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MP25 The Problem of Freight Car Supply

John Richard Felton

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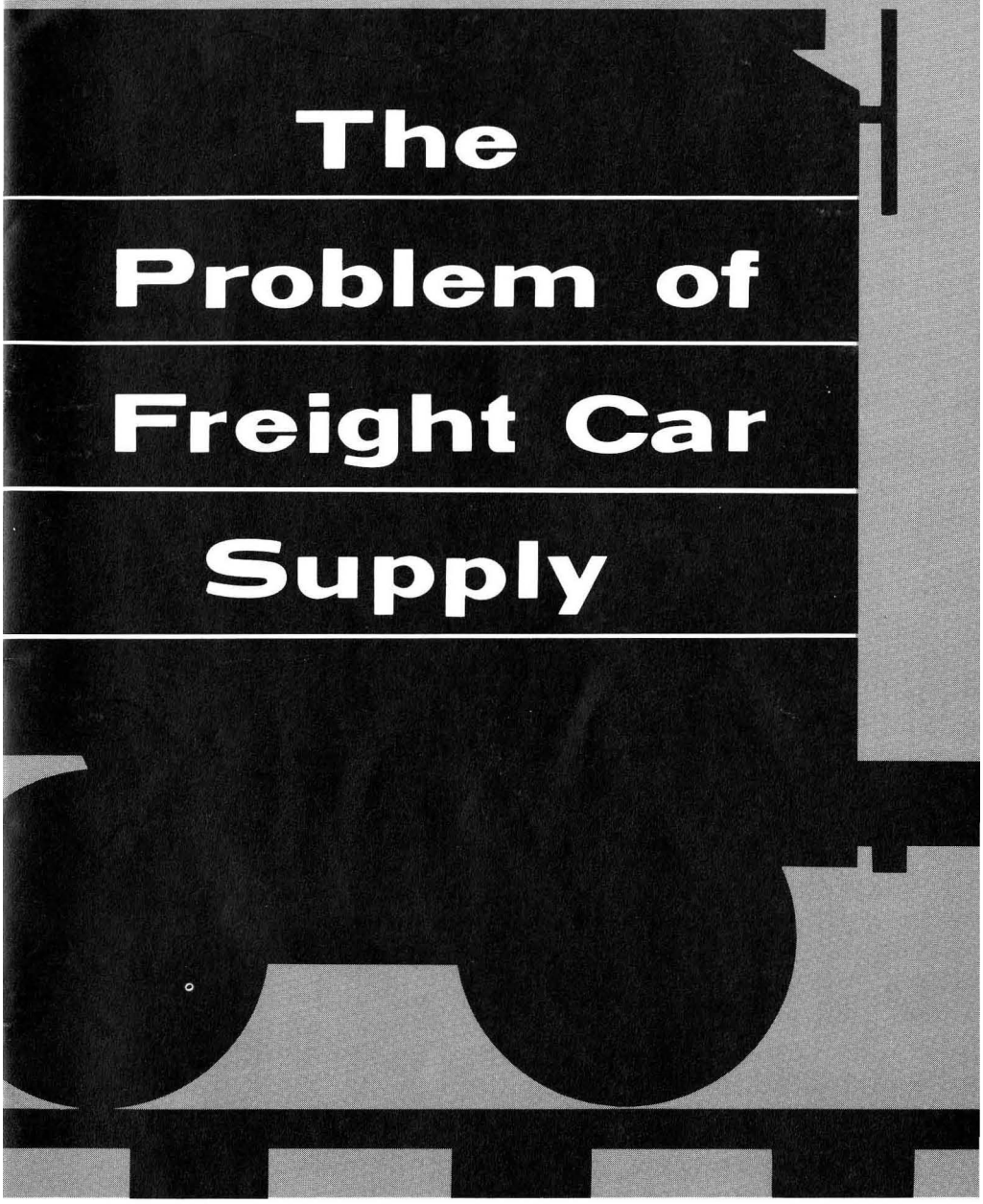

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The Problem of Freight Car Supply

By John Richard Felton*

Summary

As early as 1907 the Interstate Commerce Commission held extensive hearings on freight car shortages. At frequent intervals ever since, Congress and the commission have addressed themselves to the problem of freight car supply with considerable vigor but meager results.

Allegations of an inadequate supply of freight cars have been widespread in recent years. The decline in the number of freight cars is easy to document: between 1959 and 1968, the number of cars used in grain transport (boxcars and covered hopper cars) declined by 26%.

If, however, consideration is given to changes in car capacity and car miles per day, then grain car supply, as measured by ton-miles of grain transported, actually increased by 14% during this 10-year period.

Furthermore, a study conducted by the Interstate Commerce Commission in 1969 revealed that, on an average day in 1968, there were three boxcars and covered hopper cars available in the Midwest Region for every one ordered by shippers. Nevertheless, on this same average day, shippers received only 75 to 80% of the freight cars ordered, owing to malfunctioning of the car allocation system.

When freight cars move beyond the lines of the owning railroad, the railroad having possession must pay the owning railroad a car-rental charge known as "per diem." The Association of American Railroads and the Interstate Commerce Commission have relied upon an inflexible and inadequate car-rental charge and a comprehensive body of "car-service rules" and "car-service orders" to secure return of freight cars to owning roads or to points of greatest "need," as defined by the AAR and the ICC. Thus car allocation, at least during periods of heavy demand, is reminiscent of the decision-making process in a centrally planned socialist system.

