a capital expenditure. In the railroad industry, of course, a portion of fixed plant maintenance spending gets booked as capital, but most is treated as an operating expense. Functionally, I believe that maintenance is a capital expense. Maintenance represents resources invested now in order to obtain some benefit in the future. In the case of locomotive overhauls or track rehabilitation, those benefits are expected to be received for some years. These long-lived maintenance expenditures are functionally no different than many capital expenditures, and I believe they should be viewed in the same way. Earlier in this paper, I discussed deferred maintenance as the rational way to reduce plant capacity in response to declining profitability. It seems obvious that, if rail regulatory reform improves rail profitability, maintenance expenditures will be increased as well.

Cost-Reducing Projects

Rail regulatory reform will not increase the attractiveness of cost-reducing projects, but it will increase the funds available for them. Also, I believe that improved rail profitability will generate more optimism among rail employees and managers, and this is likely to lead to an increase in investment in cost-reduction projects as well.

Projects to Increase Capacity

It seems clear that these expenditures will become more common if the industry is successful in winning back traffic from other modes. The extent to which the industry will be successful in this area is dependent on many factors far beyond the scope of this paper. I will only point to the obvious--the railroads will increase capacity as required if profitable traffic is there.

Investments Required by Regulations

By this, I have in mind safety and environmental regulations, not economic regulations. There should be no direct connection between rail regulatory reform and increased spending on environmental or safety projects, but some indirect effects are possible. Improved railroad profitability could conceivably make the industry a more vulnerable target for those who push uneconomic expenditures in the name of increased safety. I hope that government will resist such pressures.

CONCLUSION

I see a potential for significantly increased railroad capital spending during the next decade. This increase has already begun, as a result of expectations of increased rail profitability. But expectations will not sustain an investment boom for very long. The 1980 act must be implemented in a manner that leads to improved rail profitability. The 1980 act will probably turn out to be only a good first step in the process of restoring rail financial health. Much hard work remains.

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Implications of Regulatory Reform for Intermodal Competition

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The Motor Carrier Act of 1980 will probably contribute only minimally to improved vehicle use and associated operating efficiency and will do little to strengthen the competitive position of motor carriers. However, the dynamic effects of increased competition from liberalized entry provisions and a greater emphasis on independent pricing will exert pressure for rate decreases, thus increasing the competitive strength of motor carriers. The overall effect may be some rather modest diversion of traffic from rail to truck. Given the revenue needs of the railroads and the context and objectives of the Staggers Rail Act of 1980, rate increases will almost certainly predominate over decreases in the post-legislation period due to provisions dealing with profit-maximizing freedom, the elimination of rates below cost, and surcharges. The Staggers Rail Act has little implication for costs and service performance. The contract rate provisions of the Staggers Rail Act may be more significant competitively than the pricing flexibility provisions. Experience with contracts is thus far too limited to generalize about their likely future impacts.

During 1980, the U.S. Congress passed and the President signed into law the Motor Carrier Act of 1980 and the Staggers Rail Act of 1980, two reform measures designed to reduce government regulation and place greater reliance on competitive market forces to determine the quantity, type, and price of available transportation services. The objective of this paper is to assess the implications of these measures for intermodal competition.

The analysis reviews the manner in which both acts influence the internal structure of the respective modes (i.e., rail, truck, and coordinated rail-truck or piggyback). From these direct effects, intermodal implications can be determined.

Some critical questions considered are the manner in which the legislation changes the efficiency of the respective modes and, hence, influences the prices and services each makes available. Also, the analysis includes an assessment of various provisions with direct impact on existing pricing strategies and levels for each mode. The effects of the legislation on each mode are then combined to determine the intermodal consequences. A major consideration is the sensitivity of traffic allocations to

modal price relations that may change as a consequence of the legislation.

