CHANGES IN TRANSPORTATION FACILITIES, VOLUME, MOVEMENT, AND PRICES OF GRAIN IN TOLEDO, OHIO

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A. E. 374

FEB 1965

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INTRODUCTION

With the development of the Ohio Turnpike, the St. Lawrence Seaway, and the improved Federal and State highways, Toledo's position as a center for trading in grain may be affected. These improvements will result in a different schedule of transportation costs which will influence the trade patterns of grain and grain products throughout the domestic and export system as well as in Northwestern Ohio.

With improved transportation, the Toledo market area may further expand, and if prices are favorable, the production of grain may increase. The handling of more grain may result in economies of scale so that the costs of marketing grain commodities would be reduced. Also, plant location will be affected by the improved transportation situation. These expectations were associated with the opening of the Seaway and other transportation developments. Several changes have occurred in the Toledo market since the improved transportation systems have been available. It is the purpose of this study to document these changes and assess their importance and implications to the grain industry in Ohio.

However, the economic situation is always changing and it will undoubtedly change from what is found in this study. This study of a seven-year period, 1955-1961, is intended to show the initial effects of transportation changes on the grain trade in the Toledo area, and will serve as a benchmark for evaluating changes which may occur in the future.

CHANGES IN TRANSPORTATION FACILITIES

There have been several changes in transportation facilities. The Ohio Turnpike was completed in October, 1955, U. S. Route 20 was expanded to a four-lane highway east of Toledo in June, 1958, U. S. Route 25 is an improved highway, and Interstate

highways are being developed. The improvements of these highways will lengthen the distance of profitable trucking. Another important change has been the opening of the St. Lawrence Seaway in April, 1959, and this provides an important alternative means to transport grain eastward.

The relationships between rates of competing transportation modes are quite dynamic, and these relationships are vital to the movement of grain. The railroads increased their domestic rate from December, 1955 to October, 1960 for grain and grain products according to the following schedule:

Table 1

Increases in Domestic Rail Rate from Northwestern Ohio to New York

Date Effective-Ohio	Name of Rate Increase	Amount of Increase
December 1, 1955	Ex-Parte 175-C	12%
March 7, 1956	Ex-Parte 196-A	5%
August 26, 1957	Ex-Parte 206-A	9%
February 15, 1958	Ex-Parte 212	3%
October 24, 1960	Ex-Parte 223	$\frac{1}{2}$% per cwt. and for any rate already over 65¢ per cwt., there was an increase of 1¢ per cwt.

Source: Minneapolis and St. Louis Railway Co., Traffic Department, Traffic Chart.

However, in order to compete with trucks and the Seaway, one railroad established gathering-rates (short haul rates) and cut-back rates in the Toledo market area in 1959 while some railroads established only cut-back rates, which are for soybeans. These rates did not allow the railroads to maintain their share of the market and trucks continued to move a greater percentage of grain to Toledo. The rail share of Toledo's receipts decreased from 84.7 per cent in 1955 to 63.3 per cent in 1961. The Atlantic seaboard, served mainly by railroads, has decreased

in the number of bushels exported even with reduced rail export rates in 1959. In fact, Lake ports moved from fourth to second place in 1962 in grain exports, whereas the Atlantic seaboard dropped to third from second place in 1962.[1]

As a result of changes in transportation facilities, motor carriers can out-compete railroads on the short haul, but not on the long haul. Trucks furnish the cheapest transportation for grain from the surrounding area to a water port. "Truck competition is particularly effective when markets of first destination are located on navigable water and the grain moves from them by low-cost water transportation to mills, processors, feeding areas, or export points..."[2] Thus, the combination of truck and ship may be a cheaper means to transport grain from the Toledo area than rail and ship from the East Coast to a foreign market. The following table and map are comparisons of the rail and truck rates as they extend from Toledo.

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[1] "Grain Market News," February, 1962. (Washington 25, D. C.: United States Department of Agriculture, January 9, 1959, Volume 7, No. 1, P. 11 and January 11, 1963, Volume 11, No. 2, P. 18).

[2] Grain Transportation in the North Central Region, U.S.D.A., Marketing Research Report No. 490, July, 1961, P. 33.

