DO GOVERNMENT AGENCIES RESPOND TO MARKET PRESSURES? EVIDENCE FROM PRIVATE PRISONS*

James F. Blumstein**

Mark A. Cohen***

Suman Seth****

December 2007

* Initial work on this project was partially funded by the Corrections Corporation of America (CCA) and by the Association for Private Correctional and Treatment Organizations (APCTO). Subsequent data collection and analysis was funded from the Dean's Fund for Summer Research, Owen Graduate School of Management. Views expressed in this paper are those of the authors and do not necessarily represent those of the funding sources. We are grateful for the valuable suggestions of Tong Li, Sangsoo Park and Robert Hammond; and for the competent research assistance provided by Achintya Ray on an earlier version of this paper.

** University Professor of Constitutional Law and Health Law and Policy, Vanderbilt University; Director, Health Policy Center, Vanderbilt Institute for Public Policy Studies.

*** Justin Potter Professor of American Competitive Enterprise and Professor of Law, Vanderbilt University; Visiting Professor of Criminal Justice Economics, University of York (U.K.).

**** Ph.D. Candidate, Department of Economics, Vanderbilt University.

ABSTRACT

This paper examines the role of privatization on the cost of **government-provided** services. We examine data on the cost of housing public and private prisoners from all 50 states over the time period 1996-2004, and find that the existence of private prisons in a state reduces the growth in per prisoner expenditures by **public prisons** by a statistically significant amount. In 2004, the average Department of Corrections expenditures in states without private prisoners was approximately $493 million. Our findings suggest that if the "average" state in that group were to introduce the use of private prisons, the potential savings for one year in Department of Corrections expenditures for public prisons could be approximately $13 to $15 million for that particular hypothetical state. These savings on public prisons would be in addition to any direct savings from the use of private prisons by itself.

KEYWORDS: Prisons; Privatization; Growth in Government

I. Introduction

A. The Context

One commentator, Professor Gillian Metzger, has recently described the issue of privatization as "virtually a national obsession," noting that "[h]ardly any domestic policy issue remains untouched by disputes over the scope of private participation in government."[1] As Professor Metzger further observes, "[p]rivate entities provide a vast array of social services for the government," performing functions "that appear quintessentially governmental."[2]

When private actors perform "quintessentially governmental" roles, critical and sometimes controversial issues of public policy emerge. The core "concern is that governmental power – power coercive in nature – will be used to further the private interests of the private actor, as opposed to some different public interest."[3] In short, criticisms of privatization focus on concerns about accountability – or, more precisely, the potential lack thereof.[4]

Traditionally, the mechanisms for assuring accountability include governmental oversight. This typically arises through regulation – either administratively or through contract – when government makes use of private entities to provide public services.[5]

---

[1] Gillian E. Metzger, *Privatization As Delegation*, 103 COLUM. L. REV. 1367, 1369 (2003).

[2] *Id*.

[3] David M. Lawrence, *Private Exercise of Governmental Power*, 61 IND. L.J. 647, 659 (1986).

[4] Ira P. Robbins, *Privatization of Corrections: Defining the Issues*, 40 VAND. L. REV. 813, 815 (1987).

[5] Accountability with respect to privatized services, such as operating prisons, may also arise through the operation of competition and market forces. For example, one reason that the Supreme Court declined to apply qualified immunity to prison guards who work for private prison management companies (when such immunity attaches to prison guards who work for state or local governmental entities that manage their own prisons) is that the market provides an appropriate level of incentives for private prison companies to

Accountability also arises through judicial oversight in some (but not all) contexts. This type of accountability attaches when private service-providers assume the status of state actors. Constitutional limitations and protections typically only apply to governmental conduct, but they also apply to certain conduct by private entities when those entities become state actors so that their conduct is fairly attributable to government itself.[6]

Critics note the "deep interdependence among public and private actors in accomplishing the business of governance."[7] They worry that regulatory oversight is inadequate in some complex circumstances because "the contractor's obligations cannot be fully specified in the contract itself" and therefore the contractor retains "considerable discretion."[8] Private contractors exercise discretion through "residual control rights," using "authority to approve changes in procedures or innovations in uncontracted for contingencies."[9] Other commentators express concern about the robustness of the state action doctrine, which determines when conduct by private entities will be fairly attributed to government and therefore subject to constitutional constraints, labeling

---

be sufficiently restrained and/or vigilant in managing prisons. See Richardson v. McKnight, 521 U.S. 399, 409 (1997).(noting that "[c]ompetitive pressures mean not only that a firm whose guards are too aggressive will face damages that raise costs, thereby threatening its replacement, but also that a firm whose guards are too timid will face threats of replacement by other firms with records that demonstrate their ability to do both a safer and a more effective job").

[6] James F. Blumstein & Frank A. Sloan, *Health Care Reform Through Medicaid Managed Care: Tennessee (TennCare) As a Case Study and a Paradigm*, 53 VAND. L. REV. 125, 218-32 (2000).

[7] Jody Freeman, *The Private Role in Public Governance*, 75 N.Y.U. L. REV. 543, 547 (2000).

[8] Sharon Dolovich, *State Punishment and Private Prisons*, 55 DUKE L.J. 439, 480 (2005).

[9] Oliver Hart et al., *The Proper Scope of Government Theory and an Application to Prisons*, 112 Q.J. ECON. 1127, 1132 (1997)).

"constitutional law's current approach to privatization" as "fundamentally inadequate in an era of increasing privatized government."[10]

Thus, by way of understatement, privatization of the delivery of governmental services has its critics and skeptics. Yet public management of public programs, such as prisons, hardly reflects a state of nirvana. There have been "widespread problems and deficiencies in many public prisons,"[11] and a survey by the Harvard Law Review concluded that evidence "give[s] reason to be cautiously pleased with private prison performance."[12].

Part of any anlysis of the overall role of privatization must include an examination of the practical benefits that accrue from using private entities to provide public services. This Article contributes to that analysis by focusing on the privatization of prison management. It is an area in which considerable privatization has occurred (at the federal and state levels in the United States and in many other countries), and it is an area in which accountability concerns may be less acute because "private prisons' greater exposure to damage awards and contractual obligations arguably make them in some ways more accountable than public prisons."[13] Consideration of the experience in private prison management, therefore, provides significant insights into the general policy discussion about the role that privatization can play in the management of public programs.

---

[10] Metzger, *supra* note 1, at 1371.

[11] *Id*. at 1394

[12] *Developments in the Law: The Law of Prisons: III. A Tale of Two Systems: Cost, Quality, and Accountabilty in Private Prisons*, 115 HARV, L. REV. 1868, 1870 (2002).

[13] Metzger, *supra* note 1, at 1394.

B. Some Background

Economists have long touted the potential benefits of privatization, noting that competitive forces and the profit motive will encourage private owners to find least costly and more efficient methods of production. In general, empirical evidence supports the proposition that privatization brings about direct cost savings.[14]

Cost-savings from privatization are generally attributed to (i) productive efficiencies inherent in private ownership and (ii) competition. These cost-savings arise from the relatively lower direct costs from private (as contrasted with public) management. The traditional focus of analysis has been on the cost-saving contribution that accrues directly from the differing incentives[15] and institutional constraints[16] that face private and governmental management. As a result, the emphasis in analysis and policy discussion has been on the direct contribution to programmatic cost-saving from private management as a competitor of and substitute for governmental management.

