"Evaluating the Fiscal Impacts of Privatizing Bus Transit Service in California"

Principal Investigator, J.R. DeShazo
Co-Principal Investigator, Hiroyuki Iseki

UCLA School of Public Affairs (the former School of Public Policy and Social Research)

Table of Contents

1. INTRODUCTION

1.1. Introduction

State policies strongly influence the way that local governments adjust the provision of critical services during periods of fiscal stress. California today is in just such a period of fiscal crisis. The State of California has been facing unprecedented fiscal challenges since 2001: the State's budget shortfalls for the two consecutive fiscal years 2002-2004 total more than $30 billion (California Department of Finance 2003). One common response to falling revenues is to privatize public services. This research examines the causes, consequences, and cost-effectiveness of privatization in the case of public transit service in response to declining resources. The causes and effects of privatized public transit services are not well understood by state and local officials, many of whom are currently looking for ways to stretch public dollars during a period of prolonged economic recession. The findings of the research presented in this report will help state legislators, transit agency policymakers, and transit mangers and directors improve cost effectiveness, make the best use of tax money, and be more accountable to the public.

1.2. Background / Purpose of the study

Transit service contracting is significant in California. In 2000 alone, transit operating expenses in California amounted to $3.9 billion, an increase of 30 percent in just five years (1999-2000 State of California Transit Operators and Non-Transit Claimants Annual Report). California also spent more than $1.3 billion to support capital investment for public transit systems in the same year. In 2000, more than 70 percent of the 61 public transit agencies in California contracted out at least some of their fixed-route bus transit services, compared to 37 percent of the 442 agencies in the entire nation. Transit agencies in California also spent more than $110 million on contracted bus service in 2000. This amounts to nearly $1.2 billion over the last ten years (National Transit Database, 1992-2001).

Despite its importance, state policymakers and scholars know relatively little about the determinants and consequences of privatization as a strategy to save money without cutting services. To fill these gaps in our knowledge, this report presents findings from an empirical study that addresses two sets of questions in regard to privatization of public transit service. First, what factors most compel public agencies to contract out fixed-route bus transit service and what level of contracted service they choose? Second, does privatizing lead to more cost-effective service provision in bus transit?[i]

1.3. Brief summary of findings

Most previous research has focused mainly on measuring cost savings of contracted services, and treated contracting as a simple make-or-buy decision. However, our analysis shows that it is important to distinguish agencies that contract out only a small portion of their service from those that contract out all service since different sets of factors determine the level of contracting an agency chooses.

Regarding agencies' decisions of whether or not to contract out, agencies choose *partial* contracting due to concerns about financial conditions and operating characteristics, and are less likely to be motivated by other labor conditions, governance characteristics, and political ideology. Variables related to system and operating characteristics (operating expense variability,

bus operator wage, agency size, vehicle utilization efficiency), revenue characteristics (federal, state, and dedicated funds), and budget constraints influence agencies' decisions when they contract out only a portion of service. The results suggest that large agencies are more likely to engage in partial contracting than small agencies, and they do so based on managerial factors; their decision is not political, nor is it affected by factors related to labor conditions and governance structure.

In contract, when agencies choose to contract out all service, most types of factors, including operations, financial, economic, political, and institutional factors, are associated with the decision. Small agencies are likely to contract out all services. When agencies choose to contract out all service, they are influenced by many other factors, including governance factors related to the agency board, and institutional factors, such as state procedure laws. In other words, agencies' choice of level of contracting is less managerial for small agencies than for large agencies.

Our analysis on the effects of contracting on cost efficiency shows modest cost efficiency improvement in the order of 7.8 percent and 5.5 percent for an *average* agency through partial- and full-contracting respectively, compared to no-contracting agencies. However, this improvement is not universal. The effects of contracting on cost efficiency vary by factors such as peak-to-base ratio,[ii] agency size, the bus operator wage gap between bus operators in the public and private sectors, and agency type.

Large agencies tend to contract out only part of the service, thereby adjusting their overall size to offset diseconomies of scale and to increase the operating efficiency of in-house service; they do not necessarily gain direct cost savings through contracted service. In contrast, small agencies tend to contract out all service to increase cost efficiency primarily by saving on labor costs. Services that agencies contract out are mostly special services for commuting and services in outlying areas with low ridership, where agencies usually cannot achieve cost efficiency.

In our interview study, we found that transit agencies in California use various management measures, such as hiring part-time labor, adjusting wage scales, increasing the time required to reach the top wage rate, and contracting, to increase cost efficiency. Most transit agencies selectively use a contracting strategy for a small portion of their service when they find they can offer particular types of services by contracting in a more cost efficient way or would like to "try out" a new service for which they cannot expect high ridership. Transit agencies sometimes combine operation of smaller vehicles with contracted service. This tendency to contract out only a portion of service is a reflection of agencies' concern about the delicate balance between economic concerns and labor issues in the planning process. All of three agencies that contract out all service decided to do so at the time of their inception of service at least partly because they wanted to avoid any labor issues. Some of these full-contracting agencies have minimum wage and fringe benefits requirements for contractors, so that they can protect contractors' workers or keep turnover rates low for the quality of drivers, or both.

In contrast to the past studies on the topic, the analysis finds that a contracting strategy can be a viable option to improve cost efficiency in transit services, but only when a transit agency carefully chooses the service level to contract based on an adequate assessment of its conditions.

1.4. Structure of the report

What follows this introduction are research findings of our analysis. In the next section, we first present findings from our analyses of: 1) decision making regarding contracting, and 2) effects of contracting on cost efficiency. We also present findings from interviews of transit managers and directors at transit agencies in California to ask about their experiences on contracting. Lastly, we will synthesize research results from all three parts. In this synthesis, our findings from the interviews provide details and nuances about transit service contracting practices in California that help us understand our findings based on the quantitative analysis.

In the last section, after briefly summarizing our findings, we discuss implications of our findings, and provide policy recommendations in regard to transit service contracting and related issues.

2. RESEARCH FINDINGS

We first addressed the question of the determinants of transit agencies' decision making for contracting: *What factors compel public agencies to contract out fixed-route bus transit service and what level of contracted service do they choose*? With results from our first analysis on agencies' decision making, our second analysis addressed a research question: *Does contracting affect cost efficiency in the provision of fixed-route bus transit service in the U.S.?*

We employed two research methods. First, our methods evaluated a statistical analysis of privatization based on a unique panel data set for the years 1993 to 2000 on about 400 other agencies nationwide that report to the Federal Transit Administration (FTA) as recipients or beneficiaries of federal transit subsidies (the National Transit Database). For each agency, we know how much service was privatized each year, the *annual* fiscal and operating characteristics, input prices, local economic conditions, governance structure, as well as the characteristics of the local population.

Second, we also systematically examined agencies' experience regarding contracting by interviewing managers and directors at thirteen California transit agencies. Our interviews provided more details and nuances about how public agency management views and uses contracting as a provision strategy that our statistical analysis does not reveal. They also fill the gap between our findings based on the statistical analysis of U.S. transit agencies and transit practice in California. Understanding the complexity of transit management in the economic, political, institutional, and operational setting in California helps us identify more pragmatic policy options available for the State.

In this section, we summarize the most important findings and implications from each part of the study, and also synthesize them in the end.

2.1. Decision making regarding contracting: What factors affect agencies' choice for contracting?

While the past studies treat transit contracting simply as a make-or-buy option with exclusive attention to the service at stake, it is important to understand that a contracting strategy influences cost efficiency not only in contracted service but also in in-house service when an agency contracts out only a portion of service in the system. (The term "cost efficiency" refers to service productivity: how much it costs to provide a unit of service output, such as *vehicle hour* or *vehicle mile* of service.) In other words, it is important to treat agencies that contract out

only a portion of service (*partial* contracting) separately from agencies that contract out all service (*full* contracting).

Our initial statistical analysis of the level of contracted service as a proportion of all service shows that the level of contracting is uniquely distributed. Approximately 13 percent of the agencies that we analyzed contract for a portion of service and 21 percent contract out for all service, while the rest (66%) contract out no service. Moreover, most contract out a very small portion of their service, with an average percentage of contracted service of 8.3 percent.

Two things are clear in the analysis on the relationship between agency size and type of service provision. The larger the agency, the more likely it is that the agency contracts out a portion of service, but the less likely it is the agency contracts out all service. In other words, larger agencies are likely to contract out only a portion of service, while small agencies are likely to contract out all service.

We analyzed how significantly each of potentially influential variables affect the likelihood that agencies choose either 1) *partial* or 2) *full* contracting as opposed to 3) *no* contracting. The variables included in the analysis are summarized in Table 1 with symbols showing whether or not it increases the likelihood of contracting, and data sources. We briefly present the hypotheses for factors listed in Table 1.

