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Relationship Between Costs and Rates in the Less-Than-Truckload Market*

*by Bill Raney***

The purpose of this paper is to analyse the costs and rates in the Ontario less-than-truckload (LTL) segment of the for-hire trucking industry, in order to determine whether LTL rates are based on cost factors, market forces or other factors. To complete this analysis, LTL rates are compared to carrier costs for various weights, for various distances, and for various origins and destinations. The paper is organized into four main sections: 1) LTL Carrier Costing; 2) Implications of Costing Model; 3) LTL Rate Structure; 4) LTL Cost/Rate Comparison.

LTL CARRIER COSTING

The development of accurate LTL Carrier costing is dependent upon an understanding of the basic activities involved, as shown in Figure 1 below.

In order to analyse the costs associated with the functions shown in Figure 1, an LTL costing model was developed using 1988 costs which groups the costs into those areas that carriers typically use to record their costs. The details of the model are best illustrated by referring to Table I below, which shows the costs calculated by the model for moving 23 kgs (50 lbs) and 967 kgs (2000 lbs) shipments from Toronto to Barrie and from Toronto to Thunder Bay.

An explanation of the labour costs is found in Appendix 1, and equipment costs in Appendix 2.

Pick-up and Delivery Costs

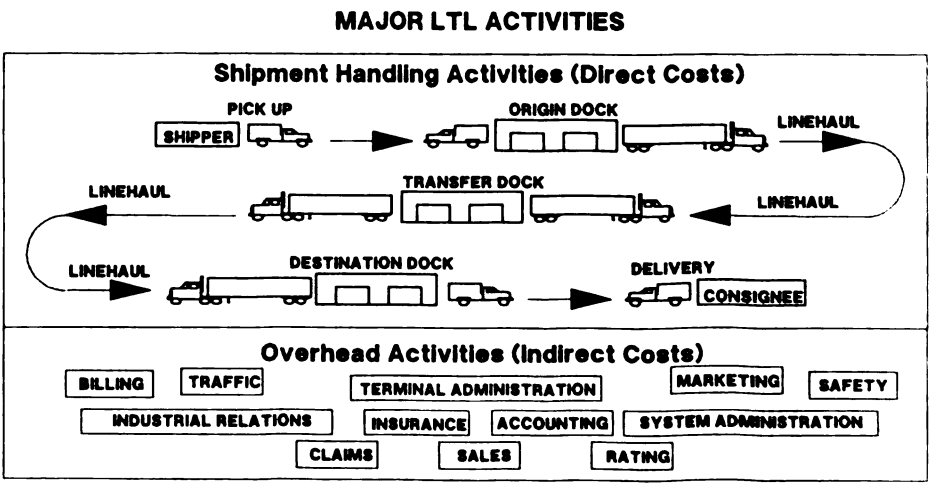
The model uses the following formula to calculate pick-up costs and delivery costs.

(Labour Cost Per Hour + Equipment cost per hour) x (shipment handling times + shipment fixed time)

For example, pick-up costs as shown in Table I for a 23 kg shipment are equal to ($19.37 + $9.85)x(.040 + .211), or $7.33.

Pick-up handling time is derived from an exponential equation that calculates the time it takes to move a shipment from the shippers loading facility onto the pick-up vehicle. The equation is based on shipment weight and the number of shipment pieces.[1] Delivery handling time is calculated using a slightly different exponential equation which reflects the additional sorting time required for the delivery operation. Pick-up and delivery fixed time includes transit time between

FIGURE 1



customers, customer delay time and non-productive time. The model calculates the number of possible stops and allocates fixed time equally to each stop. In this analysis shipment fixed time was then calculated by assuming 1.5 shipments per stop for pick-up and one shipment per stop for deliveries.[2]

Dock Costs

City trucks pick up LTL shipments that could be destined for several different cities. The dock (platform) operation involves consolidating shipments for the same city into a single line haul trailer. For major corridors the line haul trailer will usually take the shipment directly to the carriers dock in the city were the shipment is to be delivered. Here it will be put into the appropriate delivery truck. For minor corridors, shipments may be moved to an intermediate point where the shipment will be consolidated with shipments from other locations. In this analysis, all shipments are assumed to move directly from the origin city to the destination city. The model uses the same formula to calculate both origin and destination dock costs, namely:

(Labour Cost per Hour + Other Cost per Hour)x(Shipment Handling Time)

For example, origin dock costs shown in Table 1 for a 23 kg shipment are equal to ($18.88 + $8.42)x(.107), or $2.92. Other cost/hour represent the terminal costs associated specifically with the dock operation. It is derived from LTL carrier data collected by Statistics Canada in 1986 as part of their Motor Carrier Freight Survey, and has been adjusted to reflect 1988 costs.

