually. [Canadian Livestock Feed Board, 1983] The subsidy reduces the efficiency of the economy in general and of the Prairies in particular. It ought to be phased out with deliberate speed.

At and East Rates

At and East Rates apply to export grain and flour transported by ship from the Lakehead to Georgian Bay ports and from there by train to Montreal, Halifax, or other East Coast ports. Prior to 1967 the Board of Transport Commissioners set these rates so as to prevent the shipments to be diverted to Buffalo and then by rail or water to New York.

In 1967 the rates were frozen by federal statute at the 1960 level and there they remained ever since. The difference between the compensatory freight rate, as determined by the Canadian Transport Commission, and the actual rate frozen at the 1960 level is covered by a federal subsidy. The quantity os over a million tonnes a year; in recent years the subsidy has been running around $35 million [Canadian Transport Commission, 1983 b].

With rates frozen and inflation continuing a continuing upward trend in shipments and subsidy payments is to be expected. Recent studies conclude that the danger of diversion to Buffalo has ceased and "the subsidy no longer fulfills its original purpose. Indeed, within a few years it may well encourage the diversion of grain traffic from the more cost-effective Great Lakes/ St. Lawrence Seaway export route to the more expensive but subsidized rail export route" [Transport Canada, 1981, p. 43]. It is in the national interest that the subsidy be gradually phased out.

Table 6-1

Railway Costs, Revenues, Federal Government Payments and Revenue Shortfall on Grain Transportation

| | Million Dollars 1974[1] | 1980[2] |
|---|---|---|
| Railway Costs | | |
| Total Variable Costs | 231.0 | 517.1 |
| (Per Cent of Total Revenue Requirements) | | (86.0) |
| Volume Related | 176.7 | 422.2 |
| Line Related | 54.2 | 94.9 |
| Contribution to Constant Costs | | (14.0) |
| (=20% of Volume Related Costs) | 35.3 | 84.4 |
| Total Revenue Requirements | 266.3 | 601.5 |
| Revenue from Statutory Rates | 89.7 | 132.0 |
| (Per Cent of Total Revenue Requirements) | (33.7) | (21.9) |
| Gross Revenue Shortfall | 176.6 | 469.5 |
| (Per Cent of Total Revenue Requirements) | (66.3) | (78.1) |
| Federal Government Payments | 52.0 | 170.2 |
| (Per Cent of Total Revenue Requirements) | (19.5) | (28.3) |
| Net Revenue Shortfall (Borne by the Railroads) | 124.6 | 299.3 |
| (Per Cent of Total Revenue Requirements) | (46.7%) | (49.8) |
| Tonnes Shipped (million tonnes) | 18.7 | 27.0 |

Source: 1) Based on Snavely, C.M., 1976, Vol. 1, p. 200 and Appendix P.

2) Gilson, J.C., 1982, p. V-9, Snavely, C.M., 1982, p. 11.

# 7 RAILWAY CAPACITY AND ITS FINANCING

Railway freight traffic has experienced remarkable growth in Western Canada during the last fifteen years. Tons transported almost doubled between 1968 and 1980. A paper prepared for the Economic Council of Canada projects similar growth for the 1980-1992 period, expecting West-bound rail traffic tonnage of 85.9 million metric tons net, or 170.9 million metric tons gross by 1992 [Gillen, D.W. and Oum, T.H., 1984, p. 58] while other projections are even more sanguine, [ibid., Waters, W.G.II., 1983, p. 34, WESTAC Newsletter, July-September 1983]. Will the Canadian railway system be capable of transporting the tonnage? What is the current capacity of the Western railway system? Will capacity bottlenecks develop? Will rationing of railway transport become necessary, with all the accompanying problems of deciding on priority service?.

Rail line capacity is a difficult concept. A rail line is a series of sequential links and it is self-evident that the potential throughput of the line is limited by the capacity of the most congested link. There are two commonly used measures of capacity: the economic measure and the engineering one.

The economic measure of the capacity of a railway link is the one beyond which the incremental cost of incremental throughout

increases sharply. The calculation of economic capacity requires detailed information of railway costs, which are treated as confidential in Canada in order to protect the competitive interest of the railway companies, though they are public in the United States. In consequence, economic railway capacity calculations are possible for the United States [Friedlaender, A. and Spady, R., 1981], but not for Canada [Gillen, D.W. and Oum, T.H., 1983, p.19].

Engineering capacity is defined as the number of tonnes that can be moved over a specific link in a year. Needless to say, this number depends on what is regarded as the "acceptable" level service, and "necessary" level of maintenance. It can be influenced by train speed, commodity mix and train prioritites. These factors can influence engineering capacity even without improving those characteristics which laymen usually associate with railway capacity expansion, namely improved signalling and switching, number and spacing of sidings, and double tracking. Reducing grades and curvatures of track can also increase capacity in increasing train speed.

