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Privatization of Public Transit: A Review of the Research on Contracting of Bus Services in the United States

Lynn Scholl

Abstract

In the face of escalating costs, declining productivity, and constraints on funding for public transit, many governments have turned to transit privatization in an effort to improve cost efficiency. Privatization of bus services occurs in a range of forms and regulatory environments. Privatization proponents argue that publicly owned and subsidized transit operations are inefficient due to higher labor costs, restrictive work rules, and large bureaucracies. Critics of privatization argue that several market failures counteract these theorized benefits, resulting in under-insurance, substandard vehicle maintenance, and higher levels of pollution, congestion, and accident rates, among other inadequacies. This paper reviews the research and debates on privatization in the form of contracting, including its effects on cost-efficiency, quality of transit provision, and labor.

Introduction

Public transit has been increasingly viewed as important to achieving the environmental and social objectives of sustainable transport in the U.S. However, in the face of escalating costs, declining productivity, and constraints on funding for public transit, many national governments have turned to transit privatization in an effort to improve cost efficiency. For example, under Margaret Thatcher's privatization agenda, Great Britain deregulated much of their transit system in 1985, eliminating much of the controls on market entry and exit throughout the country. Similarly, Santiago, Chile, completely liberalized its transit system, allowing free entry in 1979, followed by fare and route deregulation a few years later. In the 1980s, rising costs in the U.S. public transit sector prompted the Reagan administration to substantially cut subsidies and promote contracting of bus services.

Privatization of bus services occurs in a range of forms and regulatory environments. In deregulated bus markets, governments eliminate many of the controls on market entry and exit, allowing private bus operators to compete along fixed routes and semi-fixed routes (Gomez-Ibanez and Meyer 1993). The degree of liberalization schemes vary from complete free-entry to regulations of fares, entry, routing, and vehicle standards. In many countries, governments provide exclusive franchises along routes to private operators based on a competitive bidding process. With contracting of public transit, the public agency coordinates schedules, routes, and fares to overcome the problem of multiple providers, while the private operator owns and maintains vehicles and hires drivers. This arrangement allows public control while reducing operating costs and is more common in developed countries. Finally, privately operated small-scale vehicles, or paratransit, operating along semi-fixed routes are found in a range of regulatory environments, sometimes operating informally or legally as a complement to the formal system such as dial-a-ride services for the disabled or airport shuttle services.

Privatization proponents argue that publicly owned and subsidized transit operations are inefficient due to higher labor costs, restrictive work rules, and large bureaucracies. The profit motive and competition in the private market is theorized to lower costs and improve the quality of services. It is also argued that increased competition in bus transit fosters more innovative services that are more competitive with the private automobile, bringing significant benefits to travelers at a much lower cost. Further, the free-entry of firms is theorized to not only increase mobility and transportation choices, but also to push public sector bus companies to improve their operations, cut costs, and increase productivity.

However, critics of privatization argue that several market failures counteract these theorized benefits. For example, cost-cutting behavior by transit companies often results in under-insurance; substandard vehicle maintenance; higher levels of pollution, congestion, and accident rates; as well as inadequate coordination and integration of routes and fares. In deregulated and informal markets, fierce on-road competition between buses and over-entry of bus firms along profitable routes can lead to significant increases in congestion and accidents. Conversely, private transit operators may leave the less profitable routes underserved. The lower wages and benefits paid by private bus companies has often resulted in higher labor turnover, less qualified drivers, and lower productivity, leading in turn to declines in the safety and quality of service, prompting critics to charge that cost savings are resource transfers rather than true efficiency gains. Finally, some scholars speculate that the competitive forces leading to improved services and cost savings may erode over time, due to collusion among operators, consolidation of small firms into a few big actors, or too few bidders offering tenders for contracted bus services.

This paper reviews the research and debates on privatization in the form of contracting, including its effects on the cost-efficiency and quality of transit provision, and on transit labor.

Background

Contracting is the most common form of privatization in the U.S. It allows the public agency to control planning, route, and scheduling coordination while the private bus companies own, maintain, and operate vehicles, and hire labor (Iseki 2004). Contracting is theorized to reduce costs compared to purely public transit due to labor cost differentials, diseconomies of scale, increased flexibility of service provision and work rules, and increased competition. Private firms, motivated by profit and competition from other bidders, will seek to lower the cost of service and encourage greater production efficiency. Labor costs are theoretically lowered through an increased ability to utilize part-time labor, the reduction of overtime and split-shifts, and lower labor costs paid to often non-unionized labor (Nicosia 2001; Iseki 2004). In addition, the private sector, by virtue of fewer bureaucratic constraints, is assumed to be more able to substitute factor inputs to improve production efficiency, to reduce overtime labor, and to streamline management and maintenance and procurement procedures.

