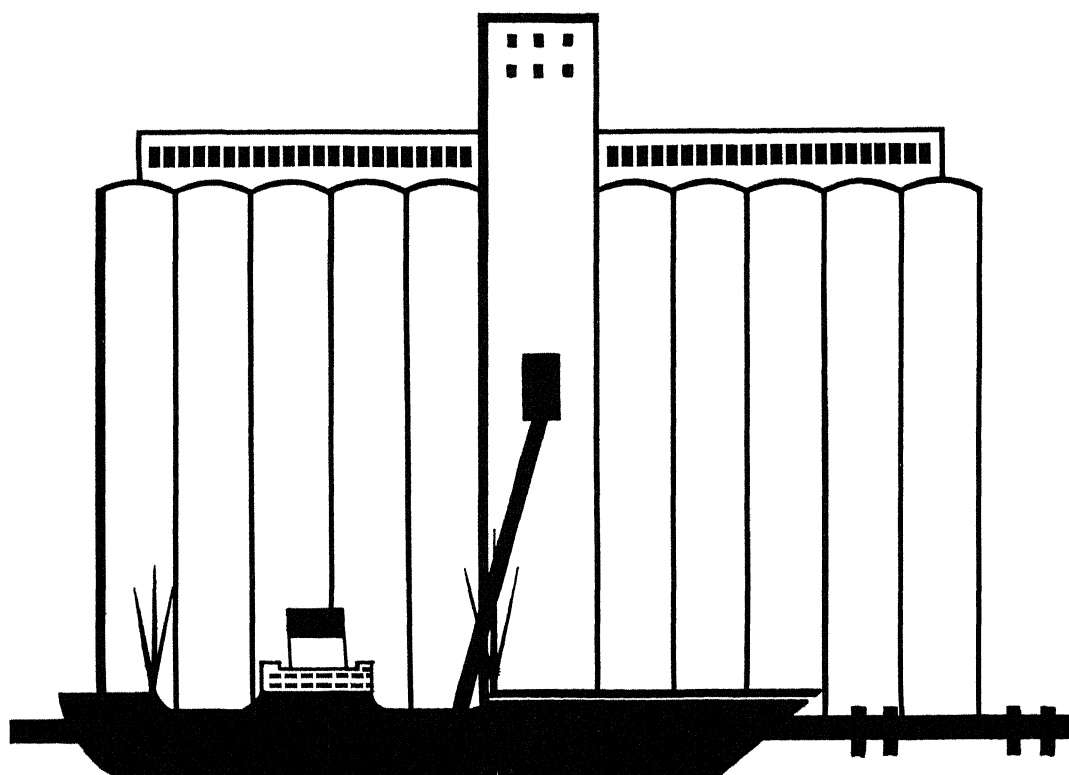


THE ST. LAWRENCE SEAWAY AND OHIO'S WHEAT

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^a Rail Rates used in this analysis were effective as of April 1, 1959.

THE ST. LAWRENCE SEAWAY AND OHIO WHEAT

J.M. Amos, J.W. Sharp, and A. Dubey

INTRODUCTION

With the opening of the St. Lawrence Seaway, this new route provides another means of marketing Ohio's wheat. Traditionally, almost all Ohio wheat destined for export (except to Canada) moved to the eastern and southern seaports by rail and barge where it was transhipped to ocean carriers. Opening of the Seaway will change the present marketing structure of wheat by reducing transportation rates.

In the United States' agricultural exports, wheat holds an important position, exceeded only by cotton, in dollar value. In spite of increasing population, total consumption has remained relatively constant since 1920 as the per capita consumption has decreased with a rising standard of living. United States must look to the foreign buyer for increases in demand.

Ohio's flour mill capacity is approximately 32 million bushels. This is almost equal to the total soft red winter wheat production in Ohio in 1958, which provides a market within the state for a majority of Ohio's wheat.

The direct impact of the Seaway will be reduced transportation rates. Grain shippers in the Seaway's trade area will save about 10 cents per bushel in transportation charges to Europe via the Seaway over present rate structure.¹ However, the competitive rate-cutting of existing eastern routes may prevent the full use of the Seaway for sometime. These changes will have a fundamental effect on grain movements in the area.

¹ Joseph R. Hartley, Effects of the St. Lawrence Seaway on Grain Movements, Indiana University, Bloomington, Indiana, 1955, p. 178.

