

FINAL REPORT

**AN ESTIMATE OF THE FREIGHT RATE CONSEQUENCES OF
RAIL CAPTIVITY TO RAIL SHIPPERS OF CANADIAN FOREST
PRODUCTS**

Prepared for

Forest Products Association of Canada

Travacon Research Limited
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EXECUTIVE SUMMARY

This report contains the findings of research conducted by Travacon Research Limited on behalf of the Forest Products Association of Canada (FPAC), the objectives of which are to estimate:

- Railway contributions from handling forest products
- The extent to which these contributions exceed competitive levels
- The extent to which forest product shippers have access to effective competition for transport of mill products

The report's findings are based upon;

- Analysis of a survey of 2006 shipping by FPAC members
- Financial and statistical data reported by railways and by Statistics Canada
- Estimation of variable costs incurred by railways in handling of forest products

It is estimated that aggregate CN/CP contributions (revenues less variable costs) from forest products traffic for 2006 were \$ 574 millions, or 39 % of variable costs.

Travacon believes that, where there is effective competition for rail traffic, railway contributions will not exceed 20 % of variable costs. Thus, the above contribution is almost double that maximum level. This excess represents \$ 277 millions for 2006, or \$ 345 per carload, or 13 % of revenue.

It is estimated that total contributions (all carriers) were 53 % of variable costs for lumber, 38 % for other wood products, 41 % for pulp and 57 % for paper.

Only 37 of the 134 mills surveyed reported use of more than 1 rail carrier. Overall, aggregating the handlings by the largest carrier at each mill, that aggregate was 92 % of total volume, indicating a general lack of effective competition between rail carriers. The average rail haul for mill products exceeded 1,300 miles, so that truck competition is not generally effective.

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Introduction

This report contains the findings of research conducted by Travacon Research Limited on behalf of the Forest Products Association of Canada (FPAC), the objectives of which are:

- 1) To compare the aggregate revenues being earned by the major Canadian railways (Canadian National Railway (CN) and Canadian Pacific Railway (CP)) from handling of forest products with the variable costs incurred by the railways therefore, and to obtain an estimate of the contributions (revenue less variable cost) earned by the railways in handling forest products.
- 2) To estimate the extent to which these contributions exceed the level that the railways would earn if there were effective competition for the forest products traffic.
- 3) To estimate the extent to which Canadian forest products shippers have access to competitive options for movements handled by rail.

In the conduct of this research, Travacon conducted a survey of FPAC members to obtain information respecting their rail shipments of forest products. Travacon appreciates the cooperation of those members in providing this information.

All dollar amounts shown in this report are denominated in Canadian currency. The term “tonnes” refers to the metric quantity 1000 kilograms, and the term “ton” refers to the short ton of 2,000 pounds.

Railway Costing Concepts

Railway costs as presented herein are based upon Canadian and United States rail regulatory methodology. Regulatory rail costing is based upon an economic concept of cost, wherein cost consists of operating expenses and cost of capital. Cost of capital provides for coverage of debt interest, corporate income taxes and a reasonable return on shareholders' equity. In an individual application, cost of capital is determined by application of an annual percentage rate (established by the regulator) to the net book value of railway property assets relevant to the application.¹

Railway long-run variable costs (LRVC) consist of that component of total railway costs which varies, up or down, with variations in level of use of the railway system. As such, variable costs represent some 80-85 percent of total Canadian railway costs. The residual of total railway costs is referred to as constant costs, and represents costs that do not vary with level of use of the railway system. Examples of variable costs include costs associated with locomotives, freight cars, train crews, train fuel, a portion of railway overheads and approximately 50 percent of the costs associated with the railway track structure. Examples of constant costs include the residual of the costs associated with the track structure and of railway overheads. It is important to note that both variable costs and constant costs include railway overheads (to the extent that they are related to variable or constant elements in the railway activity structure) and cost of capital (depending upon whether the related railway assets are considered to be variable or constant).