Gomez-Ibanez and Meyer (1993) have observed a cycle of privatization and regulation of bus service within countries. Initially, in the entrepreneurial stage, services are provided entirely by the private sector. Over time, as firms consolidate, governments move to regulate fares and grant franchises along routes. With pressure to keep fares low, in the case of rising incomes and increased auto ownership, the profitability of firms declines as they begin to operate on deteriorating capital and begin cutting back services. Subsequently, the government moves in to subsidize service and take over failing companies, however subsidies often are followed by increased costs, through higher public wages and unionization. Declines in productivity, and subsequently ridership, in turn, lead to calls for re-privatization.

Up until the mid-1960s, bus transit firms in the U.S. were primarily privately owned and operated. Privately owned streetcar lines in the early 1920s were afforded public monopoly status with the rationale that the high initial capital costs associated with rail created a large economy of scale that justified ownership by one public entity (Nicosia 2001). However, rapid growth in automobile usage beginning in the 1920s and continuing more or less through the 1960s and 1970s (with a short decline due to rationing during World War II) eroded transit mode shares, especially for off-peak trips and weekend excursions and shopping trips. In the United States, as private agencies were taken over by public ones in the late 1960s and

early 1970s, the resulting agencies tended to consolidate, leading to larger overhead expenses (Richmond 2001). In response to the growing financial troubles in the transit industry, a series of bills was passed to come to its aid. In 1964, the Urban Mass Transportation Act (UMTA) increased federal involvement in transit, providing grants for public takeovers of failing transit firms as well as capital investments, and, in 1974, the National Mass Transportation Assistance Act marked the beginning of a decade of federal funding of transit operating costs.

Operating subsidies rose rapidly under the UMTA Section 5 program, with payments rising, in constant 1984 dollars, from an initial level of approximately \$540 million in 1975 to \$1 billion by 1978 and to a peak of \$1.3 billion in 1980 (Pickrell 1985). However, as subsidies grew, transit's costs continued to soar faster than inflation, while at the same time its productivity declined.¹ For example, between 1960 and 1992, annual operating costs rose 161 percent, in constant 1992 dollars (from \$6.1 to \$15.9 billion); however, while the total number of passenger trips remained relatively constant, operating costs per passenger increased by 176 percent (from \$0.70 to \$1.93 per trip), in real terms.

Declining transit productivity and cost effectiveness have been attributed to several factors, including subsidies themselves, rising labor and fuel costs, the extension of services to far-reaching, low-density suburbs, overstaffing of transit agencies, high labor costs, stringent work rules, restrictions on the use of part-time labor, and increased utilization of overtime labor (Black 1995; Pucher and Markstedt, 1983; Pickrell 1985; Lave 1991). Pickrell (1985) found that, between 1974 and 1984, 42 percent of increased operating subsidies were absorbed by higher costs for maintaining existing service while the remaining subsidies went to new services and to finance fare reductions. However, during this period ridership only increased by 9 percent with 4.9 billion new annual trips.

Several scholars attribute policies within federal social and environmental legislation to the declines in transit cost efficiencies. Lave (1991) argues that the 1974 legislation redirected efforts away from efficiency objectives and toward social objectives, such as the revitalization of urban areas and increasing access to affordable mobility for the poor and disabled, and led to lower cost efficiencies. He concludes that these policies led to the expansion of transit services into low-density suburban areas and substantial reduction in fares. Additionally, federal environmental goals encouraged the increase of costly commuter and express bus service to lure drivers out of their automobiles resulting in a pattern of transit service in which central city services were curtailed and suburban services expanded. Pick-

¹ Productivity in the transit sector is usually defined as operating cost per vehicle mile or sometimes per vehicle hour.

rell (1985) estimates that as a result of suburban expansions, the average frequency, measured as total vehicle miles over total route miles, declined by 25 percent. Infrequent service over longer more dispersed routes with lower ridership levels led to lower productivity numbers. During this period, fare revenues also declined from about 55 percent of operating expenses in 1975 to 39 percent in 1989. Pucher and Markstedt (1983) find that while productivity declined and costs escalated with public takeovers and increased subsidization of bus transit, riders have also benefited from fare decreases and service expansions supported by subsidies.