Table 2

Rail and Truck Rates for Grain Commodities Up
To 100 Miles From Toledo
(Cents Per Hundredweight)

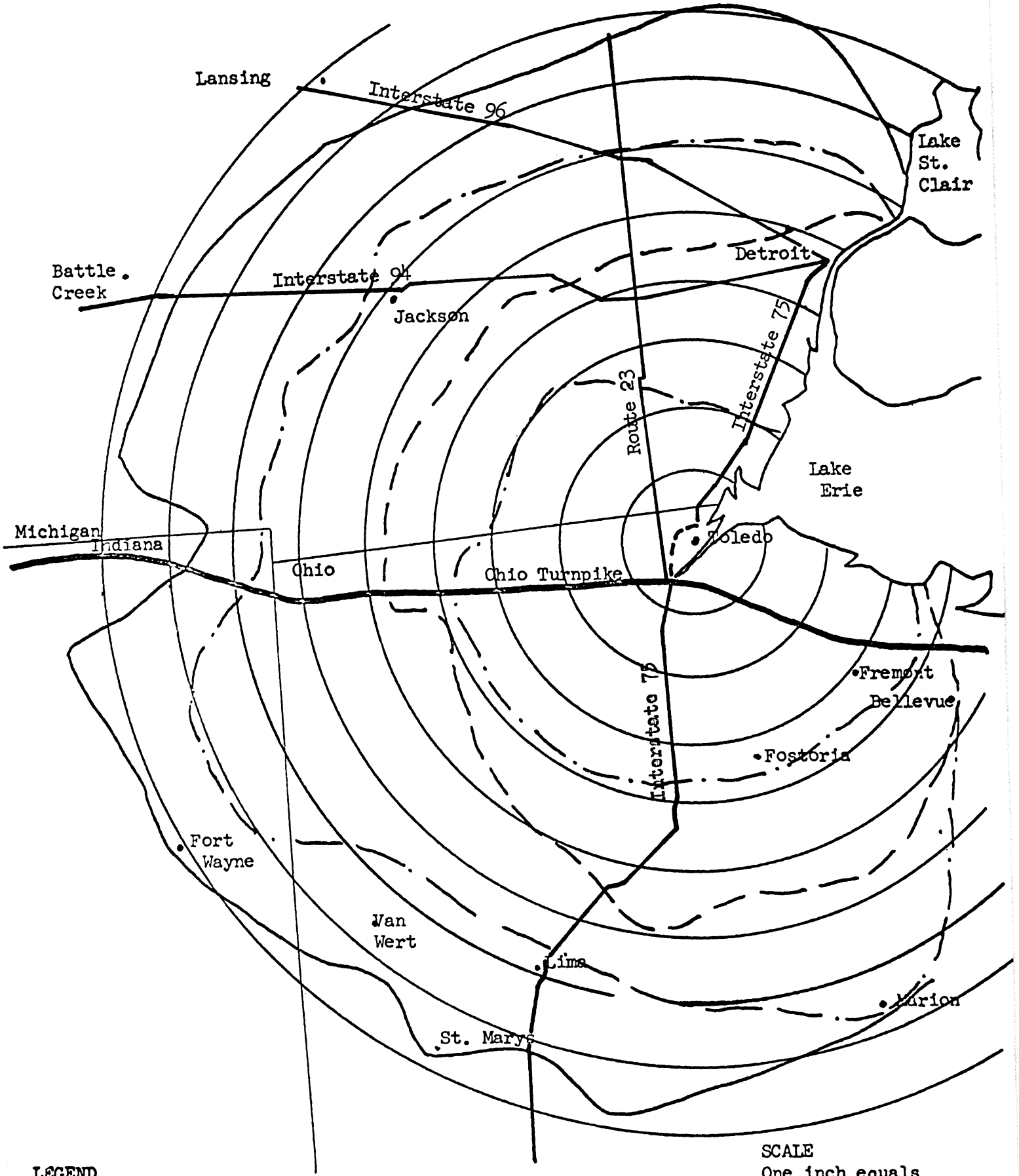
Miles	Rail Rate	Truck Rate			
	All Grains	Wheat and Soybeans		Corn	
		(a)	(b)	(a)	(b)
10	10½	6.8¢	1.7¢	7.1¢	1.8¢
20	10½	6.8	3.4	7.1	3.6
30	10½	6.8	5.1	7.1	5.4
40	10½	7.5	6.8	8.0	7.1
50	11½	8.3	8.3	8.9	8.9
60	11½	9.2	10.0	9.8	10.7
70	12½	10.0	11.7	10.7	12.5
80	12½	10.8	13.3	11.6	14.3
90	13½	11.7	15.0	12.5	16.1
100	13½	12.5	16.7	13.4	17.9

(a) 4¢ per bushel 0-30 miles, ½¢ each additional 10 miles, which is converted to cents per hundredweight.

