Economic and Environmental Benefits of Private Railcars in North America

Prepared for the North America Freight Car Association

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Abstract

The dependence of the railroad industry, shippers using rail, and the United States economy on the private rail car fleet is dramatic and growing. Private cars are identified as all rail cars that are owned by shippers, lessors, and other entities that are not railroads. Private cars now carry 54 percent of ton-miles and 56 percent of tonnage moved by railroads, and account for 46 percent of railroad revenue. Private car owners make 87 percent of total new investment in railroad cars without which railroads would be unable to function efficiently and economically.

Yet, the continued viability of this needed investment stream in private railcars is under pressure. Returns to private car owners are under pressure from a variety of factors, the most important of which will be discussed in detail herein. In the case of railcars operating under deprescription rules, returns to private car owners have declined to the point of being marginally compensatory or nonexistent; such cars in many cases offer a return relative to replacement cost of 3%, well below the 10% revenue-adequacy rate defined for railroads by the STB. The investment required to replace the existing private car fleet is staggering; about $90 billion would be required to replace the private car fleet, at current replacement values.

This tenuous situation is further exacerbated by the railroads continued shifting of costs to shippers and car owners. Changes in the Association of American Railroad's (AAR's) interchange rules have forced significant increased costs to be borne by car owners, even though the benefits of these changes go directly, in most cases, to the railroads. Other cost shifting has forced car owners to build and maintain new rail yards and facilities encompassing multiple private tracks. The railroads formerly provided such investments.

Unless there are major changes in 1) the process for establishing AAR Interchange Rules, 2) the composition of the AAR Committees that govern the rulemaking process, and 3) the control of interchange rules by regulatory authorities, the economic value of private car ownership will be further reduced and the availability of this capacity will be in doubt.

The value and benefits of the private car fleet are quantifiable in energy and environmental terms as well. The private car fleet saves the energy equivalent of 30 million truck shipments every year. Moreover, moving commodities and products by private cars rather than trucks saves ten times as much hydrocarbon production as is currently saved by all public transportation. If trucks handled all the traffic now moved in private cars on the railroads, the total cost to clean the pollutants associated with this increment in truck traffic is estimated conservatively at $12 billion. The loss or lessening of these private car investments would create dramatic economic, energy, and environmental impacts.

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Executive Summary

"After initial widespread use of private cars under the "common road" concept of early railways, railroad-owned freight cars predominated from the 1840's through the 1860's…. From this time on, however, the percentage of private cars has increased as railroads refused to build specialized freight cars because of high initial costs, rapid technological obsolescence, outside pressure, and managerial shortsightedness."
William E. O'Connell, Jr.[1]
Business History Review, 1970

This report is based on the authors' survey of the members of the North America Freight Car Association and analysis of the ownership patterns and financial data made available to the researchers. Energy and environmental analyses used data from both governmental and academic sources identified in the text of the report. Private cars are identified as all rail cars owned by shippers, lessors, and other entities that are not railroads.

Shift in Car Ownership

The majority of the cars in the rail fleet are private cars either owned or leased by shippers and used in line haul revenue service on the U.S. railroads. William E. O'Connell's historical perspective on the supply of rail cars sets the stage for understanding the continuing increase in the importance of private cars (all rail cars owned by shippers, lessors, and other entities that are not railroads) in the overall rail car fleet. Shippers have found that, due to the need for a reliable supply of cars and the railroads' inability or refusal to provide an adequate supply, they are forced into providing their own private cars.

This has evolved to include basic car types like box cars, open top and covered hoppers as well as specialized design cars (for example, the expensive to acquire and maintain tank cars). However, shipper investments in these car types may, over time, not be adequately compensated for by rates or mileage allowances from the railroads, creating potential difficulty, if not an inability, to generate critical investment and adequate rail capacity into the future. It should be emphasized that the overall adequate supply of railcars is a critical component of the freight rail supply chain, including the efficient delivery of products to the nation's producers and consumers.

1 William E. O'Connell is the retired Chessie Professor of Business at the College of William & Mary, Williamsburg, Virginia.

During the years from 2000 through 2008, there were 453,495 new rail freight cars put into service. Private railcars represent 87 percent of this investment, while the railroads provided the remaining 13 percent. In fact, in the 2006-2008 time period, there were 169,644 new private railcars (i.e., not owned by railroads) added to the fleet. With the average replacement cost of a new railcar at $87,056 (based on current dollar replacement costs), the investment in private rail cars from 2006 through 2008 totaled $14.8 billion.

The shift to the non-railroad sector's provision of freight carrying railcars has continued unabated in the post 1970 time frame. Indeed, there has been a particularly significant shift in reliance on the private sector's railcars in the time period between 2000 and 2008.

- Private cars accounted for 37.0 percent of total carloads in 2000; their share of total carloads increased to 41.90 percent in 2008. The railroad-owned cars represented 27.9 percent of the total carloads in 2008. TTX cars, a railroad owned pool, enabling reduced risk, comprised the remaining portion of the total in 2008 or 30.2 percent.
- Private cars accounted for 47.7 percent of total rail tonnage in 2000, and since 2005 private cars have handled a majority of total rail tonnage. Their share of total rail tonnage increased to 56.0 percent in 2008, even as total rail tonnage was increasing.
- Private cars accounted for 48.9 percent of all ton-miles in 2000; their share of all ton-miles increased to 54.3 percent in 2008. In contrast, rail-owned cars handled only 37.6 percent all ton-miles in 2000, decreasing to 33.5 percent in 2008. (The TTX cars account for the remaining numbers to add to 100 percent.)
- Railroads generated 39.6 percent of their revenue by private cars in 2000; increasing to 46.0 percent in 2008. In contrast, rail owned cars accounted for 39.5 percent of revenue in 2000, decreasing to only 35.6 percent in 2008.
- In sum, private cars account for 41.9 percent of all carloads, but 56.0 percent of all tons and 54.3 percent of all ton-miles in large measure due to their handling heavier weighted bulk commodities, e.g. grain, coal and tank cars.

An examination of the distribution of railroad revenue by type of freight car reveals that private cars account for the majority of railroad revenue in six freight car categories.

- Privately owned tank cars generated 99 percent of the tank car revenues and accounted for 11.7 percent of total railroad revenues in 2008. There are two distinct tank car types (those holding under 22,000 gallons and those holding 22,000 gallons and above). Private cars generate 99 percent of the total in each category.
- Privately owned open-hopper cars, mainly for coal movements, account for 75.2 percent of all railroad revenues in this car type, and generated 9.1 percent of total railroad revenues in 2008.
- Privately owned plain box cars (50 feet and above); plain gondola cars; and covered hopper cars accounted for between 50 and 60 percent of total 2008 railroad revenues.

The non-railroad investment in the railroad industry's railcars is staggering. The total replacement cost (in today's dollars) for the entire private fleet of freight carrying railcars is estimated to equal approximately $90 billion. Indeed, over the past decade, the non-railroad sector has been the source of the overwhelming share of the total investment in new rail freight carrying railcars.

Adequacy of Returns from Investments in Private Railcars

The continued viability of the private fleet of freight carrying railcars is dependent upon private fleet owners' returns on their investments, the adequacy of which is a matter of grave concern in light of a series of clearly emerging challenges to the revenue streams earned by these fleet owners.

The options available to private rail car owners to obtain revenues for their cars include leasing their cars to shippers

and railroads directly on both short and long-term leases and arranging car-hire based leases with individual railroads to compensate them for the use of their equipment, and selling cars to shippers.[2]

Rates for Shipper Owned and Leased Cars

Investors in private cars negotiate a lease contract with shippers, commonly a 3-5 year term, at a given lease rate that provides expectations of a return over time. Private car owners and shippers are the entities that carry the risk of market fluctuations, credit risk, risk of obsolescence, decreased demand, regulatory requirement changes, etc. Shippers who own or lease equipment run the additional risk of reduced or non compensatory payments from the railroad and any accessorial charges (demurrage, weigh charges, diversion/reconsignment charges, car turning, overload charges, car cleaning, into service and out of service freight costs, etc.) that arise due to the use of the equipment. The shipper obtains benefits by ensuring the availability of cars at times when the market or supply chain needs require capacity.

The Interstate Commerce Act, as amended, required that shippers who furnish their own cars are entitled to reasonable compensation from the railroads. The Interstate Commerce Commission (ICC) in implementing this requirement ordered that railroads pay a formularized allowance for tank cars and market level compensation for the use of covered hopper and box cars owned or provided by the shipper or railroads that lease privately financed equipment.

Shippers responding to our survey identified the cost to them for supplying private rail equipment as the lease or purchase costs, scheduled maintenance, running repairs, ad valorem taxes, storage fees, storage track investments, freight charges in/out of service, freight charges in/out of shop and new accessorial costs.

Even when the rate differential results in compensation for the lease or ownership costs, additional costs, such as routine maintenance costs or accessorial charges result in inadequate compensation. Private railcar owners identified operating, maintenance and running repair costs at anywhere from approximately $800 annually per car for a low mileage general purpose freight car to over $10,000 per car for a high mileage multi-platform intermodal car.

Furthermore, recent unilateral decisions by the railroads have required shippers to pay additional costs in varying forms. For example, the significant number of rail line abandonments has severely shrunk the amount of branch track available for storage and positioning of cars. For the past 10 years, shippers have had to move empty private cars off railroads' lines after being returned to a loading point or pay storage charges or lease, or rent track. The carrier-compelled need for storage of private cars has resulted in some shippers building new rail yards and facilities encompassing multiple private tracks that shippers have to maintain. Thus, in addition to providing their own fleets, shippers now find they are required to provide infrastructure and locomotive power. Railroads traditionally made these investments, but now shippers are forced to make up for the inadequacy of the railroad investment in cars.

Car-Hire Based Leases/Deprescribed Rates

In the case of car-hire based lease arrangements, rail car owners provide cars to railroads and receive hourly and mileage revenues from the railroads using their equipment. Car-hire rates were determined through the use of a formula, developed by the ICC, to compensate car owners for the cost of equipment ownership along with a fair return on the investment. In an order effective on January 1, 1993, the ICC repealed the existing formulas for car-hire rates, e.g. deprescribed car-hire rates, and adopted an allegedly market-based approach for setting car-hire rates.

As originally conceived by the ICC, deprescription was intended to reflect the market conditions of supply and demand. The deprescribed rates were intended to be negotiated rates between equipment owners and users to reflect market conditions. In practice, deprescription does not reflect market conditions. For example, the default rate for newly built cars is almost always non-compensatory since it is the lowest negotiated positive rate in effect for that car type during the previous quarter. That rate has little relationship to the actual market, since even cars in high demand

2 All private cars must obtain OT-5 operating authority to originate loads. We found some private car owners noting that certain railroads have been denying OT-5 operating authority on the grounds that they have too many cars. This is against STB rules stating that OT-5 operating authority may not be denied except for safety or mechanical reasons or a lack of adequate storage space for the cars. Such denials may, indeed, impact the revenue opportunities for private car owners.

can experience non-compensatory car hire rates. In order to earn a fair rate of return, a car owner must negotiate a bilateral compensation agreement with every railroad that would handle that car. If negotiations between the parties fail to reach an agreement, either party may request best and final offer binding arbitration. However, even if a car owner wins in arbitration, that rate remains in effect for a limited period of time.

