

**A CREDIT QUALITY STUDY OF
THE AGRICULTURAL TRUCKING
INDUSTRY OF NORTH DAKOTA**

By

**James R. Almond
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James R. Almond and David C. Nelson*

INTRODUCTION

In interstate commerce motor carriers of property for hire are divided into two groups. These groups are carriers subject to economic regulation, and those that are exempt from economic regulation. Part II, Sec. 203 (b) 6, of the Interstate Commerce Act, commonly known as "The Agricultural Exemption", placed motor carriers carrying property of live-stock, fish, or other agricultural commodities not in manufactured form as being exempt of economic regulation.¹

The regulation of motor transportation in North Dakota is patterned somewhat after the Interstate Commerce Act. There are four major types of permits or certificates for motor carriers operating in intrastate commerce for hire. The agricultural carrier permit allows for the transporting of farm products or supplies between farm and market. This permit is granted at the discretion of the Public Service Commission only after a public hearing has produced evidence that the carrier will not be a hazard to public safety, hamper public use of the highways, or cause undue wear of such highways.² The common motor carrier permit is of two types, but both involve a certificate of public need and convenience. This certificate is granted only after public need and convenience are proven at a public hearing. The same requirements of the agricultural carriers are also required of the common carriers. The Class A common motor carrier travels a fixed route following a prearranged time schedule. The special common motor carrier has no fixed route or time schedule but is given authority to travel to, from, or within a certain area of the State.³ The contract motor carrier permit is granted to carriers that contract their services to only one individual or firm. The requirements of this permit are the same as those of the agricultural permit with one exception. The individual wishing the contract permit must also prove that installment of contract service will not decay the efficiency of service already provided to the area.⁴

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¹The Interstate Commerce Act, United States Government Printing Office, Washington, D. C., 1958, pp. 124-125.

²Public Service Commission, State of North Dakota, Laws, Rules, and Regulations Governing Commercial Motor Transportation, Bismarck, North Dakota, July 1, 1965, p. 90.

³Ibid., p. 85.

⁴Ibid., p. 87.

The regulation of intrastate commerce in North Dakota is somewhat more rigid than interstate commerce. The major difference in types of permits is reflected in the requirements to file rate schedules. The agricultural carriers are not required to file rate schedules with the Public Service Commission, while both the common carriers and contract carriers are required to do so; and these must be approved before becoming effective.

The two principal permits were the special common carrier and the agricultural carrier because of the degree of similarity and competition. The number of firms with these permits accounted for 82 percent of the motor carriers registered with the Public Service Commission. Of these, 62 percent were agricultural carriers and 38 percent were special common carriers. The agricultural carrier is not required to prove public need and convenience or to file a rate schedule, while the special common carrier is required to do both. Therefore, as far as economic regulation is concerned, it can be said that the agricultural motor carriers of North Dakota are exempt, and the special common motor carriers are regulated.

Objectives

There are four factors of production or classes of resources that are needed for production of any good or service. These are land or raw materials, labor, capital, and management ability.⁵ In order to enter or remain in the trucking industry, all four factors of production must be employed and accountable. However, to increase in size, capital availability often becomes the major hurdle to growth. The major investment is in the motor vehicle. In addition, capital must be available for operating expenses.

The general purpose of this study was to determine the ability of the agricultural trucking industry of North Dakota to attract capital, either from private investors or from financial institutions.

The specific objectives were:

1. To determine the availability of credit for members of the agricultural motor carrier industry of North Dakota.
2. To determine the influences of the industry cost structure on rate levels for regulated motor carriers and exempt motor carriers and to indicate any effect this has upon the ability of the industry to attract outside financing.
3. To compare, within North Dakota economic areas, the amount of freight carried with revenues received by regulated motor carriers and exempt motor carriers and to indicate whether a relationship exists regarding percentage of freight carried with revenue received.

⁵McConnell, Campbell R., Economics, Principles, Problems, and Policies, McGraw-Hill, Inc., New York, 1966, pp. 24-25.

4. To describe the general opinion of the various financing institutions regarding agricultural motor carrier financing.

5. To provide guidelines for improving the credit position of the agricultural motor carrier industry.

Method of Study

A sampling of 30 percent of the firms obtaining operating permits from the Public Service Commission, Bismarck, North Dakota, was used as data for this study. The Public Service Commission provided year-end income statements and, when possible, balance sheets from the annual reports submitted by the firms.

The Motor Vehicle Department provided the names of lending agencies holding liens against operating equipment of various trucking firms. It was from this list of names that a sample of financing agencies was drawn. These agencies were then surveyed to determine the factors involved in financing the agricultural trucking industry.

It was discovered when analyzing the data that firms utilizing only straight trucks, regulated and exempt, accounted for 34 percent of the sample mileage and that 11 percent of the sample mileage was accounted for by bulk milk transporting firms. In view of these statistics, it was believed that these categories should be separated and analyzed on the same basis as were the tractor-trailer firms. The importance of the analysis of the tractor-trailer firms was not questioned, for their major role in the industry was expected.⁶

Analysis of selected financial statements was done to determine the stability of the industry from a financial standpoint. This analysis was limited to the regulated carriers. Even though the exempt carriers are not required to file the statements needed for financial analysis, the assets of this segment of the industry were estimated, and the analysis was completed with these estimates.⁷ Most of the analysis was done by comparing performance of carriers located in the seven economic areas of North Dakota.

⁶Casavant, Kenneth L. and Nelson, David C., An Economic Analysis of the Costs of Operating Grain Trucking Firms in North Dakota, Department of Agricultural Economics, Agricultural Experiment Station, North Dakota State University of Agriculture and Applied Science, Fargo, North Dakota, Agricultural Economics Report No. 54, July, 1967, pp. 3-4, and

Casavant, Kenneth L. and Nelson, David C., An Economic Analysis of the Costs of Operating Livestock Trucking Firms in North Dakota, Department of Agricultural Economics, Agricultural Experiment Station, North Dakota State University of Agriculture and Applied Science, Fargo, North Dakota, Agricultural Economics Report No. 55, July, 1967, pp. 3-4.

⁷The Public Service Commission does not require exempt motor carriers to file balance sheets annually and requires only partnerships and corporations of regulated carriers to file annual balance sheets.

Research Background

Very little research has been done in testing the quality of credit, whether it is the quality of loans outstanding or the ability of firms to attract capital. Indicators toward determining credit quality and how these apply to loans outstanding to the trucking industry will be outlined in this section. The existing indicators that reveal the ability of a trucking firm to attract capital or credit will also be outlined.

The volume of past-due credit and bad-debt losses is a good indicator of credit quality.⁸ The percentage of past-due loans of the total loan portfolio of a financing institution is thought to be large if it rises over 4 percent. The percentage of loans written off as bad debts should remain at less than 1 percent.

Probably the most important indicator of the ability of a trucking firm to attract capital or credit is the rate of return on assets, which is the percentage of net revenue to assets. This ratio cannot be used alone, however, for in many cases it can be inflated to provide a false picture of the firm. A good indicator of the ability of a firm to control its operating costs is the gross margin ratio which is the percentage of gross revenue that net revenue represents. The inability to control costs is represented by a low percentage figure.⁹ Nelson found that the gross margin ratio for 1964 through 1966 was 4.6 percent, 4.4 percent, and 5.0 percent, respectively, for 57 Middlewest carriers.¹⁰ A good device for measuring the efficiency of use of available capital by the trucking firms was the "turnover" ratio. Efficiency was indicated by a high ratio, and inefficiency was indicated by a low ratio.¹¹ Nelson found this ratio for the same carriers to have been 272.2 percent for 1964, 271.4 percent for 1965, and 273.4 percent for 1966.¹² It was noted that the gross margin ratio multiplied by the "turnover" ratio gave the rate of return on assets. For the same three years, 1964 through 1966, Nelson found the return on asset ratios to have been 12.6 percent for 1964, 11.9 percent for 1965, and 13.8 percent for 1966.¹³ It can be noted that it is possible, therefore, to have an efficient use of capital coupled with inefficient control of costs and still maintain the same return on assets that inefficient use of capital and efficient cost control can produce.

⁸Seiden, Martin H., The Quality of Trade Credit, National Bureau of Economic Research, New York, 1964, p. 2.

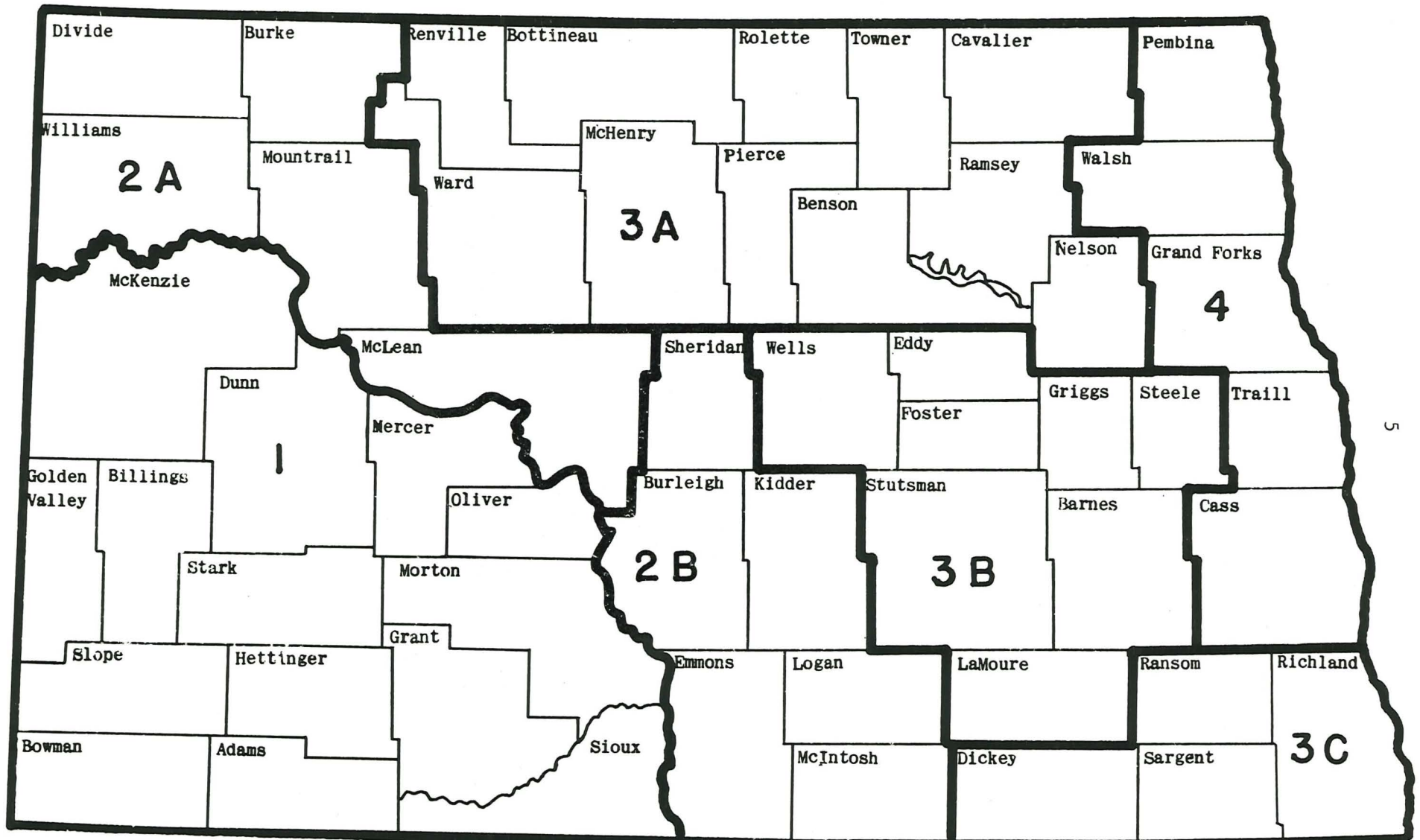
⁹Nelson, James R., Increased Rates and Charges, From, To, and Between Middlewest Territory, ICC Docket No. 34971, Washington, D. C., August 5, 1968, pp. 5-6.