The exponential equations used to determine pick-up and delivery handling time form the basis for estimating dock handling time per shipment. A factor for non-productive time is incorporated into the calculations.

Line Haul Costs

The first step in determining line haul costs is to calculate the trip costs in travelling from the origin to destination city. Trip costs are calculated as follows.

((KMS Travelled)x(Equipment + Labour Costs per Hour)) + ((Terminal Time)x(Highway Cost per Hour))

For example, trip costs from Toronto to Barrie are (90 kms x ($.616 + $.264) + (1 x $18.84) =

TABLE 1

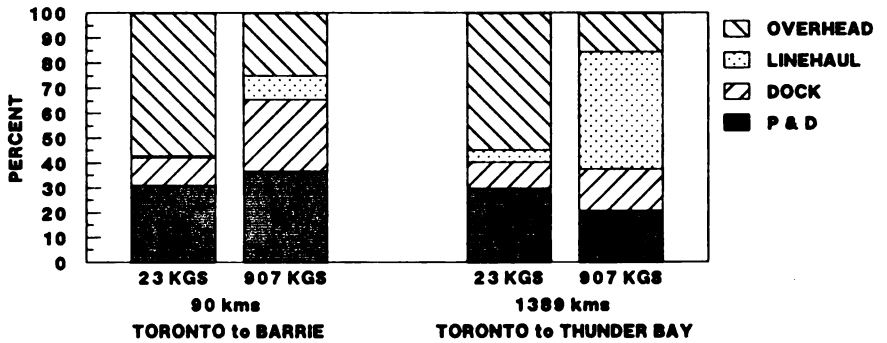
LTL Costing Model Elements

	TORONTO TO	BARRIE		THUNDER BAY	
		23 KGS	907 KGS	23 KGS	907 KGS
1.a	PICK UP & DELIVERY COSTS				
	Labour Cost / Hour	$19.37	$19.37	$19.37	$19.37
	Equipment Cost / Hour	$9.85	$9.85	$9.85	$9.85
	Pick-up Handling Time *	0.040	0.246	0.040	0.246
	Pick-up Fixed Time *	0.211	0.489	0.211	0.489
	Delivery Handling Time *	0.051	0.333	0.051	0.333
	Delivery Fixed Time *	0.258	0.555	0.258	0.555
	PICK-UP COSTS +	$7.33	$21.48	$7.33	$21.48
	DELIVERY COSTS +	$9.02	$25.95	$9.02	$25.95
1.b	DOCK COSTS				
	Labour Cost Per Hour	$18.88	$18.88	$18.88	$18.88
	Other Cost Per Hour	$8.42	$8.42	$8.42	$8.42
	Handling Time *	0.107	0.682	0.107	0.682
	ORIGIN DOCK COST +	$2.92	$18.62	$2.92	$18.62
	DESTINATION DOCK COST +	$2.92	$18.62	$2.92	$18.62
	TRANSFER DOCK COST +	$0	$0	$0	$0
1.c	LINE HAUL COSTS				
	Kilometres	90	90	1,389	1,389
	Equipment Cost per KM	$0.616	$0.616	$0.616	$0.616
	Labour Cost per KM	$0.264	$0.264	$0.264	$0.264
	Hours at Terminal(s)	1	1	1	1
	Labour Cost Per Hour	$18.84	$18.84	$18.84	$18.84
	Load Factor (kgs)	9,941	9,941	12,472	12,472
	Empty Factor (%)	37.4%	37.4%	16.6%	16.6%
	TOTAL TRIP COSTS	$98.04	$98.04	$1,241.16	$1,241.16
	LINE HAUL COST PER SHIPMENT+	$0.31	$12.29	$2.67	$105.24
	TOTAL DIRECT COSTS	$22.50	$96.96	$24.86	$189.91
1.d	OVERHEAD COSTS	$29.85	$31.87	$29.91	$34.40
	TOTAL COSTS	$52.35	$128.83	$54.77	$224.31

*Hours
+Direct Costs

FIGURE 2

LTL COST ELEMENTS AS A PERCENT OF TOTAL COSTS



$98.04. Trip costs are assigned to a particular shipment on the basis of shipment weight and shipment density. In this analysis no adjustment was made for shipment density as shipments were assumed to weigh a standard 10 lbs per cubic foot. Shipment loaded line haul costs were calculated by determining what percentage the shipment weight was of the total weight of the load. Then an additional cost was assigned to the shipment loaded line haul cost to reflect the shipment percentage share of empty kilometres driven.

From a 1987 Ministry of Transportation Ontario Truck Survey it was determined that the longer the trip the higher the load factor and the lower the percentage of empty return movements. Regression equations were developed from the survey data to estimate load and percentage empty factors for various corridors.

Loaded line haul shipment costs then, from Toronto to Barrie for a 23 Kg shipment are (23/9941) x (trip cost of $98.04) = $.227. Loaded and empty line haul costs are ($.227) + ($.227 x 37.4%) or $.31 as shown in Table 1.

