

A Comparison of Regulated and Exempt Towing Rates on the Inland Waterways: Implications for Deregulation

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During the wave of recent federal legislation that culminated in airline, trucking, and railroad deregulation, the status of the shallow draft barge industry remained unchanged. Except for voiding the mixing rule and the rule-of-three prohibitions in the early 1970s, legislation regulating the barge industry under the Transportation Act of 1940 is unchanged. Moreover, no significant interest has been expressed in deregulating the small amount of barge commerce handled by common and contract carriers subject to Interstate Commerce Commission (ICC) regulation. A number of events have occurred, however, that have begun a defacto deregulation of the common carrier segment of the barge industry. The ICC stopped requiring carriers to file financial reports. Barge companies have virtually ceased to collectively make and publish rates for regulated commerce through the Waterways Freight Bureau (WFB). Most common carrier barge operators have obtained contract carrier-operating authority. It appears that the relatively small volume of regulated barge-industry traffic is no longer handled under common carriage and published rates.

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OBJECTIVES

A comparison of regulated and exempt barge rates is presented, which may indicate the extent of regulation. An analysis of the regulated rate structure is included. In addition, the results of this study will enable improvement of tow-cost parameters in the Association of American Railroads' (AAR) barge cost model.

The need for revised tow-cost parameters was revealed during 1983 research on observed barge rates for specific movements compared to tow costs generated by the model. The model computes costs for entire barge tows and individual barges. Dedicated towing assumes the equipment only serves a particular shipper in integrated tows. The model computes optimal towload and tow size based on the annual volume of the shipment. The model then estimates the movement costs based on hourly tow costs and tow speeds. General towing assumes the shipper is moving just a single bargeload. A tow-cost factor by waterway segment is used to determine general towing costs, which have been based on regulated towing tariffs. The results of the 1983 research indicated that dedicated tow costs ranged within ± 20 percent of collected rates, but general tow costs were unrealistically high. They were usually 2 to 2.5 times the dedicated tow costs. The model's general tow-cost parameters clearly needed revision.

REGULATED AND EXEMPT RATES

This revision required an analysis of the towing rate structure. There are three categories of for-hire carriers providing towing services on the inland waterways: (a) common, (b) contract, and (c) exempt. Common and contract carriers are subject to regulation under Title 49, United States Code (U.S.C.), Interstate Commerce Act. The ICC grants these carriers licenses to provide for-hire movement of regulated, nonbulk, nonliquid cargoes. Dry bulk and all liquid cargoes are exempt from regulation. Almost all barge traffic is exempt from regulation. Only about 6 percent of barge commerce is subject to ICC jurisdiction.

Common carriers have collectively set rates on regulated commodities through the Waterways Freight Bureau (WFB). Membership in the WFB has varied. Currently the WFB consists of 11 common carriers. Except for The Ohio River Company, common carriers belonging to the WFB have historically handled about 90 percent of the regulated commerce on the inland waterways. WFB rates, rules, regulations, and classifications are published and filed with the ICC. The Ohio River Company withdrew from the WFB and independently published its own tariff for regulated commodities in 1982.

Barge transportation can be performed under towing or afreightment. Towing refers to the movement of barges by a vessel. Pure towing involves the movement of barge equipment not owned or controlled by the tower. The barges may be owned by a shipper or another barge operator. In addition to "tramping" when towboats move third-party barges on demand, operators engage in extensive towing for each other under contracts, exchanges, and reciprocal agreements. For example, most major barge lines serve Missouri River points through two or three major towing operators who specialize on the river. The same situation exists for other light-

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density waterways such as the Monongahela, Allegheny, Kanawha, Tennessee, and Tombigbee rivers.

