WHERE ARE PRIVATIZATION'S COST SAVINGS? PRIVATE CONTRACTING, TRANSACTION COSTS, AND PRISON OPERATION EFFICIENCY.

by

Melissa A. Duscha

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Approved by:

_____
Dr. Suzanne Leland

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Dr. Stephen Billings

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Dr. Lyn Exum

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Dr. Wei Zhao

ABSTRACT

MELISSA A. DUSCHA. Where are privatization's cost savings? Private contracting, transaction costs, and prison operating efficiency.
(Under the direction of DR. SUZANNE LELAND)

This dissertation examines the question: Where are privatization's cost savings? Current literature finds that government privatization does not result in overall cost savings. This is contrary to widely accepted business practices and market theory. I hypothesize that transaction costs are obstructing efficiency in government contracting. Using a dataset comparing 419 state prison facilities from Wisconsin, Arizona, and Indiana, contracting patterns are examined over a period of five years. This dissertation uses Williamson's Transaction Cost Economics framework to determine what types of contracting behavior result in prison facility operating cost efficiency, and which behavior patterns result in higher operating costs. Using a multivariate OLS regression analysis, I find that high transaction cost contracting patterns result in higher spending in prison facility operations when compared to patterns that are low in high transaction cost contracting. Policy implications include the benefits of privatization as long as transaction cost theory is taken into consideration. In this particular sample, using triangulation techniques, I find evidence that the high transaction cost contracting patterns are partly attributed to federal grants for mental health care. This opens up future investigations on the role of prisons in government-provided mental health care.

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CHAPTER 1: INTRODUCTION

This dissertation investigates the question of "Where are privatization's cost savings?" This research question was developed as a result of the recent privatization controversies in the media regarding prison privatization. Currently, virtually all areas of government implement privatization in one way or another. Privatization has been pushed by New Public Management since the 1990s, and now, post Lehman Shock, it continues to be on the rise (Schick, 2015). Of particular concern is the increasingly common privatization in thin markets such as city waste disposal, public transportation, and corrections management (Hefetz & Warner, 2004). Goodman and Loveman point out that privatization is often justified using ideological rhetoric, most often pushed by the ideal of decentralization and shrinking of government. Instead, they suggest that a more effective way to look at privatization's risk and benefits is from the more practical managerial perspective (1991). In addition to market competition, private managers must have well defined obligations and performance-based incentives. Essentially, what Goodman and Loveman are proposing, is that privatization serves the public interest best when transaction costs are minimized.

This dissertation specifically focuses on privatization in state corrections. There is an inherent conflict of interest when private corporations run prisons, given that a large part of a prison's function is to rehabilitate prisoners and prepare them for reentry into the community (Schneider, 1999). If prison profits were based on keeping prisoners, how

could there be a positive incentive for rehabilitating them, and preventing recidivism? It is not in the best interests of a private prison company to reduce the amount of prisoners. Privatized prisons do not have the incentive to have fewer prisoners, thus is not logical to implement incarceration reduction policies using private prisons with conflicting interests.

Public concerns include the rapidly increasing expense of incarceration due to increased rates of imprisonment. Moreover, the recidivism rates of prisoners are very high. In criminal justice policy, it's known as the revolving prison door (Wheelan, 2011). The United States incarcerates the most people out of any other country in the world (Bureau of Justice Statistics). The US incarceration figures are alarming, and the public is concerned. Prison privatization has become a rather salient issue, generating high levels of citizen interest (Pozen, 2003; Lukemeyer & McCorkle, 2006). Incarceration is payed for using taxpayer's money. This makes the government accountable to the taxpayers. Not only is prison privatization an issue of economic efficiency, it is also viewed as a threat to citizen values and public safety (Goodman & Loveman, 1991).

According to the literature, there is little or no evidence for cost savings in government contracting. Literature on Transportation, waste management, prisons, and nursing homes found little evidence for cost savings through privatization. Moreover, quality of service was not always increased through privatization (Kettl, 1993, Pouder, 1996; Ashton, 1997; Minow, 2003). These results are not surprising. Such industries have no market competition, due partly to high transaction costs and barriers to entry (Porter, 1980; Brown & Potoski, 2004; Hefetz & Warner, 2011). It is not consistent with best business practices to contract out for services or products with thin markets.

This investigation draws from theories in New Public Management and Transaction Cost Economics. Based on the premise of efficiency, there is a continuing trend to streamline government, and run it like a business. New Public Management emphasizes that tax payer money is used most prudently by implementing the private sector's best business practices (Hood, 1995; Rosenbloom, Kravchuk, & Clerkin, 2009). Private contracting is a way to do this. Private contracting should save money by achieving cost and quality efficiency, if the market is competitive. However, government managers must act within the limitations of our institutions. Often, when a new policy is implemented, federal mandates force state governments to contract out for high transaction cost services because of the time constraint of the implementation timeline, and lack of resources. This is especially true for recent federal formula grants for the implementation of rehabilitation services in prisons. The prison facilities and the state department of corrections do not have the resources needed to provide these services, so they have no choice but to contract them out (Brown, Potoski, & VanSlyke, 2006). This contributes to the inefficient contracting patterns of high transaction cost service contracts in prisons.