¹⁰Ibid., p. 30.

¹¹Ibid., pp. 6-7.

¹²Ibid., p. 30.

¹³Ibid., p. 30.



ECONOMIC AREAS, NORTH DAKOTA

- No. 1, Western ranch-wheat area
- No. 2A, Northwestern wheat area
- No. 2B, South-central livestock-grain area
- No. 3A, Northern wheat area

- No. 3B, East-central grain-livestock area
- No. 3C, Wheat-corn transition area
- No. 4, Red River Valley grain and specialty crops area

William Hellier, Jr., of the First National Bank of Atlanta, Georgia, analyzed the situation faced by banks wishing to lend to the motor carrier industry. It was mentioned that the most common advancement was 80 to 85 percent of the value of the equipment, thus requiring a 15 to 20 percent down payment. The length of the loans was predominantly 48 months on new tractors and trucks and 60 months on trailers; however, this was to be in relation to each firm's depreciation schedule.¹⁴

One of the basic problems mentioned in regard to lending to the motor carrier industry was the lack of understanding between bankers and carriers. Bankers seem to have been reluctant to find answers to the financing problems of the truckers, and the carriers have been hesitant to cooperate and present the needed information for financial analysis to the banks.¹⁵

To help make analysis of motor carrier financial statements more meaningful, Hellier made some changes in the ratios used in this analysis. The current ratio (or current assets to current liabilities) was more in line at 1.1 to 1 or lower. A debt to net worth ratio of less than 1 to 1 is desirable. If revenue to net worth is in the neighborhood of 4 or 4.5 to 1, it indicates efficient use of the firm's net worth.¹⁶

MODELS USED AS CONTROLS IN ECONOMIC ANALYSIS

Hypothetical models were constructed to be used as controls in analyzing the economic behavior of firms employing only straight trucks in both regulated and exempt transportation. A similar model was constructed for use in analyzing firms carrying bulk dairy products. The cost figures for the firms employing tractors and trailers were obtained from models that were constructed and incorporated into a previous study.¹⁷

Model One: One Straight Truck Firm

The investment cost for the straight truck firm was \$10,700, including equipment and storage.¹⁸ The owner-operator fulfilled the labor requirements of this firm; handling the duties of driver, manager, and minor mechanic. Only one telephone was required for the firm. The office facilities were located in the home of the owner-operator.

¹⁴Hellier, William, Jr., Lending to Motor Carriers: An Opportunity and a Challenge, Robert Morris Associates Bulletin, Philadelphia, Pennsylvania, August, 1966, pp. 676-677.

¹⁵Ibid., p. 678.

¹⁶Ibid., pp. 681-682.

¹⁷Casavant and Nelson, op. cit., Report No. 54, pp. 34-35, and Casavant and Nelson, op. cit., Report No. 55, pp. 39-40.

¹⁸Ibid., Report No. 55, pp. 16-17. This is not net of the 9½ percent cash discount, as it was felt that most equipment of this type was financed.

Model Two: Two Straight Truck Firm

The investment cost for this firm was twice that of the one-unit firm for equipment. However, the storage cost was the same. In other words, the total investment was \$15,900. The labor requirements included the owner-operator plus a driver. The telephone requirements were the same as the one-unit firm. Office facilities were located in the home.

Model Three: Two Bulk Milk Truck Firm

The investment required for the firm employing two bulk milk trucks was approximately \$42,000 for trucks and storage.¹⁹ The labor requirements for this firm were the same as for the two unit straight truck firm. Office facilities were provided in the home of the owner-operator.

Operating Costs

Fixed Costs

Depreciation

Depreciation for all models was figured on the straight-line basis with the trucks being depreciated over a seven-year period; the buildings over a twenty-five-year period; and office equipment, as well as bulk milk tanks, over a ten-year period.

Taxes

Real estate taxes were levied at \$20 per \$1,000 of investment.

Insurance

Insurance coverage was based on liability insurance and cargo insurance rates. For straight trucks, the combination of coverage was approximately \$112 per unit. For the bulk milk carriers, the cost was roughly \$200 per unit.²⁰

¹⁹From historical records of North Dakota lending agencies.

²⁰Insurance rates were determined through consultation with various insurance agencies in the Fargo vicinity.

Permit

Permit costs for regulated and exempt carriers were the same--\$25 for the permit plus \$30 per unit. The regulated carrier was charged \$40 when first applying for the permit, but the renewal charge was \$25 per year. For this study it is assumed that all are renewals.²¹

Office and Telephone

The base cost for telephone service was \$5 per month or \$60 per year. Depreciation on office equipment was figured at \$100 per year, making a total office cost of \$160 per year.²²

Interest

Interest on investment was obtained at 6.5 percent per year. This was either payment for borrowed capital or opportunity cost on firm-owned capital.²³

Utilities

The cost of utilities to the firm was placed at \$50 per month or \$600 per year.²⁴

Return to Management

The owner-operator of the firm was compensated for his role as manager of the firm. This cost did not vary with the size of the firm and was fixed at \$6,500 per year.²⁵

Variable Costs

Taxes

Fuel tax was applicable for this study. For all models this cost amounted to 1.6 cents per mile. Excise taxes on tires were of such an

²¹Public Service Commission, op. cit., pp. 100-101.

²²Casavant and Nelson, op. cit., Report No. 54, p. 20.

²³Ibid., p. 21.

²⁴Ibid., p. 21.

²⁵Ibid., p. 21.

infinite amount per mile that they were eliminated from the cost structure of the models.²⁶

Telephone

Telephone charges per mile were assessed to cover cost above the base charge of \$5 per month. The cost amounted to .2 cents per mile. This charge was eliminated for the bulk milk carrier (Model III) for with a set route, there is little need of telephone service to obtain business.²⁷

Wages, Fuel, Tire Cost, and Maintenance Costs

These items were all obtained from a previous study. Wages of drivers were set at 5 cents per mile. Fuel was priced at 22 cents per gallon, and mileage was estimated at 6 miles per gallon. Thus, a cost of 3.7 cents per mile was levied for fuel cost. Tire cost was estimated at .14 cents per mile for each tire on the truck. Therefore, a tire cost of .8 cents per mile was determined for the models. Maintenance costs were estimated at 1.3 cents per mile.²⁸

TABLE 1. FIXED COST STRUCTURES OF MODEL I, MODEL II, AND MODEL III

Fixed Costs	Model I	Model II	Model III
Investment	\$10,700	\$15,900	\$42,000
Depreciation (Truck)	743	1,486	2,000
Depreciation (Building)	220	220	400
Depreciation (Bulk Tank)	--	--	1,800
Taxes	104	104	200
Insurance	112	220	400
Permit	55	85	85
Telephone	160	160	160
Interest	695	1,033	2,730
Utilities	600	600	600
Return to Management	<u>6,500</u>	<u>6,500</u>	<u>6,500</u>
Total Fixed Costs	\$ 9,189	\$10,408	\$14,875

²⁶Ibid., p. 21.

²⁷Ibid., p. 22.

²⁸Ibid., pp. 22-23.

The regulated carriers using straight trucks had a statewide average of 1.5 units per firm, while the exempt carriers using straight trucks had a statewide average of 1.25 units per firm. Using straight-line interpolation between total fixed costs of Model I and Model II, it was found that regulated firms had fixed costs of \$10,099, while the exempt motor carriers had fixed costs of \$9,944.

TABLE 2. AVERAGE MILEAGE PER FIRM FOR REGULATED AND EXEMPT MOTOR CARRIERS ACCORDING TO TYPE OF EQUIPMENT USED

Type of Equipment	Regulated	Exempt
Tractor-Trailer	223,369	77,458
Milk Truck	--	96,035
Straight Truck	50,684	22,998

The average mileage per firm for regulated carriers and exempt carriers utilizing straight trucks was 50,684 miles and 22,998 miles, respectively (Table 2). Using these actual figures for mileage for regulated and exempt carriers, it was found that the average fixed costs per mile were 19.9 cents and 43.2 cents, respectively (Table 3). The average firm mileage for bulk milk transporting firms was 96,035 miles. Therefore, the average fixed cost per mile was 15.5 cents.

TABLE 3. TOTAL COSTS PER MILE FOR MODEL REGULATED STRAIGHT TRUCKS, EXEMPT STRAIGHT TRUCKS, AND EXEMPT MILK TRUCKS

Variable Costs	Registered Straight Trucks	Exempt Straight Trucks	Exempt Milk Trucks
Fuel per mile	.053	.053	.053
Telephone per mile	.002	.002	--
Tires per mile	.008	.008	.008
Wages per mile	.050	.050	.050
Maintenance per mile	<u>.013</u>	<u>.013</u>	<u>.013</u>
Average Variable Costs	.126	.126	.124
Average Fixed Costs	<u>.199</u>	<u>.432</u>	<u>.155</u>
Average Total Costs	.325	.558	.279

The average total cost for regulated straight trucks on a per mile basis was 32.5 cents, while the average total costs for exempt carriers were 55.8 cents and 27.9 cents for straight trucks and milk trucks, respectively (Table 3).

When return to management and depreciation costs were deducted from the three models on a per mile basis, the average total costs changed considerably. The regulated straight truck cost per mile was 17.0 cents and the exempt straight truck and milk truck costs per mile were 22.5 cents and 16.8 cents, respectively.

Models were not constructed in this study for the tractor-trailer firms. Average cost amounts were obtained from existing models of a previous study.²⁹

From data used in the current study, the size of the average firm having used tractor-trailer units in exempt transportation was determined to have been 1.8 units per firm and was found to have been operating at approximately 30 percent of possible equipment utilization. Using these statistics as guidelines and interpolation, it was found that the average fixed cost per mile was 20.5 cents, and the average variable cost per mile was 14.9 cents for the model of exempt tractor-trailer firms. The average total cost per mile for the model of these firms was 35.4 cents.

The size of the regulated firms, using tractor trailer units as determined from current study data, was averaged at 3.2 units per firm. These units were being operated at approximately 45 percent of their possible utilization. Using interpolation, it was found that a model of these firms had an average fixed cost per mile of 11.1 cents, an average variable cost per mile of 14.9 cents, and an average total cost of 26 cents per mile.

When return to management and depreciation costs were deducted from the average total costs of the tractor-trailer firms on a per mile basis, the average costs per mile of the regulated carrier were 19.7 cents per mile, and the exempt carrier had costs of 22.3 cents per mile.

COMPARISON OF REGULATED AND EXEMPT MOTOR CARRIERS

Length of Time in Business

Stability of a firm is verified to some extent by the length of time it has been in operation.