Towing can be from fleet to fleet or dock to dock. Most towing rates are quoted to and from river fleeting areas. The barge owner is responsible for additional costs to switch the barge between docks and fleeting areas. Switching costs vary from location to location, usually between \$50 to \$200 for each repositioning of the barge between fleeting, loading, unloading, and cleaning areas. Unlike towing, afreightment is used to describe the dock-to-dock movement of commodities in barges provided by the towing company. Most towing on the inland waterways is afreightment, that is, the barges are provided by the tower. The term afreightment is not generally used except in tariffs. Towing for most operators with equipment is regarded as synonymous with afreightment. Strictly speaking, however, towing and afreightment represent different circumstances with respect to barge ownership and placement at docks and fleeting areas.

METHODOLOGY

Towing and afreightment rates were developed from three sources: (a) tariffs applicable to regulated commodities, (b) tow costs computed by the AAR barge cost model, and (c) tow-operator rate quotations.

Supplement 200 to WFB Freight Tariff 108-F, Local, Joint and Proportional All-Water Rates on General and Specific Commodities in Bargeloads, effective January 1, 1984, was used to develop regulated afreightment rates. The WFB tariff is freight of all kinds (FAK) for all regulated commodities. All rates are quoted between river points. Therefore, rates do not vary by direction or commodity.

The Ohio River Company Local Freight Tariff ORCO 100, Naming All-Water Rates on Commodities in Bargeloads Also Rates for Towage on Loaded and Empty Barges and Waterway Distances, effective December 22, 1982, was also used to compile regulated towing rates. ORCO 100 has FAK rates between major river points, commodity rates for iron and steel, scrap, and so on, to and from specific major river points, and towing charges for loaded and empty barges between major river points. ORCO 100 does not have rates for traffic on rivers not served by The Ohio River Company such as the Tombigbee, and does not contain rates for the Upper Mississippi River. ORCO 100 contains a comprehensive list of geographical points and waterway distances.

Regulated rates were obtained from the WFB and ORCO tariffs for major river segments and commodity flow patterns. Barges were assumed to be jumbo size (195 × 35) with 1,400-ton payload in the absence of lower minimum-tariff provisions. Regulated rates in dollars per ton were compiled for major waterway segments and intersegment commodity flows. In addition, ORCO commodity point-to-point rates for iron and steel, scrap, and other specific commodities such as lumber were tabulated for major river points.

The per ton tariff rates were converted into mileage rates as dollars per barge mile (see RT and RA in Tables 1 and 2). The WFB and ORCO rates were multiplied by minimum shipment tons. The product was divided by waterway distances computed from the ORCO tariff to obtain rates expressed in dollars per barge mile. The river distances for traffic between the Gulf Intracoastal Waterway west of New Orleans and the Mississippi River System were calculated via New Orleans instead of the Port Allen cutoff. Flat towing charges for loaded and empty barges between major waterway points were compiled from the ORCO tariff. Towing

charges were divided by river distances to obtain towing rates per barge mile.

AAR computed costs per ton for standard configurations of towboat horsepower and barges operated on major river segments. The barge cost model was used to estimate total costs for towing and afreightment assuming 100 percent empty backhaul. These costs include a competitive return on average replacement cost of equipment. Model output was converted into dollars per barge mile based on 1,400 tons per barge. Tables 1 and 2 also give the towing and afreightment costs per barge mile developed from the model output (MT and MA in the tables).

COMPARISON OF TARIFFS AND AAR MODEL COSTS

A comparison between regulated tariff rates and the AAR model towing costs shows the model costs are about one-half of the tariffs. The Tennessee River movements tend to be the only serious outliers. The longer hauls are more tightly packed around 50 percent.

The relationship between afreightment costs estimated by the AAR model (MA) and regulated general commodity FAK rates from the WFB tariff (RA) is shown in Tables 1 and 2. Intrasegment river movements exhibit a wide scatter in the ratios of costs estimated by the model and regulated rates. The model costs are generally two-thirds of tariff rates. The widest divergence between model costs and regulated tariff afreightment rates occurs for very short haul movements such as Peoria to St. Louis, Cincinnati to Louisville, St. Louis to Cairo, and New Orleans to Mobile. It appears that the model may understate afreightment costs per mile for short distances because incidental terminal costs associated with switching and fleeting are excluded.