(b) 1¢ per bushel per 10 mile, each is converted to cents per hundredweight.

Thus, in (a), as explained in the above table, trucks can compete with the railroad's gathering rates up to 100 miles for corn, and even more than 100 miles for wheat and soybeans. However, if truck's rates are computed in (b), as explained in the above table, which is the more usual rate, trucks can compete with the railroad's gathering rate for corn up to 70 miles and for wheat and soybeans to about 75 miles. Depending upon the facilities of the elevator, the manager has the option to use either rail or truck.

In instances where grain handling firms offer premiums for grain trucked from more distant production areas, the zone of effective competition between the rail and truck carriers will be extended. An example is a firm which pays a $\frac{1}{4}$¢ premium per bushel for grain originating beyond a 30-mile radius of the market facility. An additional $\frac{1}{4}$¢ per bushel is added for each additional ten miles over thirty and



LEGEND

——— Limit of gathering rate of 13 1/2 cents per 100 cwt.
— ——. Limit of gathering rate of 12 1/2 cents per 100 cwt.
— — — Limit of gathering rate of 11 1/2 cents per 100 cwt.
—.—.— Limit of gathering rate of 10 1/2 cents per 100 cwt.
Each circle represents 10 miles.

SCALE
One inch equals approximately 19.5 miles

FIGURE 1
MAP OF THE TOLEDO MARKET AREA
ILLUSTRATING THE COMPETITIVE DISTANCE OF RAILROADS AND TRUCKS

up to 100 miles the grain moves. The maximum possible premium for grain originating 100 miles or more from the market is 2¢ per bushel. In the case of oats, a 1¢ per bushel maximum has been established by this firm.

Grain produced in the domestic rail rate zones of 55½¢, 58½¢, 60¢, or 65¢ to New York may tend to move to Toledo by truck instead of by rail depending upon the relationship between rail and truck rates. Elevator managers can compare the price of trucked grain to Toledo with the f.o.b. rail bid made by terminals and processors. Many times, it is advantageous to sell grain at Toledo by truck when the Toledo price is more than sufficient to cover the cost of trucking.

CHANGES IN THE TOLEDO GRAIN MARKET

In the attempt to define the market area, a comparative study of two counties was used. These counties were Sandusky, located 30 to 40 miles from Toledo and Van Wert, which is 90 miles from Toledo. Highways are conveniently located between Sandusky County and Toledo, but are less conveniently located between Van Wert County and Toledo. Sandusky County grain movements were greatly affected by the Seaway and changes in the Toledo port facilities, whereas little or no change in grain movements occurred in Van Wert County during the period of the study.

A comparison of grain movement in the two counties shows that in Sandusky County 0.18 per cent of the grain was shipped by truck in 1955, but in 1961, 50.6 per cent was moved by truck. However, the change in Van Wert County was much smaller. The shift was from 6.95 per cent in 1955 to 14.34 per cent in 1961.

The effects of improved transportation facilities at a market center affects the movement of grain in its market area, as is shown by the comparison of these two counties. There was no change in the proportion of grain moving to Toledo from

Van Wert County after the Seaway became operational; however, in Sandusky County the percentage of grain moving to Toledo increased from 20 per cent to 79 per cent in 1961.

Trucks have increased their share of Sandusky County grain going to Toledo from .05 per cent in 1955 to 91.6 per cent in 1961. As for each commodity the change in truck share from 1955 to 1961 for wheat was from zero per cent to 89 per cent, for corn from zero per cent to 99.5 per cent, for oats from 0.4 per cent to zero per cent, and for soybeans from zero per cent to 37.4 per cent.

Less and less of the total grain shipments from Sandusky County are moving to other parts of the state since a greater share is moving to Toledo. The percentage of Sandusky County in-state grain shipments moving to Fostoria, Ohio has declined from 50 per cent to 9.6 per cent; to the Eastern sector of Ohio the decline has been from 10.9 per cent to 0.1 per cent; and to the Southern sector of Ohio the decline has been from 6.9 per cent to 2.0 per cent.

There were some changes also in the out-of-state grain movements from Sandusky County. The following list shows the change in direction of grain shipments to geographical areas outside the state. In 1955 much of it went to states east of Ohio, but in 1961, much of it went to states south of Ohio.

To the States North of Ohio--- 5.3% in 1955 to 0.0% in 1961.
To the States East of Ohio---94.7% in 1955 to 8.1% in 1961.
To the States South of Ohio--- 0.0% in 1955 to 86.9% in 1961.
To the States West of Ohio--- 0.0% in 1955 to 5.0% in 1961.