Revenue composition and stability. Transit agencies have various sources of funding. Local government funding comes mostly from fare revenue and the general fund. Therefore, we hypothesize that the greater the share of transit revenues that comes from local sources, the more likely it is that local policymakers will consider the opportunity cost of these funds, and in turn, increase the prevalence of privatization. In addition, we hypothesize that policymakers are less likely to turn to privatization as a service delivery strategy when an agency has dedicated funding to support the provision of transit service. Finally, we hypothesize that the greater the variance in these three funding sources from year-to-year, the more likely local policymakers are to explore privatization to reduce cost increases.

System/Operating characteristics. Transit agencies operate their transit system in a variety of conditions, which affects potential advantage and effectiveness of a contracting strategy. Urban and suburban areas experience different levels of growth in their transit-dependent populations. We hypothesize that the more variable operating costs in response to a rapid change in demand for transit are, the more likely an agency is to contract out, so as to transfer risk to another agent. Privatization offers agencies the ability to scale service capacity up or down more frequently.

Labor costs make up a large share (almost seventy percent) of total operating expenses. Most of the cost savings associated with privatization come in the form of lower labor costs and more flexible labor rules. Therefore, we hypothesize that the larger the wage difference between the public and private sectors, the more likely it is that an agency will contract out its services. We also examine the bus operator wage rate which varies by geographic areas over time.

The relationship between agency size, economies of scale, and privatization has been much debated. While some argue that larger agencies suffer from diseconomies of scale (as measured as rising costs per vehicle mile), others argue for a U-shaped relationship: costs per vehicle mile initially decline and then rise as the agency grows in size. We hypothesize that an agency uses a privatization strategy to adjust its agency size and optimize economies of scale, due to varying levels of operating efficiency as a system grows or shrinks in size.

Vehicle utilization efficiency measures how efficiently an agency produces service by operating vehicles, and is measured by the ratio of vehicle miles in service to total vehicle miles which includes miles driven without carrying passengers. We hypothesize the higher this vehicle utilization efficiency, the less likely an agency is to contract out.

The peak-to-base ratio is defined as a ratio of service provided in the peak periods (during mornings and afternoons) to that in the base period (during midday). The higher the peak-to-base ratio, the lower the level of labour and vehicle utilisation. We hypothesize that increases in the peak-to-base ratio increase the likelihood of privatization.

Labor Conditions. Elected officials often view provision of employment through public works as an important objective. Therefore, we hypothesize that the higher the local unemployment level is, the less likely it is that an agency will engage in contracting. Despite the objective set by policy makers, employees at an agency may act for their interests. Transit managers may object to privatization and prefer to provide all services within public agencies, so that they can be the single provider of transit service and thereby control every aspect of service provision. Therefore, we hypothesize that the more bureaucratic, measured by the size of agency, the transit agency, the less likely it is to contract out.

In addition, many public transit agencies are unionized, and several of these unions have the right to strike. We have two conflicting hypotheses about unionization. Increased levels of unionization and presence of the right to strike will decrease the likelihood and extent of privatization, while it may increase labor costs and therefore give an agency more incentives to contract out to lower labor costs. Unionization rate in private sector is assumed to work in the opposite way that it works in public sector.

Governance characteristics. Agencies may be governed by a city council, by a county board of supervisors, by a mayor, by a regional authority with an appointed board, and so on. We hypothesize that an agency governed by a single executive, or an appointed board, is more likely to privatize some services than an agency governed by a large group of elected representatives. Smaller governing bodies with more concentrated authority will act more decisively, whereas large legislative bodies often include divergent political perspectives and are subject to “hold-up” by a vocal minority.

States often impose borrowing limits and clean government laws on local governments and their transit agencies (Lopez-de-Silanes, Shleifer and Vishny, 1997). Borrowing limits force localities to be more cost-conscious and search harder for cost savings. Therefore, borrowing limits will increase the likelihood of privatization.

Clean government laws increase the likelihood of privatization in several ways. They may prohibit political activities by public employees, limiting the gains to politicians of using public employees to their re-election benefit. This reduces the costs of privatization in terms of foregone political support. These laws impose strict purchasing standards on local governments, which reduce corruption by requiring at least three bids on a project, or by requiring that all projects pass through a central purchasing office. This not only reduces the potential for fraud associated with privatization, but also increases the potential cost-savings associated with privatization.

Ideology. The ideology of stakeholders, such as the mayor, elected officials, and appointed members, on a transit agency board are likely to affect an agency’s privatization decision making

(Lopez-de-Silanes, Shleifer, and Vishny, 1997; Richmond, 2001). Republicans tend to prefer privatization and small government while Democrats tend to favor the direct provision of public service (Richmond, 2001). Therefore, we hypothesize that agencies in the areas where Republican elected officials are dominant are more likely to privatize than those in the areas where Democratic elected officials are dominant.

Table 1 List of Explanatory Variables in the Agency Decision Making Model

	Variable	Exp. Sign	Data Source
Revenue characteristics			
E 1	Federal funding as a proportion of total operating fund	-	NTD
E 1	State funding as a proportion of total operating fund	+ / -	NTD
E 1	Local and state general funding as a proportion of total operating fund	+	NTD
E 1, E 2	Dedicated funding as a proportion of total operating fund	-	NTD
E 2	Total funding variability	+	NTD
System/Operating characteristics			
E 3	Total operating variability	+	NTD
E 6	Bus operator wage rate	+	BLS
E 6	Bus operator public-private wage gap	+	PUMS
E 7	Agency size (vehicles in operation)	+ / -	NTD
E 8	Vehicle utilization efficiency	-	NTD
E 8	Peak-to-base ratio	+	NTD
Labor conditions			
PI 1	Unemployment rate	+	BLS
PI 2	Agency size (employees)	+	NTD
PI 3	Unionization rate in public sector	+/-	CPS
PI 3	Unionization rate in private sector	+/-	CPS
Governance characteristics			
PI 6	Type of agency (city, county, state, RTA, other)	+/-	Survey
PI 6	Number of board members	+	Survey
PI 6	Composition of board	+/-	Survey
PI 6	Term limit	+	Survey
PI 7	State procedures (see Table 2-3)		USACIR
	(budget constraints)	+ / -	USACIR
	(clean government; discretionary prevention)	+ / -	USACIR
	(bargaining)	+ / -	USACIR
Ideology			
PI 8	Democrats in lower house of state legislature	-	Census
PI 8	Democrats in upper house of state legislature	-	Census
PI 8	Vote cast for United States senators/representatives in Democratic Party	-	Census
PI 8	Governors by political party affiliation; Vote cast for and governor elected by state	-	Census

Data Sources

BLS	U.S. Bureau of Labor Statistics
Census	U.S. Census Data, 1990 and 2000, STF1 and STF3A, and Statistical Abstract of the U.S.
CPS	Union Membership and Coverage Database developed from the Current Population Survey by Hirsh and Macpherson (2003); http://www.unionstats.com/, checked on July 25th, 2003)
NTD	The NTD of the Federal Transit Administration for all agencies that receive federal operating subsidies (previously known as the FTA Section 15 Report)
PUMS	U.S. Census Data, 1990: Public Use Micro Sample
Survey	Original survey by web site search, e-mailing, and phone
USACIR	State laws governing local government structure and administration from the U.S. Advisory Commission on Intergovernmental Relations (1993)

The most important findings from the analysis of determinants of agencies' contracting decision are as follows. Most factors that are found significant in their effects on the likelihood of contracting support our hypotheses. There are, however, several exceptions: *local and state general funding for full contracting, property tax limits in state procedures variables for partial contracting,* and *Democrats in upper house of state legislature* and *regional transportation authority (RTA)*. We found many variables related to revenue characteristics, system/operating characteristics and governance characteristics significant, but variables for labor conditions and political ideology were not found to be strong predictors for the level of contracting.

We found the types of variables and their effects on the likelihood of contracting differed depending on whether partial contracting or full contracting was involved. Among the five revenue characteristics variables used in the analysis, *local and state general funding, dedicated funding,* and *total funding variability* were significant for full contracting, but were not or were only barely significant for partial contracting; *federal funding* and *state funding* were significant for both levels of contracting. The negative effects of federal funding and dedicated funding are consistent with our hypothesis, but the negative effect of local and state general funding on the likelihood of full contracting did not match our hypothesis.

Among the variables that affect partial contracting and full contracting differently, *agency size* and the *wage gap between bus operators in the public and private sectors* warrant special attention. We found results for all of the variables related to system/operating characteristics were consistent with our hypothesis. However, agency size has different effects on the likelihood of contracting depending on whether an agency contracts out either only a portion of service or all service. These different effects indicate that the larger the agency is, the more likely it is that the agency contracts out a portion of service, but the less likely it is the agency contracts out all service. In other words, larger agencies are likely to contract out only a portion of service, while small agencies are likely to contract out all service.