Looking at the empirical research, studies on privatization are limited to a few service sectors such as waste management, prisons, and transportation (Brown & Potoski, 2003). However, private contracting is implemented in just about every service sector (Brown & Potoski, 2004; Hefetz & Warner, 2011). After the Lehman shock, the public became very interested in government spending. The shock necessitated huge budget cuts, and government managers turned to privatization in a desperate attempt to save money. Privatization was touted as a fool-proof money-saving endeavor (Brudney et. al.,

2005). Since the government was blamed for the recession, there was less trust in government and the idea of shrinking government became popular across the nation. Hefez and Warner say that citizen interest has a strong influence on privatization (2011). During this time of recession, the public was very interested in how the government spent their money, and privatization was heavily favored as a cost-saving measure.

This research began with a comparative investigation of private and public prisons, how they differed, how they were similar, and issues of controversy. Most of the empirical studies came out of Florida, because of the state's big prison privatization push, and backed by the state's confidence in privatization. From this research, it became apparent that the states that promoted privatization were often the states that had the most information available on their privatization practices. They're not trying to hide anything. They want their constituencies to see their commitment to government decentralization, and the expansion of the private sector in government service provision. So, as a result, Florida's department of corrections worked closely with researchers to compare efficiency and effectiveness outcomes of state and private prisons. The extensive research did not find conclusive results. Often, there was no significant difference in outcomes (Benson, 1996; Bottomley & James, 1997; Hart, Shleifer, & Vishny, 1997; Farabee & Knight, 2002; Greene, 2002; Culp, 2005; Gaes, 2005).

Private prison corporations also provide other types of services, such as behavioral therapy services and re-entry programs. They understand that the market for private prisons is small, but they expand their services to include other services that are contracted out by state prisons. For example, CCA runs private prisons and detention centers, but they also rent out facilities to the government, provide service contracts for

various rehabilitation and re-entry programs, and offer service contracts for secure transportation. So, while a state prison is run by the government, many of its services may be contracted out to these large correctional service corporations. The media doesn't seem to discuss this particular aspect of prison privatization, even though it is much more prevalent than privatized prison facilities.

Governments struggle constantly with budgetary shortfalls. Especially after the Lehman Shock, there was much pressure to save money where possible. But the government continued to struggle, as the country endured the Sequester of 2014, where the government was shut down because an agreement on the budget could not be reached. Empirical evidence show several recent cases of privatization efforts not resulting in cost savings. However, none of these studies examine contracting behavior. Private contracting is the most common form of privatization (Lukemeyer & McCorckle, 2006). It should save money, according to modern economic and business theories, and evidence from business literature (Williamson, 2010).

After some government contracting research, it became evident that contracting patterns across states and local governments were erratic with regard to transaction costs, and low-risk contracting. Specifically, many contracts were for goods or services that did not have competitive markets, such as public transportation or waste services. Moreover, there was much repeat contracting in highly competitive markets. According to best practices, contracts for general goods and services with thick markets should be up for general rebidding at the end of each contract term, in order to maximize cost efficiency (Ruzzier, 2009). However, there did not appear to be a discernable pattern based on economic theory. I sought to find out what was behind the decision to contract, if it

wasn't market competition. Public Administration literature recommends taking into consideration institutional limitations, and bounded rationality (Brown, Potoski, & VanSlyke, 2006). Recent literature proposes that government managers use the transaction cost framework to make contracting decisions (Brown & Potoski, 2004; Hefetz & Warner, 2011). Services with low transaction costs should be contracted out. These are also likely to have competitive markets due to stronger market forces (Porter, 1980; Walker & Weber, 1984). On the other hand, services with high transaction costs should be provided in house so as to avoid risks of contract failure, opportunism, and contract dependency (Domberger & Jensen 1997).

Building on previous research in prison contracting, contracting data was collected for all goods and service contracted out by the state corrections departments for six states, including the contracts for prison management services. Two large corporations monopolize the nation's private prison management contracts- GEO group and Corrections Corporation of America (CCA). This is the most controversial form or corrections contracting. In reality, the majority of privatization occurs in individual goods or service contracts (Lukemeyer & McCorkle, 2006). This type of privatization is very common in all aspects of government management (Brown & Potoski, 2004; Hefetz & Warner, 2011). Because individual contracts had not been examined in depth in past empirical research, I decided to branch out my research in privatization to government contracting. This dissertation is a research endeavor in the contracting behaviors of states' departments of corrections, the sector of state government that oversees and manages incarceration, rehabilitation, and reentry.

The data used in this dissertation are a purposeful sample initially gathered from the following six states: Arizona, Connecticut, Indiana, Louisiana, Massachusetts, and Wisconsin. These states were chosen to reflect political and regional diversity (King, Keohane, & Verba, 1994). I gathered a longitudinal sample to control for temporal changes. The sample includes five fiscal years: 2007, 2008, 2009, 2010, and 2011. Newer data can be added to this dataset for future research purposes. All data used in this dissertation investigation was manually collected by the investigator from procurement records and annual reports found on DOC websites, or retrieved through contract with state DOC administrators.

Service contracting for privately run facilities is not available public information, unlike the contracting records for public facilities. The use of private prison facilities creates a significant transparency deficit. Having looked over hundreds of annual reports for departments of corrections and individual prison facilities, the finance information for privately run prisons is simply not available to the public. Thus, this facility-level investigation only includes state prison facilities that are government-run.

The issue of prison privatization is important for several reasons. The biggest reason is the issue of public safety. A major role of corrections is to keep the public safe from dangerous criminals. Other reasons that make prison privatization and privatization in general worthy of thorough investigation is its ties to public spending, transparency, and accountability. These economic issues are especially important during this time of severe budgetary constraints (Savas, 2005; Schick, 2015).