INTERNAL RAILROAD EFFECTS

The fundamental objective of the Staggers Rail Act, as stated in Section 3, is "to provide for the restoration, maintenance, and improvement of the physical facilities and financial stability of the rail system of the United States." This concern for the future of railroads stems from a recognition by Congress of the industry's long-term depressed earnings that are insufficient to generate funds for necessary capital improvements. Without higher earnings the railroad industry will undergo further deterioration or require additional federal subsidy. The main provisions of the act are directed at removing government regulations that have become unnecessary and inefficient and, consequently, have contributed to the industry's depressed earnings. Thus, by reducing regulatory burdens the industry will be in a position to improve its earnings performance.

The primary focus of the act is to reduce and/or eliminate the role of the Interstate Commerce Commission (ICC) in determining railroad rates. With ICC influence minimized, the expectation is that, due to their poor financial condition, railroads will concentrate on rate increases in contrast to rate decreases designed to attract traffic now handled by motor carriers. Thus, to the extent that the act facilitates such rate increases, competitive shifts of traffic from truck to rail are not an anticipated outcome.

The focus of this section is to analyze the act to determine whether the expectations are justified concerning a greater tendency toward rate increases rather than competitively inspired rate decreases.

Provisions Facilitating Rate Increases

Provisions of the act regarding the reduction of ICC control over railroad rates, as well as those dealing with surcharges on joint rates, will facilitate rate increases rather than competitively inspired rate decreases.

Title II of the act eventually removes the ICC from the regulation of railroad rates except in two situations: (a) where a rail carrier has market dominance over the transportation to which a particular rate applies or (b) where a rate fails to contribute to the value of the firm by being below the variable cost of the service. In all other cases, the carriers have the opportunity to adjust their rates in whatever manner they wish. The underlying assumption is that the existence of competitive alternatives to rail transportation (i.e., the absence of rail market dominance) will restrain unjustified rate increases. That rate increases rather than rate decreases are anticipated stems from the general depressed level of railroad earnings and, consequently, the need for more, not less, revenue as well as the fact that traffic not under ICC regulations, by its definition as non-market dominant, have lower revenue-to-variable-cost ratios than market-dominant traffic. The railroads are simply not in a position to lower revenues on such traffic through extensive rate cutting without further deterioration of their already depressed earnings.

The act does maintain, however, ICC regulatory control over rail market-dominant traffic. Despite a continuation of regulation, the act provides the railroads with ample opportunity to increase rates on this traffic. They are allowed to adjust rates quarterly without challenge on the basis of a rail cost-adjustment factor calculated by the ICC. In addition, the act creates a zone of rate flexibility during its first four years (until 1984). Within the zone, carriers are permitted to increase their cost-adjusted rates without challenge as to their reasonableness as long as the increases do not raise the revenue-to-variable-cost ratio on traffic by 20 percent during any 1-year period or bring the ratio up to the threshold level for the determination of market dominance or 190 percent of variable costs, whichever is less. After 1984, the rate flexibility zone becomes smaller and is limited to carriers without adequate levels of earnings. It is anticipated that railroads will take advantage of the rate increase due to their depressed earnings and that such traffic, being market dominant, has an inelastic demand.

The second area in which the ICC still maintains authority regarding railroad rates under the act concerns situations in which the rail rate fails to contribute to the going-concern value of the firm by being below variable costs. After filing a complaint that a rate is in violation of this provision, the ICC will make a determination and, if the rate is found to be below variable costs, it will order the rate to be raised to the minimum level required by the act. Obviously, this provision of the act results only in rate increases and, consequently, will not bring about traffic shifts from truck or barge to rail.

At the three-digit Standard Transportation Commodity Code (STCC) level, there are various commodities in which the rail revenues were either below variable costs or only, at most, 10 percent above them in 1976. These results, based on an analysis of the 1976 railroad waybill sample (supplemented in that year with cost data for each waybill), are given in Table 1 (1). The list, restricted to commodities with at least 250 waybills in the sample, includes bulk items, such as crushed or broken stone, as well as manufactured goods, such as miscellaneous furniture of fixtures. Table 2 (2) gives the railroad share of the total traffic for the commodities listed in Table 1 that are also included in the Census of Transportation (2). Table 2 shows rail market shares varying from very high levels (in excess of 80 percent) for railroad equipment to low levels (21 percent) for miscellaneous furniture or fixtures. It is anticipated that rate increases might adversely affect rail market share for those commodities where rail share is currently medium or low and may have little or no effect for the rail-dominant commodities.

