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IMPACT OF TRUCK TRANSPORT ON THE NEW BRUNSWICK FOREST INDUSTRY*

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ABSTRACT

The non-regulated sector of the trucking industry serves the forest industry in Eastern Canada primarily on the input side, with independent operators accounting for approximately ninety percent of the service. On the output side, private carriers, supplemented by limited for-hire operators, meet the transport demand of the industry.

Industry spokesman have stated that they are concerned with the fact that dependency for transportation especially on the input side, has shifted heavily to the trucking mode and mainly the independent operators. These concerns include the long-term viability of the small non-regulated carriers as fuel, operating costs and capital costs including high interest rates excalate.

This matter is compounded by the fact that the industry does not have a reliable data base available to enable analysis of the problems associated with the transport component of the industry. Furthermore, the non-regulated carriers have not been researched or studied to any great depth in Canada.

This paper presents the testing and application of a methodology capable of providing an in-depth analysis of the demand for truck transport in the forest industry. The non-regulated trucking industry is analyzed relative to the viability of maintaining its operation in view of rapidly escalating fuel, operating, capital and other costs.

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1. Introduction

The motor carrier industry in Canada has developed over the past two decades to a position where the industry itself is a major factor in the economy. In the trucking sector of the industry because of cost factors, type of goods being shipped, accessibility to product supply and demand points, delivery time frame requirements, etc., many producers have effectively became captive to the trucking mode. This situation is rapidly developing in the forest industry.

While several studies of a limited nature have been completed on the for-hire or regulated sector of the industry, non-regulated trucking has received limited attention from transportation researchers.

Non regulated trucking includes both private carriage and those movements exempt from motor carrier board license - the independent operators.

The study of the impact of truck transport on the New Brunswick forest industry has been an ongoing research project of the transportation group, University of New Brunswick for the past three years. A pilot study was completed in the first year of this project to determine the accuracy, quality and quantity of data

available on that segment of the forest trucking industry outside the for-hire sector. During the following two years, the data identified in the pilot study was collected and analyzed for presentation in a report and this paper.

The objective of this paper is to present an analysis of trucking as it exists outside the for-hire sector. In the New Brunswick forest product industry this is basically an analysis of independent owner operators, private carriers and the effects of the many factors which affect the use of forest product trucking in the province.

There are several reasons why the attention of this study is focussed upon the forest sector of the New Brunswick economy. In the first place, that sector is of critical importance to the New Brunswick economy. For example, in 1976, the pulp and paper and sawmill industries accounted for 23 percent of the employment, 37 percent of the wages and salaries paid, and 36 percent of the value added by the manufacturing sector of that economy.[1] These two industries, together with primary forest activities, accounted for 20 percent of the value added in the New Brunswick goods producing sector (including construction) and 30 percent of the value added when construction is excluded. In 1977 the export dollar value of the forest industry in the province was approximately $508 million.

Secondly, while the forestry policies appear to have received considerable attention, both in the public and private sectors, the transportation system as it affects the forestry sector

appears to have received comparatively little consideration. Simply put, it is the feeling of the industry that it does not possess sufficient information to permit it to make confident judgements concerning the future trend of costs or of transportation service availability. There is a serious information gap, then, which this study attempts to fill.

This problem is further complicated by the recent changes in the tenure system on crown reserve land. Long-term leases were cancelled with a view of meeting the needs of wood users without significant reference to the potential transportation impacts. This again reflects the lact of knowledge about this component of the trucking industry and the small amount of analysis which has been completed on the transportation requirements of the industry.

Finally, industry spokesmen have stated that they are concerned with the fact that dependency for transportation, especially on the input side, has shifted heavily to the trucking mode and mainly the independent operators. These concerns include the longterm viability of the small, non-regulated carriers as fuel, operating costs and capital costs including high interest rates escalate.

2. Data Collection and Processing

The almost unlimited number of origin points of wood movements presented a difficult challenge to overcome in the collection of data for this study. The need for permission to interview truckers at the unloading point (i.e. mill sites) became paramount in importance as

contacting truckers at their residences after-hours was found to be impractical. The place of residence survey was impractical because of the long hours they worked, the limited number of interviews which could be performed in a day, and the amount of time required locating interviewees who predominantly came from rural areas.

Truckers hauling forest products generally work an average of twelve hours per day, five days per week and thus have little time or energy at the end of a day for an indepth interview.

Interviewing at a mill site has two advantages in that truck arrivals at most mill sites occur randomly and queueing problems are frequently experienced thus facilitating interviews thirty to forty minutes in duration. Experience from a pilot study showed that an interview of this duration was more desirable than a more detailed questionnaire. Also the number of truckers who could be interviewed was greatly increased by using the shorter questionnaire.

