

of the options available to the other carriers to ease the effects of the restrictions.

This paper considers only the direct effects of operating authority restrictions on operating efficiency; it does not consider the indirect effects on the structure of the industry or on rate and service competition resulting from the entry constraints imposed by restrictions on operating authority.

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The views and conclusions stated here are ours and should not be interpreted as representing the official policies of the Federal Energy Administration.

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Analysis of Rail-Water Price Competition

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The pricing debate between the water carriers and the railroads is examined. Water carriers assert that railroads discriminate against them in pricing, and railroads assert that they price in a manner that will permit them to hold on to traffic that would otherwise be lost to their unregu-

lated competitors. Both assert that their pricing practices benefit society. Competitive rail pricing practices and their effects on water carriers, shippers, railroads, and the general public are discussed.

Representatives of the water-carrier industry have argued that railroads discriminate against them in pricing practices, to the detriment not only of water carriers but of the general public as well (1). They assert that railroads practice what is known as "sharpshooting"—charging a lower rate for a freight movement in a market that faces water competition than for a similar movement in a market that does not face such competition. Railroads, the water carriers say, also practice price squeezing—charging higher rates for the rail portion of a rail-water freight movement than for a competing all-rail route. The railroads respond that, in the first case, they are only lowering rates to hold on to traffic and meet competition. In the second case, they are attempting to prevent loss of traffic to water carriers who can attract the traffic primarily because of their subsidized status. This paper examines who is benefited and who is hurt by such railroad pricing practices.

The parties affected by restriction or encouragement of these practices are (a) shippers who have access to a water route as an alternative to a rail route, (b) shippers who have no water alternative, (c) investors in railroads, (d) investors in water carriers, and (e) the general public. The analysis given in this paper indicates that sharpshooting results in lower transportation cost to shippers and to the general public and leaves only water carriers worse off. Determining the effects of price squeezing is more difficult. If waterway subsidies are taken as given (with the economic inefficiency that implies), an optimal system of price squeezing can result in a net reduction to society of transportation costs. If railroads lower rates to shippers who have access to a water alternative and raise rates on traffic not subject to diversion until the resulting rate structure produces a competitive rate of return, price squeezing simply results in a transfer payment from shippers of water-competitive traffic to shippers of non-water-competitive traffic.

A railroad's ability to respond to water competition is constrained by those sections of the Interstate Commerce Act prohibiting undue discrimination or preference. The constraints these sections impose on rail pricing adjustments can result in railroads losing traffic to water carriers when the water-carrier rate is above the rail variable cost of providing the service. In such a situation the total transportation cost to society rises by an amount equal to the difference between rail variable cost and the water-carrier rate.

If water competition results in a reduction in earnings for the railroads below competitive levels, there is a transfer of revenue from railroad investors to shippers. If it results in a government subsidy to railroads, there is a transfer of revenue from society to rail shippers equal to the reduction in shipping rates, plus a loss equal to the administrative costs of providing the subsidy.

Recent experience in the Northeast suggests that railroad main lines will generally continue to operate whether they are financed privately or by subsidy. Under such conditions, transportation costs to society could be minimized by imposing user charges on water carriers equal to the costs of maintaining the waterways. Such a program would minimize the total public cost of transportation and would shift the costs of waterway maintenance from taxpayers to those who benefit directly from waterway movements.

PRICING OUTPUT OF A REGULATED FIRM

The simplest firm to regulate is one that produces a single output product by using inputs that can be acquired discretely with changes in output. When such complete

divisibility of inputs exists, all costs of production are said to be variable with output (2) and the price that results in most efficient output levels is the price that covers all costs of production. If inputs can be purchased in quantities that vary with output, output can be produced at a constant cost per unit. The regulator should normally require a single price for all buyers; that price should be set at a level that will ensure a competitive rate of return to the regulated firm.

The only reason to charge different prices to different classes of customers would be to cross subsidize among groups of buyers. Some regulatory bodies believe that their mandate includes a requirement to cross subsidize to achieve social objectives (3). Under such conditions, one class of buyers would pay more than the cost of the output, another class less. Whether this results in a greater or smaller output depends on the elasticity of demand in each market. The cost of production per unit is the same for each unit produced. The effect on those paying the higher rate is the same as if an excise tax were imposed, and the result on those paying the lower price is the same as if a subsidy were provided. The resulting redistribution is a result of conscious social planning and is as efficient or as inefficient as any other reallocation of resources that uses an excise tax and subsidy approach. It normally results, however, in a non-pareto-optimal distribution of resources (by which is meant a distribution that is economically inefficient).