[14] That is, evidence tends to support the position that the privatized operation of prisons results in cost savings when compared to operation of prisons by government itself. *See*, e.g., Savas, 1982 and 1987; Segal and Moore, 2002b, Some commentators have challenged the strength of this evidence. *See*, e.g., Pratt and Maahs, 1999).

[15] Government agencies do not face competitive pressures in the way that a private firm does. Resource allocation decisions in the public sector are necessarily exercises in budget-making, and bureaucratic incentives for cost containment are often lacking. Absent external yardsticks that approximate a market, budget-makers have little reason to develop and make use of information that contributes toward the formulation or implementation of sometimes-painful management efficiencies. Bureaucracies that do have opportunities to economize are seldom rewarded for cost efficiencies. Instead, they often face the prospect of permanent budget trimming going forward. Thus, even if they have the flexibility and knowledge base to reduce costs, governmental bureaucracies might lack the incentive.

[16] In contrast to privately-run enterprises, government-run enterprises often suffer from burdensome layers of bureaucracy that are legally mandated. These legal mandates exist for a variety of reasons – some more worthy than others – but irrespective of their rationale, they reduce the flexibility and ability to control costs on the part of government-run institutions.

Privatization is not and need not be an all-or-nothing proposition. While entire sectors in some countries have been privatized (*e.g.*, privatization of state-owned airlines or telecommunications), in many a mix of government-owned and privately-owned (and/or privately-operated) enterprises coexist, functioning side by side. Prisons are a significant example of such a public/private mix.

During the period 1996 through 2003 in the United States, 12 out of 50 states (24%) contracted with private companies to house prisoners in each of these years. An additional 25 states (50%) contracted with private companies to house prisoners during at least one (but not all) of these years. In that same period, 13 states (26%) did not permit private companies to house prisoners at all (see Table 1). During the most recent year (2004), 34 states (68%) authorized private companies to manage at least some of their prisoners; yet only about 7.5% of prisoners in the United States are under private management (see Table 2).[17]

Privately-run prisons are also not uncommon in the United Kingdom and Australia. A study published in 2000 in the United Kingdom estimated that by the year 2007, between 9-11% of all prisoners would be under private management.[18] Although there have been a few proposals in state legislatures to do so, no state or nation has yet privatized its entire prison system

[17] Hart, Shleifer and Vishny (1997) argue that privatization works best when there are not a lot of incomplete contracting issues. They argue this is one explanation why only a limited number of prisons are private, since there could be problems with observing such factors as quality. Hart, Shleifer and Vishny focus on contracting issues, not on the competitive aspects of privatization.

[18] Thompson, 2000: 151.

This Article studies the effect of privatization in the context of the pluralistic, mixed-use environment of prison management. In contrast to earlier studies, the Article does not focus on the direct cost savings that accrue as a result of the lower costs of privately-provided government services. Instead, the Article takes advantage of and makes use of the public/private pluralism in the management of prisons to examine another role of privatization – its role in indirectly contributing to savings that accrue on the cost of comparable **government-provided** services in states that have a mix of publicly-managed and privately-managed government (*i.e.*, prison) services.

In particular, this Article addresses the important question whether or not the existence of privately-managed prisons in a state provides competitive or other pressures that help control costs in the public sector. The Article focuses on the use of privatization not as a substitute for public management but as a symbiotic partner for publicly-managed services – a partner that influences public management through such mechanisms as competition (for public resources) or education (*e.g.*, know-how transfer). Because many states still do not have any privately-managed prisons, and all states that do have privately-managed prisons also have publicly-managed prisons, the criminal justice arena is a natural setting to explore the role of private enterprise in holding down the rate of increase in the cost of publicly-provided services.

The Article proceeds as follows. Section II provides anecdotal evidence that government-run prisons respond to competitive or other pressures brought about by privately-run prisons. Section III describes our data. Section IV presents our empirical results. Finally, a concluding section provides some preliminary policy recommendations and suggests future research needs.

II. Private Prisons and Departments of Corrections: Healthy Symbiosis?

There is growing anecdotal evidence that public sector employees respond to and/or learn from competitors when they exist. An example from Virginia of the educational influence of innovation provides an illustration. A norm at a Virginia prison was to store 30 days of food. This was expensive in terms of expenditures for warehousing and staff. Private prison operators in Virginia did not adhere to this expensive 30-day food storage and supply policy, which had been a habitual practice in the public prison system. The prison food storage policy apparently had harkened back to the days of mule trains, when there was a need to keep a large supply of food in storage in case of bad weather. Upon learning of this "new innovation," state prison officials quickly adopted these privately-initiated food-supply policies and reduced overall public prison costs as well.[19] That is, "cross-fertilization" seems to be one of the main benefits of privatization.[20]

Other recent studies on private prisons have recognized that "[p]rivatization can offer increased innovation, access to expertise, improved quality, and enhanced accountability. Most important is recognizing that cost saving from privatization is itself a product of competition, and that competition has beneficial effects on the entire system….Whether from fear of being privatized themselves, or pride in showing they can

[19] Russell L. Boraas, "Structuring Successful Privatization Projects," Virginia Department of Corrections, 1997 (as reported in Segal and Moore (2002)).

[20] Harding (1997) .

compete, or from being compared by higher authorities, workers and management throughout the system respond to privatization."[21]

In the United Kingdom, some prisons have been subject to direct bidding competition between public and private management. One commentator[22] who is largely critical of private prisons in the United Kingdom noted:

> One real benefit that does seem to have occurred by allowing the private sector to manage prisons, is the creation of a competitive environment that has stimulated the public sector to raise its game when bidding to manage prisons. For example, Buckley Hall reverted back to Prison Service management this year after it won the competition to manage it from Group 4, who had operated the prison since 1994.

That is, the existence of private prisons provides an important incentive through competition for public managers to control their costs.

Anecdotal evidence suggests this phenomenon is not unique to corrections – and in theory there is no reason why it should be. Consider the following two examples from outside the prison-services arena. In Washington, D.C., the threat of outsourcing printing services to a private company resulted in a 23% price decline by the Government Printing Office. In New Mexico, a study showed that the city was paying more than twice the price of a private competitor's service. "[C]ity workers argued they should try to improve their operations before sending the work to Jiffy Lube…"[23]

Most of the empirical research to date on the relationship between public and private managers of government services has focused on explicit competition between government agencies and private enterprises. For example, one study found that direct

[21] Segal and Moore, 2002b: 2.

[22] Thompson, 2000: 153.