The tendency on the part of large agencies to contract out only a portion of service may reflect their goal of increasing the cost efficiency of in-house service or their reluctance to contract out fully, or both. Large agencies seek cost efficiency improvement in in-house service by contracting out inefficient service lines that have a high peak-to-base ratio (Tomazinis and Takyi 1989), such as long-haul commuter lines (Teal 1985; Teal and Giuliano 1986; Webster 1988), by adjusting the agency size (Morlok and Viton 1985), and by containing labor costs, using contracted service as a threat to unions (O'Looney 1998; Chandler and Feuille 1991). At the same time, managers at large transit agencies are likely to consider contracting out all services to be too risky or too difficult to implement, taking into account the scale of service (Transportation Research Board 2001).

The wage gap between bus operators in the public and private sectors also has an important effect on agencies' decisions regarding contracting. Its effect is almost three times as large on the likelihood of full contracting as on the likelihood of partial contracting. This large difference in the effects of the wage gap indicates that this factor is more important when an agency contracts out all services than when it contracts out only a portion of services. This result indicates that agencies, when they contract out all services, save costs in contracted service by taking advantage of the wage gap. In contrast, agencies with partial contracting achieve fewer savings from contracted services to come from a wage gap.

Among the three variables related to labor conditions, only unionization rate in the private sector was found important to predict the likelihood of partial contracting. Its negative effect on the likelihood of partial contracting supports the hypothesis that a lower private sector unionization rate increases contracting. The likelihood of full contracting is lowest for city agencies, and increases for county agencies, then for state agencies, and regional transportation authorities (RTAs). The likelihood of full contracting is highest for joint power authority/inter-jurisdiction agencies (JPA/IJ). The likelihood of employing partial contracting does not vary much among agencies, after controlling other factors.

Among the variables related to agency governance, many more variables are statistically significant for full contracting than for partial contracting. This difference between partial contracting and full contracting indicates that the partial-contracting decision is less a policy decision and more a management decision. Governance characteristics variables, especially variables related to board members (number of board members, composition of board membership, and term limits), have more significant effects on the likelihood of full contracting than on that of partial contracting. All four variables in this category that were found significant support our hypothesis. The results for most variables related to state procedures are consistent with our hypotheses.

Overall, agencies choose *partial* contracting due to concerns about financial conditions and operating characteristics, and are less likely to be motivated by other labor conditions, governance characteristics, and political ideology. Variables related to system and operating characteristics (operating expense variability, bus operator wage, agency size, vehicle utilization efficiency), revenue characteristics (federal, state, and dedicated funds), and budget constraints influence agencies' decisions when they contract out only a portion of service. This may reflect public transit agencies' efforts towards and success at containing costs for in-house service, so that they do not lose funds from local and state general sources, which in turn, reduces the likelihood that an agency needs to contract out. These results suggest that a large agency is more likely to engage in partial contracting than a small agency, and it does so based on managerial factors; its decision is not political, nor is it affected by factors related to labor conditions and governance structure.

In contrast, when agencies choose to contract out all service, most types of factors, including operations, financial, economic, political, and institutional factors, are associated with the decision. Small agencies choose to contract out all services because they are influenced by many other factors, including governance factors related to the agency board, and institutional factors, such as state laws. In other words, the outcome in the level of contracting is more managerial for large agencies than for small agencies.

2.2. Effects of contracting on cost efficiency: How and how much does contracting affect cost efficiency to provide bus transit service?

The second part of our analysis evaluates whether privatizing leads to more cost-efficient service provision. In this part of analysis, we grouped agencies according to the extent of contracting – *no*, *partial*, and *full* contracting – based on the results from the agencies' contracting-decision analysis. Then we examined how significantly each level of contracting (*no*, *partial*, and *full* contracting) affects cost efficiency of providing fixed-route bus transit service. We controlled for other factors that can also affect cost efficiency (See Table 2), so that we can examine the net effects of level of contracting. In addition, we examined the hypotheses that

factors, such as bus operator wage gap between public and private sectors, peak-to-base ratio, unionization rate, agency size, and agency type, affect the magnitude of the effects of contracting on cost efficiency.

Table 2 List of Explanatory Variables in the Cost Efficiency Model

	Data Source
Database: Cross-sectional, Time-series (Pooled) data	
Sample Size: 440~ systems * 9 years (1992-2000)	
Dependent Variable:	
Total Operating Expenses per Revenue Vehicle Hour	Calculated from NTD
System/Operating characteristics	
Maintenance Cost	Estimated from NTD
Vehicle in Operation	NTD
Peak-to-base Ratio	Calculated from NTD
Operating Speed	Calculated from NTD
Service Area	NTD
Vehicle Size	Calculated from NTD
Vehicle Miles per Route Mile	Calculated from NTD
Ratio of Revenue Vehicle Miles to Total Vehicle Miles	Calculated from NTD
Ratio of Driver Pay Hours to Total Vehicle Hours	Calculated from NTD
Ratio of Vehicle Revenue Hours to Employees	Calculated from NTD
Governance characteristics	
Agency Size (Employees)	Calculated from NTD
Type of Agency	Phone Survey
Contracting	**Instrumental variable**
Growth Rate of Service Area and Service Population	Calculated from NTD
Revenue characteristics	
Total Subsidy	NTD
Federal Subsidy as a Proportion of Total Subsidies	Calculated from NTD
State Subsidy as a Proportion of Total Subsidies	Calculated from NTD
Local Subsidy as a Proportion of Total Subsidies	Calculated from NTD
Dedicated Funding as a Proportion of Total Subsidies	Calculated from NTD
Input prices	
Wage Rate	Calculated from NTD
Fuel Price	Calculated from NTD
Environmental characteristics	
Service Area Population Density	Calculated from NTD
Service Area Population	NTD
Unionization	CPS
Climate (Snowfall)	USCN
Others	
Year	Dummy variables

Data Sources:

NTD The NTD of the Federal Transit Administration for all agencies that receive federal operating subsidies (previously known as the FTA Section 15 Report)

Phone Survey: Original phone survey, supplemented by information from web sites

CPS Data developed from Current Population Survey by Hirsch and Macpherson

USCN United States Climate Normals, 1971-2000; National Weather Service Snow Normals by the National Climatic Data Center, National Oceanic and Atmospheric Administration

In measuring cost efficiency, we used *operating costs per vehicle hour* for *all* services as the dependent variable, so that we could take into account the effects of contracting on the *entire* transit system, combining both *in-house* and *contracted* services, rather than just on the *contracted service*. This is because it is possible that, in addition to realizing direct cost savings from contracted services, a public transit agency may also increase the labor and vehicle utilization efficiency of its in-house services by contracting out the highly inefficient, peak-period portion of its services. Alternatively, a public agency may use the threat of contracting as leverage during labor contract negotiations to increase the cost efficiency of in-house services over the long term. Our approach also overcame the problem presented by the multitude of accounting methods among agencies to estimate total costs for contracted services (e.g., how to allocate the planning, administrating, and monitoring costs associated with contracting practice).

We found that average cost per vehicle hour was highest for the in-house service portion of partial-contracting agencies; it was approximately $15 higher than for the contracted services of both full- and partial-contracting agencies and for the in-house services of no-contracting agencies. Larger agencies have a higher cost per vehicle hour (or lower cost efficiency), compared to smaller agencies (diseconomies of scale). We found this relationship between agency size and cost efficiency for agencies with all three different levels of contracting.

Our analysis of the net effects of contracting shows that contracting *does* affect cost per vehicle hour. For both levels of contracting, agencies lower costs per vehicle hour by a few dollars on average, compared to no-contracting agencies. The combined effects of contracting result in cost savings of $4.09 and $2.89 per vehicle hour for partial- and full-contracting agencies respectively in the *average* case. Using the average operating cost per vehicle hour of $53.06, these average cost savings translate into 7.8 percent and 5.5 percent, respectively. These cost savings are modest compared to estimates of contracting cost savings on the order of 10 to 40 percent per unit found in the studies conducted in the 1980s and early 1990s.

Our analysis shows that the effect of contracting on cost efficiency varies with factors, such as the bus operator wage gap between public and private sectors, peak-to-base ratio, agency size, and agency type. First, while cost per vehicle hour increases (cost efficiency decreases) as agency size increases, its increasing rate is lower for *partial* contracting agencies than *no* and *full* contracting agencies. In other words, agencies, which are likely to be large ones, use a partial contracting strategy to adjust system size to offset diseconomies of scale in operation.

Peak-to-base ratio also influences the effect of *partial* contracting, while bus operator wage gap between public and private sectors does so only for *full* contracting. The higher (lower) the peak-to-base ratio for the entire system, the higher (lower) cost per vehicle hour for partial contracting, compared to no contracting, *ceteris paribus*. In other words, the effect of change in the peak-to-base ratio on the cost per vehicle hour is larger for partial-contracting agencies than no- and full-contracting agencies. This result suggests that larger agencies with high peak-to-base ratios should consider partial contracting, because they can effectively increase cost efficiency in in-house service as well as contracted service by contracting out lines with a high peak-to-base ratio, which are therefore more costly to operate. Transit agencies contract out long-haul commuter services that have a high peak-to-base ratio—sometimes even offering service only in the peak period (Morlok and Viton 1985; Tomazinis and Takyi 1989; Cervero 1988).

