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A Potential Solution for the Railroad Grain Car Shortage Problem

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ABSTRACT

Railroads and the grain industry have been plagued by grain car shortages for over a century. The first case docketed before the newly formed Interstate Commerce Commission (ICC) in 1887 was a railcar shortage complaint by wheat farmers from the Territory of Dakota. Grain car shortages have existed for over 107 years and the problem remains unsolved.

The purposes of this study are to develop an understanding of the causes of rail car supply problems and to identify measures that might improve the efficiency of rail transport of grain. The basic methods of analysis in this study were to obtain relevant data on the rail transport of grain and to interview representatives of all levels of the grain industry as well as major grain carrying railroads.

The following conclusions were reached in this analysis:

- Peak demand periods for rail grain cars are export-drive and seasonal in nature.
- With some exceptions, railroads allocate grain cars on the basis of various non-price systems. Cars are allocated not to those who can make the most economic use of them, but, in effect, to those who win a lottery.
- The grain transportation system has moved very large quantities of grain during peak demand periods. End users and exporters have received grain on time.
- Constraints on grain car pricing and investments include a required 20-day notice on railroad rate increases and railroads are free to refuse to load shipper owned or leased cars as long as railroad cars are available for loading.
- A potential solution to the rail car shortage would free railroads to offer prices on grain cars and movement; allow shippers to respond based on supply and demand; allow shippers open access to use their own cars on all railroads; and allow carriers to offer prices for private cars based on supply and demand.
- A market based system for allocating grain cars would require a dispute resolution system and perhaps a redefinition of the common carrier obligation.

INTRODUCTION

The first case docketed before the newly formed Interstate Commerce Commission (ICC) in 1887 was a rail car shortage complaint by wheat producers in the Territory of Dakota against the St. Paul, Minnesota and Manitoba R.R. The complaint alleged that the railroad was using cars to haul men and materials for their westward extension rather than for shipping wheat to Minneapolis and Duluth.

Farmer and shipper complaints about rail car shortages have surfaced periodically since 1887. During the grain export boom of the 1970s, the ICC received almost continuous

complaints about rail car shortages. During the same period, both railroads and private investors made unprecedented purchases of new grain cars. This huge investment was fueled by expectations of continuous growth in grain exports. A generous federal investment tax credit also encouraged many non-agricultural investors to buy new railroad grain cars.

The grain export boom ended abruptly in early 1980 and a massive rail car surplus appeared. New rail cars ordered during the late 1970s, and manufactured in the early 1980s, were taken directly to storage tracks. No new cars were ordered for several years and the existing fleet increased in age and decreased in numbers.

By the late 1980s, the railcar fleet had declined to a level that was close to existing demand and peak shipping period shortages reappeared with increased frequency. The ICC held hearings on grain car shortage problems and solutions in 1991 and again in April, 1994. The railroad grain car shortage problem has remained unsolved for over 107 years.

In 1993, the Office of Economics of the Federal Railroad Administration contracted with Apogee Research, Inc. to conduct a study to assess the potential for improving the functioning of the grain merchandising/transportation system. The purposes of the study were to:

1. develop an understanding of the nature of car-supply problems in terms of commercial operations of grain elevators and merchandisers and of system performance in moving grain from country elevators to domestic end-users and export elevators; and
2. identify any measures that might improve the efficiency of rail transport of grain.

These objectives were pursued by:

1. analyzing how grain elevators and merchandisers conduct their business operations and how their operations are affected by peak demand for grain movement;
2. determining current trends in investment in rail grain capacity; and
3. analyzing the economic and institutional forces that influence rail capacity for grain movement.

Although a substantial amount of quantitative data was analyzed in the study, the principal method of analysis was to obtain information by personal interviews with decision makers with railroads and with all levels of the grain industry. Unless otherwise cited, the factual information on the conduct of the grain-marketing business and related railroad business in this report is based on discussions with grain industry and railroad personnel. For example, interviews were conducted with local grain elevator operators in Ohio, North Dakota, Iowa and Kansas. Interviews were also conducted with representatives of regional and national grain merchandizing firms, grain processors, feed manufacturers, grain exporters and major grain carrying railroad companies.

CAR-SHORTAGE PATTERNS

Generally speaking, major fluctuations in rail grain shipments are driven by fluctuations in exports. The upper curve of figure 1 shows total grain car loadings and the lower curve shows total grain car loadings for export. Export carloads actually represent grain cars released at ports, lagged one week behind the total carloads. From 1989 on, peaks in total loadings fairly closely match the export peaks. This relationship was not as close in 1987 and 1988. A major wheat sale to the Soviet Union in the summer of 1987 was followed by the release of 700 million bushels of wheat from
Commodity Credit Corporation (CCC) storage, most of which was expected to be exported (Bjerke). It is likely that some of the domestic carloads represent wheat moving from CCC storage to intermediate terminals for consolidation before going to export elevators. Thus, the general point holds that the major fluctuations in rail grain shipments are export-driven.

