

Royal Commission  
on Transportation

Volume III

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ROYAL COMMISSION ON TRANSPORTATION

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# Royal Commission on Transportation

Volume III

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## Preface

During the course of the investigations of this Commission many special studies by interested groups were placed before us. These are part of the public record. In addition to the studies contained in the public record the Commission had special studies made in those areas where additional information seemed to be desirable and where certain evaluations had to be made with reference to submissions presented. The special studies which were found to be most significant in reaching conclusions respecting those problems for which we were given responsibility in our Terms of Reference are reproduced in this volume with the hope that they may be the basis of continued discussion and development by those public and private interests that are concerned with transportation in Canada.

A number of the studies make specific recommendations respecting the subject under consideration. Some of these the Report has embraced in recommendations, but there are some which, for a variety of reasons, the Commission was not prepared to accept. However, the studies as reproduced in this volume are as the individual authors submitted them and the Commission does not feel that it must bear any responsibility for those recommendations which are included in the studies which have not been incorporated into the recommendations to be found in Volumes I and II. The Commission requested the authors to permit the papers to be published as they were submitted, under their signatures, in order that the maximum reference material might be available for future consideration.

The Commission wishes to express its appreciation to the authors of these papers for their conscientious objectivity and integrity in their attempts to supplement the knowledge and information upon which the recommendations of this Commission rest.

The papers in this volume fall very broadly into three categories. The first two papers have to deal with the evidence and analysis of the increasingly competitive transportation industry. The next group of six papers attempts to develop the definitional concepts involved in the difficult technical problems of costing the movement of traffic in transportation and the analysis and statistical tools necessary to the application of these concepts. The third group of two papers deals with certain experience of transportation in other countries which we found useful in a general way when we came to measure the nature and extent of change occurring in the transportation environment in Canada.

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# Truck-Rail Competition in Canada

*by*

**D. W. CARR AND ASSOCIATES**

**OTTAWA 1961**

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# Truck-Rail Competition in Canada

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## Introduction

Overland freight transportation in Canada at the beginning of the 1960's was undergoing a major and rapid transition. Until a decade or two before this, the railways were accepted as dominant in overland hauling. Highway freight transportation had been growing steadily in Canada for several decades. But not until the 1950's did its growth show sufficient competitive strength to cause serious difficulties for the railways.

Up to that time, truck competition was confined largely to the area of short and medium distance hauls and its threat to the main volume of rail traffic gave little cause for concern. During the 1950's, however, trucks also began to compete more strongly for traffic on which it had previously been presumed the railways had an impregnable competitive advantage, namely, the long-haul or transcontinental transport. This indicated that the conditions of competitive advantage between rail and truck transport were in process of change and that previous assumptions would have to be revised.

To appraise these new competitive conditions, an examination of the commercial trucking industry was undertaken. In this examination, special attention was given to the recent growth and prospects of long-distance truck competition with the aim of identifying the particular techniques that had enabled truck competition to overcome its handicaps in this area.

The objective in the following report is, therefore, to examine the areas of truck-railway competition with a view to appraising its development, the directions it has taken and its future prospects. A further object was to explain the apparent paradox that although rail transport costs were reported to be substantially below highway costs,<sup>1</sup> the demand for highway freight services was growing at a much faster rate than rail freight services.

It was evident that the investigation of this cost paradox would require a deeper probing and more careful analysis of the unique nature of highway competition than had been done before. For this reason a special

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<sup>1</sup> See, for example, J. C. Lessard, *Transportation in Canada*, a study prepared for the Royal Commission on Canada's Economic Prospects, Ottawa, 1956, p. 81, where the ton-mile cost is estimated to be by rail 1.5 cents and by highway 5 to 6 cents. In *The Economics of Competition in the Transportation Industries*, Meyer, *et al.*, Harvard, 1959, p. 194, the authors state: "A substantial share of the intercity truck traffic represents a higher cost of transportation to society than would rail transportation." The explanation of this paradox attributed by the authors to value of service ratemaking seems inadequate.

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survey of trucking firms was undertaken, the first of its kind in Canada. Particular attention in this survey was given to organization, costs, areas of competitive advantage and the recent and prospective growth in demand for trucking services, especially in long-haul transport.

Along with this appraisal of comparative costs and services was included an examination of piggyback, containers and other recent developments in truck-railway competitive techniques.

The study was singularly successful in obtaining information needed to fill many of the important gaps in the knowledge of the trucking industry. It was focussed particularly on for-hire trucking, because this is the branch of the industry which competes most directly and strongly with rail freight transport. For-hire or common carrier trucking also carries the major share of total truck transport, more than the other three main types of trucking combined.

For-hire trucking in Canada is concerned primarily with intercity or highway transport. Such operations as it carries out within cities or other transportation centres are almost exclusively the pick-up and delivery (P & D) services incidental to its highway operations.

These P & D operations of common carrier trucking are a relatively small part of the total cartage services required within distributive centres. Most of these intracity transport services are carried out by local cartage firms, though not on a common carrier basis.

In addition to for-hire and local cartage trucking, there is private trucking. It is an alternative to for-hire service, much of it being intercity trucking. Some manufacturing and distributing firms find the nature of the trucking services they require such that they can be provided best by a leased or company-owned fleet of trucks.<sup>1</sup> Such private trucking is normally free of much of the regulation encountered by for-hire carriers and can be specifically directed to giving specialized service to the shipper's customers. It has grown rapidly in the past two decades.<sup>2</sup>

Contract trucking may also be noted here. In the main, however, it is an overlapping between private and for-hire trucking. Some truckers provide their facilities exclusively for the carriage of one shipper's goods—in effect,

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<sup>1</sup> Some of the benefits attributed to private trucking are lower costs, better service to customers, more flexible service, better control over transportation, less loss and damage, better control of loading and unloading, less expensive packaging, advertising on trucks, merchandise received in better condition, faster delivery and service to off-line points.

<sup>2</sup> While major emphasis in this report is given to for-hire trucking, the growth in importance of private trucking is also a notable feature of highway transport development. Private trucking is significant also from the viewpoint of public policy. The great number of firms engaged in private trucking, many in only a small way, make its public regulation and control a difficult task. More significant perhaps is the facility of private trucking in providing an alternative service when common carrier services (rail or truck) become unsatisfactory or rates become excessively high. The rapid growth of private trucking in the face of handicaps (e.g., high empty returns) may indicate its importance in this role. See Appendix B, p. 93, for a summary of the survey of private trucking in Canada made by the Canadian Industrial Traffic League in the summer of 1961.

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private trucking. Others may give priority to particular shippers but carry most traffic on a for-hire basis.

The fourth major type is farm trucking. In most provinces, farmers' trucks enjoy special licensing rates and more freedom from regulation, but the scope of their operations is correspondingly confined. In the main, farm trucking is limited to carrying farm products to market or hauling farm supplies or materials used in farming operations. As may be expected the utilization of farm truck capacity is relatively low and farm trucking provides a relatively small part of Canada's highway transport in terms of ton-miles hauled.

An indication of the relative importance of each of these four types of trucking in Canada is given by the percentage of total ton-miles performed by each in 1958:

For-hire .....	59.7
Private intercity .....	27.6
Private urban (mainly cartage) .....	9.9
Farm .....	2.8
	<hr/>
	100.0

Considering only the intercity ton-miles carried by highway in 1958, for-hire trucking hauled 68.5 per cent. Like rail transport, it has become an intercity freight service. Unlike private intercity trucking, for-hire operators seek to compete directly with rail services for shippers' intercity traffic.

## Growth of Truck Competition in Canada

The growth of for-hire trucking represents the extension of road transport from city cartage and private trucking into direct line haul competition by highway with common carrier railway services. This extension of trucking into the common carrier field has been a phenomenon mainly of the decades of the 1940's and 1950's. Its growth relative to railway services has been marked.

From 1938 to 1948 the number of railway freight cars increased from 168,329 to 172,406. By 1958 they had increased to 196,893 or 17 per cent over 1938. Truck registrations in the same period increased from 220,000 in 1938 to 488,000 in 1948, to 1,012,000 in 1958, almost a 500 per cent increase from 1938.<sup>1</sup>

DBS estimates of tons of intercity freight handled by rail and truck provide a second indication of the change in the freight transportation pattern. At five-year intervals these show:<sup>2</sup>

	<i>Rail</i>	<i>Highway</i>
	<i>(thousands of tons)</i>	
1942 .....	155,646	130,194
1947 .....	175,566	160,659
1952 .....	185,056	226,364
1957 .....	197,010	293,925

From 1942 to 1957 the railway share of Canada's total intercity freight tonnage (this includes rail, highway, water, air and pipeline) fell from 46.2 per cent to 30.7 per cent. In the same period, highway tonnage rose from 38.7 per cent to 45.7 per cent.

Tonnage alone is not a full measure of services performed. To measure production of transportation services most accurately it would be necessary to include both distance and time of hauls. Adequate records of time per ton hauled are not available but DBS has provided ton-mile estimates to take account of the distance factor. For comparable years, these estimates show the intercity ton-miles performed:

	<i>Rail</i>	<i>Highway</i>
	<i>(millions of ton-miles)</i>	
1942 .....	56,154	2,424
1947 .....	60,143	4,310
1952 .....	68,430	8,903
1957 .....	71,047	10,679
1959 .....	67,957	13,900

<sup>1</sup> Truck registrations probably under-estimate the expansion of highway freight capacity. Ordinarily, one tractor represents 1.5 to 2 trailers. The rate of increase in trailers (more comparable to box cars) would be greater than in tractors since 1938. At the same time, truck registrations include a small proportion (less than 10 per cent) of ambulances and other non-freight vehicles.

<sup>2</sup> See G. A. Wagdin, *Statistics and the Study of Road Transport*, Ottawa, September 1959, Table 6. These data include freight traffic to and from U.S. points.

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Rail freight traffic fell from 73.8 per cent of Canada's total freight ton-miles in 1942 to 53.8 per cent in 1957. Highway traffic rose from 3.2 per cent in 1942 to 8.1 per cent in 1957. By 1959 the rail share was 51.2 per cent and highway 10.5 per cent.

Comparison of the above table with the previous table on tonnages hauled shows two features of the competitive pattern. First, the average length of haul is very much greater by rail than by highway. Secondly, both length of haul and tonnage are increasing more rapidly for freight handled by highway than by rail. Between 1938 and 1957 it is estimated that railway ton-miles were multiplied two and a half times. In the same period highway ton-miles increased sevenfold.<sup>1</sup>

These ton-mile estimates tend to under-estimate the contribution of trucking because highway transport normally carries more of the higher valued traffic and includes more P & D services. The lower valued, low-revenue, bulk-handled commodities such as grain, lumber, ores and oil, are carried mainly by rail, water or pipeline. In 1958, for example, the average railway revenue per ton-mile was 1.55 cents but on the traffic for which trucks compete it was very much higher than this—on manufactured and miscellaneous commodities average ton-mile rail revenue was 2.75 cents, on animals and animal products 3.28 cents but on grains it was 0.70 cents and on mine products 1.35 cents.<sup>2</sup>

Similarly, trucks have concentrated more on the high-revenue L.C.L. traffic.<sup>3</sup> An indication of the recent effectiveness of this competition may be given by indexes of railway carloadings:

	<i>Total revenue cars loaded (Index 1947 = 100)</i>	<i>Cars of merchandise L.C.L. loaded</i>
1947 .....	100.0	100.0
1952 .....	105.2	88.7
1957 .....	102.0	71.3
1960 .....	91.9	46.6

In the period 1947 to 1957, the number of L.C.L. railway cars loaded decreased by 28.7 per cent and by 1960, 53.4 per cent. From 1957 on, part of this decrease represents a shift of L.C.L. to rail-owned piggyback equipment but an estimated 80 per cent or more apparently went to trucking firms. From 1947 to 1960 total railway cars loaded fell only about eight per cent, while cars loaded with L.C.L. were cut more than in half. This L.C.L. traffic also required a great deal more P & D services than most rail traffic. So to the extent L.C.L. freight shifted from railways to trucks the value of transport service lost was substantially greater than the shift in ton-miles would indicate.

<sup>1</sup> *Ibid.*, p. 9.

<sup>2</sup> *Waybill Analysis*, 1958, Ottawa, Board of Transport Commissioners.

<sup>3</sup> Unfortunately L.C.L. revenue is not shown in the *Waybill Analysis*.

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This decline in railway L.C.L. traffic since 1947 supports other indications that the railways were finding it increasingly difficult to compete with trucks for such traffic in recent years.

The other important factor to be considered in railway-truck competition is the increase in the length of truck hauls. Speed and flexibility of truck services has given highway transport substantial advantages over rail services on short and some medium hauls, i.e., hauls up to about 500 miles. As a result truck transport has taken over an increasing volume of traffic in this area since the 1930's. More recently it began a rapid expansion in longer distance hauls, up to 3,000 miles or more.

Before examining the growth of trucking in these two fields, it may be desirable to define clearly what is meant by long-distance trucking. It has been convenient in the past to define long-distance trucking in terms of competitive costs, that is, distances beyond which highway operations are considered to be uneconomic. Thus Meyer, *et al.*, in their Harvard study suggest that hauls of 100 miles or more are too costly by truck and can be more economically done by rail.<sup>1</sup> Unfortunately, in most of these cases, the information on relative costs has been based on the trucking industry as a whole. For specialized long-haul trucking, these average industry costs may be very wide of the mark<sup>2</sup> because they overlook what the industry can do when it is concerned primarily with line-haul costs and with keeping them to lowest possible levels. In consequence, trucks continue to reach profitably beyond these calculated distance ranges in competition with rail service. So this type of definition has been progressively proven less and less sound.

A second definition is based on arbitrary distance groupings. The best known of these is found in the Gordon Commission study of 1956, "Today the greatest concentration of intercity motor truck activity is on routes between 20 and 600 miles in length. A great volume of motor carrier traffic also moves on routes up to 1,500 miles in length. But beyond that point there is considerable doubt as to whether or not line-haul motor carrier operations are profitable or practical". And later, "In 1956 the volume of transcontinental motor carrier freight traffic moving . . . over 1,500 miles has dwindled to a trickle".<sup>3</sup> This arbitrary classification may be interpreted

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<sup>1</sup> *The Economics of Competition in the Transportation Industries*, Cambridge, 1959, p. 189 and Table 39. The relative costs in this case included P & D costs for both modes of transport. Yet p. 195, Table 40, showed almost 98 per cent of common carrier trucking involved hauls of over 100 miles.

<sup>2</sup> Professor Currie recognizes this distinction to some extent. Compare "The combined terminal and line-haul costs on a ton-mile basis are lower for highway carriers than for rail up to the point where the cheaper terminal expenses of trucks spread over ton-miles are more than offset by the more favorable line-haul cost of rail carriers". *Economics of Canadian Transportation*, Toronto, 1959, (rev.), p. 488.

<sup>3</sup> A. F. Hailey, in *Transportation in Canada*, a report prepared for the Royal Commission on Canada's Economic Prospects by J. C. Lessard, Ottawa, 1956, p. 149-50, Appendix A. This was written at a time when long-haul trucking was going through one of its most difficult periods of development. See below.

to mean that long-distance trucking is in the 600 to 1,500 mile range and highway traffic beyond that is unlikely to be significant. This definition is inaccurate on several counts. The greatest concentration of intercity traffic is between terminals much closer together than 600 miles and hauls beyond 1,500 miles appear to be increasing and profitable.<sup>1</sup>

Trucking operations and costs have been changing too rapidly in the past two decades for such definitions as the above two, even if they were accurate, to remain valid for very long. A more useful description of long-haul trucking as it is now organized is *hauls beyond single driver range*. Single driver range marks a distinct boundary which encloses in the main all short- and medium-haul traffic. When more than one driver is required to move a shipment from origin to destination, it is appropriate to define the traffic as distinctly longer haul.

Single driver range is the maximum distance one driver can ordinarily cover in his day's work. This is a matter mainly of legal limits rather than endurance.<sup>2</sup> Overnight hauls are normally a single driver assignment. But a second driver is now regularly used on hauls where the continuous distance is beyond the usual maximum overnight run. In some cases, the second driver takes over the haul at an intermediate terminal. In others, the two drivers go all the way with the load.

Thus two types of long-distance trucking may be distinguished. First, and most common, is the long-haul operation that is broken into a series of single driver stages between intervening terminals. This type of operation is common in Central Canada and can be readily fitted in with short- and medium-haul trucking. Through-cargoes may be hauled 800 to 1,000 miles with drivers and tractors being changed at several intermediate stations. Interlining arrangements between two or more trucking firms are sometimes used to provide this type of long-haul service.

The second type is the specialized long-haul operation. In this case two drivers are regularly assigned to each road vehicle with the senior driver responsible for the whole trip. For these operations, drivers as well as equipment are particularly selected for their suitability. This kind of organization is found mainly where distances between terminals are longer than single driver range. This applies in the main to interregional traffic, for example, between Central Canada and Western Canada and, to a lesser extent, between Central Canada and the Maritimes or between Alberta and the Pacific Coast.

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<sup>1</sup> This is examined in detail below.

<sup>2</sup> Single driver range is now legally determined by the maximum number of hours of continuous driving permitted for one driver in the various provinces and states involved (usually 10 hours or less) and by permissible highway speed limits for trucks (commonly 50 mph and yielding an average road speed of from 30 to 45 mph). This would include short and medium hauls within the range of 400 to 450 miles for single driver operations. In the earlier years of long haul, single drivers were also used on the 2,500-mile hauls from Quebec-Ontario to the Prairies, with stopovers en route while the drivers slept. This technique apparently proved too costly and by 1960 had been largely discontinued.

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Major barriers of distance and topography separate these four regions. Until terminals spaced within single driver range become practical across these barriers a double-driver operation is apparently essential.<sup>1</sup> Under these circumstances continuous hauls may range from 600 miles to 2,500 miles or more, with the same drivers and tractors being used to carry the cargo from origin to destination.

Both of these types of long-haul trucking had become established in Canada by 1960. The first type, terminal-to-terminal single-driver long hauls, was a natural outgrowth of intercity trucking. As such, its growth during the 1930's and 1940's was not marked by substantially different trucking techniques from those of medium hauls. In the main, its development was confined to intra-regional operations, mostly in Central Canada and in related international traffic with the United States.

It was a more difficult problem to overcome the interregional terminal-to-terminal distances (and cost competition) between such points as Toronto and Winnipeg (1,400 miles), Toronto and Edmonton (2,600 miles) and Montreal and Moncton (600 miles). It will be one task of this study to examine how, and how well, these interregional distances and costs have been overcome by the specialized long-haul highway transport.

### *Growth of Short-Medium-Haul Trucking*

Data is not available on the changing share of the short- and medium-haul freight traffic handled by the railways. But as early as 1950, the CPR stated that very little of its freight moved for less than 50 miles and not a large amount for less than 100 miles.<sup>2</sup> By 1960, experienced truckers indicated, over 75 per cent of the traffic within the 300- to 400-mile haul range was being moved by truck.

Information obtained in the survey of trucking firms showed that after a relatively slow growth in the 1920's and 1930's short- and medium-haul trucking expanded rapidly in the late 1940's and the 1950's. In addition the average-haul distances in which trucking played a dominant role were extended substantially during the 1950's. President S. P. Smith of Smith Transport Limited, the largest trucking firm in Canada, stated that, in the middle 1950's, the volume of this truck traffic was limited only by the number of road vehicles available.

Survey data from major for-hire trucking firms provided positive evidence of the rapid increase in short- and medium-haul trucking relative to railway freight operations during the 1950's. Comparison of the index

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<sup>1</sup> Some long-distance operators attempted to establish such terminals during the development of highway freight services between Central and Western Canada but they were found unsatisfactory at that time.

<sup>2</sup> Royal Commission on Transportation, 1951, *Transcript of Evidence*, p. 15584.



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of tonnages hauled by these truck operators with railway revenue carloadings and railway intercity ton-miles illustrates the substantial gains in recent years:

	<i>Tons hauled by short and medium high- way carriers</i>	<i>Railway revenue carloadings</i>	<i>Railway intercity ton-miles</i>	<i>Index of industrial production</i>
		<i>(Index 1953 = 100)</i>		
1953 .....	100.0	100.0	100.0	100.0
1954 .....	105.1	92.5	88.2	99.6
1955 .....	111.2	101.8	101.4	110.2
1956 .....	116.1	110.3	120.7	120.0
1957 .....	113.9	101.1	108.8	120.4
1958 .....	121.4	94.5	101.7	118.2
1959 .....	131.5	96.5	104.1	128.1
1960 .....	n.a.	91.1	n.a.	129.8

From 1957 short-medium-haul truck tonnage continued to increase while rail carloadings fell substantially though industrial production climbed in both 1959 and 1960. At the same time railway ton-miles failed to drop as sharply as carloadings probably indicating that the proportion of long-haul rail traffic was increasing as trucking took over an increasing share of short-haul traffic.

These data indicate the tendency for growth of short- and medium-distance highway transport in relation to railway services. As suggested above, trucks have also been widening the haul range in this area of competition. It may be evident that this growth and widening of short-medium-haul transport, at least partly at the expense of railway traffic, must, if continued, eventually reduce some rail traffic densities to the point where the railways would have serious cost difficulties in maintaining services. There was substantial evidence in 1960 that the railways were already encountering these cost difficulties in numerous areas and that, if volume continued to decline, they would find it increasingly difficult to compete with trucks in this short- and medium-haul field in future years.

### *Growth of Long-Haul Trucking*

In certain respects the growth of long-haul trucking has been even more significant than that of short and medium hauls. Its development has been more recent, mainly since 1950. It has grown in that area of overland transport where the railways had been presumed to have their greatest competitive advantage.

Since its development has been so recent, and the number of firms relatively few, it was possible to obtain much of the history of the growth of long-distance trucking in Canada. Because it marks a new and critical stage in truck-railway competition, the history of its development is examined

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here in some detail to illustrate the nature of the new technology and the new competition that the railways have faced in recent years. In fact, this long-haul development may be used to illustrate the competitive techniques being utilized by truckers throughout Canada and may be useful in explaining much of the recent rapid expansion of shorter haul trucking noted above.

The history of long-haul trucking is quite brief, covering little more than a decade. Much of its story is found in the development of long-haul traffic between Central and Western Canada. It was apparently on these routes that the long-haul techniques were first perfected. These also involved much the longest of the interregional hauls and these distance handicaps along with other obstacles were most difficult to overcome there. For these reasons the Central-Western Canada development has been selected here as illustrative of specialized long haul in Canada.

Broadly speaking, the development of specialized long-haul trucking is the story of the expansion of payload to a competitive and profitable level. Major truckers state that there was an exploitable demand for trucking services between Central and Western Canada as early as 1945 if conditions had been suitable.<sup>1</sup> But up to about 1950 the highway transport environment was unsuitable for such traffic. Conditions of highways, road equipment and provincial and state regulations, in particular, combined to make trucking over these routes hazardous, difficult and unprofitable.

In the early post-war period, poor road conditions had made heavy East-West freight hauling difficult and costly. Highways were then structurally weak, relative to those later available in the 1950's, and this led most provinces and states to maintain low gross weight limitations. Truck licensing costs were high for such interprovincial traffic because little progress had been made among provinces and states in developing reciprocal licensing arrangements.

In this pre-1950 period, tractors and trailers were heavy relative to payload. Only gas-operated tractors were then available. They were low in power compared to the diesels that were later to come into use. Until the diesels came, major truckers stated, road equipment in Canada was not sufficiently sturdy and dependable for long-distance hauling. Highway tractors in particular did not have the power, strength, efficiency or reliability for these continuous hauls of up to 2,000 or 3,000 miles.

With these poor road conditions and the heavy, unreliable equipment, the potential payload was too small to make the profitability of such operations reasonably certain. In addition, long-distance trucking between Central and Western Canada had still to prove it could give competitive service in the for-hire field and, though demand for its services was growing, it had still to develop the traffic market.

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<sup>1</sup> Interview with S. P. Smith, president of Smith Transport, and others.

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By 1950, these conditions had improved considerably and prospects for further improvements were favorable. By that time, United States No. 2 highway provided a paved East-West route through the northern border states. Good progress was being made in construction of the Trans-Canada highway. This offered the prospect of an all-Canadian route within a few years, though truckers were later disappointed in this.

In the late 1940's, wartime improvements in motive power, including diesel motors, were becoming available in highway tractors in the United States. These held out the possibility of improving the reliability of motor power for long hauls. They had a notable influence on long-distance highway transport when they were introduced in Canada in the early 1950's. This post-war period also marks the transition of truck manufacturing from its early role of mainly modifying passenger vehicles<sup>1</sup> to an industry specializing in highway freight equipment.