Lastly, the larger the wage gap between bus operators in the public and private sectors, the larger the cost decreasing effect of contracting in the full-contracting case. The cost-decreasing effect was greater for full contracting than for no or partial contracting as the wage gap increased, while the large wage gap increases the likelihood of full contracting more significantly than it increases the likelihood of partial contracting. These findings suggest that agencies located in areas where the wage gap is large take advantage of that large wage gap by contracting out all services, and thereby gain cost savings in operation. It should be noted that since many public agencies procure vehicles by taking advantage of federal capital subsidies, and then lease them to contractors, cost savings in terms of vehicle capital costs by contracting are probably not substantial.

In summary, we found that the effects of contracting on cost efficiency were modest improvements on the order of 7.8 percent and 5.5 percent for an average agency through partial- and full-contracting respectively. However, it requires caution to interpret these numbers, since this improvement is not universal. The effects of contracting on cost efficiency vary by factors such as peak-to-base ratio, agency size, the wage gap between bus operators in the public and private sectors, and agency type.

Our analysis results, combined with results regarding the agencies' decision for contracting, suggest that agencies strategically choose either a partial or full contracting strategy when they decide to contract out services, and that expected savings for each type of contracting strategy depend on the conditions in which an agency operates its services.

2.3. Synthesis of transit managers / directors' experience on contracting in California

We conducted interviews of transit managers and directors at thirteen transit agencies in California to ask about their contracting experience. We selected agencies of different sizes (small: 1 to 100 vehicles, medium: 101 to 400 vehicles, and large: over 400 vehicles in maximum operation) that have utilized different levels of contracting (partial and full-contracting) as well as agencies that have not used privatization (no-contracting) (Table 3 and the details of agencies' profiles are in the table in the appendix).

Our interviews revealed that transit managers and directors need to take into consideration various issues to choose the best strategy to operate the transit system, taking into account the agencies' financial condition, operating conditions that vary by lines, labor relationships, and the political environment wherein agencies operate. Transit managers and directors are most concerned about providing cost-efficient service for transit users, and treat contracting as one of several strategies to achieve their goal. They often use a contracting strategy for particular service lines wherein agencies can take advantage of the flexibility in a contracted service. Most transit managers and directors understand the importance of keeping good relationships with the unions, and rarely use contracting for service lines that have been provided in-house, since such conversions of in-house services to contacting services is a serious problem for the unions that are most concerned about jobs for their present union members. Among agencies interviewed in this study, it is in the planning process, rather than at the board level, that agencies choose contracting over other strategies, and some agencies successfully work with the union to gain concessions to increase labor productivity.

Table 3. Thirteen Transit Agencies for Case Study Analysis

Agency size	Level of contracting		
	None	**Partial**	**Full**
Small	Culver City Bus	City of Torrance Transit System	Santa Clarita Transit
Medium	Long Beach Transit	Omnitrans	City of Chula Vista
	Sacramento Regional Transit District	Confidential (Agency #7)	Los Angeles Department of Transportation
Large	San Francisco Municipal Railway	Orange County Transit Agency	n/a
		Santa Clara Valley Transportation Authority	
		Los Angeles Metropolitan Transit Authority	

Most transit managers and directors are aware of the complexity of transit management, and often treat contracting as one strategy among several that they can use to improve productivity and cost efficiency, and not as a single, cure-all solution. Other common strategies include **hiring part-time labor, adjusting wage scales, and increasing the time required to reach the top wage rate**. Employing part-time labor and hiring lower wage full-time workers may have effects on cost efficiency that are comparable to contracting, whose magnitude varies depending on characteristics of the service and labor scheduling (Tomazinis and Takyi 1989).

Since most management strategies to increase cost efficiency, including contracting, influence labor conditions, transit agencies face **opposition from their unions**. For a contracting strategy, this is especially true for partial-contracting agencies, where unions already face encroachment of private firms into the service and fear the possibility of further job cuts for their members. While the union may concede to contracting out new services, it tends to show much stronger opposition against contracting out existing services, since it means that its members' existing jobs are at risk. Because of this reason, agencies, such as the City of Torrance Transit System, Santa Clara Valley Transportation Authority, Omunitrans, and another agency (Agency #7) do not intend to contract out existing regular services. A different way of seeing this management practice is that an agency tries contracting first because it is very difficult to contract out service once it is provided in-house.

While most agencies that have some in-house services are sensitive to the union resistance to contracting, they also face financial distress and must find ways to increase cost efficiency. For a transit agency whose primary mission is to provide transit service to the public, economic concerns are more important than political issues. Transit agencies that currently contract out no or little service, such as Los Angeles Metropolitan Transit Authority, Culver City Bus, and San Francisco Municipal Railway, would more seriously consider contracting out if the financial situation worsened and made it impossible to provide service in-house. These agencies might consider the "drastic measure" of contracting out if they could make a convincing case to union and political representatives that it would greatly reduce service coverage or quality. The financial situation potentially overrides concerns about labor relations as it worsens.

Under severe financial distress, several agencies, including Sacramento Regional Transit District, San Francisco Municipal Railway, City of Torrance Transit System, and Omnitrans, maintain a good **relationship and open communication with the union** (or employees), which enables both parties to work together to simultaneously increase the cost efficiency of the in-house service while avoiding significant job losses due to contracting. For example, Sacramento Regional Transit District was able to negotiate adjusting wage scales and using some part-time labor. City of Torrance Transit System displays strong opposition to contracting out local bus services, but conceded the hiring of more part-time workers, which cut into its members' overtime earnings, when it was made clear that jobs were at stake. While Omnitrans, whose labor contract reserves the right to contract out services that are operating in a cost *inefficient* way, contracts out lines in the outlying areas, using smaller vehicles for low ridership to keep costs low, it reassures employees that no layoffs or reductions in workforce would result from contracting. Even when transit managers are aware of other strategies for increasing cost efficiency, they need cooperation and concessions from the union to implement them since most of these strategies also negatively impact income and working conditions for bus drivers, even if these impacts are significantly less severe than job losses caused by contracting.

Agencies that contract out only a portion of service, such as City of Torrance Transit System, Omnitrans, Orange County Transit Agency, Santa Clara Valley Transportation Authority, Los Angeles Metropolitan Transit Authority, and another agency (Agency #7), do not simply contract out the service, but identify specific lines or specific types of services that are appropriate for contracting. Partial-contracting agencies have primarily two reasons: 1) to increase cost efficiency for specific lines, and 2) to "try out" a new service. Experienced transit managers may perceive or identify in a system service assessment that the service on particular lines, such as commuter service lines and lines in outlying areas, can be provided more cost efficiently through contracting. Alternatively, managers may wish to experiment with a new service type, but do not want to commit in-house or long-term resources to the new service, so they use contracting to test it out. In these cases, the decision to contract out is a managerial one, with approval from the board of directors. Transit agencies can selectively use contracting to address specific productivity and efficiency concerns. The decision to contract is not necessarily an "all or nothing" decision.

In contrast to partial contracting agencies, the three full-contracting agencies – Santa Clarita Transit, City of Chula Vista, and Los Angeles Department of Transportation – have contracted out all services since the agencies' inception for two reasons: 1) higher productivity and cost efficiency, and 2) avoiding labor issues. These agencies are "younger" than the other agencies, and had never provided services in-house, which allowed them to avoid any labor dispute or union opposition to contracting. They are not selective regarding lines to contract out, and probably examined only no- and full-contracting strategies without taking into account the possibility of using a blend of in-house and contracted services. Other reasons these agency representatives mentioned for full contracting included continuation of the previous services administered by a different agency, limiting the number of public employees, and faster implementation. In addition, while City of Chula Vista decided to contract out all services primarily as an economic decision in the early 1970s, it is now part of the San Diego Metropolitan Transit System (MTS), and follows MTS's formal policy to review bus service for contracting opportunities since the mid-1980s.

In general, the political environment is generally pro-labor in California, and influences an agency's planning process of service management. Agencies in the pro-labor political environment in San Francisco and Sacramento carefully consider strategies other than contracting to increase cost efficiency, partly because of their concerns over labor issues. Although it is different from political viability, a few agencies have a philosophical preference for providing services in-house with their concern for service quality. Contracting – particularly contracting out existing regular services – is hardly brought up to the board, because contracting is perceived as politically infeasible, given the pro-labor political environment in which political viability is attributed to local political tendencies.

