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## PRIVATIZATION OF TRANSPORTATION INVESTMENTS

Pnina Ohana Plaut

Over the past decade, there has been a wave of public support in many countries for privatization and deregulation in a number of industries. One of the industries in which privatization is most controversial is urban transportation. In some ways, urban transportation has been the most resistant to privatization, both in the intellectual/theoretical realm and in the political realm. Nevertheless, there is increasing discussion of privatization to transportation. Recently, the Governor of Massachusetts appointed a task force to study the possibility of privatizing the maintenance of highways, commuter rail lines, and Boston's Logan Airport (*Wall Street Journal*, May 1, 1991). There are talks of privatizing the airports of Philadelphia and Los Angeles, and of privatizing transportation services in other cities. In any case, the arguments for and against privatization are different in many ways for the transportation sector because of the unique characteristics of urban transportation markets. Among the special characteristics is the common expectation that urban transportation, unlike most commodities and services, should operate in order to meet a variety of social goals beyond mere efficiency, including distributional, environmental, and political goals.

In this paper, the arguments over privatization will be surveyed through hypothetical debates over the privatization of a major bridge in a metropolitan area and over the privatization of public transit services, specifically bus service. These two cases represent near-polar opposites in terms of capital intensity. Neither represents any real proposal for privatization being debated. The role of privatization will be examined by applying various criteria to these examples. In so doing, the arguments over privatization, in general, will be explored.

The major conclusion of the analysis is that the use and form of privatization of transportation depends primarily on which policy goals are being pursued. If, for example, maintenance of public control is a political goal, perhaps in order to "create jobs," then privatization would be ruled out. If the policy goal is increased efficiency, then the test would be whether or not for privatization augments competitiveness. In this case, the private/public choice would be less important than the choice among degrees of competition. This is important because the public/private choice is frequently represented as if it were the same thing as a choice between non-competition and competition. This is not so. Privatization that did not augment competition would do little to improve resource-efficiency.

## **Theoretical and Institutional Background**

In the U.S., the private sector historically bore the principal responsibility for mass transportation until a few decades ago. Most transit systems were privately owned and operated under public regulation (Deakin and Garrison 1985, Glaister 1985). In the 1920s and 1930s it was widely believed that a free transportation market would generate excessive supply, and that load factors would be consequently too low, while average cost per passenger would be unduly high. This constituted the theoretical basis for entry regulation. But by the 1970s almost every aspect of urban transportation, including planning, financing, construction, operation, and service delivery, was in the hands of government. This was partly in response to concerns that, without regulation, certain categories of people, such as the elderly, the young, the handicapped, and the poor, would have less access to transit, restricting their ability to participate in various activities. This was the basis for forcing transport services to use cross-subsidies (Gwilliam 1989). Over the last decade, because of changing economic and political conditions, the tendency has been to involve the private sector again and to view urban transportation as a shared responsibility of both the public and private sectors (Lave 1985, Orski 1985).

There has been a long-running debate regarding regulation in mass transportation. A number of theories of economic regulation attempt to provide justifications and explanations for such regulation. The most common is the "public interest" theory of regulation (Gwilliam et al. 1985, Posner 1985). This theory, which dominated political and economic thinking until the 1980s, argues that regulation is provided or supplied in response to public demand for the "correction" of inefficient or inequitable transportation market processes.

The economic rationale for most public interest regulation of urban transportation modes has traditionally been that they are natural monopolies—that is, they exhibit economies of scale, where average costs decline with increased use. Under such conditions a sole operator can provide services most efficiently and at lowest costs. These presumptions about cost functions are increasingly at odds with empirical analysis. Most studies have found that transit services (with the exception of rapid rail) operate under conditions close to constant returns to scale. Hence the monopoly argument today seems to have limited validity as a basis for regulation (Cervero 1985).

Over the years, the public sector responded to the financial problems of the private providers of transportation services, initially with subsidies and ultimately with complete acquisition or buy-out, creating in many cases statutory monopolies (Pikarsky and Johnson 1983). The fundamental dilemma of regulation was that, while its application

inevitably diminished the internal efficiency of regulated firms, it still appeared to be necessary in order to secure efficient production and allocation of resources at the level of industry. Over the last two decades, the political balance has shifted toward emphasizing the operational efficiency of the regulated agencies. This shift has provided the background for movements toward deregulation and privatization. There has been an ongoing search for theoretical justifications for eliminating regulation.