Railway cost estimates presented herein are based upon the Travacon railway costing model, which provides estimates of long-run variable costs incurred by railways for handling of specified shipments. The cost estimates are prepared on a basis consistent with that used by rail regulatory bodies for regulatory

¹ In 2006, the Canadian transportation Agency has determined a cost of capital rate of 8.06 % for CN and 8.09 % for CP.

purposes. The estimates may differ with those that a regulator would determine, because the regulator has access to railway proprietary data not available to Travacon; however, Travacon believes its estimates are close to what a regulator would determine. Data sources used in the model include regulatory decisions, labour contracts, railway financial reports, Statistics Canada publications and operational observations.

For portions of movements within the United States, the Travacon cost model uses the Uniform Railroad Costing System (URCS) published by the Surface Transportation Board

Costs, Pricing and Contribution

In pricing of railway services, the railway benefits economically from an activity if the revenues it receives from that activity exceed the variable costs that that activity imposes upon it. The extent to which a railway price (e.g., a freight rate) exceeds the related variable cost is referred to as the contribution that the railway receives from that activity. The following sections discuss the relationship of prices and costs under various market structures.

Perfect Competition

“The following four characteristics define a market structure called perfect competition:

The market contains a large number of independently acting buyers as well as sellers.

Buyers view all units of the traded item as identical regardless of the source of supply.

Buyers as well as sellers possess full knowledge relevant to trading in the market.

Nothing impedes entry into or exit from the market for either buyers or sellers.”²

Under perfect competition, the interaction of buyers and sellers in the market establishes a price that equalizes supply and demand, thereby clearing the market. Sellers into a perfectly competitive market do not have to concern themselves with the price at which they will sell their product; they are price

² *Microeconomics*, Heinz Kaohler, at page 254.

takers and their only decision is the quantity that they wish to sell into that market.

Under perfect competition, the market price will be equal to the variable cost³ of the marginal item⁴ that is sold into the market. To the extent that some sellers have costs that are less than the cost of the marginal item, such sellers are able to earn from such sales a contribution (contribution being the difference between the price and the variable cost of the sellers).

Generally, the market conditions that would permit perfect competition also tend to be characterized by a high degree of homogeneity in the cost structure of sellers. In the absence of homogeneity there would probably be a sufficient barrier to market entry to preclude the development of the large number of sellers required for perfect competition. Under these conditions it is reasonable to expect that, in perfect competition, contributions that can be earned by sellers in the market tend to be relatively small, and prices are tightly coupled to costs. The presence of competition precludes any other result. Furthermore, this characteristic (small contributions) exists irrespective of the nature of the product or service that is being sold.

Monopoly

A monopoly exists in “a market in which a single seller offers an item for which no good substitutes are available and into which the entry of other sellers is severely restricted or even impossible. By threatening to withhold the product from would-be buyers, such a single seller also has the power to influence the price at which exchanges take place.”⁵

³Also frequently referred to as the marginal cost in economic literature.

⁴That is, the highest-cost item which can profitably be sold into the market.

⁵*Microeconomics*, Heinz Kaohler, at page 283.

A common misunderstanding about the nature of monopoly is that the monopolist can charge any price he wants for his product. While that may be technically true, a monopolist, when pricing, is constrained by the fact that, while he is the only producer of products in his market, demand for his product is not in general independent of the price he charges. Generally, the higher his price the lower the quantity he will sell. This relationship frequently arises as a consequence of buyer's market competition; that is, competition which the buyers face in their markets. Such market competition is well known to sellers of forest products, and it establishes constraints on freight rates that can be charged on forest product movements. Generally, such constraints are weaker than those that would exist if there were effective competition from alternative transportation providers.

By considering the relationship of sales quantity to price, together with his relationship of production cost to output, the monopolist seeks to establish a price at which his contribution will be maximized. This price is known as the monopoly price. The relationship of the monopoly price to the seller's cost varies depending on the degree of the constraint imposed by market competition. This variability is known as differential pricing, and is well known to railway shippers.