Overhead Costs

Perhaps the most difficult aspect of developing an LTL costing model lies in the assignment of overhead costs. Overhead costs are assigned arbitrarily, and there are several different ways in which this can be done.

In this paper the average overhead costs as reported by 32 LTL carriers in the Statistics Canada 1986 MCF Survey form the basis for the overhead costs calculations. A wider base of carriers would have been used but unfortunately about 50% of the carriers failed to report detailed shipment information.

Table 2 shows the breakdown of overhead costs and the basis of cost allocation.

This method of cost allocation was used because it at least partially allocates overhead costs on the basis of work performed for overhead functions. From Table 1 it can be seen that by using this procedure, all shipments are assigned approximately the same overhead costs in terms of absolute dollars. It should be noted that some carriers may choose to allocate overhead costs as a percentage of operating costs. Using the same 32 carriers that were used to develop the figures in Table 2, overhead costs as a percent of operating costs amount to 30.8%. This method of allocating overheads results in higher weighted shipments that move longer distances being forced to absorb unrealistically high overhead costs. For example, the overhead costs for a 907 kg shipment from Toronto to Thunder Bay would increase from the $34.40 shown in Table 1 to $58.56, while overhead costs for a 2268 kg shipment would be $124.91.

IMPLICATIONS OF COSTING MODEL

It is worth pointing out that depending upon the length of haul and the shipment weight being handled, the importance of the various LTL functions changes considerably. Figure 2 illustrates

TABLE 2

Overhead Allocation

Overhead Costs	Method of Allocation	1986 Survey Results	1988 Adjusted
Insurance	% of other costs	2.18%	2.18%
Claims	% of other costs	0.54%	0.54%
Traffic & Sales	Cost/Shipment	$4.68	$5.10
Terminal Administration	Cost/Shipment	$7.34	$8.01
System Administration	Cost/Shipment	$14.09	$15.35

that line haul costs become much more important with distance and the weight of the shipment. Overhead costs are more significant for lower weighted shipments while P & D and dock costs are relatively more important for a higher weighted shipment travelling a shorter distance.

In this paper, only average carrier unit costs and average productivity factors are presented, since the objective of the paper is to provide an evaluation of the general relationship between carrier costs and carrier revenues. The impact on overall carrier costs of varying the assumptions about unit costs, productivity factors and shipment characteristics would be better discussed in a separate analysis.

LTL RATE STRUCTURE

This section of the paper will specify the LTL rates used in the analysis and briefly outline how these rates relate to the overall LTL rate structure. Although not all for-hire carriers use tariff bureaus to publish their rates, the majority of LTL shipments are handled by carriers that use tariff bureaus. This paper will only deal with rates published by the Canadian Transport Tariff Bureau Association (CTTB) which publishes rates for shipments within Ontario, between Ontario and the Western Provinces and between Ontario and Quebec.

When one considers the many different possible operating characteristics for handling LTL freight, it is not surprising that the LTL rate structure is quite complex. There is a significant range in prices charged, even for shipments weighing the same amount, moving between the same origin and destination. For example, an LTL customer could be charged, depending upon the carrier, 6 different levels of rates for the same shipment. There are three different levels of class rates and 3 types of commodity rates. Commodity rates include a Freight of All Kinds (FAK) rate for general merchandise, FAK named account rates and rates for specific commodities.

Class rates, which form the backbone of the Tariff Bureau rating structure, are based on the premise that goods with similar characteristics requiring similar handling procedures should be grouped together. The National Motor Freight Classification Tariff groups similar goods into the same class. Higher classed goods are charged higher rates. "Class 85" which generally falls in the mid range of classes typifies the majority of LTL shipments. In this analysis, the lowest "class 85" rate in effect as of November 1988, as well as the FAK rates specified in Appendix 2 were used for comparative purposes. Except for shipments under 500 lbs, for which a flat rate minimum or per-shipment rate is charged, LTL class rates are expressed in terms of $/100 lbs. Different rates are applied to 500 lbs, 1,000 lbs, 2,000 lbs, 5,000 lbs, and 10,000 lbs shipments. Since carriers often offer lower truck load rates than the 10,000 lbs LTL rate, 10,000 lbs LTL class rates are excluded from this analysis. It must be pointed out that the majority of freight is moved by FAK or commodity rates, which are significantly lower than class rates. Figure III below shows the differences that exist between class rates and FAK rates.

From a rate perspective, carrier profitability will be influenced by the extent to which a carrier is successful in maximizing its revenues by charging the higher class rates. As a consequence, the results of the analysis can not be used to evaluate overall carrier profitability. This paper focuses strictly on the "consistency" of the CTTB class rate and CTTB FAK rate structure.

