

Effects of Competition from the Private Sector on the Efficiency of Mass Transit: A Case Study

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ABSTRACT

This study explores the implications of private transit firms competing in markets traditionally served only by a government monopoly. Focusing on the emergence of privately operated subscription buses in an important Chicago rail corridor, the study explores how a shift in riders and resources from the public to the private sector is likely to affect the operating efficiency of transit. Quantitative tools are used to assess the ramifications of competition between public and private transit operators; the findings are used to recommend socially desirable legislation and regulatory change. The divestiture process of the public carrier is modeled using Interstate Commerce Commission cost data and an industry cost-allocation technique. Labor laws, capital replacement policies, and other constraints on divestiture are taken into consideration in estimating the potential long-run savings from public carrier service cutbacks resulting from ridership shifts to the private sector. These estimates are used to demonstrate how a shift in market share from the public to the private sector is likely to affect long-run operating efficiency--measured in terms of average cost per passenger-mile--of transit services in the corridor. The findings have important implications for assessing the future role of the private sector in the urban transit industry.

Until recently mass transit was considered exclusively a responsibility of the public sector. A painful half century of private sector abandonments and bankruptcies had made the idea of competition between government and private operators seem relevant only to the historian. However, with the emergence of privately operated commuter buses in Chicago, Los Angeles, New York, and Washington and the start-up of jitney services in dozens of other cities, there is a growing belief that the private sector may play a significant role in the future of mass transit.

One of the most striking examples of the return of the private sector can be seen in Chicago. A group of subscription bus operators has initiated no-frills transit services between the central city and the suburbs, carrying nearly 5,000 passengers each day. Offering monthly subscriptions at less than half the price of public rail service, the privately operated services have quickly established themselves as an important transportation alternative to dozens of suburban communities.

To the policy analyst the significance of the Chicago subscription buses lies in their ability to help understand the long-range implications of allowing private firms to compete with public transit operators in providing transit service.

In contrast with privately operated services in other cities, appealing primarily to markets served poorly or not at all by public carriers, Chicago's subscription buses have entered into direct competition with a heavily subsidized rail carrier. The controversial new service mode, concentrated almost exclusively in the dense Illinois Central Gulf (ICG) Railroad corridor, operates parallel to rail services subsidized by the regional transportation authority (RTA) and is patronized almost entirely by former commuter railroad passengers.

This study explores some of the implications of private transportation firms competing in markets traditionally served only by a government monopoly. Conclusions are drawn about how increased private sector participation may affect the efficiency of transit systems by focusing on the competitive situation in Chicago's ICG rail corridor. This study is among the first to use quantitative tools to assess the ramifications of this competition for both suppliers and users of transit service, and the findings are used to identify socially desirable legislation and regulatory change (1).

The need for research is exemplified by the controversy created by the subscription bus industry in Chicago. The public sector, which has traditionally exhibited a clear preference for government monopolies to free market competition in urban transit systems, has made frequent accusations against its private sector competitors. It has accused private operators of "skimming the cream" by offering service only at the height of the peak period and being unfair by using nonunion labor or not providing certain amenities and station facilities. Some Chicago public agencies have claimed that the growth of private transit services is only a temporary phenomenon fueled by consumer outrage over 100 percent commuter rail fare increases in 1981. It has been argued that these private services benefit only a few yet make it increasingly difficult for the public sector to provide cost-effective transit service.

The need for research is made clear by past studies that effectively support the market potential of the private sector and enthusiastically call for the deregulation of the transit industry, but do not consider the long-range economic implications of allowing private firms to enter into competition with public operators (2,3).

In situations where the public sector can quickly divest itself of service that becomes unneeded due to advances by the private sector, the prescriptions of these studies are well founded. In such cases, there is not much doubt that increased private sector participation in transit is a socially beneficial trend. But when the public sector has invested heavily in a fixed-guideway transit system, and when divestiture is slowed by policy or law, the desirability of allowing private sector firms to operate service on parallel routes is more difficult to assess.