By 1950, the growth in demand for trucking services was becoming evident, particularly in the critical West to East traffic. Highway conditions and road equipment had improved. Rail freight rates had risen sufficiently on East-West traffic, as a result of successive horizontal rate increases, to make revenues attractive.<sup>2</sup> Conditions had improved enough for several for-hire trucking firms to consider pioneer development. In the spring of 1950 at least two firms inaugurated trucking operations between Alberta and Central Canada<sup>3</sup> and began to build up traffic.

Fortuitously, at this point, the August, 1950, rail strike occurred. This nine-day suspension of rail services created a pressing demand for extensive long-haul trucking services. Short-lived though it was, the strike was a notable test and demonstration for the trucking industry. It opened the door for an expansion of long-haul trucking that otherwise would probably have taken years to accomplish. It provided an opportunity to haul a wide range of traffic and to discover that trucking could compete at rail rates on much of it.<sup>4</sup> It demonstrated to shippers the special services that long-haul truckers could provide and their need to have those services available in such an emergency.

The 1950 strike also gave truckers the opportunity to test their abilities in overcoming the difficulties and obstacles of long hauls. To those

<sup>1</sup> See also Currie, p. 480.

<sup>2</sup> The application of the rate increases had made the rates between Central and Western Canada relatively more attractive to truckers than in other regions. This was because rates in Central Canada, being competitive with water rates, were not raised as much. In the case of Maritime traffic, with the MFRA subsidy not available to truckers, the rate increases were proportionately less attractive as far as trucking was concerned.

<sup>3</sup> M and P Transport began operations in April, 1950, Trans-Canada Highway Express in May of that year and Midland Superior in September. Several of these early long-haul operators had previous experience in serving northern Alberta and the Alaska highway.

<sup>4</sup> Trucking firms reported that revenues of \$2,000 per truckload from Western to Central Canada were regularly obtained, giving a good margin of profit in spite of relatively high costs. For comparison such West to East traffic in 1960 was normally yielding only about \$500 to \$800 a load.

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with the courage, experience and resourcefulness to meet these new obstacles, the strike and its aftermath was a unique chance to adapt their operations to the peculiar requirements of this type of transport. To those truckers with little enthusiasm for pioneering under these circumstances, it meant only a temporary period of extra traffic. For others who held on, but lacked experience and versatility it meant a gradual decline in profits that eventually forced them to abandon it. This weeding out of the long-haul truckers apparently continued for several years after the rail strike.

Meanwhile conditions were improving. Rapid progress was being made on the Trans-Canada highway. Other highways, strong enough to carry heavier freight loads, were being extended in both Western and Central Canada as well as in the border states. A few diesel tractors from the United States came into use. These were heavy but sturdy, built for the long periods of continuous operation required for these gruelling long hauls. Drivers were becoming more experienced in the responsibility and versatility needed for such operations. Rail rates, particularly those on L.T.L. and other class traffic that comprised much of the western movement, continued to rise.<sup>1</sup> Restrictions on mixing L.C.L. rail shipments to Western Canada made trucking revenues on L.T.L. particularly attractive. For the few trucking companies that were able to overcome the physical difficulties of these pioneer operations, traffic volume increased steadily and substantially. This has been attributed mainly to the widening recognition by shippers of the special services truckers could provide. More frequent deliveries that reduced inventories, less damage, the speed and flexibility of delivery, and delivery at consignee's door rather than to railway freight shed or team track, were some of the services noted. In addition, from 1950 on, some major shippers had hedged against future rail strikes by retaining truckers to carry at least a part of their regular shipments.

These favourable conditions of the early 1950's did not last. The next few years saw long-haul East-West trucking shaken to its foundations. Only the most efficient companies survived and even these were severely tested. The first blow was the foot-and-mouth disease which struck the Prairies in 1952 and wiped out the growing back haul in dressed meat traffic until March, 1953, when the United States ban was lifted. The second occurred in 1955 when the restrictions on mixing L.C.L. traffic to Western Canada were removed along with the equalization of freight rates, on March 1, 1955. The third was the intensification of competition from the railways in the later 1950's.

The change in the mixing rule cut deeply into revenues. Up to March, 1955, the mixing rule (designed to permit L.C.L. shipments to be mixed in

<sup>1</sup> The Board of Transport Commissioners authorized a 12 per cent horizontal increase in rail rates on July 4, 1951, later raised to 17 per cent, and further increases of 9 per cent on January 1, 1953, and 7 per cent on March 16, 1953. As noted above, these increases were more significant for trucking between Central and Western Canada than for other routes.

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one car and so to obtain the lower carlot rate) as applied to shipments between Western and Eastern Canada was restricted to shipments going to people in the same line of trade, e.g., implement dealers, grocers, druggists, etc. To truckers this meant their substantial L.T.L. traffic, on which competitive rail rates were relatively high, could be depended upon for most, if not all, of their net revenues and profits.<sup>1</sup>

After equalization in March, 1955, the mixing rule for the West was brought into line with its application in Eastern Canada. The railways extended C.L. rates to mixed shipments on a much wider range of L.C.L. classes. As a result, many L.C.L. rates by rail were cut sharply. Truckers, continuing at their former L.T.L. rates, saw their traffic shift rapidly to the railways. There was no alternative but to follow suit. Trucking firms stated that their L.T.L. rates had to be cut 30 per cent on the average to compete with these new rail rates.<sup>2</sup> The effect on their profits was disastrous. Some did not survive. Those that did were forced to operate much more efficiently than they had before.

To compete under these new low L.T.L. rates they saw they must use bigger, more efficient equipment that would carry more payload. Fortunately, highways had improved sufficiently to make larger load limits permissible. Long-haul trucking shifted rapidly to big diesel tractor units and bigger trailers within the next several years. The transition was not easy. Financing new road equipment had always been difficult. It became a major challenge in this mass conversion to larger vehicles. Apparently only those who could finance a substantial conversion were able to survive. Some companies were merged or consolidated to form larger and competitively stronger firms.<sup>3</sup> A notable development of the mid-1950's was the increased investment of outside capital in the trucking industry in Canada. In several important instances this was used to consolidate established long-haul services with complementary short- and medium-haul operations.<sup>4</sup> This marked the recognition by the business world of the permanence of long-haul highway transport and a new confidence in its future prospects.

The outcome of this conversion and consolidation was a stronger, more stable industry and a substantial reduction in operating costs. With

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<sup>1</sup> L.T.L. freight is ordinarily used to "top off" T.L. or near T.L. shipments, thus utilizing any extra space and thereby adding enough high revenue traffic to make bulk T.L. shipments profitable.

<sup>2</sup> For example, the 2nd class L.T.L. rate quoted by one trucker fell from \$6.73 a cwt. in 1953 to \$4.81 in 1956. By 1960 it was \$4.30.

<sup>3</sup> Various other techniques were adopted by long-haul operators to obtain capital in the 1950's. Some firms employed only those drivers who could finance the purchase of their own tractors. Others leased both tractors and trailers from individuals or trucking firms on a share-of-revenue basis. Starting in 1957, rail piggyback was used as a means of expanding. It required only the purchase of additional trailers.

<sup>4</sup> For example, in this period Soo Security and others were brought into the Canadian Motorways complex (a consolidation of some 52 trucking companies) and Gossett and Sons came into the Canada Steamship Lines organization.

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the larger and more reliable diesel tractors, payloads increased while fuel costs were cut relative to the former gasoline tractors. Supporting these cost reductions were steadily improving highways and weight limits.

This period of conversion and consolidation, that enabled truckers to survive the 1955 reduction in L.T.L. rates and the other rate cuts and agreed charges which followed, appears to be an important milestone in the history of long-haul trucking in Canada. It marks a unique stage of determination, adaptability and constructive confidence on the part of the trucking industry that indicated long-distance hauling was sufficiently flexible and attractive to continue as a permanent component of Canada's national transportation organization.

This can perhaps be best illustrated by the history of its rapid growth in tonnage after the major setback of 1955. This growth is shown by the following index of tonnages hauled during these years. Compared to the growth indexes for short-medium trucking and the railways for the same period (above p. 11) long-haul growth between Central and Western Canada was substantial.<sup>1</sup>

	<i>Index of tons hauled</i> <i>(1953 = 100)</i>
1953 .....	100.0
1954 .....	140.1
1955 .....	150.4
1956 .....	183.3
1957 .....	204.5
1958 .....	275.5
1959 .....	378.9
1960 .....	403.5

This index of long-haul growth is based on the records of specialized long-haul firms. These were among the largest operators in the field. Their rate of growth in tonnage from 1955 to 1960 provides a notable achievement.

This growth was achieved in the face of greatly intensified competition from the railways. Trailer-on-flatcar (TOFC) service for rail-owned trailers, inaugurated in 1952, was an important early step in this competition. This was supplemented, in 1957, by opening TOFC service to for-hire highway carriers, at rates that appeared quite attractive on major routes (e.g., between Montreal and Toronto). It was widely believed that these apparently low line-haul rail rates would mean the end of long-haul highway transport between Central and Western Canada. But this rail competition through piggyback has been less effective than was expected, as will be shown below. Most long-haul truckers avoided its use except when it was to their particular advantage.

Piggyback competition was reinforced from 1955 on by the extension of agreed charges by the railways. As early as 1950, the CNR had

<sup>1</sup> Tonnage estimates for the indexes of long haul are based on data obtained from the survey of major trucking firms.

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argued before the Royal Commission on Transportation that agreed charges were needed as a weapon to cope with truck competition.<sup>1</sup> By 1955, the railways had lost a considerable volume of the more remunerative types of traffic and had had to reduce rates sharply to compete with highway competition between Eastern and Western Canada.<sup>2</sup> In that year, Parliament approved the recommendations of the Turgeon Commission, permitting the extension of agreed charges without requiring approval of the Board of Transport Commissioners. From this time forward the railways used agreed charges with considerable effect as a competitive weapon. From 23 agreed charges in effect in early 1955, they were increased to 70 by the end of 1955 and by December 31, 1960, the number had reached 979.<sup>3</sup> An indication of their rate of growth is given by the number of tariffs on agreed charges filed with the Board of Transport Commissioners by the railways during those years (these include amendments and cancellations):<sup>3</sup>

1954 .....	79
1955 .....	176
1956 .....	323
1957 .....	547
1958 .....	748
1959 .....	1,004
1960 .....	1,027

Increasingly these agreed charges were used to bind the long-haul traffic to the railways. Truckers involved reported that in the beginning, before they had diversified their operations, the impact of agreed charges on their operations was often devastating. This taught the long haulers to avoid becoming too dependent on one shipper or on one type of commodity. The resulting diversification blunted the sharp edge of the agreed charge weapon. In consequence, growth of long-haul trucking continued during this period at a rapid rate. It would undoubtedly have been much greater if the railways had not used this weapon so dexterously. Undoubtedly it protected for the railways a large volume of this traffic, though net revenues were apparently cut sharply to do it.

But long-haul trucking did not maintain its rate of growth without a major effort to meet this competition. It was necessary to continue, as in the past, to seek out larger and more efficient equipment and bigger payloads. During this period most of the remaining gas-operated tractors were replaced for the long haul by diesels. The heavy diesel equipment brought into use in the mid-1950's was in turn replaced, beginning about 1957-58, with new

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<sup>1</sup> At that time, only 23 agreed charges were in effect, all in the Prairie Provinces, Ontario and Quebec.

<sup>2</sup> See Report of the Royal Commission on Agreed Charges, 1955, p. 45.

<sup>3</sup> A special tabulation provided by the Board of Transport Commissioners. Since 1938, some 1,131 agreed charges have been filed, not including amendments. Of these, 152 had been cancelled up to the end of 1960.

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lighter weight, lower cost<sup>1</sup> diesels. Performance and weight to payload had continued to be improved by truck manufacturers and the shift to these light weight, more powerful diesels<sup>2</sup> has been rapid since 1958. By late 1960 several major firms were completely equipped for their long-haul operations with these new 1959 and 1960 models.

Semi-trailers have been correspondingly enlarged. Truckers reported trailer dimensions had increased from a maximum of 6 feet by 6 feet by 28 feet (weight 10,500 lbs.) in 1953 to 7 by 7 by up to 42 feet (weight 10,800 to 14,700 lbs.) in 1960, virtually doubling their cubic capacity. Development of specialized and refrigerated trailers had also played an important part. These improvements increased the potential payload from an estimated 10 tons to 16-20 tons. From 1950 to 1960, round trip revenues, in spite of sharply reduced rates, were reported to have increased by more than 20 per cent.

But bigger payloads and correspondingly lower costs became possible only as highway load restrictions were eased. During the 1950's, provincial governments had recognized the role of long-haul trucking by raising weight limits as their highways improved<sup>3</sup> and by extending reciprocity arrangements with intervening provinces and states. Alberta took the lead in this and became a major centre for long-haul trucking between Eastern and Western Canada.<sup>4</sup>

Probably as a result of these improvements and of the increasing demand for long-haul highway services, trucking firms in this field reported continued rapid growth in traffic during 1960. This was in contrast to the information from short- and medium-haul truckers who indicated their traffic volume had, like rail freight, fallen off seriously in the latter half of 1960.

In summary, several factors appear to account for this rapid growth in long-haul trucking:

1. When it began in 1950, truck transport between Central and Western Canada was a relatively virgin field and a substantial initial demand was available for development and exploitation.
2. A substantial growth in demand for trucking services occurred throughout Canada during the 1950's.
3. In long-haul firms that survived the early long-haul difficulties,

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<sup>1</sup> Lower in operating costs.

<sup>2</sup> Rolls Royce, IHC, Kenworth, etc.

<sup>3</sup> The completion of highways 11 and 17 through northern Ontario was reported to have had little influence on the growth of long-haul operations. Except for cattle shipments from the West, most loads are routed over U.S. highways. Because cattle must be certified free of disease to pass U.S. customs, they are ordinarily routed on the all-Canadian route.

<sup>4</sup> The Government of Alberta was reported by long-haul operators to have assisted them in many ways to maintain trucking as a competitor for rail transport. It was noted, for example, that whenever rail competition by way of reduced rates or agreed charges became a very serious threat to the trucking industry, favorable consideration of higher highway load limits could be expected from the Alberta Government.



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management appears to have been particularly energetic, able, versatile and determined.

4. These operators gave special attention to keeping costs low through using the most efficient road equipment, most careful selection of capable drivers, leasing of equipment, keeping terminal investment to a minimum, careful stowage, maximum payloads and minimum empty returns. Installation of teletype and telex services improved their control of traffic and the dependability of long-haul service.
5. They sought out profitable year-round traffic and adapted their transport, refrigeration and other services to meet better the needs of particular shippers.

## Organization of Highway Transport

The basis for this growth of trucking in Canada may be found in its organization and in the specialized services it offers. In examining these features of the industry, the special survey of trucking firms provided much new information. The discussion in this section of the report is based, to a major extent, on the data obtained from the ten major trucking firms included in the survey.

The firms surveyed were all engaged in common carrier intercity transport. They handled approximately three per cent of the total tonnage hauled by for-hire carriers in Canada in 1959 and a somewhat larger share of the total ton-miles hauled.

### *Haul-Patterns*

A substantial degree of specialization in route patterns was evident among these firms. The geographical location and pattern of haul routes varied from firm to firm and reflected in most cases the provincial franchises held by individual firms. But operators with the longest hauls tended to specialize in long-haul routes and this specialization applied also in shorter haul operations. The survey showed the following grouping of firms based on length of hauls:

<i>Haul range</i>	<i>No. of firms</i>	<i>Type</i>
1,200 to 2,600 miles .....	3	Specialized long haul
30 to 600 miles .....	3	Specialized short-medium haul
30 to 1,400 miles .....	4	Combined short to long hauls

The operators with the longest hauls were found to confine their activities to long-haul freighting almost exclusively. They solicited through-traffic moving over these long distances. Their local services were limited, in the main, to P & D services at route terminals. For traffic beyond this they had interlining arrangements with intra-provincial or other truckers.

On the other end were the specialized short-medium-haul firms. These aimed to provide an intensive, relatively complete service within a limited area. They estimated that 85 to 100 per cent of their hauls were overnight or less. These firms also depended on interlining with other firms to handle their traffic going beyond this restricted zone. In some cases this mutual interdependence was manifest in continuing arrangements between individual long- and short-medium-haul firms.<sup>1</sup> In others these specialized

<sup>1</sup> Special reduced rates (in some cases reduced by one rate class) were reported by some of these.

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firms turned for interlining to whichever operator could give them the most satisfactory service and rates.

A third group of firms, engaged in short- to long-distance trucking, was attempting to meet both short- and long-haul demands of its customers. These firms reported 75 to 85 per cent of their hauls were overnight or less and under 500 miles. The operations of this group were concentrated mainly in Central Canada where the major volume of traffic lies. But they offered coast-to-coast services, though some of these were, in fact, by interlining or piggyback. More warehousing services, in addition to those related to high-way movement, were provided by this group. It may be noted that except for specialized long-haul operations, for-hire trucking was organized primarily as an overnight service, with probably 90 per cent of it within overnight range.

Another aspect of the haul pattern relates to the major routes used by for-hire trucking in Canada. Much the largest movement of truck traffic in Canada is over the routes within the major industrial complex in Central Canada, centred from Montreal in the East to Toronto, Hamilton, Windsor and Sarnia in the West. The routes between Montreal and Toronto carried the biggest share of the traffic within this area.<sup>1</sup>

Fanning out from this central industrial hub are numerous distributive or feeder highway lines, the major international routes, and Trans-Canada and other long-haul routes.

The long-haul connections with Western Canada have been largely via United States routes through the border states. In recent years, an increasing share of this traffic has moved by the All-Canada route through northern Ontario. All-Canada routing of long-haul traffic should increase greatly when the Trans-Canada highway is completed.

In the main, route patterns of for-hire trucking in most provinces emphasized intra-provincial transport services. This was no doubt the result of trucking franchises and highway construction being primarily in provincial hands. The development of long-haul trucking between Central and Western Canada depended, perhaps more than is generally realized, on the use of U.S. highways and the freedom of entry of new trucking firms in the Province of Alberta. Ontario, situated in the centre of the Trans-Canada route and with much the longest section of the highway to provide, has been marked by gaps at both ends of the highway freight route. Closing these critical gaps, expected by 1962 or 1963, is likely to shift substantial Canadian traffic from U.S. routes and from piggyback.

<sup>1</sup> Since 1957, incomplete or inadequate highway facilities between these two centres had encouraged a major shift of for-hire trailers from the highway to railway piggyback services, though most trucking firms continued to send a substantial share of their trailers by highway. Over 200 trailers a night each way between Montreal and Toronto were reported moving by piggyback in 1960. Most of these were owned by for-hire trucking firms. But most of the firms in the survey that used this piggyback service reported that they would return in the main to highway service when highway facilities were improved.

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### *Contract Versus For-hire*

The ten major trucking firms in the survey reported their operations were almost exclusively on a for-hire basis. A few firms hauled from one to three per cent of their freight on a contract basis. Indications were, however, that considerably more traffic than this was handled on a near-contract basis. In other words, individual truckers had adapted their services so effectively to particular shippers' requirements that such shippers did not seek alternative carriers. This specialization of service to particular shippers was indicated to be a major competitive advantage of trucking over the more generalized services of the railways.

### *Intra- and Extra-Provincial Services*

Specialized long-haul operators limited their activities almost exclusively to interprovincial traffic, with a small share (about one to five per cent) in international traffic. Their intra-provincial service was mainly confined to the P & D services required for their long-haul operations.

For specialized short-medium-haul firms, on the other hand, over 60 per cent of their operations were in intra-provincial services with the remaining nearly 40 per cent usually concentrated either in interprovincial (chiefly Ontario-Quebec) or international services.

Operations of the short- to long-haul firms varied, with emphasis in some cases mainly on interprovincial traffic and in others on intra-provincial, with a substantial volume of Canada-United States traffic in most instances.

Much, probably most, of the international traffic was handled by Canadian trucking firms through their United States subsidiaries. Some was handled under agreement with independent U.S. truckers.

Long-haul operators had until recently confined their international traffic mainly to making small drop-offs on their regular interprovincial routes through the U.S. But development, in the late 1950's, of direct hauls of fresh fish and other products from Western Canada to Chicago, Detroit and other U.S. markets, as well as traffic from Central Canada to the southern States, indicated that long-haul international traffic was expanding.

### *For-hire Truck Traffic*

Most descriptive of the role of for-hire trucking in its competition for traffic with rail transport was the statement of a senior official of a trucking firm who had spent most of his life in the industry. "Trucking", he said, "fits in where it can".

Thus, generally speaking, trucking operators indicated they sought out the most profitable traffic but stood ready also to carry much that yielded

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relatively low net revenues. It was possible for them to operate successfully on this basis, in some cases, by judiciously combining the high revenue traffic with the low; in others, by cutting their costs or increasing payload, or both, to enable them to carry low revenue traffic profitably. By these techniques, the for-hire trucking industry, while it had not reached into iron ore or the wheat traffic in its competition with rail services, was making profitable bulk hauls of mineral concentrates, steel rods and sheets, and such, some of which were being hauled up to 2,500 miles. Overall, the evidence indicated that for-hire truckers were steadily finding new avenues for reaching more widely and deeply into Canada's freight traffic.

In broad terms, their traffic pattern, by the early 1960's, had been strongly influenced by:

1. The railway rate structure which, with its elements of value-of-service ratemaking, horizontal rate increases and other institutions, had over previous years made rates in certain areas and in certain traffic classes particularly attractive for truck competition. But rate adjustments in the 1950's (rate equalization, agreed charges, etc.) had substantially reduced the profit opportunities in many of these areas by the early 1960's.
2. A notable growth in demand for more specialized and individualized transport services than the generalized service of the railways could provide. Factors stimulating this demand were the decentralization of industry and distribution; the increase in manufactured, processed and perishable products and the related increase in volume of high-rated traffic; the increase in demand for smaller and more frequent deliveries to hold down inventory costs; and the increased demand for specialized services, such as refrigeration, tankers, etc.
3. The speed, economy and flexibility of highway transport in providing these specialized services, in handling L.T.L. traffic, and in adapting its services to unique shipper requirements.
4. Some narrowing of the gap between railway and truck line-haul costs due to technically improved highways and road and handling equipment as well as more efficient trucking organization.

The result of these influences operating over the past decade or two has been a widening and diversification of the traffic being profitably hauled by highway. The short-medium-haul truckers, because of their advantages in speed and economy in P & D and in short-haul operations, had of course a much wider range of traffic than long-haul firms. Yet the long-distance operators reported having a demand for as much profitable westbound traffic as

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they could handle. But profitable eastbound traffic had been less readily available to them and required more careful selection and development of special services, particularly in refrigeration of meats, fish and other perishables. By 1960, however, there was evidence that development of eastbound traffic had been successful enough to require some promotion of westbound traffic to complement it.

In general, truckers had, by this time, found it unwise to specialize too much in one particular type of traffic. If they became too specialized, their experience had shown, the risk of losing most of their traffic as a result of the railways, or another trucker, offering lower rates was too great. This risk was reduced by diversification of traffic and most trucking firms, especially in long haul, had adopted diversification as survival insurance.

The traffic pattern found in the survey of trucking firms illustrates these factors. Highway trucking services were noted for their speed and dispatch, relative to other modes of transport, in handling small freight shipments. This no doubt accounts for the large proportion of L.T.L. in for-hire traffic. By weight, L.T.L. shipments were reported to average from about 30 to as high as 56 per cent of total traffic. But in number of shipments (which governs the amount of handling), L.T.L. was 80 to 99 per cent. On the basis of revenue, L.T.L. was between these two.<sup>1</sup>

The relative proportions of L.T.L. traffic by weight, shipments and revenue varied substantially among firms. Even within each of the three types of firms noted above there were significant differences. Most firms reported their L.T.L. was a relatively constant proportion of total traffic (by weight, shipments and revenue) but some handled a much larger proportion of near-truckload shipments than others. Others handled mainly small shipments.

Traffic originating in Central Canada had in the main a larger L.T.L. component than traffic moving from Western Canada to the East. Long-haul operators reported their eastbound traffic was mainly truckload with L.T.L. averaging about 30 per cent or less. Their westbound traffic (i.e., mainly from Ontario and Quebec) averaged 70 per cent L.T.L. by weight.

For firms with operations concentrated in Central Canada, L.T.L. was estimated to range from 30 per cent of total traffic to 55 to 60 per cent.

L.T.L. was regularly used by long-haul operators on westbound trips to "top-off" the near-truckload shipments, with the object of adding enough of the higher-revenue L.T.L. to make each round-trip profitable.

With the lesser volume of L.T.L. eastbound, these long-haul operators had to depend mainly on the limited range of truckload or near-truckload

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<sup>1</sup>For example, several samplings indicated that when L.T.L. was 30 per cent by weight it might average as high as 95 per cent by number of shipments and 45 to 50 per cent of the revenue.