[23] Moore, 2003.

bidding by private companies against government agencies for government contracts in the Navy helped provide an incentive for reducing the cost of government-provided services.[24] Another study, similarly, found that local government expenditures are lower in cities and counties that have higher levels of direct government-private service competition.[25]

Unlike previous studies, which analyze direct competition, we focus on the extent to which more subtle market forces provide an impetus for public-sector managers to hold down costs. Our focus has been on an assumption of public-private prison symbiosis. That symbiosis can stem from a number of factors, including a "learning" effect on the part of public prisons, and an incentive effect for public prisons to operate efficiently through "competitive" pressures. In either case, private prisons may serve as a "yardstick" or "benchmark" that creates an empirically-based standard by which public prisons can compare themselves (*i.e.*, a means of comparison akin to a market in the private sector, something that public agencies lack in the absence of a mode of comparison afforded by a "yardstick" or a "benchmark" institution). Regardless, we seek to investigate the relationship, if any, between (i) the fact that a particular state houses some of its prison population in prisons that are privately owned or operated and (ii) the rate of growth in costs per prisoner in publicly operated prisons. The hypothesis is that states that allow prisoners under their jurisdiction to be held in private facilities will experience significant cost savings in the rate of growth in the per diem cost of public prisons.

---

[24] Carrick (1988)

[25] Miranda and Lerner (1995).

III. Data

Our goal was to construct the longest possible time series for each state so that we could test the effect of privatization on the rate of growth of public prison costs. While the first state to contract with a private prison company was Tennessee in 1984, no systematic data are available on the extent of private prisons until the mid-1990s. Thus, we collected data starting in 1996, at a time when only 13 states had prisoners housed in private facilities. By 2004, the last year of our panel data set, 34 states had prisoners housed in private facilities.

Our dependent variable is the cost per prisoner in **public** facilities. Our measure of the cost per prisoner in public facilities is straight-forward. We determine the level of overall expenditures in a state for its public prison system and then divide the result by the number of prisoners. The level of overall expenditures in a state for its public prison system is obtained by subtracting state expenditures on private prisons from total overall prison expenditures.[26] To construct this variable, we needed to isolate that portion of state corrections expenditures that is devoted to public (as opposed to private) prisons. Thus, we need private and public prison population as well as state expenditure data on private and public corrections.

[26] Note that throughout this paper we refer to the term "per diem" costs of public or private prisoners. As explained in the text of the paper, our measure of per diem costs is based on total Department of Corrections expenditure divided by the number of prisoners. Thus, we would necessarily include non-prison related costs in the numerator – including the cost of departmental overhead, parole, etc. Actual variable costs associated with adding a prison day would likely be less than the "average per diem" amount we calculate. We cannot directly compare the cost of running a public versus private prison - that is not our purpose. Instead, we are interested in the effect of the existence of privately managed prisons on the entire system.

Prison Population

Systematic data on the number of private prisoners have only been available annually from the federal Bureau of Justice Statistics (BJS) since 1999.[27] These data are available for the six-year period 1999-2004. Prior to the availability of BJS data for 1999, a survey conducted by Abt Associates in 1997 also provided data on privately managed prisoners.[28] However, the definitions of private prisoners are not identical in the two surveys (*e.g.*, the Abt survey may have included half-way houses in some states), and thus the two sources of data cannot be directly compared. Another source of data on the existence of private prisons is the Corrections Yearbook, an annual compilation of survey data beginning 1996 that includes information on whether a state allows private prisoners and/or has a private prison facility located within its borders. While Corrections Yearbook contains some data on private prison population, we are less certain about its accuracy than the BJS data. Thus, we have used the BJS data from 1999 onward, and used the Corrections Yearbook data with some modification for years 1996 through 1998.[29]

[27] Source: Bureau of Justice Statistics, U.S. Department of Justice, "Prison and Jail Inmates at Midyear" (various years). In addition, a census of prisons that identifies if a facility is privately operated has been taken every five years beginning 1985. However, those data only tell us the physical location of private prisons and their population mid-year. We do not know from the earlier data which state has jurisdiction over which prisoners. Thus, for example, while North Dakota has prisoners under its jurisdiction housed in private facilities, none of those facilities are in North Dakota. Thus, we cannot use these earlier data to identify private prison population by state.

[28] Douglas McDonald, Elizabeth Fournier, Malcolm Russell-Einhourn, and Stephen Crawford. Private Prisons in the United States: An Assessment of Current Practice. Abt Associates, 1998.

[29] In particular, we found missing and incorrectly coded data in numerous cases in the Corrections Yearbook. For example, some prison facilities were identified with the wrong state in one year while correctly identified in other years. In other cases, we had to interpolate prison population between two years when one year was completely missing. Detailed adjustments to our data are available upon request from Professor Cohen.

State Corrections Expenditure Data

Department of Corrections expenditures were taken from the National Association of State Budget Office ("NASBO") State Expenditure Report (various years). We subtracted capital expenditures from total corrections costs to estimate annual operating costs. Although there is no source for total state expenditures on private prisoners, the Corrections Yearbook identifies each private prison along with its contracted for capacity and per diem cost to the state. Thus, for each state, we estimated a weighted average per diem cost (per diem contract price times capacity for each prison the state contracted with, divided by the total capacity contracted for in the state) and multiplied that by the estimated number of private prisoners. This figure – the estimated state expenditure on private prisons – was then subtracted from the total state corrections budget (net of capital expenditures) to arrive at an estimate of the public prisoner cost of corrections. In some states, where contract prices were not available, we used the weighted average private prison per-inmate contract price in the United States. [30]

Descriptive Statistics and Independent Variables

Table 2 lists the variables used in this Article and provides their average values for both 1996 and 2004. The number of states with prisoners housed in private facilities grew from 13 in 1996 to 34 in 2004, an average annual growth rate of 12.77%. Similarly, the percentage of state prisoners housed in private facilities grew from 1.88% to 7.48%, - a rate of growth of 18.81% per year. Our dependent variable, the per diem cost of publicly-managed prisoners rose during this time period by 3.26% annually – from

[30] Note that it does not matter for our purposes if our estimates of the private prison population and the per diem cost of a private prisoner are not exact. We only need these figures to estimate an amount that is to be subtracted from total state corrections expenditures to arrive at the public portion of corrections.

$67.34 to $87.05.[31] As shown in the last two columns of Table 2, the average growth in per diem publicly-managed prisoner costs over this time period was 2.03% for the 12 states that always had private prisoners, compared to 4.80% for the 13 states that never had prisoners under private supervision (difference significant at $p < .05$).

At the same time, average per capita general state expenditures grew from $1,375 to $1,714 (2.79% growth rate). Thus, state expenditures per prisoner were growing at a faster rate than overall per capita state spending (3.26% versus 2.79%). Other variables include the percent of capacity utilization of public prisons in a state (the percent that state prisons are over capacity), whether or not there are outstanding court orders affecting state prison conditions, the percent of public sector unionization, and a measure of state fiscal health. The rationale for including these variables is discussed in the following section.