In such a case, there are a number of important economic considerations that make it necessary to reserve judgment until the issues can be analyzed in more detail. The first of these considerations is that public transportation systems--particularly

fixed-guideway systems--are thought to enjoy powerful economies of density that can best be exploited through monopolistic protection. This suggests, for example, that a 5 percent ridership loss to private operators will increase the per passenger cost of handling the remaining 95 percent even if appropriate service cuts are implemented.

Another consideration is the diseconomies of peaking: highly concentrated demand during peak periods results in higher costs of providing service. This phenomenon is characteristic of transit ridership in Chicago's ICG corridor--more than 80 percent of the trips occur during peak periods from 6:40 to 8:00 a.m. and from 4:20 to 5:40 p.m. Because the private sector can serve to reduce peaking, its presence conceivably can, at least in the long run, reduce the average cost of providing public transit service.

Finally, the issue must be analyzed quantitatively because it cannot be assumed, even in the long run, that public carriers will be able to eliminate the excess capacity that results from ridership losses to the private sector. Railroad service can only be efficiently adjusted in train-size increments (simply shortening trains saves little); management is often unable to respond effectively to small, less-than-train-size losses in ridership. This argument against Chicago's private sector operators has often been cited by commuter rail officials.

Studies of private sector involvement in transit that do not consider these fundamental issues overlook the complexity of the divestiture process for public carriers and blindly welcome the flow of resources to the private sector. Because transit is almost universally regarded as a public utility relied on by an important percentage of the population, a special effort is necessary to avoid such assumptions and to reserve judgment until the effects of competition on efficiency can be thoroughly evaluated.

An appropriate measure for assessing changes in transit efficiency is average cost per passenger-mile, or the mean value of the resources necessary to move one passenger one mile. From an economic perspective, the problem can be defined as follows: Only if the average cost per passenger-mile of a transit system is lower under competition than under a public sector monopoly can it be concluded that competition has a desirable effect on efficiency. In determining this, it is useful to begin by assessing the impacts that competition is likely to have on the publicly operated transit carrier.

In the sections that follow, these issues are examined in the context of the ICG corridor running south from the Chicago Loop. Analyses were conducted under the assumption that the only change occurring, and being evaluated, was the introduction of subscription bus service. Secular trends in ridership, and changes in services of other modes, have been ignored. Thus, the interpretations may not be directly applicable to current policy and operating conditions in this corridor. They should, however, contribute to a *ceteris paribus* evaluation of private sector services in such a situation.

EFFECTS OF COMPETITION ON THE EFFICIENCY OF THE PUBLIC CARRIER

As more passengers are attracted from public to private transit services, fewer resources will be needed to support the public services. Trains can be eliminated, equipment retired or sold, labor furloughed, and administrative expenses trimmed. Ultimately, the question to be answered is whether this

shift in resources from public to private control is in the best interest of the public--if it will lead to a more efficient transit system. This will depend heavily on the ability and willingness of the public carrier to divest itself of unneeded service. In this section a conceptual but realistic divestiture process for regional transportation authority (RTA) services in Chicago's ICG corridor is examined to determine how ridership losses to the private sector could affect RTA operating efficiency.

If, through the divestiture of labor and capital, costs on the public mode cannot be reduced in direct proportion to the shifts to the private sector, then the efficiency of the public carrier will deteriorate. If, on the other hand, costs can be reduced in greater proportion to lost ridership, then efficiency stands to be increased and private competition can be concluded to have a desirable effect on public carrier efficiency.

Because private sector commuter services in Chicago (and most other large cities) are limited to the peak period, their impacts on RTA ridership and costs will be similarly limited. This necessitates estimating RTA commuter rail peak-period costs. For this purpose, the Simpson and Curtin peak-base cost allocation model (private communication from Walter Cherwony, 1982) was used. This model requires data readily available in the 1982 ICG R-1 Annual Report to the Interstate Commerce Commission.

The Simpson and Curtin model allocates costs between peak and base periods based on four parameters: track-miles; peak-period car requirements (or peak car needs); car-miles; and total system revenues. Each of the 73 expenses listed in the R-1 Report is expressed as some linear function of these four parameters. Expenses that are almost entirely fixed, such as "maintenance of highway crossings," are allocated to track-miles--a parameter independent of level of service. Variable expenses, such as "electric power for train operation," are allocated to car-miles, a parameter measuring the level of service in the corridor. Other expenses, such as "equipment maintenance and cleaning," are allocated to peak car needs. A large number of the expenses are allocated to some linear combination of the four parameters.