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traffic that would yield sufficient net revenue in itself. This tended to confine eastbound traffic to higher-revenue, year-round traffic or to traffic on which trucks could give superior service and thus obtain higher rates than the railways. Accordingly, most long-haul operators reported their operations were restricted mainly by the limited availability of suitable eastbound traffic. They could fairly readily obtain more profitable westbound traffic than they could handle.

The eastbound traffic that had been found most satisfactory for these long-haul truck operations were certain chemicals including polyethylene; dressed, frozen and canned meats; fresh and frozen fish; cattle and to a lesser extent hogs; dressed poultry; cheese; honey; liquor; military supplies; repairable tires;<sup>1</sup> seeds; scrap metal and such. Butter and eggs had been carried but their seasonality made them unsatisfactory.

A growing traffic in livestock (mainly cattle and hogs) had been developed, starting about 1958, as a year-round operation. This began only after the Trans-Canada highway through northern Ontario was opened in the mid-1950's.<sup>2</sup> Prospects that load limits would be raised, particularly through Saskatchewan,<sup>3</sup> had also stimulated these livestock shipments. With the completion of paving on the Ontario sections of Trans-Canada highway<sup>4</sup> and highway load limits all raised to 70,000 or 72,000 pounds, livestock was expected to become a major component of eastbound traffic for these long-haul operators.

On their westbound movements, traffic was generally similar to that handled in Central Canada. It included a wide range of manufactured and miscellaneous goods, much of which moved at relatively high rates. At the same time, it included an increasing volume of bulk traffic (steel, aluminum, lead and nickel concentrates, plywood, scrap metal, concrete pipe, asbestos and even stone) all carried at relatively low rates by truck.

Long-haul operators, like their counterparts on short and medium hauls, had developed a substantial part of their traffic on the basis of specialized services for a particular commodity or shipper. They had adapted road equipment, refrigeration or air conditioning, P & D, highway time and other services to the special requirements of shippers of such commodities as dressed beef, pork cuts, fish, livestock and frozen foods. Such specialization had been developed mainly for eastbound traffic. Because of the diversity of traffic in westbound loads, the possibility for specialization was more limited. But opportunities for such specialization were expected to grow as

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<sup>1</sup> Tire companies usually require that their shipments travel by highway.

<sup>2</sup> For livestock, the costs and delays for health inspection and certification at the U.S. border made its movement by U.S. routes unprofitable.

<sup>3</sup> Maximum weight in Saskatchewan was raised to 72,000 pounds on April 1, 1961.

<sup>4</sup> Paving on Ontario Highway 11 was expected to be completed in 1961 and on Highway 17, the shorter route, by 1962 or 1963.

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westbound traffic increased. The techniques for it had already been worked out by short- and medium-haul truckers who were providing specialized services for chemicals, flour, etc., by tanker, for auto components, L.T.L., magazines and many other goods.

This specialized flexibility of trucking service has enabled operators to build up substantial volumes of traffic that were, to a considerable extent, tied to the individual trucking firm. Because railways were more limited in such adaptability, this constituted a major competitive advantage of trucking over railway service.

### *Speeds, Loads and Empty Returns*

Speed of delivery has become a critical factor in service to shippers. Accordingly, it has become an important element in railway-truck competition. On short hauls, trucks have a substantial advantage because of the extra time required by rail in loading and unloading the freight in box cars or by piggyback, in switching, and such. On longer hauls, the effects of these railway time losses are reduced by spreading them over more miles, but other delays en route (switching at intervening stations, passing through hump yards, etc.) add to the time required for delivery.

Trucks, each operating as a single unit, avoided much of these delays by being fully loaded at origin with freight for a single destination, so stops en route were unnecessary except for refuelling and such. Railways could duplicate these conditions by loading full trainloads for a single terminal destination but they were limited in how far they could go in this. Extra costs and extra time at the dispatching terminal and considerable reorganization of dispatching and sorting techniques would be required to extend it farther. The CNR "highball" service between Eastern and Western Canada, announced early in 1961, was designed to overcome some of these obstacles.

Freight train speeds are regulated on the basis of track and roadbed conditions. The result is that while maximum rail speeds may under the best track conditions exceed maximum highway truck speeds, the average maximum by rail is about the same as by truck. And average line-haul rail speeds (20 mph in 1960)<sup>1</sup> were well below the average for trucks.

The data obtained from trucking firms indicated that highway speeds for long-haul operations were only slightly higher than for short-medium operations. Estimates of average road speeds varied from 30 to 45 mph but calculations based on trip times showed the average for all ten firms to be close to 35 mph with long haul at 37 to 38 mph.

Long-haul truckers reported they regularly gave fourth-morning

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<sup>1</sup> See CNR and CPR annual reports.



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delivery between Calgary-Edmonton and Toronto-Montreal, while their shippers indicated the best the railway could offer was fifth-morning delivery, even with piggyback.<sup>1</sup> Rail speeds, while moving between East and West might be as high or higher than truck speeds, but the railways lost time in having to fit shipments into more inflexible dispatch schedules, in switching and classifying at Winnipeg, in stopping for inspection of bearings<sup>2</sup> and in P & D at origin and destination. It was expected that the railways' improvements in hump yards, switching, train scheduling, etc., would within a year or two enable them to provide fourth-morning delivery also. By that time, however, trucking firms expected the Trans-Canada highway would be completed thus permitting them to give third-morning delivery.<sup>3</sup>

By the same token, long-haul trucking had advantages over short-haul in relative speed of delivery. In addition to faster highway speeds these long-haul advantages included fewer turn-arounds, relatively fewer P & D operations and more of the transit time devoted to hauling on the highway.

Even more significant for costs were the size of payloads and the proportion of empty returns. Long-haul trucking was distinguished by heavier and more careful loading and less empty returns than short-medium haul operations. For long haul, loading as closely as possible to maximum capacity and load limits was apparently one of the most critical factors in holding trucking costs low enough to compete with rail services. In effect, this meant that trailers must be fully loaded both ways and westbound loads must be balanced with eastbound loads.

Ordinarily westbound loads were limited by the number of profitable eastbound loads that were available to balance the traffic. Nevertheless, westbound loads required more careful stowage in the trailer to ensure that each vehicle carried as full a load as possible, that each load had sufficient complement of L.T.L. to make each trip profitable,<sup>4</sup> and that each shipment would withstand the long trip without damage.

The nature of the eastbound long-haul traffic made it less adaptable to maximum-revenue loading than the westbound. There was more wasted space (e.g., in loads of hanging meat), more tare due to refrigerated trailers, less weight per cube, and less L.T.L. Thus, in 1960, eastbound loads (on 5-axle units) were averaging about 12 to 13 tons, while westbound loads

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<sup>1</sup> This was before the "highball" service was inaugurated.

<sup>2</sup> Board of Transport Commissioners officials estimate freight trains stop approximately every 75 miles on the average for inspection of wheel bearings on the whole train.

<sup>3</sup> Trans-Canada route from Toronto to Edmonton when completed will be less than its 2,300 miles in 1960. This should enable the trip to be made in 65 hours or less.

<sup>4</sup> Profitability in long-haul trucking was viewed in terms of the round trip, with the higher revenue westbound loads being used to compensate for the lower revenue eastbound loads. This balancing of revenue was particularly desirable in the case of leased equipment as a means of ensuring that each driver received an adequate minimum return for his trip. Average revenue per load in 1959-60 was running at about \$1,300 westbound and \$900 eastbound or \$2,200 round trip.

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averaged 16 tons.<sup>1</sup> A significant upward trend in payload was noted. From 1955 to 1960, westbound loads increased by 3,000 pounds on the average. A substantial increase was evident in eastbound loads but some operators showed much larger increases than others, depending on the type of traffic hauled. But the shift from 4-axle to 5-axle units during this period apparently enabled long-haul loads, both ways, to be pushed up by an average of 1½ to 2½ tons.

In contrast, highway loads carried by short- and medium-haul operators averaged slightly over 10 tons while their piggyback loads averaged close to 15 tons. Load weights varied over a much wider range in short-medium hauls. This was partly because cost-revenue considerations permitted more unused capacity and partly because of wider variation in size of equipment used. More 3-axle and 4-axle equipment was used on the shorter hauls. Several samples indicated that, on the average, loading for low-density and high-density areas of short-medium haul traffic for the three equipment sizes might run approximately as follows:

	<i>Average low-density loads (tons)</i>	<i>Average high-density loads (tons)</i>
3-axle .....	3.0	10.5
4-axle .....	6.0	12.0
5-axle .....	8.0	17.0

It was notable, however, that some very large payloads were carried in short-medium hauling, larger than in long-haul operations. Loads up to 20 tons or more were made possible by using light-weight (stake) trailers. There was a wider range of profitable dry freight in Central Canada suitable for these heavy operations. On long-haul operations, on the other hand, with the nature of the eastbound freight commonly requiring refrigerated trailers, the extra weight in cooling unit, insulation, and heavier construction was reported to reduce the payload potential by several tons relative to dry freight traffic.

A substantially lower proportion of empty returns in long-haul operations can be attributed mainly to the greater emphasis given to balancing westbound with eastbound loads and to careful stowage to ensure maximum loading. By these techniques it was possible to keep unused capacity to a relatively low level and thereby maximize revenues per unit of equipment. Empty returns, which measure unused truck capacity, were held between 2 and 10 per cent of total volume in long-haul operations. Short-medium

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<sup>1</sup> Trailer loads shipped by these long-haul truckers via piggyback averaged about three tons heavier than highway loads.

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haul trucking, on the other hand, averaged 20 to 30 per cent empty return. Railway freight services averaged about 35 per cent empty return overall in 1960.<sup>1</sup>

### *Investment*

Capital investment in freight transportation is relatively high in proportion to output when compared with most industries. For the trucking firms surveyed the ratio of investment to value of output was estimated at 1:1.5. For long-haul firms it was 1:1.3. Annual reports of the two major railways showed investment to be a larger proportion of output than these. But total railway investment includes a large proportion of roadbed in which trucking does not invest directly. A more useful comparison may be the ratio between equipment investment and output.

### *Road Equipment*

Trucking, like inland water freighting, had most of its investment in hauling equipment. Out of the total investment of almost \$57 million for the 10 major trucking firms surveyed almost 79 per cent was in road freight equipment. For long-haul firms alone the proportion was 77 per cent.

The ratio of investment in road equipment to output for all these trucking firms was estimated 1:2. For the railways, estimates based on their annual reports, indicated the ratio of 1:0.7 for depreciated equipment investment to railway revenue.<sup>2</sup>

The ten trucking firms surveyed had a total of over 8,700 road vehicles including tractors, trailers and single-unit trucks.<sup>3</sup> In the main, tractors and trailers were used for the highway operations while single units took care of P & D (particularly L.T.L.) services. But where the P or D involved a substantial part of the load, tractor-trailer units were commonly used for this to avoid rehandling. Similarly, single-unit trucks were used to some extent for short-haul highway operations.

Trailer numbers were double those of tractors. Extra trailers were required for stationing at the terminal or shipper's docks for loading or unloading while the tractor was in use elsewhere. But major firms indicated that 1.5 trailers per tractor was the normal requirement. Indications were

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<sup>1</sup> Annual reports CNR and CPR, 1960.

<sup>2</sup> This ratio might be slightly higher if passenger services were excluded but passenger equipment and revenues are a relatively small proportion of those for freight. In 1960 railway passenger revenue was about seven per cent of freight revenue.

<sup>3</sup> These comprised 2,442 tractors, 4,870 trailers and 1,407 trucks.

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that many firms retained their old trailers after more modern ones were purchased, partly for a reserve for peak periods and partly because their sale price was relatively low.<sup>1</sup>

The equipment used by specialized long-haul firms was distinguished by being larger, newer and costlier on the average than the equipment of short-medium-haul firms. For highway operations, long-haul firms specialized more in heavy, powerful tractor-trailer units with more (in fact, most) trailers equipped for refrigeration. These standard long-haul highway units were supplemented by a few stake trailers, trucks and service cars. Less P & D equipment was required in long haul, because P & D was a smaller proportion of total operations and because trailers were more often fully loaded at one shipper's dock (especially in the West) than was the case for short-medium operations.

Long-haul tractor fleets were newer, the average age ranging from one to three years against over five years for the other firms. From 1957 to 1960, long-haul operators had modernized virtually all of their fleets of tractors and trailers. Their records at the end of 1960 showed their equipment to be sturdier, larger and more modern and efficient than it had been in previous years. They appeared better equipped to compete in costs, speed and service under the difficult long-haul conditions than they had ever been.

The average investment in each tractor and trailer provides an indication of how far these long-haul firms have gone in obtaining the capacity, efficiency and advanced techniques they require to meet cost, speed and service competition under the difficult conditions of long-distance trucking. The average depreciated value of tractors and trailers for the long haul and for other trucking firms in the survey illustrates this:

	<i>Long haul</i>	<i>Other firms</i>
Tractors .....	\$20,000	\$9,000
Trailers .....	11,000	6,000

The utilization of equipment has become a major determinant of hauling costs. This is because of the high investment in road equipment relative to output, the trend to newer, costlier and more efficient equipment and the increasing importance in operating costs of depreciation, obsolescence and maintenance that result from these.

Utilization of equipment can be most effectively measured in ton-miles hauled during a given period. In this survey, because ton-mile records were not available from most firms it was necessary to depend on miles hauled.<sup>2</sup>

<sup>1</sup> A small proportion of the extra trailers were attributed to piggyback requirements. In addition, short-medium-haul firms gave more emphasis to the full demands for service during peak loads than long-haul firms were able to do.

<sup>2</sup> Miles hauled can be converted to approximate ton-miles by multiplying by the average load in tons—in the case of long-haul trucking, about 14 tons; for short-medium hauling, about 10 tons.

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A substantial advantage was gained in utilization of equipment by the more continuous highway operations of long-haul firms. This is illustrated by the average miles hauled per tractor for the three groups of operators in 1959.<sup>1</sup>

Specialized long haul .....	110,000 miles
Short-medium haul .....	35,000 miles
Combined short to long haul .....	48,000 miles

The advantages of this greater utilization were substantial. In addition to reducing investment costs (depreciation, interest, etc.) per mile, it cut down average repair and maintenance costs per unit of traffic. At the same time, it enabled motive power to be sufficiently depreciated, within about five years, so it could then be replaced with new, more efficient equipment with little if any loss in investment on the old.

In spite of its higher utilization, however, this large investment in large-scale, modern road equipment was reported to have been the source of serious difficulties in financing. Long-haul firms reported that regular commercial credit agencies considered the financing risk too great<sup>2</sup> and funds that were available could be obtained only at relatively high interest rates. In the beginning, credit had been obtained mainly from private sources and auto finance companies, the latter at reportedly high interest. These sources were said to be inadequate for the capital required for expansion and long-haul operators stated this had been a most difficult and continuing problem.

The evidence showed, however, that these financing problems were related not only to the large amounts of capital required for road equipment but also to the extent to which management had demonstrated its ability to organize profitable trucking operations. Financing equipment was only one of the major problems faced by trucking firms in their early development. Perhaps equally important were the problems of obtaining competent, dependable drivers and sufficient, profitable traffic.

For some long-haul firms the twin problems of financing and competent drivers had a common solution, driver-ownership. This applied particularly to tractors. Over 85 per cent of the tractors used in long-haul operations were, in effect, leased from driver-owners.<sup>3</sup> Only 25 per cent of the trailers were so leased.

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<sup>1</sup> These data tend to under-estimate the tractor utilization of long-haul operators relative to the other two groups. Larger loads and less empty returns would increase the relative use for long haul in terms of ton-miles. In addition, for the last two groups, the miles *per tractor* includes the miles hauled by single unit trucks.

<sup>2</sup> The risk in his case was related not only to the high investment relative to output but also to the possible losses to vehicles through accidents or careless driving and servicing as well as untested capabilities of management in newly established firms.

<sup>3</sup> In the main, these lessors were two-man partnerships or small firms organized primarily to provide tractors and drivers. But their equipment was usually purchased according to the specifications of the lessee.

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Leasing of equipment, while more prevalent in long-haul firms, was also found in short-medium operations. In the latter case, however, road equipment was leased mainly from specialized lease-financing firms and the trucking firms supplied the drivers.

Such leasing was reported as necessary to enable companies to expand while maintaining adequate operating capital. It was most significant in the growth of new firms. In addition, longer established firms reported that leasing permitted them to shift part of their big financing burden to a specialized agency and thus reduce their own administrative task.

At the same time, most firms using leased equipment indicated their aim was eventually to own all the equipment they used in order to control their operations more effectively. There were indications this had led some firms to seek investment capital for their expansion. In most firms that had succeeded in obtaining such outside financing, the equipment was owned.

## *Terminals and Other Facilities*

Trucking operations were usually centred around the head office terminal of the firms with branch terminals located on routes at convenient points for P & D and trans-shipments. The head office was most commonly situated at the point where most of the traffic was handled. Here, in addition to the main terminal, with its dock and handling equipment were usually located a fully equipped repair garage well stocked with spare engines and parts; a fuel and lubrication service with a substantial inventory; administration, accounting and dispatching offices as well as the necessary personnel to man these facilities.

Investment in terminals and other facilities was a relatively small proportion of total investment, except for firms carrying on warehousing operations in addition to those related to trucking.<sup>1</sup> Terminal investment attributable only to trucking was about 15 per cent of total investment for all firms surveyed. For specialized long-haul firms it was 20 per cent and for other firms it was 14 per cent. This difference in percentage needs to be considered in relation to the traffic hauled. Terminal investment per ton-mile hauled was estimated at 0.5 cents for long-haul firms and 0.64 cents for the other firms. Long-haul firms required significantly less warehouse services per ton-mile because a larger proportion of their operations were in the highway movement.

For many firms the growth of traffic during the latter 1950's had begun to tax their warehouse and handling capacity. This applied particularly to those firms handling a large proportion of L.T.L. Long-haul firms were

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<sup>1</sup>In the main, only the larger firms had special warehousing operations in addition to those for direct handling of truck traffic.

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finding this less of a problem than the shorter haul operators. Nevertheless, firms of both types had been occupied in building new warehouses and in improving their dock and P & D handling efficiency.

With the growth in cross-dock handling of L.T.L., accompanied by increased dock wage rates, techniques for mechanizing warehouse operations had received much attention. Various materials-handling techniques (forklifts, overhead loading, "merry-go-rounds", and conveyor systems) were being used to reduce dock labour costs. Taking the industry as a whole, it was evident that though it had gone further than the railways in increasing L.T.L. efficiency there was still room for much improvement in this area. Even those firms that had adopted the most modern handling techniques were aware that further improvements could be made. But the trucking industry, lacking a central research agency and with few firms willing or able themselves to carry out the studies and costings necessary, had left the testing of these new handling techniques to individual firms mainly on a trial and error basis.

Better results were being obtained in improving the efficiency of P & D operations. Some of these improvements were the result of the research being provided by trailer manufacturers such as the two-part trailers that permit one section to be dropped off at an intervening station or shipper's warehouse in a matter of few minutes. Others, like the fish nets used in trailers to separate L.T.L. drop-offs for each point between terminals, were the result of common-sense planning by trucking companies themselves. These techniques enabled all L.T.L. to be sorted at the terminals for each destination thus reducing delays en route and concentrating the sorting operations at the points where maximum specialization and supervision can be used to promote efficiency and reduce handling costs.

## *Labour and Wages*

Labour played a most critical role in the success of for-hire trucking. Labour was a major element in total costs of trucking—wages and salaries together averaged about 40 per cent of total expenditures. In addition, trucking firms looked upon each driver, while he was on highway or P & D duties, as individually responsible for the safety and successful operation of his highway vehicle and for much of the good-will and patronage his firm enjoyed. The high standards and special abilities required in long-haul highway drivers were particularly noted.

Drivers made up over 44 per cent of the total workers in for-hire firms. But in the case of short-medium-haul operators, most of these, 64 per cent of all drivers, were engaged in P & D while their highway drivers comprised 36 per cent. In long haul, most were engaged in highway operations, P & D required only about 20 per cent of the drivers.

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Workers other than drivers comprised about 56 per cent of the labour. These included dock labour, maintenance men, terminal office staff, salesmen, and other workers.

In most of the short- to medium-haul firms the workers were organized under a standard union contract covering wage rates, benefits and working rules. But in specialized long-haul firms, labour was not organized.

One major reason for this was that so many long-haul drivers owned the equipment they operated (or part of it) and were paid by a percentage of revenue rather than wages. Another factor was that long-haul drivers received relatively high remuneration, whether on share or mileage basis, and union organization raised the possibility their returns might be reduced to the level of shorter haul drivers.

Highway drivers were normally paid on a mileage basis while P & D drivers and other workers received an hourly wage. In Ontario, the highway rate was 6.3 cents a mile in 1960<sup>1</sup> under the union contract. The maximum day's run was about 320 miles or 10 hours driving and the average driver earned about \$100 a week. In Quebec the rate was lower, 5.3 cents a mile for regular routes.

P & D drivers received \$1.56 to \$1.62 an hour in Ontario in 1960 and in Quebec \$1.46 an hour. Fringe benefits (health and welfare, etc.) were additional to these rates for all drivers.

In long haul, with two drivers to each vehicle, senior drivers were receiving from 4.25 to 4.8 cents a mile and second drivers from 3.5 to 4.5 cents a mile. Both were paid these rates for the full return mileage. Drivers averaged three trips a month (normally a week per trip with one week a month off) giving them returns of \$600 to \$700 a month. In some cases, bonuses were paid, in addition to this, for accident-free delivery of the load in good condition to the consignee.

Leasing arrangements for owner-operated highway equipment were almost all on a share-of-revenue basis—84 to 85 per cent to the owner-driver and the balance to the trucking firm.<sup>2</sup> The driver was then responsible for all his operating expenses and, in some cases, a share of various terminal expenses (P & D, insurance, etc.) directly related to his loads. The trucking firm's 15 to 16 per cent share covered terminal and overhead costs including headquarters and branch staff, dock wages, etc., and profits.

Leasing seems to have been a natural outgrowth of the conditions of long-haul trucking. The length of the non-stop hauls and difficulties of communication made it impossible to provide from headquarters the super-

<sup>1</sup> This rate went up to 6.45 cents (2-axle) and 6.5 cents (4-axle) on January 1, 1961.

<sup>2</sup> In some cases, this 84 to 85 per cent included rental of both tractor and trailer. In others, it covered only the tractor with the trucking firm providing the trailer—this was commonly found where special refrigeration or other trailer equipment was required. In addition to such highway equipment leasing, some P & D road equipment was rented but this was ordinarily on an hourly basis—driver and vehicle cost about \$3.00 an hour.



vision and direction of truck operations that are found necessary on short-medium operations. As a result the initiative, judgement and decisions relating to the handling en route of valuable equipment and cargo had to be left to the responsible driver to a considerable degree. This made the careful selection and screening of suitable drivers a most critical factor in successful long-haul operations.

Some firms had been able to screen successfully enough to find drivers that were competent to operate company-owned equipment. Others had turned to leasing as an aid in such selection. The latter had found that drivers who owned their own equipment usually showed above-average initiative and responsibility. In addition, having a monetary interest in avoiding accidents or damage losses provided them with an incentive for careful handling of equipment and cargo.

In short, the long-haul firm was able to use leasing to select more responsible drivers, to shift part of the operating risk to them, to reduce the difficulties of financing road equipment and to free management from much costly supervision.

These were all substantial advantages. But disadvantages of leasing were also evident. One of these was the extra cost of dock handling and storage required to equalize load revenues and ensure each trip yielded a profitable share to each owner-driver.

A more important disadvantage was the loss in control and utilization of tractor equipment. Company-owned tractors on long haul had an annual mileage utilization of about 50 per cent above driver-owned.<sup>1</sup> This higher utilization reduced maintenance costs per mile as well as obsolescence. It enabled firms with hired drivers to keep tractor investment at a minimum and to replace used tractors sooner with larger or more efficient equipment.

But whether the equipment they drove was their own or the company's, long-haul drivers were clearly indicated to be particularly capable as a group. Long-haul operations were preferred by the most experienced senior drivers, it was reported, even when their returns were no greater than on short hauls. Perhaps it was the degree of independence these operations afforded drivers. With the added incentive of much higher returns, senior drivers with the most skill and experience and highest safety records, competed for the long-haul berths. These applicants were carefully screened for ability, skill, responsibility, versatility, stability, personality and self-reliance. Only a few of these senior applicants were approved. Those accepted were expected to be versatile in handling special reports and costly and often intricate refrigeration equipment as well as other technical problems and to act as a public relations representative of the company in dealing with the public on the highway, with shippers and with provincial and state officials.