III. Empirical Results

A. Univariate Comparisons

Table 3 reports on the growth in costs of housing prisoners in public prisons. It compares states in two ways -- by distinguishing among states that do have and do not have prisoners under private management (Part I), and by the percentage of **private** prisoners under their jurisdiction (Part II). In both cases, it uses 1999 as the base year for

[31] These cost data are not adjusted for inflation.

determining which states have private prisoners and which do not. It then compares the growth in per diem public prisoner costs between those states.[32]

Part 1 of Table 3 compares states that have prisoners held in private facilities versus those that do not. From 1999 through 2004, states that had no private prisoners had an average increase in the per diem cost of housing their (all publicly managed) prisoners of 4.64%. During that same six-year period, states that had some prisoners in privately run institutions faced a 1.48% increase in the per diem cost of housing a prisoner in a **public** facility. This difference represents a 3.16% higher expenditure-growth rate per year in states that do not have private prisoners. These differences are statistically significant at $p < .05$.

Part II of Table 3 compares growth in public prison costs depending upon the percentage of a state's prisoners that are held by privately operated facilities. As shown at the bottom of the first column, between 1999 and 2004, the overall average cost of housing a prisoner in a public facility grew by 2.79%. This figure represents an average of the 19 states that (in 1999) had no private prison population (4.64% increase), and the remaining 30 states that (in 1999) had some prisoners held in privately run prisons (1.48% increase). However, this 1.48% rate of average growth varied considerably depending upon how many prisoners the state had under private management. Thus, states with fewer than 10% of prisoners under private management experienced an average growth rate of 1.84%, compared with 1.36% for those states with 10-20% private prisoners, and 0.36% for states with 20% or more private prisoners. While this is

[32] Note that we chose 1999 because that is the first year in which we have BJS data and are thus most confident with our estimate of private prison data. However, similar results hold when comparing 1996 to 2004.

suggestive of the fact that growth in per diem spending on public prisoners is negatively related to the percent of a state's private prisoners, given the small number of states with more than 20% of their prisoners under private management, these findings should be regarded as tentative at best.[33]

Table 4 explores whether the difference in the growth in cost of housing public prisoners is due to "learning" or "competition."[34] Here we distinguish between states that maintained "in-state" private prison facilities and those that have private prisoners who are held "out-of-state." In theory, we would expect more "learning" in states where private prison facilities are actually located in-state. In these states, the Department of Corrections is likely to have a direct supervisory role in the management of the prison. In states where private prisoners are only held "out-of-state," the Department of Corrections is essentially shipping these prisoners off to another state.

Twelve states always had in-state private prisons during this time period, and their annual growth rate in public prison costs was 2.03% - compared to the 2.80% growth rate for the 24 states that sometimes had private prisoners (whether held in-state or out-of-state) and 4.80% for the 13 states that never had private prisoners. Once again, this illustrates that states with private prisoners had lower growth in the cost of housing their public prisoners.

Even more interesting, however, is the comparison of states that held private prisoners in-state versus out-of-state. Of the 24 states that sometimes had private

[33] In particular, an Anova test of the hypothesis that these growth rates are identical rejects this hypothesis only at $p < 08$.

[34] Unlike Table 3, we start from 1996 – the earliest data we have on the existence of private prisoners. While we have data on the existence of private prisoners beginning 1996, we are less confident about the number of private prisoners held between 1996 and 1998. Hence, in Table 3, where we divide states up by the percentage of prisoners held in private facilities, we begin in 1999.

prisoners, 15 held them in-state and 9 never had in-state private facilities. The 15 states with in-state private facilities had an annual growth rate of 1.94% per publicly-managed prisoner; the 9 states that never had in-state private facilities (but housed prisoners in private facilities out-of-state) had an annual growth rate of 4.21% per publicly-managed prisoner. This difference is statistically significant at p =.038. In addition, while there is a slight difference in growth rates for the 13 states that never had private prisoners (4.80%) and the 9 states that sometimes had private prisoners but never in-state (4.21%), this difference is not statistically significant ($p < .37$). Thus, it appears that there is considerably more support for a "symbiosis" or "learning" versus a "competition" explanation. The largest and most significant cost savings with respect to the rate of growth of costs in publicly-managed prisons appear to accrue in states where some prisoners are housed in private facilities that are physically located within that state. The same impact of privately-managed prisons on publicly-managed prisons does not accrue when prisoners are shipped out of state to be housed by private companies.

We explore the "symbiosis" or "learning" versus "competition" hypothesis further in Table 5. Table 5 compares the average growth in per diem costs in publicly-managed prisons during the first year and third year of privatization. The Table compares the experience in the 12 states that began to use private prisons in-state during our sample period to the experience in the 8 states that began sending prisoners to private facilities out-of-state. Thus, in the first year of in-state privatization, the average growth rate of per diem cost in publicly-managed prisons was 6.02%. By contrast, the average growth rate of per diem cost in publicly-managed prisons in year three after privatization was introduced was a negative number (-1.83). Similarly, during the first year of out-of-

state privatization, the average growth rate of per diem cost in publicly-managed prisons was 4.77%. By contrast, the average growth rate of per diem cost in publicly-managed prisons in year three after privatization was introduced was also a negative number (-2.73%). While the overall change in the rate of growth of per diem cost in publicly-managed prisons was similar in both cases (-7.85% and -7.50% respectively), only the in-state differences were statistically significant at $p < .05$. We conclude that while the evidence is mixed and there is likely to be both "symbiosis" or "learning" and "competition," it appears the "symbiosis" or "learning" effect is somewhat stronger.

B. Multivariate Analysis

The fact that states with **privately-managed** prisoners have lower growth in **public** prison costs does not necessarily imply causation. For example, it is possible that there is a third variable that causes both a slow growth in public prison costs and the existence of private prisons. It might be, for example, that certain states happen to be both fiscally conservative and have a proclivity to use private prisons. On the other hand, it is possible that we are picking up the impact of unionization as opposed to privatization itself – as we expect states with higher public sector unionization rates both to have higher costs (due to higher wage rates and/or less efficient operating rules) and to be less likely to have private prisons (due to strong anti-privatization lobbying).

In this section, we attempt to control for these potential factors in order to isolate the effect that the introduction of private prisons has on the rate of growth of public prison costs. The key factors we have looked at are: (1) growth in non-corrections-related expenditures; (2) capacity utilization of public prisons (percent state prisons that

are over capacity), (3) extent of public sector unionization, and (4) court-ordered mandates that affect the cost of prisons. In addition, since our dependent variable is the percentage change in the per diem cost of housing a prisoner in a public facility, we control for the level of per diem costs. It is possible that, *ceteris paribus*, a higher base level of per diem costs could result in a lower percentage change.

(1) Growth in government

One might expect that state governments that spend more per capita on government services in general would also spend more on prison services. There are several reasons we might expect this to be the case. First, states with a taste for government spending on social services (*e.g.*, high public benefits or education spending) could be likely also to spend a lot on prison services (*e.g.*, more spending on rehabilitation services). Second, states that generate high levels of revenue, that do not have very significant fiscal restraints, and/or that have a lot of wasteful spending might be likely to spend more on prison services because of fund availability, ineffective management controls, or waste.