This model assumes that the size of each expense item will vary in direct proportion to the parameter or parameters to which it is allocated. For example, "maintenance of highway crossings" costs will be incurred in direct proportion to the number of track-miles on the system. Similarly, the cost of "electric power for train operation" will vary directly with the number of car-miles operated on the system.

Using the Simpson and Curtin model, for example, the elimination of one ICG peak period train would enable car-miles to be reduced 6 percent and peak car needs 8.8 percent. In the long run, after disinvestment is complete and all appropriate changes in capital, labor, and administration take place, each expense item allocated to these parameters can be expected to be reduced by an equal percentage.

The public carrier cannot reasonably expect to realize the full amount of the savings projected in this way because there are practical constraints that stand in the way of change. Public transit disinvestment is a complex process: regulatory, institutional, and technical barriers will prevent or delay full recovery of the predictable savings. Labor laws, federal regulation, indivisibilities in assets, and the nonmarketability of capital are common examples of economic factors that stand in the way of efficient divestiture.

To avoid biased estimates of the magnitude of cost reductions from disinvestment, such constrain-

ing factors must be recognized and included in the analysis. This was accomplished by investigating relevant labor law and capital replacement policies, and by discussing the issues involved with public transit officials. Savings in labor-related expenses, for example, are constrained for 6 years because of severance pay arrangements established under the Railway Labor Act. Because of asset depreciation guidelines under the Internal Revenue Service tax code, savings in capital expenses are typically constrained for nearly a decade. Savings in administrative expenses are impossible in many areas because of institutional constraints.

With the Simpson and Curtin model and an understanding of the various constraints on divestiture for each major expense category, it was possible to estimate the potential savings from service reductions. To account for the lengthy lags in realizing many of the reductions in cost (e.g., labor), it was useful to annualize these potential reductions in cost. A 20-year planning horizon and an 8 percent discount rate were assumed to accomplish this (4).

By aggregating the individual expense categories, the following estimates were developed (1):

- Reductions in car-miles will enable long-run expenses to be reduced by \$1.27 per car-mile,
- Reductions in peak car needs will enable long-run expenses to be reduced by \$89,900 per peak car, and
- Reductions in system revenue brought on from private competition will enable long-run expenses to be reduced by 13.874 cents per dollar lost.

These estimates, along with estimates of the reductions in car-miles, peak car needs, and system revenue brought about by ridership shifts to the private sector can be used to estimate the potential reductions in cost on the public mode.

To reflect uncertainties in the ability and willingness of the public carrier to eliminate unneeded service, three scenarios were considered. The first, "complete excess capacity elimination," assumes the public carrier is willing and able to reduce service in direct proportion to ridership losses to the private sector. The second scenario, "partial excess capacity elimination," assumes the public carrier can eliminate service only at half the rate at which ridership is lost to private competitors. In the third scenario it was assumed that no excess capacity is eliminated by the public carrier. Using these three scenarios, conclusions were drawn regarding the effects of ridership shifts to the private sector and related public sector service cutbacks on the efficiency of the public carrier.

For example, consider the case in which 3,600 passengers leave RTA public rail services to use private buses each peak period. Also suppose that the distribution of ridership loss during the peak period along the rail line enables the carrier to eliminate capacity exactly equal to that required to move the lost passengers (scenario 1). In this situation, the RTA could reduce peak car requirements by 34 cars and car-miles by 595,000 per year, and system revenue would fall \$4,212,000 annually. The net expected savings from these reductions can be calculated as follows:

34 peak cars reduced x \$89,000 (annualized savings/peak car reduced) = \$3,056,600/year,
 595,000 car-miles reduced/year x \$1.27 (annualized savings/car-mile reduced) = \$755,650/year,
 \$4,212,000 (revenue loss/year) x (\$0.139 savings/\$1 revenue loss) = \$585,468/year, and
 Total annualized cost savings = \$4,397,718/year.