If a car-rental exchange market were to be established, car-rental rates would be determined by competitive bidding. Freight cars would then move toward points of greatest shipper demand

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and the ICC would find it unnecessary to issue arbitrary orders to influence car distribution.

Moreover, whenever such competitively-determined rates rose above the prospective daily ownership costs of new freight cars, it would provide an incentive for the acquisition of additional freight cars. Such a car-rental exchange market could be administered by the Car Service Division of the AAR, free from the political considerations which now play a major role in freight car distribution.

Introduction

With the certainty usually attributed only to death and taxes, the problem of "freight car shortages" can be expected to manifest itself in various places and at various times during the course of each year. Shippers in the Great Plains states, particularly, have had frequent occasion to decry their inability to secure boxcars in sufficient numbers to transport grain at harvest time. As former Representative Clair Callan testified before the Freight Car Shortage Subcommittee of the Senate Committee on Commerce:

"In my hometown of Odell, Neb., on last Dec. 3 [1964], there was still milo piled on Main Street. This situation was duplicated in several other towns. The Burlington Railroad estimated that more than 20 million bushels of grain sorghum was piled on the ground in their service area alone because of the boxcar shortage."[1]

During the course of the same hearings, Gordon E. Ganka, then transportation director, Lincoln Grain, Inc., pointed out that in October, 1964, the railroads were able to supply only 68 cars in good condition to meet the 1,167 requested, i.e. 5.8%. The following month, November, 1964, of the 1,627 empty cars ordered, only 122 cars in good condition, or 7.4%, were supplied.[2]

The comments of shippers, railroad executives and regulatory officials since the 1965 hearings of the Senate Freight Car Shortage Subcommittee do not suggest that the situation has improved. In June, 1966, the Interstate Commerce Commission estimated the daily freight car shortage to be as high as 15,000 cars, compared with a maximum of 10,665 cars in all of 1965.

[1] Clair Callan, "Statement," *Freight Car Shortages*, hearings before the Freight Car Shortage Subcommittee of the Committee on Commerce, U.S. Senate, 89th Congress, 1st session, in S. 179 and S. 1098, Sec. 89-23 (Washington, D.C., 1965), pp. 271-4.

[2] Gordon E. Ganka, "Statement," *Freight Car Shortages*, p. 319. Presumably, monthly car orders are not cumulative; the November, 1964, deficiency was $1,627 - 122 = 1,505$, yet the total empty cars ordered for December, 1964, was only 1,497.

The Chicago, Rock Island and Pacific Railroad, alone, reported a weekly shortage of 3,000 grain-loading freight cars.[3]

In November, 1968, a representative of the Rock Island declared: "This is our most critical shortage of any time in the past five years."[4]

Finally, 54 of 77 large shippers who responded to a poll conduced by *Railway Age* in April, 1969, maintained that the freight car supply problem was worse than during the preceding year. Moreover, the cars in shortest supply were those employed in grain transport: boxcars and covered hopper cars.[5]

"Shortage" is not a popular word in the economist's dictionary and he typically attributes this to a failure of the price mechanism to perform its equilibrating role. Is this the essence of the problem of freight car shortages? Let us consider the nature of the demand for and supply of freight cars and the operation of the associated price system.

The Short-Run Supply of Freight Cars

The "demand" for freight cars can be interpreted both as the demand of shippers for existing cars and the demand of railroads, car-leasing companies and shippers for new or rebuilt cars. Thus, there are really two freight car markets, one for the existing fleet and one for additions to the fleet. Let us consider the supply characteristics of the market for the existing fleet.

The short-run supply of freight cars cannot be evaluated merely by counting. Cars are not homogeneous as to type or carrying capacity and intertemporal comparisons must take into consideration changes in the capacity of the average car of a particular type, in the composition of the fleet and in the percentage of serviceable cars. Thus, in the ten years from 1959 through 1968, while the total number of freight cars owned by Class I railroads declined from 1,676,386 to only 1,453,883 or by more than 13%, the aggregate carrying capacity of these cars actually increased from 92¼ million tons to 93½ million tons.[6]

Furthermore, if the reduction in the percentage of unserviceable freight cars from 7.7% of the fleet in 1959 to 4.8% in

[3] *Wall Street Journal*, June 3, 1966, p. 1, Col. 6.

[4] *Wall Street Journal*, November 6, 1968, p. 30, Col. 1.

[5] "April Traffic Poll: Shortages Continue to Plague Shippers," *Railway Age* (April 28, 1969), p. 31.

[6] AAR, *Statistics of Railroads of Class I in the United States, Years 1958 to 1969* (Washington, D.C., 1969), p. 9. Class I railroads, those having annual operating revenues of $5,000,000 or more, account for 99% of all revenue ton miles of traffic in the United States. The inclusion of freight cars owned by Class II railroads, switching and terminal railroads, car-leasing companies and shippers would have some minor effect on the totals but virtually no effect on percentage changes.

1968 is taken into account, then effective capacity increased from 85 million tons to 89 million tons, or almost 5% during this period.[7]

Instantaneous capacity may, however, be a dubious method of calculating the short-run supply of freight cars. Shippers do not demand so much capacity in the abstract but rather the movement of so many tons of goods from one point to another. Therefore, the short-run supply of freight cars over any short time period is affected not only by aggregate freight car capacity but also by the extent of capacity utilized, the time required for loading and unloading goods, the time spent in classification yards and on sidings, train speed and distance.