Figure 1.

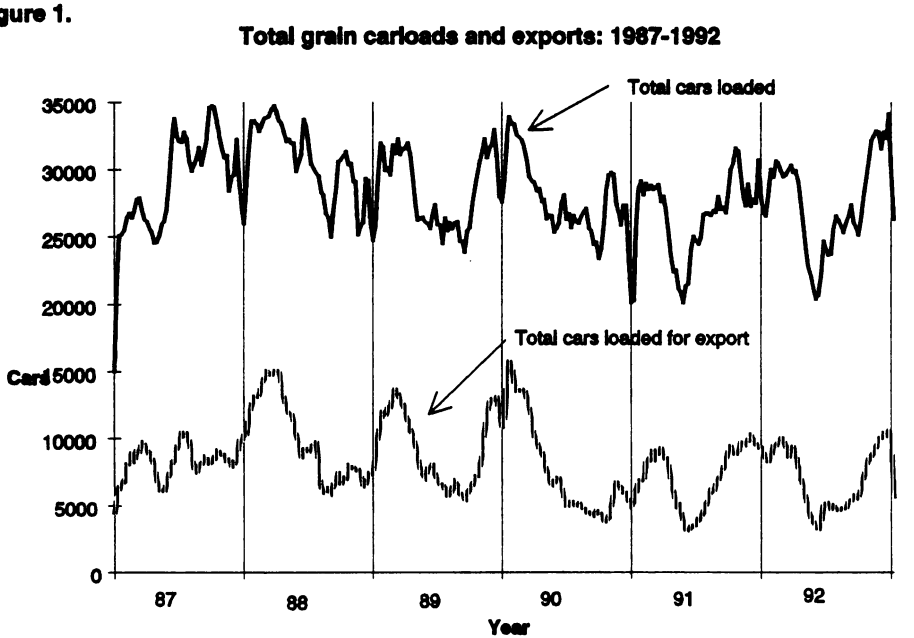
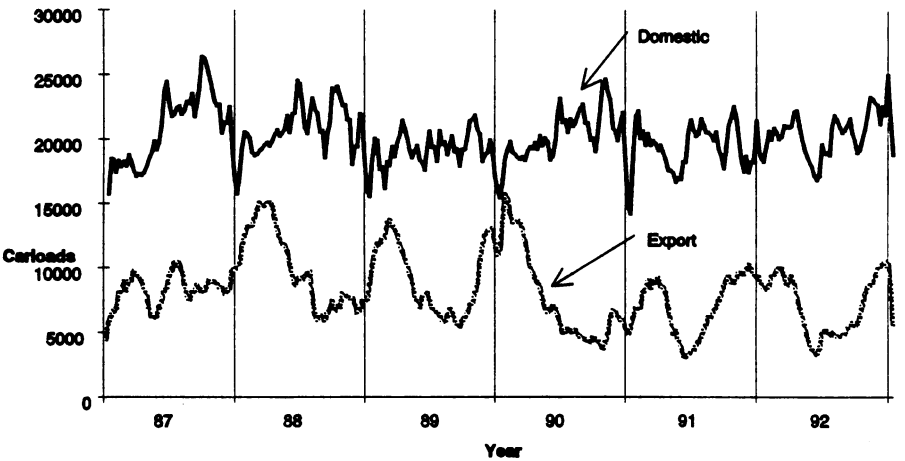


Figure 2 illustrates the same point by comparing domestic car loadings with export loadings; exports clearly fluctuate over a wider range than domestic shipments. The steep drop in domestic loads at the end of each year simply reflects the fact that railroads minimize holiday work for their crews and grain cars are not picked up or delivered during the Christmas and

New Year's holidays. Further, it is possible that the pattern of increased domestic loadings in the third quarter partly reflects wheat moving to terminals for later export and corn and soybeans moving to river terminals for barge movement to ports.

Figure 2. **Rail grain movements: 1987-1992**



The export curve shows a clear seasonal pattern: rail shipments peak in the winter and drop off rapidly in late winter or early spring. Export sales are highest in the months after the harvest because U.S. grain prices are likely to be most attractive to world buyers. Cash grain prices in the U.S. are typically at their lowest levels immediately following harvest. At that time, prices are at high levels for southern hemisphere producers who plant their crops in October-December. U.S. winter wheat prices will be at their seasonal lows in the summer when winter wheat is harvested, but summer movements of winter wheat will rarely overload the system. Moreover, winter conditions reduce railroad operating efficiency. Additional locomotive power is needed to pull the same tonnage and winter storms can slow traffic or stop it altogether. Feeder demand for grain increases in the winter since animals require more calories in cold weather.