²⁹ Casavant and Nelson, op. cit., Report No. 54, pp. 34 and 36, and Casavant and Nelson, op. cit., Report No. 55, pp. 39-41

TABLE 4. COMPARISON OF AGE OF FIRMS BY ECONOMIC AREA AND TYPE OF CARRIER

<u>EXEMPT MOTOR CARRIERS</u>								
Economic Area	<u>5 Years and Over</u>		<u>10 Years and Over</u>		<u>15 Years and Over</u>		<u>20 Years and Over</u>	
	No.	Per- cent	No.	Per- cent	No.	Per- cent	No.	Per- cent
1	13	77	10	59	8	47	6	35
2A	2	100	2	100	1	50	1	50
2B	4	50	3	37.5	2	25	1	12.5
3A	9	69	7	54	4	31	3	23
3B	11	73	4	26	4	26	3	20
3C	6	75	5	62.5	4	50	2	25
4	7	70	6	60	5	50	3	30
Total	52	71	37	50	28	38	19	26

<u>REGULATED MOTOR CARRIERS</u>								
Economic Area	<u>5 Years and Over</u>		<u>10 Years and Over</u>		<u>15 Years and Over</u>		<u>20 Years and Over</u>	
	No.	Per- cent	No.	Per- cent	No.	Per- cent	No.	Per- cent
1	11	84.5	8	61.5	5	38.5	2	15.5
2A	3	100	3	100	2	66.7	1	33.3
2B	6	75	2	25	2	25	1	12.5
3A	9	82	4	36	3	27	2	18
3B	13	81	8	50	6	37.5	4	25
3C	1	50	0	0	0	0	0	0
4	6	100	4	67	1	17	0	0
Total	49	83	29	49	19	32	10	17

Grand Total	101	77	66	50	47	36	29	22
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It can be seen by examining Table 4 that the regulated motor carriers seemed to be more stable than the exempt motor carriers. In all economic areas the regulated carriers had a higher percentage of firms five years old or older than did the exempt carriers. For the State as a whole, 83 percent of the regulated carriers were five years old or more; whereas only 71 percent of the exempt carriers fell in this category.

Further inspection of the data in Table 4 indicates that, as the classification was extended to categories of increasingly older age, the percentages of exempt motor carriers tended to remain higher than those of the regulated carriers. The statewide percentage for exempt carriers twenty years and over was 26 percent, while regulated carriers under the same category amounted to only 17 percent. Preliminary indications were that, rather than this denoting a decay in the stability of the regulated carriers, it was more indicative of the effect of the trucking activity in the farming enterprise, as many exempt carriers were farm firms.

In which economic area a firm operated had little or no apparent effect on the age of the respective firms.

Revenue and Cost Analysis By Economic Area

Economic Area 1

Revenue Received Relative to Freight Carried

Agricultural products made up approximately 65 percent of the freight carried in Economic Area I, leaving roughly 35 percent of the total freight carried to manufactured commodities or nonexempt freight.

Unregulated carriers hauled only 37 percent of agricultural products and 6 percent of the nonexempt freight. Regulated carriers hauled 63 percent of agricultural products and 94 percent of the other freight carried.

While the regulated carriers transported the bulk of the commodities carried in Area 1, their revenues were higher per hundredweight than those obtained by the exempt motor carriers. For agricultural commodities the regulated carriers received \$.59 per hundredweight on the average as compared to \$.24 per hundredweight for the exempt motor carriers. A similar situation exists in the carriage of other freight where the revenue for regulated and exempt motor carriers was \$.32 and \$.14, respectively.

The difference in revenue received by the two carriers can be illustrated even further (Table 5). It is noted that in all categories where a comparison could be readily viewed, the regulated motor carriers transported more than twice the percentage of freight than the exempt carriers did. In addition, the regulated carriers received over twice as much revenue per hundredweight.

Analysis of Revenue and Cost Per Mile

Regulated carriers accounted for 73.4 percent of the miles traveled in Area 1, of which 89 percent were tractor-trailer miles, and 11 percent

TABLE 5. COMPARISON OF AMOUNT OF FREIGHT CARRIED AND REVENUE RECEIVED BY EXEMPT MOTOR CARRIERS AND REGULATED MOTOR CARRIERS IN ECONOMIC AREA 1

Freight	Exempt Carriers		Regulated Carriers		All Carriers	
	Percent Carried	Revenue Per Cwt.	Percent Carried	Revenue Per Cwt.	Percent Carried	Revenue Per Cwt.
Merchandise	1.00	.13	.11	.97	1.11	.21
Household Goods	--	--	.03	2.70	.03	2.70
Livestock	9.08	.40	19.72	.86	28.80	.71
Machinery	.15	.18	1.34	.59	1.49	.55
Grain	5.68	.15	21.14	.34	26.82	.30
Dairy Products	9.31	.27	--	--	9.31	.27
Petroleum Products	--	--	.08	.25	.08	.25
Other Exempt	--	--	--	--	--	--
Other Nonexempt	.63	.16	31.73	.30	32.36	.30
Totals	25.85	.28	74.15	.47	100.00	.42

TABLE 6. COMPARISON OF PERCENTAGE OF AREA MILEAGE TRAVELED, REVENUES OBTAINED PER MILE, AND COSTS INCURRED PER MILE BY THE VARIOUS CARRIERS IN ECONOMIC AREA 1

Type of Carrier	Percent of Mileage	Revenue Per Mile	Costs Per Mile	Margin Per Mile
Exempt Carriers	26.6	\$.188	\$.160	\$.028
Regulated Carriers	<u>73.4</u>	<u>.297</u>	<u>.289</u>	<u>.008</u>
All Carriers	100.0	\$.268	\$.254	\$.014

were straight truck miles (Table 6). These carriers received an average revenue of 29.7 cents per mile and reported costs of 28.9 cents per mile. Upon completion of a more detailed analysis, it was found that the straight trucks received revenue of 17.0 cents per mile and incurred costs of 9.6 cents per mile, while the tractor-trailer firms received revenue and incurred costs of 31.2 and 31.0 cents per mile, respectively. The costs of the tractor-trailer firms were higher than the model costs but were covered by revenue received. The reported costs, having been higher than the model costs, could indicate that the firms in Area 1 practiced a faster depreciation write-off than was used for the model firm.

The regulated straight truck firms were well below the indicated 32.5 cents per mile cost that was evident in the model firm. If depreciation and return to management costs were not allowed for in the model, the cost per mile of operating the regulated straight trucks in Area I would have been equivalent to the revenue received per mile in that area. The reported costs per mile were unrealistic in that the model firm's variable cost per mile was greater than the total cost per mile that was reported.

The exempt carriers received a reported average revenue of 18.8 cents per mile and incurred costs of 16.0 cents per mile in traveling 26.6 percent of the Area I mileage. Of the exempt mileage, 37 percent was covered by bulk milk trucks for which revenue and cost per mile was 17.5 cents and 12.0 cents, respectively. The cost of the actual firms was below the model cost of 27.9 cents. Again it was noted that had depreciation and return to management been eliminated from the cost structure of the model, the revenue received as reported would have been sufficient to satisfy the remaining expenses of the model firm. The reported total costs per mile were less than the variable costs of the model, thus indicating a possible loss in the short run.

The tractor-trailer firms accounted for 43 percent of the Area I exempt mileage and received 21.0 cents per mile in revenues and incurred 21.1 cents per mile in costs. When comparison was made with the model firm, it was noted that the reported costs were lower than the 35.4 cents per mile model costs, and the indication was that this was due to a lack of allowance for depreciation and return to management. These costs attributed 13.1 cents to the per mile costs for the exempt tractor-trailer model.

The exempt straight truck firms traveled the remaining mileage attributed to exempt carriers. This was 20 percent of the exempt carrier mileage in Area I. They received 16.5 cents per mile in revenues and reported costs of 11.8 cents per mile. The cost figure reported was again well below that implemented by the model firm which was 55.8 cents. In this case the nonallowance for depreciation and return to management did not reduce the cost per mile enough that the revenue received would satisfy the cost of the model which was 22.5 cents. Also, the reported costs per mile were less than the model variable cost per mile.

Economic Area 2A

Revenue Received Relative to Freight Carried

Agricultural products made up 67 percent of the freight carried in Area 2A, leaving 33 percent of the total freight to manufactured goods and other nonexempt commodities.

Exempt carriers and regulated carriers hauled approximately 50 percent of the agricultural goods each, and the regulated carriers carried all of the nonexempt freight. The exempt carriers received an average of 43 cents per hundredweight for their portion of the exempt freight, while the regulated carriers received only 28 cents per hundredweight.

TABLE 7. COMPARISON OF AMOUNT OF FREIGHT CARRIED AND REVENUE RECEIVED BY EXEMPT MOTOR CARRIERS AND REGULATED MOTOR CARRIERS IN ECONOMIC AREA 2A

Freight	Exempt Carriers		Regulated Carriers		All Carriers	
	Percent Revenue Carried Per Cwt.	Percent Revenue Carried Per Cwt.	Percent Revenue Carried Per Cwt.	Percent Revenue Carried Per Cwt.	Percent Revenue Carried Per Cwt.	Percent Revenue Carried Per Cwt.
Merchandise	--	--	11.08	.81	11.08	.31
Household Goods	--	--	--	--	--	--
Livestock	18.93	.25	9.04	.50	27.97	.34
Machinery	--	--	--	--	--	--
Grain	--	--	24.59	.20	24.59	.20
Dairy Products	14.77	.66	--	--	14.77	.66
Petroleum Products	--	--	--	--	--	--
Other Exempt	--	--	--	--	--	--
Other Nonexempt	--	--	21.59	.32	21.59	.32
Totals	33.70	.43	66.30	.38	100.00	.40

The higher average price received by the exempt carriers was rationalized quite readily when it was noted that almost half of their freight was made up of high-priced dairy products, compared to over two-thirds of the regulated carrier's agricultural freight having been low-price grain (Table 7). The difference in revenue received for transporting the same commodity was evident when viewing the livestock category. As in Area 1, the regulated carriers received twice the revenue as did the exempt carriers.

Analysis of Revenue and Cost Per Mile

The exempt carriers traveled 38.5 percent of the mileage traveled in Area 2A, while the regulated carriers accounted for 61.5 percent of the mileage (Table 8). In the sample 100 percent of the regulated miles were tractor-trailer miles, while the exempt carrier miles were covered by bulk milk trucks and straight trucks at the rate of 70 percent and 30 percent, respectively.

The average revenue per mile received by the exempt carriers was 16.8 cents, and their cost was reported at 11.2 cents per mile. Milk carriers received 16.2 cents per mile in revenue and incurred costs of 10.7 cents per mile. This reported cost figure was 1.7 cents below the variable cost

TABLE 8. COMPARISON OF PERCENTAGE OF AREA MILEAGE TRAVELED, REVENUES OBTAINED PER MILE, AND COSTS INCURRED PER MILE BY THE VARIOUS CARRIERS IN ECONOMIC AREA 2A

Type of Carrier	Percent of Mileage	Revenue Per Mile	Costs Per Mile	Margin Per Mile
Exempt Carriers	38.5	\$.168	\$.112	\$.056
Regulated Carriers	61.5	.117	.105	.012
All Carriers	100.0	.136	.107	.029

per mile represented in the model. The revenue obtained per mile did allow the firms to cover their variable costs, however; and they were within .6 of a cent of satisfying their fixed costs with the exception of depreciation and return to management. The cost per mile for depreciation and return to management was 11.1 cents.

The exempt straight truck firms reported revenues of 18.2 cents per mile in Area 2A and costs of 12.3 cents. The straight truck firms were in a position similar to the milk carriers. Their reported cost per mile was .3 of a cent below the model's average variable cost. It was noted, however, that they were below the model's average total cost by 43.5 cents per mile and below the model's average total cost excluding depreciation and return to management by 10.2 cents per mile. The revenue per mile did allow them to satisfy their average variable costs plus all but 4.3 cents of their fixed costs less depreciation and return to management.

The regulated carriers reported 11.7 cents as the average revenue per mile, while their reported costs were 10.5 cents per mile. It was noted that, when compared with the model firm, the reported costs were 4.2 cents below the average variable cost, and the average revenue was 3.2 cents below the average variable cost. The indication was that the firms would save money by not operating.