Between 1959 and 1968 average train speed, including time spent at intermediate stations and on sidings, increased from 19.5 to 20.4 miles per hour.[8]

Since the portion of the day spent in road trains increased from 2 hours and 21 minutes, on the average, in 1959 to 2 hours and 39 minutes in 1968, average daily car mileage increased from 45.9 to 53.9, or about 17½%, during this ten-year period.[9]

Ton mileage has been further augmented by an increase in the percentage of capacity utilized by the average loaded car from 79.1 in 1959 to 80.4 in 1968.[10] Also, the length of the average haul has increased from 448 miles in 1959 to 492 miles in 1968.[11]

A final consideration is the change in the ratio of empty to loaded car miles. Here the change is unfavorable, the ratio of empty to loaded car miles increasing from 60.5% in 1959 to 68.7% in 1968.[12]

The net result of all these factors can be ascertained by comparing revenue ton-miles in 1959 with those in 1968. Revenue ton-miles increased from 576,529 million in 1959 to 744,479 million in 1968.[13]

Thus, while the number of freight cars of all kinds decreased by more than 13% between 1959 and 1968, the ton-miles per freight car day increased by 43%,[14] so that total freight car productivity increased by 29%.

[7] AAR, *Yearbook of Railroad Facts* (Washington, D.C., 1969), p. 58.

[8] *Ibid.*, p. 52.

[9] *Ibid.*, p. 55.

[10] *Ibid.*, pp. 50 and 66.

[11] *Ibid.*, p. 41.

[12] AAR, *Statistics of Railroads of Class I*, p. 11. The increase in the empty-loaded car mileage ratio is probably attributable to increased specialization in the freight car fleet which reduces, where it does not eliminate, the utilization of cars in back-hauls.

[13] AAR, *Yearbook of Railroad Facts*, p. 35.

[14] *Ibid.*, p. 56.

Of particular interest in the Great Plains area is the supply of boxcars and covered hopper cars, since they are employed in the transportation of grain to consumption and export points. Between 1959 and 1968 the number of boxcars and covered hopper cars declined by 26% but the aggregate capacity of these cars declined less than 13%.

This difference is attributable, in part, to the increase in the average capacity of boxcars from 49.2 tons in 1959 to 52.9 tons in 1968 and covered hopper cars from 68.8 tons to 84.7 tons during the same period. The remainder of the difference between the change in number and the change in capacity of these cars arises from the change in the ratio of covered hopper cars to boxcars. In 1959, the ratio was 1/11; in 1968 the ratio was 3/10.

Moreover, if the reduction in the percentage of unserviceable boxcars and covered hopper cars approximated that for the fleet as a whole, then available capacity declined by less than 10%. Finally, if boxcars and covered hopper cars traveled at the same train speed, spent the same portion of the day in road trains, achieved the same increase in the percentage of car capacity utilized, enjoyed the same increase in length of average haul and suffered the same decrease in empty/loaded car ratio as the average of the entire fleet, the revenue ton-miles of freight transported by boxcars and covered hopper cars would have increased from 221,964 in 1959 to 253,767 in 1968 or by more than 14%.[15]

Methods of Improving Freight Car Utilization

While the foregoing considerations provide us with little evidence as to the adequacy of the freight car fleet, in general, or boxcars and covered hopper cars, in particular, they do suggest that the short-run supply of cars cannot be ascertained merely by a process of car enumeration. It might also be noted that *potential* car productivity cannot be determined by measuring current car productivity.

Principal opportunities for the enhancement of car productivity would appear to be:

An increase in the percentage of the day during which a car is part of a road train.

A decrease in the empty/loaded car ratio.

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[15] Given the foregoing assumptions, the revenue ton-miles of freight transported by boxcars and covered hopper cars in any year would be the ratio of the combined carrying capacities of boxcars and covered hopper cars to the carrying capacity of the entire freight-car fleet multiplied by the revenue ton-miles accomplished that year by the whole fleet.

"Free Time" and Demurrage Modifications

The average freight car moves only about 54 miles a day which, at an average train speed of about 20½ miles an hour, it can accomplish in about two hours and forty minutes. The remainder of the time it is being held by shippers, consignees or the railroad itself in terminals, classification yards, repair shops and so forth.

One device for reducing loading and unloading delays would be the elimination of all so-called "free time" for such operations. The present practice of 1 or 2 working days within which one may load or unload without payment of demurrage provides no incentive for loading or unloading prior to the end of this period.[16]

Either demurrage, which would begin as soon as the car comes into the possession of the shipper or consignee, or, alternatively, a refund of a portion of the transportation charge for return of the car before the termination of the existing "free period," would provide an incentive for speedier loading and unloading operations.

Seasonally Variable Freight Rates

The portion of the year which the average freight car is in the possession of shippers and consignees is greatly exceeded by the time it is held idle by the railroads themselves.[17]

A primary reason for the existence of unused freight car capacity at various periods would appear to be seasonal fluctuations in demand coupled with the simultaneity of production and consumption of transportation service. In 1968 grain and grain product carloadings in the week of Nov. 2, the 1968 peak, exceeded those of the week of Dec. 28, the 1968 low, by 101.2%, those of the week of June 1 by 85.9% and those of the average week by 33%. Furthermore, the second and third weeks' most numerous grain and grain product carloadings occurred the week preceding and the week succeeding the peak week.[18]

An obvious method of improving freight car utilization would be through the institution of seasonably variable freight rates. Fifteen years ago, George H. Borts pointed out: "If the

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[16] Cf. John G. Kneiling, "How Not to Solve the Freight Car Problem," *Trains* (April, 1968), p. 37.