LTL COST/RATE COMPARISON

This part of the paper will compare carrier costs to carrier rates. The first step is to calculate carrier revenues by applying the appropriate rate to the shipment weight being analysed.[1] The next step is to calculate "% contributions and % margins." "% Contributions" are calculated by using the following formula:

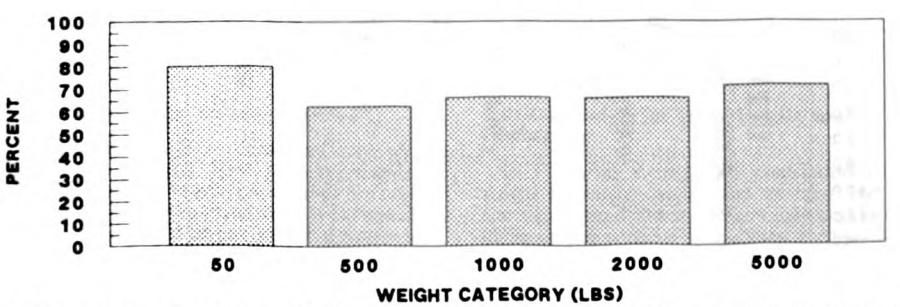
$$\%\,\text{Contribution} = (\text{Revenue} - \text{Direct Operating Cost})/\text{Revenue}^{4}$$

An evaluation of "% contributions" allows a comparison of carrier costs to carrier revenues without having to be concerned about the effect that any arbitrary overhead allocation could have on the results.

"% Margins" are calculated by using the formula shown below.

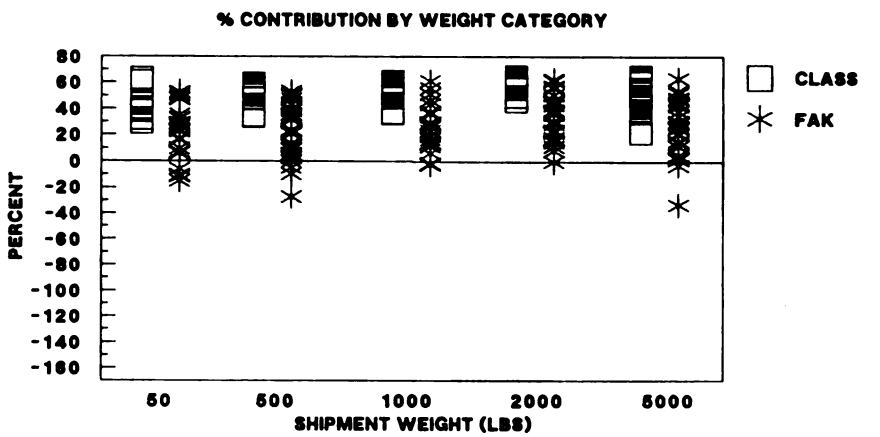
FIGURE 3

FAK RATES AS A PERCENTAGE OF CLASS RATES *



* Based on average Class and FAK rates for all origin/destination pairs, as shown in Appendix 2

FIGURE 4



% Margin = (Revenue—Direct Operating Costs—Overhead Costs)/ Revenue

Despite the problems associated with including an arbitrary overhead cost, a comparison of "% margins" is also useful because it allows an analysis of total carrier costs versus carrier revenues.

Percent contributions and percent margins are calculated for 50 lb, 500 lb, 1000 lb, 2000 lb and 5000 lb shipments for each origin and destination pair in Appendix 3. The results will be compared and analysed for various weight categories, by distance travelled, and for major origins and destinations.

Rate Comparison by Weight

In Figure 4 "% Contributions" are plotted against weight category and rate type. Each point in the scattergram represents the "% contribution" for a single shipment. In other words, 36 separate "% contributions" for class rates and 27 separate "% contributions" for FAK rates are plotted for each weight category analysed

Figure 4 shows that "% contributions" are not only higher for class rates, as would be expected, but that class rates also exhibit a much tighter range than FAK rates. It is also evident from this diagram that there is a wide range in "% contributions." Thus although carrier costs play a role in determining carrier LTL rates there can be little doubt that there must be other factors that have a significant bearing on determining carrier rates as well.