Another provision of the act facilitates rail rate increases by authorizing, under certain circumstances, the imposition of a surcharge in a joint rate situation by one carrier without the concurrence of the connecting carrier or carriers. The surcharge provision is designed to guarantee that no rail carrier will be forced to transport traffic in a joint rate situation if its share of the revenue, including any surcharges, is not at least 110 percent of its variable costs. The surcharge opportunity, however, is not available to carriers earning adequate revenues on lines that carried more than 3 million gross ton-rules of traffic per mile in the preceding calendar year. Furthermore, the provision includes a number of restrictions on imposing surcharges to protect small connecting carriers from being priced out of the traffic because of the surcharge by large carriers with alternative routes for the same traffic on which no surcharge is imposed. To date, as expected, the Consolidated Rail Corporation (Conrail) has been most active in filing surcharges in joint rate situations. Its surcharge activity has thus far involved furniture shipments,

Table 1. Commodities with low revenue-to-variable-cost ratios.

Commodity	No. of Waybills	Avg Revenue-to-Variable-Cost Ratio
Primary forest or wood raw materials	8199	0.82
Grain mill products	6897	1.05
Crushed or broken stone	3871	0.94
Chemical or fertilizer minerals	3026	0.77
Gravel or sand	2808	1.08
Converted paper or paperboard products	2393	1.09
Railroad equipment	570	1.08
Containers, shipping, returned empty	417	1.04
Fresh vegetables	380	1.07
Trailers, semi-trailers, returned empty	299	0.64
Miscellaneous furniture or fixtures	295	1.03

Table 2. Rail market share of commodities with low revenue-to-variable-cost ratios.

Commodity	Share (%)		
	Rail	For-Hire Motor Carrier	Private Truck
Railroad equipment	84.09	15.15	0.67
Converted paper or paperboard products	58.81	30.15	8.94
Primary forest or wood raw materials	50.10	0.55	49.24
Miscellaneous furniture or fixtures	21.47	39.72	38.17

coke (a coal by-product), and beer.

Provisions Facilitating Rate Decreases

The major exception to the general tendency for the act to expedite rail rate increases is the provision dealing with rail contract rates. Such rates had not been authorized until the ICC issued a policy statement in 1978 declaring that they would no longer be automatically rejected. The Staggers Rail Act formally authorizes railroads "to enter into a contract with one or more purchasers of rail services to provide specified services under specified rates and conditions" provided the contracts meet certain requirements. Some of the railroad contract requirements are that it will not (a) unduly impair the ability of the contracting carrier to meet its common carrier obligations, (b) harm a particular port due to unreasonable discrimination against the port resulting from the contract, and (c) unreasonably discriminate against shippers of agricultural commodities (including forest products and paper) due to a carrier's refusal to enter into a contract with them for the transportation of the same commodity under conditions similar to the proposed contract if the shippers are ready, willing, and able to enter into such a contract. Obviously, contracts between railroads and shippers generally should result in a combination of lower rates, better service through the dedication of equipment to perform the contract, better ability to plan the use of freight cars, and higher earnings to the railroads from the economies achieved.

The following list (from Rail Services Planning of the ICC, September 19, 1980) gives the commodities and services involved in rail contract rates that had been filed with the ICC prior to the Staggers Rail Act:

1. Reduction of empty movement of multilevel flatcars assigned to transport set-up motor vehicles;
2. Freight of all kinds--trailer on flatcar (TOFC);
3. Mineral wool--assured car supply and service standards;
4. Sheet steel--annual volume rates with guaranteed car supply;
5. Coke--95 percent of tonnage with allowances for late shipments;
6. Cement--annual volume in shipper-owned cars;
7. Corn--soybeans for export (trainload rates);
8. Import steel wire, cable--guaranteed car supply;
9. Concrete pipe or fittings--TOFC; and
10. Wheat--trainloads, annual volume, and joint line service.

