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COMPETITIVENESS OF SHORT LINE RAILROADS

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ABSTRACT

The objective of the paper is to determine if short lines are an economically viable alternative to abandonment of rural branchlines. The objective is pursued through a cross sectional survey approach that involves personal interviews of 199 grain shippers and 110 non-grain shippers located on 13 grain dependent short lines in Iowa and Kansas.

Shippers evaluated their short lines on 17 price and service characteristics. Results indicate that both the grain and non-grain shippers generally approve of the price and service performance of their short lines. The shippers also compared the performance of their short lines to that of their predecessor Class I railroad on the same set of 17 price and service characteristics. Both shipper groups rated the price/service performance of their short line as better than that previously provided by their Class I railroad, with the grain shippers observing a greater improvement than the non-grain shippers.

Shippers compared the performance of short lines to that of motor carriers on 13 price and service characteristics. Both shipper groups rate their short lines as better than motor carriers on prices, but motor carriers are rated better than short lines on service characteristics related to market access, transit time, dependability of transit time, and frequency of service.

Results reveal that short lines offer a competitive transportation service and are economically viable, assuming that short line service can be profitably supplied in the long run.

INTRODUCTION

According to Levine et. al. (1982), the number of short line railroads declined from 1009 in 1916 to only 238 in 1970. However, several events occurred in the 1970s and 1980s that helped trigger explosive growth of the industry. The bankruptcies of the Milwaukee Road and the Rock Island Railroads created

opportunities for short line development since parts of these two Class I railroads offered opportunities for profitable operation. Federal transportation policy also stimulated short line formation. The 3-R Act of 1973, the 4-R Act of 1976 and the Local Rail Service Assistance Act of 1978 all included provisions for operating subsidies and rehabilitation for light density branchlines. The Staggers Rail Act of 1980 and the Motor Carrier Act of 1980 greatly increased the degree of competition within the rail industry and between railroads and motor carriers. In the new competitive environment, railroads adopted a cost reduction strategy to maintain profitability. The sale or lease of branchlines to short line operators is part of that cost reduction strategy.¹

As Table 1 indicates, 44 short lines with 2,526 miles of rail line were created in the 1970-79 interval. However, this growth was dwarfed by the explosive growth of the 1980-89 period during which 226 short lines were created accounting for 21,028 miles of rail line. During the 1970-92 period, a total of 329 short lines were created, operating 30,214 miles of road. During the 1980s, the peak year of short line creation was 1987 during which 46 short lines were formed and 6,674 miles of rail line were transferred to short line operation. The least activity occurred the following year when only five short lines were created with only 104 miles of rail line. The decline was partly due to legal challenges raised by rail labor unions who argued that a railroad had a duty to bargain the effect of a short line sale with its employees. The issue reached the Supreme Court in the Pittsburg and Lake Erie Railroad v. Railway Labor Executives' Association case in which the court held that labor protection is not required in short line sales (Thoms, Dooley and Tolliver, 1989). Although uncertainty remains concerning short line sales and labor protection, 89 short lines were created in the 1989-92 period, accounting for 9,257 miles of rail track.

Short line railroads are operating many miles of rural rail branchline that might otherwise have been abandoned. Abandonment

Table 1
Creation of Short Line Railroads
1970-1992

Year	Number of Short Lines Created	Miles of Road*
1970	1	2
1971	2	53
1972	3	66
1973	4	414
1974	1	14
1975	1	242
1976	8	183
1977	8	900
1978	8	368
1979	8	284
1980	12	1,578
1981	10	587
1982	24	1,470
1983	15	341
1984	26	1,506
1985	27	2,620
1986	31	3,551
1987	46	6,674
1988	5	104
1989	30**	2,597
1990	30**	3,759
1991	16**	1,202
1992	13**	1,699
Total, 1970-79	44	2,526
Total, 1980-89	226	21,028
Total, 1970-92	329	30,214

* Does not include short line mileage attributed to expansion of existing short lines.