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<sup>1</sup>This may be largely accounted for by the driver's tractor lying idle during the one week per month when he did not make a trip.

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These responsibilities gave the long-haul driver a special status in his company. With the higher returns and a degree of independence added, it had attracted the best.

### *Rate Policies and Problems*

Rate policies of for-hire trucking reflected the nature of the trucking industry and the type of traffic it carried. In this respect, several significant characteristics of the industry were noted. First, the continuing efforts of the industry to develop new, improved and specialized services implied a flexibility in pricing those services in relation to both their costs and their value (or savings) to shippers. Second, rate policies reflected the competition in the trucking industry, i.e., the greater number of firms competing relative, for example, to rail transport, the endeavours of these firms to improve their competitive position through improved services or costs, and the competitive drive of the smaller or newer firms to expand in spite of the established position of older and larger trucking firms. Thirdly, the nature of truck traffic made much of it relatively unsuitable for standard classification for ratemaking purposes.

Out of these characteristics of the trucking industry stemmed a different approach to pricing and rate control than that developed in railway transport. It was evident, for example, that the more progressive firms were content to follow established rates on standard traffic (such as canned goods, etc.) but wished to retain some freedom to adjust rates where specialized services were involved. Unlike most rail traffic,<sup>1</sup> the traffic carried by truck comprised mainly manufactured and processed goods which commonly required a much wider range of handling techniques and transport services. To the extent that this traffic offered continuing opportunities to the trucking industry for improving handling and hauling services, progressive trucking firms were hesitant to agree to hold to a fixed schedule of rates.

Yet most trucking firms favoured stabilized rates for the large and increasing volume of their traffic that fell into relatively uniform classes and required standard techniques in handling. On this traffic there appeared to be little difficulty in getting agreement among trucking firms to adhere to the standard rates that had been established by the various rate bureaus to which truckers belonged. Some firms, mainly the larger or longer established, went farther than this, supporting rate filing and public enforcement of such filed rates.

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<sup>1</sup> The composition of rail traffic is examined below. It may be sufficient to note here that since a major part of rail traffic is in commodities suitable for handling in bulk and large volumes, it is, in the main, more readily adaptable to standard transportation techniques and standard classifications for rates than most truck traffic.

On the other hand, for traffic subject to improved efficiency, or for firms that were more efficient or progressive than most, rigid adherence to a system of established rates was looked upon as a handicap. Because of this perhaps, the most efficient firms as well as small firms bent on expanding, were inclined to reserve some freedom in rate setting in those provinces where this was permitted.

Rate control may be aimed at protecting the shipper from excessive charges where a degree of monopoly exists (this is normally the function of public control) or protecting established trucking firms from unfair competition by other truckers (this has been accomplished to a degree by co-operation through highway traffic rate bureaus). It was apparent that rate control has always had a recognized place in trucking organization for either one or both of these purposes since very early in the industry's development. Yet paralleling this widespread support for rate control to protect the industry from undercutting of rates was the emphasis of trucking firms on their roles in providing special services to particular shippers, and their need to maintain some freedom to set special rates for those special services in order to maintain their competitive growth, especially when both the shipper and the trucker could gain by such special services and rates.

In those provinces which did not control rates,<sup>1</sup> the trucking industry had developed its own techniques for co-ordination of ratemaking on such traffic as it was deemed desirable. For some traffic, railway rates were reported to be commonly used as the basic standard for pricing highway services. Where railway rates no longer provided a suitable standard, e.g., on much short-haul traffic, rate bureaus supported by trucking firms had become established to develop orderly ratemaking.

The above considerations no doubt accounted for the greater concern for rate stabilization among short- and medium-haul operators than among those engaged in long haul. For long-distance operators, railway rates provided a clear guide for maximum rates. Their line-haul costs appeared to be their guide for minimum rates—the risk of loss by cutting rates below this minimum was correspondingly greater than for shorter haul operators. At the same time, indications that these line-haul costs permitted adequate freedom for competition with the railways were evident in the substantial reductions made in rail rates on dressed meat, livestock, butter and other commodities during the previous several years.

Viewing the industry as a whole, the survey indicated there were frequent complaints of detrimental rate cutting and much emphasis on the need for establishing uniform rates at a satisfactory level. It was also evident

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<sup>1</sup>The Provinces of Ontario, Alberta and Newfoundland provided no rate control. In Quebec both intra- and extra-provincial rates were controlled. In other provinces, while regulations may require filing of rates, the extent to which the provincial governments determined rates appeared limited. Only Quebec required filing of extra-provincial rates.

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that few firms were prepared to bind themselves entirely to following a uniform tariff schedule. The more efficient firms, in particular, appeared anxious to reserve a measure of freedom in rate setting so they might use their competitive advantages where necessary to attract profitable traffic. It was also apparent that fixed and controlled rates for all traffic could contribute to undermining the initiative of firms to improve their efficiency in costs and services. The more progressive firms recognized this initiative as a central feature of the competitive growth of the trucking industry in Canada.

### *Regulation and Taxation*

Regulation and taxation of the for-hire trucking industry is carried out almost wholly by the provinces.<sup>1</sup> It is not the intention of this study to appraise regulation and taxation by the provinces in total because most for-hire trucking operations are intra-provincial while this analysis is primarily concerned with interprovincial-international transport. In the main, this study will examine regulation and taxation as they apply to longer haul trucking.

Within this field, the major problems in regulation and taxation as reported by trucking firms related to the freedom of new firms to enter the industry; the cost and difficulties of extending route franchises; lack of adequate reciprocity between some provinces and states (in licensing, weight and size limits, axle distances, clearance lights and such); costs of licensing and fuel taxes; regulation of piggyback; and others of less importance.

To appraise the significance of these problems it is necessary to examine briefly the background of regulation in Canada. In this respect, the development of trucking regulation in Canada reflects several major influences: the nature and stages of the development of for-hire trucking in various parts of Canada; the location of responsibility for regulation; and the diversity of provincial objectives concerning the growth of the industry.

For-hire trucking developed later in some provinces than in others but in all provinces it began as a local transport operation. It began as a service reaching out from the major industrial centres, primarily in Central Canada at first and later in other provinces. As an almost wholly local undertaking, for-hire trucking was originally intra-provincial and its early regulation was naturally designed for that type of service. Its later growth, particularly its rapid expansion in the decade of the 1950's, pushed it rapidly beyond local operations and at the same time raised new problems in the task of regulation.

In the process of this growth, intra-provincial trucking expanded greatly, to the point where it had supplanted rail transport in almost all

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<sup>1</sup> General taxes such as corporation and sales taxes are, of course, levied by the Federal Government.

short-haul movements, particularly in Central Canada. Longer highway hauls, including interprovincial and international, grew rapidly also and continue to grow, adding appreciably to the difficulties of administering regulations geared to local operations. In 1957, the advent of piggyback to serve for-hire trailers, raised further difficulties in regulating local and interprovincial movements carried partly by highway and partly by federally-chartered railways.

No doubt because the early development of trucking was largely on a local basis, the regulation of all trucking became established as a provincial responsibility. By 1954, intra-provincial operations were still sufficiently dominant in the for-hire field that provincial responsibility for regulation of both intra- and extra-provincial trucking was considered essential. In that year, after the Supreme Court of Canada and the Privy Council had ruled that interprovincial and international highway operations plus intra-provincial operations incidental thereto, were a federal responsibility, the Federal Government delegated these responsibilities to the several provinces.

In these circumstances, it might be expected that considerable diversity from province to province would develop in the approach to regulation particularly as it applied to extra-provincial trucking. The basic objective of ensuring a safe and adequate highway transport service to shippers in each province was, of course, common to them all. Beyond that, considerable variation was encountered in freedom of entry of new firms, in extension of existing franchises, in licence rates and conditions, in load and size limits and in readiness to work out reciprocal agreements<sup>1</sup> with other provinces or states to facilitate movements beyond the borders of a province.<sup>2</sup> It was made clear by trucking firms that long-haul operations between Central and Western Canada would have advanced much more slowly if the Province of

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<sup>1</sup> Reciprocity agreements among provinces and states usually apply only to licence or other fees. They become operative only if the other province or state grants similar privileges. They apply to vehicles registered in reciprocating jurisdictions but do not apply to intra-provincial operations. A recent summary of reciprocity agreements in Canada stated, in part, "Provincial reciprocity agreements vary widely both as to their content and extent of operation. The Maritime provinces, with the exception of Newfoundland (which has less interest in interprovincial and international highway operations) enjoy a general form of reciprocity with all provinces and states. In actual practice, however, agreements are in effect with only a few provinces and American States. By contrast, British Columbia, with a single relatively unimportant exception, has no reciprocity with any province or state. The remaining Canadian provinces fall between these two extremes. Alberta and Quebec have fairly extensive agreements with a number of provinces and states. Manitoba and Saskatchewan have limited types of reciprocal agreements with neighboring provinces and states, while Ontario with the greatest number of registered trucks, one-third of those registered in Canada, extends only a limited type of reciprocity to private vehicles and little or none to commercial and for-hire vehicles." See *Digest of Reciprocity Agreements, Railway Association of Canada*, April 1960, p. 1.

<sup>2</sup> Long-haul trucking firms reported that operating rights for interprovincial traffic were unduly limited by special regulations or restrictions varying from province to province. They indicated also, that, because of jurisdictional difficulties in handling extra-provincial highway and piggyback traffic, provincial transport boards in general did not encourage such operations.

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Alberta had not facilitated this development by allowing new firms and new routes to become established and by extending its reciprocity agreements to cover the necessary routes. Other provinces have extended their reciprocity arrangements also. But, by 1960, full reciprocity for for-hire trucking was available in Canada only in the Maritimes and between some of the Maritime Provinces and Quebec and Alberta. As a result, the cost of licensing for inter-provincial transcontinental operations was high.<sup>1</sup> However, good progress toward extending reciprocity agreements was reported by both trucking firms and the provinces. Prospects for future improvement were said to be favourable.

In the past, long-haul for-hire trucking depended largely on United States routes and the reciprocal agreements made by Alberta with intervening states and provinces. Even with these agreements, licence fees for such Alberta-based operations averaged \$2,000 per road vehicle in 1960. In Central Canada, for-hire licences averaged about \$900 per vehicle where interprovincial traffic between Ontario and Quebec was involved.

These licence fees, together with the tax on motor fuels<sup>2</sup> were designed mainly as levies to pay for the use of provincial highways by trucking firms. Most firms interviewed were satisfied with this general method of assessing user costs. But there was less satisfaction with the substantial disparities among provinces in the levels of these user levies, for example, in licence fee for light versus heavy vehicles, in taxes on fuel purchases, in taxes on fuel remaining in the tanks when entering from another province, in special tolls (mileage, vehicle, etc.) and such. At the same time, it was evident that most provinces had been caught relatively unprepared, in this respect, by the rapid growth of trucking in the 1950's, particularly longer haul operations. This may account for the provinces applying what appeared to be temporary measures designed to meet the immediate demands of the particular situation in each province rather than taking a more co-ordinated long-run approach.

Overall, the survey of trucking firms indicated they were aware that this growth of for-hire trucking had imposed an increasingly heavy burden of regulation on the provinces. It was apparent also that many of the provinces' difficulties stemmed from their responsibilities for regulating extra-provincial trucking, including piggyback movements, while having no jurisdiction over highways or highway operations outside their individual borders.

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<sup>1</sup> Reciprocity agreements made by Alberta with other provinces and states were reported to have saved long-haul trucking firms as much as \$1,500 a year per truck in licence fees alone. At the end of March, 1960, Alberta had full free reciprocity with 24 states and Prince Edward Island and limited reciprocity with four states and Saskatchewan, Manitoba, Ontario and Quebec.

<sup>2</sup> In 1960, fuel taxes ranged from 11 cents a gallon in Manitoba to 18½ cents in Ontario for diesel fuel, and from 10 cents in Alberta and British Columbia to 18¼ cents in Ontario for gasoline. Newfoundland levied a tax of 19 cents on both fuels but was not yet concerned with interprovincial trucking.

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This need for greater co-ordination of licensing and other regulations was recognized by the provinces in 1959 by the organization of the Canadian Motor Vehicle Association, a body comprised of representatives of provincial highway transport boards. So far, progress in co-ordination has not been remarkable. It may be too early to say whether it will be possible for this Association to reach satisfactory compromises between their dual responsibilities (incompatible to a degree) for regulating, on the one hand, provincial transport, and, on the other hand, interprovincial transport.

The prevailing view among longer haul operators in the survey was that as extra-provincial traffic continued to expand the demand for co-ordination of regulation among provinces would further outstrip possible progress in this direction; that Canada would eventually be forced to follow the path adopted in the United States more than a decade ago. There, as interstate highway transport reached substantial levels, it became necessary to shift more responsibility for it to the Interstate Commerce Commission.

Yet longer haul trucking firms had not organized as a body to promote such a development. The trucking industry had been organized primarily on the basis of provincial associations which in turn were joined together to form the Canadian Trucking Associations. The long-haul operators were active members of these provincial associations. Yet summarizing their views broadly, it seemed clear these long-haul firms were convinced that the conflicts and burdens being thrust on the provinces by the growth of their operations and of piggyback, would eventually call for increasing federal support. The expansion of long-haul trucking into the field of national transportation and its continued encroachment on rail traffic also indicated this. Complex difficulties and conflicts were being encountered by the provinces in attempting to regulate this long-haul traffic. They included: regulating highway or piggyback movements where the province had effective control of only one end of the operation; the high cost of building and maintaining highway facilities to serve extra-provincial trucking needs; the complex task of reconciling the provinces' objectives and policies for intra-provincial transport with those for interprovincial and national transport; the relative decline in the role of national railway services in meeting provincial transport needs; and others. These difficulties of provincial regulation appeared likely to multiply with the continuing rapid change in the pattern of transportation in Canada.

### *Scale of Operations*

#### *Concentration*

It is a measure of the increasing stability and prospective profitability of the for-hire trucking industry that substantial amounts of outside capital

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were invested in it during the decades of the 1940's and the 1950's. The first major venture in this direction came in the early 1940's when the DuPont interests purchased control of Terminal Warehouses in Toronto and through them purchased several trucking firms. These firms were merged or extended to form the three present companies, Direct Winters Transport in Ontario, Direct Motor Express in Quebec and Direct Winters Transport Incorporated in the United States.

In the years following, i.e., in the middle and late 1940's, several oil companies bought control of for-hire trucking companies but later disposed of most of these interests.

About 1948, the N. M. Davis Corporation purchased Inter-City Truck Lines, a fairly large Ontario firm engaged in short-medium hauling. In 1953, the Davis Corporation added Trans-Canada Highway Express, a long-haul company (Alberta to Halifax) and later established Inter-City Tankers Ltd.

About 1952, the Roy Thompson interests through their Dominion Roadways, a holding company, purchased an interest in car-hauling firms (McCallum Transport, Oshawa; Stan Brown Transport, Windsor; and McCallum Transport, Montreal). Roadways also purchased Walter Little, Ltd., of Kirkland Lake which owned two smaller firms and on January 7, 1961, bought Simmonds Transport of Midland, and Kochois of Windsor.

Probably the biggest and most rapid consolidation through outside capital started about 1955 when the Drayton interests began to build up what is now Canadian Motorways Corporation. This was done through British Electric Traction Ltd., which in 1960 held the controlling interest in Motorways. Altogether some 52 companies were merged and these have now been consolidated into three major branches: Motorways (Ontario), Motorways (Quebec) and Soo Security Motorways in Western Canada; plus Thompson Transfer in Nova Scotia and several furniture warehousing and moving firms (Hill the Mover, Capital Storage, and others). The most extensive growth in Motorways was in 1957-58.

Another major consolidation has been made by Canada Steamship Lines (CSL). In the early 1940's CSL purchased Kingsway Transport, Montreal; in 1957, Arrow Transit Lines, Winnipeg; in 1958, Gossett and Sons, Alberta; in 1960, Brocklesby Transport, Montreal; in January, 1961, Drummond Transit, Montreal; and in January, 1961, Kingsway had an application before the courts to purchase the bankrupt Dalewood Transport of Hamilton.

The largest trucking complex in Canada had been assembled under CPR control. It comprised in Eastern Canada, Smithson Holdings purchased in 1958 (including Smith Transport, Toronto; H. Smith Transport, Quebec; and Smith Transport Inc. in the United States); Deluxe Transport, North Bay; Norman's Transfer, Montreal; Montreal-Cornwall Transport, Montreal;



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and Bridges, Cornwall. These were linked through Smith Transport to Western Canada where the CPR operated Canadian Pacific Transport, Dench of Canada, O.K. Valley Freight Lines, Canadian Pacific Express, Island Freight Service, and others. The CPR holdings were built up mainly since World War II. In 1960, they provided a fairly comprehensive national trucking service. There were indications that year that this consolidation of truck lines by the CPR was approaching completion. Its trucking services extended from Halifax to Vancouver Island and provided many truck routes into traffic areas that CPR rail lines had formerly not served.

The CNR, which had delayed its highway operations, moved in this direction on a major scale in 1960 by taking an option to purchase on Midland Superior Express, Calgary, a major long-haul operator, purchasing East-West Transport, another long-distance firm, as well as several smaller companies. The emphasis in the CNR development in 1960 was thus mainly in long-distance trucking.<sup>1</sup>

The above includes the major consolidations in the Canadian trucking industry. In spite of these consolidations the degree of concentration in the for-hire trucking industry in Canada was still not large, though the over-all CPR organization was approaching a dominant position.

This relatively small degree of concentration was evident in the results of the survey of trucking firms. The survey included some of the largest scale for-hire operators in the industry. The five largest of these handled only about 2.8 per cent of the tonnage hauled by all Canadian for-hire trucks in Canada in 1959.<sup>2</sup> This level of concentration may be attributed partly to the stage of development of the trucking industry in Canada. But, in addition, the possibilities for profitable large-scale operations were indicated to be fairly limited.

### *Economies and Diseconomies of Scale*

These limitations appeared to be related to the increasing difficulty encountered, as the scale of operations increased, in efficiently co-ordinating the large number of highway and P & D vehicles, each of which must be operated independently to a degree. By its nature, truck competition depends on speed, flexibility and service. A substantial measure of these advantages may be lost through the build-up of supervision and other controls necessary to co-ordinate the large number of vehicles and terminal operations involved in serving the extensive area covered by large-scale undertakings.

Offsetting advantages of larger scale trucking were: greater ability to provide full service to shippers; opportunities for auxiliary services such

<sup>1</sup>In 1961, the CNR was negotiating for the purchase of Husband Transport Ltd., a major short-medium-haul firm serving the area from Windsor to Montreal.

<sup>2</sup>Neither CPR nor CNR trucking operations are included as a unit in this figure.

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as warehousing, tankers and bonding; a wider diversity of traffic that made such large firms more independent of individual shippers; and such.

The survey data indicated, however, that the over-all opportunities for efficiency and profit were greater in the medium-size firm, i.e., firms with a traffic volume in the neighbourhood of 75 to 150 million ton-miles a year. Profit rates at this scale were regularly higher than for larger firms. In addition, the evidence indicated this medium-scale firm could make full use of top level management, yet was not so large as to lose that close supervision, flexibility and special attention to the individual requirements of shippers that larger firms were in danger of losing. Such medium-scale firms also appeared able to take quicker advantage of opportunities to develop new, profitable services for shippers.

In the newer and relatively smaller firms, there was also considerable evidence of more initiative, greater readiness to adopt new cost-reducing or service-improving innovations, and greater emphasis on efficiency and full utilization of equipment. Several of the long-haul firms were notable in this respect.

In short, the survey results would confirm the findings of previous studies which show truck transport is not subject to any marked economies of scale beyond a medium-sized operation and does not fit closely into the traditional pattern of natural monopoly in transportation.<sup>1</sup> Yet while there was little to indicate that highway transport in Canada would become dominated by one or few firms (although opportunities for unlimited growth of rail-truck combination firms would constitute a reservation in this respect), this does not mean that elements of monopoly do not exist. For example, there was still relatively limited scope for competition on some highway routes where the number of firms permitted to compete was commonly limited by provincial restrictions on the entry of new firms.

### *Significance of Organization for Services*

Competition between truck and rail transport is partly on the basis of service and partly on costs or rates. Costs are taken up in the following section. Here services are examined.

Certain features of the organization of for-hire trucking were notable for the unique services they enabled trucking to provide. Some of the most significant of these features were:

1. The scale of each firm's operations, being relatively small, permitted positive and co-ordinated control by management over all operations and direct negotiation between top management and shippers.

<sup>1</sup>Cf. Geo. W. Wilson, *The Nature of Competition in the Motor Transport Industry*, *Land Economics*, November, 1960, p. 388 et seq.

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2. Transport operations were commonly concentrated in a limited area or on a limited number of routes. Individual trucking firms were not required to provide a complete transport service. Many concentrated to a degree on special classes of traffic though L.T.L. was generally carried.
3. Each highway vehicle was operated as a separate unit and, carrying a relatively small load, its operation could accordingly be efficiently adapted to the frequency of delivery and other unique preferences of individual shippers. This eliminated the need for standardizing equipment to the extent required in railway train service and freed these vehicles from the inflexible time schedules required to co-ordinate train service.
4. Drivers, many above average in qualifications, were able to give specialized service to particular shippers with whose requirements they were commonly familiar.
5. With investment largely in road equipment and each vehicle a discrete unit, it was possible for trucking firms to add or reduce equipment in the short run to meet changing customer demands. This applied also to terminal investment to a major degree. With the relatively small investment in "sunk costs" in comparison with the railways, the investment in trucking was remarkably adaptable to the new and changing demands of shippers.
6. Equipment was commonly adapted especially in construction, refrigeration and size to individual shippers' requirements. Costs of such adaptation were relatively small because only the trailer was ordinarily so modified.
7. Trailers could be loaded and sealed by the shipper at his dock and then moved directly to the consignee without passing through switching, central classification or clearing operations. With loads smaller than box car loads, door-to-door deliveries were possible, deliveries were more frequent (keeping inventories low) and made at a time convenient to the consignee.

These features of for-hire trucking gave it speed, flexibility and control of operations that were particularly attractive to a growing number of shippers. Under these conditions, trucking had major competitive advantages over other modes of transport in providing special transport services tailored to individual shippers' needs. The survey showed that the trucking industry was well aware of its advantages in this respect. It had in fact organized its operations primarily around those classes of traffic for which special services were most valuable.

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The development of this organization of trucking designed for special transport services and the readiness and ability of trucking firms to supply services to shippers was paralleled by a substantial growth in the demand for these services. This demand rose rapidly during the 1950's and continued rising into the 1960's.

The increase in demand for services can be attributed largely to changes in the structure of the Canadian economy and the new pattern of demand for transport services that developed out of these changes. The expansion (with some dispersion) of the processing and manufacturing sector since the 1930's is one of these structural changes. Studies indicate also a massive diffusion of manufacturing from the centre toward the periphery of industrial areas mainly since 1948.<sup>1</sup> To a considerable extent these changes represented a regrouping of industry around the highway systems and a movement away from railway sidings, team tracks and freight sheds. An increasing number of plants are no longer served directly by rail facilities.

Along with this increasing dependence of manufacturing plants on trucking services has gone a substantial increase in Canada's output of manufacturing.<sup>2</sup> From 1940 to 1960, the physical volume of manufacturing increased two and a half fold, from 1949 to 1960 it rose 50 per cent. This expansion in the volume of fabricated, high-valued goods resulted in a sharp increase in the demand for the extra services required to handle and transport them most effectively, the services that trucking was particularly well equipped to provide.<sup>3</sup>

These services may be briefly summarized as:

1. *Speed and frequency of service.* Overnight service was given on over 90 per cent of short-medium hauls and faster than rail service on long hauls. Small-load efficiency permitted frequent deliveries at shipper's preference.
2. *Quality and damage control.* Close personal supervision of refrigeration and air conditioning, less physical damage, fewer claims, faster settlement of claims, and less stringent packaging than railways are features of this.
3. *Adaptation to shippers' preferences.* Specialization in types of equipment (special trailers, tankers, etc.), in loading at shipper's dock, in trip schedules, flexibility of P & D operations, and many other such services.

<sup>1</sup>David W. Slater, *Decentralization of Urban Peoples and Manufacturing Activity in Canada*, Canadian Journal of Economics and Political Science, XXVII, No. 1, p. 83.

<sup>2</sup>In 1960, manufacturing comprised 77 per cent of total industrial production, mining 15 per cent and electric and gas utilities 8 per cent.

<sup>3</sup>Numerous other changes in the economy—the suburbanization of final goods distribution, the growth in output of processed and perishable goods, more packaged shipments, for example—had also added to the demand for such services.