This seasonal nature of export sales leads to a comparable seasonal pattern in car shortages; they are largely a winter phenomenon. Peak demands fall on the rail system at a time when there are significant aggravating factors. Much of the Mississippi River above the Illinois River is closed in the winter. The stretch of the Mississippi that is actually closed varies with the severity of the winter; it is never closed below Lock 25 at Winfield, Missouri, and it is

sometimes open as far north as Lock 19 at Keokuk, Iowa. Therefore, more grain must move longer distances by rail during the winter months.

The data in figures 1 and 2 and discussions with grain traders and railroad people point to the same conclusion: as they look ahead to the next winter, grain-market participants must consider the likelihood of car-supply problems and make their plans accordingly. Periods of peak car-demand are export driven and seasonal; they are relatively predictable with respect to timing, less so with respect to magnitude.

GRAIN-MARKET OPERATIONS

Market Participants

The physical grain market, together with the Chicago Board of Trade futures market, constitutes a complex and highly efficient mechanism for the gathering, storing, and distributing grain from one harvest to the next. Grain is produced by farmers and a portion of the grain--about 20 percent--is fed to livestock. The remainder is eventually sold and typically delivered to country elevators, who in turn, sell to merchandisers or directly to end-users, both domestic and overseas. The end-users are processors and feeders. Briefly, the roles of these various operators are as follows:

- Farmers produce grain and sell it, primarily to country elevators, but also to processors and feeders. Farmers usually haul grain to elevators or to processors or feeders in their own trucks and wagons.
- Country Elevators buy grain from farmers, hold it in storage facilities and, when it judges the right time has come, sell it to merchandisers or end-users. In many cases, country elevators store farmer-owned grain for a storage fee.
- Merchandisers buy grain from elevators or other merchandisers and sell to other merchandisers, exporters, or domestic end-users. Merchandisers take legal possession of the grain but do not always take physical possession. Merchandisers hold some grain in storage for several months, as do elevators.
- Exporters buy from elevators or merchandisers and sell to foreign buyers, usually governments. The export function is a special case of the merchandising function. Typically, but not invariably, exporters make the sale first, then buy the grain.
- Processors buy grain from farmers, elevators, or merchandisers, process it, and sell it for further processing, manufacturing, feeding, or final consumption (e.g., Quaker Oats processes grain into breakfast cereal).
- Feeders buy grain from farmers, elevators, or merchandisers and feed it to cattle, hogs, chickens, or other animals.

Some firms will perform more than one function. Most exporting firms are also domestic merchandisers. A number of large and middle-sized merchandisers are grain conglomerates that

may own processing plants, elevators, or both. This analysis only evaluates the merchandising function and its relationship with rail car supplies.

Another function of some merchandisers is that of a terminal operator. Terminals are intermediate storage elevators, almost invariably owned by merchandisers. Terminal elevators are used to store grain for a fee for customers who may be merchandisers, other market participants, or the Federal Government. Merchandisers also use terminals to store and blend their own grain, consolidating shipments and holding them in anticipation of later sales. The amount of grain stored in terminals has been declining, and many observers of the grain business believe that there is a limited economic future for this function. Terminals are now used largely for wheat; they have virtually disappeared from the corn trade.

Although the farmer is not a direct buyer of rail transport, he is an important market participant. A significant number of farmers sell their grain at harvest time. Many others, however, keep some or all of their crop--especially corn--in on-farm storage or store it in an elevator for a fee. Farmer decisions on when to sell can have a significant effect on when elevators ship.

Rail-Transport Provisions in Grain-Sale Contracts

A key feature of grain-sale agreements involving rail shipment is the specification of the time period in which the seller agrees to load the cars. Typically, this is a half-month, e.g., first half of January, last half of February. The sales contract specifies whether the seller or the buyer bears responsibility for obtaining and placement of rail cars at the originating elevator in time for loading in the contract period. The party that accepts this responsibility is liable for penalties if the grain cannot be loaded in the specified time due to lack of cars. The contract provision does not necessarily determine which party actually arranges for the cars. It is not at all uncommon that the buyer supplies the cars under an arrangement reached alongside a contract that puts formal liability on the seller.

RAILROAD METHODS FOR CAR ALLOCATION

Railroad car-allocation systems have meaning only in the context of a peak-demand period. In non-peak periods, railroads and other car holders have cars available; customers have only to order cars and they will get them from a railroad at tariff rates. In most peak-demand periods, however, railroads cannot supply all the cars to all customers at the times ordered at non-peak rates; carriers must either find a way to let rates rise with the market or resort to some form of non-price allocation.