The private sector, in this case, has made it possible to reduce long-run expenses by \$4,397,718 per year. The annual cost of services in the ICG corridor will drop from approximately \$38,384,000 per year to \$33,986,000.

How is efficiency affected? Before the emergence of private competition, 16 million passengers rode ICG trains annually, with an average trip length of 20.0 miles. Average cost per passenger-mile was, therefore,

$$\begin{aligned} \text{(average cost/passenger-mile)} &= (\$38,484,000 / \\ &16,000,000 \text{ passengers} \times 20.0 \text{ miles per passenger}) \\ &= 11.995\text{¢}. \end{aligned}$$

If 3,600 passengers leave the system in favor of subscription bus service each day, ridership will drop to 14,200,000 annually. This ridership shift will reduce the average length of ride to 19.2 miles per trip (1,p.59). The new postcompetition average cost per passenger-mile is

$$\begin{aligned} \text{(average cost/passenger-mile)} &= (\$33,986,282 / \\ &14,200,000 \text{ passengers} \times 19.2 \text{ miles per passenger}) \\ &= 12.465\text{¢}. \end{aligned}$$

It can be concluded that, in this hypothetical situation, private competition has an adverse effect on the efficiency of the public carrier, increasing total costs by 0.470 cents per passenger-mile.

Figure 1 shows the effects of competition on the efficiency and deficits of RTA rail operations in the corridor. Note that the effects of competition depend on the ability of the public carrier to divest unneeded service.

A significant and surprising finding is that, even under the most optimistic scenario, private competition has an adverse effect on the efficiency of the public carrier. Even if management is able to divest its services in direct proportion to lost demand, average cost per passenger will still rise by slightly more than 0.12 cents per mile for every 1,000 daily riders lost to the private sector. If capacity cannot be perfectly adjusted, the effects are more dramatic. When, for example, only half of excess capacity is eliminated, the average cost per passenger-mile will rise by as much as 0.23 cents for every 1,000 riders lost. If the discount rate is changed from 8 to 12 percent, the general implications, though less profound, were found not to change (1,p.79).

The effects of these ridership shifts on long-term operating deficits are slightly more encouraging. Currently, subscription buses are costing the public carrier approximately \$2,100,000 per year in revenue. If the carrier completely eliminates excess capacity, long-run costs could be reduced by approximately \$2,500,000 per year. Hence, annual deficits could be trimmed by \$400,000 (2 percent). However, if only half the excess capacity is eliminated (scenario 2), deficits will rise by approximately 5 percent (\$850,000 per year).

Chicago's RTA has, thus far, not eliminated excess capacity in the corridor in response to subscription bus competition. In the long run, if no service is reduced, the average cost per passenger-mile will rise from 11.995 cents to 12.82 cents. This loss in revenue will increase deficits approximately \$2,100,000 per year in the long run and has important ramifications for the agency's ability to service the public.

This should not be interpreted as proof that competition from the private sector is undesirable. It merely confirms the fact that public railroad systems enjoy powerful economies of density, a factor