** These are the number of lines created in these years and still operating in 1993. There may be some short lines created in these years that ceased operation or were absorbed by other railroads prior to 1993.

Source: (1970-88) Levine, et. al., *Statistics of Regional and Local Railroads*, Association of American Railroads, pp. 49, 51 (1988). (1989-92) Compiled from data in Association of American Railroads, *Profiles of U. S. Railroads*, 1993 Edition.

has several potential negative impacts on rural areas such as:

1. Lower grain prices received by farmers.
2. Higher transportation costs and reduced profits for rural rail shippers.
3. Loss of market options for rural shippers.
4. Foreclosed economic development options in rural communities.
5. Higher road maintenance and reconstruction costs.

Thus the question of long term economic viability of short lines is important to rural areas. If short line railroads are an economically viable alternative to abandonment, then the above potential negative effects can be avoided. Also as Class I railroad mileage continues to decline, state legislators, rural communities, and shipper groups may ask the states for assistance in establishing short lines. Thus state transportation policy makers need to know if short lines offer an economically viable mode of transportation in order to evaluate the question of state assistance for rail short lines.

Several researchers have investigated the economic feasibility of short line railroads. Some studies have estimated short line railroad cost functions (Sidhu, 1977; Dooley, 1991). Others have identified some of the causes of short line success or failure (Due, 1984, 1987; Wolfe, 1988; Grimm and Sapienza, 1993; and Eusebio, 1993). Some investigators have employed a financial model approach to the question of short line viability (Wolfe, 1989a, 1989b; Walter and McNair, 1990; and USDOT, 1993). Dooley and Rodriguez (1988) and USDOT (1989) addressed the problem by comparing the rates and service of short line railroads to that of the predecessor Class I railroads. Fitzsimmons (1988) and Eusebio (1993) examined the impact of intramodal and intermodal competition on short lines.

This paper employs a cross sectional survey approach to the question of short line economic viability by asking shippers located on short lines to evaluate the price and service characteristics of their short line railroad and to compare the price-service performance of their short lines to that of predecessor Class I railroads and to motor carriers. If the shippers reveal that short lines offer a competitive transportation service, then short lines could be

a viable economic alternative to abandonment, assuming that short line service can be profitably supplied.

The principal objective of the paper is to determine if short line railroads are a viable transportation alternative to abandonment. Specific objectives include the following.

1. Obtain shipper evaluation of the price-service performance of their short line railroads.
2. Obtain shipper comparison of the price-service performance of their short line railroads to that of their predecessor Class I railroads and to motor carriers.
3. Obtain shipper modal-carrier preferences and the reasons for the stated preferences.

The objectives are achieved through personal interviews of shippers located on 13 Iowa and Kansas line haul short lines. Shippers also completed detailed questionnaires regarding their transportation choices. The shipper sample is divided into grain and non-grain shipper groups.² Tests of statistical significance are performed to determine if different types of shippers evaluate short line performance differently.

STUDY AREA SHIPPERS AND SHORT LINE RAILROADS

There are 309 shippers in the study. Each of these was interviewed by a member of the research team between February 1992 and September 1993. The shippers also completed detailed questionnaires. Of the total sample of 309 shippers, 199 of these are grain shippers and 110 are non-grain shippers, almost all of which are manufacturing firms. The total sample is composed of 125 Iowa shippers and 184 are located on Kansas short lines. The distribution of shippers by short line railroad is as follows.

Iowa Railroads:

Chicago, Central & Pacific Railroad	43
Iowa Interstate Railroad, Ltd.	32
Cedar Rapids & Iowa City Railway	20
Iowa Northern Railway	16
Cedar River Railroad Company	8
Keokuk Junction Railway	6

Kansas Railroads:

Kyle Railroad	60
Central Kansas Railway	45
Kansas Southwestern Railway	27
South Kansas & Oklahoma Railroad	17
Garden City Western Railway	14
Northeast Kansas & Missouri Railroad	11
Southeast Kansas Railroad Co.	10

Table 2 displays some of the characteristics of the Iowa sample short line railroads. The Iowa sample contains two regional railroads and four line haul short lines. As a group, the six Iowa short lines have 798 employees with the two regional railroads accounting for 82 percent of the total. The two regional railroads also account for 75 percent of the 1793 miles of track operated by the six Iowa short lines.