When overheads are added to direct costs and "% margins" are calculated as shown in Figure 5, the variance between carrier cost and carrier rates becomes even more pronounced. With the additional overhead costs, many shipments now exhibit a negative margin, or loss. This does not necessarily mean that a carrier is losing money,

FIGURE 5

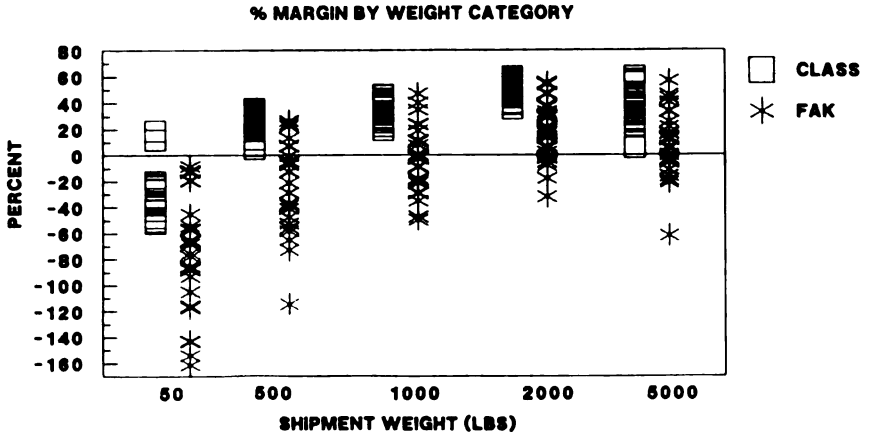


FIGURE 6

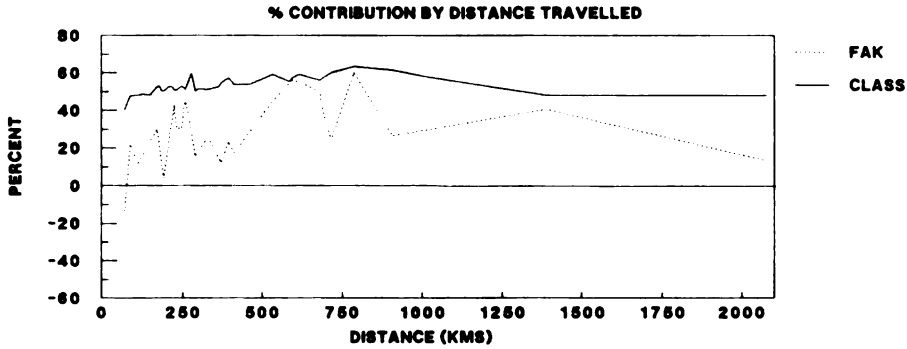
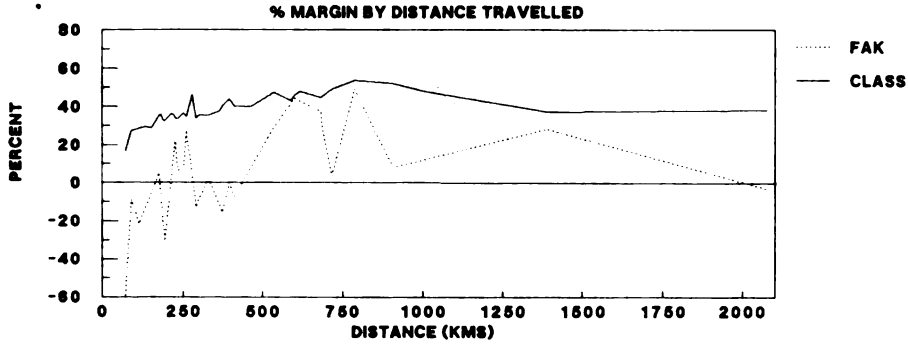


FIGURE 7



because overall profitability will depend upon the mix of shipments being handled.

The same basic patterns apparent in Figure 4 for "% contributions" is also seen in Figure 5 for "% margins." For example, it can be seen in Figure 5 that class rates still exhibit a much tighter range in "% margins" than do FAK rates.

As with "% contributions," "% margins" are lowest for shipments in low weight categories. This is not surprising when one considers that there is considerable competition from couriers for this market segment. It should be noted that if "% margins" are calculated by applying a percent for overheads to operating costs, the variance between weight categories is not nearly as exaggerated.

Rate Comparison by Distance Travelled

In Figure 6, "% contributions" are plotted against trip distance. Each point represents the weighted average of revenues and direct costs of the five different shipment weights examined for each origin/destination pair shown in Appendix 3. It should be noted that the results are influenced to some extent by the higher weighted shipments because of the higher revenues and higher direct costs associated with these shipments.

From Figure 6 it can be seen that class rates exhibit a much tighter pattern of "% contributions" than FAK rates. Class rates are lower for shorter distances, gradually increasing to 800 kilometres and then declining slightly.

The same basic pattern is seen in Figure 7 for "% margins" by distance travelled except that "% margins" are even lower than "% contributions" for shipments travelling shorter distances. This is particularly evident when examining "% margins" for FAK rates.