Economic Area 2B

Revenue Received Relative to Freight Carried

Agricultural products made up over 93 percent of the commodities transported in Area 2B, while manufactured commodities and other freight made up

slightly under 7 percent of the total freight carried. Seventy percent of the agricultural commodities were hauled by regulated carriers for an average revenue of 63 cents per hundredweight, while the exempt carriers hauled 30 percent of the agricultural produce for 48 cents per hundredweight. The nonexempt freight was carried in the same ratios as exempt freight, 70 percent by regulated carrier and 30 percent by exempt carrier; but in this case the exempt carriers received the higher average revenue, 90 cents per hundredweight, whereas, the regulated carriers received 54 cents per hundredweight.

TABLE 9. COMPARISON OF AMOUNT OF FREIGHT CARRIED AND REVENUE RECEIVED BY EXEMPT MOTOR CARRIERS AND REGULATED MOTOR CARRIERS IN ECONOMIC AREA 2B

Freight	Exempt Carriers		Regulated Carriers		All Carriers	
	Percent Carried	Revenue Per Cwt.	Percent Carried	Revenue Per Cwt.	Percent Carried	Revenue Per Cwt.
Merchandise	1.13	1.48	3.75	.61	4.88	.81
Household Goods	--	--	.03	.67	.03	.67
Livestock	16.80	.39	10.24	.47	27.04	.42
Machinery	--	--	.52	.46	.52	.46
Grain	1.93	.06	55.00	.66	56.93	.64
Dairy Products	9.06	.74	--	--	9.06	.74
Petroleum Products	--	--	--	--	--	--
Other Exempt	.20	.21	.02	.50	.22	.24
Other Nonexempt	.85	.14	.47	.10	1.32	.12
Totals	29.97	.51	70.03	.62	100.00	.59

The exempt carriers again had their average revenue inflated by the milk carriers who received 74 cents per hundredweight for transporting this product, well above the 51 cent average for all agricultural products transported by exempt carriers. It was noted that the other agricultural commodities were below the regulated carriers in revenue per hundredweight (Table 9).

Analysis of Revenue and Cost Per Mile

The regulated carriers traveled the largest portion of mileage in Area 2B. The 68.8 percent of area mileage traveled by the regulated carriers was more than twice the 31.2 percent covered by the exempt carriers (Table 10). The regulated mileage was predominantly by tractor-trailer firms--80 percent--while 20 percent was covered by straight trucks. These carriers received an average revenue of 29.3 cents per mile and reported costs on the average of 30.5 cents per mile.

TABLE 10. COMPARISON OF PERCENTAGE OF AREA MILEAGE TRAVELED, REVENUES OBTAINED PER MILE, AND COSTS INCURRED PER MILE BY THE VARIOUS CARRIERS IN ECONOMIC AREA 2B

Type of Carrier	Percent of Mileage	Revenue Per Mile	Costs Per Mile	Margin Per Mile
Exempt Carriers	31.2	\$.232	\$.178	\$.054
Regulated Carriers	68.8	.293	.305	-.012
All Carriers	100.0	.274	.266	.008

The tractor-trailer firms reported revenue of 32.0 cents per mile and costs of 34.7 cents per mile. The average cost per mile figure is well above the model cost which is 26.0 cents per mile. The apparent loss incurred by these firms could, therefore, be the result of a rapid depreciation write-off for income tax purposes.

The straight truck firms reported average costs per mile of 14.5 cents and revenue of 18.9 cents per mile. The model cost per mile was 32.5 cents, thus a difference in model cost and reported cost of 18.0 cents. Revenue reported will cover all costs if depreciation and return to management are not allowed for and will leave a surplus of 1.9 cents per mile.

The exempt carriers' 31.2 percent of area mileage traveled was covered by tractor-trailer firms, bulk milk truck firms, and straight truck firms in ratios of 16 percent, 25 percent, and 59 percent, respectively. These firms reported average revenue of 23.2 cents per mile and costs of 17.8 cents per mile (Table 10).

The exempt tractor-trailer firms reported revenue of 20.9 cents per mile and costs of 18.6 cents per mile. The representative model had costs of 35.4 cents per mile or 22.3 cents per mile when depreciation and return to management were not accountable. The firms covered their average variable costs which were 14.9 cents per mile (represented by the model). However, fixed costs were not totally covered and, therefore, depreciation and return to management suffered in the short run.

The exempt carriers of milk reported costs and revenue per mile of 32.1 cents and 41.5 cents, respectively. The model costs were 27.9 cents. These firms seem to have had their cost figures well under control, and their revenue was high enough to allow for increasing the capital account of the firm.

The straight truck firms, exempt of regulation, reported average revenues of 16.9 cents per mile and average costs of 11.5 cents per mile. The representative model had average variable costs of 12.6 cents per mile and average fixed costs of 43.2 cents per mile of which 33.3 cents represented depreciation and return to management. The reported costs were less than the model variable costs. However, these costs were covered, as well as some fixed costs, for the level of revenue was high enough to do so. Again, the indication is that depreciation, return to management, and possibly salary of the owner-driver were not covered as direct costs of the firm.

Economic Area 3A

Revenue Received Relative to Freight Carried

In Area 3A the regulated carriers hauled approximately 71 percent of the freight, while the exempt carriers carried 29 percent of it. Of the total freightage, agricultural products amounted to approximately 53 percent and other nonexempt freight was 47 percent. The agricultural products were carried by the exempt and regulated carriers at a 50 percent ratio each with the regulated carriers hauling the bulk of the non-exempt freight or 96 percent of it.

Area 3A was different from the three areas previously discussed, for in this area the exempt truckers received a higher average revenue per hundredweight for transporting agricultural commodities than did the regulated carriers. The average revenue for the exempt carriers was 54 cents per hundredweight as compared to 37 cents for the regulated carriers. The regulated carriers received 73 cents per hundredweight for carrying the nonexempt freight.

TABLE 11. COMPARISON OF AMOUNT OF FREIGHT CARRIED AND REVENUE RECEIVED BY EXEMPT MOTOR CARRIERS AND REGULATED MOTOR CARRIERS IN ECONOMIC AREA 3A

Freight	Exempt Carriers		Regulated Carriers		All Carriers	
	Percent Carried	Revenue Per Cwt.	Percent Carried	Revenue Per Cwt.	Percent Carried	Revenue Per Cwt.
Merchandise	2.23	.48	8.96	1.08	11.19	.96
Household Goods	--	--	2.97	4.62	2.97	4.62
Livestock	24.10	.58	13.36	.54	37.46	.57
Machinery	.01	2.37	8.04	.60	8.05	.60
Grain	2.21	.05	9.05	.12	11.26	.11
Dairy Products	.01	5.37	.27	.42	.28	.58
Petroleum Products	--	--	--	--	--	--
Other Exempt	--	--	3.97	.36	3.97	.36
Other Nonexempt	.12	.14	24.70	.18	24.82	.18
Totals	28.68	.53	71.32	.60	100.00	.58

Milk transportation amounted to such a minute portion of the total freightage in Area 3A that the effect it had on average revenue was nill (Table 11). In this area the exempt carriers received more per hundred-weight for transporting livestock than did the regulated carriers, while the regulated carriers hauled more of the lower revenue products, such as grain.

Analysis of Revenue and Cost Per Mile

The regulated carriers covered 60.9 percent of the mileage of Area 3A, while the exempt carriers traveled 39.1 percent of the mileage. The exempt carriers received 24.6 cents a mile in average revenue, while the reported costs were 16.7 cents per mile. The regulated carriers received average revenue of 33.9 cents per mile, while the average costs incurred were 28.8 cents per mile (Table 12).

TABLE 12. COMPARISON OF PERCENTAGE OF AREA MILEAGE TRAVELED, REVENUES OBTAINED PER MILE, AND COSTS INCURRED PER MILE BY THE VARIOUS CARRIERS IN ECONOMIC AREA 3A

Type of Carrier	Percent of Mileage	Revenue Per Mile	Costs Per Mile	Margin Per Mile
Exempt Carriers	39.1	\$.246	\$.167	\$.079
Regulated Carriers	60.9	.339	.288	.051
All Carriers	100.0	.303	.241	.062

The exempt carriers' mileage was divided evenly between tractor-trailer firms and straight truck firms.³⁰ The tractor-trailer firms reported revenue of 29.2 cents per mile and costs of 20.1 cents per mile. The model of these firms had variable costs per mile of 14.9 cents, fixed costs per mile of 20.5 cents, making a total cost per mile of 35.4 cents. It was noted that the reported costs per mile covered nearly all the model costs, if depreciation and return to management were not incorporated into the model cost structure. The average revenue per mile would cover all depreciation and add 1.1 cents per mile to return to management.

The exempt straight truck firms reported average revenues per mile of 20.2 cents and average costs per mile of 13.3 cents. The model costs were 55.8 cents per mile or less depreciation and return to management--

³⁰Milk trucking firms were not analyzed due to the minute portion of freight carried by them (Table 11).

22.5 cents per mile. Of this, 12.6 cents per mile was variable cost. These firms were covering their variable costs in the short run. Their 20.2 cents revenue was enough to cover most of the model's costs with exception of depreciation and return to management.

The regulated carriers had approximately 67 percent of their mileage traveled by tractor-trailer firms. These firms reported 41.8 cents per mile revenue and costs of 36.9 cents per mile. The reported costs were well above the model costs of 26.0 cents per mile. Thus, it is evident that these firms were allowing for all costs and still leaving revenue to add to the capital structure of the firms.

The regulated straight truck firms reported costs of 12.0 cents per mile and revenue of 17.6 cents per mile. The reported costs again were below the average variable cost of the model. However, it is also evident that the revenue per mile was sufficient to satisfy the average total cost of the model if cost for depreciation and return to management were not included.

Economic Area 3B

Revenue Received Relative to Freight Carried

The regulated carriers hauled the majority of freight in Area 3B. They carried 60.99 percent as compared with the 39.01 percent carried by the exempt carriers (Table 13). Approximately 85 percent of all

TABLE 13. COMPARISON OF AMOUNT OF FREIGHT CARRIED AND REVENUE RECEIVED BY EXEMPT MOTOR CARRIERS AND REGULATED MOTOR CARRIERS IN ECONOMIC AREA 3B

Freight	Exempt Carriers		Regulated Carriers		All Carriers	
	Percent Carried	Revenue Per Cwt.	Percent Carried	Revenue Per Cwt.	Percent Carried	Revenue Per Cwt.
Merchandise	.62	.37	3.51	1.08	4.13	.96
Household Goods	--	--	.05	2.14	.05	2.14
Livestock	7.99	.37	25.63	.50	33.62	.47
Machinery	--	--	1.02	.62	1.02	.62
Grain	--	--	10.63	.26	10.63	.26
Dairy Products	27.59	.31	--	--	27.59	.31
Petroleum Products	--	--	--	--	--	--
Other Exempt	--	--	12.81	.39	12.81	.39
Other Nonexempt	2.81	.11	7.34	.05	10.15	.07
Totals	39.01	.31	60.99	.42	100.00	.38

freight was agricultural products, while the remainder was nonexempt freight. The regulated carriers trucked 58 percent of the agricultural commodities for average revenue of 42 cents per hundredweight, and the exempt carriers hauled 42 percent for an average price of 32 cents. Regulated carriers hauled 80 percent of the nonexempt freight, while the exempt carriers hauled the balance. The regulated carriers received average revenue of 41 cents per hundredweight, while the exempt carriers received an average revenue of 16 cents per hundredweight.