Since the passage of the Staggers Rail Act, only one additional contract has been filed with the ICC. The commodities covered by contract rates thus far range from bulk commodities such as coke, wheat, and corn to manufactured items such as motor vehicles. Table 3 (2) provides rail market share data for those commodities, covered by contract rates, that are included in the 1972 Census of Transportation. As shown for some commodities (e.g., coke), railroads already have a very high market share and the contract rates may be viewed as an attempt by railroads to solidify their market position. For the other commodities, such as mineral wool, cement, and steel wire, rail market shares are below 30 percent and the contracts appear to be attempts by railroads to secure traffic gains from motor carriers or private trucks.

To the extent that the Staggers Rail Act facilitates rail contract rates motivated by a railroad effort to secure competitive traffic gains, there could be some intermodal shifts from truck to rail. The major unanswered question, then, is the extent to which railroads will use contract rates to compete aggressively with motor carriers to secure traffic gains. One caution is that the Staggers Rail Act clearly states that antitrust laws still apply to railroad-shipper contracts. As such, there is some reluctance by railroads to enter into some contracts that cover highly competitive products. The extent to which this provision will limit contract rates is highly speculative.

Although of less importance than the contract rate provision, the provision of the act that concerns rate bureaus may indirectly expedite a specific type of rate reduction. The act prohibits rate bureaus from permitting a rail carrier "to discuss, to participate in agreements related to, or to vote on single line rates proposed by another carrier." The only exception to this prohibition concerns general rate increases and broad tariff changes if, in such circumstances, the ICC determines that enforcement of the prohibition is not feasible.

If the prohibition leads to an increase in which such rates are independently determined, there exists a potential for competitively inspired rate reductions in certain circumstances. For example, under present rate bureau control, all available railroad routes between two points have the same rates for the movement of a given quantity of a particular commodity, regardless of the characteristics of the route (i.e., traffic density, length of route, and physical terrain) that affect the cost of providing transportation. If rates were independently set, then perhaps carriers with an advantageous route between two points would lower rates to reflect the available cost advantage. The rate decreases may be competitively inspired and result in traffic shifts from truck to rail.

The act also gives the ICC authority to exempt a rail transaction or service on determination that it is either of limited scope or is not needed to protect shippers from the abuse of market power. Such a transaction or service, it is assumed, would involve the transportation of non-market-dominant

Table 3. Rail market share of commodities covered in contract rates.

Commodity	Share (%)		
	Rail	For-Hire Motor Carrier	Private Truck
Mineral wool	26.02	58.89	14.77
Sheet steel	41.98	48.07	3.52
Coke	73.03	15.48	11.10
Cement	20.45	49.67	23.02
Steel wire, cable	16.99	61.50	18.21

traffic as defined by the act. Other provisions of the act already provide the railroads with the opportunity to set any rate they desire for such traffic; thus, the additional exemption authority given to the ICC will not provide railroads with any more pricing flexibility. However, the exemption of traffic from regulation will result in the removal of its antitrust immunity. This may result in more rate flexibility, stemming from removal of rate bureau participation, than would occur with the granting of rate freedom without the removal of antitrust immunity. However, speculations about the intermodal competitive consequences of the exemption provision are very difficult since the type of exemptions that the ICC will pursue is not apparent.

It is not anticipated, however, that the combined effect of these provisions will offset the tendency of the act to facilitate rate increases rather than decreases. As a result, the major consequences of the act will not be to generate shifts in traffic from truck to rail.

INTERNAL TRUCKING EFFECTS

The objectives of the Motor Carrier Act, particularly as they differ from those underlying the railroad legislation, significantly condition the types of responses that may be expected from the industry. The central theme was the substantial substitution of competitive market forces for mandatory rules of regulation. The expected payoff from this reorientation was generally lower rates arising from increased static efficiency from elimination of operating restrictions, from enhanced dynamic competitive pressures bringing lower costs, and from more competitive pricing associated with the limitations on rate bureaus. These gains were to be achieved from provisions dealing with entry control and rates that help small shippers and are mindful of energy goals.