Table 3 contains the general characteristics of the Kansas short lines. The sample contains two regional railroads and five line haul short lines. With the exception of the Kyle Railroad, either the Santa Fe or the Union Pacific System is the predecessor Class I railroad for the Kansas short lines. As a group, the seven railroads have 256 employees, with the two regional railroads accounting for 65 percent of the total. The two regionals also have 65 percent of the 2546 track miles operated by the Kansas short line railroads.

Most of the thirteen short lines in the sample are heavily dependent on grain traffic. Grain is the most important commodity for four of the six Iowa short lines and four of the seven Kansas railroads.

SHIPPER EVALUATION OF THE PRICES AND SERVICE OF SHORT LINE RAILROADS

The shippers located on the sample short line railroads evaluated the outbound and inbound rates (prices) of their short line as well as their railroad's performance on several service parameters (see Appendix A for definitions).

Table 4 contains the mean rating of the grain and non-grain shippers for each of the price and service characteristics of their short line. The shippers were asked to express their opinions by selecting a response from a five category Likert scale. The possible responses are the short line is (a) very good, (b) good, (c)

fair, (d) poor, and (e) very poor. A number is assigned to each of the above responses, ranging from 1.0 for very good to 5.0 for very poor. If the mean rating for a given rate or service characteristic is less than 3.0, it is interpreted to mean that shippers think the short line's performance is better than fair. If the mean rating is greater than 3.0 (the midpoint of the Likert scale), the short line's performance is interpreted as worse than fair. Since every mean in Table 4 is less than 3.0, it can be concluded that grain and non-grain shippers rate their short line's performance as better than fair on all evaluated rate and service characteristics. The service characteristics receiving the best performance ratings (i.e., lowest mean values) from the grain shippers are Billing Procedures, Loss and Damage Record, and Frequency of Service for Outbound Freight. The service characteristics receiving the worst ratings (i.e., highest mean values) are Rail Car Supply During Peak Periods, and Quality of the Rail Track. For non-grain shippers, the service characteristics with the lowest mean rating are Loss and Damage Record, and Shipment Tracing Capability, while Transit Time for Inbound Freight, and Dependability of Transit Time for Inbound Freight received the worst performance ratings.

The *t* statistics in Table 4 are employed to test for statistically significant differences between the grain and non-grain shippers mean ratings of the various price and service characteristics. The only service characteristics with statistically significant differences in mean rating are On-Time Car Delivery, Quality of the Rail Track, and Rail Car Supply During Peak Periods. On the first of these characteristics, the grain shippers gave their short lines a better performance rating than the non-grain shippers. The opposite is true for the latter two service characteristics.

In general, there are few significant differences in the mean price and service ratings of the two groups of shippers. Both the grain and non-grain shippers generally approve of the price and service performance of their short line railroads.

Table 2
Iowa Short Line Railroads

Short Line Railroad	Former Class I Railroad	Employment	Mileage	First Year of Operation
Chicago, Central & Pacific Railroad	Illinois Central	465	780	1985
Iowa Interstate Railroad, Ltd.	Rock Island	190	567	1984
Iowa Northern Railway Co.	Rock Island	38	143	1984
Cedar Rapids & Iowa City Railway	None	76	52	1904
Keokuk Junction Railway	Santa Fe	21	127*	1981
Cedar River Railroad**	Illinois Central	8	124	1992

* 90 miles consists of trackage rights on the Toledo, Peoria & Western Railway from La Harpe, Illinois, to Peoria, Illinois.

** The Cedar River Railroad was formerly the Cedar Valley Railroad. In 1991, the Cedar River Railroad was acquired by the Chicago, Central & Pacific Railroad.