The concern and influence of organized labor go beyond conditions of workers at public agencies, and reach contractors' employees. Contracting agencies are concerned about either simply protecting contractors' workers or keeping the turnover rate low for the quality of drivers, or both, and require contractors to set **minimum wage levels and/or provide fringe benefits**. For example, Chula Vista Transit follows a responsible living wage policy that San Diego Metropolitan Transit System and local city council enacted to call for wage levels and medical benefits. In addition to a living wage requirement, Los Angeles Department of Transportation has a worker-retention clause that goes into effect when the contractor changes: employees from the incumbent contractor making $15 per hour or less have to be offered employment for 90 days before the new contractor can decide whether to keep them or not. Other agencies, such as Santa Clarita Transit and Santa Clara Valley Transportation Authority, ask bidders for the wage and benefits information and seriously evaluate it in the bidding process to address the negative impacts that contracting can have on workers.

The Transit Development Act that requires a labor contract between a transit agency and the union *not* to preclude contracting may have some effects on agencies' labor contracts. However, it does not mean that labor contracts at all transit agencies allow agencies to contract out. The Transit Development Act (TDA) requires that "the operator is not precluded by any contract entered into on or after June 28, 1979, from employing part-time drivers or from contracting with common carriers of persons operating under a franchise or license." [iii] Among agencies that we interviewed, transit managers at four agencies clearly said that their l**abor agreements** do not prohibit an agency from contracting out fixed-route bus service. In contrast, some agencies, such as the Santa Clara Valley Transportation Authority, have a clause in the union contract that restrict the agency from contracting out "regular" fixed-route service. While not being confirmed, this inconsistency may come from whether or not an agency directly receives TDA transit subsidies. Some transit agencies particularly in large urban areas receive transit subsidies that are filtered through regional transportation agencies, such as the Metropolitan Transportation Commission in San Francisco and the Los Angeles Metropolitan Transportation Authority. Labor restrictions prevent a few agencies, including Santa Clara Valley Transportation Authority and Omnitrans, from using strategies to increase cost efficiency, such as contracting and hiring part-time employees.

The interview study revealed several important issues pertaining transit service management. Transit agencies treat contracting as one of several strategies to increase cost efficiency for the entire system, not just to seek cost savings on contracted lines. In practice, agencies use contracting in different ways, both to enhance cost efficiency and to achieve other goals. Agencies that use partial contracting can use contracting on specific lines or service types, thereby targeting efficiency improvements for those lines in greatest need. Partial-contracting

agencies can also use contracting as a short-term solution on new or unproductive lines, to evaluate whether such lines can be viable as part of an in-house provision. In contrast, agencies that contact out all services do so partly because they want to avoid labor issues that have been considered as a main reason to increase operating costs and lower productivity. All three agencies in our study that contract out all services could do so without any labor disputes because they had no existing in-house operating unit at its inception of service. To increase cost efficiency of in-house operations, agencies that are concerned about labor relations use other methods, such as employing part-time labor, tailoring wage scales to specific service types, or lengthening the time it takes for operators to reach the top of the wage scale; they may combine these with a contracting strategy or not.

These different responses of transit agencies to the fiscal pressures they experience are a result not just of economic analysis but also of the agency's institutional environment, relationship with its labor union, and the political and economic contexts in which it operates. While transit managers and directors keep a contracting strategy in mind as an option if economic conditions deteriorate to such a degree that agencies cannot otherwise provide service, they take labor relations and political climate into account in the planning process, and seek opportunities to improve operational cost efficiency without resulting in significant negative impacts on labor. The considerate planning process creates an environment in which unions can accept measures that, while they impact labor conditions, are less severe than job losses caused by contracting. In addition, some agencies set requirements of minimum wage levels and/or provide fringe benefits for contractors to partly avoid adverse effects of contracting on labor.

While labor contracts prevent agencies from implementing various management strategies, such as contracting and hiring part-time employees to increase cost efficiency in transit service operation, we could not identify the details due to large variety of labor contracts among transit agencies. This area clearly needs a more in-depth study in future.

2.4. Synthesis of research results from all three parts

Transit systems differ in their characteristics and in the conditions under which they provide service. Due to these differences, service provision strategies differ between agencies, as do the outcomes of contracting. Different motivations may lead transit agencies to pursue different levels of contracted service.

In the analysis of agencies' decision for contacting, we found that agency size significantly affects the level of contracting, which implies that agency size influences the effect of contracting on cost efficiency differently depending on whether contracting is partial or full. While cost per vehicle hour increases (cost efficiency decreases) as agency size increases, it increases at a slower rate for *partial* contracting agencies than *no* and *full* contracting agencies. Thus, a large agency may use a partial-contracting strategy to, in a sense, adjust its system size to offset diseconomies of scale in operation, and thereby contain costs.

Given urban forms, density of urban development in the U.S., people's travel behavior, and transportation policies in favor of automobiles, transit agencies find it difficult to increase and/or expand their service in a cost-efficiency way, since the demand usually has peaks that lower operation efficiency. As a result several agencies in California use contracting for new services, such as new services for commuters and for outlying areas, while they retain in-house their core service areas. This approach may be further evidence of agencies' awareness of cost inefficiency for the expansion of service. This helps explain our finding that there are no large

full-contracting agencies. In addition, agencies may be able to circumvent time-consuming hiring process of new drivers for new services and do not have to commit to providing jobs to drivers on "try-out" lines by contracting out for services. Thus, agencies are using privatization to adapt to peak-demand periods, changes in the overall demand for commuter services, and other short-term contingencies.

It may be necessary to distinguish two transitions in terms of levels of contracting: 1) shifting from no contracting to partial contracting and 2) increasing the level of contracting within partial contracting. In the first case, transaction costs associated with planning, administrating, monitoring contracted service can be significantly more than an agency who has already contracted out some portion of service increase contracted service. Particularly in the second case, agencies may be able to save costs by contracting out new services, in addition to existing contracted service, by not having to assign bus operators with high seniority and salary to cost ineffective lines, or by not affecting the operation of in-house service in terms of labor and vehicle scheduling. In other words, transaction costs of contracting have more significant impacts on agencies with no contracting experience.

In contrast, other public entities appear to privatize all of their services, thereby avoiding the cost of setting up their own operating unit. An important avoided cost is that associated with expected labor disputes in transit service management. All three full-contracting agencies in our interview were new agencies when they became responsible for administering transit service. Thus they did not have to contend with an existing labor force or union when they decided to contract out their services. In addition, while we did not find any evidence due to the limitation of the analysis in this study, the capital costs associated with maintenance shops, garages, and other facilities can be saved by a full-contracting strategy. This consideration of capital costs savings is more crucial to small agencies than large agencies. This advantage of full contracting applies much less to agencies that already have their in-house operating units.

In our interview, agencies that contract out all services decided to do so also because they assessed that it would be more cost efficient than providing service in-house. Our quantitative study showed that agencies do contract out and can save costs when agencies are in areas where the bus operator wage in the private sector is lower than that in the public sector. It is particularly important to assess conditions and environments in which an agency operates its transit service and suitability of a contracting strategy, because contracting is only one option among many management strategies that transit managers may choose to increase cost efficiency. In addition, when an agency is not sure that it can sustain ridership and therefore operation of a new line, contracting out the new line is one way to try out without committing significant resources for the line from in-house service.

Institutional factors, such as number of board members, composition of board membership, term limits, agency type, and variables related to state procedures (budget constraints, clean government, discretionary prevention, and bargaining) matter more for a full-contracting decision than for a partial-contracting decision. Taking into account the fact that smaller agencies are likely to contract out all services, these institutional factors influence more because smaller agencies are affected by institutional factors more than are large agencies.

There are several cases in our interviews in which an agency and its union working together found a middle ground in order to increase cost efficiency without significantly impacting labor negatively. In these cases, the union showed some flexibility about changes,

such as the use of part-time labor and change in salary scales, that did not severely hurt existing employees, about whom it is generally more concerned. Therefore, it is important that an agency maintains a good relationship with the union without threatening the use of drastic privatization measures. In his examination of several agencies, Richmond (2001) found that a union's strong resistance to privatization is understandable in the presence of a hostile environment. At the same time, transit agencies should attempt to avoid extensive labor provisions that would restrict management practices. The range of union reaction to contracting and other proposals for increasing cost efficiency can be instructive, however, in guiding agencies to determine the changes their unions may be willing to consider and those that are out of the question.

3. CONCLUSION

3.1. Brief summary of conclusion

In summary, our analysis suggests that most agencies rationally and strategically choose a level of contracting, understanding how agency size, peak-to-base ratio, and bus operator wage gap influence the effect of contracted services on cost-efficiency of the entire service – including both in-house services and contracted services. The synthesis of the interviews of transit managers and directors at thirteen transit agencies in California reveals several important issues of transit service management, including contracting decisions; the delicate balance between economic concerns and labor issues, labor relations, and existing contracts; and by institutional settings (variables related to board members, agency type, and state procedures) of the various agencies.

The analysis finds that a contracting strategy can be a viable option to improve cost efficiency in transit service, but only when a transit agency carefully chooses the service level to contract based on an adequate assessment of its conditions.