[17] In 1967, inactive car days, including car repair, accounted for 38% of the time of the average freight car while only 18% of the time was devoted to loading and unloading operations. See Patrick P. Boles and John O. Gerald, "Demurrage and the Freight Car Situation," *Marketing and Transportation Situation*, MTS 174 (Washington: U.S. Department of Agriculture, August, 1969), p. 34.

[18] AAR, *Cars of Revenue Freight Loaded, 1968-1969*, CS 54-B (Washington, D.C., Jan. 13, 1969), p. 2.

present (railway) pricing system were replaced by one under which customers were charged more for service during peak periods, they would have an incentive to even out their demand over time."[19]

More recently George W. Wilson has argued the case for seasonal freight rates:

"The problem is essentially this: Marginal cost is higher at the peak when excess capacity is low than it is at other times when excess capacity is greater. Thus, to induce shippers to utilize transport equipment more fully during the year, there should be seasonal rates rising with the off-peak periods.

". . . raising the rates at the peak and lowering them at other times will induce those shippers whose . . . elasticity of transport demand is high . . . to reschedule their traffic insofar as possible. This will lead to a reduction in peak traffic.

"On the other hand, business in off-peak periods will increase due to two factors: the shift of some shippers from peak to off-peak and the general increase in demand for transport due to lower rates at the off-peak periods."[20]

While seasonally variable rates would be a novelty in railroad transportation, they are a familiar characteristic of the exempt sector of highway transportation. The Marketing Economics Division of the U.S. Department of Agriculture, in a survey of truck brokers of agricultural commodities several years ago, found rather substantial seasonal fluctuations in the rates for the transportation of produce and grain.

For example, in 1959, the range in the rate for the transportation of wheat from Topeka, Kan., to Atlanta, Ga., was 28%; the range for oats from Omaha, Nebr., to Dallas, Texas, was 40%; the range for corn from Omaha to Los Angeles was 27%; the range of wheat from Wichita Falls, Texas, to Los Angeles was 40%.[21]

While freedom from rate regulation, particularly the requirement that rates be published well in advance of any changes therein, might facilitate the adoption of seasonably variable rates, it would not guarantee it. On the other hand, the existence of regulation does not preclude it. William G. Shepherd reports

[19] George H. Borts, "Increasing Returns in the Railway Industry," *Journal of Political Economy* (August, 1954), p. 328.

[20] George W. Wilson, *Essays on Some Unsettled Questions in the Economics of Transportation* (Bloomington, Indiana: Foundations for Economic and Business Studies, Indiana University, 1962), pp. 74-5.

[21] Marketing Economics Division, ERS, *The Role of Truck Brokers in the Movement of Exempt Agricultural Commodities*, Marketing Research Report No. 525 (Washington, D.C.: U.S. Department of Agriculture, 1962) pp. 25-7.

that about 8 or 9% of the electric utilities which he surveyed made extensive use of marginal-cost pricing principles, including peak and off-peak pricing policies.[22] Furthermore, the evening, night and holiday telephone rate reductions instituted by American Telephone and Telegraph Co. were not negated by the Federal Communications Commission.

The institution of seasonal railroad rates would presumably depress and spread the peak demand for freight cars. Shippers with more elastic demands for transport would either modify production schedules or adjust inventory practices so as to reduce shipments during the period of peak demand. For grain products this would most likely entail an increase in storage facilities near points of origin.[23]

Seasonally Variable Per Diem Rates

In addition to the improvements in freight car utilization realizable through peak-load pricing of transportation service, very significant gains could also be achieved through a similar reformation of the car-rental, or per diem, system.

The earning capacity of a car is a reflection of freight rates and the extent of car utilization. Therefore, the demand of railroads for freight cars will exhibit the same seasonal pattern as the demand of shippers for transport service.

Furthermore, the rationale for seasonably variable per diem rates is identical to the rationale for flexible freight rates. As Burton A. Weisbrod has observed:

"At whatever level the per diem rental charge may be fixed, this level will almost certainly be above or below, but not at, the free market equilibrium price at any particular time. In other words, an inflexible charge, regardless of its level, is both a ceiling and a floor price and will exhibit the familiar effects of both."[24]

Weisbrod hypothesized that, during periods of greater than normal shipper demand, a railroad in possession of foreign cars would find it profitable to divert such cars to its own use and

[22] William G. Shepherd, "Marginal Cost Pricing in American Utilities," *Southern Economic Journal* (August, 1966), pp. 64-5.

[23] It might be noted, parenthetically, that the economies of unit train transportation of grain constitutes further encouragement to the location of grain storage facilities in grain-growing areas rather than near points of consumption. John Richard Felton, "Technological Change and Internal Economies in Railroad Transport," *American Journal of Agricultural Economics* (August, 1968), p. 730.

[24] Burton H. Weisbrod, "The Per Diem Freight Car Rate and Railroad Efficiency—The Short-Run Problem," *Journal of Business* (October, 1959), p. 383.

pay the per diem charge rather than to return the cars to the home road. Conversely, in periods of less than normal demand, foreign cars would be returned to the home road to avoid per diem charges. Thus empty car mileage would rise at such time in the process of transferring cars from one location where they were in surplus to another place where they were equally likely to lie idle.