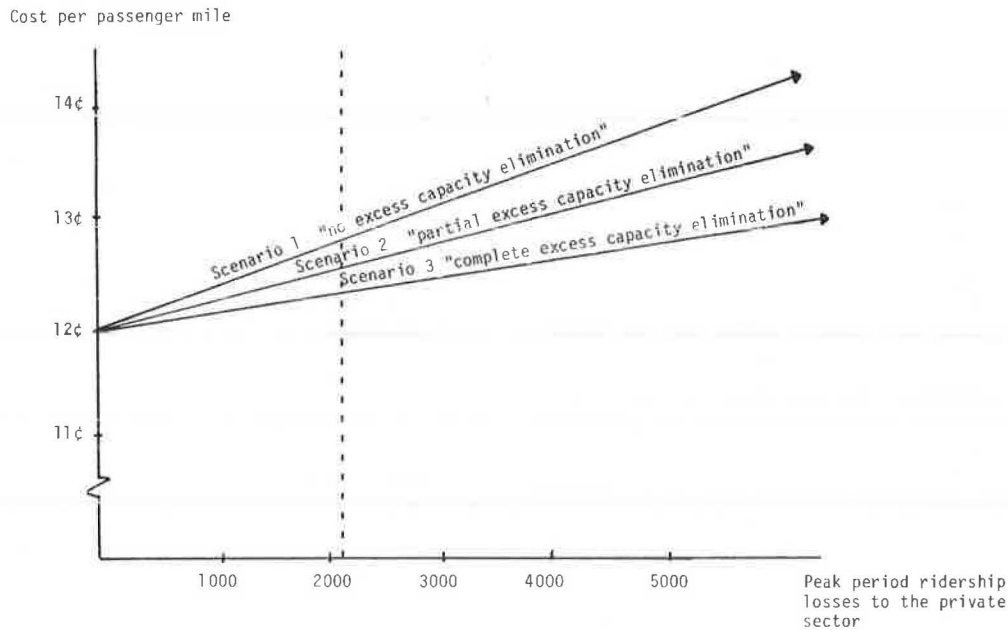


FIGURE 1 Adverse effect of private sector competition on efficiency of RTA rail services.

that must be taken into consideration when evaluating the potential role of the private sector. Like that of other public utilities, the efficiency of RTA services appears to be greatest in the absence of competition.

IMPACT OF COMPETITION ON THE EFFICIENCY OF THE TRANSIT SYSTEM AS A WHOLE

Thus far, attention has been focused exclusively on how private competition affects the efficiency of the public carrier. It must also be recognized that, because private carriers typically operate at lower costs than their public counterparts, a shift in resources to the private sector, although apparently detrimental to the public carrier, can still have a positive effect on systemwide efficiency. Simply stated, the gains in efficiency to the passenger from expansion of the private sector may offset the losses in efficiency in the public sector.

Chicago's subscription buses operate in an industrious, progressive environment; labor operates on split shifts to minimize costs; off-peak charter work is aggressively marketed; and most firms are large enough to permit maintenance and equipment refurbishment to be done internally (5). Firms appear to enjoy constant returns to scale, enabling them to expand or contract without affecting average cost (1). Analysis of the industry's cost structure shows that, even as the replacement of capital becomes necessary, the cost of providing the bus service will remain as low as 4.7 cents per passenger-mile, a full 7.3 cents lower than the cost of comparable public rail service (1,p.40).

There are, however, significant differences in service quality between the modes. The difference in cost to the passenger may not be due only to a difference in operator efficiency but may also be attributable to the reduced quality of service in terms of speed, frequency, and comfort. To avoid bias that might result from these less tangible factors, a simple nonlinear regression was performed to determine the extent to which consumers perceive the differences in quality between the modes.

By regressing the difference in fare between the modes on the number of passengers using subscription

buses, using data from several points in time, an estimate of the average fare differential necessary to attract consumers from the higher quality rail mode to the lower quality bus mode can be calculated. This average fare differential can be interpreted as the additional nonpecuniary costs borne by the passengers of the lower quality subscription bus mode in the corridor (1,p.66).

With changing rail fares, subscription bus fares, and inflation, the constant dollar fare differential between the public and private services has substantially changed at least five times since 1981. This information, along with subscription bus ridership figures collected by the Chicago Area Transportation Study, provided a workable data base for the regression analysis.

This analysis indicates, at the January 1983 difference in fares of 4.3 cents per mile, that consumers perceive no less than 44 percent of their out-of-pocket savings from subscription buses to be attributable to the lower quality of service they receive (1,p.20). This roughly equates to 1.8 cents per passenger-mile at the current level of subscription bus ridership. To avoid bias, therefore, it is necessary to include these less tangible costs to the consumer in the estimate of the operating efficiency of the subscription bus. That is, these service-quality differentials, interpreted in monetary terms, were added to the costs paid by subscription riders.

When this is done, it is possible to estimate empirically how the overall efficiency of transit in the corridor (both modes combined) will change as resources shift from public to private ownership. Taking both the perceived differences in quality between modes and the potential savings from divestiture of public rail services into account, Figure 2 shows how the average cost per passenger-mile changes as consumers shift from public services to private services. The dotted line depicts the current loss in ridership to the private sector.

The results show that the gains in efficiency from increased use of lower cost private sector service can offset the losses in efficiency to the public sector, if the private sector is able to eliminate unneeded service.