The problem becomes more complex when a single, indivisible investment is required to produce a variable number of units of output. Railroad investment in track and roadbed is such an investment. The investment cost does not vary proportionately with the number of cars moving over the track. In this instance, it cannot be said that a single price for all users will generally result in the most efficient utilization of the investment. In fact, a single price to all users will result in the most efficient use of the resource only in the limiting case in which the facility is fully utilized at that price (4, 5). The argument that subsidy is preferable to pricing at other than prices that reflect the marginal cost of each individual output has been refuted by Baumol and Bradford (6, p. 265). When the production process is complicated by requirements for indivisible, long-lived capital, imposing different prices on different classes of users leaves society better off than does imposing a single price because, as output increases, fixed inputs become more fully utilized and cost per unit of output falls.

For example, a firm must buy a machine that can produce 10 to 100 output units/week and wears out in 52 weeks regardless of the number of units produced. The machine costs \$5200. (For simplicity, capital costs are included in the cost of the machine.) Other raw materials and labor can be precisely tailored to the weekly output; they cost \$1/unit produced. To cover all costs, the firm must recover its \$5200 investment plus \$1/unit to cover raw material and labor costs. The capital investment is, for any intermediate period, a fixed cost, and the raw material and labor cost is a variable cost. If 100 units/week are sold at \$2/unit, total cost per unit will be minimized and the firm will earn a fair return.

Suppose, however, that 50 customers would be willing to pay \$3 or \$4 rather than do without the firm's output and that others have access to substitute products and would forego purchasing the output if the price rose above \$1.50/unit. Should the regulator permit different classes of customers to be charged different rates? The answer is yes because all parties are better off if the monopolist can sell the product at different rates. If only 50 units/week are sold, the cost of production is \$3/unit. If an additional 50 buyers can be found who will buy the

output at \$1.50, then the first 50 buyers need only pay \$2.50/unit. In the absence of regulation, if the producer were a true monopoly he or she could charge the lower price to those who would only pay the lower price and the \$3 or higher price to those who would be willing to pay \$3 or more. The efficient regulator would permit only sufficient discrimination to minimize costs to each class of buyers consistent with a competitive rate of return for the firm. The regulator should prevent discrimination that would result only in an overall monopoly rate of return. The precise amount of permissible price discrimination is a function of the capacity of the physical plant and of differing elasticities of demand of different groups of potential purchasers.

When a railroad provides some services that are substitutes for water-carrier services and some that are not, a multipart pricing structure can be used to attain the permitted rate of return. The reasoning is similar to that employed by Williamson (4) and Stigler (7) in which, for a given scale of plant, a single price would not cover the costs of providing service. As long as a reasonable rate of return is not exceeded, those with access to alternative transportation service should be charged a rate equal to or greater than the short-run marginal cost of providing service that maximizes the contribution to fixed cost. Those without alternatives, for whom the demand for service is presumably more inelastic, should be charged whatever rate (presumably above the average total cost) maximizes the total contribution to fixed cost. More precisely, the rates should be set equal to the reciprocal of the respective price elasticities of demand of each class of customers. Such a pricing structure could conceivably yield returns above those permitted by the regulator. In such a case, the two rates would somehow have to be reduced to yield no more than the permitted return. The downward adjustment that would minimize total societal transportation cost depends on the elasticity of demand for rail service of each class of customers and on any equity factors the regulator takes into consideration.

SHARPSHOOTING

Railroads operate trains that move only when there is traffic but pay property tax, capital costs, and maintenance on right-of-way regardless of whether or not the trains move. Part of the cost of maintaining the right-of-way is related to use, but a large part of the costs continue as a function of time, independent of use. Thus, the more traffic moves over the railroad at a rate above variable costs, the lower the average level of rates must be to cover fixed costs and provide for a given rate of return.

Variable costs are defined here as those costs that vary directly with traffic, including the capital and depreciation cost of equipment. The Interstate Commerce Commission (ICC) uses the term full cost to include variable cost plus a pro rata allocation of the fixed costs of operating a railroad. [ICC is currently under mandate from Congress to define variable costs (Pub. L. 94-210, The Railroad Revitalization and Regulatory Reform Act of 1976).] The allocation of fixed costs is done to examine changes in the amount remaining to be paid by different classes of shippers given a change in the amount paid by one class of shippers. In practice, there is no nonarbitrary way to make the allocation. Average full cost is thus defined by convention, and it does not reflect the costs uniquely or unalterably associated with producing a unit of output.