Obeng and Sakano (2000) decompose the effects of government subsidies on total factor productivity (TFP) for bus transit for the period 1983 to 1992.² They found that subsidies led to a substitution toward fuel and labor inputs and away from capital inputs over the period.³ Taken together, subsidies, output, and technical-change effects decreased TFP by approximately 4 percent per year. They conclude that capital subsidies for buses increase the use of cost-saving technologies, while bus operating subsidies have the opposite effect. However, the largest factor leading to lower productivity were scale effects, in the form of increased vehicle miles of bus travel, due to the longer distances required to serve growing low-density suburbs.⁴

As transit subsidies increased and productivity fell, the era of federal operating subsidies was followed by calls for privatization by the Reagan administration in the 1980s. Bringing a new emphasis on both cost cutting and increasing the role of the private sector, the administration passed several bills requiring privatization and the reduction of subsidies, leading a number of transit agencies to begin contracting services. As of 2001, over one third of agencies reporting to the National Transit Database (NTD) contracted for some services, spending approximately \$14 billion (Iseki, 2004).

Section 13(c) of the 1964 UMTA, which was included to allay fears that transit labor unions would lose rights to collective bargaining in the transition from private to public ownership, has become an obstacle for agencies wanting to contract out services to private firms. The law prohibits a transit

² They estimate the effects of operating and capital subsidies on total factor productivity, defined as total outputs over the costs of total share-weighted inputs, using a panel data set of 45 single-mode bus firms for the period 1983 to 1992.

³ Of this change, they found that capital and operating subsidies decreased TFP on average by 0.47 percent per year, when factor augmentation, changes that lead to technical declines, were considered. Scale effects decreased TFP by 1.28 percent per year, and technological changes, (changes that shift the total cost curve) declined at an average rate of 0.03 percent per year, also causing a decrease in TFP. Their findings indicate that the higher private costs of capital decreased technological change.

⁴ While this study goes beyond using descriptive statistics, one weakness is the apparent lack of attention to possible serial correlation, since they treat the observations in their panel data set as independent, which may have produced biased estimates.

agency from taking any action that will adversely affect its public transit union employees. Consequently, contracting has been more attractive for new or expanded bus services. Most often employed in high-deficit areas, contracting is frequently used in providing services during more expensive peak hours, on long-haul commuter lines, in low-density areas, or for specialized services such as paratransit for the disabled (Morlock, et al. 1971; Teal 1985; Teal and Giuliano 1987; Webster 1988). Larger agencies tend to contract out only some of their services while small ones tend to contract out all service (Iseki 2004).

Studies of service contracting have found cost savings ranging from 10 to 40 percent per unit (e.g., vehicle-mile, vehicle-hour) of contracted service (Teal and Giuliano 1986; Morlok and Viton 1985; Downs 1988; Karlaftis et al. 1997; McCullough et al. 1998; Nicosia, 2001; Iseki 2004). However, Sclar (1997), Teal (1991), and McCullough et al. (1998) found cost increases associated with contracting.

Many studies of contracting have been criticized for methodological shortcomings. McCullough (1998) has cautioned that many studies are too short to provide conclusive information, as they only look at a few years after contracting begins. He criticizes the practice of comparing different-sized operators in many studies. In addition, since in most cases contracting firms are not randomly assigned, the decision to contract is likely to vary systematically across firms and with respect to observed and unobserved factors. For example, more fiscally responsible firms that wish to minimize costs, or conversely, less efficient agencies that have high cost functions may be more likely to contract. Therefore, savings estimates that do not control for the endogeneity of the agency decision to contract may be subject to selection bias.

Privatization has often been implemented in an ideological and politically charged atmosphere (Richmond 2001). As a result, many case studies on contracting are politically motivated, with opposing sides using quantitative methods to justify preconceived ideas (Richmond 2001). Large differences in cost savings estimates can stem from whether the authors used fully or partially allocated costs, measure short-term or long-term effects, or include transaction costs such as the administrative costs associated with contracting. Fully allocated methods compare the cost of in-house overhead plus contracted, while partially allocated accounting methods only compare the cost savings of the contracted portion of service. In the case of a public agency contracting out part of its service, cost allocation methods yield different results. Contracting supporters have often favored fully allocated modeling while opponents have employed a marginal-cost approach.