Railroads may argue that a car's default rate is not intended to reflect market conditions and does not have to since car owners can negotiate bi-lateral rentals to reflect market conditions. However, it is important to note that, before deprescription, in the absence of a negotiated car-hire rate, railcars were assigned rates that were designed to be revenue-adequate for car owners. Today, in the absence of a negotiated rate, railcars have default rates that are non-compensatory which represents a shift in the balance of power under deprescription dramatically against car owners.

Of overriding significance for the owners of rail cars is the extent to which deprescription has failed to result in market based rates that provide a revenue stream that compensates owners for the costs of ownership plus a fair return on their original investment, as required by Section 11122 of the Act. In order to investigate this question, we conducted an empirical analysis of the adequacy of return rates associated with rates for five different types of railroad cars under deprescription:

The rates of return for each of five dominant railroad car types vary from a low of 2.19 percent for boxcars to 3.84 percent for hopper cars and gondola cars. In all cases, these rates of return are below the 20 year risk free treasury rate of 4.27 percent and far below the Surface Transportation Board's (STB) revenue adequacy rate of return of around 10%. It is safe to assume that prudent investors will find more appropriate uses for their capital investments under these circumstances, resulting in the railroad industry finding itself in an unsustainable position going forward absent its investment in railcars.

New and Changing Association of American Railroads (AAR) Interchange Rules

Another challenge to the revenue/profitability streams earned by private fleet owners involves the maintenance practices/requirements imposed by the railroads on the private fleet owners. These practices represent a distinct cost shifting to private fleet owners as a result of railroad-initiated changes that may disproportionately benefit the railroads and their operating efficiencies. Such changes are developed by the AAR where the structure of the committees established for resolution of these issues is weighted heavily in favor of the railroads and to the disadvantage of private fleet owners.

The industry survey found numerous instances where costs have been shifted or increased to car owners, out of proportion to the benefits of the change being promulgated. Most changes in the AAR Interchange Rules are related to a desire for safety or efficiency improvements on the part of both the railroad and the car owner/shipper. Two major changes, the Wheel Impact Load Detector (WILD) rule and the Long Travel Constant Contact Side Bearings (LTCCSB) rule, have been shown to produce major efficiency benefits to the railroads and only marginal safety benefits to car owners and public welfare, without the distribution of the costs reflecting these facts.

Summing all these instances noted above suggests that, unless there are major changes in 1) the Interchange Rules, 2) the composition of the AAR's Arbitration and Rules Committee, or 3) more direct supervision of interchange rules by regulatory authorities, private car ownership will become less desirable and the availability of this capacity will be under stress or in doubt. From an economic efficiency and welfare point of view, benefit/cost ratios should be calculated both for the industry as a whole and distributed in line with the benefits derived. The results should be followed and form the basis for distribution of costs among affected parties. For the market to work for car investment there is a need for equitable, non discriminatory and transparent interchange rules.

Energy and Environmental Benefits of Private Railcars

Moving freight in private rail cars has significant fuel savings and environmental benefits versus the alternative of moving this traffic by truck. If we assume current private rail ton-miles shifted to truck as a consequence of the with-

drawal of investment in private rail cars, the incremental increase in fuel consumption would equal 3,794 million gallons, a volume equivalent to the fuel consumed by almost 35 million truck shipments, assuming average truck trip distances and average miles per gallon. This total represents approximately 10 percent of the total consumption of diesel fuel in the United States. If just half of the current private rail ton-miles were diverted to trucks, the impact would still be significant at 1,897 million gallons of fuel.

There would also be significant negative environmental impacts associated with a shift in traffic from rail to truck. Indeed, the incremental increase in hydrocarbons associated with the shift would equal 1,242 million pounds of hydrocarbons, about ten times the amount of emissions offset by all public transport in the US each year. Our estimate of the total cost to remove the pollutants associated with these emissions is $12 billion. If just half of the current private rail ton-miles were diverted to trucks, the impact would still be significant at 621 million pounds of hydrocarbons.

Conclusions

The dependence of the railroad industry, the shippers using that industry, and the United States economy on the private car rail fleet is dramatic and growing. Private cars now carry 54 percent of ton-miles and 56 percent of tonnage moved by railroads, and account for 46 percent of railroad revenue. Private car owners make 87 percent of new investment in railroad cars without which railroads would be unable to function efficiently and economically.

Yet, the continued viability of this needed investment stream in private car railcars is under pressure. Returns to private car owners are under pressure from a variety of factors. In the case of railcars operating under the deprescription rules, returns to car owners have declined to the point of being marginally compensatory or nonexistent; such cars in many cases offer an average return of 3%, which is substantially below the railroad revenue adequacy standard of 10 percent defined by the STB. The required investment to replace the current private car fleet is staggering, about $90 billion would be required to replace the current private car fleet, at current replacement values. It should be emphasized that the overall adequate supply of railcars is a critical component of the freight rail supply chain, including the efficient delivery of products to the nation's producers and consumers.

This tenuous situation is further exacerbated by continual cost shifting from railroads to shippers or owners. Changes in interchange rules have forced significant increased costs to be borne by car owners, even though the benefits of these improvements are received in most cases by the railroads. Other cost shifting has forced car owners to build and maintain new rail yards and facilities encompassing multiple private tracks; investments to provide capacity and services formerly provided by railroads.

Unless there are major changes in 1) the process for establishing AAR Interchange Rules, 2) the composition of the AAR Committees that govern the rulemaking process, and 3) the control of interchange rules by regulatory authorities, the economic value of private car ownership will be further reduced and the availability of this capacity will be in doubt.

The value and benefits of the private car fleet are quantifiable in energy and environmental terms as well. The private car fleet saves the energy equivalent to 30 million truck shipments every year. Moreover, moving commodities and products by private cars rather than trucks saves ten times as much hydrocarbon production as is currently saved by all public transportation. The loss or lessening of these private car investments would create dramatic economic, energy, and environmental impacts.

Economic and Environmental Benefits of Private Railcars in North America

Introduction

The role of private ownership of the freight car fleet has been one of steady evolution, with railroad investment in and ownership of freight cars progressively declining over the past few decades. In his 1970 Business History Review article The Development of the Private Railroad Freight Car, 1830-1966, William E O'Connell, Jr.,[3] documented the increasing role of the private fleet and offered some suggestions as to the initial and continuing cause, noting:

> *"After initial widespread use of private cars under the "common road" concept of early railways, railroad-owned freight cars predominated from the 1840's through the 1860's, except for a short-lived boom in cars owned by "fast freight" lines. From this time on, however, the percentage of private cars has increased as railroads refused to build specialized freight cars because of high initial costs, rapid technological obsolescence, outside pressure, and managerial shortsightedness".*

This trend has continued unabated, until today over 50% of the tons shipped on the North American railroads are moved in cars owned by non-railroad leasing companies and shippers. Concurrent with this change in car ownership, there has been a shift of costs from the railroads to the private car owners. The purpose of this research paper is to investigate, identify and document the economic and environmental benefits accruing to shippers, consumers, investors, and the public from the existence of the private rail car fleet. In this paper, we review current car-hire practices, car rules, and interchange rules that may inhibit sustained investment in the private car fleet.

Between 2000 and 2008, there has been a dramatic increase in the share of freight cars owned by non-railroad leasing companies and shippers in order to compensate for the decreased investment in these cars by railroads. Our national economy as well as the overall financial health of the entire railroad industry has benefited from this heavy reliance on the continuing investment in freight cars by leasing companies and shippers.

3 William E. O'Connell is the retired Chessie Professor of Business at the College of William & Mary, Williamsburg, Virginia

Shift in Car Ownership

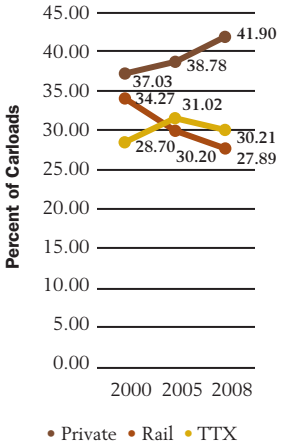
Our analysis of the data documents the shift to a fleet of rail cars dominated by non-railroad leasing companies and shippers. The primary data sources used to illustrate these trends are the Railroad Carload Waybill Public Use data files from 2000, 2005, and 2008. The Railroad Waybill database, available from the Surface Transportation Board, Washington, D.C.,[4] is a stratified one percent sample of carload waybills for all US rail traffic of US, Canadian, and Mexican origin submitted by those US rail carriers terminating 4,500 or more revenue carloads annually. It forms the basis for an estimation of the annual railroad carloads, tons, ton-miles, and revenues associated with US railroad traffic. The Railroad Waybill database allows identification of the ownership of each freight car as well as the type of freight car involved in each shipment.

At the outset, it should be noted that there are three freight car ownership categories identified in the waybill data. The first category is the private ownership category. This represents non-railroad leasing companies and shippers. The second category is the railroad ownership category. This represents freight cars owned by individual railroads. The third category of freight cars is labeled as TTX cars. TTX cars are owned by North America's leading railroads through the railroad owned and controlled leasing company, TTX. TTX cars are leased to individual railroads on an as needed basis. The analysis in the following pages tabulates each of these three equipment ownership categories separately. Although the 1990 Railroad Carload Waybill Public Use data files are available, the 1990 data file does not identify the TTX ownership category, instead including the TTX data in the private car ownership category. In order to portray an accurate picture of the dynamic redistribution of traffic among the three categories, the authors have focused this report on the years for which the three ownership categories were identified.

Overall Growth in Private Cars 2000-2008: Carloads, Tons, Ton-Miles, and Revenue

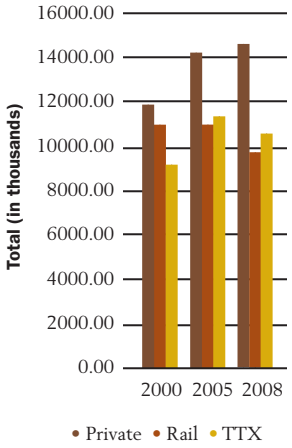
Figure 1 shows that private cars' share of total carloads increased 13.2 percent from 37.0 percent of total carloads in 2000 to 41.90 percent in 2008. During this same period, rail-owned cars' share of the total rail fleet declined 18.7 percent from a high of 34.3 percent carloads in 2000 to 27.9 percent in 2008. The TTX owned cars had a 28.7 percent share of total carloads in 2000 and 30.2 percent of the total in 2008. Figure 2 provides information on the total carloads by ownership categories for the years 2000, 2005, and 2008. It shows that in 2008 of the 34.8 million carloads movements in the system, 14.6 million were private cars; 9.7 million were railroad-owned cars; and 10.5 million were TTX cars. Clearly, private cars have become the dominant ownership category on a carload basis.