In those markets in which railroads are faced with water competition, shippers who can choose to ship by either water or rail will not normally be willing to pay as high a rate as shippers who do not have access to

waterways (all other things being equal). Shippers with access to water competition are analogous to those buyers in the previous example who are only willing to pay \$1.50 for the product. They are not willing to pay more because the availability of a substitute product (water transport) removes the incentive for them to pay rates higher than water-carrier rates to secure rail services, except to the extent that service differences warrant a premium. Other shippers, either because their products cannot move by water or because they do not have access to a waterway, are willing to pay a higher price for rail service.

Assume, for example, that two commodities—coal and wood doors—are moving over a rail line that faces water competition. The number of megagrams of each commodity moving between the two points is the same and each has the same handling costs. If each commodity is charged the same rate per 45 kg (hundredweight), each commodity will contribute one-half of the fixed costs. Assume, however, that doors, unlike coal, cannot move by water. If the railroad tries to charge a rate on coal higher than the water rate, the coal traffic will move by water rather than by rail. Even if the coal shipper is charged a rate that is equal to only a small part of the fixed costs, the door shipper is better off if the coal moves by rail. Otherwise, the rates charged the door shipper would have to be high enough to cover all the fixed costs of operating the line. Alternatively, the short-fall could be made up by subsidy by railroad investors or by the government. In either case, average rate plus subsidy will result in a higher public cost of transportation than would result if sharpshooting were permitted.

The coal shipper is better off because, as a result of competition, he or she gets a rate by rail that is as low as or lower than rates available by water. Water carriers have no fixed costs of right-of-way because waterways are provided free by nature or by the government. If they lose traffic they do not have to keep up a right-of-way but can quickly disinvest or seek other traffic in that or any other market. If they cannot meet the rail rate, they simply lose that business and the profits they would have earned had they carried it. The policy yielding the lowest societal transportation cost is to allow a railroad to compete directly with the water carriers. Sharpshooting by a regulated railroad is nothing more than trying to cover the costs of the indivisible investment to generate the lowest possible average level of rates consistent with the competition the railroad faces. (Since fixed costs are also largely common costs, there is no way to argue how they should be covered. The only measure of adequacy of rates is whether total return covers the costs of production.)

ICC regulation of railroad rates of return was presumably established to assure that practices such as sharpshooting result in a minimum level of rates to all customers consistent with no more than a fair rate of return. Part 1, Section 4 of the Interstate Commerce Act authorizes railroads to reduce rates to meet competition but prohibits railroads who once lowered rates to meet water competition from raising them on grounds that such competition no longer exists. The Railroad Revitalization and Regulatory Reform Act of 1976 further encourages rail pricing flexibility.

To the extent that waterway improvements are subsidized as an increasing function of use, the government subsidy for waterways declines with the decline in waterway use brought about by sharpshooting. This reduction in subsidy is in addition to the reduction in the aggregate freight bill and is an added benefit to the public.

PRICE SQUEEZING

Analysis of railroad price squeezing is more complex

than analysis of sharpshooting. Changes in the currently imposed set of subsidy and tax programs affecting the two modes can cause changes in the societal costs and benefits associated with any particular railroad pricing policy. Water carriers now benefit from free use of the water right-of-way. Railroads must finance their right-of-way themselves. One can reasonably assume that (a) railroads will continue to operate, by government subsidy if necessary; (b) railroad companies will earn their market cost of capital in the long run or impose a loss on either their investors or the government equal to the difference between the market cost of capital and what they actually earn; and (c) because of the administrative costs of collecting taxes, budgeting, and making subsidy expenditures, a dollar of subsidy costs the public considerably more than a dollar increase in cartage charges. It is not clear whether waterway charges will be imposed in the future or what form they will take. In this analysis the first assumption will be that waterways continue to be subsidized. Then the effect of imposing waterway user charges will be examined.

If railroads were earning returns above their opportunity cost of capital, a marginal diversion of traffic from railroads to waterways would not increase the total subsidy. Instead it would lower transportation costs to society by the amount of the reduction in the total freight bill. As a practical matter, few railroads are earning rates of return equal to the market cost of capital (8). A digression on the long-term implications of less than market rates of return will serve to clarify the subsequent discussion.