3.2. Implications and policy recommendations for transportation planning and policy

The State legislature as well as transit agencies should be aware of the difference between partial contracting and full contracting. The success of a contracting strategy depends on the level of contracting and several important conditions that are unique to each transit agency. The economic outcomes of contracting also vary between partial or full contracting, since cost efficiency is improved for different parts of services provided. Full contracting mainly saves costs of overall service by taking advantage of the wage gap between drivers in the public and private sectors; but partial contracting improves the cost efficiency of in-house services by adjusting in-house operation size and improving flexibility of in-house operations.

In the following, we first present policy implications for elected officials to consider, and then list lessons learned from this study for transit mangers and directors at public transit agencies in California.

Policy Implications for State Legislature

1. *Do not legislate a blanket policy requiring all transit agencies to contract out a certain proportion of service.*

Improvement in cost efficiency varies depending on individual agencies' conditions and circumstances and indicates that a blanket policy—either federal or state—requiring transit agencies to contract out a certain proportion of service will hardly work for all agencies.[iv] For

example, Santa Monica Municipal Bus Lines has a considerably lower cost per revenue hour than LACMTA does, due of its agency size, the types of service provided, and agency-labor relationship (Richmond 1992, 2001). Few would contend that Santa Monica Municipal Bus Lines should contract all service. Partial contracting may still be an option, but it is hardly plausible that the state (or federal) legislature will know the appropriate proportion of service that all transit agencies in California (or in the nation) should contract out, and it is certain that some transit agencies are better off with no contracted service. As our study shows, agencies, to some degree, strategically choose whether or not to contract out and the level of contracting. In addition, contracting is only one of the management strategies that transit agencies take to improve cost efficiency. Therefore, leaving a contracting decision solely to transit managers and board members of individual agencies is a better policy than a legislative requirement.

2. *Do not legislate a law that effectively prohibits transit agencies from making organizational reforms or operational adjustments to improve cost efficiency.*

Any blanket legislation that effectively prohibits transit agencies from making organizational reforms or operational adjustments to improve cost efficiency should not be encouraged either. The state of California, for the protection of existing employees, passed a law (SB 1101) preventing the LACMTA from creating a new independent transit district or breaking into zones with separate and new labor contracts (Richmond 2001). This legislation seriously hinders the LACMTA from improving its cost effectiveness by adjusting its system size.

3. *Set guidelines or requirements of performance indices, such as level of cost efficiency and cost effectiveness, and allow transit agencies to choose measures, including a contracting strategy, that best suit their operating conditions.*

The best interest of transit service management is to provide service to the public. Based on this premise, it is important to direct transit agencies to focus on the efficiency and effectiveness to provide transit service. In some cases, agencies may decide to contract out services primarily for non-economic reasons, such as political and institutional reasons. The “try-out” line for which the board requires a service provision regardless of its cost-ineffectiveness is an example of service expansion for a political reason. Such policy decisions regarding contracting cannot be necessarily expected to produce positive economic outcomes. For these reasons, it is important to exclude politics from policies on contracting (Sclar 2000).

From a perspective of the funding source, it is recommended that the State sets guidelines or requirements of performance indices for cost efficiency, cost effectiveness (measured by service consumption per unit of service output), labor utilization efficiency (measured by labor hours in service divided by total labor hours), and vehicle utilization efficiency (measured by vehicle hours in service divided by total vehicle hours), that may vary by operating conditions of individual agencies. Alternatively, these performance indices can be part of a formula to allocate state funding to individual agencies. However, the State should not force any particular management measures upon transit agencies, but allow individual agencies to choose their own management strategies, including contracting, that best suited to their operating conditions.

4. *Arrange institutional settings that enhance careful assessment and planning for contracting, instead of allowing a hasty decision.*

A large variation in operating conditions of different service lines requires transit mangers to carefully assess the effectiveness of different measures for providing transit service on the lines.

The consequences of contracting for cost efficiency are not uniform across agency. Therefore, it is recommended to set an institutional arrangement that allows an agency to examine various measures, including contracting, to provide service for proposed lines. Other measures can be combined with a contracting strategy, and result in a more cost efficient service than when the service is merely contracted out. These measures include the use of smaller vehicles and the use of part-time labor.

In addition, full-contracting can be a viable option for new agencies because a full-contracting strategy allows agencies not to deal with labor issues that have been considered as one of the main reasons to lower cost efficiency in transit service operations. However, it is likely that agencies may make a hasty decision without carefully assessing an option of partial contracting. If a new agency is to receive state funding, it may be an option for the State to provide funding for the agency to conduct an assessment of the effectiveness of all three strategies—no, partial, and full contracting.

5. Set a standard for a minimum wage and fringe benefits for employees of contractors

Although our analysis indicated that a full-contracting strategy takes advantage of the wage gap between the public and private sectors, a significantly lower wage rate is not preferable from the perspective of labor policy. When the State Legislature is concerned with the negative effects of contracting on wages and fringe benefits of transit employees, it is recommended to set a minimum wage that contractors must pay their operating employees, as has been done by San Diego Metropolitan Transit System (MTS), which has had a formal policy to review bus service for contracting opportunities since the mid-1980s.

6. Examine, evaluate, and possibly reform work rules in labor contracts at public transit agencies

One of the main sources of inefficiency in transit service operation is the restriction of work rules that limits flexibility in labor management to adjust operation to a large variation of service demand throughout a day. Stringent work rules and associated high labor costs at public transit agencies have been criticized for low cost efficiency (Cox and Love 1991; Mundle, Kraus, and Hoge 1990; Morlok and Viton 1985; Peskin, Mundle, and Buher 1992). These work rules include limited use of part time workers, 40-hour work guarantees, prohibition of split work, split-work hour premiums, overtime premium, and prohibition of different tasks. While understanding the importance of protecting benefits of transit employees, it is recommended for the State to examine and evaluate work rules in labor contracts in public transit agencies. The examination and evaluation of work rules may lead to a reform of some work rules.

7. Consider the distribution of costs and benefits of a contracting policy among different groups.

The State should be concerned with the net benefits of a contracting policy for society, and demand the more detailed analysis of sources of cost efficiency improvement (or cost saving). The net benefits of a contracting policy for society as a whole depend on where cost efficiency improvement derives from. When a contracting strategy saves costs *solely* by taking advantage of the wage gap between the public and private sectors, the result is simply redistribution of income from public transit employees to transit users, taxpayers, and private sector workers. In this case, transit employees in the public sector clearly are worse off as a result of privatization policies, unless the same work and salary conditions can be secured somewhere else. And society as a whole does not benefit from such a change in policy. In contrast, when agencies can

increase cost efficiency by adjusting their size and improving operating efficiency without affecting wage rates, fringe benefits, and working conditions of transit service employees, it should involve less redistribution of income, and the society as a whole benefits from this better allocation and use of resources. The use of part-time labor for peak services that increase labor utilization efficiency and the use of smaller vehicles on particular lines that reduce vehicle capital costs are such strategies to increase cost efficiency without harming existing employees.

This concern of the net effects of a contracting policy also addresses the equity issues associated with a policy change from in-house to private provision of bus transit service; It also addresses the distribution of costs and benefits of a contracting policy among different groups. Because of its importance, the study to examine the distribution of costs and benefits of a contracting policy among different groups is warranted.

Lessons Learned for Public Transit Agencies in California

1. *It is essential for transit agencies to assess the conditions, circumstances, and characteristics of their transit service operation before contracting.*

The effects of contracting on the cost efficiency of providing service varies not only by the level of contracting but also by a few other factors. The effect of a partial contracting strategy on cost efficiency is influenced by the peak-to-base ratio,[v] and agency size, while that of a full contracting strategy is influenced primarily by the wage gap between drivers in the public and private sectors. In addition, certain conditions may determine an agency's condition to contract out service, although cost efficiency does not derive from contracting, but from another reason. For example, it is more cost efficient to operate smaller vehicles on lines for which an agency cannot expect high ridership. Whether or not an agency uses a contracting strategy depends on the flexibility in management to be able to use small vehicles for in-house service. Thus, it is essential for agencies to assess the conditions, circumstances, and characteristics of their transit service operation, in order to decide whether or not to contract out and choose the most effective level of contracting.

2. *Agencies can take various measures to increase cost efficiency.*

A contracting strategy is not the only way to achieve cost efficiency improvements. Operating efficiency (e.g., vehicle and labor utilization efficiency) also can be improved by better scheduling of vehicles and labor, by using part-time labor, and by relaxing work rules. Revising salary scales combined with labor scheduling is another way. The use of smaller vehicles may be a more cost-effective way to provide special services, such as services for commuting and outlying areas. Thus, when certain conditions are met, a contracting strategy is only one of several ways to improve cost efficiency.