Previous research analysis using this sample of corrections contracts included a network analysis examining the contracting behavior of different states to see if their

contracting patterns were optimal for cost savings, specifically looking at asset specificity levels, and levels of competition. I looked at overall levels of contracting, as well as repeat contracting behavior, comparing the behavior to theory and best practices. I found that none of the states in my initial sample were contracting according to best practices. They were not contracting out for services that were competitive and low in transaction costs, and states did not appear to consistently keep non-competitive services and goods in-house. Market theory prescribes competitive contracting with low transaction costs to avoid risk of contract failure, opportunism, and contract dependency (Williamson, 2010).

The theory states that this behavior was high risk (Lonsdale, 2001), but the literature doesn't provide significant empirical evidence with regard to contracting in government. This dissertation looks for evidence of cost savings through government contracting in order to fill this gap in empirical research. I aim to provide empirical evidence that transaction costs do matter. This dissertation is an investigation into asset specificity and government contracting, and is largely based on the transaction cost economics theory of Oliver Williamson. In neoclassical economics, there is always the assumption of a perfect market, meaning perfect market competition. However, in reality, perfect markets don't exist. Transaction costs are ever-present. According to Oliver E. Williamson, transaction costs are an important factor in market exchange (2010). However, government contracting literature lacks empirical models in transaction cost economics. While the field of transaction cost economics continues to expand, there isn't yet a recognized formal model to evaluate transaction costs. Current transaction cost literature recommends that future research in transaction cost economics should focus on

the formalization of Williamson's transaction cost framework (Brown & Potoski, 2003, 2004; Williamson, 2010; Hefetz & Warner, 2012).

Transaction costs matter. They matter because they determine whether or not cost savings can be achieved from privatization. If transaction costs are high, then efficiency goes down. Less cost savings are realized (Williamson, 2010). This is possibly the reason previous privatization comparison studies have failed to find significant evidence of the benefits of privatization that theory so heavily touts. Observations of contracting patterns in my prison data show repeat contracting across contract categories, including contracts that are high in transaction costs, such as security services and rehabilitation therapy (Williamson, 2010). Transaction costs did not appear to be taken in consideration in my government contracting data sample. Network analysis results from my preliminary investigation implied that social relationships took precedent in contracting decisions (Duscha & Leland, 2013). Departments of Corrections (DOCs) were repeat contractors, and this repeat contracting was not done based on transaction cost theory, but based on social relationships, as posited by Granovetter (1985). Could it be that transaction costs are eating up all of the cost savings expected from privatization? This dissertation starts by asking: "Where are privatizations cost savings?" The hypotheses look at two measures of transaction costs: asset specificity and management difficulty. I hypothesize that transaction costs are the reason cost savings in privatization are often not realized.

The methods approach was based on previous prison studies. Many of the studies examined measures of prison effectiveness and efficiency. The variables used to measure prison effectiveness are generally safety, quality of care, and recidivism (Lanza-Kaduce, 1999, Bales, 2005, Bayer & Pozen, 2005). The variable used to measure efficiency is

cost. Because my question asks about cost savings through privatization, I use cost to measure efficiency. Prison facility annual reports, as well as department of corrections annual expense summaries compares facility costs in terms of per diem operating cost. This is the average cost to hold one inmate for a day. Because reporting per diem cost was a standard in all the prison facility reports, I collected this data to be used as the dependent variable in my model. Because my hypotheses infer a linear relationship, and because the literature also inferred the same, I do an ordinary least square regression analysis with transaction costs as my main independent variables, and per diem cost as my dependent variable (Gujarati, 2008). I control for prison population, security, and fiscal year, based on previous prison research (Lanza-Kaduce, 1999, Bales, 2005, Bayer & Pozen, 2005). I also control for individual prison facility to account for any facility-specific differences.

I could only find facility level per diem information for three out of my six states from my contract dataset, so my dissertation analysis is limited to the states of Arizona, Indiana, and Wisconsin. Because of the regional data limitations, my results are not broadly applicable. The external validity is weak. However, the model, itself is very generalizable and can be easily replicated across states, and even other government departments. For example, this model could be applied to the department of transportation to evaluate their contracting patterns and the budget outcomes. The department of health and human services is another department that contracts out a lot of its services. Any department that contracts out services can use this model to test for efficient contracting behavior.

Thus the model itself is a significant contribution to the study of transaction cost economics and its effect on government contracting. Not only does this dissertation contribute empirical evidence that higher transaction costs increase spending, it also contributes a generalizable model to replicate this investigation in other states and other government departments. The model could also be applied effectively in the private sector to evaluate business operating efficiency.

The next chapter is a review of the literature. It discusses previous empirical studies in the areas of incarceration, prison privatization, and government decisions to privatize. It also discusses the theories behind government privatization including New Public Management and Transaction Cost Economics. The hypotheses are introduced at the end of the literature review. Chapter three is a discussion of transaction cost theory and its relationship to the trend of managerialism and New Public Management in government administration. It points to the relationship between transaction costs and cost savings as the root of the government privatization trend, and touches on the influence of social structures on contracting decisions. It discusses the consensus in management scholarship that a balance of private sector involvement and government provision of services is the best way to achieve cost efficiency in government without compromising public values including democracy. The market can be used to alleviate government failure, and the government should step in to alleviate market failures. It is a delicate balance, and this balance is what government managers should focus on maintaining. Chapter four goes over the data and methods used in this dissertation. It explains how the data were collected, and how the analysis model was derived using previous literature and empirical studies. Chapter five presents the results of the OLS

regression analysis. The results provide strong evidence that transaction costs effect operating cost. Thus, the dissertation analysis finds empirical support for Williamson's transaction cost economics. The final chapter concludes this dissertation with suggestions for future research, policy implications, and practitioner implications