New Brunswick has ten large pulp and paper mills which use about half of the raw wood harvested in the province.[2] When chips and the residue of saw mill operations are included,the pulp and paper industry accounts for over 75% of the wood fibre produced and used in New Brunswick.

The pulp and paper companies in the province are also the major users of trucking in New Brunswick. Either by hiring truckers in their own woodlands operations, through contractors or wood lot owners, the average pulp mill incurs an enormous input trucking bill. The total provincial pulp mill cost is estimated to be $35 million annually based on the roundwood and chips consumed and the provincial average hauling rate in 1980.

The ten pulp and paper mills located in the province collectively used approximately 1,724,925 cunits of round wood and 782,453 cunits of chip and wood residue in 1980. These figures have virtually remained constant over the period 1979 to 1981. This amount of raw product would have required 156,800 and 71,100 trips respectively by trucks capable of handling a 11 cunit load.

Based on the average number of trips per day and working period of the average independent trucker this movement would require a fleet of 344 roundwood trucks and 150 chip trucks. From the actual interviews and field observations the trucking fleet is far in excess of this figure where raw roundwood movement is concerned.

The futility of estimating the total fleet involved in round wood movement in New Brunswick's pulp and paper industry can be best illustrated by the following facts. The first is that licensing of tractor trailers, straight trucks, vans and pickups, are undifferentiated by provincial statisticians (therefore the total number of straight trucks or tractor trailers in unknown): Secondly, the number of trucks registered to deliver wood at one mill interviewed was well over 500 where a fleet of 20 to 30 trucks could have handled the movements of wood. This shows the easy entry into the trucking market. Thirdly truckers are not bound to one mill for delivery and this is even more the case if the trucker is working for a contractor who has committments to supply wood to several mills, not necessarily pulp and paper producers. It can be seen from these points and the fact that wood movement is performed to a large degree by part time operators or small wood lot owners that any estimate of the

fleet size of trucking operations in pulp wood movement is quite arbitrary.

New Brunswick has 95 sawmills of varying capability which utilize the other half of the annual provincial wood harvest. The mills convert approximately half of this total into sawn lumber with the other half of residuals and chips going to pulp mills to be used in the pulping process.

The sawmill industry collectively is the second largest single employer of trucking in the province after pulp and paper companies. Through contractors, woodlot owners and owner operators hired to haul saw-logs from their own limits operations, the sawmill operators spend a significant amount of money on raw wood transport. In 1980 this was estimated to be $20 million based on the sawmills consumption and average hauling rates paid that year.

The 95 major saw mills in the province utilized 1,438,781 cunits of roundwood in 1980. This figure has remained more or less constant through 1980 and 1981. This amount of wood would require 130,800 movements by trucks capable of handling a 11 cunit load.

Based on the daily average number of hauls and the annual number of working days reported by truckers interviewed the fleet required for these movements would be 287 tractor trailer units. As was previously mentioned in the discussion on pulp and paper mills the total fleet used by this segment of the forest product industry cannot be accurately estimated because of the number of part-time truckers, the use of straight trucks or smaller vehicles and the overlapping of truckers carrying pulp wood on one inbound load and saw logs on the next.

3. Trucking Operations

The general overview of the New Brunswick Forest Products Industry presented above indicated that the actual amount of trucking units used in the non-regulated movement of wood was far more than that required. The large independent trucking population has through market pressures kept the cost of wood transport at a level which does not provide a reasonable rate of return for the average trucker.

The average trucker while making a living does not make a good return on the investment in his equipment. It is however true that certain truckers who have steady work throughout the length of the hauling season and taking advantage of the subsidy credits available to them can make a living. Other individuals make just enough to meet expenses while a good number of individuals truck just to supplement income from other sources.

The free entry into the trucking industry must be questioned. The large population of truckers have tended to keep the transport charges down. The alternative to regulating pulp and sawlog trucking is to increase the subsidy available to the truckers to increase the average income or force the users of the service primarily pulp and paper mills and saw mills to increase their hauling rates. These are the choices to be made if a majority of the present trucking population is to survive or the viability of the transportation sector of the forest product manufacturers is to be maintained. These issues are analyzed in the following sections using a detailing

costing of independent trucking.

4. Trucker Profile

Information collected from the numerous interviews with truckers in the field yeilded a wealth of information describing the New Brunswick forest product trucker.

The average trucker is male and approximately 37 years old. A significant portion of the trucker population is over 50 years old. Experienced replacements for this portion of the population involved in the N. B. trucking industry may not be there when they retire which could have serious consequences for the forest industry.

Driving experience ranged from a few months to 25 years with the average driving time being 17 years. The training of drivers has its shortcomings as many drivers claim little in the way of formal driver safety courses and rely heavily on the "on road" experience they have acquired over the years.

