Abstract

A REGIONAL PERSPECTIVE OF AGRICULTURALLY EXEMPT MOTOR CARRIERS IN THE UNITED STATES: PROBLEMS AND CHARACTERISTICS

by

Robert K. Stump and Ken L. Casavant

Agricultural exempt truckers continue to be a growing part of the national transportation system. But, the regulatory and economic environment surrounding these truckers has undergone significant changes. This paper analyses, based on a national survey of agricultural motor carriers, both the problems facing truckers as well as operating characteristics in relation to regional location. A Chi-Square test was used to test independence between region and the other variables of age, size, commodity hauled, and percent empty mileage.

It was found that regionality has a strong impact on trucker problems and operating characteristics. It appeared that commodity specialization, which is closely associated to region, might be a determinant of many problems and operating characteristics experienced by these truckers. The study results indicated that studies by researchers, and policies by policy makers based on aggregation of the national trucking industry should be instituted with some reservations.

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The important role played by transportation in the U.S. economy and for agriculture is now conventional wisdom. Although the railroads have played the leading role in moving agricultural products, truck transportation has developed into an effective and necessary part of the transportation system. These motor carriers, exempted from rate and route regulation by sec. 203b, Subsection 6 of the Interstate Commerce Act, have moved more and more of the U.S. agricultural production. These increased movements have occurred because of the truck's inherent quality of service advantage over rail service as well as competitive rates. Past studies have indicated that exempt motor carriers have also exhibited characteristics of stability, have responded to competitive traits, and have provided high quality service at low rates (1,2,3,4).

However, the regulatory and economic environment surrounding the agricultural exempt trucker has undergone significant changes during the last few years. Inflation, increasing energy costs, rail line abandonment, technological change, and increased action by legislative and regulatory bodies represent a few of the areas which are undergoing transitions. As these modifications

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occurred it has become necessary to see what problems were affecting exempt truckers, how these problems were related to other operating characteristics of the truckers and which truckers were being affected the most. Thus, the performance and needs of this trucking sector can be better evaluated by those policy makers who are making the legislative decisions on transportation issues.

The specific objective of this paper is to present trucker problems and operating characteristics in relation to regional location.

Method and Scope of Study

A study in 1974 was undertaken to examine the nature of competition and the stability of motor carriers operating under the agricultural exemption in the United States. A national mail survey yielded data from about 9,000 truckers describing the problems and characteristics of exempt motor carriers. This paper reports on the 3,335 responses who made qualitative comments in addition to providing quantitative data asked for within the questionnaire.

An economic framework for problem delineation was achieved by reviewing the literature on transportation and reading 15-20% of the questionnaires. The problem areas defined were:

1. Costs of operation, non-energy related; costs in this area were loading and unloading charges, tolls, license fees, office rent, wages, etc.
2. State weight and length laws; problems noted were lack of standardization of these laws or maximum weight standards were too low.
3. Energy issues of higher fuel and lower speed limits; increasing and varying fuel costs and initiation of a nationwide 55 mile per hour speed limit were quickly identified.
4. Truck brokers and generation of backhauls; truckers were concerned with the percentage commission charged by truck brokers, the fact government regulations on commodity movements make truck brokerage on the backhauls necessary, and some brokers ask truckers to do difficult or illegal things.
5. Ratecutting by ICC carriers on the front haul; ICC carriers haul exempt commodities as backhaul at lower rates than exempt truckers desire.

6. State permits; too many permits, reports, gas tax sheets, logbooks, etc., are required. A uniform Federal permit was desired by truckers.

7. Rate problems and low rates; rates on exempt commodities were too low and did not reflect cost increases, hence some minimum regulated rates were desired to maintain the trucking business.

8. Other problems not previously defined; such as, railroads offering lower rates on grain, the ability of common carriers to pass on the 6 percent surcharge, and government subsidizing of the railroads.

This problem framework, when combined with other available characteristics such as age, size, commodity hauled, percent empty mileage, and region produced a broad information set.

A Chi-Square test was used to test independence between regions and the other variables. Generally, this test allowed identification of regions whose characteristics are significantly different than the national distribution. The regional definition used was that of the Regional Economics Division of the U.S. Department of Commerce. The regions were: (1) New England; (2) Mideast; (3) Great Lakes; (4) Plains; (5) Southeast; (6) Southwest; (7) Rocky Mountain; and (8) Far West. A breakdown on the number of truckers responding from each region and state (based on trucker's home or legal residence) is presented in Table 1. The relationships of region to age, size, commodity hauled, problems experienced and percentage empty mileage will be presented. Because of space limitations only tables reviewing the last two variables will be included.