Railroad assets are long-lived and of little value in any other business activity. Railroads thus continue to operate for decades without earning a market rate of return on their investment, simply to recoup some of the money already invested in the existing physical stock of railroad capital. At some point, however, usually as the physical plant falls apart, it becomes clear that investors will not invest funds in new railroad capital because the expected return on investment is inadequate. The long gestation period provides no basis for assuming that railroads require a lower return on equity than do other firms.

Historically, it was possible for a railroad to go through bankruptcy and wipe out part of its debt. The railroad would then issue new debt to a new set of optimistic investors in order to secure funds to reinvest in the firm. In spite of past revenue problems and probable future problems, investors bought new securities. The Chicago, Milwaukee, St. Paul and Pacific Railroad Company, for example, was formed as a successor to the bankrupt Chicago, Milwaukee and St. Paul Railroad in January 1928. After going bankrupt again, the company was reorganized in 1945. New capital was raised after both bankruptcies. The Erie Lackawanna has a similar history; it was reorganized in 1895 and again in 1941 and raised new capital after both bankruptcies (9).

Information currently available has adversely affected investor expectations. The bankrupt roads of the Northeast are in such bad condition that they could not cover even their operating expenses, much less service any portion of their debt. The precedent of government subsidy established in the Northeast is likely to replace Section 77 of the Bankruptcy Act as the device used to keep the weaker U.S. railroads operating. The depressingly long lists of widows, orphans, insurance companies, and pension funds holding stock in the bankrupt roads of the Northeast is a reminder that even traditional bankruptcy refinancing has shifted the cost of rail transport from the shippers to that large portion of the general public who are disenfranchised by the bankruptcy. In the future, one can speculate that, following bankruptcy, shippers or the general public, rather than a new set of optimistic investors, will pay the share of

costs of operating and rebuilding the railroads that is not covered by operations. Recent experience indicates that the vast majority of railroad main lines, including most lines where significant water competition exists, will as a matter of national policy be forced to remain in service. If a railroad is earning less than a competitive rate of return, price squeezing can reduce the amount of subsidy the government or investors will be called on to provide and reduce the total societal cost of transportation.

Let us examine who pays what when a railroad earning a competitive rate of return is forced to lower rates in response to water competition. In equilibrium, a railroad earns a competitive rate of return (K). The traffic that can be hauled over a part of a route only by rail is T_r and over the rest of a route by either rail or water is T_w . The traffic moves at rail rates (R_{rr}) and (R_{rw}) respectively. Other non-water-competitive traffic (T_o) moves at rates (R_o). R_{rr} covers variable costs (VC_{rr}) and makes a contribution to general costs (GC_{rr}) (general costs, which here refer to costs that do not vary directly with the specific output and will continue to exist independent of the particular output, in the long run must be covered to attract investment funds needed to rebuild the facility); R_{rw} covers variable costs (VC_{rw}) and makes a contribution to general costs (GC_{rw}); R_o covers variable costs (VC_o) and makes a contribution to general costs (GC_o). Taxes are represented by AC . In long-run equilibrium, the regulator permits rates such that

$$K = VC_{rr} + VC_o + GC_{rr} + GC_{rw} + GC_o - AC \quad (1)$$

As long as some combination of rates results in maintenance of the required K , the mix of rates can be determined by whatever policy the regulator chooses to impose. Any shortfall in contribution to K in one transport market is made up either by other shippers in other markets through rates that contribute more to GC_o or GC_{rr} , through losses incurred by investors, or through subsidy paid by government.

Assume that a water carrier institutes service on the water portion of a rail-water freight movement at a rate (R_w) below R_{rw} but above VC_{rw} . If the water rate is below rail variable cost, then moving the commodity by water will be less costly to society than allowing the railroad to price squeeze because the reduction in rates paid by the shipper who benefits from the lower rates is greater than the loss in contribution to GC from this source incurred by the railroad. The result is that other rates go up by less than the savings to those shippers who shift to water. Unless the railroad is permitted to price squeeze, it cannot simply lower R_{rw} to R_w but must also make a proportional adjustment in R_{rr} . As a result, to compete by reducing rates the railroad must reduce contribution to GC_{rr} by an amount proportional to the reduction in contribution to GC_{rw} . The railroad will meet the water rate only if the volume of traffic moving over route (T_r) relative to the volume moving over route (T_w) results in a higher contribution to GC_{rw} after water competition is met than if the railroad does not lower rates. If the railroad does not make the adjustment, then the cost to the public of not permitting price squeezing is equal to R_w minus VC_{rw} times the volume of freight involved. If the carrier does make the adjustment, then there is a transfer as higher rates to other shippers make up the revenue shortfall equal to $R_{rr} - R_w$. If the carrier is permitted to price squeeze by lowering rates on the competitive portion of the route to meet competition and leaving rates on other portions of the route unchanged, transportation cost to the public will not increase. There will be a transfer from one group of shippers to another smaller than would have resulted had price squeezing been prohibited.