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In short-haul operations in Canada these services, together with certain cost advantages, had enabled trucking to take over most of the freight traffic within the 300- to 400-mile haul range. At the same time, shipper's costs had been reduced, relatively. In long haul, where trucking had fewer cost advantages over the railways, these service advantages were the major factor in attracting a rapidly growing volume of traffic to the trucking industry.

## Truck Versus Rail Costs

The shipper's choice between rail or truck transportation is influenced by relative costs, reflected in rates,<sup>1</sup> as well as by the bundle of services provided by each method. In short, both relative costs by rail or truck and the services that go with these respective costs must be compared to appraise the competitive advantage of each method of transport.

Direct comparison of truck and rail costs is, however, subject to several substantive limitations. In the first place, there is a lack of comparable cost information. Secondly, trucking costs commonly cover a larger bundle of services than rail transportation provides. A third limitation is related to the large volume of bulk rail traffic on which service and costs are low but weight per cubic foot of space is relatively high. As a result of the last two, comparison of average costs on ton-mile or cwt. basis, rail versus truck, may not reflect accurately the relative value of transportation services provided by each mode to shippers.

### *Truck Costs*

Thus average cost data which showed truck costs at 5 to 6 cents per ton-mile against rail costs at 1.5 cents,<sup>2</sup> may have little meaning in terms of relative values. About 70 per cent of rail traffic is heavy, bulk primary products (grain, ore, lumber, etc.) much of which is mechanically loaded and moves in trainloads over relatively long distances. This large volume of traffic is particularly suited to low-cost movement. Few special services are required, revenues are low and costs are low. Rail costs on this traffic are low enough so competition from trucks has been negligible.

In trucking, on the other hand, average costs are a function of the large volume of L.T.L. traffic (with its numerous stops and manual handlings for P & D and dock) and of the flexibility and extra services provided on other types of traffic. Costs on this traffic are largely variable costs and directly related to the work done.

The variable costs by truck, for this traffic on which trucks specialize, can be substantially lower than by rail because of the economies of small-load operation and the closer control and supervision possible in trucking. In addition, fixed costs in trucking are low relative to the railways.

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<sup>1</sup> In the past, freight rates were less likely to be a reflection of costs than they have become today, particularly in traffic areas where truck-rail competition is keen.

<sup>2</sup> See J. C. Lessard, *Transportation in Canada*, a study prepared for the Royal Commission on Canada's Economic Prospects, 1957, p. 81. This study did not, of course, presume to analyse these relative costs. Mr. Lessard's estimates compare closely with average revenues per ton-mile in 1958, 6.8 cents for for-hire trucking and 1.55 cents for the railways. See DBS, *Motor Transport Traffic, 1958*, and *Waybill Analysis, 1958*.

What this means is that, although average ton-mile costs for total truck traffic may be substantially higher than average costs for rail traffic as a whole, the evidence indicates that rail costs would be substantially higher than truck costs on much of the traffic now handled by trucks.

In other words, these particular cost advantages of trucking have significance for competition in particular classes and areas of traffic. Cost information obtained in the survey demonstrated this. For example, average all-inclusive costs for short-medium-haul firms in the survey were estimated to be 7.12 cents per ton-mile.<sup>1</sup> Yet truckers stated they hauled at these costs 75 per cent of all traffic within this 300- to 400-mile haul range. Because of their cost advantages in this haul range, trucks were also competing there effectively for much of the bulk, heavy, lower rated traffic.<sup>2</sup> On L.T.L. and other higher rated traffic their competitive advantage was more substantial.

Breaking down this 7.12 cents, the all-inclusive ton-mile cost for short-medium-haul trucking, the survey showed that slightly over half (3.59 cents) was for P & D, dock handling, etc., and only 3.53 cents was line-haul highway costs.<sup>3</sup> As was indicated above, trucking had cost advantages over rail in these P & D and other handling operations. In short hauls, this advantage was supported by certain economies in line-haul operations—e.g., fewer costly delays such as the railways have in assembling, switching, classifying, turnarounds, etc. The cost survey also showed that these short-haul cost advantages for trucks have now extended into medium-haul operations. Medium-haul costs may, therefore, not be out of line with rail costs, for comparable traffic, as has been indicated.<sup>4</sup> In addition, where there was a gap between railways and trucks in line-haul costs, trucking had evidently narrowed the gap by cost advantages in P & D and dock handling and by technological gains in improved highways and road equipment. Trucking may be expected to narrow this line-haul cost gap further as such technical improvements continue.

In brief, for short-medium hauls, trucks have substantial cost advantages in P & D and dock handling. On these hauls also they have substantial advantages in some line-haul costs. Along with these, they supply many special services (speed, frequency of small-load deliveries, quality and damage

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<sup>1</sup> See Appendix A, p. 92. Average load on these short-medium hauls was ten tons.

<sup>2</sup> Steel, for example, with 18 to 20 or more tons per truck load was being hauled for all-inclusive costs as low as 2.39 cents a ton-mile on 500-mile hauls.

<sup>3</sup> This is the all-inclusive cost. Out-of-pocket line-haul costs were 2.82 cents per ton-mile. Meyer, *et al.*, (p. 92) calculated out-of-pocket line-haul costs at 2.73 to 3.05 cents a ton-mile based on U.S. Middlewest estimates.

<sup>4</sup> For example, Meyer, *et al.*, *The Economics of Competition in the Transportation Industries*, Harvard, 1959, concluded that trucks have a cost advantage (including P & D and line-haul) only within a haul range of 100 miles or less, p. 194. Yet later in that study it showed that over 97 per cent of for-hire truck hauls were over 100 miles. The author's conclusion: that shippers were not choosing the most economical method of transportation because rates did not reflect costs. In fact, substantial areas of services provided by trucks in excess of rail services were not included in the Harvard study.

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control and adaptation to shippers' preferences) that the railways cannot conveniently provide. These special services are highly valued for certain classes of traffic. In appraising rail versus truck line-haul costs, it may be necessary to deduct the value of these extra services from truck costs to make them comparable to rail costs.

Turning to long-distance trucking, the cost advantages in P & D and dock handling were not as great as in short-medium hauls since these costs were a relatively smaller proportion of total costs. But long-haul trucking had maintained and expanded the superiority in special services to shippers. In addition, it had gone further in technological improvement, especially in road equipment, and this permitted larger payloads to be carried and ton-mile costs to be accordingly reduced.

With this larger payload (loads averaged 14 tons), all-inclusive costs for long-haul trucking were on estimated 3.25 cents a ton-mile and line-haul costs 2.94 cents a ton-mile.<sup>1</sup>

Trucking firms reported in the survey that ton-mile line-haul costs were reduced in long-haul trucking relative to shorter hauls by:

1. Careful loading to utilize maximum space and weight capacity.
2. Lower driver cost through more continuous driving.
3. Lower maintenance costs through greater equipment utilization.
4. Relatively lower costs for terminals and terminal equipment.
5. Lower overhead because of less complex management requirements.

Part of these cost advantages were offset by:

1. Lack of communication with drivers.
2. Higher costs for fuel and repairs between terminals.
3. Higher costs for stowage and licensing.

Relative to the railways, long-haul trucking had similar cost economies to short-medium operations in P & D, dock handling as well as closer control and flexibility of small load efficiency. But in long haul, these cost advantages, being diffused over more miles of line-haul, became less significant in over-all cost competition. No doubt to compensate for this, the long-haul operators had given more emphasis to efficiency in line-haul costs and to special services. Use of larger and more efficient road equipment, careful stowage and full loading had raised payload enough to reduce line-haul costs per ton-mile 17 per cent below such costs in short-medium hauls, thus bringing them significantly closer to efficient line-haul rail costs. In services,

<sup>1</sup> See Appendix A, p. 92. Out-of-pocket line-haul costs were 2.41 cents per ton-mile, well below short-medium trucking.



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more attention had been given by long-haul operators to exploiting their advantages over the railways in speed of delivery, closer supervision of refrigeration for perishables, scheduling shipments to meet consignee distribution and receiving preferences, developing special services for particular commodities,<sup>1</sup> and others. There were costs involved in providing these extra services which shippers desired but the railways could provide them only at much higher cost, if at all. They were valuable enough to shippers to make truck transport preferable even at higher rates, in some cases, than by rail. The organization of these special services of long-haul trucking had become developed and recognized by the late 1950's. By that time they had become an integral part of cost competition. Broadly speaking, shippers had the choice of slightly higher line-haul costs plus extra services, by truck, or somewhat lower line-haul costs without these services, by rail. For a very rapidly increasing volume of traffic the extra services were preferred.

Viewed thus broadly, the critical area of truck-rail cost competition lies between two extremes. On the one extreme is the short-medium-haul transportation where economies in handling small shipments, in short hauls, in small loads and in other aspects, give trucking decided competitive advantages for most traffic. On the other extreme is the traffic that can be handled in bulk or trainload movements by direct long hauls from terminal to terminal. For most of such traffic the railways appear to have marked line-haul economies.

Between these two extremes the competitive positions are less clearly defined. Trucking, for example, may meet strong rail competition on hauls beyond 500 to 600 miles except where extra services are demanded or where traffic densities are light. But the railways may similarly find it impossible to compete even on long-haul trainload movements for traffic that requires special services (such as continuous supervision of refrigeration temperatures) which the railway may not readily provide.

Yet it should be emphasized that these competitive cost conditions are now dynamic rather than static. In future, the cost advantage could swing more toward trucking, especially in this middle area of cost competition that lies between the two poles of advantage noted above. A major factor in this will be the extent to which trucking makes further inroads on railway traffic. Wherever truck competition continues to reduce the volume hauled by rail, railway costs per unit of traffic may be expected to climb. This is because such a large part of rail costs are unavoidable (e.g., costs of investment and maintenance of roadbed, management and other overhead costs)<sup>2</sup>

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<sup>1</sup>One example: for the growing livestock hauling operation from Alberta to Central Canada, special cattle-liners were developed, intermediate unloading and feeding stations were established and faster hauls enabled only one stop for feeding against two for the railways.

<sup>2</sup>Road maintenance costs, for example, in 1960 for the CNR were 23 per cent of total railway expenses; for the CPR, 19 per cent.

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and must be spread more heavily over the smaller volume of traffic. By the early 1960's, it was already evident that the railways had reached a stage where further losses in this middle area could push costs for certain rail traffic sharply upward.<sup>1</sup>

This trend to increasing railway costs was most marked on the relatively low-density branch or main lines, in particular classes of traffic such as perishables<sup>2</sup> and in the area of medium- and some long-haul traffic. Wherever these areas of increasing rail costs had developed, a fertile field for expansion of truck competition was opened.

In for-hire trucking most of the costs are variable, i.e., they are avoidable, going up or down directly with increases or decreases in traffic volume. With so little of its investment in sunk costs relative to the railways, trucking was not ordinarily subject to variations in unit costs like the railways.<sup>3</sup> In addition, technical improvements had tended to hold trucking costs down or reduce them. In consequence, cost competition by for-hire trucking had continued to strengthen and it may be expected to extend farther into traffic on low-density rail lines, into medium- and long-haul traffic which demands special services and into other traffic that cannot be readily fitted into direct terminal-to-terminal trainload movements.

## *Rail Costs*

The rate at which trucking continues to erode rail traffic depends to a major extent on how effectively the railways are able to organize in future to capitalize on their own cost advantages. Cost advantages in rail transport are substantial but there are many obstacles to utilizing them fully. Notable progress in recent years has been made in overcoming some of these obstacles and this is taken up in a separate section below. At the same time, there is good evidence that for some traffic the railways are not providing the cost competition they are capable of and on other traffic the

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<sup>1</sup> Dr. O. M. Solandt, vice-president, CNR, has described the current "plight" of the railways in this respect as a "vicious spiral". The railways, he said, "are faced with rising costs . . . which lead to declining profits. If they raise their rates . . . to improve their revenue, the result will be a declining volume of business. Because of the very high fixed costs of railways, this declining volume will lead to a sharp increase in unit costs, hence the railways (would soon) . . . be in a position of moving less traffic at high prices and also at higher costs". See *The Canadian Transportation System—A Vision of the Future*, address to the Toronto Railway Club, December 1960, p. 10.

<sup>2</sup> Especially where special equipment, supplies and staff must be maintained by the railways to service a limited volume of traffic.

<sup>3</sup> Except for fairly small firms, for-hire operators can readily adjust investment to volume of traffic by failing to replace worn-out vehicles when traffic falls and adding new ones when it increases. Cf. also Meyer, *et al.*, "For the larger firms, the important operators of long-distance equipment, . . . the size of the truck fleet can be adjusted to the volume of traffic. Therefore, all line-haul costs can be considered a variable expense.", p. 91.

full costs by rail may be much too high to warrant continued competition with trucks.

Too often in the past there has been a tendency to look only at the calculated line-haul economies of rail transport and fail to examine why there is such a shortfall in capitalizing on these economies. Both must be assessed in appraising the competitive potential in costs. This can be done only broadly here.

The cost advantages in rail transport lie in its potential economies in man-hour productivity, fuel costs and capacity. It has been calculated that railways produce about six times as many ton-miles per man-hour as do trucks; that full costs for a diesel locomotive is about .036 cents a net ton-mile against .17 cents for a diesel truck; and that a single track rail line has about seven to eight times the freight capacity of a two-lane highway of equivalent cost.<sup>1</sup> These major advantages are substantial but it may be obvious that it requires large cars in large trainloads moving regularly on long, non-stop hauls to capitalize on these advantages. For a substantial volume of their traffic it is possible for the railways to operate in close to this fashion. Where they can do this, rail costs, with a satisfactory back haul, may be as low as a cent or less per ton-mile. But such costs do not apply on that share of Canada's freight traffic that has shifted from the railways to dependence on trucks. For this important volume of traffic rail costs are much higher than this.

To appraise broadly why railway costs depart so widely in some cases from this optimum it is necessary to visualize the great magnitude of sunk costs involved; the vast fixed plant established from coast to coast with its inherent rigidity in routes and services; the increase in low-traffic-density lines; the costly and inflexible systems of centralized management and accounting; the costs and physical difficulties of adapting this structure to modern competition; the inflexible routines and techniques established by tradition and regulation for handling traffic and road equipment in freight operations; the interweaving of labour institutions with the operational structure; the established aim of the railways to provide a complete transport service to all shippers rather than a selective service like trucking; and the limitations imposed on change by public policy.<sup>2</sup>

This environment has much significance for rail cost competition. It indicates the inflexibilities that delay or prevent the railways from adapting their operations to meet growing truck competition. It suggests why some rail costs may be significantly higher than might be expected. It leads to the conclusion that unless the railways can break through the barriers imposed

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<sup>1</sup> *Railway Research*, an address by Dr. O. M. Solandt, vice-president, CNR, to the Association of Professional Engineers, Vancouver, December, 1960, p. 5.

<sup>2</sup> Both major railways have plans under way for remedying some of the deficiencies in this field (see below) but much remains to be done.

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by this environment, any cost advantages they may have could well be dissipated on the extra costs involved in this kind of operational environment.

This may be illustrated by examining briefly a few of the key areas where railway costs may depart widely from the theoretical normal costs in those traffic areas where they compete with trucking.

But before taking these up it would be well to note the handicaps now faced by the railways in appraising their competitive potential in these key areas of competition with highway transport. A major obstacle (though there are others) to adequate appraisal may be in the railways' organization of centralized management and accounting. By its nature, this organization was dependent on systems of standardized services and on averaging of costs. In these circumstances, it had been most difficult for them to appraise adequately the competitive bundle of costs and services being offered by truck competition in a particular area or a class of traffic or to appraise why the railway service was not competitively more effective. In many cases, it seemed evident that if the railways had enough on-the-spot, local information on relative costs and services by rail and truck to assess adequately their competitive potential, they would have altered their operations more readily to suit the competitive situation.<sup>1</sup> This lack may have prevented desirable specialization and adaptation of costs and services to local demand. It appeared to be a major reason for the railways continuing certain practices and operations which a careful investigation would indicate were clearly uneconomic.<sup>2</sup>

This may be illustrated by citing a few features of rail operations that appeared likely, by keeping rail costs high, to encourage increased competition and enable further traffic inroads to be made by trucks.

1. The large volume of L.C.L. traffic still handled in box cars (11.8 per cent of revenue cars in 1960) through freight sheds (requiring four more handlings than by truck) and team tracks (requiring two extra handlings). Such operations may require excessive handlings relative to trucking and may decrease the productivity of both railway equipment and manpower.<sup>3</sup>
2. The excessive and costly delays, in handling box car traffic, due to switching, assembling, classifying, stopping whole trains to

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<sup>1</sup>New techniques for calculating costs, based on multiple regression and computer methods, will do little to remedy this deficiency. In the main these new techniques are subject to the same weaknesses of using cost averages and general services that former costings were exposed to. The solution is likely to lie more in developing a system of specialized costing that can focus its appraisal of competitive costs and services on the local or particular areas or classes of traffic where truck competition is significant.

<sup>2</sup>In this context, those practices and operations which public policy requires the railways to perform may be excluded.

<sup>3</sup>Cf. Meyer, *et al.*, p. 102-103.

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set off a car or two at intervening stations, and such, estimated to consume 78 per cent of the rail time between origin and destination.<sup>1</sup>

3. The use of costly centralized management and accounting procedures that prevent local adaptation and specialization of services and accurate appraisal of costs, rather than management control and costing methods designed more for making rail services more flexible and specific at the local shippers' level and directing them particularly into those operations where the railways have most advantages in costs and services.<sup>2</sup>

It may be apparent that the extra costs of the inefficiencies in all three of these areas apply particularly to the traffic on which trucking competition is most severe. A preliminary appraisal would suggest these extra costs may add as much as 50 to 100 per cent or more to the costs of an efficient, well-organized rail or combined rail-truck operation for such traffic. Under these conditions, such rail costs may be well above truck costs on this type of traffic and further erosion of rail traffic by highway transport may be expected. These circumstances are also significant in appraising the future outlook. In view of the many organizational and structural obstacles, outlined above, that the railways still face in adapting their operations to lowest cost competition, it seemed likely that trucking would reach more deeply into railway traffic, even in those areas where railways could have substantial cost advantages, before the railways had completed their adaptation to the new competitive environment.

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<sup>1</sup> Estimates based on 1960 railway operations show the time lost on the average rail haul (445 miles) in these operations relative to truck time would approximate:

Switching at terminals .....	25.4 hours
On sidings en route .....	2.2 hours
Assembling and switching at origin and destination .....	48.0 hours
Hauling time .....	7.7 hours
	<hr/>
	83.3 hours

Actual hauling time by rail averaged 21.7 hours, or only 22 per cent of the time, from origin to destination. These calculations are based partly on data in Meyer, *et al.*, p. 192-193.

<sup>2</sup> The difficulties of making these changes should not be under-estimated. But steps now being taken by the railways in this direction seem likely to be too little and too late. The 1960 Annual Report of the CNR states, "The transfer of responsibility to the regional and area levels under the new plan of organization, requires a reorganization of the accounting function. To meet this need, a program was introduced to modify the accounting system, over a period of time . . .".

## Pattern of Truck-Railway Competition

From the above review it may be discerned that the pattern of truck-railway competition is a fairly complex configuration of costs, services and the related flexibility to adapt to shippers' demands. In effect, this means that competition extends into both the supply and the demand sides of the market for transportation.

But so far this examination has been concerned mainly with only the supply side, i.e., the conditions of competition in terms of relative costs and services by truck and rail. A few decades ago this may have been sufficient. More recently shippers' demands or preferences have clearly risen to importance in competition as alternative services of trucking have been extended into traffic areas formerly serviced by railways alone.

Preliminary to looking at this demand side, it may be useful to summarize broadly the supply relationships that shipper demand faces. This will provide a basis for assessing the scope of preferences that may be satisfied as well as the potential of each mode of transportation in competing for particular traffic.

On the supply side of transportation two main features stand out. First, transportation involves a wide range of costs and services and these may need to be selectively adapted to the demands of particular types of traffic. Second, the ability to supply particular services at acceptable costs on this selective basis depends to a large extent on the unique cost advantages as well as on the flexibility of operations that each mode of transport enjoys.

On the supply side for trucking, the competitive pattern has shown certain areas of advantage in costs and services. In costs, trucking is relatively flexible and adaptable in the short run, both in labour and capital, to demand changes involving either volume or types of service. This flexibility has permitted costs to be kept relatively low for dock handling, P & D, small shipments, short hauls, low-density traffic and other operations.

In services, trucking is particularly well equipped to provide special services to individual shippers. Its organization (i.e., its small scale relative to railways which gives more positive control of operations, local concentration, driver responsibility, flexibility of individual road units and other elements) permits services to be tailored closely to individual shippers' preferences.

In comparison, railway costs are relatively low for trainload, bulk-handled movements which require a minimum of services. But they are relatively high on freight shed handlings, small shipments, short hauls, low-density traffic and special services.

In services, the railways are less capable of supplying the specialized services that trucking is uniquely fitted for. Railway services tend to be

standardized, to serve uniformly the main body of freight traffic. This generalized service by the railways commonly requires shippers to fit their transportation needs to the railway services offered, rather than the reverse, as in trucking. This non-specific nature of railway services is the result partly of certain structural rigidities that greatly limit the flexibility of rail services (the necessity for fixed scheduling of trains, the rigidity of routes inherent in fixed roadbeds, the large scale of operations and such). It results in part also from organizational rigidities (centralized management and control; standardized regulations and rates; little local responsibility for claims, rates and other specialized services; and the limitations imposed by public policy). In spite of these handicaps, railway services have been improved substantially since World War II as will be shown below. But railway progress in improvement has been slow relative to the growth of truck competition. Its progress will continue to be slow in this direction because of the above structural and organizational rigidities, many of which are inherent in railway operation. In fact, because of these, the railways should never be expected to reach the level that trucking may attain in service competition.

These are characteristics of the supply side of transportation—a complex structure of various services offered at various prices by truck and railway to meet the varying demands or preferences of shippers for transport services.

During the past few decades the demand side has grown increasingly more complex also. The increased volume of manufactured and processed goods together with the growth of competition, particularly in the provision of special services by trucking, has opened the way for shippers to demand a wide range of new services. This demand for services varies from shipper to shipper.

The simple equation, commonly used in the past, to describe total demand in terms of price as a function of weight and distance falls far short of representing today's conditions. The characteristics or nature of the traffic, other than its weight and haul distance, have risen to great prominence in shipper demands. Broadly speaking, the components of demand that play the most influential roles in truck-railway competition are: the nature of the traffic, haul distance and density. These influences on demand warrant scrutiny.

The nature of the traffic determines to a large degree the type and extent of services demanded by the shipper as well as the relative prices he is willing to pay for them. Some of the most important traffic characteristics to be distinguished in this context are whether the traffic is bulk-handled or packaged; low-valued or high-valued; heavy or light per unit of space; in large or small shipments; perishable or non-perishable; low or high in loss-damage risk; and so on. On traffic, for example, that is manually handled, high in

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value, perishable and subject to high damage-loss risk, more services will be demanded and a higher price offered by shippers than for bulk-handled, low-valued, non-perishable freight. In short, characteristics of the traffic determine the value of services preferred, the risks involved, the preference for speed and frequency of delivery and, in consequence, the price the shipper is willing to offer.

Distance is still a major factor in demand and in the determination of price. But its significance, in these respects, has been notably reduced for a substantial volume of traffic by the relative growth in value of special services. This change is particularly notable in the case of long-haul trucking, where the preference for extra services by shippers has enabled trucks to compete over distances on which railways would tend to have the advantage were line-haul costs alone considered. This tendency is also evident in short-medium hauls where extra services (in addition to certain cost advantages) have given trucking a substantial advantage in the competitive race with the railways.

Density of the traffic demand has become increasingly significant in the case of railway transportation. Trucking can, by its nature, adapt to very low-demand densities. But for railways, traffic demand must be in much greater volume, i.e., sufficient for regular trainloads involving few stops, if they are to gain the competitive advantages of their minimum cost operation. This adverse condition of low demand density has developed in numerous railway traffic areas, for example:

1. On an increasing number of branch lines.
2. In heavy traffic areas where short-medium-haul trucking has taken over the major volume of traffic, leaving the railways to meet mainly the demand for the remaining low-valued bulk commodities, a demand that is often intermittent and thus costly to service.
3. In long-haul operations that require special services for particular types of traffic, density of demand may not be great enough to enable the railways to maintain such special services (e.g., supervised refrigeration for perishables) at a price shippers would be prepared to offer, that is, a price that would be competitive with truck prices.