Table 3
Kansas Short Line Railroads

Short Line Railroad	Former Class I Railroad	Employment	Mileage	First Year of Operation
Central Kansas Railway	Santa Fe	59	882	1993
Kyle Railroad	Rock Island	108	778	1982*
Kansas Southwestern Railway	Union Pacific System	29	302	1991
South Kansas & Oklahoma Railroad	Santa Fe	24	286	1990
Southeast Kansas Railroad Co.	Union Pacific System	25	140	1987
Northeast Kansas & Missouri	Union Pacific System	7	113	1990
Garden City Western Railway	Santa Fe	4	45	1916**

* Kyle Railroad began operating former Rock Island Railroad lines in 1982 under lease from the Mid States Port Authority. In 1991, it began leasing 347 miles from Union Pacific System.

** The Garden City Western Railway began in 1916 and purchased the Garden City Northern from Santa Fe Railroad in 1989.

Table 4
Shipper Mean Ratings of Iowa and Kansas Short Line Railroads
Grain and Non-Grain Shippers

Rate or Service Characteristic	Grain Shipper Mean**	Non-Grain Shipper Mean**	t Statistic
Rates on Outbound Freight	2.670	2.592	0.49
Rates on Inbound Freight	2.701	2.531	1.33
Market Access (Outbound)	2.414	2.610	1.38
Inbound Freight Service	2.554	2.583	0.23
Transit Time for Outbound Freight	2.393	2.552	1.01
Transit Time for Inbound Freight	2.604	2.707	0.76
Dependability of Transit Time for Outbound Freight	2.419	2.542	0.83
Dependability of Transit Time for Inbound Freight	2.635	2.683	0.33
Frequency of Service for Outbound Freight	2.287	2.300	0.09
Frequency of Service for Inbound Freight	2.357	2.305	0.38
Loss and Damage Record	2.266	2.108	1.52
Shipment Tracing Capability	2.396	2.198	1.78
Billing Procedures	2.290	2.355	0.50
On-Time Car Delivery	2.360	2.653	2.12*
Quality of Rail Cars	2.558	2.526	0.25
Quality of the Rail Track	2.929	2.542	3.24*
Rail Car Supply During Peak Periods	2.947	2.623	2.26*

* Statistically significant at .000 to .050 level.

**Means are the mean responses of the two shipper groups to the following five category Likert scale.

The short line is:

Very Good	1.0
Good	2.0
Fair	3.0
Poor	4.0
Very Poor	5.0

SHIPPER COMPARISONS OF THE PRICES AND SERVICE OF SHORT LINE RAILROADS TO THAT OF THEIR PREVIOUS CLASS I RAILROADS

One of the principal arguments in favor of short line railroads is that they are able to provide a better price-service package than Class I railroads to shippers located on rural branchlines. To evaluate this hypothesis, the shippers were asked to compare the price and

service performance of their current short line railroad to that of their predecessor Class I railroad. In making the comparisons, the shippers indicated their opinion by selecting a response from a five category Likert scale. The response reveals whether the current short line railroad is (a) much better, (b) better, (c) same, (d) worse, or (e) much worse than the predecessor Class I railroad with regard to a given rate or service characteristic. A number is assigned to each of the above responses, ranging

from 1.0 for much better to 5.0 for much worse. If the mean shipper rating for a given rate or service characteristic is less than 3.0, it is interpreted to mean that the shippers think the short line performance is better than predecessor Class I railroads. If the mean rating is greater than 3.0, the opposite interpretation applies. With one exception, all the mean ratings in Table 5 are less than 3.0. This means that both shipper groups rate short lines as better than previous Class I railroads on nearly every rate and service parameter.

The grain shippers gave their short lines the widest margin of superiority (i.e., lowest mean rating) over their previous Class I railroad on On-Time Delivery of Rail Cars, and Frequency of Service for Outbound Freight. The grain shippers observed the least difference (i.e., highest mean rating) between the two types of railroads on Rates on Inbound Freight, and Market Access (Outbound).