Most railroads do not have formal, published car-allocation rules or practices beyond tariffs specifying procedures for ordering and canceling cars and related matters. The railroads that do have formal car-allocation systems are the two largest grain-hauling carriers, the Burlington Northern (BN) and the Union Pacific (UP), and the considerably smaller Soo Line. Rail car-allocation systems can be grouped under three headings:

- Market-based (BN and Soo Line),
- Historical usage-based (UP),
- Variations of first-come, first-served (all other railroads).

The BN Certificates of Transportation (COTs) program is essentially a form of auction for forward sales of grain transport. The Soo Line Protected Equipment Rate Exchange (PERX) is also an auction for future transport, but with some significant differences from COTs. The UP Advanced Car Ordering System (ACOS) allows customers to order cars in advance, but rations cars according to historical use at any given facility.

BN COT auctions usually begin five months ahead of the period (first or second half of a month) when the cars will be placed. A weekly auction continues until the month preceding placement or until all cars allotted to the program are sold. According to the BN, no more than 40 percent of its covered hopper grain car fleet is allocated to the COT program. COTs can be, and are, freely traded in a secondary market. COTs may be bought for single cars, multi-car sets up to 15 cars, or for unit trains, thereby establishing segregated markets for shippers who cannot load unit trains. A customer who fails to exercise a COT forfeits the 25-percent prepayment of the COT purchase price.

BN also allocates cars through a carpool. Cars are guaranteed to customers who place their own cars in the pool under leases that usually run for one or two years. Customers are guaranteed a fixed number of cars each month; they are free to sell their claims on these guaranteed cars to other BN shippers. UP and Santa Fe also operate carpools with roughly similar arrangements.

Like COTs, Soo's PERX program is an auction, once a month (the second Wednesday) for a fixed number of cars, not to exceed 25 percent of the Soo fleet. The cars are offered for the first and last half of each of the following six months. Bids must be for a minimum of five cars, but the market is not segregated between unit trains and smaller orders. A major difference from COTs is that PERX certificates are origin-specific; that is, they are good for loading only at a specified location and, thus, cannot be traded. The holder of a PERX certificate who does not load the cars in the specified shipping period forfeits the $250-per-car advance deposit.

Under UP's ACOS system, a shipper is allotted a monthly "carloading base" for each facility—the average loadings at that facility for that month for the four previous years. For October 1994, for example, the base would have been the average of 1990–1993 October loadings. Customers must order ACOS cars a full month before the placement month; August 31 is the last day for an October order. Cars not taken under the ACOS program are added to the cars available to all customers on a "standby" basis. A firm wanting more cars than the base allows must order on a standby basis and take its chances.

Generally, other railroads allocate cars on a "first-come, first-served" basis plus considerations of operating efficiency, customer relations, and other factors. For example, the Chicago and Northwestern (CNW) offers an arrangement called a "car supply agreement". For a premium of $100 per car, CNW will provide guaranteed cars on fairly short notice. This arrangement is, however, only rarely used. Most railroads are receptive to advance orders and will often give them priority, but make no guarantees.

Some railroads guarantee cars to a large receiver by dedicating an agreed number of trains for service to one or more of the receiver's facilities. This practice assigns control of the trains to the receiver as long as the trains are fully utilized. To improve the carrier's operating efficiency, the receiver gives the railroad advance notice on where and when the trains will be wanted. In essence, this is the nature of the CNW "Cycle Train" program.

An option open to some shippers is the use of private cars, i.e., cars owned or held under lease by some shipper or party other than a railroad. Most railroads allow shippers to use private cars at the shipper's option and the railroad pays shippers for the use of their cars. A partial exception is the BN which, aside from its carpool arrangements, will not allow customers to use private cars unless the BN is unwilling or unable to provide its own cars.

Many railroads pay a "mileage allowance" for private cars. The allowance is typically a payment in cents per loaded car-mile. Others have dual tariff rates for a given move, e.g., $1,450 per car if the carrier's cars are used and $1,000 per car if the customer's are used. Some railroads adjust the price they pay for cars as supply and demand vary in the market. Some carriers do the same with tariff rates for moving grain; others do not.

COMMERCIAL DAMAGE FROM CAR-SUPPLY PROBLEMS

Export demand drives the demand for grain transport capacity, but, for a variety of institutional reasons, rail rates for grain cars and grain movement do not move with the market. Because of below-market prices, peak demand for railroad-controlled cars will exceed the available supply, and there will be a shortage. Some or all railroad customers will be compelled to accept delays, uncertainty, and the inability to ship at the perceived optimum time. This situation carries the potential of commercial damage for both elevators and merchandisers.