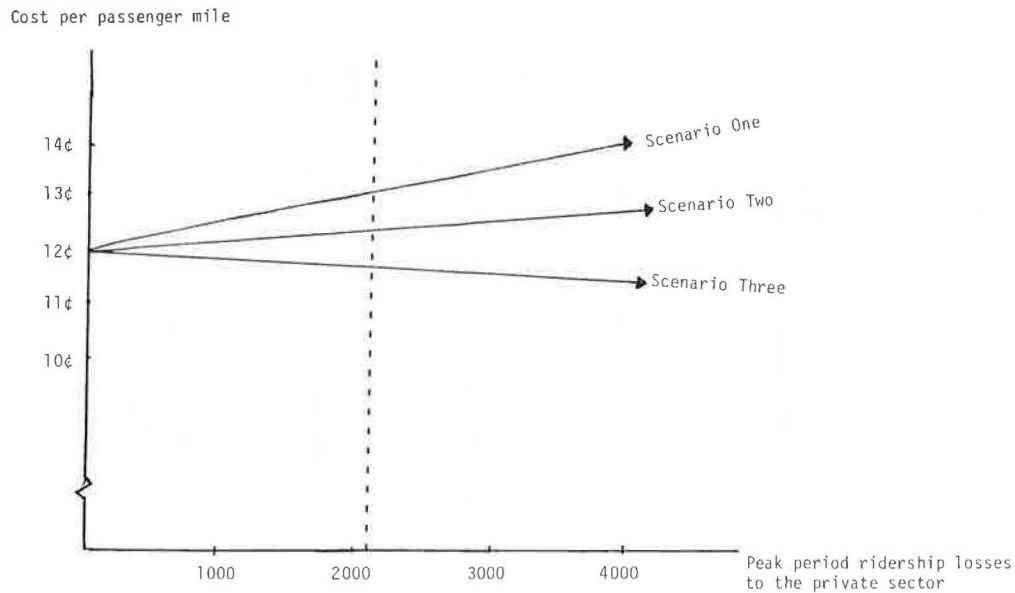


FIGURE 2 Effect of private sector competition on transit efficiency after adjusting for differences in quality.

At the current level of subscription bus ridership, the following inferences can be drawn:

- Scenario 1: If the public carrier is able to eliminate all excess capacity following ridership losses to private competition, market efficiency will increase by 0.33 cents per passenger-mile (2.7 percent).
- Scenario 2: If the public carrier is able to eliminate only half the excess capacity, efficiency will decrease by 0.17 cents per passenger-mile (-1.4 percent).
- Scenario 3: If the public carrier is unable to eliminate any excess capacity due to private competition, efficiency (including nonpecuniary costs) will deteriorate by 0.66 cents per passenger-mile (-5.5 percent).

Because, at this writing, the public carrier has not eliminated excess capacity brought about by private competition, the actual situation is best depicted by scenario 3. In the long run, if such practice continues, the agency can anticipate a 5.5 percent drop in operating efficiency, which might lead to an estimated loss to society of approximately \$700,000 per year (1, p.70).

The simple yet important proposition to which this leads is that, before the new is welcomed, it must be understood exactly how well the old can be divested. In this case, competition can be regarded as a desirable element in the marketplace only if the public sector can eliminate service at least 60 percent as fast as the new private operators expand their market share.

OPERATIONAL FEASIBILITY OF EXCESS CAPACITY ELIMINATION

The evidence presented in the previous section plainly shows that the potential benefits of private sector participation in transit hinge on the ability of public transit operators to eliminate excess capacity. On the basis of an examination of RTA and subscription bus ridership in the corridor, an attempt is made to show that the temporal patterns of

mode shift actually permit elimination of trains and thereby appear to make it feasible to eliminate nearly all the excess capacity brought about by the subscription bus.

A ridership survey was taken in October 1982 to explore the extent to which subscription buses had caused excess capacity on RTA trains in the corridor and specifically to determine if some trains could be eliminated as a result. Figure 3 shows the resulting estimates of excess capacity. The dark portions of the graph represent the approximate ridership of particular trains lost to subscription buses based on a survey of the schedule patterns and destination points of the new services (1, p.74). As can be seen, some trains, particularly those departing at the height of the peak period, appear to have suffered ridership losses of more than 250 passengers per day.