(2) Capacity utilization of public prisons

We expect the per diem costs to vary by capacity utilization in a state's prison system. For example, to the extent there are certain fixed costs associated with running a prison (*e.g.*, management and utilities for common areas), we would expect per diem costs to be negatively related to utilization. On the other hand, to the extent that extra prison guards must be hired (with resultant fixed salary and benefits costs even if only needed to house a few extra prisoners) and/or overtime paid as prisons become crowded,

the cost per diem might actually rise. Regardless of the sign, this appears a priori to be an important control variable.

(3) Public sector unionization

Since labor costs may be higher with unionized workers – due to a combination of higher wages and more restrictive work rules – we expect there may be less pressure on reducing costs in states with unionized corrections workers. Since we cannot locate any time series data on the existence of correctional unions by state, we use data on the percent of all state workers who are unionized as a proxy for corrections unions. This is a reasonable proxy, as we have been able to locate information on which states had correctional officer unions during one year - 2001. According to Census data, in 2001, states that had correctional officer unions had 38.8% of their total public sector employees unionized, compared to only 22.4% in states that did not have correctional officer unions. We might expect states with a high degree of unionized public sector employees to have a higher rate of growth in per diem public sector costs.

(4) Court imposed or other legal requirements

If a court imposes legal restrictions that have significant cost implications, that could mask any findings about the effect of the introduction of some private prison management on overall costs. For example, if a court orders prisons in a state to increase education programs in prison, one would expect costs to rise in that state. However, if this is a state that also has a large private prison population, the fact that costs are rising due to the court-ordered education program could hide the fact that private prisons are holding costs down.

Panel Regression Results

To isolate the effect of private prisons on the cost of public prisons, we estimate a random effects regression model of the form:[35]

$$GPC_{it} = \beta_0 + \beta_{GPTE} \cdot GPTE_{i,t} + \beta_{PC} \cdot PC_{i,t} + \beta_{D\Pr} \cdot DPR_{i,j} + \beta_{AL} \cdot AL_{i,t} + \beta_{Cap} \cdot CAP_{i,t}$$
$$+ \beta_{Un} \cdot UN_{i,t-1} + \beta_{Crt} \cdot CRT_{i,t-2} + \sum_k \beta_k \cdot D_k + \sum_t \beta_t \cdot D_t + c_i + u_{it};$$

$$\text{for } i = 1,..,50;\ t = 1998,..,2003;\ j = t-1, t-2, \text{ and } k = West, South, Midwest.$$

where *GPC* is the growth of public prison costs; *GPTE* denotes the growth rate of total general per capita expenditures; *PC* refer to the public prison cost; *AL* is equal to 1 if the state always had private prisons beginning the year or before 1996 and until 2004; *DPR* is a dummy variable equal to 1 if the state has private prisoners; *CAP* is the percent of capacity utilization relative to a state's maximum prison capacity; *UN* is the proportion of public employees that are unionized; *CRT* is the number of total court orders under which the state correctional system is currently operating; D_k is equal to one for the k^{th} region; D_t is equal to 1 for the t^{th} year; and c_i represents the state fixed effect.

Table 6 reports on this random effects regression model using several different models, where the dependent variable is the rate of growth in per diem public prison costs. In all cases, we control for the growth in per capita state general expenditures as well as the level of per diem public prison costs. Additional explanatory variables include the percent of prison overcapacity, proportion of workers in public union, court orders, as well as region and year dummies. In the first model, the private prison dummy variable is

[35] We tested both pooled regression and fixed-effects models, but neither was appropriate in this case. The pooled model indicated the presence of serial correlation. Moreover, as shown in Table 1, there are many states in which there is no variation in the private prison dummy variable (*i.e.,* they either always or never have private prisons over the sample time frame). Thus, a fixed effects panel model will not allow us to properly identify the effect of the private prison dummy. Thus, a random effects model is most appropriate here.

included with a one year lag. Thus, the private prison dummy in year one is from 1996, with the dependent variable being measured as the growth in public prison costs between 1997 and 1998. This model allows us to include six years of data.[36] The coefficient on the private prison dummy is -1.062, but not significant. In the second model, we use a two year lag which reduces our sample to a five year panel. Now, the private prison dummy coefficient is -2.639, with only marginal significance ($p < .087$). In the third model, we also use a two year lag but divide the private prison dummy into three pieces: (a) states that always had private prisons, (b) states that sometimes had out-of-state private prisoners but never had in-state private prisoners, and (c) states that sometimes had in-state private prisoners. The latter is marginally significant at $p < .087$. Once again, while the results are less than definitive, there appears to be more support for a learning hypothesis.[37]

The only other significant variables at $p < .05$ are the growth in per capita general expenditures, capacity utilization, and court orders – all of which are positive (although their significance levels sometimes fall outside the $p < .05$ threshold), and the South, which is negative. Not shown, but also included, are state-specific variables. Overall, these regressions explain between 19% and 23% of the variance in the growth in per diem costs for public prisoners.

---

[36] We cannot go beyond the 2002 to 2003 growth in prison costs because we do not have comparable court order data past 2002.

[37] All three regressions are based on 48 states. We had to eliminate two states – Wyoming and Connecticut. Wyoming was deleted due to various anomalies in the reported data for both general and correctional expenditures. For example, in some years expenditures reportedly doubled and then subsequently were reduced by 50%. Discussions with NASBO were unable to resolve these issues. Connecticut was deleted since BJS does not report prison capacity utilization for that state. (Eliminating the overcapacity variable and including Connecticut does not significantly affect our findings.)

The fact that a one-year lag is smaller and insignificant suggests that learning by public corrections officials takes place with a significant lag. This is not surprising, as instituting a private prison in 1999, for example, is unlikely to affect public sector prison policies and spending patterns for at least another budget cycle. Similarly, in model 3 when we separate in-state versus out-of-state prisoners as well as states that have had private prisoners throughout the entire time frame of our dataset, we find that the most significant coefficient is for those states that recently instituted private prisons in-state.

Treatment Effects Model

While the random effects model controls for state-specific and time-varying differences in public prison costs, it is still possible that there are variables we do not observe that contribute to both the existence of private prisons and the cost of public prisons. From the regression analysis above, we know that states that have prisoners housed in private facilities have a lower growth in per capita public prisoner costs. However, we do not know if states that choose to have private prisoners are also states that would be expected to have low public prison growth costs even if they did not privatize. This is essentially a question of selection bias – are states that select to have private prisons also the states that would have low public prison growth costs in the future? To control for this possibility, we adopt a "treatment effects" model[38] where states are assigned to either a treatment (private prisons) or control (no private prisons) group. We model this as a two-stage process, where we first estimate the probability of a state allowing private prisons. In the second stage, we have controlled for this selection bias and thus estimate the effect of the treatment (private prisons) itself.

[38] See Rosenbaum and Rubin, 1983.