Figure 1:
Distribution of Total Carloads by Ownership Category 2000-2008



Source: Railroad Carload Waybill Data, Surface Transportation Board, Washington, D.C., Public Use File, 2000, 2005, and 2008

Figure 2:
Total Carloads by Ownership Category 2000-2008



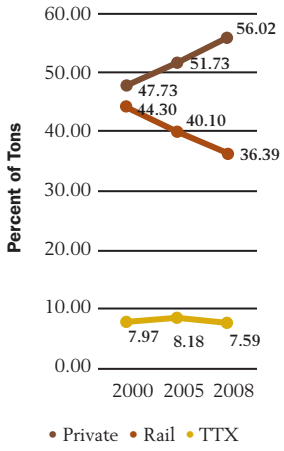
Source: Railroad Carload Waybill Data, Surface Transportation Board, Washington, D.C., Public Use File, 2000, 2005, and 2008

Figures 3 and 4 reflect total tons moved on the railroad system by ownership category. The growth in the share of tons moved in private cars is very significant. In 2000, private cars accounted for 47.7 percent of total rail tonnage. By 2008, private cars accounted for 56.0 percent of the total rail tonnage, even as total rail tonnage was increasing. In contrast, rail-owned cars were responsible for 44.3 percent of total tonnage in 2000, but only 36.4 percent in 2008. The share of total tonnage in TTX owned cars has been somewhat stable, only fluctuating from 8.0 percent of total tonnage in 2000, 8.2 percent in 2005, to 7.6 percent in 2008.

In 2008, private cars moved 1.2 billion tons of freight on the railroad system, rail-owned cars moved 770 million tons, and TTX cars moved 160 million tons. It is significant to note that TTX cars handle a much smaller

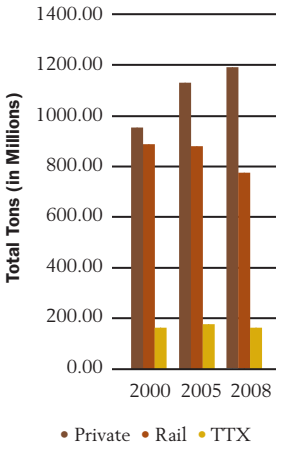
4 http://www.stb.dot.gov/stb/industry/econ_waybill.html

Figure 3:
Distribution of Total Tons by Ownership Category 2000-2008



Source: Railroad Carload Waybill Data, Surface Transportation Board, Washington, D.C., Public Use File, 2000, 2005, and 2008

Figure 4:
Total Tons by Ownership Category 2000-2008



Source: Railroad Carload Waybill Data, Surface Transportation Board, Washington, D.C., Public Use File, 2000, 2005, and 2008

share of total tonnage carried on the railroads versus the percentage of carloads on the system. This is explained below by noting that the TTX cars participate heavily in the intermodal market which involves merchandise traffic with lower car-weights than many of the bulk commodities.

Total ton-miles by ownership category from 2000 through 2008 are shown in Figures 5 and 6. Private cars accounted for 48.9 percent of all ton-miles in 2000 and 54.3 percent of all ton-miles in 2008. In contrast, rail-owned cars handled only 37.6 percent of the ton-miles in 2000, decreasing to 33.5 percent in 2008. Throughout this period, there were some minor fluctuations in the share of ton-miles moved in TTX cars, from slightly more than13.5 percent of the total ton-miles in 2000 to 12.3 percent in 2008.

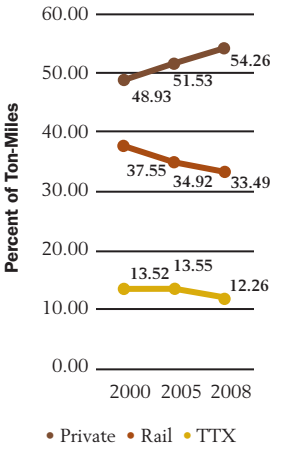
In 2008, there were 17.4 billion ton-miles of freight moved on the US rail system. Of this total, private cars accounted for 9.4 billion ton-miles of freight; rail-owned cars accounted for 5.8 billion ton-miles; and TTX cars accounted for 2.1 billion ton-miles.

The distribution of total railroad revenue by ownership category is provided in Figures 7 and 8. Once again, participation of private cars increased throughout the study period. In 2000, 39.6 percent of railroad revenue was generated by private cars, increasing to 46.0 percent in 2008. In contrast, rail owned cars accounted for 39.5 percent of the revenue in 2000, decreasing to only 35.6 percent in 2008. In so far as shipments in TTX cars, they accounted for 21.9 percent of total railroad revenue in 2000 dropping to only 18.4 percent of the revenue in 2008.

In 2008, the railroads generated $72.6 billion in revenues; $33.4 billion was derived from private cars, $25.9 billion from rail-owned cars, and $13.4 billion from TTX cars.

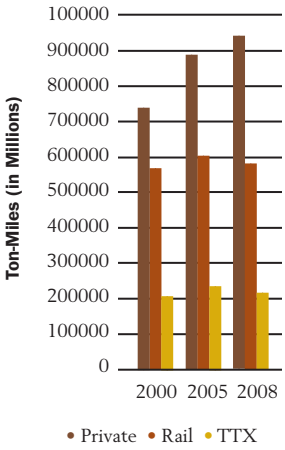
It is interesting to note the railroads' investment priorities. TTX cars, which represent a significant portion of the railroads' investment in railcars, account for 27.9

Figure 5:
Distribution of Total Ton-Miles by Ownership Category 2000-2008



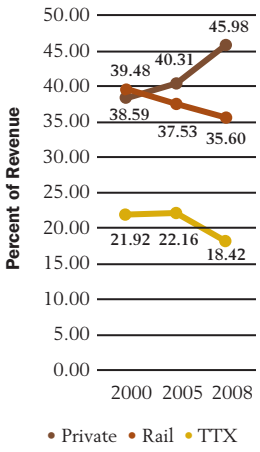
Source: Railroad Carload Waybill Data, Surface Transportation Board, Washington, D.C., Public Use File, 2000, 2005, and 2008

Figure 6:
Total Ton-Miles by Ownership Category 2000-2008



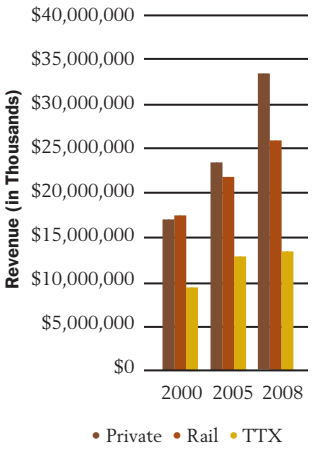
Source: Railroad Carload Waybill Data, Surface Transportation Board, Washington, D.C., Public Use File, 2000, 2005, and 2008

Figure 7:
Distribution of Total Revenue by Ownership Category 2000-2008



Source: Railroad Carload Waybill Data, Surface Transportation Board, Washington, D.C., Public Use File, 2000, 2005, and 2008

Figure 8:
Total Revenue by Ownership Category 2000-2008



Source: Railroad Carload Waybill Data, Surface Transportation Board, Washington, D.C., Public Use File, 2000, 2005, and 2008

percent of all carloads in 2008, but represented only 7.6 percent of all tons, 12.3 percent of all ton-miles on the system, and 18.4 percent of their revenue. Again, this is a reflection of the TOFC/COFC movements in TTX cars which more often than not consist typically of lighter weighted-manufactured goods in contrast to movements in other car types, which focus on heavier bulk commodities, e.g. private cars account for 41.9 percent of all carloads, but 56.0 percent of all tons and 54.3 percent of all ton-miles due to the heavier weighted bulk commodities they carry.

Private Car Usage by Car Type and Ownership Category, 2000-2008

In this section, we investigate the significance of private rail cars in a number of different car type segments as well as the growing reliance on private rail cars in these segments. Table 1 distributes total rail system revenues in 2008 by car type and ownership category. It breaks out all rail shipments into 15 car type categories in accordance with Surface Transportation Board (STB) definitions.

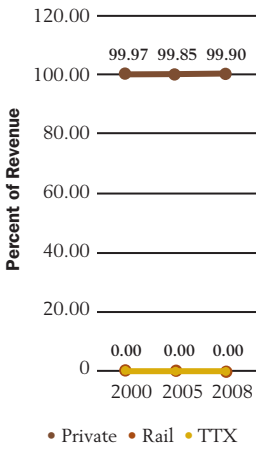
Of the fifteen car type categories, private cars account for the majority of railroad system revenue in six of the categories. Indeed, in the two tank car categories (under 22,000 gallons and 22,000 gallons and over), over 99 percent of revenue is generated in private cars; there are virtually no railroad or TTX owned tank cars, yet these tank car categories account for 11.7 percent of total railroad revenues in 2008.

The second highest category of private car revenue generation involves open top hopper cars (special service). Private cars in this category contributed 75.2 percent of all railroad system revenues derived from this type of car and 9.1 percent of all railroad revenues.

Private cars in three car type categories – plain box cars (50 feet and above); plain gondola cars; and covered hopper cars - accounted for between 50 and 60 percent of total 2008 railroad revenues. In these three categories, private cars were responsible for 53.1, 60.4, and 59.0 percent respectively of the total revenues generated by these types of cars. Note particularly that the covered hopper car category generated 20.6 percent of total rail system revenues in 2008, 59.0 percent of which was derived from private covered hopper cars.

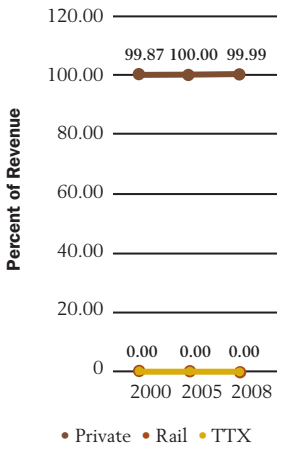
Private participation in these six car type categories over time, in terms of their share of total system revenues, has grown. Rail shipments in tank cars have moved in private cars almost exclusively throughout the 2000-2008 periods (Figures 9 and 10).

Figure 9:
Distribution of Under 22,000 Gallon Tank Car Revenue by Ownership Category 2000-2008



Source: Railroad Carload Waybill Data, Surface Transportation Board, Washington, D.C., Public Use File, 2000, 2005, and 2008

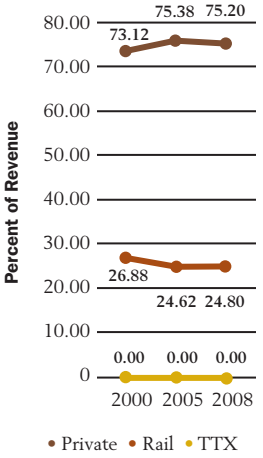
Figure 10
Distribution of Over 22,000 Gallon Tank Car Revenue by Ownership Category 2000-2008



Source: Railroad Carload Waybill Data, Surface Transportation Board, Washington, D.C., Public Use File, 2000, 2005, and 2008

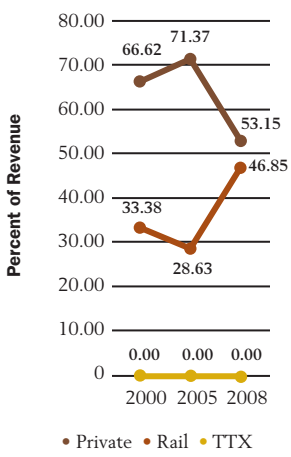
As shown in Figure 11, private cars also dominate movements in open top hopper cars in special service market, which are mainly coal movements. Indeed, the private car share of the system revenue in this car type has been in the 70+ percent range in each of the three analysis years, 2000, 2005, and 2008, and for the most recently reported year equals 75.2 percent.