A comparison of empty/loaded freight car ratios in years of expanding and contracting economic activity tended to confirm the hypothesis of an inverse relation between level of economic activity and the empty/loaded car ratio.[25]

More than 60 years ago the Interstate Commerce Commission gave serious consideration to the adoption of seasonally variable per diem rates. The commission, in commenting on the increase in per diem charges from 20¢ to 50¢ instituted by more than 100 railroads, conceded that "this will be effective in securing return of cars to the owning railroads during the few months of the year when traffic is light . . . but that it will insure return during times of great need is not likely, for in such times the holder could earn perhaps ten times the amount he would be compelled to pay by using the foreign car."[26]

Car Service Rules and Orders

As a matter of fact, the railroads have not relied primarily on per diem rates to govern car allocation. Car movement, rather, has been made subject to a comprehensive body of regulations of the Association of American Railroads known as "car service rules." The underlying principle of these rules, as Eugene W. Coughlin has observed, is that "a railroad buying cars to serve its shippers is entitled to a reasonably prompt return of the cars after they have moved beyond the owner's rails, but that this return should, to the greatest practicable extent, be under load, to keep empty car haulage to a minimum, and even though this process of loading might involve some delay

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[25] *Ibid.*, pp. 384-5.

[26] *In the Matter of Car Shortages and Other Insufficient Transportation Facilities*, 12 ICC 561, 573 (1907). The commission suggested that 50¢ might well be regarded as a minimum per diem rate and that a rate as high as $2 a day could be established during the period of greatest demand in the latter half of the year. *Loc. cit.* The Association of American Railroads did experiment with seasonally variable per diem rates for foreign freight cars during the years 1910 to 1913. The difference between the March to July rate and the August to February rate was so small, 30¢ and 35¢, respectively, that its effect could not have been pronounced. Leonor F. Loree, *Railroad Freight Transportation* (New York: D. Appleton and Co., 1922), p. 389.

and circuity in returning the cars to the owner."[27]

More specifically, the AAR's rules provide that "foreign cars shall be loaded to the fullest extent possible to, toward or via the owning road, and system (home) cars shall not be loaded off owners' rails when the use of foreign cars, properly applicable under these rules, is practicable."[28]

Whatever the merit of the principle embodied in the rules, and this will be examined later, the rules themselves suffer two basic shortcomings:

1. They are not enforceable.
2. They are regularly superseded during periods of heavy shipper demand by "car service orders."

Car service orders typically require Eastern roads to effect certain reductions in the number of Western cars on their lines or to deliver a certain number of freight cars of a particular kind or kinds to specified railroads at particular junctions within a given period of time without regard to ownership.[29]

While AAR car service orders, like AAR car service rules, are not enforceable, the Interstate Commerce Commission has authority to issue binding orders, violation of which will subject the violator to substantial penalties.[30]

In summary, it seems appropriate to characterize railroad freight car allocation in the United States as based on the ownership principle, modified by notions of efficiency in car utilization, and overlaid by authoritative determinations as to shipper needs. Thus, car allocation, at least during periods of heavy demand, is reminiscent of the decision-making process in a centrally planned socialistic system.

As a consequence, it should occasion no surprise that car allocation has been the subject of unceasing controversy for decades, that much unnecessary empty car movement takes place and that the distribution of cars may bear slight resemblance to one governed by market principles. The elements of an acceptable system of car allocation will be discussed after the market for the sale of new and rebuilt freight cars has been explored.

The Long-Run Supply of Freight Cars

In addition to the problem of effective utilization of the existing freight car fleet, there is the crucial issue of the ade-

[27] Coughlin, *op. cit.*, p. 5.

[28] *Ibid.*, p. 9.

[29] *Ibid.*, pp. 211-2.

[30] The authority of the Interstate Commerce Commission to fix per diem rates, promulgate car service rules, issue car allocation orders and impose penalties for violation was established by the Car Service Act of 1917, 40 *United States Statutes at Large*, Part I, pp. 101-2.

quacy of the fleet itself. Allegations of an inadequate total supply of freight cars have been widespread in recent years. The Comptroller General of the United States, in a letter to the Senate Committee on Commerce on March 8, 1965, referred to the national freight car shortage as a "matter of public knowledge."[31]

The following June the Committee on Commerce submitted a report which declared: "Car shortages, which once were confined to the Midwest during harvest seasons, have become increasingly more frequent, more severe and nationwide in scope as the national freight car supply has plummeted."[32]

As to the magnitude of the shortages, the report maintains: "Already this year, before the beginning of the harvest season, shippers are demanding 7,500 cars more daily than the railroads can provide. Over the past 20 weeks, boxcar shortages have averaged more than 4,000 cars short per day. Gondola shortages have averaged well over 1,300 daily and flatcar shortages have exceeded 300 per day in this same period."[33]

The ICC Study of Freight Car Supply

Despite the foregoing allegations, the recent hearings on freight car supply conducted by the Senate Subcommittee on Surface Transportation tend to cast some doubt on the thesis that the railroad industry suffers from a secular deficiency in freight cars. The Interstate Commerce Commission required all Class I and Class II railroads to submit information on car orders and supply for each of 12 randomly selected days over a 12-month period, specifically, Jan. 29, 1968, to Jan. 23, 1969.