THE SEAWAY

Forecasts for Seaway traffic by various authorities have ranged from a few million tons to as high as 84 million short tons.² The Seaway Development Corporation estimates traffic is likely to be about 36.5 million short tons in 1959 and 52 million in 1965.³ Estimates for grain to be shipped through the Seaway also vary considerably. The United States Department of Commerce estimates the lowest, 6,500,000 tons and the Seaway Development Corporation's estimation is the highest at 17,238,000 tons. Whether these estimates are achieved depends on several factors which may limit the use of the Seaway to grain movements.

Length of the navigation season will affect the use of the Seaway since it is supposed to be open for a minimum of 244 days and a maximum of 259.⁴ Any grain shipments from this area during the winter months must move by other modes of transportation. For this reason, some of the grain trade may be reluctant to use the Seaway or invest in the necessary equipment for water shipments if favorable rail rates are obtained.

Another factor limiting the Seaway's practical capacity may eventually be the present 27-mile Welland Canal Locks, which connect Lake Ontario with Lake Erie by carrying ships around the Niagara Falls. The estimated capacity of the Welland Canal is 44.0 million tons for a 50-50 distribution between downbound traffic from Lake Erie to Lake Ontario and upbound from Lake Ontario to Lake Erie. The anticipated increase

² United States Department of Commerce, Potential Traffic on the St. Lawrence Seaway, Washington D. C., U. S. Government Printing Office, 1948, p. 25.

³ Questions and Answers on the St. Lawrence Seaway, U. S. Senate Subcommittee on St. Lawrence Seaway of Committee on Foreign Relations, 83rd Congress, 2nd session, Washington: 1954, p. 2.

⁴ N. R. Danielian, The St. Lawrence Seaway-Unfinished Business, Speech to the City Club of Chicago, February 28, 1955. Washington, D. C.: Great Lakes St. Lawrence Association, 1955.

in the Seaway traffic will take place on upbound movements, virtually all of which will be iron ore. Fortunately, potential grain movements are downbound which will complement grain flows rather than compete with them for canal capacity.⁵

Indications are that the Welland Canal can handle a substantial increase in traffic. In the future, when the Seaway is fully developed, the Welland Canal will probably be a limiting factor. If it does become a limiting factor, it could be expanded if the need arises since the cost of expansion would be feasible compared to the total investment in the Seaway.⁶

Probably the most restricting factor in the Seaway achieving its potential is the depth of the Seaway and harbors. The 27 foot depth of channels will prevent large ocean ships from entering and loading grain. Furthermore, the shipping season will only be approximately eight months which may suppress grain shipments.

OHIO'S ADVANTAGES IN WHEAT

Total production of soft red winter wheat for the United States was 186 million bushels in 1956, yet, there is no surplus of soft red winter wheat. Flour made from this wheat contains less gluten and more starch than hard red winter wheat; therefore, it is preferred for pastry making and most home baking. Ohio has been the most important producer of soft red winter wheat since 1919. (Table 1) Ohio's share of production during the period has increased even though the total for the five leading states combined has remained virtually the same. Therefore, because of its role in the soft red winter wheat industry, Ohio has a greater interest in factors affecting its production than any other surrounding state.

⁵ Guy A. Lindsay, Estimates of the Maximum Freight Tonnage Capacity of the Welland Ship Canal on Completion of Deep Waterway, partially reprinted in St. Lawrence Seaway Hearing on H. J. Res. 2, U. S. House Committee on Public Works, 82nd Congress, 1st session, pt. 2, Washington: 1951, p. 741-43.

⁶ Joseph R. Hartley, The Effects of the St. Lawrence Seaway on Grain Movements, Indiana Business Report No. 24, Bureau of Business Research, Indiana University, Bloomington, Indiana, 1957, p. 100.

Table I
 Estimated Production of Soft Red Winter Wheat
 in the Five Leading States and U. S. A.^a
 (000 bu.)

	1919	1929	1939	1949	1956 ^b
Ohio	55,344	31,580	35,961	57,842	39,676
Illinois	39,857	18,159	24,344	27,036	27,428
Indiana	39,329	21,901	23,305	37,623	34,014
Missouri	52,394	15,830	26,595	18,320	24,153
Pennsylvania	24,375	19,977	19,343	33,088	8,646
Total	211,299	107,447	129,548	173,909	133,917
United States ^c	286,581	164,400	194,910	214,418	186,000
Ohio as Percent of U.S.	19.3	19.2	18.5	27.0	21.3

^aSource: U. S. Department of Agriculture, Crop Production, 1956, Agricultural Statistics, 1948 and subsequent issues.