The contention is supported by the relationship between model costs for afreightment and regulated afreightment rates for intersegment river shipments in Table 2. The spread between costs and tariff rates is generally narrower. Model costs for movement between the Upper Mississippi and Ohio are 10 to 20 percent greater than tariff rates. In most other instances model costs are 10 to 20 percent less than regulated rates.

AFREIGHTMENT AND TOWING RATES

The relationship between regulated afreightment rates (RA) and regulated towing rates (RT) for intrasegment and intersegment river movements is also given in Tables 1 and 2. Tariff afreightment rates for intrasegment river movements are usually greater than tariff towing rates. The greatest spread between afreightment and towing exists for short lengths of haul such as Peoria to St. Louis, St. Louis to Cairo, New Orleans to Mobile, and Nashville to Paducah. The larger spread probably reflects the incidental switching costs associated with dock-to-dock movements that must be spread over relatively short distances. In Table 2 the relationship between regulated afreightment and towing rates reflects relatively long haul movements. Afreightment rates are consistently less than towing rates except for Houston to Memphis.

The relationship between regulated afreightment and towing rates does not permit a clear distinction to be made between the different services. Moreover, a relationship between exempt afreightment and exempt towing rates quoted by operators does not exist. Towing rates are not necessarily less than afreightment rates. Because most main-line intersegment river towing is per-

TABLE 1 TOWING AND AFREIGHTMENT RATES IN DOLLARS PER BARGE MILE (Intersegment)

Origin	Dest.	Miles	RT (1)	RA (2)	MT (3)	MA (4)	MT/RT	MA/RA	RA/RT
Chicago	St.Louis	363	23.53	23.29	10.61	13.61	0.45	0.58	0.99
Min'pls	St.Louis	673	23.53	15.48	9.47	12.17	0.40	0.79	0.66
Dubuque	St.Louis	399	23.53	19.72	9.54	12.25	0.41	0.62	0.84
Peoria	St.Louis	201	20.28	29.95	10.52	13.51	0.52	0.45	1.48
Pit'bgh	Cin'cti	470	15.81	16.68	10.13	13.02	0.64	0.78	1.06
Pit'bgh	Lou'vle	604	15.19	18.94	10.11	13.00	0.67	0.69	1.25
Cin'cti	Lou'vle	134	25.81	38.87	10.03	12.96	0.39	0.33	1.51
Cairo	N.Orl'ns	859	10.65	11.25	5.72	7.95	0.54	0.71	1.06
St.Louis	Cairo	180	21.69	32.36	6.69	9.33	0.31	0.29	1.49
St.Louis	N.Orl'ns	1039	12.56	10.91	5.89	8.18	0.47	0.75	0.87
Memphis	N.Orl'ns	641	11.08	12.89	5.72	7.95	0.52	0.62	1.16
Houston	N.Orl'ns	402	17.01	19.22	12.12	14.18	0.71	0.74	1.13
N.Orl'ns	Mobile	163	17.01	31.95	10.99	13.40	0.65	0.42	1.88
Nash'vle	Paducah	198	13.28	28.28	20.36	24.32	1.53	0.86	2.13
Gunt'vle	Paducah	358	14.79	18.26	12.83	15.29	0.87	0.84	1.23
Chat'nga	Paducah	464	14.18	16.17	8.69	11.16	0.61	0.69	1.14
Knox'vle	Paducah	648	13.98	17.33	9.81	12.27	0.70	0.71	1.24

(1) RT--Regulated Towing. Local Tariff ORCO 100, The Ohio River Company; Cincinnati, Ohio; Effective December 22, 1982.

(2) RA--Regulated Afreightment. Supplemental 200 to Freight Tariff 108-F, Local, Joint and proportional All-Water Rates on General and Specific Commodities in Bargeloads, Waterways Freight Bureau; Fairfax, Virginia; Effective January 1, 1984.

(3) MT--Model Towing. AAR Barge Cost Model.