Truckers also indicated, as did drivers, by an 80% margin that it is not difficult to find employment outside of forest product trucking. This is an indication that many truckers and owners derive their total income from other sources in addition to trucking.

Drivers were found to have worked for their present employer an average of 3 years. The average owner operator was found to have been hauling on his own for 9 years. These time figures point to a permanent population in the industry who will haul on the basis of the life style it provides. The changing fortunes

of the hauling business will probaly have little effect on the enthusiasm these people have for trucking.

5. Trucking Costs

The costing formulas used in the industry are very rudimentary and consist of two distinct components. One is the fixed cost which is the allocation of costs such as capital, licensing and insurance which do not vary according to mileage or tonnage carried. The other component is the variable cost which includes costs which change depending upon the tonnage carried and the mileage. These costs would include maintenance, parts, fuel and driver renumeration.

The problem is comparing the costs of various trucking operations is that depending on how the allocation of fixed and variable costs are performed the cost curves in any analysis scheme can be misleading. For this analysis a cost model using a single driver-truck operation, the fleet costing formulas used by two private mills, and trucker perceived costs obtained from interviews were compared. It was felt that these costing methods would represent the trucking operations in the N. B. forest product industry.

The major factor affecting costs in the trucking of raw input to the various forest product mills is the amount of work available to the individual operator or trucking operation. From interviews with the mill operators and trucking operators an average amount of wood hauled during the year and average mileage was obtained. These were used in the model and perceived cost calculations. The

private fleet costing formulas utilized the amount of work the mills indicated the individual truck unit would be allocated.

While averages were used on the amount of wood hauled and the mileage limit accumulated over a one year period, the operating units chosen were actual tractor-trailer or straight truck vehicles available to the industry. An average straight truck or tractor trailer was not used because it was felt that an actual operating unit representative of the trucking operation in the forest industry was more appropriate than some hypothetical 'average' truck which does not exist in the performance characteristic combination chosen.

Table 1 presents the provincial averages of hauling costs for private fleet operations and independent trucking operations. They are presented in a mileage variable format and an hourly format. Since no major private fleet could be identified which utilizes straight trucks, this is a comparison of tractor trailer units only.

TABLE 1

PROVINCIAL AVERAGE TRUCKING COSTS

	Mileage		Hourly
Private Fleet 1980	9¢ cwt	+ 0.18 cwt/mile	$35.00
Private Fleet 1981	10¢ cwt	+ 0.20¢ cwt/mile	$40.00
Independent Perceived 1980	8¢ cwt	+ 0.195¢ cwt/mile	$30.00
Independent Perceived 1981	9¢ cwt	+ 0.21¢ cwt/mile	$35.00

6. Hauling Rates and Subsidy Analysis

The hauling rate is the amount paid by the owner or cutter of the wood to the trucker to transport a given load of wood from roadside to the mill site.

Mill rates in the province are paid upon a $/tonne-km, $/cord-mile, stacked meter, cubic meter or $/cunit-mile basis. The private woodlot producers tend to pay a flat rate per cord with little regard for minor variations in mileage. This rate is based on a negotiated delivered price which the various New Brunswick wood producer associations arrive at in bargaining with the mills. This negotiated price also includes a quota in which the mill agrees to purchase from a private woodlot owners/producers a given amount of wood.

The independent trucker has available to him a subsidy which, during the study period, in effect increases the existing wood hauling rates by 15%. The subsidy is part of the ARSSPA (Atlantic Region Special Selective and Provincial Assistance) program sponsored by the Federal Government. The intra regional grant or subsidy structure gives 15% on the basis of trucking income.

For the purpose of analysis the 15% subsidy is added onto the rates to compare with the costs determined in the previous section entitled trucking costs. This way the effect of the subsidy can be determined and an evaluation of the subsidies relationship with the trucking industry in the New Brunswick Forest Product industry can be performed.

The effects of subsidies is summarized in Table 2. The hauling distances indicate the maximum range an economical haul can be performed: The 15.6 mi (25 km) means that in 1980 a straight truck could perform an economical haul as long as the haul was under 15.6 miles or 25 km. The economical hauling distance in the Province of New Brunswick is a function of hauling costs and hauling rates. The significant increase in the economical hauling distances between 1980 and 1981 is due in part to the differences between northern and southern hauling conditions and a large increase in the hauling rates prevalent in 1981.

This analysis shows that the 15% subsidy has a significant effect on the hauling distances especially where straight trucks are concerned. The subsidy increases by a magnitude far in excess of 15% the economical hauling distance. On average the increase in mileage ranged from 24% to 38% or 4.5 mi to 18 mi (7.2 km to 28.8 km) additional range. Considering the haul situations analyzed, the subsidy provided an additional 20% to the number of economical hauling situations in 1980 and 18% more in 1981.