^bU. S. Department of Agriculture, AMS, Crop Production, 1956.

^cU. S. Department of Agriculture, Agricultural Statistics, 1948, and subsequent issues.

Location

Approximately 70 percent of all Ohio wheat produced in 1956 was within a 125 mile radius of Toledo which is an ocean port since the opening of the St. Lawrence Seaway. This new development will give most of Ohio's wheat a natural advantage in water transportation. Furthermore, the terminal elevators in this area are presently handling over 50 percent of the wheat handled by all such outlets in Ohio. It should be pointed out that the majority of Ohio's milling capacity is also located in this area. Thus, the transportation structure is already bringing a large proportion of the wheat to Toledo.

The present cost of shipping wheat from Chicago to Montreal via the existing channels is about 19 cents per bushel which includes trans-shipping costs.⁷ The Seaway eliminates these transshipments at a saving of about five cents per bushel. ⁺The present export rate by railroads from Toledo area to the eastern seaports is 47 1/2 cents per 100 pounds

⁷Ibid.

which amounts to 28 1/2 cents per bushel. Therefore, the total saving through the new waterway from Toledo amounts to about 10 cents per bushel over present shipping rates to eastern seaports. One of the major railroads has already stated its intention of meeting Seaway competition from this area to the Eastern Seaports. If rail rates are reduced, the Seaway impact on the transportation structure will likely be less than earlier anticipated.

In order for Ohio's wheat to be shipped by the Seaway, it must be trucked to Toledo because short haul rail rates are, at present, higher than truck rates. Truck rates, as calculated by one of the major trucking firms in the area, are five cents per bushel up to 35 miles, with an additional one cent per bushel for each 10 miles. Rail export rates range from 10 to 13 cents per 100 pounds, which is six to nine cents per bushel within a 100 mile radius of Toledo.⁸ These new shipping rates should greatly improve the movement of wheat to the Toledo area.

Under the present rail rate structure in the Toledo area the export rates are 47 1/2 cents per 100 pounds to the eastern seaports, and in the eastern section of Ohio the export rate is 43 cents per 100 pounds. If the estimated shipping costs via the Seaway and transportation costs to Toledo are correct, then wheat from a radius of about 100 miles from Toledo will move through the Seaway via Toledo, but wheat in the 43 cent export rate zone will either move to eastern Ohio ports or by rail to the eastern seaports. Even if the proposed rail export rates are not approved, the farmers in the Toledo area will still benefit by the Seaway and be at an advantage over farmers in other states producing soft red winter wheat.

Price

In the past, foreign buyers seemed to prefer soft red winter wheat to other types of wheat only when the prices was lower. Foreign buyers appear to be price conscious since they buy whichever wheat is cheaper.⁹ The price of soft red winter wheat in Toledo was generally lower than the price of white wheat during the crop years 1947-57. In 48 months

⁸

C.C. Sampson, Personal Interview, April 1, 1959, Division Freight Sales Manager, New York Central System, Columbus, Ohio.

⁹

Interagency Committee on Agricultural Surplus Disposal, Prospects of Foreign Disposal of Domestic Agricultural Surpluses, Washington, May 1956.

the price was lower, 45 months they were both the same, and 27 months soft red winter wheat was higher (Table II). A comparison of prices at Chicago shows a similar result as soft red winter wheat was generally lower than No. 2 hard red winter during the crop years 1947-57. Soft red winter wheat was lower 60 months, equal for 26 months, and higher in 34 months (Table III). Toledo market offers a price advantage to the foreign buyer since the price of No. 2 soft red winter wheat is generally higher in Chicago than Toledo (Table III). In the years 1947-57 the average price in Toledo was 7 to 12 cents lower than in Chicago; generally, these reflect the differences in transportation costs.

To the foreign buyer, Toledo will have an advantage in both transportation and price over Chicago, because supply and demand determine the price in the foreign market plus the cost of transportation. Lower transportation costs of wheat at Toledo will affect the movement of export wheat, especially if rail rates remain the same. The main advantage of the Seaway will occur in long haul rather than inland shipping. Imports to Cleveland, Detroit, and Toledo will bring ships into this area, and if the Toledo area continues to have lower priced grain than Chicago, then these ships will load wheat at Toledo.