CHAPTER 2: LITERATURE

Introduction

Recently, for a number of reasons, there is an increasing wave of government privatization, resulting in the contracting out to private sectors of public goods and services. One of the main reasons for the increased use of privatization is cost savings. According to business and economics theories, privatization should increase competition and decrease prices, resulting in maximum quality with minimum cost, (Moe 1987; Hart, Shleifer & Vishny 1997; Price & Riccucci 2005; Ruzzier, 2009). Privatization research has shown mixed results with regard to the question of cost savings. The majority of empirical studies on government privatization, including cost comparisons of private and public prisons, show very little, or no cost savings (Boyne, 1998). However, business literature tells a different story. When following best business management practices, using transaction cost frameworks, private businesses are able to realize cost savings through contracting (Jiang, Frazier, & Prater, 2006).

Why it Matters

Currently, in the United States, there are over 2.3 million incarcerated individuals (Glaze & Kaeble, 2013). Approximately $74 billion dollars are spent on incarceration each year, as a result (Henrichson & Delaney, 2012). Our nation is still in the midst of a budget crisis, resulting in government shutdowns, affecting millions of individuals. The money spent on prison operations is not just a prison issue, but a budget management

issue for the use of taxpayer dollars. Moreover, it is estimated that 50 percent of the government's overall budget is spent on private contracts. Figuring out where the cost savings in privatization is going could lead to an effective accountability tool, especially in the midst of recent controversies involving government contracting (Blackwater, Private Prisons, Halfway Houses, Immigration detention centers, and Rehabilitation centers, foster care, to name a few) (Brown and Potoski, 2004). The reason for concern is that this could be an indication of corruption. That is why this research question matters. Tax payers' money is used to provide public services, and it is very important to verify where costs are going, if expected cost savings are not being realized.

Effective Use of the Private Sector:

This purpose of this literature review is to investigate how the private sector can legitimately contribute to operational efficiency of prison facilities. While much opposition surrounds private prison facilities in the United States, many prison services are successfully provided by private third parties and have been for decades (Pozen, 2003; Culp, 2005). The continuing steep increase of prison spending is a factor of criminal justice policy and cannot be solved by increased measures of privatization. Prison facilities are being privatized as a last resort- there are few other avenues in the corrections sector that have not already been privatized. Because the recent and most controversial trend in the prison privatization involves only the facilities management, and because of transaction costs caused by state and federal regulations, overall cost savings are unlikely. The budgetary problems caused by prison over-crowding in the

United States are more likely to be solved by institutional change in the form of new policies aimed at reducing rates of incarceration, rather than streamlining prison systems.

Contracting out is how privatization takes place. So when this dissertation discusses privatization, it is referring to contracting out. Private prisons are a kind of government contract. There are various reasons for its scrutiny and controversy, but the reason I investigate in this dissertation is cost effectiveness. This is because cost effectiveness is measureable, and also, since the more common reason given for private contracting is cost effectiveness, it makes logical sense to investigate cost savings, or possible cost savings resulting from privatization. While larger institutional change is arguably necessary to have an efficient prison system, this investigation addresses short-term cost efficiency, within the current institutional structure of the prison system.

The Decision to Privatize

Several factors contribute to the privatization decision. Research informs that traditional practices, symbolic meaning, or political theories and cultures determine whether or not a particular function is public or private. Institutional norms promote or prevent privatization (Minow, 2003). While government privatization is often backed by economic efficiency arguments, empirical analysis of privatization decisions does not support this. Some policy scholars assert (and provide empirical evidence) that decisions to privatize public services are fueled by political agendas (Pouder, 1996, Price& Riccucci, 2005). However, other literature finds that state level difference and variations, including the political landscape, have little apparent effect on the frequency of contracting out for services at the state or local level (Hefetz & Warner 2004; Brudney, Fernandez, Ryu, & Wright 2005; Choi, Cho, Wright, & Brudney 2005; Fernandez, Ryu,

& Brudney 2008; Brudney). While some studies find that politics matter, others find that an agency's decision to contract out seems to be largely unaffected by political forces, ideological predispositions, the size of the constituencies that demand services or the level of unionization of state employees (Brudney, Fernandez, Ryu, & Wright 2005). Instead Brudney et. al. (2005) assert that financial stress during a particular budgetary period, principal agent problems, and transaction cost effects, such as the capacity of an agency to manage certain types of contracts, or foreseeable management difficulties, lead to decreased likelihood of contracting out. Brown, Potoski, and VanSlyke find that public values and citizen interest has a significant effect on government contracting decisions (2006). A consensus has yet to be reached. Thus, an important contribution of this dissertation is to investigate whether or not private contracting can saves money, specifically in the area of state corrections.