The conditions under which regulation/privatization are efficient economically can be stated through an application of Baumol's (1982) theory of contestable markets. According to this theory, as long as there are no "sunk costs" involved in entering a market nor other barriers to entry, the only firms that will be found in a market will be internally efficient and of optimal size, scale, and structure, with an optimal mix of products and without cross-subsidization. Hence, in contestable markets the government should neither determine the optimal structure of production nor protect it, but it should seek to eliminate constraints on entry and maximize the credibility of the threat of new competition. According to Baumol, when conditions of contestability are found, even monopolists will behave as if they were operating under conditions of intense competition in order not to create incentives for new firms to enter the market as competitors.

Following this line of reasoning, the relevant factor that generates cost savings and better quality of service is *not* the private vs. public sector dichotomy, as it has generally been assumed in the transportation privatization debate, but rather the dichotomy competitive vs. noncompetitive (Higgins 1981, Lave 1985). A number of studies have shown that competition within the public sector can produce results comparable with competition in the private sector (Landau, Chisholm, and Webber 1980, Viton 1980).

In the next section, criteria for assessing privatization will be presented with application to two hypothetical cases that encompass these and other relevant issues. The examples involve two hypothetical privatization proposals that are presented to decision-makers, one for a bridge and one for transit service. The two were chosen because they represent polar opposites in some ways, as will be explained. Accordingly, a number of general conclusions may be established through their analysis. The criteria of analysis represent those generally used in the debate over urban transportation policy. In particular, the issue of competitiveness and efficiency will be emphasized.

## **Assessing Two Privatization Proposals**

Privatization may take many forms in transportation. Here, two specific forms will be assessed:

- A. Privatization of a major bridge that carries a significant portion of the traffic in a metropolitan area. (The bridges of New York or San Francisco would be obvious examples. Where relevant, distinction will be made between privatizing a newly constructed bridge, which would be built in addition to existing bridges, or privatizing a previously existing bridge. Actual proposals to privatize new or existing bridges have been discussed in a number of cities.)
- B. Privatization of public bus services.

The two cases represent almost diametrically opposite possibilities in terms of capital intensity. Transportation investments of intermediate range for capital intensity could be assessed by extrapolating from these "polar" cases.

These two proposals will be examined according to the following aspects:

1. contestability and competition
2. the types of public-sector involvement required, such as regulation, subsidy, etc.
3. the role of government (and institutional changes in general)
4. efficiency effects
5. equity effects
6. public goals served and political feasibility.

The comparisons between the two proposals are summarized in Table 1, where the rows are the aspects of evaluation and the columns are the proposals. These comparisons will be elaborated below.

### *Aspect 1: Contestability and Competition*

The issue here is whether the proposal increases competition in transportation in the metropolitan area or not. At one extreme is the privatization of an existing major bridge, such as the Golden Gate Bridge, which is the only physical connection of Marin County with San Francisco. In that case the bridge exhibits the features of a virtually complete monopoly. In contrast, an intermediate case would be a private bridge newly built as an additional crossing. This bridge would produce some enhanced competition with existing bridges, albeit at large capital costs. At the other extreme, with bus service, there is no reason why privatized bus service need be monopolistic. The policy

Table 1

*Comparisons of Two Privatization Proposals*

<u>Criteria</u>	<u>Bridge Privatization</u>	<u>Bus Service Privatization</u>
1. Contestability and competition	Bridge itself not contestable	Contestable
Competition-enhancing?	For existing bridge, no; for bridge, yes	Yes
2. Public-sector & involvement	Regulation; Subsidies	Service contracting or deregulation;
3. and Role of Government	Possibly safety control subsidization	possibly selective subsidization
4. Efficiency Effects	Lower operating costs; if new bridge, improved services & diversity	Diversity in service, possibly at lower price; improved quality
5. Equity Effects	Little or none	Unclear; could go either way
6. Public Goals Served	Generates revenue; retains public regulation and oversight; a new bridge creates more competition	Creates more competition; saves public expenditures

considerations that are relevant for the privatization of the bridge are very different from those relevant in the bus proposal.