One of the characteristics that distinguishes the monopolist from the seller in perfect competition is that the monopolist establishes his selling price independently, whereas the seller in perfect competition merely accepts the market price. In coming to his decision respecting a selling price, the monopolist is heavily influenced by the demand-to-price relationship of his buyer. This is sometimes referred to as value-of-service pricing. That relationship is in turn influenced by what the market will bear. That relationship is not of significance to a seller in a competitive market. One of the important differences between value-of-service pricing and pricing under competition is that, under the former, a number of factors other than the seller's cost can and do have impact on the level of price established whereas, in the latter, as noted above, prices are tightly coupled to costs.

To the extent that the monopolist has a degree of control over the price and production decisions in his industry, he is said to have market power. “In a monopoly, the firm has a high degree of market power while firms in perfectly competitive industries have no market power.”⁶

By virtue of his market power, it is possible that a monopolist may be able to earn relatively high levels of contribution by pricing substantially above his variable cost (which includes a reasonable level of profit), depending upon what the market will bear. Although that ability is not guaranteed, the existence of high levels of contribution over an extended period generally indicates a relatively high degree of market power since, as discussed above, ability to earn significant levels of contribution over an extended period does not generally exist in situations of low or no market power which are found under perfect competition.

Oligopoly

Oligopoly is a market structure that is intermediate between perfect competition and monopoly. It is characterized by the existence of more than one seller, but not a sufficient number of sellers to meet the requirements of perfect competition. A subset of oligopoly is duopoly, which is a market with two sellers.

Price under oligopoly can range anywhere between the perfect competition price and the monopoly price, depending primarily upon the extent of organization and discipline of sellers in the industry, and the cost of entry into and exit of new competitors in the market. Under a high degree of organization or discipline, such as would exist with cartels or other forms of collusive behaviour, or under an established regime of price leadership by a specific firm, or where entry and exit is costly, the oligopoly price can approach the monopoly price. In other situations, where such organization or discipline is lacking, or where the cost of entry and exit of new competition is low, prices can be bid down to the price that would result from perfect competition.

⁶*Economics*, Paul A. Samuelson and William D. Nordhaus, 13th Edition, at page 977.

Effective Competition

Competition is considered desirable in the interest of maximizing economic efficiency. However, there is recognition that conditions necessary to enable perfect competition are frequently not attainable in the real world. That has led to efforts to define a market structure that provides the majority of the benefits of perfect competition, but without the stringent conditions described above. That structure is called “effective competition” or “workable competition”.

The U.S. Attorney General’s report describing workable or effective competition (terms which are used interchangeably) resonates with the characteristics of perfectly competitive markets. “Workable competition differs from pure and perfect competition in several ways. In the first place, the two theories have different purposes. The theory of pure and perfect competition is an instrument of theoretical analysis; the theory of workable competition seeks to provide a method for making necessarily less exact but more practical realistic judgments of actual market situations.”⁷ With regard to pricing, the study notes that, “... under workable competition there should exist substantial pressure driving the price of any given product or service toward uniformity, and toward its cost of production ...”⁸

Another study by the Independent Regulators Group lays out principles of best practice and implementation for National Regulatory Authorities in the EU⁹. It notes, “Effective competition can be defined as the persistent absence of players with market power. In its essence, market power is the ability to influence prices and of persistently enjoying higher profits than those enjoyed by firms which do

⁷ “*Report of the Attorney General’s National Committee to Study the Antitrust Laws*”, Government Printing Office 1955 pg. 338 (footnote 3). .” Washington, DC,

⁸ Ibid, pg. 334.