(4) MA--Model Afreightment. AAR Barge Cost Model.

formed by barge operators, towing rates are usually similar to afreightment rates as a result of the following: (a) barge operators' equipment may be fully employed, therefore no excess capacity exists in available tows; or (b) barge operators may discriminate against towing to provide incentives to shippers to use carrier barges.

TOW-OPERATOR RATE QUOTATIONS

Exempt towing and afreightment (towing) vary primarily by river segment. The principal factors affecting rates were tow size and speed. Where river operating conditions are similar, exempt rates are nearly equal. For example, similar tow sizes and speeds on the Illinois and Upper Mississippi rivers are reflected in nearly identical rates. Direction of the tow (up or down) does not usually affect rates on slack-water rivers. The Missouri and Lower Mississippi, however, have different rates for loaded barges by direction. Up-bound tows moving against the current have lower speeds and higher operating costs. Consequently, up-bound towing rates are higher than down-bound rates.

Exempt towing rates are quoted in mills per ton-mile, dollars per barge mile, dollars per ton, or flat rates per barge. Rates differ for loaded and empty barges. Generally, empty barges are handled at 70 to 80 percent of loaded barge rates. This relationship reflects an

engineering standard (drag coefficient) for a jumbo 195 × 35 fully loaded barge commonly referred to as equivalent barge mile. Empty barges are estimated to have 70 percent of the draft coefficient of a loaded barge. Towing rates are a function of barge loadings for most major waterways in terms of mills per ton-mile or dollars per ton. Specialized waterways, however, tend to have flat charges per barge regardless of weight. The flat charges are usually quoted in terms of hourly towing rates for small rivers such as the Arkansas or flat rates for tramp towing on the Lower Mississippi.

Estimated market rates for afreightment and towing on the Mississippi River system are given in Table 3. No distinction is made between pure towing and afreightment because of the small role of towing- and barge-operator emphasis on afreightment. Pure towing rates could be greater or less than the rate factors in Table 3 depending on supply and demand for towing services. The rate factors in Table 3 do not reflect current rates, which are between 5 to 20 percent less than Table 3 because of weak demand for barges. All rates in Table 3 are for jumbo barges (195 × 35). Barges with a length between 200 to 250 ft would be assessed rate factors 50 percent higher than standard jumbo barges. Barges exceeding 250 ft would be assessed rate factors 200 percent higher than in Table 3.

Regulated rates are considerably higher than exempt rates. For example, on the Ohio River regulated tariff towing rates for loaded

TABLE 2 TOWING AND AFREIGHTMENT RATES IN DOLLARS PER BARGE MILE (Intersegment)

Origin	Dest.	Miles	RT (1)	RA (2)	MT (3)	MA (4)	MT/RT	MA/RA	RA/RT
Chicago	N.Orl'ns	1401	15.42	11.17	6.44	9.93	0.42	0.89	0.72
Min'pls	N.Orl'ns	1711	15.42	10.29	7.56	10.02	0.49	0.97	0.67
Chicago	Pit'bgh	1524	17.40	11.72	10.12	13.03	0.58	1.11	0.67
Min'pls	Pit'bgh	1834	17.40	10.81	9.79	12.59	0.56	1.16	0.62
St.Louis	Pit'bgh	1161	15.48	11.66	9.97	12.83	0.64	1.10	0.75
N.Orl'ns	Pit'bgh	1840	12.62	9.43	8.07	10.65	0.64	1.13	0.75
Houston	Pit'bgh	2241	13.41	11.20	8.40	10.71	0.63	0.96	0.84
N.Orl'ns	Lou'vle	1238	12.39	10.20	7.06	9.49	0.57	0.93	0.82
Houston	Lou'vle	1640	13.52	12.41	7.76	9.84	0.57	0.79	0.92
Chicago	Memphis	761	20.92	15.16	8.87	11.59	0.42	0.76	0.72
Min'pls	Memphis	1071	20.92	12.60	8.65	11.25	0.41	0.89	0.60
Houston	Memphis	1043	13.37	15.33	7.07	9.10	0.53	0.59	1.15
Pit'bgh	Memphis	1199	14.64	11.06	9.32	12.10	0.64	1.09	0.76
Chicago	Chat'nga	1054	19.46	17.39	9.50	12.21	0.49	0.70	0.89
Min'pls	Chat'nga	1364	19.46	14.87	9.19	11.80	0.47	0.79	0.76
Chicago	Cin'cti	1054	19.34	10.03	10.12	13.02	0.52	1.30	0.52
Min'pls	Cin'cti	1364	19.34	11.82	9.67	12.44	0.50	1.05	0.61
N.Orl'ns	Cin'cti	1370	12.46	9.99	7.60	9.84	0.61	0.98	0.80
Houston	Cin'cti	1772	13.50	12.09	7.94	10.09	0.59	0.83	0.90
Chicago	Houston	1803	15.77	12.97	7.83	10.16	0.50	0.78	0.82