The question of whether and to what degree the bus market is actually or inherently contestable has been a subject of intense debate following the British Transportation Act of 1985 (Banister 1985, Beesely and Glaister 1985, Glaister 1985, Gwilliam 1989, and Gwilliam et al. 1985). This legislation is the latest and in many ways the most radical effort at privatizing and deregulating local public transportation service in a developed country. The Act ordered that all public bus companies in the UK (with the sole exception of those serving the Greater London metropoli-

tan area) be reorganized as for-profit corporations with no limits on entry, fare structure, nor quality of service. This policy has been the subject of controversy among academics, in the media, and in the public.

The academic debate has focused on two main questions. First, does the market for bus transportation services possess the characteristics for creating contestability or something close to it? Second, is contestability sufficient to maximize welfare in this market? Consensus seems to have emerged from this debate over a number of points (Gwilliam 1989):

1. The bus market is not completely contestable in the Baumol sense, although it does have a number of the required features for contestability. The capital required to provide bus transport services is primarily the vehicle itself, which is by its nature highly versatile. It can serve different geographic markets. It may be assigned to more or less demanding uses. The secondary market for vehicles always serves as an alternative use, providing the option of selling the vehicle and leaving the market. Similarly, this market creates the possibility of entry at fairly low cost, creating the basic technological prerequisite for contestability (low sunk costs). There may of course be other kinds of sunk costs such as marketing expenses or initial losses until market recognition is developed, but the competitive threat is highly credible.
2. Where there are problems of externalities (such as congestion) or optimal mixes of service integration, even high levels of contestability do not generate resource efficiency.

To return to our specific proposals, privatization of an existing bridge may create or perpetuate a monopolistic structure. In contrast, construction of a new, private bridge may reduce monopolistic distortion. It would involve enormous sunk costs in capital and material, which for obvious reasons cannot be moved once in place or used for alternative purposes, nor can it be sold in a secondary market and transported. The threat of new entry is low and so is contestability. Nevertheless, despite a non-contestable market, the addition of a new privatized bridge to an urban area does create the potential for more competition with the other bridges, and this competition, if not suppressed, may contribute to efficiency. Competition may express itself not only in pricing but also in other areas such as service quality, maintenance, labor costs, etc.

### *Aspects 2 & 3: Types of Public Sector Involvement and the Role of Government*

Two types of public-sector involvement may still be required after implementation of either of the privatization proposals. Involvement can take the form of continuing regulation or of subsidization.

Private acquisition of a unique bridge would create a private-sector monopoly. The government would still be required to regulate the tolls charged on the bridge and possibly also service-quality and maintenance. In the case of bus privatization, if the service retains a monopoly position it would continue to be regulated. Regulation would require that the government attempt to analyze the cost structures of the bus operator in order to determine "fair profit."

Currently, the standard practice is to base bridge tolls on long-term cost recovery, with mark-up revenues sometimes used to subsidize other services. Congestion is also taken into account in this process. If social considerations dictate that the price be set below average costs, then subsidies must also be granted. Some economists have argued that bus transit exhibits declining average costs and consequently must be subsidized if priced according to marginal costs (Mohring 1972). If an operator is coerced into providing services below costs, he must also be compensated through a subsidy.

In contrast, a privatization proposal involving the construction of a new, additional bridge might not require any governmental involvement beyond safety inspection, and perhaps environmental impact assessment and the usual precautions to ensure that the project is executed properly (such as performance bonds). Since the bridge operator would not be a monopolist, regulation of price and service quality may not be required.

There are different ways of implementing privatization of a bridge and of a bus service. In the case of an existing bridge, one alternative would be auctioning off the asset, but in a package that includes regulatory restrictions on tolls and service quality, and possibly also subsidies. In the case of bus service, alternatives for privatization of ownership would be:

1. Auctioning off the system as a whole or the right to operate it with controls and/or subsidies.
2. Leaving the existing system intact, but removing barriers to entry; possibly subsidizing certain lines.

Two methods for regulation of the operation of these services can be considered: service contracting and complete deregulation and privatization. Each has advantages and disadvantages and different implications for the role of government. Service contracting means public ownership combined with private operations and financing, in accordance with those service specifications established by the public entity. It can be implemented through competitive bidding for the service contract. While most transit contracting experiences have been positive, it should be emphasized that they are subject to difficulties in quality con-



trol. Quality of service will depend to a large degree on the quality of the contractual arrangement itself. Poorly written service specifications and loose monitoring may allow a contractor to deliver less or poorer-quality services than intended by the sponsor (Teal 1986). Once a contract is confirmed, it is very difficult to cancel or recall it. Therefore, the primary public-sector responsibility lies in assuring the quality of the contractual arrangement.