This evidence suggests that the public carrier does have an opportunity to eliminate the excess capacity brought about by the subscription bus. The ridership losses have, for example, made it possible to eliminate as many as three trains per peak period. The number of trains to each zone, the evidence shows, could be reduced from five to four in each peak period without causing a capacity problem or a major reduction in level of service. These service curtailments, reducing available seating by 17.6 percent each peak period, would eliminate over 90 percent of the excess capacity caused by the private sector.

CONCLUSIONS AND POLICY RECOMMENDATIONS

Chicago's private sector transit operators are at a critical stage in their development. On one hand, their future seems bright, particularly when one considers that government agencies are considering additional increases in fares on the financially ailing commuter rail system. On the other hand, the private carriers operate with the realization that at any given moment regulatory agencies could paralyze them by invoking regulation to protect the public sector transit monopoly.

In this paper the widespread belief, apparent in

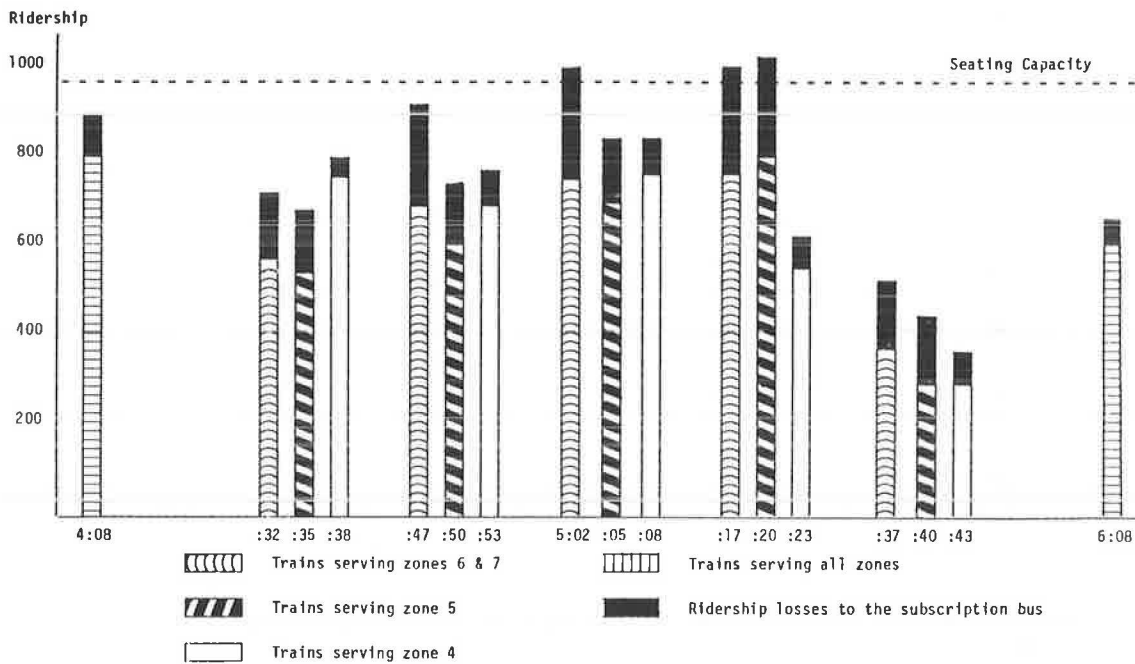


FIGURE 3 Ridership losses of RTA commuter trains to subscription bus in Illinois Central Gulf corridor.

both regulation and political opinion, that urban transit is most efficiently operated as a government monopoly has been challenged. Table 1 gives a summary of the principal findings, listing the predicted effects of competition on the public carrier and the transit corridor as a whole. The results are presented both with and without the statistical adjustment for the differences in quality between the public and private services.