Figure 11:
Distribution of Open Top Hopper Car in Special Service Revenue by Ownership Category 2000-2008



Source: Railroad Carload Waybill Data, Surface Transportation Board, Washington, D.C., Public Use File, 2000, 2005, and 2008

Figure 12:
Distribution of Plain Box Car Revenue by Ownership Category 2000-2008



Source: Railroad Carload Waybill Data, Surface Transportation Board, Washington, D.C., Public Use File, 2000, 2005, and 2008

Table 1:
Railroad Revenue Distributed by Car Type and Ownership Category, 2008

Category	Private Revenue	% Private	Rail Revenue	% Rail	TTX Revenue	% TTX	Total Revenue	% of Total
All Cars	$33,391,339,590	45.98	$25,858,581,660	35.60	$13,378,665,046	18.42	$72,628,586,296	100.00
Plain Box Cars 50 ft and above	$248,461,061	53.15	$219,045,719	46.85	$0	0.00	$467,506,781	0.64
Equipped Box Cars	$542,362,011	10.51	$4,617,999,750	89.46	$1,841,080	0.04	$5,162,202,841	7.11
Plain Gondola Cars	$5,153,671,811	60.40	$3,379,570,732	39.60	$0	0.00	$8,533,242,543	11.75
Equipped Gondola Cars	$419,035,251	13.18	$2,757,733,896	86.76	$1,741,200	0.05	$3,178,510,347	4.38
Covered Hopper Cars	$8,825,517,576	59.04	$6,121,275,268	40.95	$794,120	0.01	$14,947,586,964	20.58
Open Top Hopper Cars-General Service	$996,167,748	29.11	$2,426,052,239	70.89	$0	0.00	$3,422,219,987	4.71
Open Top Hopper Cars-Special Service	$4,973,123,429	75.20	$1,640,271,651	24.80	$0	0.00	$6,613,395,080	9.11
Refrigerator Cars-Mechanical	$135,808,776	22.46	$468,933,643	77.54	$0	0.00	$604,742,419	0.83
Refrigerator Cars - Non-Mechanical	$18,048,440	4.96	$345,840,566	95.04	$0	0.00	$363,889,006	0.50
Flat Cars TOFC/COFC	$3,209,449,172	24.00	$1,470,997,537	11.00	$8,692,258,174	65.00	$13,372,704,883	18.41
Flat Cars-Multi-Level	$6,530,520	0.15	$583,326,737	13.55	$3,716,447,748	86.30	$4,306,305,005	5.93
Flat-Cars-General Service	$5,009,211	36.09	$7,128,600	51.36	$1,742,560	12.55	$13,880,371	0.02
Flat Cars-Other	$187,952,486	6.49	$1,745,894,119	60.28	$962,222,780	33.23	$2,896,069,385	3.99
Tank Cars-Under 22,000 Gallons	$3,128,769,194	99.90	$3,251,084	0.10	$0	0.00	$3,132,020,278	4.31
Tank Cars-22,000 Gallons and Over	$5,389,617,640	99.99	$371,760	0.01	$0	0.00	$5,389,989,400	7.42

Source: Railroad Carload Waybill Data, Surface Transportation Board, Washington, D.C., Public Use File, 2008

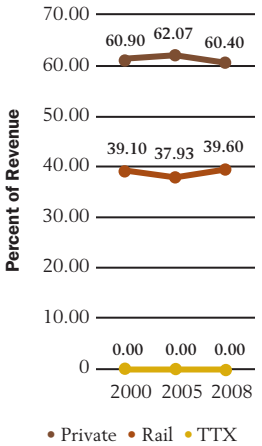
The majority of total revenue in plain boxcars has also been derived from private cars during the period ranging from 66.6 percent in 2000 (Figure 12) to 71.4 percent in 2005, although decreasing to 53.2 in 2008 as the recession took hold and railroads relied on their own fleet first.

Private car participation in the plain gondola car type category has been at a consistent level throughout the 2000-2008 time periods (Figure 13) fluctuating between 60 and 62 percent in 2000, 2005, and 2008.

The final car type category dominated by private cars is the covered hopper car type (Figure 14). Private covered hopper participation increased from 56.0 percent in 2000 to 59.0 percent in 2008 during which period the rail-owned share decreased to a 41.0 percent share.

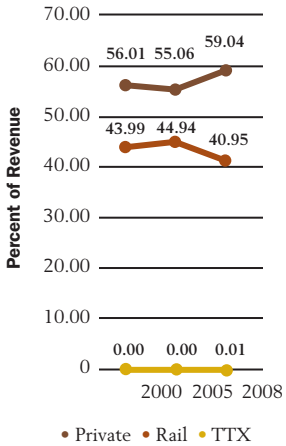
The railroads' joint freight car venture, TTX which represents a significant railroad investment in railcars, did not participate in any of these six car type categories although 53.81 percent of total railroad system revenues are generated by these six car types. The TTX cars do, however, account for a majority of total railroad system revenues for TOFC/COFC intermodal movements (Figure 15).

Figure 13:
Distribution of Plain Gondola Car Revenue by Ownership Category 2000-2008



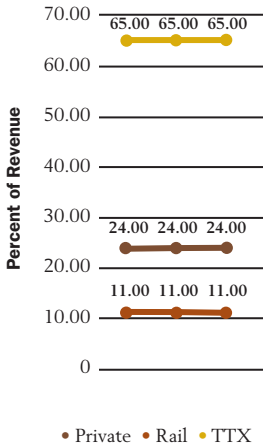
Source: Railroad Carload Waybill Data, Surface Transportation Board, Washington, D.C., Public Use File, 2000, 2005, and 2008

Figure 14
Distribution of Covered Hopper Revenue by Ownership Category 2000-2008



Source: Railroad Carload Waybill Data, Surface Transportation Board, Washington, D.C., Public Use File, 2000, 2005, and 2008

Figure 15
Distribution of TOFC/COFC Flat Car Revenue by Ownership Category 2000-2008



Source: Railroad Carload Waybill Data, Surface Transportation Board, Washington, D.C., Public Use File, 2000, 2005, and 2008

Types of Products and Commodities Predominately Moved in Non-Railroad Owned Cars

The private rail fleet is totally responsible for tank car movements which primarily contain: food products, chemical or allied products, and petroleum or coal products. The food product category includes primarily corn syrup, soybean oils, tropical oils and nut or vegetable oils. The chemical or allied product category consists predominately of alcohol, sulfuric acid, and fertilizers. Lastly, the petroleum or coal products category consists of liquefied gases, or petroleum.

Privately-owned plain box cars are used to move the following commodities and products: paper waste, scrap; fiberboard, paperboard, pulp board, and beer.

Coal is the primary commodity moving in privately owned open hopper cars and in plain gondolas. Additionally, privately-owned open hopper cars are used extensively to transport crushed stone, pulpwood, and other wood chips, while iron and steel scrap are the commodities that move predominately in privately-owned plain gondolas.

Finally, the major shippers of privately-owned covered hopper cars transport bulk grains (including corn, soybeans, wheat, barley, sorghum), prepared feed, soybean meal and pellets, feed ingredients, flour, corn products and grits; dry fertilizers, salt, clay, plastic materials or synthetic resins; sodium compounds; and hydraulic cement. Both the privately-owned and TTX-owned TOFC/COFC flat cars handle miscellaneous mixed shipments.

Table 2 portrays the distribution of total rail system ton-miles in 2008 by car type and ownership category. Of the fifteen car type categories listed in Table 2, private cars account for the majority of railroad ton-miles in six of the categories, identical to the ones in which they provided a majority of the total railroad revenues.

The tank car categories account for 9.1 percent of total railroad system ton-miles in 2008. Private open top hopper cars (special service) transport 79.3 percent of all system ton-miles transported in this type car and generated 13.4 percent of all railroad system ton-miles. Privately owned plain gondola cars transport 72.8 percent of all system ton-miles transported in these gondola cars and generated 22.6 percent of total railroad system ton-miles. Plain box cars (50 feet and above) and covered hopper cars were responsible for 51.8 and 52.7 percent of the total ton-miles generated in these car types respectively.

Table 2:
Railroad Ton-Miles Distributed by Car Type and Ownership Category, 2008

Category	Private Ton-Miles	% Private	Rail Ton-Miles	% Rail	TTX Ton-Miles	% TTX	Total Ton-Miles	% of Total
All Cars	941,386	54.26	580,989	33.49	212,670	12.26	1,735,045	100.00%
Plain Box Cars 50 ft and above	3,967	51.76	3,697	48.24	0	0.00	7,664	0.44%
Equipped Box Cars	11,135	13.54	71,096	86.43	32	0.04	82,263	4.74%
Plain Gondola Cars	285,407	72.83	106,458	27.17	0	0.00	391,865	22.59%
Equipped Gondola Cars	8,105	16.62	40,624	83.30	38	0.08	48,766	2.81%
Covered Hopper Cars	191,741	52.65	172,440	47.35	8	0.00	364,189	20.99%
Open Top Hopper Cars-General Service	28,593	35.30	52,416	64.70	0	0.00	81,009	4.67%
Open Top Hopper Cars-Special Service	184,695	79.27	48,312	20.73	0	0.00	233,007	13.43%
Refrigerator Cars-Mechanical	2,517	24.80	7,629	75.20	0	0.00	10,146	0.58%
Refrigerator Cars - Non-Mechanical	393	5.68	6,524	94.32	0	0.00	6,917	0.40%
Flat Cars TOFC/COFC	63,732	24.00	29,210	11.00	172,606	65.00	265,548	15.30%
Flat Cars-Multi-Level	73	0.25	3,849	13.33	24,961	86.42	28,882	1.66%
Flat-Cars-General Service	44	20.79	137	65.46	29	13.75	210	0.01%
Flat Cars-Other	1,723	3.19	37,313	69.09	14,972	27.72	54,008	3.11%
Tank Cars-Under 22,000 Gallons	59,805	99.91	53	0.09	0	0.00	59,859	3.45%
Tank Cars-22,000 Gallons and Over	97,201	100.00	4	0.00	0	0.00	97,205	5.60%

Source: Railroad Carload Waybill Data, Surface Transportation Board, Washington, D.C., Public Use File, 2008

Replacement Cost of Fleet of Private Rail Cars by Car Type

The total investment in the private fleet of rail cars is highly significant. Indeed, if the railroads were required to step in and replace the investment made in the private fleet with their own equipment, it could significantly disrupt rail service resulting in adverse consequences for distressed industries and an already strained national economy. Table 3 provides estimates of the magnitude of the investment costs associated with replacing the entire fleet of private rail cars by identifying the current number of private rail cars by car type category. An estimate of the replacement costs (in current dollars) for each car type category is then provided. Finally, from those data, we calculate the replacement costs associated with each car type category as well as the overall total replacement costs if the entire private rail car fleet were to be replaced.[5] It should be noted that railcars are assets with 40-50 year lives.