Contracting out transit service has been criticized on many grounds. Gomez-Ibanez and Meyer (1993) argue that cost savings from contracting are sometimes just a transfer between groups instead of a resource savings for the economy, stating, "Lower wage rates reduce budgetary costs but, without productivity increases, do not reduce the labor resources required" (Gomez-Ibanez and Meyer 1993, 279–80). Transit agency boards usually abstain from wage negotiating processes and instead rely on private contractors to establish market rates. Richmond (2001) and Kim (2005) note that lower wages may result in lower service quality due to high labor turnover and less experienced drivers. Additionally, changes in companies at the end of a contract period often results in drivers losing their jobs or having to start over at the bottom of the wage scale (Richmond 2001).

Sclar (2001) questions many of the assumptions underlying standard economic theory as it applies to contracting. He cautions that contracting markets are likely to become oligopolistic or even monopolistic over time, undermining the competitive forces theorized to lead to cost savings. Transit firms have an incentive to work together to exclude potential competitors and increase market power and profits. In Colorado, for example, where the state legislature mandated a law requiring privatization of 20 percent of Denver's transit services, 18 firms, ranging from large bus operators to small taxi cab companies, initially expressed interest in bidding; however, after the law was implemented, contracts tended to be awarded to the same few large companies with a higher capacity to write qualified proposals and with the ability to finance the required bonding and insurance. These firms also had a greater ability than small firms to submit very low bids, by assuming losses in the initial years. Sclar further argues that since complex services such as transit require longer term contracts, it may inhibit the ability of public agencies to replace firms quickly with competitors if services are not up to par, leading to less real competition. Additionally, the development of relationships between the public agency and the provider may lead to unfair political influences.

Problems of principal-agent, adverse selection, and moral hazards can lead to high contract design, monitoring, and enforcement costs that may counteract cost savings (Sclar 2001). Information asymmetries between the contracting firm (the principal) and the public agency (the agent) substantially increase the costs of contract monitoring and enforcement. Adverse selection, in which the more poorly qualified firms whose inexperience leads to very low and often winning bids, also compromises the quality of service. Adverse selection can increase overall costs due to declines in ridership, increases in accidents, and expenses associated with poor vehicle maintenance. Some public agencies respond to this problem by setting a higher bidding price floor in order to obtain services from the more qualified firms. However, Sclar (2001) notes that this price may equal or exceed

that of the public agency, possibly negating the benefits of contracting. A moral hazard arises where vehicles are owned by the public agency but operated by the private contractor who has a disincentive to maintain them well. Furthermore, he notes that contractors have little incentive to try to increase or maintain the agency's ridership base. However, he does not mention whether public agencies might be able to add provisions for ridership losses in the contract design. The desire for repeat contracts may form incentives to overcome these moral hazards.

Large economies of scale justifying public ownership in transit have often been assumed. However, in bus services this assumption may not hold. Sclar (2001) argues that there may be diseconomies of scale for bus transit. Small, publicly-operated bus agencies have been able to achieve similar operating efficiencies to private operators, and partial contracting tends to be implemented by large agencies with higher cost structures (Richmond, 2001). Several empirical studies have supported these observations. Berechman (1993) and Cowie and Asenova (1999) found that smaller agencies have increasing returns, mid-sized agencies have constant to decreasing returns, and large agencies have decreasing returns to scale. Viton (1991) found that average operating costs decrease for small, are constant for medium, and increase for large bus agencies.

Empirical Studies on Cost-Efficiency of Contracting

Several studies have explored the cost efficiency of contracting. More recent studies have utilized time series and cross-sectional data and increasingly sophisticated methodologies to address issues such as cost allocation, long-term effects, agency size, and issues of endogeneity.

Pucher et al. (1983) estimate (using a pooled cross-sectional time-series for 77 transit systems in 1979 and 135 transit systems in 1980) the effect of subsidies on the performance and productivity of public transit, including dummy variables for private contractors, operating and financial characteristics, and socioeconomics of the transit service area. They estimate that private management reduced per-hour operating cost by \$1.72 (in 1979–1980 dollars) (0.05 significance level); however the authors caution that their results could be biased due to endogeneity issues.