In speculating about the potential effects of the trucking legislation, the industry's several segments must be separately considered. The regular-route general-commodity carriers provide both less-than-truckload (LTL) and truckload (TL) services. Some of their TL services are closely integrated with LTL operations while others are conducted quite independently through subsidiaries. The latter overlap closely with (and are a part of) the TL services of the irregular-route special-commodity carriers. The contract carriers overlap with both the irregular-route special-commodity services and with private carrier operations. Another quasi-segment is composed of the independent owner-operators, some of whom specialize in exempt agricultural product carriage with incidental leasing to certificated operators while others are more fully committed to leasing. Through leasing, they are particularly identified with the irregular-route carriers and with the TL subsidiaries of the regular-route carriers.

Entry Effects

The entry provisions of the Motor Carrier Act include those that produce a general relaxation of entry requirements as well as those that deal with specific aspects of entry control associated with operating restrictions. The broad relaxation is also accompanied by provisions that permit some new entry with only a fitness test and that broaden the agricultural exemption. These entry control provisions are designed to improve operating efficiency by enhancing vehicle use through more favorable load factors that are a function of the share of vehicle miles operated under load and the extent to which the full capacity of the vehicle is then used. A significant determinant of this performance measure is the extent that empty backhauls are problems. It is significant for purposes of this evaluation to recognize that efficiency gains from eliminating empty backhauls depend strictly on the logistical requirement of matched empty movements in opposite directions in substitutable vehicles. The entry provisions may also trigger dynamic structural changes in markets from new entrants and the introduction of additional capacity. These dynamic forces may also have load factor implications that alter intermodal competitive relations.

Speculation about potential impacts of this act on intermodal competition requires consideration of responses within the various industry segments and the associated intersegment effects. The LTL component of the regular-route carriers' operations, which is intimately associated with complex networks and terminal nodes, is not relevant for intermodal consideration except as it affects integration with TL services. According to available data, these integrated LTL-TL services enjoy a load factor of about 90 (which approaches a practical maximum). These data indicate a load factor for the regular-route carriers of about 85 (3). If the irregular-route special divisions realize a load factor comparable to that indicated for the irregular-route carriers (about 70), the integrated LTL-TL factor would approach 90. This favorable performance is due to the benefits of integration and to the apparent elimination of operating restrictions over the years by purchase and certificate modifications. The load factor ceiling of around 90 is attributable particularly to structural factors involving the overall balance of traffic flows to and from particular markets and to operating heuristics that require repositioning vehicles for service reasons. According to these indications, there is little prospect for efficiency improvements in the TL element of the integrated services of the regular-route carriers.

Efficiency gains (unreflected in load factors) arising from the elimination of operating circuity mandated by the act may be possible. However, this restriction has been substantially eliminated and further gains from this source are estimated to be modest according to a recent study (4). The study also foresaw modest efficiency gains from the mandated investigation and elimination of restrictions on a case-by-case basis, including commodities, intermediate points, and backhauls. These findings are confirmed by the relatively and absolutely high load factors realized by the regular-route carriers in their integrated TL-LTL operations.

Since these TL operations are closely tied to the terminal nodes and associated network of LTL services, minimum market invasion under the relaxed entry rules may be expected. There may, of course, be some entrance into new markets that can be served with an existing terminal system and, in the less likely case, where the opportunities appear great enough to warrant network extension with a new terminal. Such moves, however, are apt to reduce load factors in the entered market. The case for

the specialized TL operations of these carriers is appropriately considered along with those of the irregular-route special-commodity carriers since they essentially fit into this category.

The load factors of these carriers is much less favorable, in the vicinity of 70 to 75, according to available data (3). The opportunity for increasing this performance nevertheless appears to be slim. The trucking industry is generally regarded as highly competitive. The entry policy recently pursued by the ICC has done much to round out two-way operations and could hardly be more liberal under the new act.

These specialized operators are not involved significantly in commodity authority or intermediate point problems. They have been involved in the circuity problem only in connection with the gateway restrictions where liberalizing action has already been taken by the ICC. Significant efficiency improvement appears to be unlikely.