Although the commission did find the railroads' performance to be "inadequate throughout 1968 in most regions of the country," it conceded that "the regional problem is not so much the availability of sufficient cars to fill current shippers' orders as the use of the cars within a region."[34]

The commission continued: "Even in regions where the supplying of a type of car to fill shippers' requests involved the greatest delay, availability in general was at least twice the

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[31] Joseph Campbell, Comptroller General of the United States, letter to Warren G. Magnuson, chairman, Committee on Commerce, U.S. Senate, dated May 6, 1965, in *Freight Car Shortages*, Senate Report No. 386, 89th Congress, 1st Session, June 30, 1965, p. 10.

[32] *Ibid.*, p. 1-2.

[33] *Ibid.*, p. 3.

[34] *Report of the Results of Freight Car Study in Ex Parte No. 252 (Sub. No. 1)*, Appendix A, *Freight Car Supply*, Hearing before the Subcommittee on Surface Transportation of the Committee in Commerce, United States Senate, 91st Congress, 1st session, May 13, 1969 (Washington, D.C., 1969), p. 9.

Table 1. Plain boxcars and covered hopper cars available, ordered, deficiency and surplus in Midwest Region,[1] Jan. 29, 1968, to Jan. 23, 1969

	General service boxcars (unequipped)		Covered hopper cars	
	Ave. daily number	Percent of total available	Ave. daily number	Percent of total available
In hands of railroads at beginning of day (a)	16,059	71.7	8,140	72.1
Received by railroads during day (b)	6,351	28.3	3,147	27.9
Total available to railroads (c) = (a) + (b)	22,410	100.0	11,287	100.0
Cars ordered by shippers (d)	6,305	28.1	3,624	32.1
Net surplus (e) = (c) − (d)	16,105	71.9	7,663	67.9
Total deficiency (f)	1,567	7.0	748	6.6
Total surplus (g) = (d) + (f)	17,672	78.9	8,411	74.5

1 The Midwest Region consists of Colorado, Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, Wisconsin and Wyoming.
Source: *Report of the Results of Freight Car Study in Ex Parte No. 252 (Sub No.1), Appendix A, Freight Car Supply*, Hearing before the Subcommittee on Surface Transportation of the Committee of Commerce, United States Senate, 91st Congress, 1st Session, May 13, 1969 (Washington, D.C., 1969), pp. 31-2.

current orders . . . [I]t appears that, on an annual basis, the problem is not primarily one of inter-regional distribution of cars."[35]

Furthermore, where deficiencies in car supply were present, they usually were of relatively short duration. As the commission put it: "For most car types in most zones less than 3% of the orders were unfilled after 4 days delay."[36]

The relationship of boxcars and covered hopper cars ordered to those available in the Midwest Region and the days of delay in filling these orders are set forth in Tables 1 and 2, respectively. Table 1 reveals that there were three boxcars and covered hopper cars to every one ordered by shippers on an average day in 1968. Nevertheless, owing to maldistribution within the region, there were still deficiencies in car availability equal to 20 to 25 % of the cars ordered. On the other hand, the delays in filling orders do not generally seem to have been lengthy. Almost 80% of car orders were filled with less than one day's delay and more than 97% were filled within four days.

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[35] *Loc. cit.*
[36] *Ibid.*, p. 12.

Table 2. Plain boxcars and covered hopper cars distributed by number of days' delay in Midwest Region, Jan. 29, 1968, to Jan. 23, 1969.

Days delayed	General service boxcars (unequipped)		Covered hopper cars	
	Number	Percent	Number	Percent
Total	1,114,296	100.0	739,464	100.0
No. of days' delay:				
Less than 1 day	886,728	79.6	590,472	79.9
1 - 2 days	143,424	12.9	124,680	16.9
3 - 4 days	52,392	4.7	12,648	1.7
5 - 6 days	11,568	1.1	5,424	0.7
7 - 8 days	7,968	0.7	2,232	0.3
9 - 10 days	7,152	0.6	2,304	0.3
11 - 12 days	1,416	0.1	480	[1]
More than 12 days	3,648	0.3	1,224	0.2
Ave. No. of days delayed	1.06		0.88	

[1] Less than 1/10 of 1%

Source: *Report of Results of Freight Car Study in Ex Parte No. 252 (Sub No. 1)*, Appendix A, *Freight Car Supply*, pp. 50 and 68.

Another reason for doubt as to the existence of a serious over-all deficiency in freight cars is the relative ease with which ralroad equipment can be financed. As Gilbert Burck has commented:

"Since locomotives and cars can be repossessed, financing them is almost risk-free . . . so during the past decade the carriers spent an average of more than $900 million a year on locomotives and cars. But other investment, such as new yards and line revisions, had to come largely out of cash flow and amounted to only $300 million a year."[37]

The Economic Test of Freight Car Adequacy

While the foregoing considerations may raise doubts as to the existence of a long-run freight car shortage, they are certainly not controlling.

The crucial issue is: Do the railroads, as a group, have the incentive to invest in freight cars up to the point that the discounted expected future earnings of such equipment will equal the prevailing rate of interest?

The answer is: It all depends upon the relationship of the per diem rate to expected daily ownership costs to the home road. Even though per diem payments cancel out for the railroad system, as a whole, they play a crucial role in the investment decision process.