To assess fully the relative potentials of truck versus rail competition on the basis of these demand factors (i.e., nature of the traffic, distance and density), it would be desirable to appraise the total demand for transportation in Canada in these respects. Unfortunately, this kind of information is not



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available for all freight traffic. But part of it, perhaps the most significant part in this context, is available, namely, data on railway traffic. Railway traffic comprises about half of total freight traffic.

An appraisal of such traffic can show a great deal about the nature of demand for railway services and in addition demonstrate the areas of traffic in which the railways are competitively strong or competitively weak vis-à-vis trucking.

Before examining the structure of railway traffic two qualifications should be noted. First, as representative of total demand for freight transport in Canada, railway traffic is deficient in certain respects, e.g., in short-haul traffic, small shipments, manufactured goods and perishables. Secondly, highways do not extend into all areas of rail traffic so trucking cannot compete for all of it. At the same time, this volume of traffic solely dependent on rail transport is not a dominant factor and has declined as highways have been extended into such areas.<sup>1</sup>

With these qualifications, demand for transport services as exemplified in railway traffic may be fruitfully examined. It should be emphasized, however, that demand in this sense involves preferences for various bundles of transport services at various prices. In general, where competition flourishes the prices (or rates) tend to correspond to the values (or costs) of the various bundles of services supplied. It is in this context that the competitive demand comprised in railway traffic can best be examined here.<sup>2</sup> This implies that on traffic on which the railways have long-run competitive cost advantages, plus services equal to trucking, prices will be such that shippers will continue their preference for rail transport. On traffic involving prices and services on which trucks have a competitive advantage, shippers will tend to demand truck services.

On this basis it is possible to set out the broad categories of traffic for which shippers may tend to continue to demand rail transport. The analysis of relative costs and services by rail and truck, examined in previous sections of this report, provides the information for this. That analysis showed, on the basis of railway services and prices (based on potential costs) that shippers might be expected to have a clear preference for rail transport on such traffic as the following:

1. Heavy-density traffic that moved in trainloads over long distances, especially large volume, bulk, heavy-per-unit-of-space, machine-loaded traffic.

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<sup>1</sup> A considerable volume of primary mineral and forest products may, however, continue to depend solely on rail services for many years because highway facilities are lacking.

<sup>2</sup> It is commonly stated that railway pricing retains substantial vestiges of above-cost rates on high-valued traffic and below-cost rates on low-valued traffic, based on the traditional "value-of-service" rate policy. This may have tended to shift demand from rail to truck transport on the high-rated traffic and leave the railways with an increasing proportion of low-rated traffic—an increasingly unprofitable trend for the railways. The extent of this influence has not been examined here. It would require a special study.

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2. Traffic on which time, i.e., speed and frequency of delivery, was not a critical factor in transport services.
3. Traffic on which close supervision of quality and condition (i.e., refrigeration) was not essential, that is, non-perishables.
4. Traffic on which claims for loss, theft or damage were unlikely to be significant, that is, products of low value, of sturdy construction and not requiring careful handling.

Shippers' preference for trucking services would lie mainly on the other end of the spectrum:

1. Small, short-haul shipments.
2. Traffic requiring special service and supervision in both long and short hauls, especially high-valued products.
3. Traffic on which speed and frequency of delivery are important to shippers.
4. Low-density traffic.

These shippers' preferences provide the means for assessing the demand structure comprised in railway traffic. They point up the areas of intensity in the pattern of competition between truck and railway.

These may be illustrated by the components of current railway traffic and by the trend in volume of each component. The component proportions of railway traffic for 1960 are shown below together with the change in each from the 1946-50 period:

	<i>1960 Carloadings, per cent of 1960 total<sup>1</sup></i>	<i>1960 Carloadings, per cent of 1946-50<sup>2</sup></i>
1. Grain and grain products .....	12.4	88.4
2. Fresh fruits and vegetables .....	1.0	58.8
3. Livestock, meats and products .....	1.8	48.2
4. Other farm and food products .....	2.2	93.2
5. Pulpwood .....	3.4	61.9
6. Woodpulp and paper .....	6.6	111.8
7. Lumber, timber and plywood .....	5.5	100.6
8. Other forest products .....	2.5	100.0
9. Ores, concentrates and refined metals .....	11.5	239.3
10. Coal and coke .....	5.5	60.4
11. Fuel oil, petroleum and gasoline .....	8.2	132.8
12. Mineral building materials (stone, etc.) .....	5.9	101.7
13. All other non-metallic minerals .....	4.4	221.7
14. Primary iron and steel .....	2.0	91.2

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	1960 Carloadings, per cent of 1960 total <sup>1</sup>	1960 Carloadings, per cent of 1946-50 <sup>2</sup>
15. Autos, machinery and parts .....	2.4	100.0
16. Fertilizers .....	1.2	116.1
17. Other manufactures and misc. <sup>3</sup> .....	11.7	151.3
18. Merchandise L.C.L. ....	11.8	47.5
<b>TOTAL</b> .....	<b>100.0</b>	<b>93.1</b>

<sup>1</sup> DBS, *Carloads of Revenue Freight on Canadian Railways*.

<sup>2</sup> Freight car capacity increased from an average of 44.83 tons in 1946-50 to 51.08 tons in 1959 but most of this increase was in ore cars, i.e., from 1955 to 1959 average ore car capacity rose from 63 to 79 tons.

<sup>3</sup> Includes piggyback carloadings. With piggyback excluded, 1960 carloadings of "Other Manufactures and Misc." were 96.2 per cent of 1946-50.

In the main, it may be observed that the traffic components showing the greatest decline from 1946-50 are those for which demand for trucking services was strongest<sup>1</sup>—i.e., fresh fruits and vegetables, livestock and products, pulpwood and merchandise L.C.L. In other cases—for example, autos, machinery and parts; other manufactures and miscellaneous—rail carloadings have increased much less than the increase in Canada's output of these products.

Yet the railway traffic for which trucking competes the strongest was, at most, only about one-third of total rail carloadings by 1960. The main components of rail traffic, close to 66 per cent, were centred in the heavy, bulk-handled, trainload commodities, in which rail transport had significant advantages:

	<i>Per cent</i>
Grain and grain products .....	12.4
Forest products (ex. pulpwood) .....	14.6
Ores, concentrates and refined metals .....	11.5
Coal and coke .....	5.5
Fuel oil, petroleum and gasoline .....	8.2
Mineral building materials .....	5.9
Other minerals (non-metallic) .....	4.5
Primary iron and steel .....	2.0
Fertilizers .....	1.2

Most of these bulk commodities also required a fairly long haul (grain products averaged 763 miles; forest products, except pulpwood, 795 miles; coal and coke, 324 miles; fertilizers, 417 miles).<sup>2</sup>

Overall this would indicate that by 1960 the railways were exposed to fairly strong competition from trucks on roughly one-third of their traffic and to relatively less competition on the other two-thirds. But this interpretation should not be pressed too far. It should not be presumed from this

<sup>1</sup> The decline in coal and coke carloadings is an exception. This decline is related primarily to the shift in demand from solid to liquid fuels.

<sup>2</sup> 1958, *Waybill Analysis*.

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that the railways will be increasingly certain of retaining their remaining traffic volume as trucking presses them closer toward hauling only the traffic on which they have a theoretical cost advantage. If the railways were capitalizing more fully on their potential cost advantages they might expect trucking competition to peter out eventually. But there were too many indications that the railways were falling far short of this to have such expectations. This was indicated by the sharply increased railway deficits in 1960; by their difficulties in improving rail operating efficiency rapidly enough to stem the shift of traffic to trucks; by their purchase of large trucking subsidiaries in recent years; and by the general air of pessimism and uncertainty in the industry.

At any rate, it had become clear by the early 1960's that the railways had already been brought to a critical juncture by the continuing and probably increasing erosion of rail traffic by trucking. It had apparently reached a point where the future of traditional rail operations was clouded by serious uncertainty and was probably in jeopardy.

In these circumstances, it seemed likely that the trucking industry, having substantial opportunities for technological improvements still opening before it, might well encroach further on future rail traffic than their relative cost potentials alone would seem to warrant.

## Organization of Railway Competition

The extent of this competitive threat to the railways was only becoming clearly apparent by the early 1960's. Trucking encroachment on railway traffic had been increasing for more than a decade before that, but the sharp shift from rail to highway came mainly after 1957. By 1960, this loss of traffic together with the downturn in economic activity starting in the third quarter of that year, showed the seriousness of the railways' position.<sup>1</sup>

Both major railways had begun modernizing their plant, operations and services after World War II, but progress in this was not pressed forward until the late 1950's. By 1960, they had completed the change from steam to diesel locomotion; rolling stock had been improved; automated classification yards had been developed and were well advanced in construction;<sup>2</sup> signalling equipment had been improved; mechanized track maintenance had been introduced; data processing was begun; and advanced communications equipment was installed. These were mainly technical changes developed over a decade or more and effective primarily in improving the operating efficiency and lowering costs of rail transport. Much of this improvement was in those operations related to traffic on which the railways have their major cost advantages. In particular, it improved the efficiency of bulk trainload movements substantially.

Changes designed to improve the services to shippers were slower in coming. Most of them were in the late 1950's. Their delay seems attributable partly to a failure by the railways to recognize early enough the increasing significance of service in the new competitive environment and partly to the great difficulty encountered in directing the organization of the railways more toward a service approach.<sup>3</sup> Many of the needed improvements in services involved substantive changes in long-established modes of organization and in operations which had become firmly entrenched by tradition and regulation. Where conditions like these exist, the gains from improvement ordinarily have to be more amply demonstrated and the modifications more thoroughly tested, than might be expected in the normally adaptable trucking industry. No doubt because of this, much of the effort devoted by the railways to

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<sup>1</sup>The 1960 Annual Report of the CNR states, p. 4, "The experience (the Company's financial record for 1960) served to highlight the necessity for pressing forward with programs designed to mould the System into an instrument better able to adjust and respond to both the prevailing business climate and the shifts and new challenges of a highly competitive transportation market".

<sup>2</sup>These electronically controlled hump yards were expected to reduce the time required to make up freight trains by 75 per cent.

<sup>3</sup>"The very nature of the railway as a service industry, plus the magnitude of its operations, contributes substantially to its lack of resiliency in responding to changing conditions." Extract from the Annual Report of the CNR, 1960, p. 4.

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modernizing their service competition has gone into experimentation and testing designed to appraise the gains and difficulties and to familiarize their organization with the necessary modifications of established procedures.

By the early 1960's it was evident that for many important services the railways were still in this trial stage. This applied to local merchandising services, containers, fast through (highball) freight service and others. Piggyback service had advanced further than this but was not yet being exploited fully.

Only in their purchase of trucking firms, especially from 1958 on,<sup>1</sup> had the major railways moved rapidly and substantially forward in providing improved service. This shift into highway transport, of course, implied that they did not expect standard rail services to compete effectively with trucking for certain types of traffic in future. This apparently applied also to rail-owned piggyback service, because in 1957 both railways opened piggyback service to for-hire trucking firms.

Most of these innovations concerned with services were designed particularly to meet the growing competition from trucks. It is with their potential in this respect that this study is particularly concerned. The most significant of these competitive innovations were piggyback, containers, agreed charges, railway purchases of truck lines and merchandising services.

### *Piggyback*

Piggyback service involves using a railway flatcar for transporting highway trailers or other containers on line-haul operations and using a highway tractor for pick-up and delivery. In the main, this trailer-on-flatcar (TOFC) operation is a practical measure designed to capitalize on the dual advantages of using trucks for P & D and railway for line-haul.

Starting about 1952, the railways began providing piggyback service using rail-owned trailers (called Plan II). Growth of this TOFC service was slow but in the fall of 1957 the CNR and CPR extended TOFC service to for-hire trucking firms (called Plan I). From 1957 to 1960 the number of trailers carried on piggyback increased rapidly. TOFC carloadings climbed from 3,932 cars in January, 1958, to 16,288 cars in April, 1960.<sup>2</sup> From the latter date, however, piggyback loadings began to level off and in October and November, 1960, loadings were below the same months in 1959. In the first four months of 1961, they averaged 12,379 cars a month, 0.1 per cent below the same period in 1960.<sup>3</sup> Part of this check in piggyback growth

<sup>1</sup> The CPR took up its option to purchase Smith Transport in 1958.

<sup>2</sup> Statistics are available only from 1958.

<sup>3</sup> Total rail carloadings in this period fell more than piggyback. As a result, TOFC rose from 4.4 per cent of total carloadings in January-May, 1960, to 4.9 per cent in January-April, 1961.

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can be attributed to the general decline in freight traffic that followed the slackening of economic activity in 1960. But there were also clear indications, as shown below, that the growth of piggyback was likely to be less rapid in future even when economic activity had returned to normal.

Several features of the recent growth of piggyback support this prospect by demonstrating that part of the growth may have been attributable to factors other than any unique long-run advantages of piggyback service:

1. Growth in piggyback from 1957 was largely in the carriage of for-hire trucking trailers. By 1959-60, rail owned and operated TOFC was still only 20 to 25 per cent of total piggyback carloadings and had grown relatively little since 1958.
2. About half the total piggyback carloadings in Canada in 1959-60 were for movements between Montreal and Toronto. This major movement may be explained partly by the deficiencies in highway facilities between these two major industrial centres, especially in the vicinity of the Quebec-Ontario border, and partly by the more attractive rates offered to truckers on this route relative to other routes.
3. The purchase by the railways of trucking companies, mainly since 1957, has enabled part of their highway traffic to be shifted to piggyback. This addition to TOFC traffic was expected to be relatively secure for the railways. It may comprise one-third or more of total for-hire piggyback.<sup>1</sup>

These features suggest that piggyback service may expand less rapidly in future, especially where new or improved highways make road transport easier, as is expected within a few years on the Montreal-Toronto route.

Yet it is necessary to explore the nature of piggyback service beyond its growth pattern in order to assess its potential significance in competition between highway and railway transport. It has substantial advantages over standard box car service for L.C.L. and other high-valued traffic in speed, lower claims and handling costs (TOFC can save four handlings relative to freight shed box car service, two handlings relative to team track operations). Investment in terminals and facilities (involving only ramps, trackage, holding space for trailers and a supply of flatcars equipped with a trailer hitch) is low, about ten per cent of the investment for standard box car terminals. TOFC is relatively profitable to the railways at present rates<sup>2</sup> provided there is sufficient volume for regular trainload, terminal-to-terminal movements.

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<sup>1</sup>In the main, the truck lines purchased by the railways continued to operate as independent for-hire carriers.

<sup>2</sup>In its Annual Report for 1960 the CNR reported, an eight per cent increase in TOFC tonnage over 1959 gave the Company a 23 per cent increase in revenue.

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These major advantages in costs and profitability, over box car service, seem likely to encourage the railways to divert to piggyback as much as possible of their present box car traffic that is now threatened by independent for-hire trucking. This diversion might be made through rail-owned piggyback, through rail-purchased truck lines now operating as relatively independent for-hire carriers, through encouraging Plan I piggyback for the wholly independent trucking firms or through encouraging Plan III for shippers owning their own trailers.<sup>1</sup> But, in fact, the scope for this kind of diversion to piggyback is fairly limited under current conditions.

This is because the conditions under which piggyback can be profitable are relatively limited. Its profitability depends to a very large extent on volume and on the rates that can be established.

Looking first at volume as a factor in profitability, it may be apparent that for piggyback service to capitalize most fully on its cost and service advantages over box car operation and, at the same time, meet truck competition most effectively, it must operate on the basis of regular full TOFC trainloads moving largely non-stop from terminal to terminal. This regular volume movement is necessary to compete with the speed and service by highway. It is necessary also to minimize piggyback costs to the railways. Less than trainload movements are costly. For example, to hold up the dispatch of a TOFC until it can be attached to another scheduled passenger or freight train is both costly and time-consuming and ordinarily much slower than direct truck service. Similarly, drop-offs at stations intervening between terminals must be largely eliminated to maintain speed of delivery comparable to highway. This was no doubt the reason that piggyback service in Canada was, in 1960, still confined to less than 35 terminal cities.<sup>2</sup>

This means that piggyback tends to be limited to volume (i.e., trainload) movements and that centres between terminals will have to be served by highway transport. It also means that TOFC service will tend to stimulate highway trucking as a feeder service.

Turning to rates, thus far the rates established for piggyback service, except perhaps on the Montreal-Toronto route, do not appear likely to stimulate large volume TOFC movements in competition with highway service. The rate on for-hire trailers between Montreal and Toronto was 61 cents a cwt. (minimum loading of 34,000 lbs.)<sup>3</sup> or approximately 3.58 cents per ton-mile (highway mileage). Independent truckers using this service must add to this their extra costs for delivering and picking up the trailer

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<sup>1</sup> Plan III started only in March 1961, when some shippers of chemicals began piggybacking their own trailers.

<sup>2</sup> The larger industrial centres have several TOFC terminals.

<sup>3</sup> CTC Freight Tariff No. 38D, January 4, February 4, 1960. The rate for rail-owned trailers, taking into account P & D charges, was equivalent to this for-hire rate. In most cases, the TOFC for-hire rate increases much more rapidly than highway costs per mile as the load rises above the minimum weight of 34,000 pounds.



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at the terminals and for the time lost in doing this. Against these costs, it may be recalled, truckers all-inclusive line-haul costs were 3.53 cents a ton-mile in short-medium-haul operations.

On the longer haul from Montreal to Winnipeg the TOFC rate works out to 6.6 cents per ton-mile, while the line-haul costs of long-haul highway operations were only 2.94 cents a ton-mile. On short hauls the TOFC rates tended to be considerably higher. Between Montreal and Ottawa, for example, they were \$1.09 a cwt. or 18 cents a ton-mile.

There are some other competitive disadvantages of piggyback relative to trucking. One that may be important to shippers is the loss of personal service ordinarily provided by the truck driver. For example, for perishables the highway driver is able to give continuous attention to maintaining appropriate refrigeration or air conditioning.<sup>1</sup> In the case of piggyback, the railway does not provide protective services against heat and cold while refrigeration, if used on a trailer, must be of an approved type of battery-operated equipment.<sup>2</sup>

Since 75 to 80 per cent of total piggyback carloadings are provided by for-hire trucking firms and close to 50 per cent by independent for-hire truckers, the value of TOFC service to these operators is most significant for its future success. In the survey of major trucking firms it was possible to obtain information with which to appraise this value to for-hire trucking. Almost all firms in the survey used piggyback but they used it primarily for dry freight rather than perishables. The major advantages of piggyback reported by trucking firms were:

1. Its convenience and benefits in special circumstances, i.e., when highway facilities become inadequate, for peak load conditions when too few tractors were available, for extra heavy or large dimension loads, or in "frost law" periods.
2. It enabled operations to be expanded with a smaller investment.<sup>3</sup>
3. It permitted Sunday movements.
4. It might reduce licensing costs.
5. Mileage by rail may be much shorter than by highway, e.g., Edmonton to Vancouver.
6. It was useful for rebalancing trailers among terminals.
7. It might give less exposure to accidents (though insurance rates showed no evidence of this).

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<sup>1</sup> It is common for the recording meters to be located where they can be observed by the truck driver in the cab.

<sup>2</sup> CTC Freight Tariff No. 38D, February 4, 1960.

<sup>3</sup> There were some complaints that truckers without route franchises were using piggyback services and that loads above provincial weight limitations were being carried. Reports indicated the railways looked on these as provincial responsibilities.

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8. Risk of snow or ice conditions on the highways might be shifted to the railways.

On the other hand, these same firms reported the following major disadvantages:

1. TOFC was too costly especially when account was taken of the extra costs of delivering and picking up trailers at the piggyback terminal (often up to 10 or 12 miles or more from truckers' terminals). Costs (or rates) were particularly high for short piggyback hauls and for loads above minimum weights.
2. Truckers risked becoming too dependent on piggyback service and thereby becoming vulnerable to railway dominance.<sup>1</sup> In case of a railway strike, truckers could then do little to fill the gap.
3. Piggyback service from shipper to consignee was slower than highway. It required extra time in delivering and picking up trailers at the terminal and in holding loaded trailers until the train was scheduled to leave or had a full trainload of trailers.<sup>2</sup>
4. It was more costly and difficult to schedule dock and P & D operations with a large influx of trailers at a fixed time. With highway operations these auxiliary services could be scheduled to spread over the whole day while piggyback bunched them in the morning and evening to fit train schedules. Twenty-four hours can be lost if a piggyback train is missed.
5. TOFC schedules are not always suited to truckers' needs.
6. Piggyback provides no control and supervision of refrigeration.
7. Truckers required more trailers for piggyback than for highway operations.
8. A large part of the trucker's costs became fixed and these costs were not subject to his ingenuity and innovation in reducing costs as highway expenses were.
9. Truckers lost some control over the speed and flexibility of handling their freight.

The survey indicated that, after three years of for-hire piggyback, much of the original enthusiasm had given way to hard-headed calculation of the net gains and losses of TOFC. It was clear that large-scale use of

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<sup>1</sup> "Once the truckers are tied to piggyback, the railways are in control", was the statement of one large firm.

<sup>2</sup> This may not be a serious difficulty where overnight service is given, so long as the TOFC train arrives at destination terminal by seven or eight a.m. On longer hauls, e.g., Toronto to Winnipeg or Edmonton, the delay may be more significant.

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piggyback had become less attractive to most independent trucking firms. By 1960, several firms had become doubtful enough of its advantages to carry out special studies of comparative costs, TOFC versus highway. Relative costs on several routes (Montreal-Toronto, Toronto-Ottawa and Toronto-Windsor) were examined. On all of them highway service showed a significant over-all cost advantage.

A careful review of the truckers' appraisals shows that while most firms saw definite advantages in piggyback for meeting peak or other special load conditions and for easing investment costs during expansion, they planned to use TOFC for these purposes rather than to meet their regular day-to-day needs. The exception to this was where highway facilities were still inadequate. All independent firms stated they did not intend to expand their use of piggyback because of its net disadvantages. Even those firms now heavily dependent on Montreal-Toronto piggyback, because of inadequate highway facilities, reported they continued to send at least 15 to 20 per cent of their loads by highway to ensure they did not become wholly dependent on TOFC. Several of these stated that when the Montreal-Toronto throughway was completed (expected by 1965) they intended to ship by highway only. A reduction in piggyback rates could influence this trend, because the higher cost of TOFC had become a significant factor in their evaluation.

Yet in spite of these disadvantages, it seems clear that piggyback will continue to grow, though at a slower rate than it did from 1957 to 1960. For non-perishable freight on which speed and special services en route are not critical factors, its growth could be steady and substantial, rising in a few years to 10 per cent or more of total railway traffic. But how rapidly it will grow depends to a large degree on whether rate policies are adopted which promote its expansion. The above appraisal has been based on rates remaining as they are. But current rates on most routes make piggyback costs higher than costs by highway and services may be less advantageous than by highway. Current rates also discriminate against heavier loads,<sup>1</sup> for which piggyback is particularly well suited. Changes in these rates could stimulate the growth of piggyback and change the above outlook substantially. In early 1961, however, there was no indication that the piggyback tariffs would be so altered.

### *Containers*

The possibility that containerization may be used extensively by the railways to meet the growing competition from trucks has received much

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<sup>1</sup> This discrimination in piggyback rates may be designed by the railways to discourage the loading of piggyback trailers beyond the provincial highway weight limits. At the same time, incentive rates designed to promote heavier loading of box car freight were being extended by the railways.

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attention in recent years. Yet progress in this direction is still marked mainly by experiment and demonstration. Nevertheless, it has become clear that the role of containers in freight transport will expand. But there has been an evident difficulty in appraising their competitive potential. Much of this difficulty lies in the need for subtle distinctions in the definition and application of containerization.

In a broad sense, containers may be defined as anything capable of holding goods. Thus containers may range from ships and box cars through special shipping cases to the cardboard cartons in which products are packaged at the plant. This whole range of containers has been involved to some extent in the modification of carrying facilities that has occurred in recent years to meet better the needs of industry and to suit the changing conditions of transportation. But in terms of truck-railway competition, the distinction is more subtle than this. In this case, the type of use or purpose of the container is the significant consideration. Basically, containers may be said to be of two primary types or applications. The most important type of the two is the general purpose container suitable for wide general use—the demand here is for a container that is mobile and versatile in carrying a wide range of traffic both ways, that can be fitted in with other modes of transport, and that can be readily kept under control because it is continually being registered as active. In this general purpose type would be included ships, box cars, semi-trailers and such.

The other primary container type is for specialized uses, that is, containers specifically designed to provide the particular conditions for transport required by certain products or certain carriers. These conditions may call for containers smaller or larger than general purpose containers; special refrigeration; special protection from damage, loss or theft; special shapes, special loading and unloading devices and so on. These specialized containers are ordinarily less versatile in range of freight carried and in interchangeability between carriers than general purpose containers. They also encounter other handicaps: difficulties of obtaining return cargo, extra costs and responsibility in returning empty containers, problems of keeping accurate records of container inventories and locations, and such.