⁹“ *Principles of implementation and best practice in effective competition in electronic communications markets, as decided by the Independent Regulators Group*”, 19 February 2001. pg. 2.

not possess market power. In an effectively competitive market users are better off, because they are more likely to be provided a greater variety of products and/or services of lower price and higher quality than they could be provided in a non-competitive market.”¹⁰

Watson and Holman define the market structure required to enable effective competition:

- (a) “New firms can freely enter the industry and produce at costs not markedly higher than those of established firms.
- (b) The firms in the industry are independent and active rivals and do not engage in collusion.
- (c) The number of firms is large enough so that none is dominant.”¹¹

In some respects, notably freedom of entry and a large number of firms, this definition does not fit competition between railways in Canada. However, the word “effective” means that something more competitive than an industry structure equivalent to monopoly must be the consequence. Even if the form of competition is an oligopoly or a duopoly, the word “effective” requires that the pricing action that results from the industry structure must more closely approach the competitive price than the monopoly price. More specifically, it requires that, if prices rise to levels substantially in excess of the level that would prevail under perfect competition, some competitors will have an incentive to take actions that will drive prices downward toward the competitive level.

In general, it is not possible to make estimates of relationships of price and variable cost for Canadian railway movements, under effective competition or otherwise, because of the confidentiality of most of the significant freight rate information. However, with respect to export potash and grain, there is some publicly available data that provide insights into the relationship of freight rates

¹⁰ Ibid pg. 2.

¹¹Price Theory and Its Uses (Fourth Edition), David S. Watson and Mary A. Holman, page 268.

and costs in a situation where there is effective competition. Although Travacon is not aware of any publicly-available price data respecting Canadian railway movements for forest products under effective competition, the relationships that exist between price and cost for other commodities are representative of the relationship that would exist for forest products under effective competition. That is because, as discussed above, prices under effective competition are tightly coupled to costs, rather than being strongly influenced by other considerations. The following sections discuss some available information.

Export Potash. Export potash moves by rail from Saskatchewan mines to Vancouver terminals, with the mines being served by both CN and CP. Public information described a 1992 competition between CN and CP for handling of this traffic, which competition was won by CP. Travacon's analysis of available data indicates that the resulting freight rate provided a contribution to CP of 14 % of its LRVC, and amounted to a reduction of about 25 % from the previous rate level.

Railway Interswitching Review. On April 18, 1997, the CTA issued a determination (published in the Canada Gazette October 12, 1997) with respect to its review of interswitching rates.¹² Among other things, this review considered how the maximum regulated interswitching rates should be established. The Agency concluded that the rates should be established at the level of variable cost, plus a contribution of 7.5% towards coverage of constant costs. In its determination, the Agency characterized this methodology as one that would result in rates that would be commercially fair and reasonable to all parties, in accordance with the requirements of Section 112 of the *Canada Transportation Act*.

¹²Interswitching rates are regulated rates, established by the Agency, and represent the maximum rates chargeable by switching carriers, for pickup or delivery of railcars from or to shippers served by the switching carrier.

While the Agency characterized this as an interpretation of the concept of “commercially fair and reasonable to all parties”, it did specify that this interpretation applied only to the prescription of interswitching rates. With respect to the relationship of railway variable costs and constant costs, the Agency said:

“Under the previous WGTA regime, the Agency determined in 1992 that an 83/17 ratio of variable to fixed costs was appropriate for the movement of western grain traffic.”¹³

That being true, an average contribution of about 20% of variable costs (the relationship of 17% to 83%) is required to fully cover constant costs. However, the Agency went on to say that:

“--although a full contribution towards rail fixed costs is required for all rail traffic, in aggregate, contribution levels are less when competition dictates.”¹⁴

Thus, where competition is effective, railway contributions are less than 20% of variable cost.

Western Grain Transportation Act. Most grain commodities originating in Western Canada are subject to railway freight rate regulation. From 1984 through 1995, this regulation was governed by provisions of the *Western Grain Transportation Act (WGTA)*. Currently that regulation is governed by provisions of the *Canada Transportation Act*.

Some insight into the relationship of freight rates to costs under effective competition can be obtained from determinations made by regulatory bodies under provisions of the former *WGTA*. More specifically, the *WGTA* prescribed a specific level of such contribution of rates over variable cost with respect to regulated grain traffic. At subsection 34(1), the legislation defines “estimated

¹³ Canada Gazette, Part II, Vol. 131, No. 25, dated October 12, 1997, at page 3407.