If the per diem rate is insufficient to defray expected daily ownership costs of newly acquired cars, then railroads will need

[37] Gilbert Burck, "The Railroads are Running Scared," *Fortune* (June, 1969), pp. 123-4.

to anticipate earnings for home line use in excess of the prevailing rate of interest before undertaking such investment.

By the same token, if the per diem rate is more than sufficient to defray expected daily ownership costs of new freight cars, then an anticipated rate of return for home line use of less than the prevailing interest rate will still induce new car purchases.[38]

It should be emphasized that any "shortage" in the over-all supply of freight cars is relative to a given level of effectiveness in the utilization of existing equipment. This follows from the definition of a shortage as an excess in the expected rate of return from the home line use of new equipment over the prevailing rate of interest. Thus, an improvement in car utilization could easily transform the shortage into a surplus by depressing the anticipated earnings of further additions to the fleet.

The underlying conditions for a shortage would not presumably have been removed by such improved utilization, however, and, in the absence of further change, freight car additions would be curtailed until anticipated earnings from the home line use of new equipment once more rose sufficiently above the appropriate discount rate to establish a new equilibrium.

From this it can be concluded that a solution to the problem of an adequate freight car supply necessitates a simultaneous attack upon car utilization and the size of the fleet itself.

If, for example, the per diem rate is less than the current expected daily ownership costs of a particular freight car, equating the per diem rate with such ownership costs so as to encourage increased car ownership is inappropriate so long as the utilization of the existing fleet is unsatisfactory. In short, neither the problem of car utilization nor of fleet size can be solved in isolation.

The Inadequacy of the Per Diem Rate

The next question is: Has the per diem rate generally been of sufficient magnitude to cover prospective daily ownership costs of new equipment?

The answer, it would appear, is "no."

On the basis of a cross-section analysis of the relationship between car maintenance costs and car age and of various assumptions as to car life, car prices and the rate of interest, Grunfeld found that the per diem rate in effect from Jan. 1, 1957, to

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[38] Cf. Yehuda Grunfeld, "The Effect of the Per Diem Rate on the Efficiency and Size of the American Railroad Freight Car Fleet," *Journal of Business* (January, 1959), p. 56.

Dec. 1, 1959, viz., $2.75, would justify the purchase of a $10,000 car only if the rate of interest were 3% and the certain life of the car was 50 years. It would justify the purchase of a car lasting 20 years only if the interest rate were 3% and the car cost no more than $7,000. At 6% a $6,000 car could be justified only if it would last for 50 years.[39]

As of Jan. 1, 1964, a system of multi-level per diem rates was adopted by the Association of American Railroads. Rather than a single per diem rate, a series of per diem rates, which varied with the depreciated original cost per car, was established. The following year, the number of per diem groups was increased from 6 to 9, with the per diem rate varying from $2.16 for a car having an unamortized cost of $1,000 to $12.18 for one whose original cost less depreciation was currently more than $35,000.[40]

Robert Tosterud has computed the rate of return to the owner of a freight car used exclusively on foreign lines, pursuant to the foregoing multi-level per diem schedule. He notes that, for a $19,000 freight car having a life of 30 years, the rate of return, even with zero maintenance and repair, is still only 3%.[41]

On Jan. 30, 1968, the Interstate Commerce Commission in Chicago, Burlington and Quincy Railroad Co., *et.al., v.* New York, Susquehanna and Western Railroad Co., *et.al.*,[42] promulgated a car-rental charge combining per diem and mileage charges. Some 21 cost bracket groups were established, the first bracket representing cars of less than $1,000 in value and the remaining brackets characterized by $2,000 class intervals. Mileage charges were to vary with the cost bracket and the time charge with both the cost bracket and the age of the freight car.[43]

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[39] Grunfeld, *op. cit.*, pp. 62-3. The average cost of new boxcars at the time Grunfeld was writing (1959) was $9,851, while covered hopper cars cost an average of $11,532. ICC, *Transport Statistics in the United States*, Part I, Railroads, Release 2 (Washington, D.C., 1960) p. 28. An expected life of 30 years would probably have been a reasonable one in 1959. While some 22% of all freight cars were 30 years of age or over in 1959, the average age was 18½ years at a time when the freight-car fleet had been undergoing more or less continuous contraction for a number of years. American Railway Car Institute, *Railroad Car Facts, 1959* (New York: 1960), pp. 2-4, and ICC, *Transport Statistics in the United States*, Part I, Railroads, Final Release (Washington, D.C., 1966), p. 50.

[40] The complete per diem schedule is set forth in AAR, *Code of Car Service Rules, Code of Per Diem Rules*, Circular OT-10-B (Washington, D.C., 1968), p. 6.

[41] Robert J. Tosterud, *Economics of the Boxcar Supply* (Unpublished M.S. thesis; Fargo, N.D.: North Dakota State University, 1969), p. 136.

[42] 332 ICC 176 (1968)

[43] *Ibid.*, pp. 242-3.

In the future, the mileage and per diem rates were to be computed from cost data for the most recent four-year period[44] and yield a 6% rate of return on depreciated original cost.[45]

This most recent system of freight car-rental payments, while it considers more fully the variables involved in ownership costs, nonetheless continues to construe those costs as past, not prospective. Certainly, a 6% rate of return on original cost will not compensate an owner of a new freight car who must borrow at 8½% or more.