If all 1.088 million private rail cars were to be replaced, the total investment cost would be $88.9 billion. Breaking this staggering sum into various car type categories is revealing. The car type category generating the largest portion of the total replacement cost is the private covered hopper category – the 393,545 covered hopper cars in the private fleet have an estimated replacement cost of $29.3 billion. The replacement cost for the second largest car type – tank cars – would be $ 27.2 billion for 315,926 tank cars.

The third and fourth largest categories – plain gondola cars, plain and open-top hopper cars, – consist of 154,593 private gondola cars with a replacement cost of $11.1 billion, and open-top hopper cars with 103,062 private cars and a replacement cost of $8.2 billion.

The estimated number of private cars in each equipment type category as well as the replacement costs for individual equipment types and overall replacement costs for each equipment type are provided in Table 3. These different categories add up to a $88.9 billion investment required of the railroads if the private car fleet needed to be replaced.

To further analyze the importance of the investment in private cars to the railroad industry, we examined investments in freight cars brought into the fleet during the 2000-2008 time period. Figure 16 displays information on the number of new railcars by ownership category during this time period. There were 453,495 new railcars built, with non-railroad, private cars representing 87 percent of this investment; and only 13 percent being provided by the railroads. In fact, during the time period covering 2006-2008, the 169,644 new private railcars added to the fleet – at an average replacement cost of a new railcar at $87,056 (based on current dollar replacement costs) – represented a non-railroad investment in private rail cars

Table 3:
Replacement Cost of Fleet of Private Rail Cars by Car Type, 2008

Equipment Category	Number of Private-Owned Cars	Replacement Costs Per Car	Total Replacement Costs
Plain Box Cars 50 ft and above	68,784	$107,000	$7,359,888,000
Plain Gondola Cars	154,593	$72,000	$11,130,696,000
Covered Hopper Cars	393,545	$74,500	$29,319,102,500
Open Top Hopper Cars-Special Service	103,062	$80,000	$8,244,960,000
Flat Cars TOFC/COFC	15,524	$196,000	$3,042,704,000
Flat-Cars-General Service	37,133	$70,000	$2,599,310,000
Tank Cars-Under 22,000 Gallons	315,926	$86,000	$27,169,636,000
All Cars	1,088,567		$88,866,296,500

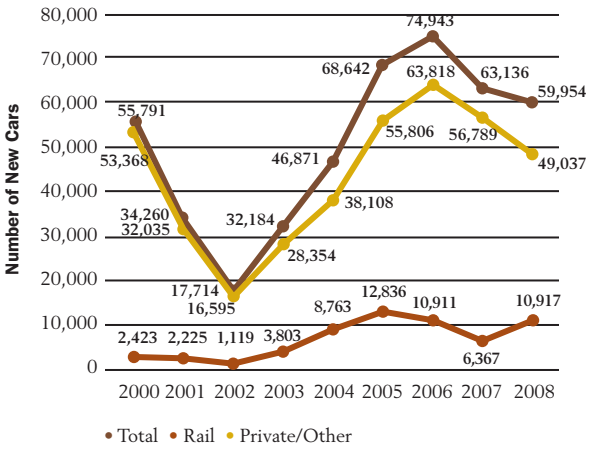
Source: Private Rail Car Fleet Size by Car Type from Industry Sources; Estimates of Private Rail Car Replacement Costs by Car Type Averaged from Manufacturers, Owners, and Lessors. Costs are retail costs based on typical car in each car type category. Number of Private-Owned Car data from UMLER (Equipment Management Information System), 2010.

5 Some would argue that it is unrealistic to assume replacement of the entire private fleet with new railroad-owned cars, if low returns resulted in all private car owners leaving the business. The actual investment decisions in these circumstances are difficult to predict as it would involve railroad choices between keeping older, smaller, and more maintenance-intensive cars or replacing them with newer, larger cars.

of $14.8 billion, minus the scrap value of any older cars retired. This compares with the approximately $10 billion in total annual expenditures for capital improvements by the railroads, themselves.

Overall, it is unmistakable that the rail industry, both railroads and shippers alike, has become almost completely reliant upon private car owners for investment capital in railcars. The railroads provide the locomotive power and physical infrastructure, while the overwhelming share of the railcars comes from private, non-railroad investment dollars. It should be emphasized that the overall adequate supply of railcars is a critical component of the freight rail supply chain, including the efficient delivery of products to the nation's producers and consumers. Any change in the willingness of private investors to provide these investments, based on declining rates of return as well as other costs that cannot be determined precisely enough to be included in a rate of return calculation, would have significant, deleterious consequences for the railroad industry and the entire United States economy.

Figure 16:
New Railcar Installations by Ownership Category 2000-2008



Source: Progressive Railroading, June 9, 2009

Adequacy of Returns from Investments in Private Cars

The continued viability of the private fleet of freight carrying railcars is dependent upon private fleet owners' returns on their investments, the adequacy of which is a matter of grave concern in light of a series of clearly emerging challenges to the revenue streams earned by these fleet owners.

The options available to private rail car owners to obtain revenues for their cars include leasing their cars to shippers and railroads directly on both short and long-term leases and arranging car-hire based leases with individual railroads to compensate them for the use of their equipment, and selling cars to shippers.[6]

The following section provides an analysis of rates of returns in those cases in which data were available, and a summary of shippers' evaluation of their individual experiences with compensatory or non-compensatory rates.

Rates for Shipper Owned and Leased Cars

The majority of the cars in the rail fleet are private cars either owned or leased by the shippers and provided to the railroads. Generally, private car owners negotiate a lease contract with a shipper, commonly a 3-5 year term tenure, at a given lease rate that provides expectations of a return over time to the lessor. Under this scenario, private car owners and shippers (lessee) carry the risk of market fluctuations, decreased demand, and other factors that affect the capital value of the car. Shippers pay the lease cost for the equipment and run the additional risk of reduced or inadequate compensation from the railroad, and any accessorial charges and other costs that arise from use of the equipment. While the shipper does obtain some benefit from providing cars, such as relief from demurrage if the cars are on industry track, the principal benefit is derived from ensuring the availability of cars at times when the market or the supply chain needs require capacity and service.

The Interstate Commerce Act, as amended, provides that shippers who furnish their own cars are entitled to reasonable compensation from the railroads. Section 11122 of the Act reads, in part:

(a) The regulations of the Interstate Commerce Commission on car service shall encourage the purchase, acquisition, and efficient use of freight cars. The regulations may include–

(1) The compensation to be paid for the use of a locomotive, freight car, or other vehicle;

(2) The other terms of any arrangement for the use by a rail carrier of a locomotive, freight car, or other vehicle not owned by the rail carrier using the locomotive, freight car, or other vehicle, whether or not owned by another carrier, shipper, or third person; and

(b) The rate of compensation to be paid for each type of freight car shall be determined by the expense of owning and maintaining that type of freight car, including a fair return on its cost giving consideration to current costs of capital, repairs, materials, parts, and labor. In determining the rate of compensation, the Commission shall consider the transportation use of each type of freight car, the national level of ownership of each type of freight car, and other factors that affect the adequacy of the national freight car supply.

The ICC has determined that private covered hopper cars operated by shippers are not entitled to fixed compensation from the railroads, but instead to a market level compensation, which was not defined by the ICC. A similar standard applies to privately financed cars furnished to (small) railroads by private sources. Indeed, market level compensation is not easily identifiable or quantifiable in all cases. Who knows? was a common response to whether the rate differentials or mileage allowances paid to the shippers furnishing their own cars were compensatory. Universally, survey respondents indicated that the costs they bore for routine running maintenance expenses and the newly imposed accessorial charges assessed by the railroads, were not being covered by the compensation paid by the railroads.

As railroads worked with shippers to encourage them to provide car capacity, the method of compensation to shippers initially agreed upon for equipment other than tank cars was per mile allowances. Later an alternative was adopted; a differential in rates between tariffs for railroad provided cars and shipper provided cars. Other early incentives for shipper investment in cars included initial

6 All private cars must obtain OT-5 operating authority to originate loads. We found some private car owners noting that certain railroads have been denying OT-5 operating authority on the grounds that they have too many cars. This is against STB rules stating that OT-5 operating authority may not be denied except for safety or mechanical reasons or a lack of adequate storage space for the cars. Such denials may, indeed, impact the revenue opportunities for private car owners.

mileage allowances of 35 cents to 50 cents, to as high as 60 cents per loaded mile for some commodities and movements. Over time these allowances have been substantially reduced, resulting in the current mileage allowances in the 18-21 cents per loaded mile range, a range identified by shippers as being non-compensatory. In some cases these allowances are not provided at all. Regardless of the method of compensation shippers currently face a silent investment loss wherein allowances do not generate a return on leasing and accessorial charges sufficient to encourage future and continuing investment by shippers in the car fleet.

The initial mileage allowances, resulting from statutory requirements, were designed to compensate shippers for their investment or the lease charges they paid, and served as an incentive for shipper provided capacity. Currently, however, mileage charges at the existing level are only offered to and used by shippers for about 5-10% of the railcar fleet and these are offered by only select railroads. The common alternative is the use of a differential in rates for a given movement, with the spread being the difference between the rates for a shipper provided car versus a carrier provided car. This spread or reduced tariff rate for the shipper provided car was originally calculated by using the basic mileage allowance of 24 cents per loaded mile times the estimated turns per month. Shippers report that the original 24 cents per loaded mile was not a compensatory rate so any differential based on that rate was fatally flawed. This is even truer today -- the current purchase price of cars is double what it was 20 or 30 years ago. The rate spread methodology was accepted, and, in most cases, welcomed by both carriers and shippers only because of the significant decrease in administrative activities of tracking mileage and determining costs. Today many carriers do not even offer spreads. For many of their rates they simply offer a rate in private cars for which car compensation is invisible.

In the mid to late 90's the shortage of cars, particularly covered hopper cars, resulted in shippers scrambling to find cars. To ensure a guaranteed car supply, shippers leased many cars and in numerous cases subleased them to railroads, which guaranteed shippers a minimum monthly supply of cars in return. In addition to the benefit of an increased supply of shipper provided cars, sublease rates were compensatory. Unfortunately, these sublease programs have been discontinued by the railroads. Additionally, more and more railroad rates have abandoned spreads and allowances altogether, with railroads claiming that their freight rates would have to increase if they paid private car compensation of any sort. Some private car movements today are entirely without discernable compensation to the car owner, according to the survey respondents.

Shippers responding to the survey identified their cost to supply rail equipment as the sum of lease costs, maintenance, repair, and new accessorial costs. While some surveyed shippers believed rates were compensatory, most felt the rate structure was so blurred and complicated they could not determine if compensation was adequate, and a number felt that rates were definitely not compensatory.

Even if the rate differential resulted in compensation for the lease or ownership costs, the shippers universally identified additional costs imposed on them by railroads that were not covered by the differential rates, such as routine maintenance costs as well as new accessorial costs. Private car owners identified operating, maintenance and running repair costs at anywhere from $800 annually per car for a low mileage general purpose freight car to over $10,000 per car for a high mileage multi-platform intermodal car. Furthermore, recent unilateral decisions by the railroads have put shippers in a position of paying additional costs in varying forms.