Analysis of Revenue and Cost Per Mile

The exempt carriers traveled 38.6 percent of the Area 3B mileage at a revenue and cost per mile of 27.9 cents and 19.6 cents. The regulated carriers covered the remaining 61.4 percent of the mileage at 24.6 cents per mile and 19.1 cents per mile for revenue and cost, respectively (Table 14).

TABLE 14. COMPARISON OF PERCENTAGE OF AREA MILEAGE TRAVELED, REVENUES OBTAINED PER MILE, AND COSTS INCURRED PER MILE BY THE VARIOUS CARRIERS IN ECONOMIC AREA 3B

Type of Carrier	Percent of Mileage	Revenue Per Mile	Costs Per Mile	Margin Per Mile
Exempt Carriers	38.6	\$.279	\$.196	\$.083
Regulated Carriers	61.4	.246	.191	.055
All Carriers	100.0	.257	.193	.064

Of the regulated mileage, 79 percent was by tractor-trailer firms and 21 percent by straight truck firms. The straight truck firms reported average revenue of 17.9 cents per mile. Their costs were 11.5 cents per mile reportedly. This cost figure is somewhat unrealistic, for it is indicated when compared with the model firm, that this cost is less than the average variable cost of the model. The average revenue reported would cover the variable costs of the model and also the fixed costs with the exception of depreciation and return to management.

The tractor-trailer firms reported revenue of 26.4 cents per mile and costs of 21.2 cents per mile. This cost was lower than the total cost per mile indicated by the model; and again, return to management and depreciation were probably not incorporated in the cost structure. However, the revenue received was sufficient to cover all costs of the model.

The exempt mileage was covered by milk carriers and straight truck firms at a ratio of 60 percent and 40 percent, respectively. The milk

carriers reported revenue of 32.7 cents per mile and costs of 23.6 cents per mile. This compared quite favorably with the model cost of 27.9 cents per mile for all costs were covered with the exception of return to management and the revenue was sufficient to cover the difference. It was assumed that these were individual operators, and they received the revenue net of costs.

The exempt straight truck operators reported costs of 13.8 cents per mile and average revenue of 19.7 cents per mile. The model average variable cost was covered by the reported costs but were short of average total cost of the model by 42 cents. Without including depreciation or return to management in the model costs, reported costs were short by 8.7 cents. The revenue per mile was not sufficient to cover the average total cost of the model even when depreciation and return to management were not included.

Economic Area 3C

Revenue Received Relative to Freight Carried

The exempt carriers hauled 63.15 percent of the freight in Area 3C, all of which was agricultural products (Table 15). The regulated carriers hauled 29.73 percent of the freight and of this, 75 percent was agricultural products and 25 percent was nonexempt freight. The exempt carriers received an average of 34 cents per hundredweight in revenue, while the regulated carriers received revenue of 42 cents per hundredweight and 58 cents per hundredweight for exempt and nonexempt freight, respectively.

TABLE 15. COMPARISON OF AMOUNT OF FREIGHT CARRIED AND REVENUE RECEIVED BY EXEMPT MOTOR CARRIERS AND REGULATED MOTOR CARRIERS IN ECONOMIC AREA 3C

Freight	Exempt Carriers		Regulated Carriers		All Carriers	
	Percent Carried	Revenue Per Cwt.	Percent Carried	Revenue Per Cwt.	Percent Carried	Revenue Per Cwt.
Merchandise	--	--	7.11	.57	7.11	.57
Household Goods	--	--	.01	5.00	.01	5.00
Livestock	63.15	.34	26.62	.45	89.77	.38
Machinery	--	--	--	--	--	--
Grain	--	--	3.11	.21	3.11	.21
Dairy Products	--	--	--	--	--	--
Petroleum Products	--	--	--	--	--	--
Other Exempt	--	--	--	--	--	--
Other Nonexempt	--	--	--	--	--	--
Totals	63.15	.34	36.85	.46	100.00	.39

Analysis of Revenue and Cost Per Mile

The exempt carriers traveled 51 percent of the mileage in Area 3C. They received average revenue of 14.2 cents and reported costs of 9.4 cents per mile. The regulated carriers covered 49 percent of the area mileage and reported 12.9 cents per mile of revenue and 8.6 cents per mile of costs (Table 16).

TABLE 16. COMPARISON OF PERCENTAGE OF AREA MILEAGE TRAVELED, REVENUES OBTAINED PER MILE, AND COSTS INCURRED PER MILE BY THE VARIOUS CARRIERS IN ECONOMIC AREA 3C.

Type of Carrier	Percent of Mileage	Revenue Per Mile	Costs Per Mile	Margin Per Mile
Exempt Carriers	51.0	\$.142	\$.094	\$.048
Regulated Carriers	49.0	.129	.086	.043
All Carriers	100.0	.135	.090	.045

These carriers were straight truck firms for both regulated and exempt traffic. The exempt carriers reported costs below the average variable cost of the applicable model, and their revenue covered 1.6 cents per mile of 43.2 cents of fixed costs represented in the model.

The regulated carriers were in a more difficult position than were the exempt carriers. Their reported costs were 4 cents per mile below the model's average variable cost, and only .3 of a cent per mile of the revenue could be applied to the 19.9 cents per mile of the model's fixed costs.

Economic Area 4

Revenue Received Relative to Freight Carried

The regulated carriers carried approximately 85 percent of the agricultural commodities and all of the nonexempt commodities hauled in Area 4. This amounted to 85.1 percent of all freight carried in Area 4 (Table 17). The exempt carriers hauled 14.9 percent of the freight and all of this was exempt commodities for which they received an average of 33 cents per hundredweight. The regulated carriers received 36 cents per hundredweight for transporting agricultural commodities and 54 cents per hundredweight for carrying nonexempt commodities.

TABLE 17. COMPARISON OF AMOUNT OF FREIGHT CARRIED AND REVENUE RECEIVED BY EXEMPT MOTOR CARRIERS AND REGULATED MOTOR CARRIERS IN ECONOMIC AREA 4

Freight	Exempt Carriers		Regulated Carriers		All Carriers	
	Percent Carried	Revenue Per Cwt.	Percent Carried	Revenue Per Cwt.	Percent Carried	Revenue Per Cwt.
Merchandise	--	--	.38	.72	.38	.72
Household Goods	--	--	--	--	--	--
Livestock	6.83	.34	24.24	.47	31.07	.44
Machinery	--	--	.04	.60	.04	.60
Grain	3.46	.21	--	--	3.46	.21
Dairy Products	4.02	.44	59.54	.32	63.56	.33
Petroleum Products	--	--	--	--	--	--
Other Exempt	.59	.22	--	--	.59	.22
Other Nonexempt	--	--	.90	.46	.90	.46
Totals	14.90	.33	85.10	.37	100.00	.36

Analysis of Revenue and Cost Per Mile

The exempt carriers in Area 4 traveled 21.2 percent of the mileage. They received average revenue of 23.2 cents per mile and incurred costs of 15.3 cents per mile. Milk trucks accounted for 20 percent of the exempt traffic and reported costs of 24.1 cents per mile and revenues of 39.7 cents per mile. The model costs were 27.9 cents per mile; and thus, all costs were included in the firms' reported costs with the exception of return to management which was undoubtedly the remainder of revenue over costs.

TABLE 18. COMPARISON OF PERCENTAGE OF AREA MILEAGE TRAVELED, REVENUES OBTAINED PER MILE, AND COSTS INCURRED PER MILE BY THE VARIOUS CARRIERS IN ECONOMIC AREA 4

Type of Carrier	Percent of Mileage	Revenue Per Mile	Costs Per Mile	Margin Per Mile
Exempt Carriers	21.2	\$.232	\$.153	\$.079
Regulated Carriers	78.8	.291	.313	-.022
All Carriers	100.0	.278	.279	-.001

The exempt straight truck firms reported revenue of 18.0 cents per mile and costs of 13.0 cents per mile. The reported cost exceeded the model average variable cost by .4 cents per mile. Thus, it was impossible for them to include all fixed cost items. Revenue received by these firms was 36.9 cents per mile below the average total cost figure represented in the model's cost structure. Of this, 33.3 cents per mile represented depreciation and return to management.

The regulated carriers covered 78.8 percent of the area mileage. They received average revenue of 29.1 cents per mile and incurred average costs of 31.3 cents per mile. Tractor-trailer firms accounted for 71 percent of the mileage and straight truck firms covered 29 percent. The tractor-trailer firms reported costs per mile of 37.8 cents and revenue of 33.8 cents. These figures were well above the cost figure of the model. It would indicate a possible rapid write-off of depreciation for tax purposes.

The regulated straight truck firms received revenues of 17.5 cents per mile and incurred costs of 15.4 cents per mile. The cost figure is larger than the average variable cost represented in the model. However, it does not encompass the total cost of the model even had depreciation and return to management been eliminated. The revenue does cover this cost and exceeds it by .5 of a cent.

Statewide

Revenue Received Relative to Freight Carried

The statewide totals supplement the economic areas. The regulated carriers carried 71.17 percent of the freight of the State. Seventy percent of this was agricultural commodities which were carried at an average revenue of 48 cents per hundredweight. Thirty percent of the regulated carriers' payload was nonexempt freight which was carried for an average revenue of 43 cents.

TABLE 19. COMPARISON OF AMOUNT OF FREIGHT CARRIED AND REVENUE RECEIVED BY EXEMPT MOTOR CARRIERS AND REGULATED MOTOR CARRIERS STATEWIDE

Freight	<u>Exempt Carriers</u>		<u>Regulated Carriers</u>		<u>All Carriers</u>	
	Percent Carried	Revenue Per Cwt.	Percent Carried	Revenue Per Cwt.	Percent Carried	Revenue Per Cwt.
Merchandise	.85	.44	2.56	.96	3.41	.82
Household Goods	--	--	.32	4.41	.32	4.41
Livestock	11.86	.41	20.04	.63	31.90	.55
Machinery	.06	.19	1.58	.60	1.64	.58
Grain	3.08	.14	17.66	.41	20.74	.37
Dairy Products	11.88	.35	11.71	.34	23.59	.34
Petroleum Products	--	--	.03	.36	.03	.36
Other Exempt	.11	.22	.39	.36	.50	.33
Other Nonexempt	.99	.13	16.88	.26	17.87	.25
Totals	28.83	.39	71.17	.46	100.00	.43

The exempt truckers carried 28.83 percent of the freight statewide and 93 percent of that was agricultural products carried at an average revenue of 35 cents per hundredweight. The 7 percent of nonexempt freight that the exempt carriers transported was carried for an average revenue of 27 cents.

In all categories except dairy products, it was noted that the regulated carriers carried the larger percentage of freight and received more revenue per hundredweight carried.

Analysis of Revenue and Costs Per Mile

The exempt carriers covered 31.5 percent of the motor carrier mileage (Table 20). For this they received average revenue of 22.3 cents per mile and incurred costs of 16.6 cents per mile. The exempt tractor-trailor

TABLE 20. COMPARISON OF PERCENTAGE OF AREA MILEAGE TRAVELED, REVENUES OBTAINED PER MILE, AND COSTS INCURRED PER MILE BY THE VARIOUS CARRIERS STATEWIDE

Type of Carrier	Percent of Mileage	Revenue Per Mile	Costs Per Mile	Margin Per Mile
Exempt Carriers	31.5	\$.223	\$.166	\$.057
Regulated Carriers	68.5	.281	.267	.014
All Carriers	100.0	.262	.235	.027

firms accounted for 23 percent of this mileage. They reported costs and revenues of 20.6 cents per mile and 23.2 cents per mile, respectively. The reported cost per mile is well below the model cost. When depreciation and return to management were eliminated from the model cost structure, the model's average total cost exceeded the reported costs by 1.7 cents. The revenue per mile exceeded the revised model cost by .9 of a cent. It was believed that all costs with the exception of depreciation and return to management were covered, although they were not charged directly to the firms.