Perry and Babitsky (1986) estimated bus system performance as a function of five organizational structure types using multiple regression⁵ analysis. They found that publicly owned and operated transit systems were no different from publicly owned and privately operated ones. However,

⁵ Data consisted of 246 agencies in 1981 and 249 agencies in 1980 from the NTD.

privately owned and operated systems have higher cost efficiency and higher farebox recovery ratios. One explanation given by the authors for the higher cost-efficiency of the privately owned and operated systems is that these systems tend to be concentrated in the northeastern U.S., serving a solid ridership base of commuters traveling to strong central business districts, in areas with highly congested freeways and high parking costs. The authors also note that their study did not address the redistributive effects of these organizational forms, which are important given the social objectives of mass transit subsidization.

McCullough et al. (1998) used NTD data for the period 1989 to 1993 in a cross-sectional time series design to estimate the effects on fully allocated operating expense per revenue hour of bus service of three types of contracting: no contracting, partially contracted, and fully contracted services. Although they were not able to control for the endogeneity of the agency decision to contract, they found no evidence that fully contracted services are more cost-efficient than services operated by public agencies, but they did identify some savings for partial contracting. They reported that vehicle scheduling and labor utilization were the most important determinants of cost-efficiency. However, private contractors and privately owned bus firms may have more ability to adjust vehicle and labor utilization than public agencies.

Two more recent studies by Iseki (2004) and Nicosia (2001) control for the endogeneity between the decision to contract and cost efficiency. Nicosia (2001) utilized the NTD for 319 transit agencies from 1992 to 2000 to model both the decision to contract and short-run operating costs simultaneously using full-information likelihood methods and fixed effects to control for unobservable firm heterogeneity. She modeled a short-term cost function⁶ and found a 15 to 19 percent operating cost savings for contracted services, with an average savings of \$4 million per year for her sample. Nicosia notes that studies (with the exception of McCullough et al. [1998]) that do not account for endogeneity find more savings, indicating that high-cost firms tend to contract and that cost savings appear to come primarily from labor cost savings.

Iseki (2004) analyzed 400 agencies for the years 1992 to 2000 using a fully allocated operating cost model.⁷ Using a two-stage ordinary least squares and instrumental variables, he controlled for the endogeneity of the decision to contract. He controlled for more political and institutional variables than past studies and estimated the effects of various levels (partial versus

⁶ Including input prices (labor, fuel and parts), outputs (passenger miles and passenger trips), and service area characteristics (service area miles, vehicle miles, route miles, collisions, road-calls).

⁷ Total modal cost for the agency which captures administrative costs.

full contracting) of contracting on cost efficiency. He found cost savings of 7.8 percent for full contracting and 5.2 percent for partial contracting from an average service cost of \$53.06 per vehicle hour.

The Effects of Contract Design on Cost Efficiency

Nicosia (2001) explored how contract design impacts the degree of cost efficiency savings in contracting. Two main types of transit contracts are utilized frequently in the U.S.: cost plus and fixed cost. Under cost-plus contracts the public agency reimburses the contractor for all costs that come up and is more flexible to changing circumstances. With fixed-cost contracts, firms bid based upon their estimates of the cost of providing service. Fares are collected by the public agency and the agency pays the firm for the fixed amount specified initially in the contract. This type of contract is theorized to better minimize costs but to offer less flexibility to the contractor and may result in lower-quality service. A third variation of contract structure is fixed-cost contracting with incentives. These types of contracts are utilized more frequently in the U.K. and New Zealand than in the U.S. and include incentives for improved quality standards and ridership increases (Shaw 1996). Finally, with net-cost contracting the operator keeps fare revenue and is given a subsidy. Also known as minimum-subsidy franchising, the public agency covers any revenue shortfall predicted by the firm at the time of bidding. Firms face more risk from demand fluctuations, which may reduce interest in contracts, or competition in the bidding stage, and induce firms to add a risk premium to their bid price.

Using propensity score methods, Nicosia (2001) found no differences in cost-efficiencies between the cost-plus and fixed-cost contracts, however, she found that agencies self-select into contracts that are more efficient or better suited to their circumstances. She found that cost-plus contracts are more often utilized by agencies with more contracting experience and greater asset specificity,⁸ while fixed-cost contracts are used more frequently by larger agencies or those with more bargaining power relative to the contractor.

Quality of Service and Contracting

The quality of transit services is important to attracting ridership. Studies of Toronto and Boston found elasticity of demand of 0.4 for quality⁹ while

⁸ Specialized technology.