3. *Transit agencies should be aware of economies and diseconomies of scale in transit service operation.*

In addition to the management strategies mentioned above, there is another way that uses a concept of economies of scale to increase cost efficiency of the entire system. A partial-contracting strategy allows a transit agency to reduce the size of their in-house operations and gain economies of scale, and increase operating efficiency by outsourcing bus lines that have a high peak-to-base ratio and are very inefficient to operate. However, both adjusting the size of an agency's in-house operation and improving operating efficiency can be brought about in other ways. For example, the size of in-house operation can be controlled by creating independent

operating districts.[vi] Richmond (1992; 2001) attributes Foothill Transit's low operating costs to its smaller unit size, which enables the agency to more closely monitor both costs and service on individual lines. The Los Angeles County Metropolitan Transportation Authority (LACMTA) recently divided its bus operation into five service sectors, each of which has its own governance council that is responsible for service improvements in each local community. The efficacy of such a strategy on cost efficiency is yet to be examined, but is certainly worth considering for other large agencies.

4. *Transit agencies should seek a way to corporate with unions to increase cost efficiency but not significantly disadvantage conditions for existing employees.*

While the full-contracting strategy saves costs mainly by lowering labor costs, it is difficult for transit agencies to switch from an in-house service provision to contracting, because such drastic change will create hostility from unions and cause disturbance in service. Most agencies do not face unconstrained decision-making power that all of three full contracting agencies had because they did not have to contend with their own operating unit from the beginning. It would be better for agencies to work with unions to lower labor costs but not significantly disadvantage existing employees. To do so, agencies can change work rules, create more steps to reach the top wage rate, and improve labor scheduling, rather than hiring more part-time labor or contracting out service, to improve labor utilization efficiency and productivity. Another alternative is to give a publicly-owned service unit the chance at reform by allowing it to compete against private contractors in a bidding process. This has been successful in San Diego.

5. *A lower wage rate is not necessarily better for transit service operation.*

A low wage rate at private transit firms may increase the turn-over rate for bus operators, and may result in a lower quality of service, affecting such things as on-time performance. This has been a serious concern in some cities, such as Denver and Las Vegas (Richmond 2001; Transportation Research Board 2001). Transit agencies also need to make this tradeoff between cost efficiency and the quality of service to provide, and may set a minimum wage that contractors must pay their operating employees separately from the State or regional policy.

Transit agencies have much broader goals than just providing the cheapest-possible, minimum-quality service. Agencies need to provide quality service to their customers and also provide decent jobs to their employees, spending wisely the public money from taxpayers. The effects on these three groups – riders, employees, and taxpayers – must be balanced out in transit policy decision making. Contracted service can be wisely used to provide service for high-cost commuter service or suburban service with high peaks, or it can be used to gain concessions from public employees and their unions to relieve stringent work rules.

There are many issues left to be examined. In particular, we suspect that federal and state transit subsidy requirements may have significant implications for how those subsidies are used, and that they may affect the contracting decision. Unfortunately, we were not able to obtain sufficient information about these requirements. We were also unable to examine how the details of labor agreements may influence the contracting decision, and whether labor's influence on how an agency uses contracting comes from political strength, from the power of the labor agreements in place, or from other factors. These issues are on future research agendas.

4. APPENDIX

Table A1 Profiles of Interviewed Transit Agencies

NTD Data for Fiscal Year 2002 (July 2001 - June 2002)	Variables	General Characteristics			Vehicles in max operation (VOM)					
		NTD ID #	City	Size	Total	Contracted	In-House	Level of Contracting	Primary Respondant	Peak to Base Ratio
AGENCIES										
Culver City Bus ("CCB")		9039	Culver City	Small	32	0	32	No	Transit Operations Manager	1.35
Long Beach Transit ("LBT")		9023	Long Beach	Medium	159	0	159	No	Confidential	-
Sacramento Regional Transit District ("SacRTD")		9019	Sacramento	Medium	193	0	193	No	Assistant General Manager of Planning and Transit	1.25
San Francisco Municipal Railway ("Muni")		9015	San Francisco	Large	414	0	414	No	General Manager	1.53
City of Torrance Transit System ("TTS")		9010	Torrance	Small	54	11	43	Partial	Transit Administrative Manager	1.79
Omnitrans		9029	San Bernardino	Medium	144	5	139	Partial	Confidential	1.00
CONFIDENTIAL ("Agency #7")		-	-	Medium	-	-	-	Partial	Contract Administrator	-
Orange County Transit Agency ("OCTA")		9036	Orange	Large	494	53	441	Partial	Department Manager	1.57
Los Angeles Metropolitan Transit Authroity ("LA Metro")		9154	Los Angeles	Large	2067	142	1925	Partial	Director of Transportation Contract Services	1.46
Santa Clara Valley Transportation Authority ("SCVTA")		9013	Santa Clara	Large	435	33	402	Partial	Operations Planning Manager	1.58
Santa Clarita Transit ("SCT")		9171	Santa Clarita	Small	47	47	0	Full	Transportation Manager	2.47
Chula Vista Transit ("CVT")*		-	Chula Vista	Medium	-	-	-	Full	City Transit Coordinator	1.39
Los Angeles Department of Transportation ("LADOT")		9147	Los Angeles	Medium	228	228	0	Full	Chief of Transit Program	2.14
National Profile (Using whole numbers)					50,463	5,441	45,022			1.60
California Profile (using whole numbers)					8,014	1,137	6,277			-

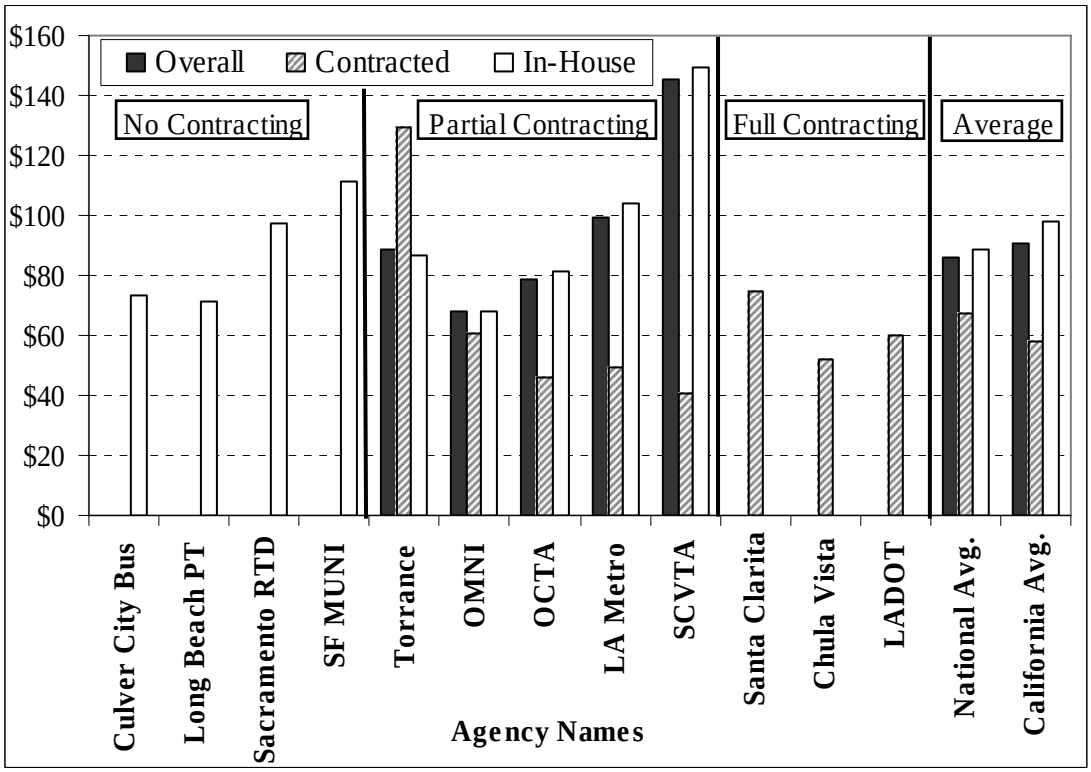
Note: National Data is based on 453 agencies. Of these, 309 agencies have Directly Operated service only, 94 have contracted service only and 50 agencies have both types of service. California data is based on 65 agencies. Of these agencies, 21 are DO only, 32 are PT only and 12 offer both DO and PT service. Confidential and "-" listings indicate that either agency requested confidentiality or specific information was unavailable.