The appeal of private-sector service contracting is explained by its promise of large cost savings and reductions in subsidies without necessitating service cutbacks or fare increases. These reductions will have political value, particularly if they can be translated into taxpayer benefits, such as lower taxes and improved service.

In the case of complete privatization and deregulation, the role of the government will be altered into that of defender against the formation of imperfect competition or anti-competitive structures (Gomez-Ibanez and Meyer 1990).

Subsidies in regulated transportation systems are usually granted in lump-sum form, leaving the operator with discretion on the expenditure of funds. Deregulation also eliminates non-commercial cross-subsidization. Local authorities have the task of deciding where, when, and how to fill the gap in service provision left by commercial decisions of private operators (Glaister 1987). Consequently, local authorities must take responsibility for service quality maintenance and cost regulation for any deprived areas. Gwillian (1989) argues that "comprehensive and competitive tendering" offers the most powerful strategy for enhancing deregulation and privatization schemes and for creating competitive challenges for existing operators and market structures.

Privatization and deregulation may enhance the policy-making functions of the public sector, which can act as consultant, facilitator, information provider, and defender of system integration (i.e., the existence of satisfactory connections between pairs of locations and between transit lines).

### *Aspect 4: Efficiency Effects*

The question of how government-owned companies will perform in comparison with privately-owned companies is an important one. Several theories have been advanced to predict differences in behavior between both types of firms, for instance theories of bureaucratic growth, inefficiency, and concentration on vote-maximizing service.

It has long been recognized that there are adverse effects from regulation and subsidization under public ownership. These include the likelihood of mismanagement, exploitation of monopoly power by

organized labor, overinvestment, and lack of innovation due to the protection of statutory monopoly status (Pikarsky and Johnson 1983). All of these contribute to escalated labor costs, decreased productivity, and large increases in transit deficits. Here we will consider the efficiency effects of the two privatization proposals.

Numerous studies have shown that public ownership combined with capital subsidy grants has the following consequences (Anderson 1983, Pucher 1982):

- an expansion of service levels
- increased total operating costs
- higher wage levels for employees
- fare levels that do not necessarily decrease
- an increase in the area served by the transit system; this increase is associated with both higher wage rates and higher unit costs.

Having noted all this, it should be added that several studies show that inefficiency and excessive bureaucratic growth are associated with passive sponsorship and large firm size, but *not* with public ownership as *such*. If the manager is required to minimize costs while maintaining an agreed-upon level of output and staying within his fare-box-revenue-plus-subsidy budget constraints, the productive efficiency of public-owned transit systems may be equivalent to that of competitive private firms (cf. Niskanen in Anderson 1983). Once again the crucial issue is efficiency and not the public/private dichotomy as such.

Other studies predict public agency inefficiency with either active or passive subsidy sponsors, because the sponsored are presumed to maximize utility through vote-maximization (DeAlessi and Peltzman in Anderson 1983). Still others emphasize competition, regardless of public vs. private ownership, and argue that public-sector competition can produce results comparable with the private sector (Landau, Chisholm, and Webber 1980, Viton 1980). Public sector agencies possess the taxing power that may be used to finance deficits, while privately-owned corporations do not. However, privately owned corporations are much better at resisting union-sponsored wage demands and at negotiating more productive work arrangements because they are not concerned with the political sensitivities, beyond commercial repercussions, of their decisions (Pikarsky and Johnson 1983).

A proposal to construct a new privately-owned bridge would enhance efficiency, in the sense that it may potentially expand the mix of different types of road services, road qualities, service qualities, and various prices, since there will be a new crossing added to the existing cross-

ings. An expanded set of crossings will allow a better adjustment to the diversity of travel preferences. One crossing might serve as a higher-price, faster, more comfortable choice, while others may operate as lower-cost but provide more highly congested alternatives. Building a new crossing, of course, also expands total capacity and may relieve congestion on other crossings. Competition from a privately-operated bridge may force the publicly-operated bridges to improve service and efficiency.

A new bridge may enhance efficiency in providing service at lower costs and better resource allocation. However, there is some research that argues that private ownership operating with public regulation may actually be associated with higher real average fares than publicly owned operations (Anderson 1983). Deregulation and privatization in the bus market should result in the same sort of efficiency improvements and possible greater diversity of service choices. Service-price packages would be closer in line with consumer preferences, while operations should be more cost-efficient, reducing the need for subsidization.