- (1) RT--Regulated Towing, Local Tariff ORCO 100, The Ohio River Company; Cincinnati, Ohio; Effective December 22, 1982.
- (2) RA--Regulated Afreightment. Supplemental 200 to Freight Tariff 108-F, Local, Joint and Proportional All-Water Rates on General and Specific Commodities in Bargeloads, Waterways Freight Bureau; Fairfax, Virginia; Effective January 1, 1984.
- (3) MT--MODEL Towing. AAR Barge Cost Model.
- (4) MA--Model Afreightment. AAR Barge Cost Model.

barges are approximately 6.9 mills per ton-mile compared to exempt rate quotations between 3.5 to 4.0 mills per ton-mile. Regulated tariff rates for empty towing on the Ohio River are nearly \$6.00 per mile compared to exempt rates of \$3.00 to \$4.00 per mile quoted by operators.

COMPARISON OF EXEMPT AND REGULATED RATES

Regulated and exempt afreightment rates along with the AAR model cost estimates are presented in Table 4. The exempt rates were developed in the following manner: assuming a 1,400-ton barge and empty backhaul, 1,400 multiplied by the appropriate segment mills per ton-mile plus the dollars per barge mile for empty backhaul towing on the particular segment. For example, the towing rates for a 1,400-ton barge between Minneapolis and St. Louis with an empty backhaul are 1,400 times 4.5 mills per ton-mile, which equals \$6.30 per barge mile plus \$4.00 per mile empty return, which equals \$10.30 round trip rate per barge mile. The afreightment rates and the AAR model estimates are the same as in Table 1.

The exempt afreightment rates are much lower than the tariff rates. No exempt rate is more than 75 percent of the regulated

TABLE 3 EXEMPT TOWING RATES FOR AFREIGHTMENT

	Loaded (mills/ton-mile)		Empty (\$/barge mile)	
	Down	Up	Down	Up
Upper Mississippi	4.50	4.50	4.00	4.00
Illinois	4.50	4.50	4.00	4.00
Lower Mississippi	2.00	3.00	2.25	2.50
Ohio	4.00	4.00	4.00	4.00
Tennessee/Cumberland	4.00	4.00	4.00	4.00
Gulf Intercoastal West	6.00	6.00	6.00	6.00
Gulf Intercoastal East	8.00	8.00	8.00	8.00

Source: K. Horn. *Specification of General Two Costs on the Inland Waterways*. Unpublished working paper.

tariff. Almost all the exempt rates are between one-third and two-thirds of the tariff. The regulated tariffs show no close relationship to exempt rates. The AAR model cost estimates are much closer to the exempt rates. Nearly all the rates were above two-thirds of the cost estimates. In fact, most were over three-quarters of the cost estimates, and a couple were greater than the model costs.