⁹ Service quality was defined as vehicle-miles of service in the Gomez-Ibanez (1996) study.

that for fare was lower, ranging between -0.2 and -0.3 (Gomez-Ibanez 1993). In a Transportation Research Board (2004) survey, 40 percent of transit managers cited declines in service quality as the primary downside of contracting. A Federal Transit Administration (FTA) study found an average demand elasticity of 0.5 in response to service frequency increases, a measure of quality (TCRP 2004).¹⁰

Gomez-Ibanez and Meyer (1993) found several negative impacts of contracting on service quality in London, particularly during transition periods. Coordination and integration of services declined with contracting.

Nicosia (2001) examined the effects of contracting on quality of service in the U.S., measured by vehicle miles and capacity, number of collisions, and road calls. Controlling for the endogeneity¹¹ between service quality and the decision to contract, she estimated the parameters in the decision to contract conditional on bargaining power, transaction cost, and economic and political variables. Using panel data to control for exogenous changes in demand over time, she found a 36 percent increase in recalls, a 76 percent increase in collisions, and a 16 percent decrease in vehicle-miles. As a consequence, ridership also decreased by at least 10 percent. These results are consistent with case studies that found high turnover and low-skilled drivers an issue in some areas (Richmond 2001). However, vehicle-miles are a coarse measure of quality. Better measures might be vehicle-miles per route-mile of service (an indicator of frequency) or passenger-miles per vehicle hour (a measure of speed). Alternative measures of quality could include reliability, on-board safety, information for customers,¹² comfort, and convenience; however, more data on these factors are needed (TCRP 2004).

Labor Impacts

Transit is a labor intensive industry, with labor comprising approximately 70 percent of total operating costs (Kim 2005). While the proponents of contracting argue that labor costs are excessive as a result of public operation, critics of contracting charge that the cost savings of contracting come primarily at the expense of reductions in wages, labor productivity, and service quality. High labor costs have been attributed by some scholars to

¹⁰ The extent of the decrease in demand for a decrease in service frequency varies by service levels prior to the change and also income, with both lower-income riders and higher levels of prior service being less sensitive to quality changes.

¹¹ Service quality and contracting may be endogenous, since contracting may occur along certain types of routes that vary with quality or ridership.

¹² Such as Intelligent Transportation Systems (ITS) reporting real-time bus information and estimated arrival times.

restrictive work rules limiting the hiring of part-time labor or cross-utilization of labor among various job functions, for example drivers performing maintenance tasks or vice versa. In addition, union contracts often require workers to be paid for eight-hour shifts plus split-shift differentials, even though, due to declines in off-peak transit demand, many workers are idle during the off-peak. So while the typical number of hours spent driving is between 4 to 5 hours, workers are usually paid for 12 hours to cover the morning and afternoon peak periods for which part-time drivers cannot be hired.

Recent work by Kim (2005) examined the effects of contracting on transit labor and transit productivity. The study consisted of 12 transit agencies that report to the National Transit Database,¹³ including five private contractors, the in-house portion of service by public agencies that contract out some service to these five contractors, and four public agencies that were matched as comparison groups based on operating characteristics. Because limited access to labor data from private companies (those not receiving federal subsidies and therefore not reporting to the NTD) restricted the sample size available for the study, the ability to generalize the results may also be limited.

Kim's (2005) research findings suggest that drivers working for private transit firms receive substantially lower wages, have fewer paid days off, receive slower seniority increases, and have lower wage ceilings. Private industry drivers in the sample made between 34 and 38 percent lower wages than public drivers, indicating that most of the savings of contracting come from labor cost differentials. They earned approximately \$10 to \$11 per hour (or \$24,000 annual earnings), while public drivers received \$16 to \$18 per hour (or \$36,500 annually). In addition, wages paid by the private contractors in the sample increased more slowly and lagged behind inflation over the study period (1996 to 2001). For example, in Houston, drivers start at \$9.27 an hour and can earn up to \$11.29 with five years' experience.