Feeders and processors are also threatened with damage, because they are exposed to heavy costs if there is an interruption in their grain supplies. In practice, however, these supplies are not interrupted; car shortages do not typically become major problems for receivers of grain. The impacts of grain car shortages mostly fall on shippers who are competing for opportunities to sell grain at a time when cash bids are high. Elevators and merchandisers both face costs from missed trading opportunities and from penalties for failure to load cars in the time promised in a sale agreement.

Generally, missed opportunities are the largest cost of car shortages. Elevators and merchandisers conduct their business to avoid, or minimize, penalties; but in doing so, they are often compelled to forgo attractive profit opportunities. Surges in exports cause shippers to face highly volatile cash grain prices. Grain traders use futures markets to replace the risk associated with volatile cash grain prices with the more predictable changes in the futures basis. The basis is defined as the local cash price minus the price of a specified futures contract. As the delivery date approaches for the futures contract, the cash price is expected to rise relative to the futures price, reflecting the decreasing cost of storing the grain to the delivery month. Since most grain merchants hedge their grain purchases and sales, an unexpected increase in the basis indicates an increased profit opportunity and signals shippers to sell grain and order cars. A shipper, uncertain that cars will be available, may be hesitant to sell at the high basis price and be forced to for go the short term profit opportunity.

Elevators also face costs if their storage capacity is filled to the limit or if they hold deteriorating grain. In the former case, the elevator may be unable to purchase additional grain from farmers.

Well-managed elevators take car supply into account as they plan their operations for the time after harvest. Options for getting cars when supply is tight vary by railroad. Elevators on BN or Soo lines may make forward arrangements by buying COTs or PERXs. If they have not provided themselves with COTs ahead of time, they may enter the secondary market and buy COTs when they want to ship. They may also buy guaranteed cars in railroad carpools, such as those operated by the BN, UP,
or ATSF.

An elevator may try to obtain cars on a short-term basis. Or an elevator may sell to a merchandiser who, one way or another, has available cars. The merchandiser's bid to the elevator will, however, likely be reduced to reflect a premium value for the cars.

Many elevators on railroads that accept advance orders will place orders as far in advance as they feel confident of their requirements. Once a car shortage occurs, shippers try to manipulate a railroad's allocation system. If an elevator believes a railroad is placing cars according to the date wanted and the railroad is running three weeks behind, the elevator will order cars three weeks ahead of its true want date. If an elevator manager believes the railroad is giving customers a fixed percentage of the cars they order, more cars will be ordered than are needed. Or an elevator will order cars not having made a sale, believing it can sell on good terms once it knows when cars are coming.

Merchandisers also pay constant attention to car-supply conditions. Choosing between a high risk of default due to lack of cars and giving up a promising opportunity is a decision that merchandisers would rather not face. Therefore, they make forward arrangements for cars and also develop ways of obtaining cars on short notice.

Forward arrangements for cars may take the form of agreements with railroads that give a merchandiser control of a given number of trains--as with the CNW cycle trains--or leases, COTs, and PERX. Leases--including cars placed in carpools--and COTs are tradeable claims on railcars. Buying these claims amounts to taking a speculative long position in railcars. When demand for grain cars is high and the short run car supply is fixed, premiums will accrue to those who hold these claims. Cash bids for grain will reflect the demand for cars as well as the demand for grain. When a trader, holding claims on cars, buys grain from a seller who is uncertain of car supply, the trader will pass on little, if any, of the premium accruing to cars. If that trader did not have cars, he would be forced to offer a higher price to buy the grain. If the seller faces a zero probability of getting cars, all the premium will stay with the buyer who holds cars. If the seller controls cars and the buyer does not, the premium will go to the seller. Because of relatively inflexible rail rates, these premiums will tend not to accrue to railroads. The BN may capture some premiums through COTs, but some close observers of the COTs market believe that the BN, in fact, receives only a small share of these premiums.

In slack-demand periods, these premiums on cars vanish, and a holder of cars may offer premiums for grain in order to find a use for his cars. Whether the holder of a longer term car lease makes or loses money depends, of course, on the net gains in peak-demand periods against losses in car-surplus periods.

DEFINITION OF THE CAR SHORTAGE PROBLEM

In order to understand the fundamental nature of the car-shortage problem, it is useful to review some key points from the above analysis:

- Peak-demand periods for rail grain cars are export-driven, seasonal, and typically predictable in timing but less so in magnitude. There is little, if anything, that can be done to change the seasonal nature of the seasonal demand for rail grain cars.
- With the exception of BN COTs, Soo Line PERXs, carpools and private cars, railroads allocate grain cars on the basis of various non-price systems.
- The grain-transport system has moved very large quantities of grain in the car-shortage periods from 1987 on. Feeders and processors have received their grain on time; exporters have not been forced into default or had to pay heavy ocean demurrage charges (Mills).
- Peak-demand periods present grain shippers with difficult car-supply problems, but sophisticated grain traders are generally capable of coping with those problems and, at times, find profit opportunities in them.