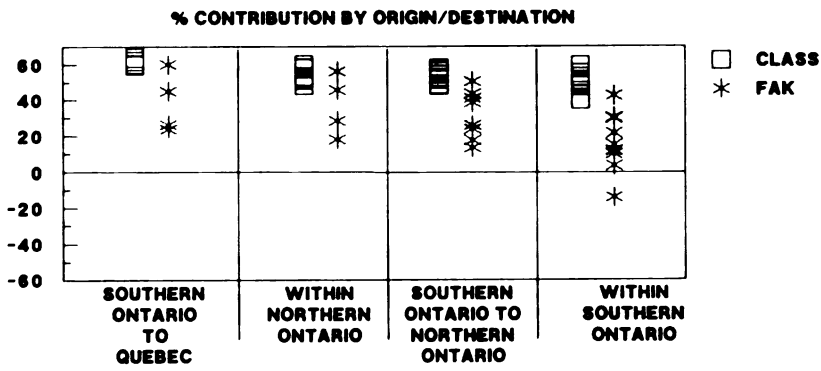
There is considerable pressure from shippers to keep rates relatively low for shorter distances. LTL shippers can afford to transport shipments for shorter distances themselves, if they perceive a rate to be too high.[6]

Rate Comparison for Major Origins and Destinations

In Figure 8, average "% contributions" are sorted by major origins and destinations. The specific origin-destination pairs included in each major area or corridor are outlined in Appendix 3. "% Contributions" for each point in the scattergram are calculated using the same method as for Figure 6.

Although the fluctuations are greater, the pat-

FIGURE 8



tern is similar for "% margins" in Figure 9 below.

From Figures 8 and 9 it can be seen that the "% margins" and "% contributions" are fairly similar for class rates for major origins and destinations except between Southern Ontario and Quebec where they are generally higher.

When "% margins" are examined for FAK rates, Southern Ontario to Quebec "% margins" continue to be the highest. This might be explained by the fact that, up until recently carrier entry was very strictly controlled by both Ontario and Quebec regulatory authorities. It will be interesting to see if the Motor Vehicle Transportation Act (1987) and complementary Ontario and Quebec legislation will result in lower rates for this segment of the market.

"% Margins" for FAK rates are generally lower within Southern Ontario. This is probably due to the shorter distances and the higher level of competition. "% Margins" for FAK rates within Northern Ontario and between Northern Ontario and Southern Ontario fall in the middle of the range. Possibly this can be explained by the fact that there is less LTL freight to be moved within and from Northern Ontario and as a consequence there is less competition to force the rates down.

Factors Influencing Carrier Rates

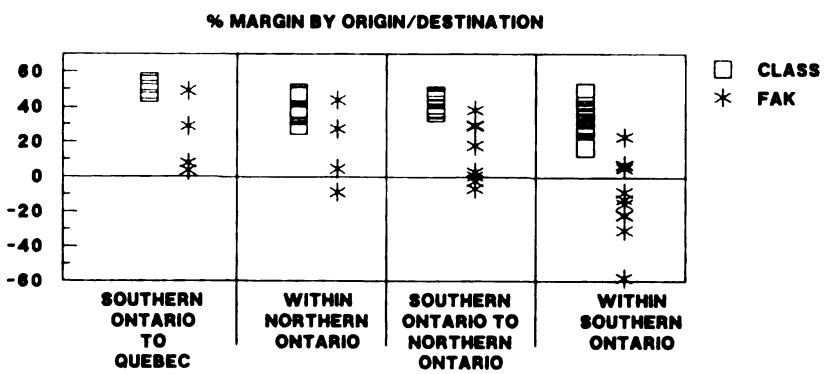
It has already been suggested that competition, carrier costs, and regulatory constraints all have an influence on the level of LTL rates. There are several other possible factors which are also worth mentioning.

First of all, it must be recognized that it is expensive for carriers to set up costing systems to record costs for individual LTL shipments. As long as overall profits are satisfactory there will be some carriers that will establish rates on general cost levels and not be concerned that "% margins" are higher for some shipments than for others.

Secondly, once tariffs are established it is often very difficult to alter the basic structure even if an apparent problem exists. For example, an elaborate costing system is not required to recognize that costs from Toronto to Sault Ste. Marie, a distance of 681 kilometres should be less than those from Toronto to Thunder Bay a distance of 1389 kilometres. FAK rates, however, are 30.5% higher for a 500 lb shipment and 21.4% higher for a 1000 lb shipment going from Toronto to Sault Ste. Marie compared to the same shipments going from Toronto to Thunder Bay.

Finally, the costing model used in this analysis

FIGURE 9



uses average unit costs and average carrier productivity factors. Circumstances for individual carriers will be different and it is possible that "% margins" that appear to be low or high as calculated by the costing model presented in this paper are quite appropriate when based on a carrier's specific operation.

SUMMARY AND OBSERVATIONS

In this paper it has been demonstrated that the many different factors of an LTL operation require the development of a fairly complex costing system. In order to be able to present a meaningful analysis, assumptions must be made that restrict the number of alternatives examined. Despite this limitation the assumptions in this analysis have been applied consistently and the results should reflect the basic costs to revenues patterns.