The mean ratings of the non-grain shippers are higher than those of the grain shippers on most of the evaluated rate and service characteristics. This means the non-grain shippers observed less difference between their short line and the previous Class I railroad. The non-grain shippers gave respective mean ratings of 2.65 and 2.69 to Rates on Outbound Freight, and Inbound Freight Service. However, six of the evaluated rate and service characteristics have a mean rating between 2.9 and 3.0, indicating virtually no difference in the performance of short lines and predecessor Class I railroads.

According to the *t* statistics in Table 5, there is a statistically significant difference in the mean ratings of grain and non-grain shippers for the following rate and service characteristics.

Transit Time for Outbound Freight
Dependability of Transit Time For Outbound Freight
Frequency of Service for Outbound Freight
Billing Procedures
On-Time Car Delivery
Quality of Rail Cars
Rail Car Supply During Peak Periods

In each of the above listed cases, the mean rating of the grain shippers is less than that of the non-grain shippers.

In summary, both shipper groups rated the price and service performance of their short line as better than that previously provided by their Class I railroad. However, the grain shippers observed a greater improvement than the non-grain shippers.

The superiority of short line performance is supported by other evidence from the shipper survey. We asked the shippers if the amount they ship by rail changed after the Class I railroad service was replaced by their current short line railroad. Of the total shipper sample, 40.5 percent said they are shipping more or much more by rail, 44.5 percent are shipping the same amount, and only 15 percent said they are shipping less or much less by rail.

SHIPPER COMPARISON OF PRICES AND SERVICE OF SHORT LINE RAILROADS TO THAT OF MOTOR CARRIERS

Thus far, the analysis has revealed that the rate and service performance of short lines is well regarded by shippers and that their short lines provide better rail transportation than they previously received from Class I railroads. However, to further evaluate the hypothesis that short lines are a competitive transportation option for rural shippers, we asked the shippers to compare the rates and service of their short lines to that of motor carriers. In making the comparisons, the shippers indicated their opinion by selecting a response from the same five category Likert scale employed to perform the predecessor Class I railroad comparison. The interpretation of the values of the mean ratings is also the same.

Table 6 contains the grain and non-grain shipper mean ratings of short line rate and service performance relative to that of motor carriers. According to the grain shippers, the short lines posted their best performance (relative to motor carriers) on Inbound Rates and Billing Procedures which had respective mean ratings of 2.77 and 2.76. Short line performance is least impressive on Transit Time For Inbound Freight (mean rating of 3.4), and Frequency of Service For Inbound Freight (mean rating of 3.25). The grain shippers rate their short lines as better than motor carriers on 8 of the 13 price and service characteristics listed in Table 6. However, three service characteristics, have mean ratings between 2.95 and 3.0. This indicates that grain shippers see

Table 5
Shipper Mean Comparison of Transportation Prices and Service
of Iowa and Kansas Short Lines to That of Previous Class I Railroads
Grain and Non-Grain Shippers

Rate or Service Characteristic	Grain Shipper Mean**	Non-Grain Shipper Mean**	t Statistic
Rates on Outbound Freight	2.688	2.652	0.16
Rates on Inbound Freight	2.931	2.733	1.03
Market Access (Outbound)	2.929	3.038	0.83
Inbound Freight Service	2.797	2.694	0.62
Transit Time for Outbound Freight	2.582	2.907	2.30*
Transit Time for Inbound Freight	2.663	2.750	0.59
Dependability of Transit Time for Outbound Freight	2.478	2.822	2.56*
Dependability of Transit Time for Inbound Freight	2.505	2.755	1.63
Frequency of Service for Outbound Freight	2.388	2.778	2.45*
Frequency of Service for Inbound Freight	2.545	2.825	1.84
Loss and Damage Record	2.719	2.800	0.87
Shipment Tracing Capability	2.807	2.791	0.15
Billing Procedures	2.667	2.934	2.37*
On-Time Car Delivery	2.387	2.721	2.37*
Quality of Rail Cars	2.747	2.966	2.39*
Quality of the Rail Track	2.759	2.954	1.57
Rail Car Supply During Peak Periods	2.575	2.922	2.51

* Statistically significant at .000 to .050 level.