Results

Region and Age

Age of the trucking firm is simply how long the firm has been in business. The Chi-Square analysis indicated that age didn't vary significantly between the regions. The only significant finding within regions was that in the Great Lakes region more firms who have been in business 25 to 29 years were found than expected. Also, fewer firms of 1 to 4 years in age were found

Table 1. Total Number of Truckers Responding by State and Region Based on the Regional Economics Breakdown

Region of Home Office	Total # Responding	% of Total
New England		
Maine	34	
Vermont	1	
New Hampshire	3	
Massachusetts	13	
Connecticut	6	
Rhode Island	6	
Total	63	.02
Mideast		
New York	21	
Pennsylvania	68	
Maryland	21	
New Jersey	19	
Delaware	16	
Total	145	.04
Great Lakes		
Illinois	109	
Indiana	124	
Ohio	28	
Michigan	51	
Wisconsin	85	
Total	397	.12
Plains		
North Dakota	147	
South Dakota	109	
Nebraska	103	
Kansas	146	
Missouri	156	
Iowa	277	
Minnesota	277	
Total	1215	.37

Region of Home Office	Total # Responding	% of Total
Southeast		
Virginia	51	
West Virginia	8	
Kentucky	15	
Tennessee	43	
Arkansas	65	
Louisiana	27	
Mississippi	32	
Alabama	51	
Georgia	44	
Florida	226	
North Carolina	90	
South Carolina	44	
Total	696	.21
Southwest		
Arizona	17	
New Mexico	30	
Texas	141	
Oklahoma	93	
Total	281	.09
Rocky Mountain		
Montana	70	
Idaho	46	
Wyoming	13	
Utah	24	
Colorado	92	
Total	245	.08
Far West		
Washington	67	
Oregon	62	
California	105	
Nevada	3	
Total	237	.07

than expected in this region, suggesting fewer younger firms existed here than in the national trucking industry.

Firm Size and Region

Firm size was classified by truck numbers including both straight trucks and truck tractors. It does appear that there is significant variation in firm size by region. Trucking operations in the Southeast had more firms possessing fewer than three trucks and less firms possessing 6 to 10 trucks than any other region. Plains region truckers had more firms than expected in the 3 to 5 truck firm size and less with 11 to 30 trucks. In the Rocky Mountain region, firms having 6 to 10 or over 51 trucks in their operation occurred more often than expected.

Commodities and Region

Truckers were classified according to the percentage distribution of total tonnage of specific commodities hauled across state lines, with the trucker being placed in the specific commodity group based on the highest percentage of tonnage outbound. Commodity specialization was found to definitely vary by region, as would be expected. New England had less grain and more milk and cream than the national distribution. The Mideast region had fewer grain and more non-exempt carriers than expected. The Great Lakes region had a preponderance of milk and cream haulers.

Except for grain, which occurred significantly less, fruit and vegetable, poultry and eggs, and cotton and wool carriers occurred more often than expected in the Southeast region. The Plains area, on the other hand, had more grain and less fruit and vegetable carriers than expected. In the Southeast, hay and forage haulers occurred more, and non-exempt carriers less, than expected. The Rocky Mountain region had more livestock and less fruit and vegetable and poultry and egg carriers than expected. Except for grain

and livestock, which were significantly less, fruit and vegetable and non-exempt truckers occurred more often than expected in the Far West region.

Problems Experienced and Region

Problems experienced by truckers did vary significantly by region (see Table 2). Operating costs problems were found to be very prevalent in the Southeast and seldom in the Plains region where "other problem areas" occurred very often. The Rocky Mountain area had fewer problems of backhaul and fuel and speed while the Far West truckers noted low rates and backhauls as their problems.

Weight and length problems were found often in the Southwest and less often in the Southeast. Backhaul availability was a problem for the Southeast but not for the Rocky Mountain region. Ratecutting was noted by the Mideast truckers but not very often by the Plains, who also mentioned low rates on agricultural commodities less than expected. Finally, truckers in the Plains region mentioned many different problems while those in the Southeast usually mentioned only the first seven areas.

Percent Empty Mileage and Region

Truckers were asked to identify the percentage of their total firm mileage that was without a load (see Table 3). Truckers in the Mideast had a smaller percent of total mileage traveled without a load than any other region. Trucking operations in the Great Lakes region had substantially higher empty mileage than expected compared to truckers in the Southeast region who had less than expected. The Plains area as well exhibited higher percentage empty miles than did the national distribution. In the Far West the most significant empty mileage was in 6 to 20 percent category.