Kim (2005) hypothesizes that lower wage rates in the private sector result in drivers working longer hours to make ends meet. She states, "A privately hired driver worked on average 100 to 200 hours more per year than a public driver in order to compensate for lower regular wages, but still did not always achieve the same annual earnings as his public counterpart" (Kim 2005, 165). Additionally, private drivers have very few paid days of leave, while public drivers receive three times more paid absences than public drivers. Specifically, public drivers receive approximately 52 paid days off while private drivers receive 15 days off per year. Private opera-

¹³ Only agencies that receive federal assistance are required to report to the NTD.

tors hired fewer part-time drivers than public operators in the sample (2 percent versus 11 percent, on average), a surprising finding given the degree of peaking in transit. Kim (2005) speculates that lower wages paid by the private sector may result in a lower willingness to work part-time, especially given that public agencies offer significantly higher wages and benefits for part-time work in the same metropolitan areas. Finally, payments associated with union work rules, a component of spending considered inefficient, declined over time for public agencies contracting out a portion of their service. According to Kim (2005), this finding may indicate that labor had granted concessions under the threat of contracting.¹⁴

Labor cost savings from contracting came with several tradeoffs. Lower wages and job security were associated with lower service quality, less efficient labor utilization, higher labor turnover, less-experienced drivers, increased absenteeism, and higher accident rates. Higher accident rates, in turn, were associated with increased insurance, training, overtime, and work-rules related costs. Lower labor costs were accompanied by less efficient labor utilization and higher costs due to less qualified and less productive labor. Additionally, although the total operating costs for private operators were lower than those for public operators (\$50 versus \$84 per revenue vehicle hour), the costs of non-labor inputs, such as fuel, maintenance, casualty, liability, and administration were higher for private operators. Surprisingly, private operators also paid significantly more for non-operating labor time, including stand-by time, driver training, union functions, run selection, and accident reporting, which were the most costly components of work rules payments.

Kim (2005) computes the savings that could hypothetically be transferred to labor if private operators were more efficient in three areas (overtime, non-operating time, and insurance), finding that wages could increase on average by \$2.22 per hour, bringing the average private wage to \$12.95 per hour, which remains lower than the average public wage of \$17.30 per hour. Notably, some public agencies were able to achieve similar cost-efficiencies while still paying wages and benefits substantially above those of the private sector. For example, VIA San Antonio, a public operator in Texas, had operating costs of \$52 per revenue vehicle hour (RVH) below that of First (DART), a private operator with similar operating conditions, whose costs were \$64 per RVH. However, VIA drivers received roughly \$3 more per hour than First (DART) drivers and received \$1,500 more in benefits. VIA also had a higher utilization rate of part-time labor and fewer payments due to work rules as well as higher vehicle fuel and maintenance efficiencies. Given these findings, Kim (2005) calls for increased

¹⁴ Work rules related payments are payments to on-call drivers who fill in for unexpected absences and are an indicator of inefficiency in an agency (Kim 2005).

examination of alternative methods to contracting for improving transit operation and organizational efficiency as well as wage standards set by public agencies.

Similarly, Sclar (2001) argues that in cases where transaction costs of contracting exceed savings, those agencies would be better off by restructuring their operations to improve efficiency. He emphasizes that organizational changes require a public agency leadership that is willing to listen to and involve workers in efficiency improving reforms. For example, he cites the costs savings brought by organizational changes in Indianapolis Fleet Services, a public agency that maintained the city's vehicle fleet, under the threat of contracting. Under the pressure to contract, the agency's leadership successfully involved public workers in brainstorming and implementing several cost savings and efficiency improving reforms without wage reductions. Changes implemented were reportedly ones that workers had been requesting for years with no response previously from management. Using this example, Sclar (2001) contends that the costs of better management of public workers may be less than those of managing private contractors. This assertion raises the question of what kinds of institutional changes are needed to create the effective incentives for management and workers to collaborate toward efficiency and improvements in quality.

Summary and Conclusions

Escalating costs, declining productivity, and constraints on funding for transit have spurred many public transit agencies to return to privatization. Early studies on contracting of fixed bus routes in the U.S. have found cost savings from contracting that range from 10 to 40 percent (Iseki 2004). However, many of those studies had methodological issues that brought into question the accuracy of their results. More recent studies by Nicosia (2001) and Iseki (2004) were able to address many of these issues, in particular that of endogeneity between costs and the decision to contract. Nicosia's (2001) results indicate that contracting can save between 15 and 19 percent, while Iseki (2004) finds lower savings, of 8 percent for full contracting and 5 percent for partial contracting. However, these costs savings seem to come at the price of service quality and safety (Nicosia 2001) and reductions in driver compensation levels without increases in labor productivity (Kim 2005). Furthermore, lower wages and higher turnover rates associated with contracting may be in turn related to the observed increase in accidents and lower quality transit service by Nicosia (2001).