**Means are the mean responses of the two shipper groups to the following five category Likert scale.

The short line is:

Much Better	1.0
Better	2.0
Same	3.0
Worse	4.0
Much Worse	5.0

Table 6
Shipper Mean Comparison of Transportation Prices and Service
of Iowa and Kansas Short Lines to That of Motor Carriers
Grain and Non-Grain Shippers

Rate or Service Characteristic	Grain Shipper Mean**	Non-Grain Shipper Mean**	t Statistic
Rates on Outbound Freight	2.798	2.658	0.71
Rates on Inbound Freight	2.768	2.560	1.18
Market Access (Outbound)	2.960	3.641	3.91*
Inbound Freight Service	2.976	3.345	2.27*
Transit Time for Outbound Freight	3.188	3.951	5.68*
Transit Time for Inbound Freight	3.413	3.802	2.91*
Dependability of Transit Time for Outbound Freight	2.994	3.656	5.23*
Dependability of Transit Time for Inbound Freight	3.250	3.580	2.58*
Frequency of Service for Outbound Freight	3.100	3.483	2.99*
Frequency of Service for Inbound Freight	3.252	3.329	0.65
Loss and Damage Record	2.913	2.977	0.73
Shipment Tracing Capability	2.795	3.011	2.38*
Billing Procedures	2.757	2.998	2.53*

* Statistically significant at .000 to .050 level.

**Means are the mean responses of the two shipper groups to the following five category Likert scale.

The short line is:

Much Better	1.0
Better	2.0
Same	3.0
Worse	4.0
Much Worse	5.0

little difference in the performance of their short lines and that of motor carriers in these three areas.

The non-grain shippers think the short lines perform best (relative to motor carriers) on Inbound and Outbound Rates which had respective mean ratings of 2.56 and 2.66. The non-grain shippers are least impressed with short line performance on Transit Time For Outbound Freight (mean rating of 3.95), and Transit Time For Inbound Freight (mean rating of 3.80). The non-grain shippers rate motor carriers as better than their short lines on 9 of the 13 price and service characteristics listed in Table 6. An additional two service characteristics have mean ratings of 2.98 and

2.99, indicating very little difference in non-grain shipper evaluation of the performance of short lines and motor carriers in these areas.

Table 6 data indicate that grain shippers have a higher opinion of short line rate and service performance (compared to motor carriers) than do non-grain shippers. Of the 13 evaluated rate and service characteristics in Table 6, nine have statistically significant differences in mean ratings. The grain shipper mean is less than the non-grain shipper mean in all nine cases.

In summary, the grain and non-grain shippers rate their short lines as better than motor carriers on rates, but motor carriers are rated better than short lines on service

characteristics related to market access, transit time, dependability of transit time, and frequency of service. It should be noted that most of the short lines in the sample have very little local traffic and are thus dependent on Class I railroads to originate and deliver most of their carloadings. Therefore shipper evaluation of short line performance (relative to motor carriers) with respect to market access, transit time, and dependability of transit time is affected by Class I railroad performance in these areas.

TRANSPORTATION MODE PREFERENCES OF SHIPPERS

The questionnaire distributed to shippers asked the following question.

Taking rates and service into consideration, which of the following modes of transportation do you prefer?

The responses are in Table 7. The data indicate that the grain shippers prefer short line railroads, whereas the non-grain shippers prefer motor carriers. When the entire sample is considered, 15 more shippers prefer short lines than prefer motor carriers. This reinforces the previous analyses that indicates that shippers regard short lines as a competitive transportation alternative.