7. Long Term Viability of Non Regulated Trucking

The study identified four critical factors which affect the overall costs of trucking and are of current topical concern. These factors were interest rates, fuel costs, working days and hauling weight.

Individually, the cost factors have limited effect on the total trucking costs. Independently interest rates and fuel costs

TABLE 2

ECONOMICAL HAULING DISTANCES

Year Hauling Unit	Economical Hauling Distance Without Subsidy	Economical Hauling Distance With Subsidy	% Increase In Mileage Due to Subsidy	Hauling Range Increase
1980 Straight Truck	15.6 mi	20.1 mi	29%	4.5 mi
1980 Tractor Trailer	44.8 mi	56.6 mi	26%	11.8 mi
1981 Straight Truck	24.6 mi	34.2 mi	38%	9.6 mi
1981 Tractor Trailer	75.3 mi	93.3 mi	24%	18.0 mi

would have to increase substantially to cause overall costs to supersede current hauling rates. Similarily reductions in hauling weights and working days would have to be very significant to increase costs over rates paid.

It must be noted in making these statements that changes in these factors do affect substantially the profitability of trucking operations. Significant changes in interest rates, fuel prices, hauling weights and working days are required to put a trucker at a break even position in terms of operating costs versus operating income. However minor changes in the cost factors will reduce the profit of an operation and in the case of independent truckers the income they must live on.

The analysis of the various cost effects was accomplished by keeping constant all costs except the individual factor being considered. The real world does not allow for this situation so a combination of changes in the factors was also analyzed. As an example a 25% interest rate and 44¢ per litre fuel price with the reported number of hauling days and hauling weights would increase the cost of trucking approximately 27% over 1981 reported costs. This is in comparison to the 1981 second quarter interest rate of 21% and fuel price of 31¢ per litre.

An increase in interest rates and fuel prices combined with a reduction in hauling days had a multiplier effect in that cost increases were a compounding function of combined factor changes rather than an additive function.

The analysis of long term viability of non regulated trucking indicated a critical situation. The independent trucker, on average, in New Brunswick does not make a return on investment which will enable him to continue operating when he must purchase a new unit. This is borne out in the trucking cost analysis which showed a significant operating cost difference between newer and older truck models with the older models being the least costly. The analysis also pointed out that if an optimum or ideal number of independent truckers carried round wood and sawlogs in the province, current rates would provide a lucrative income for owner-operators and a return on investment which would guarantee continued viability.

Private fleets were found to operate at substantially higher costs than the independent operators because of unionized labour and overhead costs.

Rates paid for hauling of forest products have responded to increases in operating costs experienced by truckers, but the analysis has indicated that the increase in rates has not been equal to the actual increase in operating costs. The analysis indicates that the present trend of continued increases in operating costs which are currently greater than increases in the hauling rates paid will eventually make even the optimal number of truck operations non-viable. When this occurs is uncertain because of the many variables and the prophecy required to determine future trends in anyone of them.

8 Conclusions

The impact of truck transport on the New Brunswick Forest

Product industry is such that both industries need each other to function at the level presently enjoyed. The trucking industry would be reduced significantly by a discontinuance of its use by the forest industry while a prolonged disruption of trucking service would bring the forest industry to a standstill.

The dependence of forest product companies on independent trucking as opposed to private fleets is due to two factors. First, private fleets are more expensive to operate on a per unit and per load basis and, secondly, private fleets cannot receive the 15% intra-regional subsidy available to independent truckers.

The average income of the independent raw wood truckers after expenses is low. The net income averaged $8,995 for straight truck operators and $15,444 for tractor trailer operators per unit when the subsidy is considered. This income is what the trucker takes home and is effectively his salary and return on investment.

The effects of the selected cost factors of hauling weight, hauling days, interest rates and fuel prices individually are not critical but are significant in combinations. The individual factors do not affect the overall costs on a percentage basis but significantly affect the take home income. A fuel price increase of 1¢ per litre can reduce take home income by $598. This reduction in light of the overall picture is very critical.

The long term viability of the current trucking industry which supports the forest product operation within the province of New Brunswick is uncertain. The current cost increases experienced

by the trucking population will result in a reduction of the population of raw wood truckers. Trucking could well move from the hands of independent owner operators hauling from crown or company land to contractors who will haul the harvested wood from private wood lots in their own fleets. This trend was indicated by the information provided in this study, the current provincial woodlands policy, the costs of the various methods of trucking and the transport rates currently being paid.

Footnotes:

1 Statistics Canada Publications

2 Department of Natural Resources, Timber Utilization Survey for the Year 1979, Fredericton, N. B., July 1980.