According to the foregoing indications, the entry provisions of the act will not have much impact on load factors and vehicle use of the irregular-route special-commodity carriers, although further consideration of this potential is required in connection with their association with independent owner-operators.

These observations should apply equally to the specialized (nonintegrated) TL business of the regular-route common carriers. The efficiency opportunities from trade-offs between these operators and the irregular-route carriers depend on the fundamental logistical requirement of opposite-direction empty hauls that are homogeneous with respect to vehicle type and commodity availability. But with the minor potential for improved vehicle use (and load factors) for regular-route carriers from the backhaul factor and the liberal backhaul authorizations accorded to the irregular-route carriers, the efficiency opportunities do not appear to be promising. The regular-route carrier integrated TL business is characterized by less regular and heavy volume traffic than the irregular-route carriers typically haul. Furthermore, they would not have the benefit of the integrated LTL traffic base to permit successful invasion.

There are reverse indications for the impact of the regulation on the private carriers and, in turn, on the other trucking segments. On the one hand, private carriers will be able to obtain operating authority within the limits of the "Toto" decision (Toto Purchasing and Supply Co., Inc., Common Carrier Application, March 10, 1978). With a captive traffic base, they will have the opportunity for load factor improvements largely at the expense of common carrier load factors. While this trade-off may be neutral or even beneficial for the system as a whole, it cannot protect common carrier customers from potentially adverse pricing effects. The exception would be in the logistical foundation case of opposite-direction homogeneous empty hauls, where the system and common carrier customers would gain. Such opportunities appear to be limited, however, in view of the liberal backhaul grants to the irregular-route carriers and the high load factors and limited backhaul potential gains for the regular-route carriers. However, marginal changes in the private carriage industry could have large impacts on common carriers, since the former is very large compared with common carriers.

On the other hand, the act may encourage some private carrier traffic to return to the common carriers. While this would apparently be minor, efficiency gains from improved common carrier vehicle use and competitive price reductions could result, as suggested in the subsequent pricing discussion. But empirical evidence indicates that most private carriage is undertaken for service, rather than pricing, reasons (5).

It appears that, on balance, the legislative impact on private carriers and thus on the regulated sector of the industry and intermodal competition will be modest.

In combination with the ICC's new policy with respect to dual authority, the statutory invalidation of the "rule of 8" will provide special advantages to contract carriers. In view of the limited common carrier effects that have been described, there may be a real gain relative to the common carriers. With their generally heavy loadings and long hauls, this may intensify intermodal competition (6). The contract carriers will probably blend in with the irregular-route common carriers and realize the limited static efficiency effects that were described for that segment.

The independent owner-operators do not constitute a true "segment" to correspond to the irregularand regular-route common carriers. This element overlaps these regulated segments by leasing capacity to them. But it also embraces the exempt component that specializes in hauling agricultural products. These owner-operators were given special consideration in the act and they also may be affected by the more generalized provisions that liberalize entry. The basic question is the impact of the changed regulation on their relation to the rest of the trucking industry and thus on its competition with railroads.

The special provisions responded to the general expectation that exempt haulers frequently return empty and hence have very poor load factors, thus contributing to economic waste and to the operator's financial instability. The primary provisions of interest are the fitness-only test for processed food and fertilizer and the extension of the agricultural exemption to cover feed, seed, and plants moving to agricultural sites or businesses. Statutory and other qualifications limit the effectiveness of these provisions and their implications for intermodal competition. The fitness-only test for processed food and fertilizer applies only when the vehicle owner is the driver, and these commodities cannot constitute more than 50 percent of the owner-operator's annual volume. Furthermore, recently available data indicate that the exempt carrier component of owner-operators does not have unusually low load factors but reaches the 70-75 range that characterizes irregular-route and contract carriers. Return hauls are associated primarily with leasing of vehicles to the irregular-route special-commodity carriers. While vehicle use gains may be modest, there may be pricing implications (discussed later) from the fitness-only and exemption provisions.

Rate Effects

The primary rate provisions are (a) the zone of reasonableness that permits uncontested increases and decreases of 10 percent annually (with qualifications) and (b) the limitation on rate bureau powers. The mandatory prescription of joint rates between truckers with barge lines appears to have limited implications for intermodal competition.