The exempt milk transporters traveled 34 percent of the exempt miles for which they reported costs of 19.3 cents per mile and revenue of 27.0 cents per mile. The model cost was 27.9 cents per mile and without depreciation and return to management, 16.8 cents per mile. All costs were covered in the reported cost figure except depreciation and return to management; and when the revenue was considered, it was believed that depreciation and all but .9 of a cent for return to management had been accountable.

The exempt straight truck firms handled 43 percent of exempt carrier mileage statewide. They reported 17.7 cents per mile in revenue and 12.3 cents per mile in costs. The cost figure was below the average variable cost in the model firm; and thus, it seemed that the reported costs were quite unrealistic. The revenue received per mile was below the adjusted model cost, excluding depreciation and return to management. It was believed that the revenue was used to cover all costs other than fixed costs of depreciation and return to management and variable cost of the driver which was 5 cents per mile.

The regulated carriers covered 68.5 percent of the statewide mileage. Eighty percent of this were by tractor-trailer firms, and the balance was by straight truck firms (Table 20). These firms received a per mile average of 28.1 cents in revenue and incurred 26.7 cents per mile in costs. The tractor-trailer firms reported costs of 30.3 cents per mile and received revenues of 30.7 cents per mile. The costs reported by the firms were above those of the model. This could indicate a rapid write-off of depreciation for taxes. Whatever the case, the indication is that all costs were covered by the firms.

The regulated straight truck firms reported revenues of 17.2 cents per mile and costs of 12.0 cents per mile. Again, the reported costs were lower than those the model indicated as average variable costs. This would indicate a loss to the firm in the short run. Revenues, however, were sufficient to prevent this. In fact, it was possible for the firms to cover all but the costs of depreciation and return to management of the model.

CREDIT ANALYSIS AND OPINIONS OF LENDING AGENCIES

Indicators of the Ability to Attract Capital

The ability of a firm to produce a profit on investment is probably best indicated by the amount of net revenue before taxes that the firm's assets can generate.³¹ These assets are provided by capital obtained from sources outside the firm and from the owner of the firm. The capital obtained outside the firm is known as debt or liabilities, and the capital provided by the owner or owners of the firm is called equity or net worth.

The return on assets or profit on investment is the percentage of total assets that net revenue or gross revenue less costs represents.

$$\frac{\text{Net Revenue}}{\text{Total Assets}} = \text{Return on Assets}$$

³¹Nelson, James R., op. cit., pp. 5-7.

The return on assets is the result of the interaction of two other ratios.³² These are the "turnover" ratio and the "gross margin" ratio. The turnover ratio is the percentage of total assets that gross revenue represents and is a good indicator of how efficient the firm is utilizing assets in the generation of revenue. This ratio in equation form is:

$$\frac{\text{Gross Revenue}}{\text{Total Assets}} = \text{Turnover Ratio}$$

The higher this ratio is, the better is indicated the ability of the carrier to generate revenue.

The gross margin ratio is a good indicator of the efficiency of the firm in controlling costs. This ratio is the result of a relationship of net revenue to gross revenue.

$$\frac{\text{Net Revenue}}{\text{Gross Revenue}} = \text{Gross Margin Ratio}$$

Caution should be exercised in interpreting the gross margin ratio, because if all costs are not considered, the net revenue would be misleadingly high; and thus, the gross margin ratio would be inflated.

The interaction of the gross margin ratio and the turnover ratio results in the return on asset ratio.

$$\frac{\text{Net Revenue}}{\text{Gross Revenue}} \times \frac{\text{Gross Revenue}}{\text{Total Assets}} = \frac{\text{Net Revenue}}{\text{Total Assets}}$$

It was noted that when viewing the return on asset ratio alone, a false picture of the ability of the firm to attract outside capital could be developed. If the firm had either a low or high turnover ratio and had an inflated gross margin ratio, the resulting effect would be inflated high return on assets.

The data for the exempt carriers were incomplete as to providing asset figures for the firms. To allow for computation of these ratios, the fixed asset values were estimated from the model investment figures of Chapter II and applying the corresponding depreciation as was found in the data of the regulated carriers.³³ These estimates were considered conservative for there was no adjustment for current assets.

³²Ibid., pp. 5-7.

³³The average amount of depreciation for the regulated carriers was 53 percent. This amount of depreciation was deducted from the estimated assets of the exempt firms.

Economic Area 1

The return on asset ratio was higher for the exempt carriers of Area 1 than for the regulated carriers (Table 21). Thus, it was indicated that the exempt carriers yielded a higher profit on investment. This was proved to be a misleading deduction when the gross margin ratios and turnover ratios of the various firms were compared. These two ratios, when multiplied one by the other, yield the return on asset ratio.

TABLE 21. RETURN ON ASSETS AND RELATED RATIOS FOR REGULATED AND EXEMPT CARRIERS IN ECONOMIC AREA 1, NORTH DAKOTA, 1967

Type of Firm	Gross Margin	Turnover (percent)	Return on Assets
		<u>Exempt Carriers</u>	
Straight Truck	28.6	57.9	16.6
Milk Truck	29.8	82.4	23.8
Tractor-Trailer	-.4	142.9	-.6
All	16.0	95.0	15.2
		<u>Regulated Carriers</u>	
Straight Truck	43.8	180.2	78.9
Tractor-Trailer	.8	181.3	1.5
All	3.5	181.3	6.4

Cost Control

The gross margin ratio is a good designator of a firm's ability to control costs. The exempt straight truck firms, exempt milk truck firms, and regulated straight truck firms all presented a concept of this ability (Table 21). From statistics presented in the previous section, however, it is noted that the net revenue of the regulated and exempt straight truck firms; and the milk truck firms were inflated, because these firms did not account for all costs indicated in the comparative model.

The inflation of the net revenue figure for these firms results in an inflated gross margin ratio. Thus, even though the gross margin

ratios of these firms were above those found by Nelson (4.7 percent),³⁴ they indicated a misrepresented ability to control costs. The exempt tractor-trailer firms were in the same position as the aforementioned firms and also suffered from a cost control problem.

The regulated tractor-trailer firms were not inflating net revenue for all costs were accountable. The gross margin ratio was, therefore, a true indicator of the cost control ability of these firms. The indication was that these firms were lacking in ability to control costs when compared with the 57 Middlewest carriers.

Efficient Asset Utilization

The turnover ratio is an indicator of how efficiently the firm can utilize assets in generating income. The average turnover of assets in gross revenue as found by Nelson was 272.3 percent.³⁵ The exempt straight truck firms and milk truck firms were well below this average (Table 21). Thus, the ability of these firms to generate income was very low. The exempt tractor-trailer firms were somewhat higher than the other exempt classes, but had only approximately half the income generating power of the carriers surveyed by Nelson.

The regulated carriers were much better able to generate income than any of the exempt carriers, but they too were lacking when compared to the carriers in Nelson's study. The average turnover ratio for the regulated carriers (Table 21) amounted to only two-thirds of the average of the 57 Middlewest carriers.

Ability to Attract Capital

The ability of the firm to attract capital is well identified by the return on asset ratio. This ratio is the product of the gross margin ratio multiplied by the turnover ratio.

The regulated straight truck firms of Area 1 had a highly inflated gross margin ratio and a high ability to generate income; thus the return on asset ratio was very high (Table 21). It was more than six times the return on asset ratio found by Nelson (12.8 percent). These firms were misleading as capital attractors when considering the return on asset ratio; but if efficient cost control was induced after all costs were considered and the gross margin ratio was not inflated, the high turnover ratio would have encouraged the belief that these firms could attract capital.

The regulated tractor-trailer firms did not inflate the gross margin ratio but the ability of these firms to control costs was low when compared

³⁴Nelson, op. cit., p. 30.

³⁵Ibid.

with the findings of Nelson. The income generation ability of these firms was high. The return on asset ratio of these firms was low due to the extreme leverage exerted by the gross margin ratio. If cost control was imposed on these firms, the ability to attract capital would be greatly increased due to the great ability to generate income.

The exempt carriers have high return on asset ratios due principally to the leverage of the inflated gross margin ratio. The ability of these firms to generate income is low; and thus, the ability to attract capital is low. If the exempt milk carriers' were able to control costs better and not inflate the gross margin ratio, their ability to attract capital would be greatly improved because of the relatively high turnover ratio.

Economic Area 2A

The return on asset ratio was higher for the regulated carriers than for the exempt carriers in Area 2A. The return on assets was misleadingly high, however, for both carriers for the respective gross margin ratios had been highly inflated.

TABLE 22. RETURN ON ASSETS AND RELATED RATIOS FOR REGULATED AND EXEMPT CARRIERS IN ECONOMIC AREA 2A, NORTH DAKOTA, 1967

Type of Firm	Gross Margin	Turnover (percent)	Return on Assets
		<u>Exempt Carriers</u>	
Straight Truck	32.4	71.3	23.1
Milk Truck	34.1	82.0	27.9
All	33.5	78.0	26.2
		<u>Regulated Carriers</u>	
Tractor-Trailer	21.9	151.9	33.3
All	21.9	151.9	33.3

Cost Control

The net revenue figures of the regulated and exempt straight truck firms as well as the milk truck firms were inflated due to the firms not

accounting for all costs as explained in the previous section. Therefore, the gross margin ratios were misleadingly high and indicated an incorrect degree of cost control (Table 22).

Efficient Asset Utilization

The regulated carriers again demonstrated a greater ability to generate income from assets than did the exempt carriers (Table 22). Although the turnover ratio for the regulated tractor-trailer firms was half that reported by Nelson, it was twice that of the exempt carriers.

Ability to Attract Capital

In Area 2A the regulated carriers were more able to attract capital than were the exempt carriers judging from the respective return on asset ratios (Table 22). The leverage of the inflated gross margin ratio was not as great in this area and thus the turnover ratio was the deciding factor; however; the regulated carriers had not inflated the gross margin ratio as badly as had the exempt carriers.

Economic Area 2B

The regulated carriers had a lower return on assets than did the exempt carriers (Table 23); however, the regulated carriers presented the possibility of having a greater return due to the efficient use of assets.

TABLE 23. RETURN ON ASSETS AND RELATED RATIOS FOR REGULATED AND EXEMPT CARRIERS IN ECONOMIC AREA 2B, NORTH DAKOTA, 1967

Type of Carrier	Gross Margin	Turnover (percent)	Return on Assets
		<u>Exempt Carriers</u>	
Straight Truck	29.2	111.2	32.5
Milk Truck	22.3	244.2	54.4
Tractor-Trailer	10.8	36.7	4.0
All	23.4	105.7	24.7
		<u>Regulated Carriers</u>	
Straight Truck	31.5	222.9	52.3
Tractor-Trailer	-7.1	498.4	-35.4
All	-3.1	429.0	-13.3

Cost Control

The exempt straight truck firms and exempt tractor-trailer firms presented a badly inflated gross margin ratio due to lack of considering all costs. The regulated straight truck firms had a similar problem but not to as great a degree. Thus, these firms presented a misleading indication of efficient cost control (Table 23).

The regulated tractor-trailer firms did not inflate the gross margin ratio and thus indicated a true picture of lack of cost control. The exempt milk truck firms did not inflate the gross margin ratio, thus presenting a true picture of their cost control ability which was excellent at nearly five times the average of the firms in Nelson's study.