Stage One: Probability of Private Prisons

Our strategy in the first stage is to find the best model fit possible for the probability of private prisons in a state. We expect private prisons to be adopted in states that (a) are fiscally constrained and thus looking for cost saving measures, (b) have significant pressures on prison capacity, and (c) have relatively little pressure from labor unions. Thus, our first stage contains the following variables:

Fiscal Health

To capture fiscal pressures that might lead a state to legalize private prisons, we adopt a common measure of state fiscal health, the ratio of the difference between total state revenue and spending to total spending.[39] Annual revenue and spending data are taken from the U.S. Bureau of Census.

Pressure on Prisons/Capacity

We tried several measures of the pressure for more prison capacity, including the measure of prison overcrowding (percent over capacity) and court orders used in Table 6, and the imprisonment rate (number of prisoners per 1000 population). Theoretically, there is no reason why one should outperform the other – they are all reasonable measures of the likely need for more prison space (although court orders might have nothing to do with overcapacity). Ultimately, we chose the best fit and the variable that allowed us to have the largest panel dataset – the imprisonment rate. [40]

[39] Berry & Berry, 1992.

[40] Not reported here, we also included a lagged "court order" variable similar to that in Table 6 under the hypothesis that states under court order were more likely to subsequently adopt private prisons as a method of reducing overcrowding or otherwise complying with the court restrictions. While this variable was generally positive, it was not statistically significant. Similarly, we included the overcapacity variable shown in Table 6. Surprisingly, the coefficient on this variable was negative – indicating that states with more overcrowding were less likely to privatize. Due to data availability, using these variables reduces our

Union Pressure

Here we use the same measure as before, the percent of public sector workers that are unionized.

Stage One Results

As shown in Table 7A, the most significant coefficient in stage 1 is the proportion of workers in public unions, which is negative as expected. In addition, we included as a control variable the total number of prison facilities in a state, which was positive and significant. Other variables, while having the expected signs, are insignificant. Overall, however, the model results in a pseudo-R^2 of 0.30% - indicating that our model explains about 30% of the variation in private prisons.[41]

Stage Two: Treatment Effect

In the second stage, shown in Table 7B, we find that the private prison dummy is of a similar magnitude as in Table 6. Since we did not use the two variables that limit our time span (overcapacity and court orders), we are able to estimate a six or seven year panel depending upon the lag structure used. Thus, in model 1, with no lag, we find that controlling for the first stage, there is actually a positive (+0.577), but insignificant difference ($p < .637$) in the growth of per diem costs between states that have private prisoners and those that do not. Similarly, in model 2 with a one year lag, there is a negative (-0.796) but insignificant ($p < .570$) difference. However, in model 3, using a two-year lag, we find a large negative effect (-3.125) and a highly significant coefficient

---

stage 1 sample size. Since our stage 2 results hold and virtually identical using either model, we report only the full sample here.

[41] To calculate the Pseudo R^2 we use the method proposed by McFadden (1974), where Pseudo R^2 is defined as $1 - L_{UR}/L_R$. L_{UR} is Log likelihood for the unrestricted model and L_R is the Log likelihood for the restricted model.

($p < .047$). Thus, the treatment effect model is consistent with our earlier regression findings. Introducing private prisons into a state correctional system appears to reduce the growth in public prison per capita expenditures by about 3% annually – with a two year lag before the cost savings start to accrue.

CONCLUSION AND POLICY IMPLICATIONS

This study was designed to investigate the relationship between (1) the fact that a particular state houses some of its prison population in prisons that are privately owned or operated and (2) the rate of growth in costs per prisoner in publicly operated prisons. The core objective has been to determine whether the existence of prisoners under a state's jurisdiction that are held in **privately owned or operated** facilities can have a beneficial effect on the rate of growth in expenditures on **publicly held** prisoners.

The fundamental conclusion of the study is that, over the six-year period 1999-2004 (the period for which appropriate data exist), states that have some of their prisoners in privately owned or operated prisons experience lower rates of growth in the cost of housing their public prisoners. That finding is generally statistically significant at the conventionally accepted 5% level.

The study indicates that the existence of prisoners in privately run facilities in a state's system reduced the rate of growth in the state's per diem expenditures on publicly held prisoners by approximately 2.64% to 3.125% per year over this time period. In 2004, the average Department of Corrections expenditures in states without private prisoners was approximately $493 million. Our findings suggest that if the "average" state in that group were to introduce the use of private prisons to some extent, the potential savings for one year in Department of Corrections expenditures for public prisons in that

"average" state could be approximately $13 to $15 million. These putative savings on public prisons would be in addition to any direct savings from the use of private prisons by itself, which source of savings may by itself be not insubstantial.[42]

While we were able to draw some preliminary conclusions about the relative importance of "symbiosis" or "learning" versus "competition," these findings were much less definitive. The fact that we do not observe an immediate reduction in costs – but instead costs begin to come down with a two year lag – suggests that there is considerable learning on the part of public prison officials. However, this effect could simply result from the fact that there is a lag between when public sector officials feel the effects of competition and when they are able to institute meaningful changes to reduce costs. Thus, we cannot rule out either explanation. However, we also note that cost savings appear to be more significant in states that have privately-managed prisoners in-state than those who send their prisoners to privately-managed facilities in other states – again, supportive of the learning hypothesis. Future research should focus on the timing and reason for these apparent savings, something that might be feasible as we gain more years of experience with privatization.

While we believe this is an important finding and should provide policy makers with an additional reason to favor privatization of some portion of a state's prisons, we realize that this is only a cost-analysis, and does not necessarily relate to the benefits of private versus public prisons. A benefit-cost analysis would need to account for both the cost savings as well as the benefits of public versus private incarceration. Thus, if

[42] For a review of the evidence of studies that compares public to private prison costs, see Segal & Moore, 2002a. Segal & Moore found that "virtually all of the studies find private prison costs to be lower – on average between 5 and 15 percent."

privately operated prisons had higher recidivism rates or lower-quality educational or drug-treatment programs, for example, these factors would need to be balanced against the direct cost savings identified here. On the other hand, if privately-operated prisons had lower recidivism rates or higher-quality educational or drug-treatment programs, then those additional beneficial factors would also need to be taken into account.[43]

While our purpose was not to conduct such a benefit-cost analysis, there is evidence that suggests that private prisons generally do as well or better on these quality dimensions. A comprehensive review of the evidence published in the Harvard Law Review concluded that privately-operated prisons not only bring about "clearly positive [direct] cost savings,"[44] when compared with privately-operated prisons, but also, on balance, "outscore[e] public prisons on most quality indicators."[45] A similar review by Segal and Moore concludes that "there is clear and significant evidence that private facilities provide at least the level of service that government-run facilities do."[46] Some studies have also found that recidivism rates are as low or lower in private facilities,[47] and that assaults on inmates are lower and other quality dimensions are higher at private prisons.[48] To the extent that these findings are accurate, they add positive qualitative

[43] Private prisons operate in virtually all of the same service dimensions as public prisons – including, for example, providing various security levels, providing educational and medical facilities, and providing drug treatment.

[44] Harvard Law Review (2002:1875),

[45] *Id*. at 1876.

[46] Segal & Moore (2002a).