The grain which was predominant in these movements was corn in all but one year, 1958.

The improvement in the Toledo grain market is reflected by its increased grain receipts, which have increased proportionally more than the production of grain in Ohio or in Ohio Crop Districts 1 and 2. By comparing 1961 production

with the years of 1955 to 1957, Toledo's receipts have increased 25 per cent whereas production in Northwestern Ohio only increased 6.2 per cent while Ohio's production has decreased 2.3 per cent, which shows that Toledo's increased receipts are not due just to increased production.

The following two tables will show the grain receipts and shipments by transportation modes, and they will show the increased and decreased use of each transportation mode in 1955 and in 1961.

Table 3

Toledo Grain Receipts and Shipments of Wheat, Corn, Oats, and Soybeans for 1955 and 1961 (In Bushels)

	Receipts		Shipments	
Mode	1955	1961	1955	1961
Truck	14,863,064	43,236,771	0	1,184,172
Rail	83,338,709	74,793,600	71,073,850	53,997,800
Ship	215,929	0	7,714,495	42,670,110
Total	98,417,702	117,930,371	78,788,345	97,852,082

Source: Toledo Board of Trade, Toledo, Ohio.

Table 4

Percentage Distribution of Grain Receipts and Shipments of Wheat, Corn, Oats, and Soybeans by Transportation Mode for 1955 and 1961

	Receipts		Shipments	
Mode	1955	1961	1955	1961
Truck	15.1%	36.7%	0.0%	12.1%
Rail	84.7	63.3	90.2	55.2
Ship	0.2	0.0	9.8	32.7
Total	100.0%	100.0%	100.0%	100.0%

Source: Table 3.

The relative improvement in Toledo's grain prices is an important reflection of the improvement of the Toledo market, and because of this and other improvements, Toledo's volume of grain has increased. Toledo terminal elevators are in a better position to offer a higher price than can the Chicago terminals, which are farther away from foreign markets via the St. Lawrence Seaway.

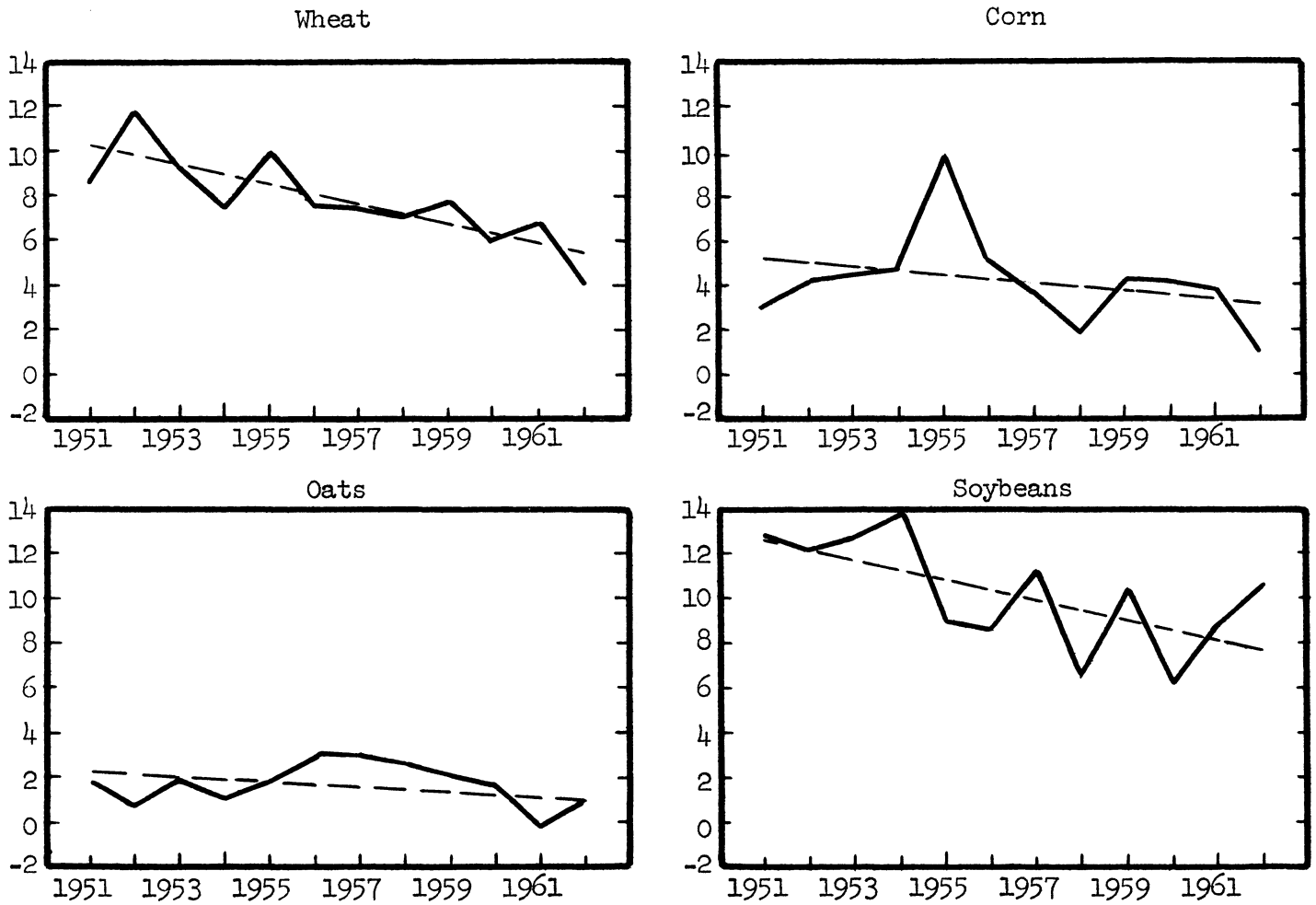
A gradual narrowing of the spread of the arithmetic average grain price between Chicago, the hub of the grain market, and Toledo occurred between 1951 and 1962, but Chicago's price was the higher one most of the time. Soybeans and wheat still have the largest spread in price between the two markets. For soybeans, the narrowing of the price spread has been from 12.6¢ to 7.8¢ per bushel although the yearly movement has been rather eratic. The wheat price spread has decreased from 10.2¢ to 5.4¢ per bushel, and the oats price spread has declined from 2.2¢ to 1.0¢ per bushel. The corn price spread between the two markets has declined from 5.2¢ to 3.1¢ per bushel, while the actual price spread for corn in 1962 was only 1.2¢ per bushel. The price spread between the two markets usually declines as the crop season progresses.