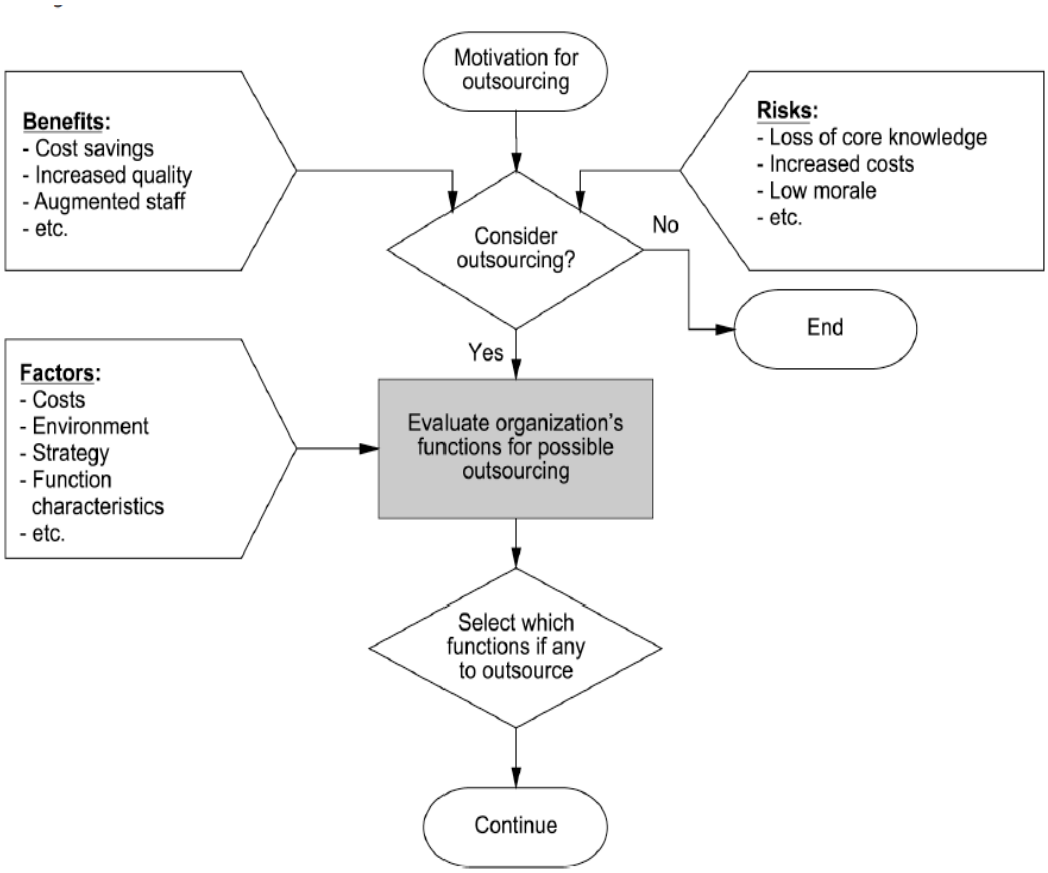

Figure 1: Outsourcing in private business models (Kremic, Tukel, & Rom, 2006)

The above diagram is a framework by Kremic, Tukel, and Rom to guide business organizations in outsourcing decisions. This is a non-governmental framework to be used for cost efficiency and profit maximization (2006). The framework suggests that when making a decision to contract out for a service, benefits and risks should first be considered, before evaluating areas of an organization for functions best suited to contracting out or outsourcing. This diagram borrows from Vining and Globerman's outsourcing decision framework, which outlines market competition, asset specificity, and management difficulty as the main factors in an organization's decision to contract (1999). Recent business literature does find evidence for cost savings through outsourcing, when such frameworks are used (Jiang, Frazier, & Prater, 2006).

New Public Management

Over the past few decades, New Public Management has heavily influenced government privatization efforts. Embraced by public administrators worldwide, New Public Management was a paradigm shift from the traditional management approach of a centralized bureaucracy with a rigid hierarchy (Hood, 1991, 1995; Boyne, 1998). The foundation of New Public Management was the idea that government could be more efficient if it were run like a business. This means decentralization and the implementation of private sector management practices such as accountability measures, and private contracting (Hood, 1995; Rosenbloom, Kravchuk, & Clerkin, 2009). In theory, when market competition is high, contracting out should be a cost saving mechanism. The New Public management continues to have a heavy influence on current government management practices.

New public management urges streamlining government, by using best business practices to get higher efficiency. The underlying logic behind NPM is that politics obstructs efficiency, and therefore should be separated from government management. NPM emphasizes privatization for cost-effective government management. However, it is proven to be impossible to separate politics from government management. This is probably why the decision to privatize literature is mixed. So it does make sense that research evidence shows two major reasons that keep a tie. The inseparable attachment of politics and management is most likely causing the mixed evidence outcomes in privatization literature, and is likely to be the reason there is not strong evidence of cost savings through privatization, even though, theoretically, there should be. Business literature tells a different story. Business literature promotes efficiency in business

practices to maximize profits. NPM promotes efficiency in government organization to reduce cost, but is inseparable from the political agenda that implements management procedures. This is an importance difference between NPM and Private Business Management.

Controversy of Privatization

There is a large ideology-fueled debate behind privatization that continues not only in our country, but internationally. While free-market ideals dominate American democratic society, the government is seen as an important safety net for non-competitive service provisions such as public health and social welfare. Also, the government protects the economic institution from monopolistic behavior that puts a country's economic health at risk (Williamson, Hierarchies and Markets, 1975). Much negative reaction to privatization measures come from groups who are concerned with the conflict of interest between the public and private sector. While the private sector's main objective is profit, it is the government sector's responsibility to provide service for the public good, to maximize public interest and social welfare, and not for profit motives. From the literature, it is this basic ideological conflict that largely fuels the government privatization debate in the United States. On the other side, privatization allies contest that logically, privatization is more cost effective, and therefore in the best public interest, since it is taxpayers who foot the bill for these services. There is a balance that can be struck, as it is in the private sector, and that balance lies in transaction cost evaluation and management. Brown and Potoski propose that their Transaction Cost Framework based on Williamson's theory of transaction cost economics should be used to strategically implement privatization measures where there are cost savings to be found, and to keep

government provision of a service that are least likely to yield cost savings due to heavier transaction costs.