Table II

Monthly Average Closing Price Differences^a Between No. 2
Soft Red Winter Wheat & No. 2 White Wheat, Toledo,
1947-1957 (In cents per bushel)

Year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Ave.
1947-48	-2	-1	-1	-1	-1	0	-2	-1	0	0	0	0	-1
1948-49	0	0	0	0	0	0	0	0	0	0	0	0	0
1949-50	-1	-2	0	0	0	0	0	0	1	1	1	1	0
1950-51	-1	-1	0	0	0	0	0	0	0	0	0	0	0
1951-52	0	0	0	0	0	0	0	4	2	3	-1	-1	-
1952-53	-2	-2	2	1	-2	-3	2	2	2	3	3	9	1
1953-54	-2	-3	-4	-2	-2	-4	0	3	3	2	2	1	-1
1954-55	-1	-1	-1	-5	-6	-5	-2	-4	-10	-7	-5	-6	-4
1955-56	-6	-5	-3	-7	-8	-6	-4	-1	-1	3	-1	-3	-3
1956-57	0	0	-2	-2	-2	1	1	2	2	0	1	0	0

Monthly Average Closing Price Differences^a Between No. 2
Soft Red Winter Wheat & No. 2 Hard Red Winter Wheat,
Chicago, 1947-57 (In cents per bushel)

1947-48	-3	1	14	2	3	2	5	5	8	5	4	2	4
1948-49	0	1	0	1	0	0	12	0	1	11	7	8	3
1949-50	-2	-3	-1	-1	-1	-3	-5	-9	-9	-4	0	0	-3
1950-51	-2	-3	-1	0	0	4	0	-1	-2	-2	-1	0	-1
1951-52	0	-1	0	0	0	0	0	1	1	1	0	0	0
1952-53	-4	-5	-5	-9	-7	-4	-4	-4	-4	-6	-8	-7	-5
1953-54	-5	-4	1	-7	-8	-11	-10	-10	-4	-1	-3	-2	-6
1954-55	-7	-6	-1	-5	-8	-6	-6	-5	-6	-8	-7	-4	-6
1955-56	-7	-3	2	1	3	0	1	0	0	-1	0	1	0
1956-57	0	1	9	0	1	1	1	1	0	-2	-4	-3	0

^aMinus sign indicates that soft red winter wheat was lower.

Sources: Grain Market News, United States Department of Agriculture, AMS

TABLE III
 Monthly Average Closing Cash Price Differences^a
 Between Toledo and Chicago Markets, No. 2
 Soft Red Winter Wheat, 1947-57
 (In cents per bushel)

Year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Ave.
1947-48	-4	5	10	15	18	10	10	11	9	12	12	9	10
1948-49	7	7	5	6	5	7	9	8	9	13	9	0	7
1949-50	13	12	10	10	12	13	11	13	9	9	13	18	12
1950-51	16	14	14	14	12	11	12	7	5	6	8	14	11
1951-52	13	8	6	7	9	5	2	3	5	5	9	19	8
1952-53	17	17	16	17	14	9	11	11	10	9	5	8	12
1953-54	15	11	10	7	6	4	2	4	7	4	-1	8	7
1954-55	8	9	12	8	6	13	11	10	11	8	9	6	9
1955-56	10	14	13	12	10	7	9	10	11	9	8	-5	9
1956-57	7	9	14	9	5	5	8	12	10	7	9	5	9

^a Minus sign indicates the price in Chicago was lower.

Source: United States Department of Agriculture, AMS, Grain Market News.

Lower shipping cost and lower prices at Toledo will cause only a small increase in the quantity demand since wheat has an inelastic demand. When wheat is well above the price of feed grains, the demand for wheat is fairly inelastic. Consumption tends to increase when prices decline but the response in percentage terms is small.

In the foreign market wheat is inelastic and quantities demanded are more sensitive to price than in the domestic market. This may be due to the fact that the foreign buyer is able to substitute different types and, to a certain extent, other food commodities for wheat. Still, a reduction of a few cents per bushel, due to the Seaway, will only cause a slight increase in the total wheat exported.

The soft red winter wheat, in this country, is nearly all consumed in the domestic market and no surplus exists. Therefore, any small increase in the demand for this type of wheat should cause prices to increase, provided present government controls remain unchanged. In the short run this increased price will go to soft red winter wheat producers. If supply is allowed to increase, prices will decline with the saving going to the foreign customers.