Table A1 Profiles of Interviewed Transit Agencies (Continued)

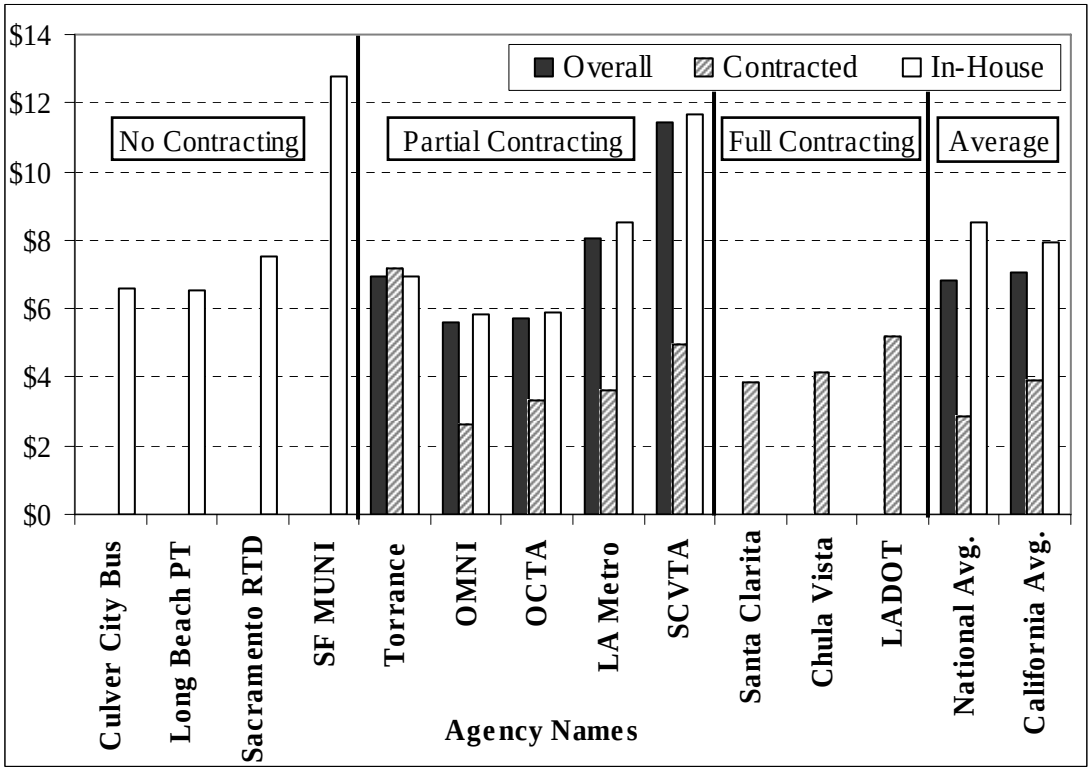
		General Characteristics		Service as a Proportion of Total Service (Vehicle Revenue Miles)		Operating Cost per Vehicle Revenue Hour			Operating Cost per Vehicle Revenue Mile		
NTD Data for Fiscal Year 2002 (July 2001 - June 2002)	Variables	Size	Level of Contracting	Contracted Service	In-House Service	Overall Service	Contracted Service	In-House Service	Overall Service	Contracted Service	In-House Service
AGENCIES											
Culver City Bus ("CCB")		Small	No	0%	100%	$73.08	$0.00	$73.08	$6.57	$0.00	$6.57
Long Beach Transit ("LBT")		Medium	No	0%	100%	$71.52	$0.00	$71.52	$6.51	$0.00	$6.51
Sacramento Regional Transit District ("SacRTD")		Medium	No	0%	100%	$97.10	$0.00	$97.10	$7.54	$0.00	$7.54
San Francisco Municipal Railway ("Muni")		Large	No	0%	100%	$111.58	$0.00	$111.58	$12.80	$0.00	$12.80
City of Torrance Transit System ("TTS")		Small	Partial	6%	94%	$88.52	$129.36	$86.94	$6.96	$7.20	$6.96
Omnitrans		Medium	Partial	7%	93%	$67.85	$61.00	$68.10	$5.60	$2.63	$5.82
CONFIDENTIAL ("Agency #7")		Medium	Partial	-	-	-	-	-	-	-	-
Orange County Transit Agency ("OCTA")		Large	Partial	6%	94%	$78.95	$46.11	$81.20	$5.73	$3.31	$5.90
Los Angeles Metropolitan Transit Authroity ("LA Metro")		Large	Partial	8%	92%	$99.31	$49.11	$103.70	$8.06	$3.63	$8.49
Santa Clara Valley Transportation Authority ("SCVTA")		Large	Partial	3%	97%	$145.44	$40.82	$149.17	$11.46	$4.93	$11.65
Santa Clarita Transit ("SCT")		Small	Full	100%	0%	$74.53	$74.53	$0.00	$3.87	$3.87	$0.00
Chula Vista Transit ("CVT")*		Medium	Full	100%	0%	$52.17	$52.17	$0.00	$4.15	$4.15	$0.00
Los Angeles Department of Transportation ("LADOT")		Medium	Full	100%	0%	$60.32	$60.32	$0.00	$5.22	$5.22	$0.00
National Profile (Using whole numbers)				11%	89%	$86.20	$67.15	$88.59	$6.80	$4.45	$7.05
California Profile (using whole numbers)				22%	78%	$90.50	$58.19	$97.80	$7.05	$3.89	$7.92

Figure A1 Cost per Vehicle Revenue Hour and Cost per Vehicle Revenue Mile

Cost per vehicle revenue hour



Cost per vehicle revenue mile



5. EXTRA

Conference Paper to Date

Iseki, Hiroyuki, Amy Ford, and Rachel J. Factor, "Contracting Practice: Case Studies of Fixed-Route Transit Service Contracting in California," presented at the 84th Annual Meeting of the Transportation Research Board, Transportation Research Board, Washington D.C. This paper is also under review for *Transportation Research Record*.

6. BIBLIOGRAPHY

California Department of Finance. 2003. 2003-04 Governor's Budget Summary submitted by Gary Devis, Governor, the State of California, to the California Legislature. Sacramento, California.

Cervero, Robert. 1988. Transit Service Contracting: Cream-Skimming or Deficit Skimming? Washington, D.C.: Urban Mass Transportation Administration, U.S. Department of Transportation Technical Sharing Program.

Chandler, Timothy, and Peter Feuille. 1991. Municipal Unions and Privatization. *Public Administration Review* 51:15-22.

McCullough, W. S. , Brian D. Taylor, and Martin Wachs. 1998. Transit Service Contracting and Cost-Efficiency. *Transportation Research Record* 1618:69-77.

Morlok, Edward K., and Philip A. Viton. 1985. The Comparative Costs of Public and Private Providers of Mass Transit. In *Urban Transit: The Private Challenge to Public Transportation*, edited by C. A. Lave. Cambridge, Mass.: Ballinger Publisher Co.

O'Looney, John A. 1998. *Outsourcing State and Local Government Services: Decision-Making Strategies and Management Methods*. Westport, Connecticut: Quorum Books.

Richmond, Jonathan. 1992. The Costs of Contracted Service: An Assessment of Assessments: Prepared for Los Angeles County Supervisor Michael Antonovich, Chair, Los Angeles County Transportation Commission.

———. 2001. *The Private Provision of Public Transport*. Cambridge: A. Alfred Taubman Center for State and Local Government, John F. Kennedy School of Government, Harvard University.

Sclar, E.D. 2000. *You Don't Always Get What you Pay For*. Ithaca, N.Y.: Cornell University Press.

Teal, Roger. 1985. Transit Service Contracting : Experiences and Issues. *Transportation Research Record* 1036:28-36.

Teal, Roger, and Genevieve Giuliano. 1986. Contracting for Public Transportation Service. *Transportation Planning and Technology* 10 (4):279-292.

Tomazinis, A.R., and I.K. Takyi. 1989. Reducing the Cost of peak Hour Transit Service through Contracting Out Service. *Transportation Planning and Technology* 13:259-273.

Transportation Research Board. 2001. Contracting for Bus and Demand-Responsive Transit Services: A Survey of U.S. Practice and Experience. Washington, DC: National Research Council.

Webster, Bette A. 1988. Dallas Area Rapid Transit service privatization: A Summary of Benefits/Risks for Transit Providers. Arlington, Texas: North Central Texas Council of Governments.

7. ENDNOTES

[i] It should be noted that the focus of this research is a contracting strategy that is the most prevalent privatization strategy among U.S. public transit agencies because it allows transit agencies to maintain control over important policy decisions regarding service routes, fare levels, and scheduling.

[ii] Peak-to-base ratio is highly correlated with measures of operating efficiency, such as vehicle utilization efficiency and labor utilization efficiency.

[iii] Sacramento Area Council of Governments, *Transportation Development Act Guidelines*, June 2000, http://www.sacog.org/transit/tda.pdf checked on Nov. 14th, 2004.

[iv] For example legislation in Colorado state that passed and signed by Colorado governor Roy Roemer in 1988 requires 20 percent of Denver bus service to be competitively contracted.

[v] It is defined by the ratio of the number of vehicles in the peak period to the number of vehicles in the off-peak period. It is a good proxy of the operating efficiency to provide service.

[vi] Richmond (1992; 2001) attributes Foothill Transit's low operating costs to its smaller unit size, which enables the agency to more closely monitor both costs and service on individual lines. The Los Angeles County Metropolitan Transportation Authority (LA Metro) recently divided its bus operation into five service sectors, each of which has its own governance council that is responsible for service improvements in each local community. The efficacy of such a strategy on cost efficiency is yet to be examined, but is certainly worth considering for other large agencies.