The preceding discussion indicated that the prospects for substantial efficiency advances from improved vehicle use are modest at best, providing little basis for rate reductions and increased competitiveness. Consideration must be given, however, to the pricing effects of dynamic competitive pressures in combination with the weakened rate bureau role.

The regular-route general-commodity carriers are most likely to reflect such pricing pressures. There is evidence, however, that there is significant price competition in the integrated TL component of this segment. Independent actions account for 43 percent of the total actions of the rate bureaus serving these carriers. Some 80 percent of these independent actions apply to TL traffic (7). While this indicates substantial current price competition in this intermodal area, pressures are apt to increase with the curtailment of rate bureau activity.

With TL-LTL integration, potential LTL rate movements have uncertain implications for TL rates. Rates for the smallest shipment sizes are allegedly held too low by regulations and are accordingly apt to increase. On the other hand, there is reputedly little active price competition in the LTL component, which suggests reductions in these rates and thus pressure for countervailing increases in the TL rates.

As previously indicated, the rates of the irregular-route special-commodity carriers are generally regarded as competitive. However, the new owner-operator freedom to carry processed food, fertilizer, feed, and seed may enhance price competition to the extent that this track is more profitable than leasing. However, there are severe limitations on the freedom of transporting processed food and fertilizer. Furthermore, feed and seed transportation to agricultural sites and businesses is not a likely area of intermodal competition.

Private carrier gains outlined previously may add competitive pricing pressures. In summary, however, pricing effects of the act relevant for intermodal competition appear limited. The discernible effects are apt to result in reductions that encourage the diversion of traffic from rail to truck. However, the ultimate result, to be considered later, depends on the types of commodities affected and the sensitivity of traffic allocations of these commodities to changes in intermodal rate relations.

TOFC AS A COMPETITIVE FORCE

Specific provisions of the rail and truck acts may encourage TOFC development and thus have an impact on intermodal competition. The Motor Carrier Act eliminates the requirement that a trucker have operating authority to serve ramp points in order to use piggyback. The general exemption authority of the ICC granted in the Staggers Rail Act has potential implications for TOFC as an intermodal competitive force. The ICC has exempted from regulation the rail and truck services provided by railroads in connection with TOFC movements that would enhance its competitive potential [Ex Parte 230, Sub. 5, Improvement of TOFC/COFC Regulation (8)]. Furthermore, the fast growth of TOFC in Canada has been attributed previously to greater pricing flexibility and not to intermodal ownership as commonly credited (9). The two statutes together offer greater trucking freedom. The rail exemption and greater pricing flexibility should thus have a stimulating influence on TOFC as a competitive force.

CONCLUSIONS

The Motor Carrier Act will probably contribute only minimally to improved vehicle use and associated operating efficiency and thus will do little to strengthen the motor carriers' competitive position. However, dynamic effects of increased competition from liberalized entry and greater emphasis on independent pricing will exert pressure for rate decreases and increase the competitive strength of the motor carriers. The overall effect may be some rather modest diversion of traffic from rail to truck.

There is little reason to expect any offsetting effects from the Staggers Rail Act due to the greater rate flexibility it provides. Given the revenue needs of the railroads and the context and objectives of the act, rate increases will almost certainly predominate over decreases because of profit-maximizing freedom, elimination of rates below cost, and surcharges. The Staggers Rail Act has little implication for costs and service performance. Furthermore, any efficiency advances realized will probably be absorbed primarily in profit improvement rather than be applied to rate decreases.

The contract rate provision may be more significant competitively than the pricing flexibility provisions. Some of the contracts filed thus far (prior to the act) appear to be competitively motivated. With the other motives apparent in many of these contracts, however, it is unlikely they can offset the price-increasing emphasis of the statute and the less favorable competitive position.