However, the distinction between regulated and exempt rates

TABLE 4 EXEMPT AND REGULATED AFREIGHTMENT RATES IN DOLLARS PER BARGE MILE (Intersegment)

Origin	Dest.	RA (1)	MA (2)	EA (3)	EA/RA	EA/MA
Chicago	St.Louis	23.29	13.61	10.30	0.44	0.76
Min'pls	St.Louis	15.48	12.17	10.30	0.67	0.85
Dubuque	St.Louis	19.72	12.25	10.30	0.52	0.84
Peoria	St.Louis	29.95	13.51	10.30	0.34	0.76
Pit'bg	Cin'cti	16.68	13.02	9.60	0.58	0.74
Pit'bg	Lou'vle	18.94	13.00	9.60	0.51	0.74
Cin'cti	Lou'vle	38.87	12.96	9.60	0.25	0.74
Cairo	N.Orl'ns	11.25	7.95	5.30	0.47	0.67
St.Louis	Cairo	32.36	9.33	5.30	0.16	0.57
St.Louis	N.Orl'ns	10.91	8.18	5.30	0.49	0.65
Memphis	N.Orl'ns	12.89	7.95	5.30	0.41	0.67
Houston	N.Orl'ns	19.22	14.18	14.40	0.75	1.02
N.Orl'ns	Mobile	31.95	13.40	19.20	0.60	1.43
Nash'vle	Paducah	28.28	24.32	9.60	0.34	0.39
Gunt'vle	Paducah	18.26	15.29	9.60	0.53	0.63
Chat'nga	Paducah	16.17	11.16	9.60	0.59	0.86
Knox'vle	Paducah	17.33	12.27	9.60	0.55	0.78

(1) RA--Regulated Afreightment. Supplemental 200 to Freight Tariff 108-F, Local, Joint and proportional All-Water Rates on General and Specific Commodities in Barge loads, Waterways Freight Bureau; Fairfax, Virginia; Effective January 1, 1984.

(2) MA--Model Afreightment. AAR Barge Cost Model.

(3) The values in Table 3 and assuming a 1400 ton barge.

levels appears to have disappeared. Historically regulated rates were collectively made by relatively few common carrier barge lines. Under collective rate making regulated rates were somewhat higher than bulk commodity rates for the same equipment and similar operating conditions, but on paper that relationship has widened. Beginning in 1980 regulated rates began to collapse. The demise of collective rate making was apparent as early as 1982 when the second largest common carrier barge line withdrew from the WFB and independently published its own tariff. Other members of the WFB had already begun to independently publish and file numerous exceptions to the commodity rates in the tariff. Moreover, since 1980 most common carriers and some exempt carriers have obtained contract operating authority under which nearly all regulated waterway commerce is handled. Consequently, regulated tariff rates have become "paper" rates that have no significance in the current market.

IMPLICATIONS

The demise of regulated rates and collective rate making can mean nothing other than that the barge industry is subject far more to market forces than to the vestiges of regulation and price fixing. This should not be surprising. Any sort of collective rate making or cartel structure has trouble surviving without clear enforcement powers when faced with long-term excess capacity. This is particularly true in a fiercely competitive industry such as the inland towing industry. The number of firms and the low-entry barriers

for the barge industry combined with the retreat of government regulation allowed market forces to exert the predominant influence on regulated rates. The regulated tariffs thus become meaningless.

Although other transportation sectors have encountered opposition to further deregulation and even calls for reregulation, de facto deregulation on the inland waterways has proceeded almost unnoticed without any serious obstructions. No doubt part of this is due to the fact that most waterway commerce was always unregulated. Shippers are certainly content with the current low rates and cannot see how regulation would help them. Although carriers have complained of low rates and poor profits, they have not asked for regulation. They probably understand how difficult it would be to regulate their industry and also realize that government regulation can even retard industry growth. In any case, it seems clear that the towing industry will remain deregulated and competitive for the foreseeable future. All that remains is to repeal the trappings of regulation implied by Title 49, U.S.C. and the preservation of collective rate making. The WFB is already inactive and for all practical purposes defunct. The myth of a common carrier barge industry that formerly handled most of the small volume of regulated commodities that are currently handled by contract carriers, belies the continuation of federal regulation.