TABLE 1 Impact of Competition on the Operating Efficiency of Transit in the ICG Corridor (1)

| | Impact on Efficiency of the Public Carrier (%) | Impact on Overall Efficiency of Transit (both modes combined) (%) | |
|---|--|---|-------------------------|
| | | Without Quality Adjustment | With Quality Adjustment |
| Scenario 1 (complete excess capacity elimination) | -2.5 | +4.9 | +2.7 |
| Scenario 2 (partial excess capacity elimination) | -5.0 | +0.2 | -1.2 |
| Scenario 3 (no excess capacity elimination) | -7.5 | -2.3 | -5.5 |

An important conclusion is that the presence of private sector transit operators has created an opportunity to improve the long-range efficiency of transit in Chicago's ICG corridor if the public sector appropriately reduces service. Even after taking into consideration factors such as severance pay to furloughed rail employees, the high fixed cost of maintaining railroad right-of-way and station facilities, and the differences in quality between the two modes, it was shown that a shift in resources from public to private control (i.e., subscription buses) would lower the average cost of transit service in the corridor.

It is important to note that the efficiency of the public carriers was found to suffer slightly because of private sector competition. However, the system as a whole (both public and private operators) can be made more efficient and deficits need

not rise if the public sector responds, as a private business would, by divesting service that is rendered unneeded by competition.

In this case, the accusation that private operators destructively "skim the cream" is not supported, and thus it may be in the public's best interest to have private sector competition in the marketplace. Similarly, the natural monopoly argument--that the public is best served by a single, government-regulated transit carrier--does not appear to be valid in the case of Chicago's subscription buses.

In the light of these conclusions, the following four recommendations warrant serious consideration:

1. Chicago's public sector decision makers should acknowledge the impact of low-cost transit operators on public commuter rail ridership and explore rail service reductions in proportion to lost demand. It appears that subscription buses have made it possible to eliminate three round trips each business day in the ICG rail corridor.

2. Given the evidence that the private sector can play a constructive role in Chicago's transit system, it is appropriate to free subscription bus service from legal ambiguities that have hampered its growth. More specifically, it should be clearly established that the emerging industry will not be forced to comply with the complex web of common carrier regulations under the Illinois Public Utilities Act.

Not only would common carrier status be inappropriate in light of the private, closed-to-the-public nature of the service, but the evidence shows that, from an economic perspective, it could result in a net welfare loss to the consumer by discouraging entrepreneurship. Ironically, it is the consumer that transit regulation is intended to protect.

3. Government should use the presence of the private sector as a basis for strengthening its bargaining position with organized labor and contract carriers. Efforts to modernize work rules, eliminate featherbedding, allow split-shifts and other cost containment measures should be intensified. Unlike previous policy makers who tried to attain such re-

forms when publicly subsidized rail carriers and organized labor enjoyed a virtual monopoly in the transit marketplace, today's policy makers are in a strong position to bring forth such changes (1).

4. Finally, on the basis of a survey of the various strengths and weaknesses of the growing subscription bus industry, it is recommended that the public sector permit free market forces to guide its growth. It was consumer dissatisfaction with publicly provided transit services that led to the rapid growth of the industry in Chicago; to attempt to stimulate its growth artificially through subsidies and government planning would destroy much of its appeal to the consumer. Although the temptation to intervene in the name of "protecting the consumer" or "coordinating service between the private and public sector" may be great, such policy would inevitably reduce the industry's flexibility in responding to changing market conditions and discourage entrepreneurs from entering the industry.

Publicly subsidized operators, with a vested interest in maintaining a powerful market position, are likely to oppose these recommendations. However, the evidence presented in this paper suggests that the most common arguments against private competition are not supported. The conclusion seems clear: Unregulated subscription bus competition creates an excellent opportunity for reducing Chicago's financially ailing transit systems.

The transferability of the results to other cities, or even other corridors in Chicago, of course, is limited by the fact that different transit systems have different cost structures. But the analytic process set forth in this study, though only a beginning, may serve as a useful guideline in answering similar questions in other contexts. This process is not only easily applicable to different transit scenarios, it is able to consider some of the important economic considerations that cannot be

properly addressed in a more qualitative approach.

It is possible that competition is economically desirable in some transit systems and undesirable in others. However, analysis of the subscription buses in one Chicago corridor reveals that there are strong economic arguments in support of deregulation of the transit industry, even when the public sector has invested heavily in a fixed-guideway transit system.

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