Significant rail line abandonments have severely shrunk the branch tracks available for storage and positioning of cars. For the past 10 years, shippers have had to move empty private cars off railroads' lines after being returned to a loading point or pay storage charges, lease, or rent track. The carrier-compelled need for storage of private cars has resulted in some shippers building new rail yards and facilities encompassing multiple private tracks that shippers have to maintain. Thus, in additional to providing their own fleets, shippers now find they are required to provide infrastructure and locomotive power. Railroads traditionally made these investments, but now shippers are forced to make up for the inadequacy of the railroad investment in cars. When normal maintenance costs along with storage charges are considered, then the rates of return outlined below plunge significantly, making the overall investment in private rail cars less justifiable from a rate of return perspective.

Finally, for railroad car types in which the railroads have no investments, e.g., tank cars, the railroads usually

quote only a single rate, which they assert is lower than it would be if they were providing the car. However, the survey respondents emphasized that they were left with no real way to verify these railroad claims. As indicated above, the railroads do pay mileage compensation on about 10 percent of tank car movements.

Car-Hire Based Leases/Deprescription Rates

Car-hire based leases compensate rail car owners who lease their cars to railroads who use the equipment in revenue-generating services. These types of arrangements generally involve small railroads with limited ability to make capital investments in cars. Through these leases, the leasing companies and rail car owners provide cars to railroads and receive payments based on hourly and mileage revenues that the car lessee receives from other railroads using their equipment as cars are interchanged. Car-hire rates initially were determined through the use of a formula, developed by the ICC, to compensate car owners for the cost of equipment ownership along with a fair return on the investment. In an order effective on January 1, 1993, the ICC repealed the existing formulas for car-hire rates and adopted a then called market-based approach for setting car-hire rates, except for tank cars, which remained subject to prescribed car hire rates. The ICC's deprescription order was phased in over a ten-year period with full implementation becoming effective on January 1, 2003.

Deprescribed rates in theory are designed to reflect the market conditions of supply and demand. Deprescription is designed to result in negotiated rates between equipment owners and users to reflect market conditions. If, however, negotiations between the parties fail to reach an agreement, either party may request binding best and final offer arbitration, somewhat similar to the process employed by Major League Baseball to resolve player salary disputes. In the established STB rules, the arbitration process is mandatory and legally binding. The associated arbitration fees are shared by both parties, up to a total of $2,000. Fees beyond this ceiling, however, are borne by the losing party in the arbitration process. Each party bears its own costs and legal fees.

Of overriding significance for the owners of rail cars, however, is the extent to which market based deprescribed rates provide the owners with a revenue stream that compensates them for the costs of ownership, plus a fair return on their original investment. Returns to private car owners are under pressure from a variety of factors. In the case of railcars operating under deprescription rules, returns to private car owners have declined to the point of being marginally compensatory or nonexistent; such cars in many cases offer an average return of 3%, which is substantially below the railroad revenue adequacy standard of 10% defined by the STB. In order to investigate this question, we conducted an empirical analysis of the adequacy of return rates associated with market-based deprescribed rates for five different types of railroad cars: A405 Boxcars (50 ft. in length); A606 Boxcars (60 ft. or above in length); E530 Gondola cars; C112 Hopper Cars (3,000-4,000 cubic feet); and C114 Hopper Cars (5,000 cubic feet).

We obtained market deprescription rates from the Association of American Railroad's Deprescription Market Report website from which all records were selected where Car-Hire Accounting Rate Master (CHARM) rate type code is equal to M (market rate) or S (spot market rate). For each railroad car type, we took the average monthly hourly market rate for each month of 2009 and calculated an annual average hourly rate. We then assumed that the equipment would have a 70 percent utilization rate or 511 revenue hours per month. We estimated annual revenue on the basis of the hourly market rates and the assumed utilization factor. We assumed that the mileage revenue received by the equipment owner would offset any maintenance expenses associated with the equipment.

We then calculated 30 year rates of return for each type of equipment under the following set of assumptions: (1) annual revenue based on 511 revenue hours per month times twelve months times the average annual hourly market rate; (2) industry estimated car replacement costs based on current equipment retail prices; (3) a $5,000 residual equipment value at age 30; and (4) gross rail load of 286,000 lbs. for each rail car. Table 4 provides the implied 30 year rates of return under 2009 market based deprescription rates for each of the five railroad car types. The return rates vary from a low of 2.19 percent for the A405 Boxcars to 3.84 percent for the C112 Hopper Cars and the E530 Gondola Cars. In all cases, these rates of return are below the 20 year risk free treasury rate of 4.27 percent (as of May 4, 2010) and dramatically below the STB revenue adequacy return of around 10%.

Clearly, the market-based deprescribed rates are not

delivering to car owners a return rate that compensates them for their investments. Indeed, the 30 year rates of return are substantially below the risk free Treasury bill rates. It is safe to assume that unless rates of return are increased, investors will find more appropriate uses for their capital investments, and the railroad industry will find itself in an unsustainable position going forward absent a substantial investment in railcars. Note too that the comparison on return rates of the risk free Treasury bill does not even compare with a more appropriate point of reference—the internal rate of return used by the railroads, themselves, in making investments. Indeed, the railroads seek a ten-percent return rate on their own investments—significantly above the Treasury bill return rate. The overriding conclusion that must be drawn from the data is that deprescribed rates have failed to deliver on their promise of providing compensatory return rates for equipment owners.

Table 4:
Market Deprescription Rates: Adequacy of Returns

Equipment Type	Average Hourly Rate	Equipment Replacement	Implied 30 Year Return Rate	Risk Free 20 Year T-Rate
Boxcar A405	$0.78	$107,000	2.19%	4.27%
Boxcar A606	$0.8	$120,000	2.33%	4.27%
Gondola E530	$0.65	$72,000	3.84%	4.27%
Hopper C112	$0.63	$74,500	3.84%	4.27%
Hopper C114	$0.64	$80,000	2.95%	4.27%

Notes: Data from Railinc (286 GRL Assumed)
Average Hourly Rate: 2009 Average Market Rate
Equipment Cost: Industry Estimates
30 Year Return Rate: Assumes 70% utilization, 511 revenue hours per month
$5,000 residual value at age 30
Risk Free 20 Year T-Rate as of May 4, 2010
Assumed that mileage revenue and maintenance expenses offset one another

Analysis of the Impacts of New and Changing AAR Interchange Rules

The investments by railroads documented above have significantly diminished in the area of car ownership, thus shifting the costs for ownership and maintenance of freight cars to private owners. Cost shifting from railroads to private owners has also occurred as a result of the railroads' promulgation and implementation of new rules and standards governing the use of freight cars operating in interchange service. The costs of maintaining freight cars in service are found to be disproportionately borne by the private car owners.

This section reports on an investigation into recent changes in the rules and standards, the distribution of benefits and costs associated with these changes, and the final impact of these changes upon the freight car owner. The national survey of the members of the North America Freight Car Association (NAFCA) was used to evaluate the extent of recent interchange rule changes and the perceived or documented impact of those changes on the cost structure of private car owners. Car owners, lessees, and lessors responded to survey contacts by this research team, providing the information reported below.

Background of AAR Interchange Rules

The need for rules and standards to enable free, safe, and fluid movement of traffic is both evident and understandable. As our nation developed, the need to tie the country together efficiently by railroads that allowed free and easy movement over the many lines, required the development of rules and standards to govern the requirements for all freight cars used in interchange service. The Association of American Railroads (AAR) and its predecessors were the bodies which developed these necessary rules and standards for interchange service. These rules and standards are formally referred to as AAR Interchange Rules. Their goal is identified as maintaining and improving the safety and efficiency of operating the rail system. No privately marked car can operate in the national rail system unless its owner signs the AAR Interchange Agreement. The AAR Arbitration and Rules (A&R) Committee is the governing decision-making body with respect to creation of any new interchange rule or standard. Its stated purpose is to give consideration to requests for revisions, amendments, or additions and revise the AAR Interchange Rules where necessary and to render formal and informal interpretations of existing code of rules. It also provides rulings on disputes that are submitted to arbitration. Finally, it provides overall direction and technical oversight to the Car Repair Billing Committee. Although the A&R Committee has railroad and private car owner members, the overwhelming majority of its fifteen members, eleven, are railroad representatives. The Committee is comprised of fifteen (15) members, eleven (11) railroad members, three (3) non railroad members, and a TTX member.

This rulemaking process was equitable when the railroads, themselves, provided almost all the elements of the rail system; power, cars, and rails. But, as shown above, freight car ownership and responsibility has shifted, so the historical interaction between and among railroads now impacts a third party, one that owns the majority of freight cars but is not an equal participant in the development and modification of those rules, namely the private car owners. Private car owner participants in AAR rules committees that are heavily weighted in favor of railroad owners provide little, if any, negotiating power for the private car owner. Indeed, there is no avenue for private car owners to appeal rules they believe to be inappropriate or inequitable.

As new rules and standards are developed, new costs are inevitably created by such actions. Under the current rulemaking process, however, there is no requirement to apportion costs between railroads and car owners in relation to projected benefits inuring to them. For example, if the efficiency gains associated with a rule change accrue to the railroad in the form of operating savings, fair allocation of costs to benefits would require that compliance costs attendant to that change should also accrue to the railroad, in the form of decreased tariff rates to shippers, modification of car owner revenue streams, or payment for the changes.

The existing, uneven distribution of safety and efficiency gains was investigated to the extent available data or existing studies allowed. Our survey of the private car owners, lessors, and lessees sought to determine if significant or notable changes had occurred in recent years in overall maintenance costs, and, if so, to determine the source and impact of those costs. Numerous confidential responses were received and some of these, not-attributed to source, are offered below.

Overall Maintenance Costs

The increase in maintenance costs for private car owners is evident and substantial. Based on information provided by the survey, maintenance costs of private car owners increased by 115% between 2007 and 2009. Consistent with the experience of private car owners, the 2009 report from the AAR Car Repair Billing Committee found that repairs per net ton mile had almost doubled from 2006 to 2009.

One source of private car owner frustration is the rapid increase in the AAR Labor Rate (Labor Rate). Between 2007 and 2009, the labor rate increased at about twice the rate of inflation for the overall economy, and now stands at almost $105 per hour. Generally, it is more efficient to perform wheel replacements and other running repairs at the point where the defect is detected rather than sending the car to a private car repair shop. However, the rapidly increasing Labor Rate has at times caused private car owners to try to avoid the high AAR repair costs by paying for movement of cars to lower-cost repair sites, which removes use efficiencies from the fleet. One question raised by NAFCA members in the survey is whether the process for calculating the labor rate properly reflects the overhead costs of mechanical departments especially since Rule 111 of the Interchange Rules expressly prohibits the inclusion of any profit in the labor rate.

Underlying these increases in costs is the economic issue of allocating costs of complying with new rules in proportion to the benefits received by the various parties. When appropriate allocation of costs occurs, appropriate investment and provision of service is expected to occur. The major categories of benefits associated with changes to the Interchange Rules are safety improvements, on the one hand, and efficiency gains, on the other. This issue is addressed with greater specificity in the following sections of this Report.