One way of ascertaining the engineering capacity of a line is to observe the highest past throughput of its most congested link. Thus we find that on the westward line of the CPR 44.9 million gross tonnes miles per mile (GTM/M) were moved in 1980 over the Golden-Vancouver link, and on the line of the CNR 45.5 million GTM/M in 1981 over the Red Pass Junction-Bickerdike link

[Gillen, D.W. and Oum, T.H., 1983, p. 19], giving a current aggregate "proven capacity" of 90.4 million GTM/M. These figures are in reasonable agreement with results obtained in American studies of comparable lines [Gillen and Oum op. cit., pp. 14-15].

The railways have announced plans for capacity expansion - though they have declared that these plans are subject to certain conditions, which we shall discuss later. The CNR is proceeding with double-tracking of its line from Winnipeg to Vancouver. This would increase its capacity 2.5 fold by 1987 to 113.7 million GTM/M [Gillen and Oum, op. cit., pp. 22, and CNR, 1983]. The CPR capacity expansion program to 1987, though it is due to more difficult terrain approximately as expensive as that of the CNR, would increase the CPR capacity by 45 per cent to 65.1 million GTM/M [Gillen and Oum, op. cit., p. 22, and CPR, 1983] yielding a total system capacity of 198.8 million GTM/M, more than enough to handle the projected 170.9 million GTM/M projected for 1992.

In order to achieve this capacity expansion, the railways estimated to spend $5.0 billion on capital expenditures in Western Canada during 1983 to 1987 inclusive. [CNR, 1983 and CPR, 1983]. Of this amount about 80 per cent would be devoted to road property, the rest to equipment. The estimate was prepared in current dollars in late 1982 - early 1983, when inflation was around 10 per cent. If the current, lower inflation rate of 5.5 per cent holds in the future, the same real expenditure can be

achieved with fewer current dollars. - In addition the railways estimated the spending of another $1.8 billion on their capital expenditure program in Eastern Canada for the same 1983-1987 period, totaling a capital expenditure program of 6.8 billion. In order to set this amount in perspective we should recall that the total assets of all Canadian railways amounted to $16.6 billion in 1980. Even if we keep in mind that this $16.6 billion is based on historical figures expressed in current dollars spent long ago, (because railroad investment has a long economic life), it is evident that the 1983-1987 investment program is a very major one.

The railways claimed that they would not be able to realize the necessary investment program if they did not receive a compensatory freight rate. Gilson (op. cit., p. V-9) has estimated that the railways have lost $670.9 million on shipping statutory grain in the 1981-82 crop-year alone, and, short of a grain freight reform, the annual loss was likely to escalate sharply as inflation and the volume of grain shipments increased in the future. The railways maintained that, as long as this state of affairs persisted, they would not be able to raise the capital needed for capacity expansion either from retained earnings or on the financial markets. They maintained, that they would have been able to invest in Western Canada only $2.2 billion during the 1983-1987 period, less than half needed to provide the capacity required for the projected volumes of freight. Their debt equity

ratio was already about 40/60, and prudent management regards this as the upper limit. Their return on assets is low compared to other industries (see Table 3-4), and would be even lower if assets would be valued at current rather than historical prices. The railways claimed, that under such circumstances it would have been unwise, if not impossible, to raise either equity of security capital on the market.

Were the arguments of the railroads valid? It must be emphasized here that their losses incurred on the transportation of statutory grain were very substantial and growing. Even though the experts do not agree on the exact magnitude of the losses (see J.C. Gilson, [1982] p. V-9, Snavely, [1982] and the testimonies of R.L. Banks and J. Edsworth before the Transport Committee of the House of Commons) there is little doubt that these losses were of the order of $500 million in the 1981-82 crop year. It is in the interest of the national economy and of a rational and efficient transportation system that the railroads should be adequately compensated. This said, the question arises whether the existence of the statutory grain loss had anything to do with the desirability and possibility of Western capacity expansion. One could argue that if the expected additional freight is capable of paying its way, including the cost of the needed investment, then the capital markets - provided they are working properly - should be willing and able to provide the necessary equity and security capital, irrespective of the "Crow loss". (It should be noted

that the various freight projections indicate that only 10-20 per cent of the incremental freight will be grain.) If, on the other hand, the incremental traffic is not able to bear the incremental cost, then the capacity expansion is not in the economic interest of Canada, even if the "Crow loss" is eliminated. (This does not mean that there may not be other social reasons for expanding Western railroad capacity).