How America's Incarceration Model Conflicts with Prison Facility Privatization

After analyzing the history of service contracting within the public prison system, it can be deduced that physical incarceration is the key to government legitimacy with regard to the institute of criminal justice. The criminal has broken the social contract and must be punished by being taken out of society for a length of time determined to be appropriate to the offense. The physical aspect of incarceration must remain in the pubic or government domain. The offenders broke the social contract. Deviants betray society and so society must have the reigns over their punishment. The ultimate punishment in western criminal justice theory (other than death) is the loss of one's freedom, considered by some to be worse than death. It appears that most aspects of the prison system can be contracted out without much public dissent, except for the physical incarceration of the prisoners. A certain amount of government control of physical incarceration is necessary to keep the institutional legitimacy of the prison system. For example, the prison guards might be contracted workers, but the warden should be appointed by the government.

The controversy over private prisons is not about privatization of prison services, per se. It specifically concerns the term "private prison" which refers to a prison facility owned and run by a third party private corporation contracted out by a state to house prisoners (Schneider, 1999). While this is fundamentally contradicts the institute of punishment, the economic argument expects great improvements. Unfortunately, not much difference in quality, effectiveness, or efficiency can be extracted from various inconclusive empirical studies (Lanza-Kaduce, 1999, Bales, 2005, Bayer & Pozen, 2005).

This is likely the result of the overlapping prison services that are privately provided to both public and private prison facilities. For example, both public and private prisons may contract out their rehabilitative services, including cognitive therapy, and drug rehabilitation. This overlap of service provision would even the playing field with regard to prison quality and effectiveness. Moreover, the facilities may be using the same contractors for these services, since the market for rehabilitation services may not be crowded.

France has "semi-private" prison institutions following the idea that the government should be in control of actually incarcerating the prisoners. All other services are privatized, except for the custodial control (Harding, 2001). Australia, and the United 0Kingdom have systems similar to the United States where privately run facilities coexist with public ones (Schneider, 1999, Harding, 2001, Pozen,2003). Israel is also experiencing a recent trend of private prisons, met with strong public resistance and disapproval. There is a reoccurring theme in privatization resistance that the government supervision of the private sector is inadequate. The problem of the iron triangle and government corruption or conflicts of interest in prison systems is also of significant concern (Schneider, 1999).

The literature on prison privatization cites three main measures of effectiveness: cost efficiency, safety, and recidivism (Anderson, Davoli & Moriarty, 1985, Hart, Shleifer & Vishny, 1997, Price & Riccucci, 2005, Young, 2007). Whether the prison system is public or private, the costs are taken from the limited funding of public tax dollars, thus an important measure of prison effectiveness is cost (Pozen, 2003). Prisons are also used as a method to keep the public safe from criminal harm, thus another main

function of a prison is to keep criminals incarcerated. There should be sufficient security so that prisoners cannot escape. Another safety issue is the safety of inmates and prison staff within the prisons. The third major function of prisons, often overlooked by the public is the rehabilitation of criminals to be released in the future and reestablished into society. Rehabilitation of criminals takes the form of psychological therapy, education, job training, and an overall safe environment providing basic human needs such as nutrition, exercise, sanitation and medical treatment (Alarid & Schloss, 2009).

Economic Efficiency Argument

Many economic efficiency evaluations have been done on the topic of prison privatization (Anderson, 1985; Benson, 1996; Bottomley, Keith, & James, 1997; Farabee & Knight, 2002; Greene, 2002; Culp, 2005; Gaes, 2005; Blumstein, Cohen & Seth, 2008;). However, these evaluations focus on one kind of prison privatization, facility management. This is one out of hundreds of different kinds of government contracts for prisons. Based on Adam Smith's theory, privatization should increase efficiency of production through specialization and competition. However, the market for prisons is riddled with market failure. Most notably, the heavy capital investment requirement of building and maintaining corrections facilities invites the danger of monopolies (Johnston, 1990, Sclar, 2000, Greene, 2002). Currently, the private prison market is dominated by two large corporations[1]. While specialization might be viable, efficiency

[1] The two largest private prison corporations in The United States are Corrections Corporations of America (CCA, www.cca.com) and GEO (formerly Wakenhut Corrections Corporation www.thegeogroupinc.com), both operating as private prison contractors in the United States since the early 1980's. These two corporations have 75% of the monopoly on private prisons in the United States. CCA has a total prisoner capacity of 80,000 in 19 different states, while GEO trails in second with a capacity of 49,000 across 16 US states. GEO also operates internationally with facilities in Australia, South Africa, and the United Kingdom with a total international prisoner capacity of 80,000 beds.

through competition is unlikely. Not surprisingly, most empirical evidence suggests that the cost differences between public and private prisons are minimal or non-existent (Johnston, 1990, Price & Riccucci, 2005). One of the explanations for lack of cost difference is cross-fertilization.