In Canada both the general purpose and specialized types of containers are being used along with a few that range in between these two primary types.<sup>1</sup> Of the general purpose containers, the most versatile is the truck semi-trailer. It is mobile. It can move by highway, rail or water. It can be delivered to the shipper's dock, left there to be loaded by the shipper, sealed by the shipper, refrigerated or handled according to the shipper's instructions, hauled directly to the consignee by highway or piggyback and

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<sup>1</sup> In the U.S. a much wider variety of containers has been used. Rail piggyback carriers, in particular, have developed numerous specialized types, many of which are not interchangeable between carriers.

returned loaded without cost for return to the original shipper. For general versatility, mobility and adaptability the semi-trailer, as it is used in Canada, has major advantages over other standard containers like box cars, ships, pipelines or aircraft. Perhaps the best evidence of the recognized suitability of the semi-trailer as a standard container is the decision of all Canadian railways to adapt their piggyback service to carrying highway semi-trailers almost exclusively. This wise decision was made after a diverse range of piggyback container types had been made available in the United States.<sup>1</sup> Because of it, there has been little demand in Canada for what is called "a standard container" such as there has been in the U.S.

This suggests there is little possibility of the semi-trailer being supplanted soon in its central role as a standard container. In Canada the railways have, in the main, not attempted to supplant it.<sup>2</sup>

In special containers, however, the competition has been keener. Here the object has been to fit the container to the special needs of the shipper in terms of ease of handling; of protection from damage, theft or loss; of special refrigeration; of special dimensions and such. In general, the value of the commodity must be relatively high to warrant the extra costs and inflexibilities of special containerization.

In numerous instances, trucking firms have taken the initiative in developing these special containers, as noted above. Their efforts to provide special services to shippers have led to development of special tankers for fuels, chemicals and flour; special refrigerated trailers for perishables; special cattleliners and others. More recently they have developed a two-unit trailer to handle L.T.L. shipments. There was no indication that they were behind the railways in developing special containers. The evidence pointed rather to the railways' efforts to develop containers that might enable them to compete more effectively with the standard and specialized services already established by the truckers. For example, specially insulated and refrigerated boxes for shipping fresh fish were developed when it was found that standard reefer icing and lack of supervised refrigeration by rail left much to be desired in maintaining the quality of the product.

This demand for special containers is likely to expand in future. But there are fairly clear indications now that the trend toward special containers will be tempered by considerations of versatility and the back-haul advantages of standardization.<sup>3</sup> This is already evident in the development of containers for ships. The earlier efforts to develop wheelless containers for

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<sup>1</sup> In the U.S. this diversity of equipment with its lack of interchangeability is now looked upon as the major obstacle to the growth of piggyback service there. See, for example, *Piggyback and the Future of Railroad Transportation*, John G. Shott, Washington, 1960.

<sup>2</sup> Efforts in the U.S. have, on the other hand, been clearly directed toward this end.

<sup>3</sup> Several trucking officials noted the large numbers of containers piled obsolete in fence corners in the U.S. as evidence that over-specialized containers had proven unsatisfactory.

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close stowage in the hold appears to be giving way to the use of semi-trailers which move directly from ship to highway.<sup>1</sup>

One field that might have potential opportunities for containers was being explored in Canada in 1960. This was in overseas shipments. Trucking firms had demonstrated the advantages of direct truck-to-ship-to-truck through-shipments to Europe, both by special containers and standard stowage. Substantial economies in costs and time and a single charge to the shipper were some of the advantages noted.

Overall, the tendency to use special containers will continue to be confined to the higher valued and higher rated traffic. The trend, as noted above, is for such traffic to move by truck and piggyback. Because of this, it may be expected that, in container services, trucks and railways will be on a relatively equal footing in competition, with the advantage, if any, probably favouring trucking.

## *Agreed Charges*

Agreed charges have become one of the most effective weapons remaining to the railways in their competition with trucking. They involve an agreement by the shipper with the railway to ship at least a stated major portion of his freight by rail in return for receiving a special, favourable rate from the railways. Originally established in 1938, they were designed as a special inducement to encourage shippers to ship year-round by rail rather than changing to water or truck services in summer. By 1950, they were being directed more toward meeting truck competition. From 1955, when the application of agreed charges was made easier, the railways extended them rapidly to check the loss of traffic to highway carriers. The tonnage moved under agreed charges rose from 53,000 tons in 1954 to 100,000 tons in 1959. The share of railway revenue from agreed charge traffic has expanded rapidly, rising from 6 per cent in 1954 to 14 per cent in 1958.

Primarily, the agreed charge may be considered as a makeshift rate technique designed to enable the railways to price competitively yet bypass normal procedures for establishing competitive rates. The procedure was simplified in 1955, as recommended by the Royal Commission on Agreed Charges, specifically to permit the railways to use agreed charges more freely in meeting truck competition.

Agreed charges have several important advantages for the railways. They permit the railways to bid low enough to ensure they hold or attract the traffic. By tying the traffic to the railways, they assure to them a definite minimum volume of the traffic involved in the agreements. This facilitates

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<sup>1</sup> The relatively high cost of modifying ships' holds to carry containers or trailers seems likely to hold back this "fishyback" development, in spite of the high costs of dock handling, until a more effective container has been more definitely established.

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railway planning and operations. They also assure a more stable year-round volume, with seasonal variations smoothed out, and this also reduces railway costs. They may both expand and stabilize traffic sufficiently to permit regular trainload movements and thus offer substantial reductions in costs.

At the same time, agreed charges hold some disadvantages for the railways. To attract or hold traffic, rates may often have to be reduced to the point where net revenues become very low. The railways' service disadvantages relative to trucks indicate it may be increasingly necessary to set agreed charges at or below all-inclusive truck costs to be competitive. Even then, agreed charges may not always be effective in retaining the traffic for the railways. In some cases, they involve higher costs to the shipper for blocking and loading box cars, etc., and truckers reported these were significant enough to persuade some shippers to prefer truck services. Agreed charges can be applied most effectively to bulk freight. They are more difficult to adapt to the needs of shippers concerned primarily with L.T.L. shipments, so such L.T.L. has continued to shift to trucking services.

To truckers, in general, agreed charges were a serious threat because they could be used to take away a substantial and sustaining share of their traffic volume. It had become necessary to avoid too great dependence on bulk or volume traffic that might be subject to agreed charges. This prevented specialization in bulk traffic and tended to promote diversification. Agreed charges appeared to have injected a substantial and perhaps excessive measure of uncertainty into the for-hire trucking industry. Some truckers claimed certain agreed charges were set below all-inclusive rail costs and this constituted unfair competition. Yet others indicated that since many agreed charges cover only from 75 to 95 per cent of the shipper's total volume most of them still leave, in the main, all the traffic that any one trucker could handle from these large shippers.<sup>1</sup>

There was evidence in the survey that the trucking industry retained considerable advantage on certain traffic in spite of agreed charges. Cases were reported of agreed charges that had to be very much lower than truck rates in order to attract shippers. In some cases, e.g., dressed meat from Western Canada, it was reported that meat packers preferred truck services (especially their supervised refrigeration) rather than agreed charges at a much lower rate. Improved highways and the reported tendency for the provinces to raise highway load limits when agreed charges threatened the competitive position of trucking was also indicated to have helped trucking firms to meet agreed charge competition.

The strength of the agreed charge as a competitive technique appears to lie chiefly in its combination with the bargaining power that railways

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<sup>1</sup> Most agreed charge contracts provided that 75 to 100 per cent of a shipper's traffic must move by rail.

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already enjoy as the major transporter of large volume traffic. Faced with having to ship most of their bulk traffic by rail in any case, shippers may be reluctant and limited in their opportunities to bargain for a rational division of their traffic according to the relative rates and services offered by rail and truck. Under these circumstances their value as a long-run competitive technique may tend to be unstable. Yet it seems clear that without the use of agreed charges the railways' competitive position vis-à-vis trucking would have deteriorated much more rapidly than it has since 1955.

Trucking firms stated they had lost much profitable traffic to the railways through agreed charge agreements. Their complaints emphasized that agreed charges as used by the railways tended to eliminate competition, that at least some of the rates did not cover rail costs and that there was no means of appeal by the trucking industry against discriminatory agreed charge rates.

Yet so long as the railways are required to fill the major transport role in the Canadian economy, it may seem necessary to permit them to use extreme measures to hold traffic rather than allow them to decline as rapidly as they otherwise would have. It seems evident, however, that the growth of trucking relative to rail transport will continue in spite of agreed charges. If it does, as the railway traffic for which trucks compete declines in volume, rail costs may be expected to continue rising and eventually establish a floor price below which agreed charge rates will not be profitable. By 1960-61, there were indications that the railways were already approaching this point on lines where traffic volume was relatively low.

## *Railway-Owned Trucking Services*

A more recent technique in railway competition is the development or expansion of railway-owned trucking services. Most of the growth in this field came after 1957. As noted above, the CPR, with its acquisition of Smith Transport in 1958, became the largest operator of trucking services in Canada. The CNR delayed its action longer, and only in 1960 moved strongly into this area of competition, especially in long-haul trucking.

In general, truck lines purchased by the railways have continued to operate as separate for-hire carriers as subsidiaries of the railway company. In most cases, while they continue to serve the route for which provincial franchises were held, their organization and financing appears to be undergoing a process of gradual integration with the other highway services owned by each railway and, to a lesser extent, with the purely rail operations. The competitive techniques used have been confined primarily to piggyback<sup>1</sup> and

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<sup>1</sup> For example, a substantial part of Smith Transport's traffic may now be seen moving by CPR piggyback since Smith was purchased in 1958.



to direct highway competition. There is very little indication that they can or will be used effectively as a feeder service for rail box car operations. For the major part of rail traffic, especially the bulk, machine-loaded traffic carried in trainloads direct from shipper to consignee, there is little scope for co-ordination of trucking with rail services. On the rest of the traffic, extra handlings are required in using trucking as a feeder service for box car movements. Because of this, rail-owned trucking can compete with independent highway operators on non-bulk freight more effectively through piggyback or direct highway hauling than as a feeder service.

It is probably too early to assess clearly which of these two directions, piggyback or direct highway, will receive the most emphasis in future development of these subsidiary trucking services.

In the developments to 1961, the CPR had tended to emphasize the feeder role, chiefly via piggyback, of their trucking subsidiaries while retaining those highway operations which appeared essential to hold the traffic. The CNR followed a similar pattern in the beginning, especially in its development of "rail-head" piggyback services in the Maritimes and in their limitation of piggyback services from Central Canada to the Maritimes to rail-owned trailers. Yet the CNR's option-purchase of two long-haul trucking firms operating between Central and Western Canada, seems to suggest the intention of this railway to shift more into direct highway operations.

The evidence now building up on piggyback potential suggests that the future trend is likely to be more toward highway operations. In the main, piggyback can compete strongly with direct highway operations only on dry freight, terminal-to-terminal operations, and where there is a relatively large volume of traffic. In these circumstances, it will leave much traffic (perishables, low-density or intervening station traffic, etc.) that must move by highway in any case. Piggyback growth has levelled off. For about half of their TOFC handlings the railways are dependent on independent truckers and they may lose a big part of this as highway facilities improve. Railway-owned TOFC has not kept pace with the growth of trucking. And it may be expected that piggyback handlings by truck lines purchased by the railways will also suffer similar difficulties in expanding their TOFC traffic. In addition, there are, as examined above, many traffic areas where direct highway transport has substantial advantages over piggyback in both services and costs. In total, these features of piggyback versus highway competition may be expected to turn rail-owned trucking more toward direct highway operations to enable the railway complex to compete most effectively.

Yet these trucking subsidiaries of the railways have some significant disadvantages in competing with independent trucking firms. In becoming part of a very large rail-truck complex their flexibility is evidently reduced to some extent even though their operations are largely independent of those

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of the railway. To the extent they co-ordinate their operations with those of the railway and its other trucking services, the subsidiaries may also lose some important advantages of small firm decision-making. Some loss of independent initiative by management was evident and this may reduce their ability to compete as effectively in special services as the smaller, wholly independent trucking firms. Finally, evidence of provincial government opposition to the expansion of rail-owned trucking may be a handicap to their expansion.

Offsetting these in part were several important advantages. The railways, as the major large volume transporters,<sup>1</sup> have advantages over smaller independent truckers in bargaining with shippers for traffic. They may use some of these bargaining advantages on behalf of their trucking subsidiaries. They may also be able to direct their subsidiaries toward traffic on which rail box car or piggyback services are having difficulties in competing against independent trucking.

Independent trucking firms showed some concern about this growth of rail-owned trucking. Information obtained in the survey indicated their concern was mainly that this could lead to some degree of monopoly of surface transport by the railways. Several reported losing some traffic to rail trucking because of the extra bargaining power imputed to the railways. But most of them were less concerned with present disadvantages than with future prospects in this respect. Taking account of the handicaps, discussed above, which rail-owned trucking faces in future competition with independent truckers, there may be less cause for concern than the latter anticipated. But future trends in public policy with respect to further purchases of independent trucking franchises and the extension of existing franchises was looked upon as a critical determinant of this.

## *Merchandising Services*

The impact of sharply increased competition during the 1950's from highway transport, pipelines, airlines and, to a lesser extent, water transport, impelled the railways to turn their attention toward improving and co-ordinating their transport services. Such action had become urgent as a result of the rapid technological changes in freight transportation, the demand by shippers for the new and specialized services that were becoming available and the consequent losses of freight traffic by the railways.

To meet this new competition the railways have turned toward improving their merchandising services, i.e., toward specializing their operations, their services and their promotion to fit the local market demands and the particular commodities involved. But the railways' progress in the

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<sup>1</sup> For example, many large manufacturers depend on the railways to haul their bulk freight both in raw materials and finished products, which commonly comprises the major volume of their traffic. Only the traffic requiring special services may go by highway.

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direction of improvement and co-ordination at the local level has been neither easy nor rapid. This was because, on the one hand, it required a massive reorganization of railway services and management. On the other, it required changing the approach of railway management and workers from a passive to an active philosophy. In organizations as large in scale as Canada's two major railways and with such long established techniques and services, the obstacles to such changes are very great. Much greater than might be expected in the smaller, flexible trucking firms that ordinarily restrict their operations to a limited area or route.

Nevertheless progress has been made. After several years of study both railways are now moving on a broad front. The major features of this reorganization for improvement indicate the range and complexity of the developments envisaged. Steps have already been taken to decentralize the administration of railway operations and to co-ordinate these with the expansion of direct selling as well as the development of new services.<sup>1</sup> The object of this transfer of more administrative control to the area offices from the central headquarters was to improve their competitive efficiency<sup>2</sup> by co-ordinating sales with operations at the area level and integrating rail and truck operations there also.

But whether they have moved far enough in this respect to meet independent trucking competition is still doubtful because the local areas established are in the main substantially larger than those within which most independent truck firms concentrate their services.

But even if these new local areas were the appropriate size, the difficulties of re-aligning the railways' long established chains of authority, of shifting from central to local accounting procedures, and of developing new techniques and services for local handling of freight, seem likely to make the decentralization a fairly slow process. Both major railways have had to give it much preliminary study and testing. Both railways have used the experimental approach rather than an immediate over-all shift into local administration and co-ordination. The CPR has been testing local integration of operations for handling rail, truck, air and sea traffic in British Columbia for some two years, gradually expanding it to cover more points in that Province. The progress and success so far there has indicated this type of integration would be expanded further.<sup>3</sup>

The CNR, having expanded its highway services somewhat later than the CPR, gave more emphasis in the beginning to the "railhead" approach in experimental development. The railhead technique involves using highway

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<sup>1</sup> In July, 1959, the CPR subdivided its eight districts, reporting through three regional headquarters, into 31 operating divisions with four regional headquarters. In 1960, the CNR broke down its three regions, 10 districts and 31 divisions into five regions divided into 18 areas with each area administration having authority for both sales and operations.

<sup>2</sup> CPR Annual Report, 1959, p. 18, and CNR Annual Report, 1960, p. 5 and 6.

<sup>3</sup> CPR Annual Report, 1960, p. 8.

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carriers to fan out from a rail terminal, to pick up and deliver freight moved mainly by rail. The CNR has used this technique in the Maritimes in conjunction with piggyback operations since 1959. Its value for improving handling efficiency was noted in 1960 along with plans to extend it in future to other areas.<sup>1</sup>

The over-all task of integrating the transport services provided by the railways is complex and difficult. The railways have indicated it will involve combining their express and L.C.L. services; co-ordinating the scheduling of highway with rail operations; developing techniques that improve the speed and reduce manual operations on handling freight that is transferred between highway and rail services; improving the type and speed of service; developing new equipment and terminals to facilitate integration of rail-truck services; developing new equipment to meet shippers' special requirements; and eventually co-ordinating these local services with transcontinental operations.<sup>2</sup> In a transformation of this magnitude, which the railways have apparently concluded is essential to meet the new competition that has developed,<sup>3</sup> progress must of necessity be slow. The impediments to rapid modification of established techniques as well as the extensive nature of the new techniques to be developed seem likely, in view of progress thus far, to delay completion of the full reorganization until the late 1960's at least.

Until the changeover to local responsibility is completed in each area the railways will be under considerable disadvantage in providing specialized services to shippers in competition with the locally-oriented independent trucking firms.

### *Trends in Railway Transport*

To summarize the foregoing, the railways have made substantial advances in adapting their operations and organization to the new conditions of competition in the transport market. Yet most of their progress has been in improving their efficiency in handling bulk trainload movements (dieselization, automatic classification and signalling, improved rolling stock, etc.). This has strengthened the advantages they already enjoyed on this volume traffic.

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<sup>1</sup> CNR Annual Report, 1960, p. 8.

<sup>2</sup> Both railways inaugurated a fast freight "highball" service between Central Canada and the Pacific Coast in January, 1961, to develop techniques for meeting "the steadily increasing competition in the transcontinental freight hauling". *Keeping Track*, April, 1961, p. 7.

<sup>3</sup> "The ultimate aim of the program is to provide one superior service featuring speed and service and employing the most efficient coordinated use of train, piggyback and highway carrier transport." CNR Annual Report, 1960, p. 8.

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Much slower progress has been made in improving services to shippers. And it is in services that the railways have the greatest disadvantages in competing with highway transport. It may require some years to complete the reorganization necessary to bring co-ordinated service competition down to the local level where trucking now has such superiority. In the meantime, rail traffic will continue to be eroded by highway services. In the meantime, also, it may be expected that technological improvement in highway transportation will continue to make further rapid progress, as will be shown in the next part of this report.

Because of this and because of the greater obstacles the railways face in adapting to this changing competitive environment, the railways may be expected to continue to lag behind the smaller scale, more flexible trucking firms in technical and service improvement. The gap seems likely to widen. In other words, taking all these influences into consideration it seems clear that the improvements made or under way in rail transport will retard but not prevent further losses of traffic to highway transport.

These considerations indicate the prospect that standard railway services will in future be confined more closely to carrying only the heavier, bulk trainload commodities. Rail piggyback, while it cannot provide a complete service in competition with highway transport and has significant disadvantages in costs and services, may be expected to expand considerably. TOFC handlings should rise steadily, especially of dry freight, perhaps to ten per cent or more of total rail carloadings. They could rise faster and higher if TOFC rates are more closely adapted to stimulating piggyback services.

Highway operations of rail-owned trucking may be expected to increase. But the growth of these intercity highway operations of the railways may not be as rapid as that of independent trucking because of the inflexibilities that attach to integration of highway and rail operations. Future highway operations by the railways may be affected also by the freedom they are allowed in extending their present franchises and in their purchases of additional truck lines.

Overall, the evidence does not suggest that the competitive strength of independent trucking has been or will be significantly weakened by the railways' progressive improvements. Thus far these improvements have not closed the gap in services rapidly enough to prevent an increasing loss of traffic to independent trucking. Indeed the gap may well widen during the next decade.

## The Role of Trucking in Canadian Transport

The foregoing appraisal has indicated the influences that are likely to shape the future role of for-hire trucking in Canada. They may be briefly summarized here.

Short- and medium-haul trucking has grown steadily in recent years and now carries most of the freight traffic within its haul range. Much of its growth has been at the expense of rail traffic, especially in L.T.L. and other high revenue freight. Long-haul trucking, though more recent in development, has shown a remarkable growth particularly in the late 1950's and in 1960. It appears destined to continue this expansion.

The nature and organization of trucking gives it notable advantages over the railways in providing services to shippers. The growth of these trucking services has been paralleled by a growth in shippers' demand for specialized services. In this new service-oriented transport market, railway transport has been falling behind in competition. In addition, losses of traffic to trucking impose a double penalty on rail transport. Because the traffic requiring the most specialized services is commonly the most profitable to carry, the railways have been losing not only the volume of this traffic but also its substantial net revenues. Even in costs the railways have encountered disadvantages in recent years. While they still enjoy substantial advantages over trucking in bulk, trainload, terminal-to-terminal long-distance movements, trucking in turn has major advantages over rail in short haul, small shipment and L.T.L. operations. Between these two extremes the competitive positions are less clearly defined. But highway operations have been steadily expanding in this intermediate area. The most notable feature of this highway expansion has been the growth of long-haul trucking, especially in perishables and in other traffic requiring special services, but also in some bulk traffic. The evidence indicates that in the long run, the competitive advantage is likely to swing more toward trucking in this intermediate area of the Canadian transport market. Supporting this is the tendency of railway costs to increase in the areas of low-density traffic that continue to develop as traffic shifts to highway services. There was evidence the railways were already encountering critical cost difficulties in this respect in 1960.

The marshalling of railway operations and organization to meet truck competition has been delayed by inflexibilities. It is still advancing relatively slowly insofar as improvements in services are concerned. Piggyback appears likely to compete with highway transport mainly on dry freight and then only with some significant cost (or rate) handicaps. Perhaps because of this the railways appear to be looking more toward expansion of their highway subsidiaries than to piggyback or improved box car services as a means of

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meeting independent trucking competition. This approach seems justified in view of the limited range for piggyback competition and the disadvantages of extra handlings by box car. This suggests that trucking as a purely feeder service for the railways may have relatively less application than might appear at first glance. The effectiveness of feeder trucking under present conditions is likely to be confined mainly to piggyback and to bulk commodities that can be readily transferred mechanically between truck and box car. At the same time, establishment of joint rail-truck through-rates at more satisfactory levels and with suitable financing arrangements might well open a potential field of traffic which the railways have not yet exploited extensively.

This summarizes the competitive conditions as they had developed at the beginning of the 1960's. Unless there is a significant change in this competitive pattern, the railways will continue to have difficulties in maintaining such a rapid rate of growth and improvement as is expected in trucking. These immediate prospects suggest trucking will continue to draw ahead in the competitive race. Such prospects were confirmed in the plans of firms as reported in the special survey of trucking that was part of this study. They are supported also by the longer run outlook.

### *Current Outlook for Highway Transport*

The survey of trucking firms indicated that highway services were likely to continue to improve relative to rail services and that these service advantages would stimulate further shifts of traffic from the railways. Opportunities in this connection were noted particularly in long-haul trucking. But progress in improving services was also evident in short-haul operations (i.e., 100 to 200 mile hauls) where there was little competition with rail service because trucks already carried virtually all of this traffic.

Recent advances in short-haul movements were directed mainly toward improving the handling and servicing of L.T.L. traffic (e.g., mechanized terminal sorting, split trailer bodies, etc.) and special shipments requiring individualized service. These improvements were providing more or faster service to shippers and, at the time, usually reduced the trucker's handling costs. It was clear that much more could be accomplished in this field and that the efficiency of progressive short-haul operators would continue to improve.

In medium- and long-haul trucking, however, greater opportunities for development and growth were recognized. Several short-haul operators, for example, said their major possibilities for future expansion lay in extending their activities into the area of medium and longer hauls. Trucking firms already engaged in long hauls were the most optimistic of all on the prospects for growth of trucking. Some of these emphasized particularly that competi-

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tive opportunities for improvement of services to shippers relative to existing railway services were virtually unlimited, that the key to their growth was in specializing in service to shippers. These long-haul firms suggested that if trucking operators examined shippers' needs and then tailored a mutually satisfactory service to those needs there was much scope for expansion of highway traffic. Examples of immediate potential improvements in long-haul operations were: third-morning delivery in place of current fourth-morning delivery between Alberta and Central Canada as soon as the western Ontario portion of the Trans-Canada highway was completed; direct delivery of truck-loads of dressed meat from packing plants in the West to eastern chain stores; special two-way containers to protect the quality of perishables; bulk liquids in rubber tanks; specialized services to particular shippers; improvements in terminal handling and others.