As noted on Charts 1-4, the price spread for grain between Chicago and Toledo was declining even before the Seaway opened. Consequently, it is not known at what rate the price spread would have continued to decline if the Seaway had not been developed. Evidently, some factors, other than the Seaway, have caused the price to improve at Toledo.

A stronger Toledo market price, relative to Chicago, is also shown by a time period spread analysis of on-track grain prices before and after the opening of the Seaway. Again, the price spread of all grains in the two markets has been on the decline at least since 1951. This study does not include truck

Charts 1-4

Actual Trend and the Spread of Cash Prices Between Chicago and Toledo, 1951-1962



Source: Grain Market News and Wall Street Journal.

prices which are higher at times than rail prices in both markets. Chart 5 shows the following relationships after the Seaway opening:

1. The price spread between Chicago and Toledo for wheat and soybeans was consistently less after the opening of the Seaway;
2. The price spread between Chicago and Toledo for corn was less after the Seaway opening except for the months of August, September, October, and April; and
3. The price spread between Chicago and Toledo for oats was less after the opening of the Seaway except for the months of July, Ausust, and September.

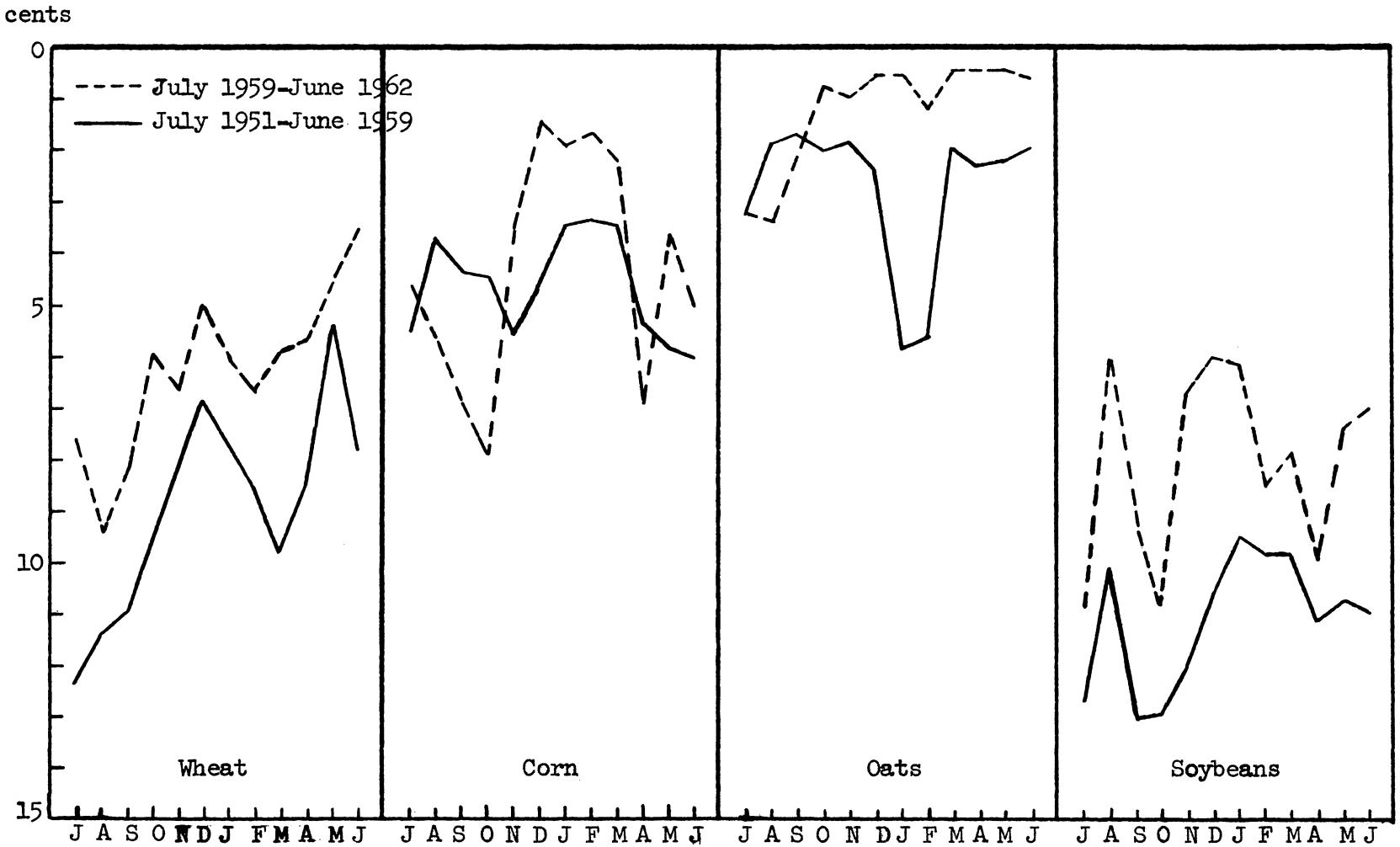
The lack of consistently lower price spreads for corn in every month after the opening of the Seaway might be due to the fact that Chicago is a larger consuming and processing market than is Toledo. As a result of Chicago being a larger processing and consuming market, corn price is at a premium at times at Chicago compared to Toledo when corn is well distributed throughout the marketing channel. Also, when corn-combines create a glut of corn on the market at harvest and when farmers begin to sell their farm-stored corn in late spring, Chicago price is not depressed as much as Toledo.

SUMMARY

1. St. Lawrence Seaway has provided another alternative means of exporting grain from the Toledo market area.
2. Trucks are moving a larger share of the grain to Toledo.
3. Toledo's market volume of grain has expanded.
4. Toledo's market area has expanded.

Chart 5

Spread of On-Track Prices Between Chicago and
Toledo, Before and After the Seaway,
for Wheat, Corn, Oats and Soybeans



Source: Grain Market News and Wall Street Journal.

CONCLUSIONS

Transportation carrier rates are very dynamic and currently rail rates are becoming much more competitive. Consequently, relationships shown in this study may change, decreasing Toledo's competitive advantage. However, if the existing zonal rate making system remains in effect, the following conclusions seem apparent:

1. It seems advisable for country elevators in the Toledo market area to consider having loading facilities for rail and truck to acquire more flexibility in order to take advantage of rate changes.
2. Trucks' share of the Toledo grain receipts may increase further.
3. The Toledo market volume of grain will probably expand further, providing Toledo's competitive position is maintained.
4. Farmers may specialize in more cash grain production now than before the Seaway opened.
5. Further research is needed concerning the possible location of grain processing plants around Toledo.
6. When changes in transportation facilities occur in other grain market, repercussions similar to those experienced in the Toledo market may result.