¹⁴ Canada Gazette, Part II, Vol.131, No. 25, dated October 12,1997, at page 3407

eligible costs”, which determine railway revenue requirements, to be the sum of variable costs and

“(b) the contribution to the constant costs of the railway companies, being, in respect of the 1986-1987 and subsequent crop years, twenty percent of the volume-related variable costs;”

At subsection 38(5), the legislation required a review of the appropriateness of that contribution level in conjunction with the Quadrennial Costing Reviews provided under the legislation. Specifically, the CTC and its successors were instructed,

“In assessing the appropriateness of the level of contribution referred to in Sub-section (4), the Commission shall be guided by the following objectives:

- (a) to ensure that the overall revenues of the railway system are adequate to meet its long-term needs; and*
- (b) to ensure that the contribution to constant costs provided by the movement of grain is fair in relation to the contribution provided by other commodities.”*

The appropriateness of the 20% grain contribution level was reviewed three times, in the Costing Reviews of 1984, 1988 and 1992. There was no recommendation to change the 20% contribution as a result of these reviews. Travacon therefore believes that the regulatory bodies have found that the 20% contribution level is fair in relation to the contribution levels being provided by other rail commodities. Of course, these other rail commodities consist of a mixture of movements for which effective competition exists and those for which the railways have substantial market power and/or are in a monopoly position. Since contributions in competitive situations are probably less than those where railways have market power, it is Travacon’s conclusion that, if the 20 % level is representative of the contribution being obtained by railway commodities as a

whole, something less than 20% would be representative of the sub-set of railway commodities for which there is effective competition.

Establishment of Non-Compensatory Rates by Canadian Railways. Not only are the railways prepared to accept relatively small contributions in the presence of effective competition, as evidenced by the examples above, the Canadian railways have demonstrated that they are willing to establish their freight rates below variable costs as calculated by the NTA, or its predecessor the CTC, under effective competition, in order to secure business.¹⁵

Conclusion. Based on the foregoing it is Travacon's opinion that, where there is effective competition, the level of contribution that railways can earn is less than 20 % of LRVC.

Railway pricing practices

Railways actively practice differential pricing. For differing freight movements, the relationships of freight rates to LRVC vary greatly, depending on degree of competition and economics of the product being transported. Where the railways encounter effective competition they price accordingly; where they lack effective competition they use their market power to maximize their contributions to the best of their ability. Some freight rates are even set below the level of LRVC.

The railways have periodically stated that they practice a scheme of pricing known as Ramsey Pricing. Ramsey Pricing is, essentially, pricing at what the market will bear except subject to the constraint that the overall seller's return on capital does not exceed its cost of capital.¹⁶ In recent years, railway returns have consistently exceeded their cost of capital. There is no regulatory requirement that the railways observe the Ramsey Pricing constraint; indeed they would do

¹⁵ A number of cases brought under provisions of the former *Railway Act* and *National Transportation Act, 1987* determined movements for which railway rates were set a levels less than LRVC.

¹⁶ That constraint is met if the aggregate of contributions does not exceed the constant cost.

their shareholders a disservice if they did. By not voluntarily so constraining themselves, they are not practicing Ramsey Pricing.

It is noted that, while Ramsey Pricing enjoys some support in the economics community, it also has a number of detractors. Its opponents cite impracticality of application and weak theoretical foundations.

Where there is effective competition, the Ramsey Price is the same as the price as set by the forces of competition. Where there is lack of effective competition, and where there is no effective constraint on profitability (either regulatory or self-imposed), the Ramsey Price becomes the monopoly price.

In theory, the railway will, in the long run, be able to attract new investment funds only if the sum of the contributions from all of its activities equals or exceeds its constant costs. In practice, the Canadian railways have demonstrated their ability to invest even in periods when the aggregate of their contributions has failed to cover their constant costs.