In the absence of legal constraints, it would be possible for the railroad to (a) lower the rate on the water-competitive portion of the movement from R_{rw} to R_w but leave other rates unchanged (mild price squeezing), (b) lower R_{rw} to R_w but increase the rate on the noncompetitive portion of the movement (R_r) to make up the difference (extreme price squeezing), or (c) lower R_{rw} and lower R_r proportionally (no price squeezing). The first alternative can lead to charges of discrimination or of undue preference and prejudice. Although, under current regulation constraints, meeting competition may be an effective defense against mild price squeezing, it is not a defense against extreme price squeezing. As shown above, the effect of implementing the third alternative is to reduce not only contribution to GC_{rw} but also contribution to GC_r . This leads to a loss in contribution to K greater than the reduction in transportation charges to shippers shifting to water transport and thus to an increase in the total societal cost of transportation.

If mild price squeezing is allowed, the problem does not arise. The only loss in revenue that occurs is the loss resulting from lowering R_{rw} to R_w on the water-competitive portion of the movement to meet the rates of the water carrier. The mild form of price squeezing that results from not reducing rates on the noncompetitive portion of the movement minimizes the total transportation cost to the public. Extreme price squeezing cannot further reduce transportation cost except indirectly by minimizing the probability that a rail subsidy will be needed and thus minimizing the costs to society of administering a subsidy.

The greater the amount of rate adjustment that is required to maintain traditional rate relationships, the greater are the related rates that must be reduced when the R_{rw} rate is lowered. As the quantity of rates to be reduced rises, the possibility that the railroad will give up water-competitive traffic rather than make the rate adjustments necessary to retain it also rises. The larger the required rate adjustment is, the more likely it is that the cost of transportation to society will rise.

WATERWAY SUBSIDIES

Even in the long run, the common cost problem makes it impossible to specify who should pay what share of rail fixed costs. There is no way to determine the effect of shifting the proportion of fixed costs covered by different classes of traffic to efficiency of resource allocation. To the extent that waterways are subsidized as a function of use, the subsidy will rise as traffic is diverted from railroads. If the water subsidy increases, society is worse off because the total cost of transportation is increased. The cost of waterway maintenance is held down to the extent that price squeezing retards the increase in barge traffic. Shippers having access to the water alternative pay a higher rate; other shippers are spared a rate increase. Subsidizers are better off because subsidies to both water and rail are limited.

In some markets, waterways are natural and do not involve significant government investment. In many markets, however, the reason that water carriers can offer lower rates than railroads is that they receive a subsidy in the form of free waterway maintenance and free use of lock facilities. The preceding analysis was predicated on the assumption that either the waterway was natural or the subsidy to the waterway would continue regardless of the level of use and without imposition of user charges on the water carriers. If there were a user charge imposed on water carriers that covered the costs of maintaining and rebuilding each waterway segment, the rates water carriers would have to charge would increase in many markets. Given a

1974 Corps of Engineers annual operation and maintenance figure for shallow-draft waterways of \$155 811 000/year, the necessary increase in water rates would reduce incentive to transship to barges on all but natural waterways. Increased revenue to the railroads would be likely to improve their financial position and reduce both losses to railroad investors and the government subsidy required to maintain the roads. Freight rates would rise on water-competitive traffic. The contribution required from other shippers, however, would decrease. Because the government would probably continue to build and maintain the waterways, there would probably be little or no reduction in the costs of administering waterway subsidies. The cost of collecting user charges, which could be insignificant or considerable depending on the type of charge and method of collection, would represent an increase in transportation cost. Railroad shortfalls made up by government subsidy would fall, reducing costs by the decline in subsidy and the decline in the cost of administering the subsidy. Government expenditures would fall, and the burden of paying for transportation facilities would be shifted onto those who benefit directly from the facilities.