The problem is that, when grain markets offer good trading margins due to increased demand, not all traders who want to sell can obtain cars. There is a close linkage between car shortages and strong cash bids. High bids reflect both an increased demand for grain and an increased demand for grain movement; the demand is for delivered grain at export terminals, at feedlots, and at processing plants. High cash bids that occur at peak-demand periods reflect, in part, that the volume of grain moving is getting close to the system's capacity limits. This stems largely from the short run inelastic supply of grain transport. If, in some way, more cars suddenly became available at such a time, the supply of delivered grain would go up and prices would decline. Part of the margin--possibly a large part--that some traders miss for lack of cars would disappear. Eliminating the car shortage eliminates the tempting trading opportunities that go with it.

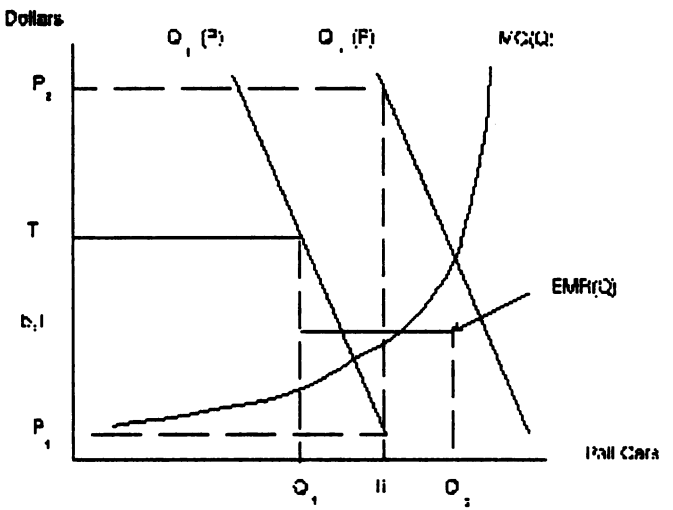
In sum, the economic damage from car-supply problems does not stem from reduced grain shipments and is not to be measured in terms of unfilled car orders or delays in car placement. Unfilled orders simply measure the degree to which demand exceeds capacity in the absence of a price-based allocation system; they are only a symptom of the true economic problem, which is the inefficiency of non-price mechanisms for allocating scarce resources in the face of strong demand. When demand for grain cars rises to the point where the system comes under strain, cars are allocated not to those who can make the most economic use of them, but, in effect, to those who win a lottery.

RESTRAINTS ON GRAIN CAR PRICES AND INVESTMENTS

It should be clear that simply increasing the size of the grain-car fleet will not eliminate the problem. If the railroads were to invest in all the cars required to accommodate the peak

demand, they would acquire substantial assets that would generate no revenue for several months in the year. Grain traders would not be able to pay the level of rates necessary to give the railroads or other investors, the return required to justify such an investment. This is not to say that the current grain-car fleet represents an optimal level of investment. Because of the way car use is priced, railroads tend not to receive the extra revenue that would otherwise flow from peak demand for grain shipment. For this reason, and because there are other factors that restrain investment in grain cars, the size of the current fleet is probably sub-optimal. Figure 3 illustrates why grain car shortages appear.

Figure 3. Optimal fleet size under tariff rates.



In figure 3, the demand for grain cars at the tariff rate is $\bar{Q}_1$ under normal demand conditions and $\bar{Q}_2$ under a surge in exports. The railroad will acquire cars until the expected marginal revenue of a car, EMR(Q), is equal to the expected marginal cost of operating and purchasing a car, MC(Q) (Pautsch).

Assume that the marginal cost is upward sloping and that the tariff is at a level such that the marginal cost of $\bar{Q}_2$ exceeds its expected marginal revenue, b_2T. Further, assume that the expected marginal revenue of $\bar{Q}_1$ exceeds the marginal cost of the car. The expected marginal revenue of the first $\bar{Q}_1$ cars is equal to \$T, since the railroad expects to use these cars under either demand state. However, the expected marginal revenue of the next $\bar{Q}_2$ - $\bar{Q}_1$ cars is $\$b_2T$, because the railroad expects to use these cars only if a surge in exports occur.