Conclusions[5]

The dominant conclusion to be drawn from this study is that regionality has a strong impact on trucker problems and operating characteristics. This further

Table 2. X^2 Comparison of Problems Experienced and Region Located

Region \ Problem	Operating Costs	Weight & Length	Fuel & Speed	Backhauls	Rate-cutting	Permits	Low Rates	Other Problems	Totals # Truckers/ X^2 Value
New England	25 1.89 +	14 .08 +	20 .00 =	14 .07 -	7 .80 +	17 .21 -	17 .06 -	15 .31 +	63 3.42
Mideast	46 .21 +	32 .13 +	51 .54 +	28 1.06 -	17 4.90 +	49 .57 +	36 .61 -	27 .14 -	145 8.16
Great Lakes	108 .85 -	81 .05 -	115 1.13 -	103 .86 +	33 .55 +	122 .03 -	108 .14 -	65 2.81 -	397 6.42
Southeast	279 24.23 +	113 7.06 -	251 3.79 +	189 3.49 +	61 2.42 +	181 4.00 -	210 1.00 +	107 8.20 -	696 54.19
Plains	296 12.03 -	269 1.01 +	399 .31 +	263 2.01 -	67 4.60 -	406 4.14 +	293 6.75 -	295 10.20 +	1215 41.05
Rocky Mountain	67 .22 -	57 .71 +	59 4.63 -	41 4.98 -	19 .06 +	64 1.35 -	84 3.26 +	58 1.65 +	245 16.86
Southwest	88 .19 +	77 5.49 +	90 .00 =	67 .02 +	12 3.20 -	93 .75 +	90 1.53 +	51 .63 -	281 11.81
Far West	69 .06 -	40 1.65 -	62 2.58 -	70 3.50 +	20 .53 +	59 2.35 -	83 3.82 +	44 .33 -	237 14.82
Totals									3279
# Observations	978	683	1047	775	236	991	921	662	6293
X^2 Value	39.68	16.18	12.98	15.99	17.06	13.40	17.17	24.27	156.73

Critical Values of X^2
X^2 0.050% level
7 D.O.F. = 14.07
49 D.O.F. = 66.33

Explanation of Table Cells
000 = Actual number observed
0.00 = Individual cell X^2 value
+ observed value > expected value
- observed value < expected value
= observed value = expected value

Table 3. X^2 Comparison of Region and Percent Empty Mileage Traveled

Region \ % Empty Mileage	0% to 5%	6% to 10%	11% to 20%	21% to 30%	31% to 40%	41% to 50%	51% or More	Totals # Truckers / X^2 Value
New England	3 .25 -	3 .25 -	12 2.00 +	12 1.00 +	14 .08 +	15 1.21 -	2 .00 =	61 5.29
Mideast	15 6.13 +	14 1.60 +	19 .24 +	29 3.05 +	27 .14 -	29 6.89 -	5 .00 =	138 18.05
Great Lakes	11 4.76 -	18 2.46 -	37 1.76 -	68 2.57 +	91 2.55 +	130 .29 +	9 1.79 -	364 16.18
Southeast	48 2.08 +	57 2.13 +	113 10.01 +	144 17.29 +	154 1.40 +	133 38.26 -	15 4.00 -	664 75.17
Plains	34 17.00 -	52 10.98 -	82 28.05 -	133 11.38 -	252 .20 +	553 63.20 +	53 1.84 +	1159 132.65
Rocky Mountain	19 2.77 +	24 4.00 +	33 .55 +	28 1.40 -	44 .33 -	70 .64 -	9 .00 =	227 9.69
Southwest	15 .06 -	16 .47 -	46 5.12 +	40 .02 -	49 .88 -	84 .40 -	14 1.60 +	264 8.55
Far West	39 52.00 -	38 30.25 +	50 17.29 +	23 2.38 -	22 13.29 -	42 15.21 -	8 .00 =	222 130.42
Totals # Truckers	184	222	392	477	653	1056	115	3099
X^2 Value	85.05	52.14	65.02	39.09	18.87	126.60	9.23	396.00

Critical Values of X^2
X^2 0.050% level
6 D.O.F. = 12.59
7 D.O.F. = 14.07
42 D.O.F. = 58.11

Explanation of Table Cells
000 = Actual number observed
0.00 = Individual cell X^2 value
+ observed value > expected value
- observed value < expected value
= observed value = expected value

suggests that studies by researchers, and policies by policy makers based on aggregation of the national industry might not be based on the correct assumptions. It would appear that commodity specialization, which is closely associated to region, might be a determinant of many problems and operating characteristics faced by truckers carrying exempt agricultural commodities. The following selected examples out of much that could be summarized indicate the structure of this interaction between region and commodity.

The Southeast trucker is heavily a hauler of fruit and vegetables, small in firm size, and has low percentage empty mileage. Operating costs, backhauls and low rates are the main problems affecting these truckers. Additionally, these Southeast, as well as the Far West Truckers, felt availability of backhauls and cost of truck brokers were distinct problems, both problems obviously related to long-haul movements.

Regional differences were not easily identified in weight and length laws, in permits, or in fuel and speed problems although these problems were mentioned often, by 21, 30, and 32 percent of the truckers, respectively.

Great Plains truckers carried mostly grain and traveled between 41-50 percent of their mileage without a load. These firms were the region that felt railroad subsidization was their strongest problem.

Finally, this paper has virtually ignored the interrelationships existing between size, age, commodity, and percent empty mileage. These variables, when combined with the definite effect of region, should cause research and policies based on aggregate data to be accepted with some reservations.