[47] Bales et al., (2005). *But see* Bayer and Pozen (2005) (finding a higher recidivism rate for juvenile offenders held in private facilities). Bayer & Pozen conducted a benefit-cost analysis and concluded that the savings due to lower cost of private prisons is outweighed by the cost of increased juvenile recidivism. The Bales et al. study is based on a considerably larger sample of data from across the state of Florida.

[48] Lukemeyer & McCorkle (2006).

dimensions to the positive direct and indirect cost dimensions in the consideration of the role of privately operated prisons.

Table 1
States with and without Private Prisoners, 1996-2003

13 States w/NO private Prisoners	25 States with Private Prisoners during some years	12 States w/Private Prisoners all years, 1996-2003
Connecticut	Alabama (2003)	Arizona
Delaware	Alaska (1997-2003)	California
Illinois	Arkansas (1998-2000)	Florida
Iowa	Colorado (1998-2003)	Kentucky
Massachusetts	Georgia (1998-2003)	Louisiana
Missouri	Hawaii (1997-2003)	Maine
Nebraska	Idaho (1997-2003)	Mississippi
New Hampshire	Indiana (1997-2003)	New Mexico
New York	Kansas (2001)	North Carolina
Oregon	Maryland (1999-2003)	Oklahoma
Rhode Island	Michigan (1999-2003)	Tennessee
Vermont	Minnesota (1999)	Texas
West Virginia	Montana (1997-2003)	
	Nevada (1997-2002)	
	New Jersey (1999-2003)	
	North Dakota (1997, 2000-2002)	
	Ohio (2000-2003)	
	Pennsylvania (2001-2003)	
	South Carolina (2000-2003)	
	South Dakota (1999-2003)	
	Utah (1996-2000)	
	Virginia (1999-2003)	
	Washington (1999)	
	Wisconsin (1998-2003)	
	Wyoming (1997-2003)	

Source: Corrections Yearbook (various years).

Table 2
List of Variables and Average Values (1996 and 2004)

Variable	Source	1996	2004	Annual growth 1996-2004	Annual growth with Private Prisoners (12 states - always)	Annual growth without Private Prisoners (13 states - never)
Number of states with Private Prisoners (0-1)	BJS and CY	13	34	12.77%	---	---
Private prisoners (%)	BJS and CY	1.88%	7.48%	18.81%	8.30%	0.0%
Cost per day per public prisoner ($)[a]	**CY**	**67.34**	**87.05**	**3.26%**	**2.03%**	**4.80%**
Per Capita Total General Expenditures ($)[a]	NASBO	1375	1714	2.79%	2.89%	3.18%
Percent state prisons are over capacity (%)	BJS	115.6	101.2[b]	-1.89%	-2.20%	-0.84%
Court Order for prison conditions in state (0-1)	CY	32	17 [c]	-10.01%	-4.12%	-5.71%
Percentage of Public Workers in Labor Union (%)	BLS	34.44	32.36	-0.78%	-0.78%	-0.74%
Prisoners Per 100,000 inhabitants	BJS and Census	360	426	2.15%	2.14%	2.14%
State Fiscal Health (%)	Census	13.25	14.68	1.28%	3.08%	1.58%

Sources: BJS = Bureau of Justice Statistics, *Prison and Jail Inmates at Midyear*
CY = *Corrections Yearbook*
BLS – Bureau of Labor Statistics, *Current Population Survey*
NASBO = National Association of State Budget Officers, *State Expenditures Data*
UCR= Uniform Crime Report, Federal Bureau of Investigation
Census = Annual population estimates for number of inhabitants; State revenue and expenditures for fiscal health.

[a] Calculated using 49 states, excluding Wyoming due to problem in state expenditure data
[b] 2003 (2004 not available)
[c] 2002 (2003 and 2004 not available)

Table 3
Growth in Per Diem Cost for Public Prisoners by Percent of Prisoners in Private Facilities

	1999 to 2004	
Percent Private Prisoners	**Average annual Growth in Cost per Public Prisoner**	**Number of States with Private Prisoners in 1999**
I. Yes/No Private Prisoners*		
No	4.64%	19
Yes	1.48%	30
II. By Percentage**		
None	4.64%	19
0% to < 10%	1.84%	20
10% to < 20%	1.36%	5
20% or higher	0.36%	5
Total	**2.79%**	**49**

* $p < .05$ based on t-test.

** $p < .08$ based on Anova.

Note: Wyoming is eliminated from Table 3 as the Department ofCorrections data are unreliable.

Table 4
Annual Growth in Per Diem Cost for Public Prisoners by Extent of Privatization

Category of Private Facilities throughout 1996 - 2004	Number of States in Each Category	Annual Growth in Cost per Public Prisoner 1996-2004
Always Private Facilities (in-state)	*12*	**2.03%**
Sometimes Private (combined)	*24*	**2.80%**
- In-State when Private*	15	1.94%
- Only Out-of-State when Private	9	4.21%
Never Private Prisoners	***13***	**4.80%**
TOTAL	**49**	**3.26%**
T-TEST for Differences		**p-value**
Always Private/ < Never Private		0.020
Always Private < Sometimes/In-State when Private		0.303
Always Private < Sometimes Out-of-State when Private		0.036
Sometimes Private < Never Private		0.054
Sometimes In-State Private < Never Private		0.022
Sometimes Out-of-State Private < Never Private		0.370
Sometimes In-State Private < Sometimes Out-of-State		0.038

Note: Wyoming eliminated as the Department of Corrections data are unreliable.

* Includes several states that had in-state private prisoners some years, out-of-state prisoners in other years, and no private prisoners in the remaining years.

Table 5
Paired t-test for the difference in growth rates of Per Diem Public Prison Cost

	No. of states	Average Growth Rate of Per Diem Cost in the First year of Privatization	Average Growth Rate of Per Diem Cost in the Third year of Privatization	Change in Growth Rate	p-value (3^{rd} Year Growth < 1^{st} Year Growth)
In-State Privatization Only	12	6.02%	-1.83%	-7.85%	0.004
Out-of-State Privatization only	8	4.77%	-2.73%	-7.50%	0.100

Note: Only for those states which had at least three years of privatization (20 out of 24 states in table 4).