In figure 3, the optimal fleet of cars for railroad is R. If a sudden surge in exports occurs, there will be a shortage of $\bar{Q}_2$-R cars. But under normal demand conditions, there will

a surplus of $R\text{-}Q_1$ cars. If all shippers face a constant tariff price, no grain shipper can be certain of receiving cars for loading during periods of car shortages. One method of eliminating the persistent shortages and surpluses of cars is to allow prices to clear the market.

As it turns out, the same actions that would eliminate the inefficient car allocation problem would also remove restraints on investment in grain-movement capacity. Rail rates are sticky in upward movements due to legal and implicit political constraints. The Staggers Rail Act of 1980 substantially reduced, but did not altogether remove, regulation of rail rates. Railroads can offer prices for grain movement in two ways—in published tariffs or in confidential contracts with individual customers. Rail carriers are relatively free to adjust tariff rates, but a rate increase requires a 20-day advance filing with the ICC. Twenty days may not seem a long time, but grain markets are dynamic and premium prices may last only a few days or weeks. Lease rates for private cars and for grain barges fluctuate daily. It is clear that the 20-day notice requirement imposes an artificial rigidity on rail rates in peak-demand times.

Railroads have long been viewed as large and powerful firms, enjoying a degree of monopoly power. An increase in rail grain rates can attract intense political interest that would not, by contrast, be focused on increases in barge rates or leased-car rates. Rail executives may judge that their best course is to avoid attracting such attention. Thus, both legal and political factors restrain the amount of revenue that railroads derive from providing peak-demand service.

Returns available to holders of private cars are restrained by the ICC ruling in the "SCOT-5" case (ICC, 1989). The gist of the ruling was that a railroad could refuse to load a shipper's cars as long as it would make its own cars available to that shipper. BN is the principal carrier that takes advantage of this ruling, maintaining a firm stance of not accepting private cars, other than in its carpool, unless it is under heavy demand pressure. Generally, other carriers will accept private cars, although they follow different practices in the prices they offer for use of private cars. Nonetheless, the SCOT-5 decision does have the effect of placing restraint on the use of private cars. This has the effect of inhibiting investment in private cars. It maintains an artificial separation between the market for railroad-controlled cars--including cars leased by carriers--and the market for private cars.

A POTENTIAL SOLUTION

A potential remedy to the century old problem of grain car shortages is to remove these restraints on rail-rate flexibility and on private-car access. These changes are inextricably linked; neither can work without the other. If railroads have full rate flexibility and the power to restrict private cars, the balance of market power tilts too much in their favor. On the other hand, if private cars have free access while railroads do not have pricing freedom, grain traders holding cars are in a position to take financial advantage of both railroads and other grain shippers. The answer is for:

1. railroads to be free to offer prices on grain cars and movement and for shippers to be free to respond based on supply and demand conditions, and
2. private-car holders to have open access to railroads, and carriers to be free to offer prices for private cars in accord with supply and demand.

It is beyond the scope of this paper to explore and resolve the details about how to implement market based rail rates. There are many alternative methods of implementing this type of pricing system. However, one essential aspect of a new system is clear: prices for grain cars and movement would be agreed on between carriers and customers at the time cars are ordered. If, on a given day, a shipper asks for railroad cars three months hence, (e.g., the second half of March), the railroad would reply with a price for providing the cars and moving them. If the shipper accepted the price, that would fix a binding agreement. The rate for grain movement capacity in the second half of March might fluctuate widely in the interim, but that shipper would have a firm commitment from the carrier to place the cars at that time at the fixed rate and the railroad would have a firm commitment from the shipper to accept the cars at the fixed price. These arrangements would give shippers more protection against rate movement after a sale is made than currently exists. Most sales are for loading one or more months ahead, so the current 20-day filing rule on rate increases provides only limited protection.

Under such a new system, dealings among railroads, shippers, and private-car holders would become more market-based. Grain-shipment capacity under peak-demand conditions would be allocated to those traders that are most efficient or have the best trading opportunities. Dealings between railroads and grain traders with respect to private cars would be based on supply and demand in the market and neither group would gain a consistent advantage over the other. Economic returns from holding grain cars should increase, and, other things being equal, the size of the grain-car fleet should increase although not necessarily dramatically. This can be demonstrated by figure 3. If EMR(Q) intersects MC(Q) to the right of R, the optimal size of the fleet will increase.

IMPLICATIONS FOR MARKET POWER AND COMMON-CARRIER CONCERNS

The solution to the century old rail car shortage problem suggested in this paper raises the question of whether existing legal and institutional safeguards against potential railroad market power are adequate to protect shippers in regions of very limited railroad competition. Implementation of a market based grain car pricing and allocation system would require that the market power question be addressed. Ultimately, some form of dispute resolution system would be required.