Cross-Fertilization

Contrary to other scholars' beliefs that the private prison trend is gaining ground and is bound to continue at a rapid pace, Culp argues that the privatization movement, especially in the prison industry, is dying down as private and public prisons have become "mirror images" of each other (2005). An explanation for Culp's "mirror image" observation is the theory of cross-fertilization. Cross-fertilization theory implies that the coexistence of both public and private prison systems may drive market efficiency through competition, learning, and benchmarking (Johnston, 1990, Bottomley & James, 1997, Greene, 2002, Blumstein, Cohen & Seth, 2008). Empirical data supports evidence of increased cost efficiency in public sectors that comingle with private entities (Bottomley & James, 1997, Greene, 2002, Blumstein, Cohen & Seth, 2008). Blumenstien, Cohen & Seth found that simply the presence of a private prison will create subtle market forces that influence the public sector enough to result in cost savings as much as $13 to $15 million for an average state (2008).

Privatization Does Not Always Lead to Cost Savings

In prior paragraphs, I discuss how prison facility privatization empirical studies do not find evidence for cost savings. Privatization studies which examine other types of government service contracting also find mixed evidence for cost savings. These privatization investigations were done in the areas of transportation, waterworks, and

engineering. Some find cost savings, while others do not. The constant in the evidence is that markets are a significant factor. If the markets are competitive, cost savings can be realized. If there isn't market competition for the good or service, costs are most likely not realized. Smirnova and Leland (2013) find that cost savings in transportation contracts may be realized if the markets are competitive. If a competitive market does not exist, then contract performance is lower and cost savings are not realized. Bel and Warner analyze several waterworks cases and conclude that market structure, industrial organization and government management, and in the case of waterworks, they do not find evidence for cost savings. This is due to the quasi-market nature of the waterworks sector. Waterworks involves significant capital investment and sunk costs, creating long, open contracts, thus efficiency is not realized. In the case of waterworks management, literature informs that a public-private partnership (PPP) may be a more suitable option, as a hybrid of private and government management. Grimsey& Lewis find that PPPs save money when they are used for suitable projects, such as major infrastructural projects, and concludes that PPPs are not appropriate for smaller projects because of the transaction costs involved. Instead of a transaction cost framework, many local governments employ the relational contract model for outsourcing services with high transaction costs (2005). Ponomariov, Kingsley, & Boardman find evidence for relational contracting in prime and sub contracts for engineering services over a period of 12 years (2011). Instead of keeping engineering services in-house, governments establish relationships with highly asset-specific engineering contracts to achieve the most efficient service outcome. Leland and Smirnova (2008) find that government structure matters. Special purpose governments can realize cost savings through contracting because of the

focus on specific services. This has parallels to PPP solutions. From these previous privatization investigation, I can conclude that market competition and relationships in contracting do result in cost savings. Market competition is heavily influenced by transaction costs. Patterns of relational contracting are found where transaction costs are high. The findings of these previous studies are applied in this dissertation to prison contracting data in Chapters 4 and 5. This dissertation uses the lens of transaction cost economics to investigate cost effectiveness in private contracting.

Transaction Cost Economics

Empirical results show little, none, or invalid evidence supporting or opposing the contracting out of government services. Since theory suggests otherwise (contracting out should save money and improve efficiency), I look closer at contracting patterns at the level of the individual contract to find out why cost savings are not realized. Something must be different when a company or institution contracts out instead of providing a good or service in house. So what's missing in this equation? The use of an appropriate framework has been proposed by Brown and Potoski (2005). Their Transaction Cost Framework is based on Oliver Williamson's Transaction Cost Economics. In a descriptive evaluation of government contracting behavior and transaction cost evaluation, Brown and Potoski have discovered that much of the service contracts outsourced by government contract managers are high in transaction costs, and thus risky, and inefficient. They surveyed randomly selected city managers on 64 commonly outsourced government services, and asked that they rated the asset specificity and ease of performance measurement for each of these government services. After observing the mismatch of transaction cost measures to actual contracting behavior, they devised a

transaction cost framework and recommend that government managers follow the framework. Their transaction cost framework measures levels of asset specificity and levels of performance measurement difficulty. If a service is either high in asset specificity, or performance measurement difficulty, or both, they advise that the service should not be outsourced because transaction costs most likely would outweigh any cost savings. Even if the transaction costs are moderate, they argue that cost savings would be very unlikely.

Empirical Research in State and Local Contracting Behavior

According to transaction cost theory, if there is difficulty in performance measurement, or there are high levels of asset specificity, either side may fall victim to opportunism. The vendee is most vulnerable. Lonsdale cautions against the risk of getting locked in to contracts with high transaction costs, especially those with high asset specificity. Even moderate asset specificity poses significant risks. If a service is difficult to evaluate, then the vendee has no way of knowing if the service is effective, or has even been executed according to contract specifications. Certain services such as therapy and rehabilitation services, typical in corrections service contracting, are very problematic with regard to performance measurement.

Table 1: Brown and Potoski's transaction cost framework

	Low Asset Specificity	High Asset Specificity
Easy to Measure	Low Transaction cost services	Mixed Transaction Cost Services
Difficult to Measure	Mixed Transaction Costs Services	High Transaction Cost Services

(Brown & Potoski, 2005, p. 333)

Brown and Potoski's framework (shown above) is based on Williamson's Transaction Cost Economics which takes into account asset specificity and ease of performance measurement to evaluate risk in contract negotiation and management. After creating a framework from Williamson's theory, Brown and Pototski apply the framework to government service contracting. They execute an empirical study of contracting behavior by government contract managers. They survey government contract managers, and find that while many of the services are judged by public administrators as being high in asset specificity, or difficult to measure, or both, local governments are still contracting out for these services. Thus, the expected efficiency pattern found business research is not found in Brown and Potoski's evaluation (2005).