Movement of forest products

Rail

In 2004, CN and CP in Canada handled a total of 46.9 million tonnes of forest products, with the major components being as shown in Table 1.

Table 1
Canadian Rail Movement of Forest Products - 2004

	Tonnes (millions)	Percent of total
Logs & other wood	2.1	4.5
Wood chips	4.5	9.6
Lumber	13.7	29.2
Other wood products	7.5	16.0
Wood pulp	10.4	22.2
Newsprint	3.4	7.3
Paper & paperboard	5.3	11.2
Total	46.9	100.0

Source: Calculated from data contained in Statistics
Canada 52-216

Table 2 presents the distribution of 2004 railway forest products traffic between Provinces or regions of origin and destination.

For traffic other than logs and chips, it is estimated that some 83 % is destined to points outside of Canada, being comprised of 68 % moving by direct rail to United States and Mexico, and 15 % being handled to a marine export facility.

Table 3 presents measures of railway forest products activity for 2006.

Table 2
Distribution of Railway Forest Products
Traffic - 2004

Province or Region	Per cent of originating total tonnes	Per cent of Terminating total tonnes
Atlantic	5.5	2.9
Quebec	19.6	4.8
Ontario	14.7	8.7
Manitoba	2.1	1.3
Saskatchewan	3.3	0.1
Alberta	14.8	1.3
British Columbia	35.0	21.1
US & Mexico	5.1	59.8
Total	100.0	100.0

Source: Calculated from data contained in
Statistics Canada 52-216

Table 3
CN/CP Measures of forest products traffic
Year 2006

		Total
Revenues	\$ millions	2,061
Revenue ton miles	millions	51,329
Revenue/ton mile	cents	4.02

Source: Calculated from railway financial reports

Total railway forest product revenues for 2006 are in the vicinity of \$ 2.1 billions. Total payments to the railways will exceed that amount to the extent that additional payments are made for rail handling by carriers other than CN and CP when CN and CP deliver traffic to other carriers that serve destinations, mainly in the United States, that are not served by CN or CP.

Over the past 8 years, the forest products traffic of CN and CP combined has grown by almost 27 %, for a compound annual growth rate of about 3 %.

Truck

Table 4 presents statistics for handling of forest products by for-hire motor carriers in 2003.

Table 4
Handling of forest products by for-hire
motor carriers - 2003

	Tonnes (millions)	Average haul miles	Average revenue/ ton mile cents
Logs	9.1	133	11.68
Chips	9.8	121	13.72
Lumber	8.1	322	7.60
Other wood products	5.4	268	9.93
Pulp & paper	6.4	332	10.62
Total	38.9	221	10.16
Total excl logs & chips	20.0	311	9.19

Source: Calculated from data contained in Statistics
Canada "Trucking in Canada – 2003"

Trucking is concentrated in short-haul log and chip movements, where handlings substantially exceed rail handlings. For other movements, trucking is confined to short haul operations that are complementary to, rather than competitive with, rail. The high costs of trucking, as indicated by the relatively high revenue per ton mile, preclude use of trucking for longer hauls, except as backhauls with consequently limited availability.

The FPAC member survey

To obtain data for this project, Travacon conducted a survey of FPAC producer members. Respondents provided shipping detail for the first 6 months of 2006, showing for each mill the number of carloads to each destination, the car types, carload weights and rail routings. Data was obtained for a total of 134 mills. Table 5 provides a summary of these mills by product and location.

Table 5
Number of Survey mills

Location	Lumber	Other wood	Pulp & paper	Total
Atlantic	0	1	1	2
Quebec	22	4	16	42
Ontario	6	1	10	17
Manitoba	1	1	1	3
Saskatchewan	0	2	1	3
Alberta	6	6	4	16
British Columbia	34	8	9	51
Total	69	23	42	134

Respondents also identified 19 other locations from which cars were shipped, primarily reload points.¹⁷

Table 6 summarizes number of rail carload shipments as reported in the survey for the first 6 months of 2006.