Table 6
Panel Regression Results
Dependent Variable = Growth in per diem public prison costs

Dependent Variable = Growth in Per Diem Public Prison Cost	Model 1 1997/98–2002/03		Model 2 1998/99–2002/03		Model 3 1998/99–2002/03	
Growth of per cap. Total General Expenditure	0.374	(0.000)	0.368	(0.000)	0.365	(0.000)
Per diem Public Prison Cost	-0.040	(0.059)	-0.039	(0.094)	-0.039	(0.094)
Private Prisoner Dummy (One year lag)	-1.062	(0.403)				
Private Prisoner Dummy (Two year lag)			-2.639	(0.087)		
States always had private prison (Dummy)					-1.598	(0.364)
States that sometimes had "out-of-state" private prisoners, Dummy (Two year lag)					-3.893	(0.133)
States that sometimes had "in-state" private prison facilities, Dummy (Two year lag)					-3.407	(0.087)
Prison Over Capacity	0.056	(0.021)	0.057	(0.045)	0.056	(0.053)
Proportion of Worker in Public Union	-0.042	(0.437)	-0.047	(0.439)	-0.037	(0.543)
Proportion of Court Orders to Total Facilities	1.689	(0.093)	2.922	(0.008)	2.694	(0.019)
West	-2.971	(0.143)	-4.802	(0.044)	-4.269	(0.086)
South	-4.488	(0.032)	-4.689	(0.049)	-4.673	(0.049)
Midwest	-2.090	(0.173)	-3.347	(0.048)	-2.826	(0.109)
Year 2002	-0.475	(0.813)				
Year 2001	-1.930	(0.315)	-1.410	(0.437)	-1.435	(0.431)
Year 2000	0.560	(0.736)	0.725	(0.671)	0.557	(0.749)
Year 1999	1.497	(0.396)	1.596	(0.379)	1.388	(0.449)
Year 1998	1.891	(0.358)	1.772	(0.416)	1.425	(0.524)
Constant	2.710	(0.521)	3.572	(0.410)	3.336	(0.439)
R^2	0.194		0.231		0.235	
No. of Observations	288		240		240	

p-values in parentheses.

Note: Based on 48 states, with Wyoming and Connecticut eliminated due to data availability.

Table 7A
Treatment Effect Propensity Score Model for Growth in Per Diem Public Prison Costs
Dependent Variable = Private Prisoner Dummy

	1996-2002	
Total Number of Facilities	0.040	(0.017)
Per diem Public Prison Cost	0.019	(0.153)
Proportion of Worker in Public Union	-0.060	(0.030)
Prisoner per 1000 Population	0.208	(0.468)
State Fiscal health	-0.009	(0.624)
West Region	1.507	(0.178)
Northeast Region	-1.376	(0.370)
Midwest Region	-0.989	(0.394)
Year 1996	-2.237	(0.005)
Year 1997	-0.992	(0.204)
Year 1998	-0.560	(0.463)
Year 1999	0.438	(0.524)
Year 2000	0.508	(0.471)
Year 2001	0.245	(0.633)
Constant	-0.600	(0.768)
Pseudo R-square	0.301	
No. of Observations	343	

p-values in parentheses.
Note: Wyoming excluded from second stage due to data availability on growth in per diem costs.

Table 7B
Second Stage Treatment Effect Regression
Dependent Variable = Growth in per diem public prison costs

	No lag 2000-2004		One year lag 2000-2004		Two year lag 2000-2004	
Private Prisoner Dummy	0.577	(0.637)				
Estimated Private Prisoner Dummy	-2.981	(0.069)				
Private Prisoner Dummy (1-Year Lag)			-0.796	(0.570)		
Estimated Private Prisoner Dummy (1-Year Lag)			-4.086	(0.030)		
Private Prisoner Dummy (2-Year Lag)					**-3.125**	**(0.047)**
Estimated Private Prisoner Dummy (2-Year Lag)					-1.808	(0.386)
Year 2003			1.963	(0.395)	4.529	(0.044)
Year 2002	-0.637	(0.752)	-2.469	(0.288)		
Year 2001	-0.644	(0.751)	-2.515	(0.279)	-0.164	(0.942)
Year 2000	3.206	(0.115)	1.213	(0.599)	2.875	(0.207)
Year 1999	4.759	(0.019)	1.910	(0.392)	4.172	(0.071)
Year 1998	5.132	(0.009)	2.457	(0.267)	4.277	(0.075)
Year 1997	3.354	(0.083)				
Constant	2.365	(0.090)	5.849	(0.000)	3.349	(0.096)
Adjusted R^2	0.143		0.138		0.132	
No. of Observations	343		343		294	

p-values in parentheses.

Note: Wyoming excluded from second stage due to data availability on growth in per diem costs.

References

Bales, William D., Laura E. Bedard, Susan T. Quinn, David T. Ensley, and Glen P. Holley (2005), "Recidivism of Public and Private State Prison Inmates in Florida," Criminology and Public Policy 4(1): 57.

Bayer, Patrick and David E. Pozen, "The Effectiveness of Juvenile Correctional Facilities: Public versus Private Management," (2005). Journal of Law and Economics 48: 549-589.

Berry, Frances Stokes and William D. Berry (1992). "Tax Innovation in the States: Capitalizing on Political Opportunity." American Journal of Political Science 36(3): 715-42.

Carrick, Paul M. (1988). "New Evidence on Government Efficiency," Journal of Policy Analysis and Management 7(3): 518-28.

Harding, Richard W. (1997). "Enhancing the Prison System: Cross-Fertilization and Market Testing." Chapter 10 in Private Prisons and Public Accountability (New Brunswick, NJ: Transaction Publishers).

Hart, Oliver, Andrei Shleifer and Robert W. Vishny. (1997). "The Proper Scope of Government: Theory and an Application to Prisons," Quarterly Journal of Economics 112(4): 1127-1161.

Harvard Law Review (2002). "Developments in the Law, The Law of Prisons," Harvard Law Review 115(7): 1838-1963.

Lukemeyer, Anna and Richard C. McCorkle (2006). "Privatization of Prisons: Impact on Prison Conditions," The American Review of Public Administration 36(2): 189-202.

Miranda, Rowan and Allan Lerner (1995). "Bureaucracy, Organizational Redundancy and the Privatization of Public Services," Public Administration Review 55(2): 193-200.

Moore, Adrian T. (2003). "Commentary: Is There a Trend Here?" Privatization Watch, available at http://www.rppi.org/isthereatrend.html (February).

Pratt, Travis C. and Jeff Maahs. (1999). "Are Private Prisons More Cost-Effective Than Public Prisons? A Meta-Analysis of Evaluation Research Studies." Crime and Delinquency 45(3): 358-71.

Savas, Emanuel (1982). Privatizing the Public Sector: How to Shrink Government. (Chatham, NJ: Chatham House Publishing).

_____. (1987). Privatization: The Key to Better Government. (Chatham, NJ: Chatham House Publishing).

Rosenbaum, Paul R. and Donald B. Rubin. (1983)."The Central Role of the Propensity Score in Observational Studies for Causal Effects." Biometrika 70, 41-55.

Segal, Geoffrey F. and Adrian T. Moore. (2002a). "Weighing the Watchmen: Evaluating the Costs and Benefits of Outsourcing Correctional Services, Part I: Employing a Best-Value Approach to Procurement." Reason Report No. 289, at p. 2, January 2002.)

Segal, Geoffrey F. and Adrian T. Moore. (2002b). "Weighing the Watchmen: Evaluating the Costs and Benefits of Outsourcing Correctional Services, Part II: Reviewing the Literature on Cost and Quality Comparisons." Reason Foundation Report No. 290 (January).

Thompson, Paul (2000). “PPPs in Criminal Justice: The role of the Private Sector in Prison Management,” New Economy 7(3): 150-4.

Warner, Mildred and Robert Hebdon. (2001). “Local Government Restructuring: Privatization and Its Alternatives,” Journal of Policy Analysis and Management 20(2): 315-36.