Along with these improvements in services, the long-haul operators looked for their recent rapid expansion of traffic to continue, particularly in eastbound perishables and other traffic requiring special services.

Prospects for reducing costs relative to the railways were also examined in the survey. As with services, the long-haul firms saw greater opportunities for cost improvement than did the short-haul operators.

Yet the shorter haul operators reported some costs were being reduced and others were expected to be cut in future. Improvements in the quality of tires (partly the change from rayon to nylon) and recapping processes had already cut tire costs as much as 29 per cent since 1959. Opportunities for increasing payloads were still available and being exploited.

Larger and lighter trailers,<sup>1</sup> lighter and more powerful tractors and sturdier highways were some of these. Prospects were good that such technological improvements would permit substantial reductions in future costs by way of larger payloads.

To some extent, these cost reductions through bigger payloads depended on technology only. In part, they depended on government policy in building more and sturdier highways and bridges, in permitting longer vehicles and larger load limits. Most operators saw steady improvement in these also. Other avenues noted for reducing costs were in more flexible trailers, split trailer bodies, removable undercarriages,<sup>2</sup> and in P & D and dock handling operations.

Against these prospective economies the short-haul trucking operators set expected higher labour costs and possibly some increase in licensing costs.

Long-haul operators, facing a much larger volume of unexploited demand, saw wider opportunities for reducing costs. The increased volume

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<sup>1</sup> Many truckers still use 35-foot trailers when they could use 40-foot (e.g., in Ontario) or longer than 40 feet in other provinces.

<sup>2</sup> In some provinces only the undercarriage is licensed and ability to switch undercarriages may enable licensing costs to be reduced.



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of traffic in prospect was expected to reduce their overhead costs, would permit quantity purchases of repairs and supplies at lower prices and would reduce equipment servicing costs and P & D costs. Other cost savings were in prospect in dock handling and claims (e.g., by new air cushioning methods for trailers).

Long-haul operators looked forward to substantial cost reductions through improvements in their equipment. Use of more powerful tractors with shorter motors and blocks,<sup>1</sup> use of lighter and stronger materials (e.g., plastics) in construction, elimination of front axles, and nitrogen gas refrigeration, were noted as improvements that were expected to reduce future costs by increasing the payload, even with highway weight limits unchanged. Improvements in trailers were also expected. These would involve use of lighter materials, more trailers utilizing the full lengths and heights permitted, and more uniformity in provincial regulations (on lengths, heights, clearance lights, licensing, etc.) that would tend to bring all provinces nearer to current average requirements in these regulations.

The improvements now possible in trailer equipment plus those available in tractors could increase the average payload by several tons without any change in existing regulations. Less certain but still a clear possibility was the likelihood that public policies would continue to permit increases in payloads as well as promote other economies as they have in the past. Most significant was the expectation that weight and length limits would be raised as highways were improved.<sup>2</sup> Additional savings on licensing costs, clearance lights, adjustable wheels, and other regulatory costs were expected as the provinces progressed toward fuller reciprocity in Canada and with near-border states. In general, long-haul truckers looked for their total costs to be decreased considerably in future. Less concern about the prospects of higher labour costs was evident among long-haul firms than short-haul operators, probably because drivers were not organized to the same extent in long-haul operations.

Viewing the over-all cost outlook, the long-haul operators saw their cost position as likely to improve relative to railway costs. Short-haul operators saw fewer opportunities for cost reductions and little prospect of significant reductions relative to rail costs.

These differences in cost outlook and traffic prospects were reflected in their plans for expansion in the future. All long-haul firms had plans for

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<sup>1</sup> Wider use of V-8 engines was suggested as contributing to this.

<sup>2</sup> This expectation was confirmed to a degree by the increase in weight limits in Saskatchewan in April 1961, enabling a substantial increase in loads on the Trans-Canada highway route between Alberta and Central Canada. On length limits the 50-foot maximum in Ontario seems to give most concern to truckers.

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immediate or continued expansion. The short- and medium-haul firms saw less likelihood of a general expansion of their traffic<sup>1</sup> but reported numerous plans for developing new traffic lines.

Specialized long-haul firms planned to expand as much as 25 per cent a year. They saw substantial opportunities for growth in traffic requiring special services, in perishables including livestock, in L.T.L. and in overseas shipments. Their plans included carrying a wider range of commodities, increasing their traffic volume and extending their route coverage.

On the other hand, it was clear that the non-specialized long-haul operators had found the opportunities in long-distance trucking less attractive than their specialized confrères. This group of firms, the largest in scale of operations, was engaged mainly in short-medium hauling but included long hauls as part of the complete service they endeavoured to provide. These firms planned to expand their medium-haul operations (particularly the range beyond 300 miles) where, unlike the short haul, there was still substantial room for growth. Some of these firms expressed the view that in the long run they saw the greatest advantages for trucking within haul ranges of 400 to 600 miles rather than in longer hauls. It seemed evident, however, that their lack of specialization in long-haul operations may have been a sufficient handicap to lead to this conclusion.

Plans for expansion by short- and medium-haul operators included, for example, overseas shipments,<sup>2</sup> more L.T.L., some extension into longer haul traffic, serving new resource areas such as are being opened up in the "Roads to Resources" program and in handling bulk products like paints where the shipments can be loaded in split trailer sections by the manufacturer and each section delivered intact to its particular consignee.

### *Long-Run Outlook*

Considering the above appraisal of its potential in services and costs as well as the industry's plans for expansion, the for-hire trucking industry

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<sup>1</sup> This response of short- and medium-haul operators was, in part, a reflection of the recognition that they already carried almost all of the traffic suitable for highway in their haul range. It reflected also the slowdown in the Canadian economy which had resulted in a downturn in their traffic for several months just before the survey was made at the end of 1960. This downturn did not occur in long-haul traffic.

<sup>2</sup> Geared as they are to providing special services, truckers have found a fertile field in overseas transport. Standard overseas service was reported to be too complex for the average shipper to handle conveniently. It ordinarily involved several agencies and several handlings and much lost time. After a few test shipments, truckers had found profitable opportunities in overseas shipments direct from shipper to consignee (in some cases on one bill of lading). These opportunities were starting to be exploited in 1960 by both long- and short-medium-haul firms. The economies in time and cost of having shipments handled throughout by one agency were reported to be large. Additional savings in crating, etc., were gained by using split trailer containers loaded by the shipper and carried intact to the overseas consignee.

seems destined for continued growth. Part of this future growth may be expected through drawing traffic from the railways, part from new traffic. For short-haul trucking, not much growth at the expense of rail traffic may be expected since trucking handles virtually all of this traffic already. In medium-haul operations, a steady expansion seems indicated to the point where a substantially larger share of this traffic will be moving by highway. For long-haul trucking, now carrying a relatively small share of the total traffic, prospects are for a continued rapid growth. This tendency for growth in the medium- and long-haul traffic means a substantial part of it will be in interprovincial hauling.

These prospects depend, of course, upon more than the demand for trucking services and the industry's plans to expand them. They will be affected also by public policies respecting highway construction, load limits, reciprocity and other regulations and programs. In this respect, the plans of the trucking industry for future growth were premised in the main on highway conditions as they were in 1960. They did not take into account any improvements beyond those they had enjoyed in the past. Aside from the expectation that important gaps in the Trans-Canada highway would be completed by 1964 or 1965, new highway construction did not come into their plans.

Yet it may be evident that public policies, primarily provincial policies, will be an important element in the future growth rate of trucking. Virtually since the beginning of highway transport, the growth of the trucking industry has been treading heavily on the heels of progress in highway construction and regulation in Canada. It still is. The development of long-haul trucking in Canada was and still remains primarily dependent on United States highway facilities. Gaps in highway facilities between Montreal and Toronto have made it necessary to use piggyback services to handle part of the growth in demand for trucking. Gaps in the Trans-Canada highway—in Ontario, British Columbia, Quebec and the Maritimes—continue to restrain freight movements along this route.

Lack of uniformity in licensing, weight and size limits, clearance light requirements and other regulations continue to restrain the development of extra-provincial trucking.<sup>1</sup> For example, the development of long-haul trucking between Central and Western Canada turned, in the beginning, primarily on the Province of Alberta holding the door open for development. Alberta, virtually alone among the provinces concerned, allowed new firms to enter freely for extra-provincial transport, and by special efforts promoted reciprocity in licensing and other regulations with intervening states and

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<sup>1</sup> Trucking firms reported that provincial transport boards were hesitant in supporting expansion of extra-provincial trucking because of federal-provincial jurisdictional problems. The railways were reported as opposing such expansion also, either directly or through their trucking subsidiaries.

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provinces. The national transportation service provided by these long-haul firms still depends to a major degree upon the good offices of that Province.

Nevertheless, progress is being made among the provinces in co-ordinating their regulations and licensing arrangements to facilitate interprovincial movements. Progress in provincial highway construction has also been notable—in completing the Trans-Canada highway, in building wider and sturdier thoroughways for heavy traffic volumes and in building intercity and feeder highways. Yet here it may be noted that the emphasis is ordinarily given, as would be expected, to serving the transport needs of the provincial economy rather than the national economy.<sup>1</sup> In these circumstances, it may not be surprising that the gaps in highway facilities occur frequently at a distance from the industrial heartland of a province, often in the vicinity of the boundary between provinces. Thus it may be expected that co-ordination of highway facilities on a national basis is likely to continue to depend on federal participation such as in the construction of the Trans-Canada highway.

Overall it was expected that highway facilities would improve steadily but that they would continue to lag relative to the volume of traffic which demand for highway transport indicates the trucking industry may be called upon to carry.<sup>2</sup>

## *Outlook as the Transition Develops*

While the growth of trucking may be less than it might be with more adequate highways and more co-ordination of licensing and regulations, nevertheless its growth is likely to be substantial. This growth will be concentrated more on medium- and long-haul (e.g., interprovincial) traffic than it has been in the past. And a part of this growth will be based on traffic that is attracted from rail services.

But further losses of traffic by the railways could well have extensive repercussions on rail transportation in Canada. Already in 1960-61 the railways were facing most serious financial difficulties. The relative inflexibility of the railways in adapting their services to meet competition in the new service-oriented environment seemed likely to prevent them regaining the ground lost to trucking. The increasing extent of unprofitable traffic areas, low-density branch lines and uneconomic handling services, appeared

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<sup>1</sup> Nevertheless, there is increasing recognition among the provinces of the need for a national highway system. For example, Provincial Treasurer Woodrow Lloyd of Saskatchewan recently stated that development of a national highway system to take responsibility for all international and interprovincial highways was desirable. See *The Globe and Mail*, June 21, 1961, p. 19.

<sup>2</sup> Trucking firms expected steady improvement in highway construction resulting in larger payload and lower costs and improvements in regulations and reciprocity, though their plans for expansion did not include these expectations as a factor.

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to be approaching the point where further traffic losses could soon prove disastrous by their effects in raising costs. The alternatives open to the railways would seem to suggest speeding up the modernization of their merchandising services and divesting themselves of their most unprofitable operations. Such a withdrawal of rail services from low-density and unprofitable operations would permit the smaller sized and more flexible trucking services to serve these areas, normally at lower costs.

While each such withdrawal of rail services would need to be appraised on its individual merits, it may be evident that the capacity of the trucking industry to absorb the additional demands for services is limited under current conditions. Deficiencies in highway facilities, low capacity bridges in most areas, limitations on interprovincial movements as well as obstacles in adapting highway transport to meet the gaps in national services, all serve to restrict its ability to meet such additional demands for services.

Altogether the outlook suggests that highway transport is not likely to be able to take up its eventual role in provincial and national transportation as rapidly as the railways may need to shift it to them because of rail cost difficulties. This indicates that the next five to ten years may be in the nature of a transition period. During this period the railways may be forced to remain in financial difficulties because Canada is not yet well enough equipped with highways, regulatory institutions and associated services to enable trucking to ease the railways' burdens of uneconomic operations as they become acute. It seems likely that within a few years the competitive difficulties of the railways will have become more clearly evident. When that time comes, the need for more highway and other public services, particularly for interprovincial traffic, may also become clearer.

### *Problems of Public Policy*

The foregoing analysis has shown that for-hire trucking in Canada has established itself on a firm foundation for continued growth. In the beginning its growth was primarily in short-haul or intra-provincial transport. This was the necessary result of the conditions under which for-hire trucking developed—limited highway facilities, low capacity and undependable road equipment, and a railway-oriented industrial economy. With the changes in these conditions, for-hire trucking has overcome many of its early handicaps in competing with rail transport and has steadily extended its range of competition. Its expansion in the phase of local operations may now be said to be virtually completed. While it will undoubtedly increase and improve its services further in short-haul operations it will gain little traffic from the railways in this area because it already carries almost all of it.

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In recent years, as the dominance of for-hire trucking in short hauls became established, its growth has tended to reach more and more extensively into longer haul traffic including interprovincial and transcontinental movements. Already it has become firmly established as a strong competitor of the railways for a substantial volume of this traffic. Its future growth at the expense of rail traffic will be substantial on medium-haul traffic but it appears likely to be most rapid in long hauls where its specialized services are in widening demand in competition with the railways.

This rapid and substantial shift toward longer highway hauls has caught public policy singularly unprepared. Most of this longer haul growth occurred in the last five years, i.e., since 1956. Public policy had been based on the belief that such a development was unlikely to occur.<sup>1</sup> When it came, it brought difficulties not only for the railways but also for the administration of public transport policy.

Because of the nature of the early development of highway transport on a local service basis, it is not surprising that it appeared practical and desirable at that time to establish its administration wholly as a provincial responsibility. Until recent years this appeared to be the only reasonable alternative. With the volume of extra-provincial traffic relatively small it was also quite effective.

The volume of such traffic carried by for-hire trucking was still relatively small in 1954 when the Federal Government delegated its share of responsibility over highway transport to the provinces. In February of that year, the Privy Council had ruled that federal jurisdiction included interprovincial and international transport plus any intra-provincial undertakings incidental thereto. This jurisdiction was immediately delegated by the Federal Government to the several provinces where it has been administered since then.<sup>2</sup>

This delegation of powers caused little difficulty for the provinces at the time because it merely confirmed what they had been doing in the past. But the rapid changes in Canadian transportation since then have sharply increased the difficulties and burdens of these responsibilities. Looking ahead, it seems clear that the difficulties of these responsibilities will multiply in future. This seems assured by the prospects for continued rapid growth of longer haul trucking and for the continued withdrawal of railway services

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<sup>1</sup> For example, as late as 1956 a report prepared for the Royal Commission on Canada's Economic Prospects clearly indicated there was little likelihood of such growth.—“Beyond that point (1,500 miles) there is considerable doubt as to whether or not line-haul motor carrier operations are profitable or practical.” See A. F. Hailey in *Transportation in Canada*, J. C. Lessard, Appendix A, p. 149.

<sup>2</sup> All provinces, except Newfoundland, where there is virtually no extra-provincial traffic involved, now assume responsibility, by concurrent regulations, for these federally delegated powers.

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that may be expected to accompany this. In fact, the competitive and financial difficulties of the railways are already at a point where this withdrawal may move very rapidly in the next half decade.

The responsibilities imposed on provincial jurisdictions by this rapid and continuing transition in national transportation services are substantial. In effect, provincial governments are being pressed by events to provide a co-ordinated national highway service to fill the growing demands of shippers and the gaps developing in railway services. This involves provision of highway facilities to link the transportation services from province to province. It also involves regulating highway and piggyback operations between provinces although provincial jurisdiction does not extend beyond each province's borders.

The federally-assisted Trans-Canada highway is not yet complete. By the time it is finished (now planned for the end of 1963) it is expected to be then well short of the expanded requirements. In the central provinces of Ontario and Quebec substantial distances of these increasing highway requirements are outside the central industrial areas. Highways traversing these less industrialized areas are alternatives to continued dependence on U.S. highways to link the regions of Canada with trucking services. Prospective growth in interprovincial traffic may well burden United States highways unduly and make them a less certain avenue for such traffic. Moreover, the obligation for the provinces to regulate interprovincial traffic does not include the obligation to provide highways for such traffic, nor are their obligations likely to be so extended. Accordingly, a co-ordinated highway system for interprovincial traffic would imply federal participation.

The growth of interprovincial and international traffic has also rendered its regulation more difficult for the provinces. Regulation has been made complex also by the purchase of truck lines by the federally-regulated railways and by the growth of railway piggyback. All of these have raised conflicts of regulatory policy between provinces and interprovincial carriers and between provincial and federal regulations. Difficulties have developed in working out suitable reciprocal licensing, load limits, franchises and other regulations among provinces. If these difficulties continue, the tendency in Canada may be for shippers to turn from for-hire towards private trucking as they have in the United States.

Problems of policing the licensing and load limits for piggyback trailers have also apparently weakened provincial control. A conflict between national and provincial services was arising out of the regulation of truck lines purchased by the railways. Numerous other such complex problems were developing.

As long-haul trucking expands in its interprovincial operations these conflicts and difficulties of the provinces may be expected to grow also. They

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are likely to become increasingly burdensome. In the long run, it seems no more likely that the provinces can carry the full responsibilities of developing and regulating large-scale interprovincial trucking operations effectively than it was possible for them to carry the burden of railway building and regulation they attempted 50 to 70 years ago.

At the same time, the importance of a co-ordinated and comprehensive transportation system for the growth and maintenance of the Canadian economy on a national basis has been recognized. This has been established as a principle of national policy since before Confederation. The growth of longer haul transportation and the inroads made by trucking in general on the established national transportation system of railways has now reached the point where the national system, to give complete service, includes highway as well as rail services.

Apparently, this expansion of highway transport into the interprovincial field has brought with it a new awareness of the role of federal co-ordination. The brief presented to the Royal Commission on Transportation by the Province of Quebec stated for example "Transportation policies are largely national policies . . . The Government of the Province of Quebec stands ready to co-operate with the other provinces and the Federal Government in the development of transportation policies which will best serve the interests of all Canadians".<sup>1</sup>

Viewed from the federal role, the rapid growth of for-hire trucking has made the co-ordination of a national transportation policy more complex than it was when major dependence for overland transport was on the railways. As the role of the railways declined relatively, federal policy problems have resolved into two major aspects. On the one hand, national policy has been faced with problems related to the adaptation of the railways to the new transportation environment with all that this entails in curtailment of unprofitable services and reorganization of operations. On the other hand, it is confronted with problems of making it possible and practical for highway transport to fill the gaps thus created by this withdrawal of railway services.

The complexity of these federal problems has been multiplied by the rapidity of the recent growth in longer haul trucking and the lack of public awareness of how seriously this growth had undermined the position of the railways and will continue to so undermine it in future.

The transition period will pose significant problems in federal transport policy. The task of revamping long established legislation, regulations and procedures to enable the railways to adapt to their new and changing environment will be one of these. On the other hand, the Federal Government has been so little involved with highway transport that it has not been concerned either with policy in this field, or, to a sufficient extent, with the sub-

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<sup>1</sup> Submission by the Province of Quebec, p. 65-66.



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stantial range of information that would be needed to develop an effective federal policy. It is notable that the first recognition of the trucking industry in federal legislation came only on June 9, 1961.<sup>1</sup>

Another federal handicap may be the absence of a unique organization of trucking firms that is concerned primarily with problems of national or interprovincial highway transport.<sup>2</sup> Lacking such a body it may be difficult for the Federal Government to have clear recommendations on policies from the interprovincial operators involved. Yet it was evident that both provinces and trucking firms were becoming convinced that the degree of co-ordination required in interprovincial trucking would eventually involve more federal participation.

The magnitude and complexity of the task of making it possible for the railways and for-hire trucking to carry out their new sharing roles in national overland transportation effectively and, at the same time, of preventing the resulting dislocations from causing undue burdens on shippers in the various regions, all suggest substantial federal initiative and participation.

Undoubtedly the costs of the eventual transition will also be large. Already the national government is carrying a substantial share of the railways' financial difficulties. Other costs to provincial or federal governments may be seen arising as a result of the curtailment of railway services or the increasing demand for more interprovincial highway facilities. Additional local highways and the strengthening of many local bridges may be required where branch line rail service is withdrawn.

All this adds up to a substantial task in both policy and financing. The pressing urgency of the railways' plight seems likely to make the federal task even greater. The adaptation of railway legislation, regulations and institutions, complex though this may be, may be the most readily solved of the two tasks.

Pending fairly wide-spread support from both the provinces and the trucking firms concerned, the fitting of trucking into the national transportation system at the federal level may need to move fairly slowly. In the meantime a great deal more information could be obtained on it, so that as the demands for federal co-ordination develop they may be most effectively implemented.

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<sup>1</sup> Statement of Hon. Léon Balcer, Minister of Transport, House of Commons Debates, p. 6124, June 9, 1961, in the debate on a private member's Bill to allow a national trucking association or a province to appeal to the Minister or Board of Transport Commissioners against agreed charges that are unjustly discriminatory. The Bill had not at that time received approval of the Senate.

<sup>2</sup> As presently organized both local and interprovincial trucking firms are joined together into provincial associations. These provincial associations have formed a central organization, the Canadian Trucking Associations Inc., as their national body.

AVERAGE COSTS PER HIGHWAY MILE

LONG- AND SHORT-MEDIUM-HAUL TRUCK OPERATIONS, CANADA<sup>1</sup>

	<i>Long haul</i>	<i>Short and medium haul</i>	
<i>Line-haul costs:</i>			
<i>Tractor operation:</i>			
Tractor drivers' wages .....	8.44	7.19	
Maintenance .....	3.48	4.15	
Tires .....	1.81	0.73	
Fuel and lubricants .....	6.86	5.76	
Tolls .....	0.92	....	
Road expense .....	0.26	....	
	21.77	17.83	
Depreciation .....	3.61	2.44	
Licences .....	1.91	0.84	
Insurance .....	0.72	0.23	
	6.24	3.51	
<i>Semi-trailer:</i>			
Maintenance .....	1.84	1.46	
Tires .....	0.71	0.47	
	2.55	1.93	
Depreciation .....	2.87	3.31	
Licences .....	0.18	1.47	
Insurance .....	0.06	0.16	
	3.11	4.94	
Total line-haul costs excluding overhead .....	33.67	28.21	
Overhead applicable to line haul .....	7.52	7.13	
Total line-haul costs .....	41.19	35.34	
<i>P &amp; D and dock costs:</i>			
Direct costs .....	2.67 <sup>2</sup>	23.95	
Overhead .....	1.65 <sup>3</sup>	11.99	
Total P & D costs .....	4.32	35.94	
Total costs per mile .....	45.51	71.28	

<sup>1</sup> Average costs for firms surveyed.

<sup>2</sup> For long haul, P & D costs plus their share of overhead was included in this item.

<sup>3</sup> Overhead in this case includes terminal and dock costs.

## A SURVEY OF PRIVATE TRUCKING IN CANADA

Aside from Dominion Bureau of Statistics data which covers only recent years, there is very little information on the development and growth of private trucking in Canada. For this reason a recent survey<sup>1</sup> made by the Canadian Industrial Traffic League (CITL) is of particular interest. The CITL is an association of some 550 shippers across Canada, many of them among the largest users of transportation services.

The CITL survey, made in the summer of 1961, showed 72 per cent of its member shippers used private trucking and shipped 34.2 per cent of their freight by this means. Most of this development of private trucking has been in the past two decades—63 per cent of the private truck fleets were started after 1945. The carrying capacity of these private trucks had expanded substantially, particularly in the 1950's. From 1956 to 1961, for example, 65 per cent of these fleets had increased their capacity, the average increase being 48.6 per cent. Future expansion is expected to be even more rapid—55 per cent of these private fleet owners planned to expand capacity, by an average of 25 per cent within the next two years, that is, from 1961 to 1963.

The reasons shippers use private trucking, as given by the CITL firms, emphasized the importance of services and costs. Ninety-three per cent of the firms put lower costs (41 per cent), better services to customers (41 per cent) and more flexible service (11 per cent) as the major advantage of private trucking. Next in order of importance were the advantages of better control of loading and unloading, better control over transportation, faster transit time, less loss and damage and advertising benefits.

Some 27 per cent of the private truck fleets were either partly or wholly leased. This points up another feature of the survey, its indications of the growth of "do-it-yourself" commercial trucking. This do-it-yourself trucking is an outgrowth of truck leasing. It enables individuals or firms to obtain trucks to be operated by the lessee with no capital outlay. There was evidence that this type of leasing operation was stimulating private transport and would be increasingly important in future.

Overall, the report indicated that private trucking had reached a stage where it could become an immediate alternative if the services and rates of for-hire carriers should depart very far from the services and costs that private trucking could provide.

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<sup>1</sup> Apparently the survey was stimulated by references to the importance of private trucking made in the first volume of the Report of the Royal Commission on Transportation, March, 1961, page 24.