Of the reporting mills:

- 37 mills used more than 1 rail carrier
- 82 mills used CN only
- 15 mills used CP only

¹⁷ A reload is a point which loads railcars with product that has been handled from the mill to the reload point by truck

Table 6
Rail carloads by Origin Mode

Origin	Total
Mill direct (1)	69,110
Former BCR (2)	27,003
Short lines	25,555
Reloads	8,597
Total	130,265

(1) Excludes cars loaded on short lines and former BCR origins

Of the 37 mills that used more than one rail carrier:

- 3 mills used mill direct rail service from more than one carrier¹⁸
- 16 mills used reloads to access a competitive carrier
- 13 mills are located on former BC Rail lines

In total, 5 of the 134 mills had access to more than 1 carrier at the mill, either directly or through interswitching.

Competition through use of reloads amounts to less than 7 % of total volumes. Carriers at competing reloads are at a competitive disadvantage to carriers serving the mill directly since the reload routing must absorb the relatively high cost of trucking plus the transshipment cost at the reload point.

The mills located on former BC Rail lines are somewhat special in that, by virtue of the provisions of CN's acquisition of BC Rail in 2004, carriers other than CN have access to their traffic in interchange in the Vancouver area, with CN's rate divisions for such moves constrained by limits established under terms of the purchase. These limits are set marginally below the rate levels that BCR had obtained prior to the acquisition, which rates were, essentially, truck competitive. While this arrangement provides an element of competition, it is noted that traffic handled thereby, based on the survey, represents only 13 % of total CN originating carloads on the line, and represents largely traffic destined to western

¹⁸ Either directly or through interswitching

States where all-CN routings are not available or practical. This arrangement cannot be considered effective competition.

Of the 37 “competitive” mills, the largest carrier had a market share less than 70 % at only 10. For each mill, the volume of the largest carrier was designated the “primary share” for that mill. Aggregating over all mills, these primary shares amounted to 92 % of total volume.¹⁹ For the most part, as regards rail traffic, most mills can be thought of as dominated by the largest carrier. Rail competition is not non-existent, but it is far from effective.

Trucking as a competitor to rail is effective only at short hauls, and is primarily effective for logs and chips. For other forest products, based on the rail traffic sample described below, the average rail haul exceeds 1,300 miles, far beyond the competitive range of trucking.

While no individual element of the foregoing is conclusive in itself, taken together it is indicative of substantial market power on the part of rail carriers. Fundamentally, mill location is dominated by considerations of timber supply, with consequent long hauls to markets and without primary consideration of rail competition.

¹⁹ In making this calculation, traffic originating at former BCR mills, such was not counted as CN traffic if it was interchanged to other carriers in the Vancouver area.

Estimated railway contributions from handling of forest products

Aggregate contributions obtained by CN and CP from handling of forest products were estimated on the basis of railway revenue, carloads and ton miles for 2006, as reported in the quarterly financial releases. To estimate the LRVC incurred by the railways in handling this traffic, a random sample of carloads was drawn from the shipment reports provided through the FPAC member survey. For each of these carload movements, the Travacon cost model was used to estimate the LRVC incurred by CN and CP for their portions of the movements.

The sample amounted to 678 carloads (i.e.–origin-destination-commodity combinations). In total these carloads represented a total of 86,194 carloads handled over the 6-month survey period.²⁰

The costing results were input to a simple regression analysis for each railway, in which the independent variable for each observation was the estimated LRVC per carload for the CN or CP portion of the movement. The dependent variable for each observation was the ton miles of transportation provided by CN or CP in incurring that LRVC. In developing the regression estimates, each observation was weighted in accordance with the number of total carloads handled in that movement in the first 6 months of 2006. The regression relationships so developed are as follows:²¹

- CN LRVC for a shipment = \$ 704 + 1.75 cents per ton mile
- CP LRVC for a shipment = \$ 457 + 2.38 cents per ton mile

²⁰ The number of carloads represented is far greater than the number of origin-destination-combinations since each such combination represents many carloads over the 6-month survey period.