Alternative toll proposals would result in different types of rate adjustments. The general fuel or freight tax will raise operating costs on all waterways by a relatively uniform percentage (although a fuel tax imposes a de facto higher tax on upriver movements because of the increased fuel consumption required in moving against the current). A section toll would increase costs on sections of the waterway system in proportion to the costs of improvements and maintenance on that section. In general, the effect of a section tax on rates for traffic moving longer distances is not likely to differ greatly from the effect of a fuel tax because tolls for high-maintenance areas and those for natural portions of the waterway system will tend to average out. Thus, although some cross subsidy is created by the imposition of a fuel tax on users who only use the natural portions of the waterway system, such inequities may well create fewer allocation problems than might be expected.

The effect of any toll on rates is a function of the profit level of the water carriers and of the elasticity of demand for water-carrier service. Pressure from railroad rates would result in some tolls being absorbed by water carriers. The substantial variation in barge rates over the year, however, makes it very difficult to measure the amount of toll absorption. To the extent that water carriers absorb any part of the user charge, the net federal subsidy to water carriers is reduced and the total cost of transportation to society is reduced by the amount absorbed. If water-carrier rates rise as a result of user charges, less traffic will be diverted from railroads. Given the continued maintenance of both rail and water service, there will be some optimal user charge on waterways that minimizes the total government subsidy to both modes and minimizes the total cost of transportation to the general public.

From the viewpoint of economic efficiency, imposing user charges results in allocation efficiencies as well as minimized government expenditure. Such a pricing mechanism also shifts the cost of the service to those who benefit from it—shippers and the buyers of products shipped—which economists generally consider preferable to the government paying part of the cost of the service offered (6). It is inconsistent, inequitable, and, as shown above, inefficient to finance waterways by government grant and at the same time require private investors to finance railroad right-of-way until bankruptcy prevents further operations.

CONCLUSIONS

Railroads are frequently prevented from raising rates on "captive" traffic to a point where they can earn a reasonable return on total investment on the grounds that such rates would be unreasonably high and therefore unlawful. At the same time, water carriers argue that, whenever a joint water-rail rate would result in a lower rate to the shipper than an all-rail rate, railroads should be compelled to interchange with water carriers on a nondiscriminatory basis. Water carriers raise or lower rates in response to market conditions; railroads are compelled by law to provide service only at published prices. This amounts to forcing a railroad to give traffic to its competitor, who responds to market conditions in a way rail carriers cannot respond and receives subsidies rail carriers do not receive. Permitting railroad sharpshooting and mild price squeezing helps to redress the competitive imbalance between the modes. Imposing user charges further reduces the financial imbalance. User charges and increased rail pricing freedom would lower transportation costs to society and encourage a more equitable distribution of resources within the transportation system.

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Economic Cross Subsidization in Domestic Air Transportation

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This paper presents an analysis of the economic incentives for a particular air carrier to provide air service to a particular point. Economic cross subsidization is discussed as it exists in many industries other than domestic air service. A suggested definition of economic cross subsidization is presented as well as an argument for recognizing this economic concept as primarily one of allocation of revenues rather than as primarily an allocation of accounting costs, which has been the traditional approach. Issues of product definition are also discussed.

There are a variety of proposed legislative measures currently before the Congress designed to reform economic regulation of the domestic airline industry. During the debate over regulatory reform, a central argument offered by the industry in defense of the 1958 Federal Aviation Act and against regulatory reform has been that there is extensive interdependence among air travel markets in the domestic airline industry and that, because of important economic cross subsidization of air routes, many air travel markets cannot stand on their own but must be supported by other markets (1, 2, 3, 4). Deregulation, the argument continues, would

result in "cream-skimming," the collapse of the cross-subsidy system, and wholesale abandonment of service. From the point of view of this paper, the primary significance of this argument is in its assertion that, if existing cross subsidization among the routes of a particular carrier were removed by some external force, that removal would result in wide-scale abandonment by the carrier of points currently served. If such abandonment by carriers is not the result of an external removal of supposed interdependence among markets, then the argument loses its significance and need not be considered an important issue in regulatory reform.

Opponents of regulatory reform have argued that extensive cross subsidization currently exists between and among markets (or points served by particular carriers) and that the removal of cross subsidization would mean an end to profits that are necessary to support marginal service to marginal points served and would thus destroy a national, integrated system of air service. Inherent in this argument is the belief that (a) many of the markets served are not independent markets that can