With the change of Ohio lake ports into seaports, Ohio farmers may have a transportation advantage over the five leading soft red winter states, except Pennsylvania. The distance from point of export is an important factor in determining regional patterns for wheat export; therefore, wheat from this area should move first rather than inland soft red winter wheat.

The Seaway apparently will reduce the transportation cost of exporting wheat, the savings being distributed between buyer and seller. From the farmer's viewpoint, this could be looked at as generating new demand. With wheat prices generally lower at Toledo, this should enable the foreign buyer to purchase soft red winter wheat advantageously in the Toledo area. With existing government controls and the inelastic demand structure for wheat, the Seaway probably will not increase the export volume of soft red winter or other classes of wheat to a great degree.

SEAWAY'S EFFECTS ON GRAIN FACILITIES

The Seaway's effects on the existing market structure appear minute mainly because: (1) our inelastic demand will cause no appreciable increase in total exports; (2) with proposed eastern rail export rates, present grain movement will remain virtually unchanged. Many firms have large investments in present grain facilities which they will continue to operate in the short run if variable costs are covered. There will be need for these grain facilities since the Seaway will only be open seven or eight months of the year. Consequently, the Seaway's impact on the grain marketing structure and its facilities will certainly be less than originally anticipated by some authorities. The terminal elevators and flour mills in the Toledo area handled and utilized a volume approximately equal to all of Ohio's wheat production in 1958.

The waterside elevators at Toledo are adequate for today's present limited water movement, but with any increase in the future they would be inadequate to realize the potential from the St. Lawrence Seaway.¹⁰ Many firms have planned or indicated an interest in expanding their present facilities. Until waterside elevators are expanded, the area will be limited in the use of the Seaway.

Two thirds of Ohio's milling facilities are located in or within 35 miles of Toledo. Flour mills do not anticipate any change in export demand for flour with the advent of the Seaway.¹¹ Foreign flour exports by large flour mills in Ohio are relatively insignificant compared with their total production. This fact is also true for the United States which produced an average of 225 million sacks of flour annually from July, 1953 to July, 1956. These flour mills exported only 18 million sacks, or 8 percent of the

¹⁰ Walter P. Hedder, Facilities Necessary to Encourage & Accomodate Potential New Grain Movement, Prepared for the Toledo-Lucas Co. Port Authority, Toledo, Ohio by Port Development, N.Y., N.Y., 7/2/56, p. 9.

¹¹ Akhelesh Dubey, "The Effects of the St. Lawrence Seaway on Ohio Wheat Marketing", Ohio State University, 1958, p. 108.

total.¹² In the past, foreign buyers have customarily preferred to mill and blend their own flour. Furthermore, flour easily deteriorates in quality and requires special handling in transit as compared to wheat. Therefore, the Seaway will probably not influence to a great degree the flour milling industry sales or cause significant changes in foreign sales of the total American flour production.

The flour mills' supply of soft red winter wheat will probably be affected by the Seaway in several ways. First, since foreign competition is expected to increase the demand for soft red winter wheat, the flour mills in the Toledo area will be competing with flour mills located in other areas for their wheat supply. Secondly, a large volume of wheat may by-pass flour mills in the area especially if the proposed rail export rate to Toledo is put into effect. And third, if Toledo becomes an important marketing center its supply of wheat will be increased in the future. This factor will offset the adverse factors which may affect the supply of wheat for flour mills during certain times of the year.

The consequences of the Seaway on country elevators located in the Toledo area and areas around other seaports will require these firms to make some adjustments in the handling of grain. The competition from trucks will possibly reduce the number of local grain elevators in these areas. Some of this grain could move directly from the farm to the terminal port elevators, by-passing the local country elevator. Since the truckers' handling costs per bushel have been reduced, the country elevators will find it necessary to reduce their handling costs, even if the proposed rail rate changes are put into effect in the area to meet the competition of the truckers and the Seaway.

If the elevators are able to make these changes by either reducing handling cost through introducing new techniques or by equipping themselves with their own trucks they should be able to handle grain satisfactorily. Furthermore, because the present country elevators are now handling the major portion of the grain shipments in their area, this established position should aid firms in making these changes.

¹² U.S.D.A., Grain Market News, January 27, 1956, p. 11 and Ibid., February 1, 1957, p. 9.

Considering these factors, there seems to be no economic reason why present terminals and country elevators cannot maintain and provide the required services demanded by the market after the Seaway is fully developed.

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