²¹ For the statistically minded, for CN, the R squared for these relationships is .86 and the error of estimate at the 95 % confidence level is 1.7 %. For CP, the R squared for these relationships is .98 and the t value for the error of estimate at the 95 % confidence level is 1.5 %.

Estimated CN and CP LRVC for the traffic of the year 2006 period were developed by applying these relationships to the number of carloads and ton miles reported by each railway for the year 2006, and were then aggregated to estimate the aggregate LRVC for the 2 railways. Based on these estimates, Table 7 presents an estimate of the aggregate contributions earned by the railways in the period.

Table 7
Estimated railway contributions
Forest products traffic
Year 2006

		Total
Revenue (1)	\$ millions	2,061
LRVC (2)	\$ millions	1,487
Contribution (3)	\$ millions	574
% contribution (4)		38.6

(1) Source: Railway financial reports

(2) Travacon estimate

(3) Revenue less LRVC

(4) Contribution as % of LRVC

The possible sampling error in the LRVC estimate (95 % confidence level) is +/- 1.7 %. As a consequence, the possible sampling error in the percent contribution is +/- 2.3 percentage points.

Contributions by product segments

Estimation of railway contributions for segments of the forest products traffic was constrained by recognition of confidentiality constraints respecting most if not all individual rates under which traffic is handled. Working within these constraints, the following procedure was used to obtain estimates of product segment contributions, which procedure did not require shipper disclosure of individual rates:

- Using the LRVC estimates provided by Travacon, individual shippers calculated contributions above LRVC generated by their traffic, by commodity category.
- The resulting contribution figures, but no rate information or costing estimates, were forwarded to Aikins, MacAulay & Thorvaldson LLP (FPAC's legal advisors), which in turn aggregated these figures by commodity category.
- Aikins, MacAulay & Thorvaldson LLP provided aggregated contribution figures to Travacon, excluding those commodity categories for which contribution figures for fewer than two shippers had been submitted.

Using that data, Travacon then estimated contribution as a percent of LRVC for individual product segments²², as shown in Table 8.

Table 8
Estimated contributions as percent
of LRVC

Lumber	52.8
Other wood products	37.6
Pulp	41.0
Paper	57.4

²² Note that these estimates refer to the totality of these movements, rather than being just the CN or CP portion, since shippers do not generally know how their rates are divided between CN/CP and connecting carriers.

A discussion of contributions

Railway contribution levels vary widely for different commodities and movements, depending on railway market power. In an article published in *Canadian Shipper*, March 1990, Travacon presented data indicating contribution levels varying between – 10 % and 160 %²³ for Canadian railway movements.²⁴ The *Western Grain Transportation Act (WGTA)* prescribed a contribution level of 20 % of variable cost for statutory grain, which level was determined to be fair relative to other railway traffic and adequate to meet the financial needs of the railways. Although *WGTA* has been repealed, statutory grain continues to be regulated. In a report prepared for Canadian Wheat Board in 2004, Travacon estimated that, for the crop year 2002/2003, CN and CP aggregated earned a contribution of some 27 % from handling of statutory grain.

As previously stated herein, Travacon estimates that, under conditions of effective contribution, railway contributions would not exceed 20 % of LRVC.

²³ 160 % means that the contribution is 160 % of variable cost, or that revenue is 260 % of variable cost

²⁴ This data was developed under contract for Transport Canada in 1987.

Conclusions

While some forest product shippers have access to competition for their mill products traffic, such does not generally rise to the level of effective competition.

For the railways, market power has, in 2006, permitted them to earn a contribution of 38.6 % of LRVC from handling of forest products, almost double the upper end of the competitive level at 20 % of LRVC. The excess of the actual contribution level above the upper end of the competitive level amounts to some \$ 277 millions for 2006, or \$ 345 per carload or 13 % of revenue.

Contributions for individual products, shown in Table 8, are in general higher than the aggregate level. This may indicate that contribution levels are lower for commodities such as logs and chips that are included in the aggregate but not included in Table 8.