More research is needed on how contracting impacts the quality of transit service, such as on-time performance, routing, passenger comfort and

satisfaction, and frequency, as well as longer-term impacts of contracting on labor. This work would require better survey data related to labor and service quality for private contractors not included in the NTD. Contract design and bidding requirements were not found to significantly affect cost-efficiency but may have important, but yet to be identified, implications for the quality of service and fare levels. In this vein, research is needed to address how the details of contract design, such as provisions for labor standards or incentives for maintaining or even increasing ridership, might impact the quality and efficiency of service.

Additionally, research by both Kim (2005) and McCullough et al. (1998) highlights that contracting and wage reductions are not the only means of increasing cost efficiency within transit operations. Other operational changes could include improving labor-utilization, fuel, and maintenance efficiencies through route interlining and optimization, or decreasing non-revenue vehicle operating hours by optimizing locations of maintenance and storage facilities relative to routes (Kim 2005; McCullough et al. 1998; Iseki 2004). These methods might be written in contracts or transit agencies could negotiate with unions to reduce inefficient work rules such as restrictions on part-time workers, split shifts, and limited differentiation of wage rates by seniority levels (Kim 2005).

To this end, more research is needed on what institutional and policy changes, other than the threat of contracting, could foster incentives to improve service cost efficiency and quality. For example, some scholars have proposed that smaller transit zones operated by public agencies achieve similar cost savings through reductions in overhead costs, while maintaining higher wages and a more stable workforce (Richmond 2001).

The research findings reviewed here seem to indicate that responsible and fair labor practices in contracting transit are integral to maintaining high service quality and safety. However, in determining the appropriate labor policies, the social objectives of increasing mobility for all segments of society, especially those who are unable or cannot afford to drive, and reducing environmental externalities of transportation should be kept in focus. That is, to the extent that driver wages and benefits far exceed the market rate for similar skills and educational attainment levels, or that inefficient work rules significantly constrict the supply of transit, bus riders, who are often very low-income, may be paying for these inefficient labor practices with their mobility. Instead, wage rates and benefit packages should be set to attract and retain well-trained and qualified drivers, while negotiating work rules that foster efficient, high-quality transit that meets the needs of both bus riders and transit labor and also furthers environmental objectives. Additionally, income inequality and poverty

are important issues that might be more effectively addressed on a wider scale using policy measures that increase access to job training and higher education opportunities.

Finally, the research reviewed here shows that decline in transit productivity over time has not been due solely to subsidies, high labor costs, and inefficient work rules, but to as a complex combination of factors. The continued growth in auto ownership complemented by low-density, auto-oriented urban growth patterns have continued to erode transit ridership and extend the distances routes must cover, substantially reducing the cost effectiveness of transit. Subsidies and investments in other modes of transportation, such as automobile infrastructure, free parking, and gasoline prices that do not reflect environmental externalities, have exacerbated this trend and put transit at a further disadvantage (Litman 2005). Therefore, addressing other inefficiencies in the passenger transportation sector at a broader level should also be considered as a means of improving transit efficiency. For example, where traffic congestion results in slower bus speeds, investments in Bus Rapid Transit technologies¹⁵ might have higher payoffs in terms of cost efficiency relative to transit contracting, provided concurrent investments in appropriate and supportive land uses are made. In lower-density environments, given the high cost of fixed-route bus service, it may be more cost effective to provide mobility for the poor through subsidized shared taxis, legalized privately owned paratransit services, or even subsidized car ownership (O'Regan and Quigley 1998; Taylor and Ong 1995; Wachs 1997). More research comparing alternatives to contracting to increase operating efficiency is needed.

In conclusion, while contracting appears to have the potential to substantially reduce costs, the tradeoffs involved may be considerable, and the broader social objectives of transit need to be kept in mind. More research is needed on possible ways to reduce these tradeoffs, such as better contract design, quality and safety standards, and contract monitoring. Various alternatives to contracting, such as broader organizational changes or addressing larger transportation system inefficiencies, and their tradeoffs, should be weighed in a broader policy context. Lastly, where contracting is utilized, it should be accompanied by appropriate and enforceable service quality standards and labor practices which support these standards.

¹⁵ Such as providing exclusive right-of-way for buses, signal prioritization, and vehicle-arrival-information technology.

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