The shippers that preferred short lines emphasized the personalized service of short lines as one of the reasons for their preference. They also stated that short line rates are lower than motor carrier rates, especially for longer hauls; and that the relatively low labor costs of short lines allows them to charge lower rates than Class I railroads. Many grain shippers said they prefer short lines because their lower rates allow them to receive a higher price for their grain.

The shippers that prefer short line service cited several advantages of shipping by rail that are not unique to short lines. For example, the grain shippers mentioned the opportunity to obtain origin grades for grain that allowed them to select the best market for a given grain shipment.³ Other advantages of rail shipment include faster payment, less paperwork, less congestion during peak periods, loading at the shipper's convenience, and the efficiency of shipping large volumes.

The shippers that prefer Class I railroads mentioned what they feel are advantages of Class I railroads compared to short line railroads. These include direct access to more markets, ability to supply more equipment, and ability to supply equipment in better condition. These shippers also cite the lower prices of a Class I only, long haul movement compared to a joint short line and Class I railroad long haul movement. They also state that since Class I railroads have direct access to more markets than short lines, the Class I railroad can offer lower rates to these markets due to less interlining.

The shippers that prefer motor carriers cite the lower rates of motor carriers, especially on short hauls. Thus, grain shippers located close to their primary markets are able to receive a higher price for their grain by employing motor carriers. These shippers emphasized the faster delivery times of motor carriers, especially for short hauls. The shippers frequently mentioned that motor carrier pickup, delivery, and transit times are more dependable than alternative modes. Some shippers practicing JIT inventory management said they prefer trucks because they are faster and more dependable than railroads. Other shippers mentioned that motor carriers are able to provide door-to-door service to more locations than railroads. Some other reasons for motor carrier preference include better equipment availability and less need for advance notice of intent to ship products.

CONCLUSION

The above discussion indicates that various shippers prefer different modes, because of their different transportation requirements. The transportation modes offer different price-service characteristics and individual shippers select the modes that deliver what the individual shipper regards as important. Since the important mode selection criteria varies by individual shipper, and the transportation modes offer different price-service attributes, it implies that each mode has a role to play in the transportation system.

Each mode has comparative advantages and disadvantages. For example, short line railroads are able to provide personalized service to each shipper on their lines because they have a small number of shippers. Grain

Table 7
Transportation Mode Preferences of Shippers
(Percents)

The numbers in this table are the percents of the shipper sample that expressed a modal preference in response to the following question.

Taking rates and service into consideration, which of the following modes of transportation do you prefer?

	Short Line Railroad	Class I Railroad	Motor Carriers	Indifferent	No Opinion	Other*
Grain Shippers	47.2	13.8	21.4	8.8	3.1	5.7
Non-Grain Shippers	21.1	15.8	43.2	9.5	3.1	7.3

* The other category primarily includes shippers which expressed a preference for more than one mode of transportation.

shippers strongly endorse short lines because of the rail transport advantages for moving grain in large volumes over long distances. Short lines are able to offer lower rates than Class I railroads because they have lower labor costs. If the short line's advantages coincide with the shipper's most important modal selection criteria, the shipper will select the short line.

However, short line railroads also have disadvantages relative to Class I railroads. For example, Class I railroads have direct access to more markets than short lines simply because the Class I railroad serves a large area while short lines serve small areas. The Class I railroads can provide more and newer equipment than short line railroads because the Class I railroad has better access to capital. Many short lines have very little local traffic and rely on Class I railroads to deliver their inbound and outbound freight. Since the short line must interline its traffic with other railroads, its rates may be higher than the corresponding Class I railroad rate that involves no interlining. If the Class I railroad's comparative advantages correspond with the shipper's most significant modal selection criteria, the shipper will prefer the Class I railroad.

Motor carriers have comparative advantages relative to both Class I and short line railroads. These include faster delivery

times, more dependable transit times, door-to-door service to more locations, and lower prices for short haul movements. Shippers that regard these advantages as important to their logistics systems will select motor carriers.