With TOFC exempted from regulation (including associated rail-owned trucking operations), optimal conditions have been established for its emergence as a competitor to both boxcar and straight-truck service. In fact, this potential development may represent the major effect on intermodal competitive relations. However, crediting the Staggers Rail Act with this possible effect is questionable, since it is quite possible that the ICC could have (and perhaps would have) exempted TOFC under the exemption provision of the Rail Revitalization and Regulatory Reform Act of 1976.

Excluding the uncertainty regarding the TOFC exemption and its possible competitive impact, the two acts together will barely change the intermodal competitive situation. The effect on relative rail-truck prices appears to be minimal and the influence of this variable on modal choice is, in any case, questionable (10-12). The railroads' competitive position is dictated primarily by service problems stemming from inherently complex production operations. The Staggers Rail Act may, however, provide the railroads with revenue relief that will ultimately assist in solving the service problem and thus, in the long run, affect intermodal competition.

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N.B. A discussion of this paper and that of David S. Paxson, which follows, begins on page 39.

Potential Impact of Motor Carrier Act of 1980 on Railroad Industry: An Analysis

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The Motor Carrier Act of 1980, which became effective July 1, 1980, will change the structure, costs, and operations of the motor carrier industry. These changes will have an effect on the competitiveness of the trucking industry vis-à-vis the railroad industry. This paper analyzes the changes that may result from the legislation and evaluates how these changes may affect the rail industry. At issue is whether the act will result in the $8 billion reduction in truck rates that proponents of the bill have said will occur. This analysis suggests that the total rate reduction will be more on the order of $300 million-$500 million at most. This analysis shows that, although the Motor Carrier Act of 1980 will change the trucking industry and its competitiveness with railroads, this change will be relatively small, and certainly not of the magnitude that has been suggested by supporters of the bill. Specifically, the analysis suggests that (a) the Motor Carrier Act substantially deregulates the motor carrier industry; (b) implementation and interpretation of the act will likely be such that the act will be as deregulatory as possible; (c) the rail competitive truckload sector is already substantially competitive, but there are still some areas where deregulation could increase competitiveness, causing lower truck rates; (d) the extent to which some truck rates may drop depends on the degree deregulation decreases union bargaining power (it is likely that this power will be substantially reduced); and (e) the relative rail-competitiveness of the regulatory subgroups of the trucking industry may change (private and contract carriers may become more competitive, while common carriers become less competitive; however, the net competitiveness of the trucking industry with rail should increase only slightly). The main point is that the change in truck competitiveness with rail that will be brought about by the Motor Carrier Act will not be severe, both in terms of potential truck rate decreases and of potential diversion.

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In order to assess the impact of the bill, three main questions, which this paper addresses, must be answered:

1. To what extent does the Motor Carrier Act of 1980 deregulate the trucking industry?
2. How will less regulation affect the operations and costs of the intercity trucking industry?
3. What is the net effect of the changes brought about by the act on intercity freight competition?

This analysis shows that, although the Motor Carrier Act of 1980 will change the trucking industry and its competitiveness with railroads, this change will be relatively small--and certainly not of the magnitude that has been suggested by supporters of the bill. Specifically, the analysis suggests that

1. The Motor Carrier Act of 1980 substantially deregulates the motor carrier industry.
2. Implementation and interpretation of the act by the Interstate Commerce Commission (ICC) will likely be such that the act will be as deregulatory as possible.
3. The rail-competitive truckload sector is already substantially competitive, but there are still some areas where deregulation could increase competitiveness, causing lower truck rates.
4. Excess profits and management inefficiencies appear to be small in the truckload sector.
5. There is little empty mileage in intercity trucking that will be eliminated by deregulation.
6. Those areas where high costs exist in the truckload sector are those where the drivers are union members.
7. The extent to which some truck rates may drop depends on the degree deregulation decreases union bargaining power. It is likely that this power will be substantially reduced.
8. The relative rail-competitiveness of the regulatory subgroups of the trucking industry may change. Private and contract carriers may become more competitive, while common carriers become less competitive. However, the net competitiveness of the trucking industry with rail should increase only slightly.

Overall, the changes in the trucking industry brought by the act should result in a decrease in average truck rates by no more than 2-3 percent. However, some specific commodities may experience