Among other things, this should lead to greater variation in the kinds and sizes of vehicles used. Smaller vehicles would play a larger role with higher fares and better service quality than with larger vehicles (Glaister 1985, Gomez-Ibanez and Meyer 1990). Some believe that the private sector is most efficient in providing peak-load services (Jones 1985, Pikarsky and Johnson 1983). A possible negative effect is that a large fleet of small vehicles might cause a net increase in traffic flows, making congestion worse (Glaister 1985).

Research on the British experience with bus deregulation and privatization (Gomez-Ibanez and Meyer 1990) has shown that:

- deregulation has encouraged service innovations;
- bus companies reduced costs;
- fares rose faster than inflation, about 25 percent in real terms; and
- there were no significant increases in auto use attributable to deregulation.

There are conflicting views over whether a privatized and deregulated bus system will generate the same level of system-integration. Some argue that a privatized system will offer the benefit of more integration (Cervero 1985). Others disagree, claiming it will damage integration (Gwilliam, Nash, and Mackie 1985).

### *Aspect 5: Equity Effects*

Equity, like beauty, is always in the eyes of the beholder. The question of equity is one over which there will never be complete agreement.

Different definitions of equity are used in the literature, involving concepts such as fairness, ability to pay, benefits received, and equal payment and treatment under equal circumstances or use. Nevertheless, there are two criteria that are often used to assess equity for a user-charge structure. These are sometimes referred to as horizontal and vertical equity (Lee 1978).

Horizontal equity is directly related to the popular notion of fairness. It means equal treatment for individuals in equal circumstances. In the case of transportation users, different people should be charged a payment based on the costs they generate or the benefits they receive. Equal payment for people in equal circumstances means that each pays his own "fair share" of total costs. Vertical equity demands that payments be in proportion to an individual's ability to pay. Payments are computed as a progressive function of income. The horizontal and vertical criteria for equity may conflict.

One reason why some forms of transportation service organization may be inequitable is that different income groups may place different value on their time. It is generally assumed that the rich value their time more highly than do the poor. Hence the rich will derive more benefits from any reduction in travel time. The value of time is generally thought to be directly related to wages, to be in effect the opportunity-cost of time.

Some studies of the value of time examine how small savings in time are evaluated by different people (Button and Pearman 1983). Empirical evidence suggests that constant marginal valuation of time-savings in travel cannot be established for several reasons. Small savings in time may not even be perceived by the beneficiaries. Even when perceived, their value may not be linearly proportional to large savings. The value of time may itself change over time. Some researchers have questioned whether it is even possible to assign a single value to travel time (Keeler and Small 1975). The value of travel time may depend on the specific travel destination or goal or other factors. The specific alternative use to which travel time savings would be assigned may also be important. The use of wages as an indicator of opportunity costs is predicated on the assumption that time saved would be used for labor. If the wealthy use time savings for leisure while the poor use it for labor (or vice versa), any judgement of equity would have to be revised.

Bridges, like toll roads, are equitable horizontally in that users pay according to the costs they engender and the benefits they receive. Individuals in similar circumstances pay the same amount. However, tolls are generally regarded as inequitable vertically, because they are regressive (Kulash 1974). Some researchers contest this claim. In countries outside the U.S., it is sometimes argued that the poor do not

In this paper, two hypothetical "polar" cases of privatization were considered, involving a highly capital-intensive bridge and bus services operated with relatively low capital intensity. In the case of the bridge, privatization would bring in revenue, it could require public regulation (especially if the bridge is already built), and it could produce greater operational efficiency relative to public ownership. Privatizing an existing bridge would not produce competition. From an economic point of view this is the least efficient form of privatization, but it may be politically popular, combining private monopoly with public regulation and subsidization. If a new privately-owned bridge is built, the capital funds would not be coming out of the public purse. Such a proposal has the potential to increase transportation efficiency and competition in the urban area. It does not necessitate strict regulation and it would ameliorate congestion.

Privatization of bus service creates far fewer problems of public regulation. Since the industry is far more contestable and potentially competitive, market forces would create pressures for cost minimization and cost-based pricing. Even if some subsidization is to continue, it is likely to be much lower than under public ownership; the industry itself would be more efficient, and so there would be fewer losses for the public sector to cover. Subsidization of certain lines would continue in particular because of political or equity concerns.

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