Wheel Impact Load Detector (WILD) Rule

In 2004, the AAR modified Interchange Rule 41 to allow/require wheel sets to be replaced based on readings from wheel impact load detectors. Readings from detector sites are fed to a central database known as Interris. Interris drives the railroads' Equipment Health Management System (EHMS), which alerts railroads and car owners whenever a wheel set registers a reading that requires replacement under the rules. A large proportion of the wheel set replacements done under the rules are performed by the railroads themselves because it is not economical to home shop cars for wheel set replacements. Concerns about the rule change include: the removal of wheel sets using only one detector reading, and whether the rules dealing with other condemnable defects causing the out of round condition necessitating replacement should be evaluated.

This rule change has resulted in a significant increase in the replacement of wheel sets. At issue is the safety (benefits inuring to the public generally) versus efficiency improvements (benefits inuring to the railroads) and the allocation of the costs necessary to produce those benefits. As this rule change was being considered by the AAR, private car owners strongly questioned the economic rationale and voiced concerns about the inequitable distribution of costs and benefits. In response, the AAR formed a study group called a Technical Advisory Group (TAG), including representatives of railroads, private car owners, shippers, and suppliers. The Transportation Technology Center (TTCI), an AAR subsidiary, provided data to the TAG. Although the AAR's TAG found that virtually all of the net benefits were received by the railroads, largely due to decreased track maintenance and lower fuel consumption, the rule was implemented with all costs being borne by the car owners. Since there are more privately-owned cars than railroad-owned cars, private car owners are paying for a majority of the wheel replacements yet reap virtually no benefits because this rule almost exclusively benefits a railroad's operations. This imbalance was noted throughout this study as an example of assignment of costs not reflecting benefits received by an industry participant. Indeed, this latter point was mentioned by well over half of the respondents in our surveys and interviews. One car owner reported spending $40 million since 2005 due to wheel set replacements mandated by the new rule. It was estimated that $500 million has been spent industry wide since 2005 for wheel set replacements mandated by the new rule, the majority of which has been paid by private car owners.

Long Travel Constant Contact Side Bearings (LTCCSB)-Rule 88

This 2002 rule change mandates that constant contact side bearings be added to all existing tank cars, a rule that had both efficiency and safety benefits. Increases in speed, accompanied by high speed stability and less tank car roll, are the principal source of benefits. The cost is substantial,

estimated by one private car owner for their firm at in excess of $25 million by the time their entire car fleet is modified. To equip the entire fleet of tank car represents an investment in excess of $100 million, based on the estimate that approximately 200,000 tank cars need to be retrofitted.

Prior to its adoption, this rule change underwent AAR analysis as to the extent of benefits and costs. Although benefits were found to be above costs for the overall industry, the distribution of those benefits was not addressed in the final rule. Prior to implementation of the rule, private car owners and the Railway Supply Institute (RSI) provided written comments to the A&R Committee. Based on analysis conducted by AAR and TTCI, over 75% of the benefits expected from the rule ($17.5 million out of about $23 million) would come from the railroads' ability to operate the trains at higher speeds, with car owner maintenance savings and shared derailment savings accounting for the remaining 25%. The costs of implementing the rule are borne 100% by the car owners, without regard to either the AAR and TTCI analysis or the comments submitted by private car owners and RSI.

Service Interruption-Rule 91

This rule allows for the handling carrier to bill car owners for costs associated with train delays caused by a condemnable car defect that result in the train being delayed on the line of road. A review of this issue reveals that such service interruptions are long standing and have been a component of the rate structure paid by shippers for years. Rule 91, however, established a new means to address the issue. Revenue for the same haul can now be received twice by a railroad: the normal revenue that is received from the shipper for moving the traffic, and revenue from the freight car owner for any perceived service interruption costs. Historically, the first revenue source was considered to cover the costs of providing the service, with the expectations of normal service interruptions. Rule 91 adds costs to the freight car owner without an apparent accompanying decrease in rates paid by the shipper to properly reflect this cost transfer. In some, maybe many cases, the shipper and the freight car owner are the same entity, thus resulting in double payment for the same service. . This concern was evident in various private car owners' responses to the survey and in our interviews.

Continued Shifting of Costs

Other examples concerning operating costs being shifted to the shipper/car owner were noted in this survey and interviews. Some of those examples identified by survey respondents include:

- Allocation of new versus turned wheel sets. It has been noted that some railroads are applying the higher priced new wheel sets to privately owned freight cars and retaining the lower priced turned wheels sets for their own fleet of freight cars.
- Another issue is the Single Car Air Brake Test. The AAR chargeable price for a car that is past due is higher than the cost of a car not over date. While not well documented in our survey, the understanding is that the added charge is for the cost to move the car to a repair track, however, that cost is also included in the AAR Labor Rate Overhead, under Switching .
- When car parts are found missing from cars in railroad possession, the railroads historically paid for the missing parts. Now, railroads only accept responsibility when railroad documentation of their removal is produced. Thus, car parts lost or stolen while a car is in a railroads possession are left for the car owner to cover, even though the car owner has no control of the car in the train.
- Looking into the future, the advent of electronic brakes and positive train control has both safety and efficiency benefits. The Federal Railroad Administration (FRA) has already identified the benefits of electronic brakes as accruing to railroads primarily as a result of increased railroad operating efficiency and fuel cost reductions. Concerns about the future allocation of the estimated $6 billion cost of this innovation are self-evident.

Overriding Issue

The industry survey found numerous instances of new rules shifting costs or increasing costs to car owners when car owners do not share in the benefits resulting from implementation of those rules. Most changes in the AAR Interchange Rules are related to safety or efficiency improvements on the part of the railroads and the private car owners (who may also be shippers). Two major changes, the WILD rule and the LTCCSB rule, have been shown to produce substantial efficiency benefits to the railroads and minor public safety benefits, without an equitable distribution of costs to reflect these facts.

In summary, the foregoing incidences suggest that unless there are major changes in 1) the process for establishing AAR Interchange Rules, 2) the composition of the AAR Committees that govern the rulemaking process, and 3) the control of interchange rules by regulatory authorities, the economic value of private car ownership will be further reduced and the availability of this capacity will be under stress and doubt. From an economic efficiency and welfare perspective, benefit/cost ratios should be calculated both for the industry as a whole, and as to distribution of benefits between railroads and car owners. The results should form the basis for distributing costs among affected parties. For the market to work for car investment there needs to be an equitable, non discriminatory and transparent interchange rule process.

Energy and Environmental Impacts of Private Railcars

Value of the Private Rail Car Fleet in Energy Savings

Energy issues have been a key component of the national economic, environmental, and political debate. The existence of this increasingly large private rail car fleet has a direct impact on the energy consumed and emissions produced by the overall transportation system. Another measure of the value of the private railcar fleet is the impact on energy consumption if the capacity of this fleet were not available. This section of the paper addresses the energy saved by the private car fleet, quantifies it, and then does a sensitivity analysis on how much of the output from the private rail car fleet could reasonably be expected to shift to truck movement.

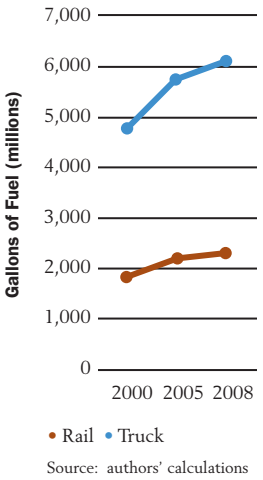
To perform this assessment we bring the private car ton miles carried for the years 2000, 2005, and 2008 forward from the earlier analyses and presented in Table 5 and Figure 17, developed from the Waybill Sample. Those ton miles increased from 736,904 million in 1990 to 941,386 million in 2008.

Recent energy coefficients for rail and truck modes were used to determine the volume of fuel utilized or that would be utilized in generating those ton miles (source: Texas Transportation Institute, A Modal Comparison of Freight Transportation Effects on The General Public, amended March, 2009). The analysis shows that rail consumed 1,784 million gallons of fuel in 2000, increasing to 2,145 million gallons in 2005 and finally, to 2,279 million gallons in the recent data year of 2008 (Figure 17). If those ton miles had been moved by truck, which utilizes fuel at about a 2.66 higher rate than rail, there would have been about 4,754 million gallons consumed in 2000, about 5,715 million gallons in 2005, and 6,073 million in 2008.

The fuel saved as a result of these ton miles being handled by the private rail car fleet is substantial. In the unlikely event that all (100%) of the private car ton miles had to be moved by truck, almost 3.8 billion more gallons of fuel would have been consumed. (This volume is equivalent to the fuel consumed by almost 35 million truck shipments, assuming average truck trip distances and average miles per gallon.) Specifically, the potential savings in fuel energy used has increased from 2,974 million gallons in 2000, to 3,570 million in 2005, and up to 3,794 million gallons in 2008.

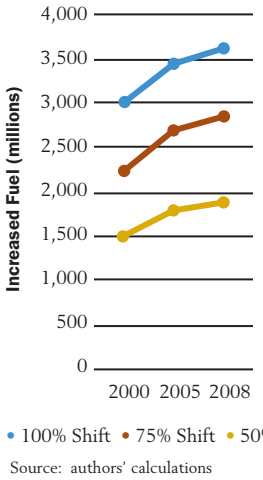
The above analysis assumes all of the ton miles would be shifted from rail to truck carriage. It is highly probable that some of the commodities being carried would still have to be moved by rail, in any remaining private or

Figure 17:
Fuel Consumed by Alternative Modes



Source: authors' calculations

Figure 18:
Energy (Diesel Fuel) Consumed if Private Rail Car Ton-Miles are Carried by Truck



Source: authors' calculations

Table 5:
Energy (Diesel Fuel) Consumed if Private Rail Car Ton-Miles are Carried by Truck Year

Year	Private car Ton-miles (millions)[1]	Rail Gallons of fuel (millions)[2]	Truck Gallons of fuel (millions)[3]	Increased fuel at 100% shift (millions)	Increased fuel at 75% shift at (millions)	Increased fuel at 50% shift (millions)
2000	736,904	1,784	4,754	2,974	2,231	1,487
2005	885,968	2,145	5,715	3,570	2,678	1,785
2008	941,368	2,279	6,073	3,794	2,846	1,897

1 Waybill data
2 413 ton miles per gallon
3 155 ton miles per gallon

Source: Texas Transportation Institute, "A Modal Comparison of Freight Transportation Effects on The General Public," amended March, 2009

railroad owned cars. So a sensitivity analysis was developed where only 75% or 50% of the ton miles are assumed to be shifted to truck (Figure 18). The energy savings by having the private car fleet available is still substantial. Even if only 50% of the ton miles are shifted to truck, up to 1,897 million more gallons of fuel would have to be consumed in 2008. If trucks were able to capture 75% of the ton miles, the increase in energy or fuel consumption would be 2,846 million gallons in the same year. The same relative shift and increase in fuel consumption would occur in the previous years in this analysis. The cost to the nation's economy under any of these scenarios is huge and will grow if the price of fuel increases.