It has been estimated [Gillen, D.W. and Oum, T.H., 1984, pp. 58-59] that the incremental revenue on West-bound bulk traffic (grain, coal, sulphur, potash, and forest products), i.e. the revenue on the increase in tonnage shipped, would be $437.6 million for the year 1992, using 1980 freight rates. Due to the steadfast refusal of the railroads to make their variable costs public, it is not possible to say with certainty whether the revenue would have sufficed to cover the fixed costs of capacity expansion. Net profit for the CPR and CNR as a whole in 1980 has been reported as $325.6 million [Statistics Canada, Catalogue No. 52-208, 1980, p 11] and the increase in the "Crow loss" between 1980 and 1981-82 has been estimated as $200 million [J.C. Gilson, op. cit., p. V-9]. In the absence of the resolution of the problem of future increases in the "Crow loss" due to inflation and increases in the volume of grain shipments may soon have wiped the profits of the railways entirely. In such a case investors may have refused to lend to the railways, even if an incremental project like the Western capacity expansion would be

profitable by itself. It should be noted that the elimination of the 1981-82 railway revenue shortfall due to the statutory rate, amounting, according to J.C. Gilson, to $670.9 million, would probably be sufficient to finance the servicing of the Western capacity expansion. With the passage of Bill C-155, providing the railways with compensatory revenue for grain transportation, the most important obstacle to western railway capacity expansion has disappeared. The danger that railway capacity constraints will retard the economic progress of the Western provinces has vanished.

# 8 SUMMARY AND CONCLUSIONS

During recent decades there has been much debate on transportation and the economic development of the Western provinces. Does railway freight-rate setting inhibit the diversification of the Western economies and hinder the development of manufacturing? Is there a danger of future transportation capacity constraint, and is it due to the losses incurred by the railroads because of the statutory grain freight rate? Is the recent reform of the freight grain rate and the payment of the Crow benefit directly to the railways conducive to the efficiency of Canadian agriculture? Is transportation in general, and railway transportation in particular, still the central issue of Western economic development as it was a century ago, or has it receded to a still significant but second order importance? These are the questions our paper has attempted to answer.

The growth of trucking has greatly weakened the monopolistic power of railroads in Canada. This is true in the West as well as in the East. On the Prairies the railroads position is somewhat stronger than in the East, due to the bigger importance of bulk products in the West, longer distances, and sparser population. Nevertheless, in the last decade the return on assets in the railroad industry has been lower than the average in Canada; even if the loss on statutory grain is ignored the return is barely above that of the average. Thus it cannot be maintained that the railroads have grossly misused their monopolistic position. Behaving as one would expect from discriminating monopolists, they

have kept freight rates on manufactured products from the Central provinces to the Prairies higher than the rates in the opposite direction. This tends to raise the cost of living on the Prairies; but at the same time acts as a protective tariff for the vulnerable Western manufacturing industries.

Setting railway freight rates exclusively on the basis of distance throughout Canada would not improve the competitive position of Western Canadian manufacturing against Central Canadian manufacturing. Furthermore, relevant transportation costs amount to such a small percentage of the value of manufacturing shipments that even the complete elimination of such costs would not contribute much to Western diversification. Distance related rate setting to cover variable cost only would result in a need for big subsidies from the taxpayer. Distance-related rates sufficiently high to cover variable and fixed costs are essentially a cost plus scheme, and are - just like subsidization - a counterincentive to efficient railway operations. The same holds true for schemes to nationalize part or whole of the roadbed. On the whole, it appears that rate-setting freedom, as incorporated in the National Railways Act, has served Canada well, and has led to remarkable productivity increases in the railway industry. [Caves, D.S. and Christensen L.R., 1978; Rao, P.S and Preston R.S., 1983]

The passage of Bill C-155, reforming the freight rate setting of statutory grain, has strengthened the financial position of the railroads. There is now no reason why the capacity expansion

needed for the 1990s should not proceed. This eliminates one of the constraints which threatened Western economic growth in the recent past. However, the current method of payment of the Crow Benefit will tend to perpetuate an important inefficiency of the Canadian economy. By paying the Crow Benefit entirely to the railroads, the government helps statutory grain production as against other farm products, rail transportation as against road transportation, and livestock and meat production in the rest of Canada as against the Prairies. The economic efficiency of Canada requires that the method of payment be changed so that all, or most, of the payment be made directly to the owners or tenants, of the land concerned.

The grain freight rate from Georgian Bay to eastern export ports, the At and East rate, is frozen at its 1960 level. This may encourage the use of the inefficient rail export route to the detriment of the cost-efficient seaway.

In sum, we conclude that transportation is still important to Western economic development, but much less so than it was to previous generations.

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