Efficient Asset Utilization

The exempt tractor-trailer firms and exempt straight truck firms were similar to those of Area 2A, for they were lacking in ability to generate income from assets. The regulated straight truck firms and exempt milk truck firms could generate income at a rate of more than four-fifths that found by Nelson (272.4 percent); whereas, the regulated tractor-trailer firms had the ability to generate income at a rate almost twice that of the carriers of Nelson's study.

Ability to Attract Capital

The exempt straight truck firms provided a misleading return on assets for the gross margin ratio was highly inflated and the ability to generate income was low. This was the case of the exempt tractor-trailer firms also; however, the turnover ratio in this instance was drastically low. Thus both of these type firms have indications of having had poor ability to attract capital.

The regulated straight truck firms were inflating the gross margin ratio somewhat, but the ability to generate income was strong, thus providing for a fairly solid ability to attract capital. The exempt milk carriers in Area 2B indicated strong ability to control costs as well as a fairly strong ability to generate income, thus the ability to attract capital was strong. The regulated tractor-trailer firms lacked ability in cost control but had tremendous ability to generate income; thus the ability to attract capital was high.

Economic Area 3A

The exempt carriers in Area 3A had a higher return on assets than did the regulated carriers. This, again as in Area 1 and Area 2B, was largely due to the inflated gross margin ratios of the exempt carriers (Table 24).

Cost Control

The exempt and regulated straight truck firms had badly inflated gross margin ratios indicating a distorted ability of cost control (Table 24). The exempt tractor-trailer firms had inflated the gross margin ratio to some extent, thus the judgment as to cost control was difficult to make. The regulated tractor-trailer firms did not inflate the gross margin ratio and had more than twice the cost control ability of Nelson's 57 Middlewest carriers.

TABLE 24. RETURN ON ASSETS AND RELATED RATIOS FOR REGULATED AND EXEMPT CARRIERS IN ECONOMIC AREA 3A, NORTH DAKOTA, 1967

Type of Firm	Gross Margin	Turnover (percent)	Return on Assets
<u>Exempt Carriers</u>			
Straight Truck	33.4	77.9	26.0
Tractor-Trailer	30.9	63.5	19.6
All	32.1	69.6	22.3
<u>Regulated Carriers</u>			
Straight Truck	17.3	114.3	19.8
Tractor-Trailer	11.9	158.4	18.9
All	14.2	136.2	19.3

Efficient Asset Utilization

The regulated carriers exhibited a greater ability to generate income than did the exempt carriers as was evident when viewing the turnover ratios (Table 24). This trait had been evident in all the areas examined to this point. However, the ability of the carriers in Area 3A was not as great as that of the carriers in Area 2B.

Ability to Attract Capital

The ability of the regulated tractor trailer firms to generate income and control costs makes these firms the most attractive to capital investors of all carriers in Area 3A. The exempt tractor-trailer firms were the second most favorable of the carriers when ability to attract capital is considered; however, the ability to generate income is low. The least attractive for capital investment was the straight truck firms in either exempt or regulated traffic because of the problem of inflated incomes.

Economic Area 3B

The regulated carriers indicated a higher return on assets than the exempt carriers due to the inflated gross margin ratios coupled with the high turnover ratios (Table 25).

TABLE 25. RETURN ON ASSETS AND RELATED RATIOS FOR REGULATED AND EXEMPT CARRIERS IN ECONOMIC AREA 3B, NORTH DAKOTA, 1967

Type of Firm	Gross Margin	Turnover (percent)	Return on Assets
<u>Exempt Carriers</u>			
Straight Truck	29.7	72.4	21.5
Milk Truck	28.0	176.1	49.3
All	28.5	124.7	35.5
<u>Regulated Carriers</u>			
Straight Truck	39.0	164.6	64.2
Tractor-Trailer	19.4	172.4	33.5
All	22.2	171.3	38.0

Cost Control

The straight truck firms inflated the gross margin ratio seriously in both regulated and exempt traffic, thus efficient cost control was misrepresented (Table 25). The milk truck firms provide for most costs; thus the indicated gross margin ratio was evidence of efficient control of costs. The regulated tractor-trailer firms inflated the gross margin ratio; but in this instance also, the firms were believed to have some ability of cost control.

Efficient Asset Utilization

The ability of the regulated carriers in Area 3B to generate income was again greater than the exempt carriers; however, the milk truck firms in exempt traffic also demonstrated the ability to generate income (Table 25). These firms were not as competent as the firms in Nelson's study or the firms of Area 2B, however.

Ability to Attract Capital

The exempt milk truck firms were best able to attract capital in Area 3B due to efficient cost control and generating income ability resulting in a high return on asset figure. The regulated tractor-trailer firms also had a fair amount of capital attraction; but since the gross margin ratio was not as high as that of the milk truck firms, the capital attraction was not as great as those firms.

Economic Area 3C

The regulated carriers in Area 3C had a higher return on asset ratio than did the exempt carriers due to the higher ability to generate income (Table 26).

TABLE 26. RETURN ON ASSETS AND RELATED RATIOS FOR REGULATED AND EXEMPT CARRIERS IN ECONOMIC AREA 3C, NORTH DAKOTA, 1967

Type of Firm	Gross Margin	Turnover (percent)	Return on Assets
		<u>Exempt Carriers</u>	
Straight Truck	37.1	48.6	18.0
All	37.1	48.6	18.0
		<u>Regulated Carriers</u>	
Straight Truck	33.1	195.9	64.8
All	33.1	195.9	64.8

Cost Control

The regulated and exempt carriers had badly inflated gross margin ratios and thus presented misleading indications of efficient cost control.

Efficient Asset Utilization

The regulated carriers did present a higher ability to generate income than the exempt carriers. Although the ability of the regulated carriers was four times that of the exempt carriers, the regulated carriers were below both the carriers in Nelson's study and those of Area 2B.

Ability to Attract Capital

The carriers in Area 3C were lacking in ability to attract capital mainly because of the effect of the inflated gross ratios, and the exempt carriers also lacked the ability to generate income.

Economic Area 4

The exempt carriers in Area 4 had a higher return on asset ratio than the regulated carriers. This was due, as in many other areas, to the influence of the gross margin ratio of the exempt carriers (Table 27).

TABLE 27. RETURN ON ASSETS AND RELATED RATIOS FOR REGULATED AND EXEMPT CARRIERS IN ECONOMIC AREA 4, NORTH DAKOTA, 1967

Type of Firm	Gross Margin	Turnover	Return on Assets
		(percent)	
		<u>Exempt Carriers</u>	
Straight Truck	31.2	44.6	13.9
Milk Truck	39.3	90.6	35.6
All	34.1	54.5	18.6
		<u>Regulated Carriers</u>	
Straight Truck	12.4	168.9	20.9
Tractor-Trailer	-11.8	220.6	-26.0
All	-7.6	209.5	-15.9

Cost Control

The exempt milk truck firms demonstrated efficient cost control for without inflating the gross margin ratio, these firms had a ratio over eight times that reported by the firms in Nelson's study (4.7 percent) . The regulated tractor-trailer firms did not inflate the gross margin ratio, and it indicated a lack of cost control (Table 27). The straight truck firms both in exempt and regulated traffic presented inflated net revenues and thus resulting in inflated gross margin ratios.

Efficient Asset Utilization

The regulated carriers again demonstrated a greater ability of income generation. These firms developed nearly four times the income from assets as did the exempt carriers (Table 27).

Ability to Attract Capital

The firms in Area 4 were not overly able to develop capital attraction. The milk truck firms were best able to control costs, but their income generation ability was low; however, the resulting return on asset ratio would indicate the ability to attract capital. The regulated tractor-trailer firms had the highest turnover ratio, thus indicating ability to generate income; however, due to lack of efficient cost control their ability to attract capital was low.

The regulated and exempt straight truck firms did not consider all costs; and this would indicate a lack of cost control, thus leaving a doubt as to ability to attract capital.

Statewide

The exempt carriers had a return on asset ratio higher than that of the regulated carriers (Table 28). This was due to the overall effect of inflated gross margin ratios of the exempt carriers.

TABLE 28. RETURN ON ASSETS AND RELATED RATIOS FOR REGULATED AND EXEMPT CARRIERS IN NORTH DAKOTA, 1967

Type of Firm	Gross Margin	Turnover	Return on Assets
		(percent)	
		<u>Exempt Carriers</u>	
Straight Truck	31.2	66.5	20.7
Milk Truck	28.5	131.9	37.6
Tractor-Trailer	12.4	84.0	10.4
All	25.7	89.1	22.9
		<u>Regulated Carriers</u>	
Straight Truck	25.6	148.4	38.0
Tractor-Trailer	2.3	200.4	4.6
All	6.0	189.9	11.3

Cost Control

The exempt straight truck firms had inflated their gross margin ratio quite badly. Thus the true indication of cost control ability was impossible to determine. The exempt tractor-trailer firms and regulated straight truck firms had also inflated the gross margin ratio, but it was possible to ascertain some degree of cost control from the gross margin ratio and the information developed in the previous section. The milk truck firms demonstrated a considerable amount of efficient cost control for the gross margin ratio was inflated very little. The regulated tractor-trailer firms did not inflate the gross margin ratio, and the indication was a lack of cost control.

Efficient Asset Utilization

Statewide as in the various economic areas, the regulated carriers demonstrated a higher ability of income generation with the exempt milk truck firms exhibiting the greatest ability of the exempt firms and the tractor-trailer firms indicating the greatest ability of all firms (Table 28).

Ability to Attract Capital

The exempt milk truck firms indicated the most ability for attracting capital for they demonstrated efficient cost control and relatively high ability to generate income. The resulting return on asset ratio was high indicating a good profit on investment. The regulated tractor-trailer firms lacked to some degree in capital attraction because of lack of cost control. The high ability of these firms to generate income would make them attractive to investors if efficient cost control was introduced.

The exempt straight truck firms and tractor-trailer firms lacked ability to generate income and ability to control costs as indicated somewhat by an inflated gross margin ratio. The regulated straight truck firms also inflated the gross margin ratio indicating the lack of ability to control costs. These factors indicate the lack of ability to attract capital by these three types of firms.

Selected Ratios to Indicate Ability to Obtain Credit

The ratios that were selected to determine the credit position of the agricultural trucking industry were the current ratio, fixed assets to net worth, debt outstanding to net worth, gross revenue to net worth, and net revenue to net worth.³⁶

³⁶ Annual Statement Studies, Robert Morris Associates, Philadelphia, Pennsylvania, 1968, pp. v-vii.

An indicator of the ability of a firm to meet its current obligations is the current ratio, which is current assets to current liabilities. This ratio should be between 1 and 1.10.³⁷ How much of the firm's own capital is available for working capital or quick assets is evident when the fixed assets to net worth ratio is observed; the higher this ratio is, the less amount of owner capital is available as current assets. The ratio expressing the relationship of owner's capital to creditor's capital is the debt to net worth ratio. This is an indicator of what is owned to what is owed.³⁸ This ratio should be less than 1.0.³⁹ This ratio analysis was used on only a few regulated carriers in each economic area. Twenty-four carriers had records for possible analysis. Records for this type of analysis were not required of the exempt carriers; therefore, they cannot be included in the analysis.

TABLE 29. CURRENT RATIO, FIXED ASSETS TO NET WORTH, AND DEBT TO NET WORTH RATIO BY ECONOMIC AREA, NORTH DAKOTA, 1967

Economic Area	Current Assets to Current Liabilities	Fixed Assets to Net Worth	Debt to Net Worth
Area 1	.4	1.8	1.1
Area 2A	5.2	.2	.1
Area 2B	a	.3	0
Area 3A	.3	1.2	.5
Area 3B	.5	1.7	1.3
Area 3C	.1	2.3	1.5
Area 4	<u>2.0</u>	<u>1.1</u>	<u>.8</u>
Statewide	.8	1.2	.7

^aThe firms analyzed in Area 2B did not indicate any current liabilities.