In the SCOT-5 decision, the Commission was concerned that the free entry of private grain cars would cause railroads' car fleets to decline, thus impairing their ability to meet their common-carrier obligations. More broadly, the common-carrier issue is almost always raised in debate about reducing regulatory restraint on railroads, usually in the sense that relaxing some restraint might allow rail carriers to ignore, or escape from, their duties as common carriers. Therefore, to analyze the impact on the common-carrier obligation of the proposed market system of pricing and allocating rail grain cars, one must discover the meaning of the "common-carrier obligation." In its recent remand to the ICC regarding the Commission's ruling on the legality of BN COTs, the U.S. Court of Appeals called attention to Sections 11101(a) and 11121(a)(1) of the Interstate Commerce Act (United States Court of Appeals). The former says that common carriers must provide "transportation or service on reasonable request"; the latter says that rail carriers shall provide "adequate car service" and have "reasonable rules and

practices on car service." While implicitly conceding the generality of this language, the court went somewhat further and found a Congressional intent that cars should be distributed equitably among customers requesting tariff service and that a carrier should have sufficient equipment to meet "reasonable" requests for conventional service.

It is difficult to give analytical meaning to the phrase, "adequate car service." It can be said that, with an open car market, shippers would get better car service in a peak-demand period than they do now. This would be true for shippers who do not wish to hold their own cars as well as for those who do. The open car market with railroad rate freedom would give the small shipper choices and flexibility that do not exist now. It should be noted that the option of holding cars is not necessarily closed to small shippers. In the 1970s, some elevators formed associations to hold grain cars; with the advent of the car-surplus period of the early and middle 1980s, these groups became defunct.

Importantly, the open-market arrangements allow the choice of postponing shipment for a few weeks if the elevator manager finds that day's opportunities unattractive. He will not, of course, know for certain what the price of cars might be in two or three weeks, but cars can be obtained at some price if he decides to wait. He has the choice of shipping now or later, and he has information to help calculate the gains and costs associated with his decision.

The elevator receiving a fixed allocation based on past usage is in a somewhat different position. That manager knows the elevators monthly car allocations, but there is no effective way of signalling to the market about the special opportunities, or threats, that might make it highly desirable for him to ship on some pattern quite different from his historical usage. A feature, possibly the worst feature, of any non-market allocation system is that it takes little or no account of which grain traders can realize the highest value by shipping at a peak-demand time. All elevators are treated alike, or on a historical basis, regardless of the relative economic merits of the opportunities before them.

If "reasonable request" is defined as "request from a customer willing to pay market price for service," and "adequate car service" is defined as "cars provided to customers willing to pay market price," then the proposed arrangements satisfy those requirements of the common-carrier obligation.

It is unknown whether open-market arrangements satisfy a requirement for equitable distribution. "Equity" is, of course, difficult to define. It does seem clear, however, that equitable distribution of grain cars is often used to mean allocation of cars among customers on some basis other than market signals. More generally, proposals for equitable distribution are introduced when some people believe that something unfair or unjust in the allocation would result from the workings of the market. In the context of the grain market, equitable distribution is often used in the same sense referred to above: all elevators should be entitled to get some cars, allocated in some arbitrary fashion, regardless of their circumstances or their willingness to pay a market price. The proposed arrangements do not satisfy this meaning of equitable distribution. But this concept reflects equity only in that all are treated alike when, in fact, all are different.

If equity is defined as allocation of cars to those willing to pay the market price, then, of course, the proposed arrangements meet the common-carrier test. As long as prices do not reflect abuse of market power, this is a sound definition of equity. A market allocation system distributes cars and service to those who can make the best economic use of them. Sellers

whose business situations make them the most anxious to sell and the buyers whose circumstances make them the most anxious to buy will get cars in a high-demand period. All market participants can look at the same price information and make their own decisions as to whether to buy transportation at high prices or postpone shipment in the hope that market conditions will change in a favorable way.

To force a non-market allocation on the system in the name of equity reduces the efficiency of the grain-marketing system and, thereby reduces the incomes of many of its participants, including farmers. It is relevant to consider what interests are being protected when law and custom impose a non-economic allocation system for transport services and cars. Railroads and merchandisers are clearly not being protected by the present system; both would benefit from moving to a market-based system.

A non-market allocation also comes at the expense of farmers. The effect of the non-market system is to prevent the more efficient elevators from fully exploiting their advantages over less efficient ones; and some of the gains from efficient elevator operations would be passed on to farmers in the form of higher bids or higher refunds.

Insistence on a non-market distribution of grain cars in the name of equity and the common-carrier obligation is economically damaging to the grain production and distribution system and most of its participants. If the ICC and the courts continue to interpret the common-carrier obligation to require a non-market allocation system, it might be wise public policy to consider substantial modification of the common carrier obligation.

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ENDNOTE

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