In summary, the different transportation requirements of shippers and the different comparative advantages of transportation firms mean that all the modes have a role in the transportation market, including short line railroads.

This paper has concluded that in the current environment, short line railroads are a viable transportation alternative for rural shippers. However the long term survivability of short line railroads is not assured. The future of the short line railroad industry depends on the attitude of Class I railroad management. The Class I railroads can nearly assure the survivability of the industry by providing short line railroads with rail cars, competitive joint rates, and market access. By the same token, the Class I railroads can virtually ensure the demise of the short line industry by failing to cooperate in the above areas. Either of these scenarios is possible. If Class I railroad management views short lines as contributors to Class I profitability by originating more rail freight, they are likely to pursue the first of the above scenarios.

However if Class I railroads view spinoffs only as a politically expedient method of eliminating the cost of the rural branchline system, then the long term future of the short line rail industry is indeed bleak.

However even with the support of Class I railroads, not every short line railroad will survive. Nine of the 13 short lines in the sample have been in service for five years or more. One-third of these nine railroads have posted consistently negative financial results. Perhaps the short line railroad industry will evolve as all the other industries in a market driven global economy in which the well managed prosper and the poorly managed fail.

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ENDNOTES

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1. The Association of American Railroads (AAR) has developed the following definitions for the short line and regional railroad industry.

Regional Railroad – A non-Class I line-haul railroad which operates 350 or more miles of road, and/or which earns revenues of at least \$40 million.

Local Railroad – A railroad which is neither a Class I nor regional railroad, and which is primarily engaged in providing line-haul service.

Switching and Terminal Railroad – A non-Class I railroad primarily engaged in providing switching service in a terminal area, or which receives a switching charge from a line-haul carrier.

In this paper, the term "short line" includes regional, local, and switching and terminal railroads. The term "line haul short line" includes only regional and local railroads. It should be noted that other federal government agencies have adopted different definitions for short line and regional railroads. The Interstate Commerce Commission (ICC) and the Federal Railroad Administration (FRA) define a short line railroad as a line haul railroad which operates fewer than 250 miles of track, while a regional railroad is a line haul railroad that operates 250 miles or more of track.

2. The sample could also be divided into Iowa and Kansas shipper groups, but in the interest of brevity, the discussion is limited

to grain vs. non-grain shippers. The major conclusions with respect to the objectives of the paper are not materially affected by the stratification of the shipper sample.

3. The price received by the shipper for grain depends on its grade. If the grain is to be shipped by railroad, the shipper can request the state grain inspection service to officially certify the grain's grade prior to shipment. The shipper can then select the market that pays the highest price for that particular grade. If the grade of the grain is not officially certified prior to shipment, such as with truck movements, the grain is graded at the destination and the shipper must accept the grade and the price offered by the buyer, which may be less than an origin grade. Thus origin grades increase the market flexibility of the shipper and may increase the price received for the grain.

APPENDIX A

Market Access (outbound) – the number and type of profitable markets that can be served by the shipper with available transportation carriers.

Inbound Freight Service – the number of origins from which inbound freight is received. This refers either to inbound freight that is resold or inbound freight that is a component part of the company's product.

Transit Time – the number of days that it takes the carrier to deliver freight from the origin to the destination.

Dependability of Transit Time -- the ability of the carrier to consistently achieve the same transit time.

Frequency of Service – the number of times per week that the carrier is willing and able to provide transportation service.

Loss and Damage Record – the number of shipments per year that are lost or damaged while in the carrier's possession.

Shipment Tracing Capability -- the ability of the carrier to inform the shipper of the location of a shipment at any given time.

Billing Procedures -- carrier practices regarding the payment of freight bills.

On-time Car Delivery -- placement of rail cars by the carrier within the time frame specified by the shipper.

Equipment and Track Quality -- the general condition of carrier's rail cars and track.

Rail Car Supply During Peak Periods -- refers to the ability of the carrier to supply rail cars in sufficient quantity within the time frame requested by the shipper during harvest or other peak periods.