The regulated firms in the state were in relatively good financial position, with the exception of their ability to cover current liabilities with current assets (Table 29). Corresponding values from a nationwide sampling were: .9 for the current ratio, 1.4 for the fixed assets to net worth ratio, and 1.6 for the debt to net worth ratio.⁴⁰

³⁷Hellier, op. cit., pp. 681-682.

³⁸Annual Statement Studies, op. cit., pp. v-vii.

³⁹Hellier, op. cit., pp. 681-682.

⁴⁰Annual Statement Studies, op. cit., p. 220.

Past Experience and Opinions of Selected North Dakota
Lending Agencies Regarding Motor Carrier Financing

The lending agencies surveyed were divided in two groups. These were finance companies and banks.

Past Experience in Motor Carrier Financing

The banking industry reported approximately 3.6 percent of their loan portfolios were devoted to motor carrier financing. Of this, direct paper, loans made by the bank directly to the individual for purchase of the equipment, accounted for 21 percent, while purchased paper, loans purchased from the dealer selling the equipment, made up the remaining 79 percent.

The finance companies reported an average of 12.9 percent of their loan portfolios were comprised of motor carrier loans and that 100 percent of these loans were purchased from the dealer selling the equipment.

Purchased paper was preferred by many lending agencies, because the dealers selling the equipment would guarantee the loans; and also a higher rate of interest could be charged by the selling dealers. The lending agencies felt that these factors compensated for the increased risk involved. Direct paper carried an average interest rate of from 7.5 percent to 9 percent simple interest, while purchased paper carried interest rates from 10.5 percent to 14 percent.

The suspicion that purchased loans tend to carry more risk than direct loans was borne out when past-due rates and repossession rates were compared. The direct loans were reported to have a 1.1 percent past-due record over 30 days and a repossession rate of .2 percent. The loans purchased by banks reportedly had a past-due record of 10.1 percent and a repossession rate of 2.7 percent. The finance companies reported their motor carrier purchased paper had a record of 1.8 percent past-due and a 2.8 percent repossession rate. A past-due position of less than 4 percent and a repossession rate of less than 1 percent is desirable.

The terms of the loans, regardless of whether they were purchased or direct, were mainly 36 months in length with monthly payments. The banks reported 7 percent of the motor carrier loans were 24 months, 79 percent were 36 months, 2 percent were 48 months, and 12 percent were farm plan payments or one payment per year. The finance companies reported 9 percent were 24 months, 54 percent were 36 months, and 37 percent were 48 months. No farm plan loans were reported by the finance companies. The average down payment required by the banks was 27 percent. However, this was considered negotiable for each individual loan. The finance companies reported an average down payment of 23 percent.

Opinions Toward Motor Carrier Financing

The lending agencies were asked whether they had any feeling of favor or disfavor concerning motor carrier financing. The banks reported 40 percent in favor and 60 percent not in favor of such financing. The finance companies were in favor of lending to the trucking industry at a ratio of 80 percent for and 20 percent against.

The lending agencies were questioned as to what influence the type of commodity to be transported would have concerning the extension of a loan. Forty-seven percent of the banks said it would have no influence, but the remaining 53 percent felt it would have a great influence on how readily available credit would be. These banks ranked carriers of petroleum products as being the best credit risk and in order of increasing risk, carriers of merchandise, machinery, dairy products, livestock, and grain. Twenty percent of the finance companies said the commodity hauled would have no influence concerning making the loan. However, the 80 percent who felt the commodity was an important influence, had the same opinion as the banks.

When asked if they felt the demand for motor carrier financing had changed in the last five years, 50 percent had noted no change and felt that the demand was small. Of the 50 percent that had noted a change, 70 percent indicated an increase and 30 percent noted a decrease. The finance companies all mentioned a change in the demand for truck financing, but they were mixed as to how. Eighty percent indicated a decrease in demand and 20 percent indicated an increase.

SUMMARY AND CONCLUSIONS

Summary

The regulation of intrastate commerce in North Dakota was patterned after the Interstate Commerce Act to some degree. The Public Service Commission can issue four types of permits: the agricultural carrier permit, the special common carrier certificate, the Class A common carrier certificate, and the contract carrier permit. The two permits considered in this study were: the agricultural carrier permit or exempt carriers and the special common carrier certificate or regulated carriers. The scope of the study was limited to these two carriers, because of the degree of similarity and competition; and these firms accounted for 82 percent of the motor carriers registered with the Public Service Commission.

The specific objectives were:

1. To determine the availability of credit for members of the agricultural motor carrier industry of North Dakota.

2. To determine the influences of the industry cost structure on rate levels for regulated motor carriers and exempt motor carriers, and indicate any effect this has upon the ability of the industry to attract outside financing.

3. To compare, within North Dakota economic areas, the amount of freight carried with revenues received by the regulated motor carriers and exempt motor carriers and to indicate whether a relationship exists regarding percentage of freight carried with revenue received.

4. To describe the general opinion of the various financing institutions regarding agricultural motor carrier financing.

5. To provide guidelines for improving the credit position of the agricultural motor carrier industry.

Hypothetical models were constructed to use as controls in analysis of the actual trucking firms. The models had average total costs of 32.5 cents per mile for regulated straight truck firms, 55.8 cents for exempt straight truck firms, 27.9 cents for exempt milk truck firms, 35.4 cents for exempt tractor-trailer firms, and 26.0 cents per mile for regulated tractor-trailer firms.

Of the regulated carriers, 83 percent had been in business five years or more while only 71 percent of the exempt carriers were in this category.

Revenue received in Area 1 was higher for the regulated carriers than for the exempt carriers, and the regulated carriers hauled nearly 75 percent of the entire freight load. It was found that the regulated and exempt straight truck firms did not report realistic costs. The regulated tractor-trailer firms reported costs higher than the model while the exempt tractor-trailer firms and exempt milk carriers reported costs well below model costs. However, these firms had revenue that would cover the model costs less depreciation and return to management.

In Area 2A, the regulated carriers again carried the bulk of the freight. The revenues of the regulated carriers were lower than the exempt carriers due to the influence of the high price received by the exempt milk carriers. The regulated carriers were receiving revenue below the average variable cost of the model, and thus were losing money in the short run. The exempt straight truck firms and the milk transporters reported costs below those of the model but received revenues to allow coverage of all costs less depreciation and return to management.

The regulated carriers transported 70 percent of the total freight of Area 2B at a higher price than was received by the exempt carriers. The regulated tractor-trailer firms covered all model costs. The regulated straight truck firms reported costs below the model costs but the revenue received was sufficient to cover the model costs less

depreciation and return to management. The exempt tractor-trailer firms and the exempt straight truck firms had the same problem as the regulated straight truck firms. The exempt milk transporting firms were covering all costs and their revenue allowed for addition to the capital account.

In Area 3A, the regulated carriers carried over 70 percent of the freight and received revenues higher than the exempt carriers. The regulated straight truck firms covered all costs but depreciation and return to management with the revenue received. The regulated tractor-trailer firms covered all costs and were able to add to the capital account from the revenue received. The exempt tractor-trailer firms covered all costs but return to management but did not include these in the reported costs. The exempt straight truck firms reported costs were low and covered the variable costs of the model. The revenue received was sufficient to cover all model costs except depreciation and return to management.

The regulated carriers moved over 60 percent of the freight in Area 3B and received 10 cents per hundredweight more revenue than did the exempt carriers. The regulated straight truck firms reported costs less than the model variable costs, and the revenues received were sufficient to cover the model costs less depreciation and return to management. The regulated tractor-trailer firms reported costs lower than the model costs but the revenue received covered all costs of the model. The exempt milk carriers reported costs equal to the model costs less return to management but the revenue received more than covered this. The exempt straight truck firms reported costs lower than the model, and the revenue received was less than the model costs less depreciation and return to management.

Area 3C was an exception with the exempt carriers hauling the bulk of the freight. However, the regulated carriers received 12 cents more per hundredweight in revenue. Straight truck firms were the firms operating in regulated and exempt traffic. In both cases, the reported costs were below the variable cost of the model; and revenue covered only a small portion of either the regulated firms' exempt or fixed costs.

In Area 4, the regulated firms carried 85 percent of the freight and received 4 cents more per hundredweight than the exempt carriers. The exempt milk truck firms reported costs equal to the model costs less return to management and revenue in excess of costs more than covered that. The exempt straight truck firms reported costs well below the model costs, but the revenue received covered nearly all model costs with the exception of depreciation and return to management. The regulated tractor-trailer firms reported costs greater than those indicated by the model and also in excess of revenues received. The regulated straight truck firms reported costs less than the model costs. However, the revenue received covered all model costs less depreciation and return to management.

The ratios of return on assets, turnover ratio, and gross margin ratio indicated that the regulated carriers had greater ability to generate income than did the exempt carriers. These ratios were also evidence of the ability of the regulated tractor-trailer firms of Area 1, the exempt milk truck firms and regulated tractor-trailer firms of Area 2B, the regulated tractor-trailer firms of Area 3A and the regulated tractor-trailer firms of Area 4 to attract outside capital.

Selected ratios used to analyze the financial statements that were acceptable from the regulated firms indicated that these firms were having problems of covering current liabilities with current assets but otherwise were financially sound.

Past experience of lending institutions indicated problems of past-due loans and high repossession rates in the motor carrier industry. These lending agencies also indicated that the commodity hauled had some relation to the amount of credit risk involved. In order of increasing risk, the commodities were ranked: petroleum products, merchandise, machinery, dairy products, livestock, and grain.

Conclusions

The firms of the agricultural trucking industry of North Dakota are relatively stable when measured by the length of time in business. The regulated carriers are more stable than are the exempt carriers.

It was indicated that the exempt straight truck firms are guilty of not allowing for all costs when developing their income statements. This could be a result of allocating the remaining costs to some other enterprise such as a side occupation of farming. This problem carries over to the regulated straight truck firms and also to the exempt tractor-trailer firms. When considering advancing capital to these firms in the form of a loan, it would be wise to look to the other income for additional payment.

Firms involved in agricultural trucking in North Dakota are faced with the problem of excess capacity. There are too many firms, and entry into the industry is too easy to allow for efficient utilization of fixed assets. The firms lower rates in hope of capturing traffic to generate revenues in order to recover all costs. However, when one firm sets rates, another must set a lower rate in order to secure traffic. This process continues until rate levels are less than fully distributed costs. This trend continues until the less efficient and less well managed firms are forced from the industry, but there always seems to be at least an equal number of firms to replace those ceasing to exist. This problem is especially noted in

the cases of exempt tractor-trailer firms and exempt straight truck firms where the firms are exempt from economic regulation.

The regulated carriers have the capability to pay off debts incurred more readily than exempt carriers because of the ability to generate income. If cost control can be incorporated into these firms, the problem of repayment will be lessened.

Guidelines for advancing credit to members of the motor carrier industry are:

1. Regulated carriers are more stable than exempt carriers.
2. Regulated carriers have a greater ability to generate income.
3. Regulated carriers have a tendency to be more able to control costs.
4. Of the exempt carriers, the milk truck firms have the highest turnover ratio indicating the ability to generate income.
5. The regulated tractor-trailer firms have a high ability to generate income and show a tendency for efficient cost control.
6. Economic Area 2B has indications of producing the highest income generating firms.
7. If lending agencies are willing to keep tight control on motor carrier loans, this type of loan carries a high rate of interest; and the term is for three years in most cases.

Further research is needed to discover trends in the agricultural trucking industry of North Dakota. The data available at the time this study was completed were only for 1967.