It has been shown in this paper that carrier rates are not entirely dependent upon carrier costs. Other factors such as competition, regulatory constraints, and traditional rate structures also influence LTL rates.

The results of this paper suggest several opportunities for LTL carriers. First of all, even if an LTL carrier does not base its rates entirely on costs, a sound understanding of costs will become increasingly important as competition increases with regulatory reform. As shown in this paper it could be very dangerous for a carrier to reduce all rates indiscriminately. On the other hand there are certain market segments that could be pursued actively in order to maximize profits.

There are also opportunities for carriers to work with shippers to improve the efficiency of an operation. If carriers focus on those areas that are critical cost contributors to an operation it might be possible to generate savings that could be shared with the customer. As has been pointed out in this paper, factors will vary in importance from one customer to the next.

There is a cost for carriers to maintain the wide variety of possible rates such as class, FAK, and specific commodity rates. There seems to be an opportunity to use a less complicated rate structure. For example, although class rates are not perfect, the class rate structure could be better utilized. Class rates better reflect carriers cost than do FAK rates as there is not such a wide range in "% margins" for class rates.

If discounts were applied to the class rate structure and those discounted rates displaced the commodity or FAK rates, it would not only be easier for carriers to update their rates but it would also be easier for carriers to keep track of both marginal and profitable accounts and to offer price incentives within attractive market segments or niches.

Finally, from a government perspective it would be useful to conduct a similar analysis in a few years to see the extent to which regulatory reform has influenced the relationship between carrier costs and carrier LTL rates, as demonstrated in this paper.

ACKNOWLEDGEMENTS

1. Carrier costs were based on a modified version of Trimac's "Operating Costs of Trucks in Canada—1986." Trimac Consulting provided the necessary information to make the modifications.

2. Shipment handling time formulas were based on formulas developed in a "1977-1978 Motor Carrier Platform Study" produced by the United States Interstate Commerce Commission.

3. Peter Skorochod and Don Borrows, Ministry of Transportation, Ontario for their assistance in the rate analysis.

4. Karen Siwak, Ministry of Transportation, Ontario for her assistance in preparing the charts and tables.

ENDNOTES

* The views expressed are those of the author and not necessarily those of the Ministry.
** Goods Distribution Systems Office, Ministry of Transportation, Ontario, Canada

1. Shipments in the 50 lb weight category were assumed to consist of 1 piece, while other weight categories were assumed to be made up of pieces weighing approximately 75 lbs each.
2. 1.5 shipments per stop were used to reflect the fact that more than one shipment is often picked up from an LTL customer. LTL shipments are not usually combined for delivery.
3. For example, revenue generated fro an FAK rate of $7.54 per hundred lbs for a 2000 lbs shipment between Toronto and Barrie would be (2000 x $7.54)/100, or $150.80.
4. "%Contribution" for FAK rates for a 2000 lb shipment from Toronto to Barrie using costs from Table 1 would be ($150.80–$96.96)/$150.80, equalling 35.7%
5. "% Margin" for FAK rates for a 2000 lb shipment from Toronto to Barrie using costs fro Table 1 would be ($150.80–$96.96-31.87)/$1580.80, equalling 14.6%.
6. In a 1987 Ontario Ministry of Transportation truck survey, it was found that private carriers accounted for more movements for shorter distances than the for-hire carrier while the reverse was true for longer distances.

APPENDIX 1

Labour Costs

LABOUR COSTS	P&D	DOCK	HIGHWAY HOURLY	HIGHWAY DISTANCE
Base Rate	$14.13	$13.83	$14.13	$0.198
Overtime % of Base	4.29%	1.98%	3.27%	3.27%
Fringe % of Base	22.61%	24.09%	19.75%	19.75%
Vacation % of Base	6.38%	6.38%	6.38%	6.38%
Stat Holiday % of Base	3.89%	4.09%	3.96%	3.96%
TOTAL COST	$19.37	$18.88	$18.84	$0.264

NOTES

Labour costs are based on average union wages for a mid-sized to large firm.
Overtime: P&D and Dock based on hours in excess of eight hours; highway overtime based on hours in excess of ten hours.

Fringe: includes workers' compensations, unemployment insurance, government and union pension, government and union health; highway fringe percentage is lower because the costs are spread over a larger base.

Vacation: Fifteen days of regular hours and average overtime hours.

Statutory Holidays: Ten days of regular hours.