In sum, billions of gallons of diesel fuel are saved by the availability of the private rail car fleet. Depending on the amount of ton miles shifted to truck, the savings would, in 2008, range from 1,897 million gallons (50% shift) to 2,846 million gallons (75% shift) to as much as 3,794 million gallons (100% shift). The 3,794 million gallons of diesel fuel represents approximately 10 percent of all diesel fuel consumed in the United States on an annual basis.[7]

Environmental Impact Benefits of Availability of Private Rail Cars

Transportation accounts for about one third of the energy consumed globally, and about one fourth of that transportation consumption of energy is associated with freight shipments. The magnitude of damage caused by such emissions may be under debate, but the fact of the problem is not. The Environmental Defense Fund, in The Good Haul, Innovations That Improve Freight Transportation and Protect the Environment , in 2010 suggests that freight sector consumption generates about 8% of total global carbon dioxide emissions, while the freight sector's greenhouse gas emissions have increased 58% since 1990. Therefore, it is useful and informative for the purpose of this study to examine what the further impact on carbon production would be if the tonnage and ton miles carried by the private rail car fleet were to be shifted to and moved by trucks.

This brief analysis is fairly straightforward and simple. The gallons used in moving the volume of private rail car traffic for the years developed in the Waybill database are multiplied by commonly used emissions coefficients, in terms of pounds of hydrocarbons produced per gallon, to identify the amount of hydrocarbons currently produced by the private rail car fleet's tonnage. Then this is compared to the hydrocarbon that would have been produced if this volume were shifted to truck movements. The difference then becomes the savings or decrease in environmental pollution caused by the availability of the private rail car fleet; thus a look at the environmental public benefit of these cars is available.

The private rail car fleet, as indicated in the previous section, offered the public benefit of substantially reduced energy consumption, one of the acknowledged goals of most public and private entities. Such fuel or energy savings are accompanied by significant public benefits in the form of reduced emissions, especially hydrocarbons, into the atmosphere. This section reports a brief analysis where the energy intensity of the differing modes is converted into emissions intensity and the environmental savings from the availability of the private rail car fleet.

The emissions of hydrocarbons in producing the ton miles (from the Waybill analysis earlier in this paper) carried by the private car fleet from 2000 to 2008 are identified in Table 6. The earlier analysis found that private rail car ton miles ha increased from 736,904 million ton miles in 2000 to 941,386 million in 2008. In a direct fashion the gallons of fuel necessary to move that amount of ton miles by private rail cars increased from 1,784 in 2000 to 2,279 in 2008. The analysis further showed that if those ton miles were shifted to truck the gallons consumed increased from 4,754 million to 6,073 million over the same time period.

The EPA estimates commonly used in recent studies, and utilized in this analysis, show that the pounds of hydro-

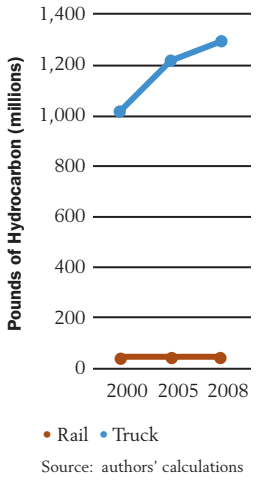
Table 6:
Production of Hydrocarbons by Private Rail Car versus Truck Movements

Year	Private car Ton-miles (millions)[1]	Rail Gallons of fuel (millions)[2]	Truck Gallons of fuel (millions)[2]	Pounds of hydrocarbon by rail (millions)[3]	Pounds of hydrocarbon by truck (millions)[3]
2000	736,904	1,784	4,754	39	1,011
2005	885,968	2,145	5,715	47	1,216
2008	941,368	2,279	6,073	50	1,292

1 Waybill sample
2 Constructed table 5 above
3 EPA estimates

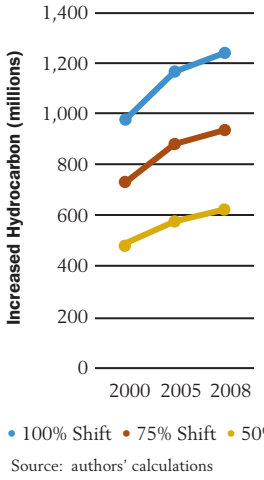
7 Highway Statistics-2008, MF-21 Motor Fuel Use, Federal Highway Administration, U.S. Department of Transportation, Washington, D.C., http://www.fhwa.dot.gov/policyinformation/statistics/2008/

Figure 19:
Production of Hydrocarbons by Private Rail Car versus Truck Movements



Source: authors' calculations

Figure 20:
Production of Hydrocarbons if Private Rail Car Traffic Shifts to Truck



Source: authors' calculations

carbon produced by the private rail car ton miles were 39 million in 2000, increasing steadily to 50 million pounds of hydrocarbons in 2008. If truck were used to move those ton miles, the pounds of hydrocarbons produced increases dramatically from 1,011 million in 2000 to 1,292 million in 2008 (Figure 19). The savings in fuel hydrocarbons associated with avoiding truck carriage and moving the ton miles by private rail car can be determined from Table 6. (The 1,292 million pounds is about ten times the amount of emissions offset by all public transport in the US each year-126 million pounds-, according to the **Public Transportation Takes Us There** website.) One estimate of the cost to clean the hydrocarbon pollutants is conservatively put at $20,000 per ton. Thus, with 600,000 tons of hydrocarbons emitted by truck transportation of the freight now handled by private rail cars, the total cost to clean the hydrocarbon pollutants associated with a shift of this traffic to truck would equal $12 billion.[8]

As discussed earlier it is doubtful that truck would be able to capture that total volume of additional ton miles so a range was incorporated into this analysis. As indicated in Table 7, the amount of hydrocarbons saved diminishes significantly from the high of 1,242 million pounds if 100% of the private rail car ton miles were shifted to truck, down to 621 million pounds if only a 50% were achieved. In all three scenarios in Figure 20, significant savings in hydrocarbon production are identified due to the availability of the private rail car fleet.

Table 7:
Production of Hydrocarbons if Private Rail Car Traffic Shifts to Truck

Year	Increased hydrocarbon at 100% shift (millions)	Increased hydrocarbon at 75% shift (millions)	Increased hydrocarbon at 50% shift (millions)
2000	972	729	486
2005	1,169	877	585
2008	1,242	932	621

8 Robert F. Westcott, Cleaning the Air: Comparing the Cost Effectiveness of Diesel Retrofits vs. Current CMAQ Projects, Washington D.C., 2005. CMAQ refers to the Congestion Mitigation and Air Quality Program. Westcott provides a range of from $20,000 to $100,000 per ton to clean pollutants. We have chosen the lowest figure in his range to provide our estimates.

Conclusions

The dependence of the railroad industry, the shippers using that industry, and the United States economy on the private car rail fleet is dramatic and growing. Private car owner equipment now carries 54% of total ton miles and 56% of total tonnage moved by railroads, and 87% of new investment in railroad cars has been made by private car owners.

Yet, the continued viability of this needed investment stream in private car railcars is under pressure. Returns to the private car owners are considered non or barely compensatory. Under the deprescription rules , the ROI of the revenue streams is at least 30% below the lowest risk free Treasury Bill (an average of 3% compared to 4.27%, both substantially below the railroad revenue adequacy standard of 10%). The required investment to replace the current private car numbers is staggering, about $90 billion would be required to replace the current private car fleet, at current replacement values. It should be emphasized that the overall adequate supply of railcars is a critical component of the freight rail supply chain, including the efficient delivery of products to the nation's producers and consumers.

This tenuous situation is further exacerbated by continual cost shifting from railroads to shippers or owners. Changes in interchange rules have forced significant increased costs, such as those for Wheel Impact Load Detectors and Long Travel Constant Contact Side Bearings, among others, to be borne by the car owner, even though the benefits of these improvements are received in most cases by the railroads. Other shifts have forced car owners to build new rail yards and facilities encompassing multiple private tracks that they now have to maintain-- investments they were forced to make to achieve what the railroads used to provide.

Lastly, with respect to financial issues, it appears that unless there are major changes in 1) the process for establishing AAR Interchange Rules, 2) the composition of the AAR Committees that govern the rulemaking process, and 3) the control of interchange rules by regulatory authorities, the economic value of private car ownership will be further reduced and the availability of this capacity will be in doubt.

The value and benefits of this private car fleet reach into the energy and environmental areas as well. The availability of this private car fleet can save the energy equivalent to 30 million truck shipments every year. Further, moving commodities and products by private cars rather than trucks saves ten times as much hydrocarbon production as is currently saved by all public transportation. If trucks handled all the traffic now moved in private cars on the railroads, the total cost to clean the pollutants associated with this increment in truck traffic is estimated conservatively at $12 billion. The loss or lessening of these private car investments would create dramatic economic, energy and environmental impacts.

About the Authors

Professor Corsi *joined the Robert H. Smith School of Business in 1976 as a Professor of Logistics and Transportation. He served as Chairperson of the Logistics and Transportation Group from 1986 through 1994. During that time, the Group received recognition from the Transportation Journal as the most prolific faculty group in the nation based on published research in the field. He is an associate editor of the Logistics and Transportation Review and the Journal of Business Logistics and serves on the editorial review board of the Transportation Journal and the International Journal of Physical Distribution and Logistics Management. He has authored more than 100 articles on logistics and transportation. He has consulted for such organizations as the Interstate Commerce Commission, the Maryland State Department of Transportation, the National Science Foundation, the United States Department of Transportation, the National Truck Stop Operators, United Parcel Service, the United States Department of Energy, and the U.S. Army Logistics Agency. He has co-authored four books entitled: The Economic Effects of Surface Freight Deregulation, published in 1990 by the Brookings Institution in Washington, D.C; Logistics and the Extended Enterprise (Benchmarks and Best Practices for the Manufacturing Professional), published in 1999 by John Wiley & Sons in New York City; In Real Time: Managing the New Supply Chain, published in 2004 by Praeger in New York City; and X-SCM: The New Science of X-treme Supply Chain Management, published in 2010 by Routledge in New York City and London.*

Dr. Ken Casavant *is Director of the Freight Policy Transportation Institute (FPTI) and Professor in the School of Economic Sciences at Washington State University, leading the transportation research program there for the past 40 years. He is a nationally known transportation economist; he has co authored three books, produced seven chapters in other books, published over 120 articles and given over 300 presentations, including testifying before state legislatures, regulatory bodies and U.S. Congress, leading to public debate and understanding by all sectors of the economy of the crisis of freight transportation and mobility. This prominence has brought in over $9 million of grants and contracts to his personal research program and over a million dollars to multi-discipline research teams of which he served as member. Ken has been sought out as a consultant on transportation economics and policy including for USDA, USDOT, USAID (nine overseas consulting assignments), Canada Grains Council, Interstate Commerce Commission, and US Army Corps of Engineers (in all, over 60 domestic contracts plus traveling for others in 10 countries). The studies under these broad research efforts resulted in over 50 analytical and policy reports dealing with all aspects of transportation, from rural airports to rural transit planning to energy and emissions impact of Snake River dam removal, to security planning for the state, to scoping and data needs for the state, etc. Seeking prioritization of infrastructure investments based on an in depth knowledge of what was being moved, its value and its needs, two state wide origin and destination trucking surveys, based on 60,000 truckers being stopped and interviewed in the study were achieved. These surveys, the first of their kind in the United States, have resulted in improved understanding of the freight flows in the state, and caused numerous requests, nationally and internationally, for presentations on the methodology, findings and usage of the survey technique. Policy implications of modal freight receive continued emphasis.*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