It should be pointed out, in this connection, that Congress has conferred upon the Interstate Commerce Commission, pursuant to Public Law 89-430 of May 26, 1966, authority to impose so-called "incentive" per diem charges over and above the ownership costs of freight cars.

The commission could prescribe such increased compensation whenever, in its judgment, such incentive element would "provide just and reasonable compensation to freight car owners, contribute to sound car service practices (including efficient utilization and distribution of cars), and encourage the acquisition and maintenance of a car supply adequate to meet the needs of commerce and the national defense."[46]

In Ex Parte No. 252, *Incentive Per Diem Charges,* the Interstate Commerce Commission on Oct. 3, 1967, discontinued a proceeding for the imposition of interim incentive per diem charges on the ground that existing information on unfilled orders was inadequate to fulfill statutory standards.[47]

Furthermore, an even more comprehensive study of freight car supply was ordered by the commission for 1969-1970.[48] Whatever the study reveals with respect to car deficiencies and surpluses, it will be of doubtful relevance insofar as determining an appropriate per diem rate is concerned.

[44] *Ibid.*, p. 230.

[45] *Ibid.*, p. 213.

[46] 80 Stat. 168 (1966).

[47] 322 ICC 11, 17 (1967). Subsequent to the time the foregoing paragraphs were written, a schedule of incentive per diem charges for general service unequipped boxcars was adopted by the Interstate Commerce Commission in Ex Parte No. 252 (Sub. No. 1). Pursuant to this order, the incentive charges in effect from September through February of each year would yield the owners of boxcars on foreign lines an 18% return during these months, or an average annual return of 12%. The net credit balance accruing to any railroad from these incentive charges is to be employed only for the purpose of acquiring boxcars over and above such railroad's average additions in the preceding five years. ICC, Ex Parte No. 252 (Sub. No. 1), decided April 28, 1970 (April 30, 1970), Appendix B, pp. 3-4.

[48] Order, Ex Parte No. 252 (Sub. No. 1), Incentive Per Diem Charges, 1968 (Jan. 24, 1969).

A Proposed Solution

The customary method for accomplishing the transfer of privately produced goods and services in the United States is through the operation of a market for their sale or rental. Whatever may be the influence of the individual buyer or seller upon the sale price or the rental charge, all such transactions have the important merit of being voluntary.

Owing to the fact that connecting and terminating carriers of interline shipments are involuntary renters of freight cars, the utilization of the market mechanism to establish the rental charge for freight cars would appear, on the face of it, to be inappropriate. How can the rental charge be determined by the forces of the market when one of the parties, the railroad receiving a foreign car, cannot refuse to enter into the transaction?

While the involuntary nature of the existing car-rental system would appear to weigh against a market for the allocation of freight cars, the creation of a market in which prospective renters and owners would be free to participate or refrain from participating is, nonetheless, a distinct possibility.

Insofar as the initial movement of a freight car to an off-line destination is involved, the participating railroads are still free to negotiate a division of the joint rate, taking into consideration the rental value of the freight cars employed in transporting the goods from origin to destination. Furthermore, whatever the constraints on freedom of negotiation in the initial off-line movement, they are absent for any subsequent movements of the freight car on foreign lines.

Once a foreign car has completed its original off-line journey, its disposition could then be determined by a process of bidding for its use. Per diem rates would be established by the competition of railroads and shippers for cars, and the proceeds would be paid to the owning railroad or private car company after the deduction of a broker's fee. Cars would presumably be rented on a delivered basis, and a mileage payment would be made to any carrier participating in the movement of the car to the location designated by the renter.

Under such a system, cars would be classified by size and type and graded by quality, whenever relevant. Car rental charges would be a function of these variables, as well as of the season of the year and of the distance which the freight car must travel to reach the shipper.

The Car Service Division of the AAR or some newly established organization could undertake the creation and operation

of a freight car rental exchange. The Automatic Car Identification System, which is soon to be in operation,[49] should be invaluable in the assembly of the information necessary to operate such a market.

There would appear to be a number of important advantages to be derived from the adoption of a market system of freight car rentals:

1. The existing car fleet would be allocated on the basis of economic considerations of productivity rather than legal considerations of ownership and administrative determinations of relative shipper need. Empty car mileage should be greatly reduced through the elimination of rules designed to move cars, whether loaded or empty, in the direction of the home line. Nevertheless, owners could always assume possession of their own cars merely by making a mileage payment to one of their own junctions. Finally, per diem rates would fluctuate with seasonal variations in the intensity of demand.

2. Carriers which might not have participated in the joint rate for the movement of a particular carload of goods would no longer be charged for the privilege of transporting empty cars to or toward an owner's lines. As David E. Smucker, Vice President of Operations, Pennsylvania Railroad, remarked in the 1965 hearings on the freight car shortage: "In view of the short haul we receive in the loaded movement, we should not only be relieved of per diem but actually compensated by the owner for moving the car empty in long haul."[50]

The rental system suggested here would provide such compensation for all empty-haul transport.

3. Whenever, despite improvements in car utilization, the anticipated proceeds from freight car rental rose above prospective ownership costs, railroads would be induced to add to the existing fleet. Thus, a freight car-rental exchange system would contribute to the simultaneous solution of the long-run, as well as the short-run, problem of freight car supply.

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[49] Burck, *op. cit.*, p. 191.

[50] David E. Smucker, "Statement," *Freight Car Shortages*, Hearings, pp. 100-1.