APPENDIX 2

Equipment Costs

	P&D STRAIGHT TRUCK[1]	LINE HAUL TRACTOR[2]	LINE HAUL TRAILER[3]
CHARACTERISTICS			
Annual Kms	30,813	150,313	150,313
Annual Hours	1861	----	----
Purchase Price	$43,700	$88,350	$25,400
Salvage Value[4]	$8,740	$17,670	$3,048
Loan Period	4	4	4
Equipment Life	5	5	8
Equipment Ratio	1	1	3.45[5]
Fuel Cost/Litre	$0.45	$0.45	----
Fuel Km/Litre	3.54	2.58	----
ANNUAL FIXED COSTS			
Depreciation	$6,992	$14,136	$9,640
Interest[6]	$1,846	$3,732	$2,405
Other	$1,357	$4,135	$7,590
ANNUAL VARIABLE COSTS			
Fuel	$3,917	$26,174	----
Maintenance	$3,297	$14,205	$4,134
Tires	$924	$3,608	$2,856
Equipment Cost / KM	$0.595	$0.439	$0.177
Equipment Cost / Hour	$9.851	----	----

NOTES

1. Cost for straight truck based on a new truck with a van box mounted on a 7.3 metre chassis, powered by a diesel engine and equipped with a 5 speed transmission and power steering.
2. Cost for a new tractor powered with the equivalent of a 315 diesel Cummins engine and equipped with a 9 speed transmission and 40,000 lb. rear axle.
3. The trailer costs are based on a new 48' 102" tandem axle van trailer.
4. It was assumed that the salvage value would be used as a down payment.
5. Trailer costs are 3.45 times higher than the cost of an individual trailer, reflecting the tractor/trailer ratio used.
6. Annual interest costs are spread over the life of the equipment.

APPENDIX 3

CTTB Rates Used for Analysis

CORRIDOR			TARIFF REFERENCE		ORIGIN/DESTINATION
ORIGIN	DESTINATION	KMS	CLASS 85 *	FAK **	CODE
TORONTO	MONTREAL	533	CTTB10	CTTB3020	1
LONDON	MONTREAL	715	CTTB10	CTTB3020	1
TORONTO	QUEBEC	787	CTTB10	CTTB3020	1
WINDSOR	MONTREAL	908	CTTB10	CTTB3020	1
TORONTO	COLBORNE	132	CTTB1001		4
OTTAWA	PEMBROKE	151	CTTB1001		2
PETERBOROUGH	KINGSTON	180	CTTB1001		4
NORTH BAY	PEMBROKE	212	CTTB1001		2
NORTH BAY	OTTAWA	364	CTTB1001		2
NORTH BAY	KINGSTON	462	CTTB1001		3
SUDBURY	KINGSTON	586	CTTB1001		3
KINGSTON	WINDSOR	616	CTTB1001		4
TORONTO	HAMILTON	72	CTTB1001	CTTB1091	4
TORONTO	BARRIE	90	CTTB1001	CTTB1091	4
TORONTO	ST. CATHARINES	114	CTTB1001	CTTB1091	4
TORONTO	BELLEVILLE	174	CTTB1001	CTTB1091	4
TORONTO	LONDON	187	CTTB1001	CTTB1091	4
LONDON	WINDSOR	193	CTTB1001	CTTB1091	4
TORONTO	PARRY SOUND	222	CTTB1001	CTTB1091	3
CHATHAM	HAMILTON	225	CTTB1001	CTTB1091	4
LONDON	OWEN SOUND	232	CTTB1001	CTTB1091	4
TORONTO	KINGSTON	249	CTTB1001	CTTB1091	4
NORTH BAY	KIRKLAND LAKE	259	CTTB1001	CTTB1091	2
TORONTO	SARNIA	290	CTTB1001	CTTB1091	4
SUDBURY	SAULT STE MARIE	298	CTTB1001	CTTB1091	2
TORONTO	NORTH BAY	330	CTTB1001	CTTB1091	3
TORONTO	WINDSOR	372	CTTB1001	CTTB1091	4
TORONTO	OTTAWA	394	CTTB1001	CTTB1091	3
TORONTO	SUDBURY	411	CTTB1001	CTTB1091	3
NORTH BAY	HEARST	597	CTTB1001	CTTB1091	2
TORONTO	SAULT STE MARIE	681	CTTB1001	CTTB1091	3
TORONTO	TIMMINS	684	CTTB1001	CTTB1091	3
SUDBURY	THUNDER BAY	1006	CTTB1020		2
TORONTO	THUNDER BAY	1389	CTTB1020	CTTB1045	3
SUDBURY	TIMMINS	278	CTTB1020	CTTB1091	2
TORONTO	WINNIPEG	2076	CTTB1020	CTTB1400	3
TOTAL ORIGIN/DESTINATION PAIRS ANALYSED			36	27	
WEIGHT CATEGORIES ANALYSED			5	5	
TOTAL SHIPMENTS ANALYSED			180	135	

* Lowest class tariff as of Nov. 1988
** As of Nov. 1988, primarily named accounts

ORIGIN/DESTINATION CODES
1. Southern Ontario to Quebec
2. Within Northern Ontario
3. Between Southern and Northern Ontario
4. Within Southern Ontario