Brown and Potoski found an inconsistency between best business practices and government contracting behavior. This dissertation uses Brown and Potoski's transaction cost framework to test Williamson's transaction cost theory and solve the mystery of missing cost savings. Where are privatization's cost savings? Economic theory tells informs that privatization should improve efficiency in government services because of competition and experience in the private sector. The private sector is assumed to be more streamlined and thus efficient. Private businesses greatly consider the issue of transaction costs when making the outsourcing decision. Free market theory assumes that private business's ultimate goal is to maximize profits. Business literature on transaction costs is not lacking. In business literature, it is described as horizontal vs. vertical integration, or the decision to make or buy. If the purpose of government privatization is to streamline the government and improve efficiency, then private sector business theories and practices should be observed. This is maintained by Williamson and Brown

and Potoski. When similar practices in contract management are observed in the public sector, I propose that cost savings can occur. This is the basis of Brown and Potoski's framework. The framework is meant to be used as a tool to maximize efficiency in government contracting.

Local Governments Engage in High-Risk Contracting Behavior

Thus far, government management continues to show high risk contracting behavior, contracting out for services with high levels of asset specificity and/or high levels of performance measurement difficulty. This is observed in our dataset of state corrections contracts as well. However, if the transaction cost framework devised by Brown and Potoski is followed, the missing cost savings can be identified. Contracting out for services low in asset specificity and low in performance measurement difficulty while keeping services that are highly asset specific and difficult to measure should lead to cost savings. This dissertation looks at various prison facilities, and hypothesizes that those facilities that contract "smarter", meaning those contracts that are have low transaction costs, will have observable cost savings in the form of lower overall operational costs for the facility after controlling for several important prison facility variables such as level of security, population size, year, and region.

Hefetz and Warner used a similar framework to measure contracting patterns among state and local government managers. However, their survey was conducted over a larger sample, taking into consideration population size and metro status. In addition to transaction costs, they also looked at market characteristics, citizen interest, and place characteristics. They compared managers' surveys to the actual contracting patterns of the corresponding local government, and found that while managers are aware of

transaction cost levels, they don't necessarily make contracting decisions that correspond to transaction cost theory. They know the theories, but other variables such as citizen interest and regional characteristics also have significant influence on the contracting decision. Managers are also limited by bounded rationality. They can only make decisions based on the information they acquire, while there may be important unknown variables playing a part. Managers from Hefetz and Warner's survey were aware of transaction costs measures for asset specificity and management difficulty, and ranked goods and services accordingly. Their measures of high transaction costs matched those found in business management literature (Klein, 1990; Williamson, 2010; Hefetz & Warner, 2011).

These two studies only go as far as survey the government managers to see if they are taking transaction costs, specifically asset specificity and ease of management/measurement into account when soliciting bids for private services and procurement. They find that while managers are aware of transaction costs, they are limited by their resources and by bounded rationality, and thus, while the survey results suggest that they take transaction costs into consideration, the contracting behavior tells a different story.

A Case of Strong Theory but Poor Testing

Boyne's meta-analysis of contracting studies finds that empirical evidence supporting cost savings has not been found because of the flaws of those studies. He concluded that this lack of evidence is not because there aren't underlying efficiency improvements. Economic theory supporting cost savings through contracting holds up in the private sector, according to business literature (Jiang, Frazier, & Prater, 2006).

However, in the public sector, the complexities of government management are not appropriately considered. He maintains that more research using appropriate methods needs to be done to understand why cost savings are not being realized. He points out that the reason privatization is so prevalent is due to the strength of the theory.

Boyne said it best in his 1998 review of service contracting studies: “Indeed it could be argued that a strong theory has been ill-served by weak tests.” Almost twenty years later, empirical evidence is still missing. Perhaps researchers have given up on measuring contract efficiency. Maybe it simply faded into the background during the thriving times of the late nineties and the naught years. Cost savings issues are more salient when money is short. So in these seven years following the 2008 financial crisis, the issue of privatization and contract efficiency is once again center stage. State and local budgets are tight. Contracting out for services and goods is a go to option due to economic theories backed by strong models that say that privatization leads to the most efficient outcomes, i.e., private contracting should maximize cost savings. Over the past seven years, the contracting studies have come back with a vengeance, largely due to their media scrutiny. Outsourcing has been a successful business strategy in the private sector. But the public sector is not so black and white. Government regulations, policy implementations, political ideologies, all in the name of social welfare, create infinite layers of complexity, when looking in on the situation as an outside observer.

Boyne makes the general observation that private contracting has been used for every service that the government provides. There may be exceptions, but he challenges scholars to find them. In my extensive research of state and local contracting data, I cannot come up with a service that has not been contracted by state and local

governments. It would be an exception, and not the rule. It is safe to say that contracting is used for most government services, depending on the time and place. Certain government sectors are more suitable for privatized services, and so there are differences across sectors, regions, and political boundaries.

His analysis reviews 29 studies over a 20-year period and finds the overall evidence to be inconclusive. Twenty years later, more recent studies show very similar, inconclusive findings. So, does this mean that contracting doesn't work? More importantly, if decades of contracting studies yields inconclusive evidence of cost savings, why do governments still contract out in the name of cost savings? Boyne, and the majority of the literature points at the strength of the economic theory and the models that back it up. Moreover, business literature finds conclusive evidence that outsourcing leads to cost savings. One thing to take into consideration is that the business literature maintains that there are suitable circumstances for contracting out, and unsuitable circumstances. Much of the business literature dealing with outsourcing decisions focuses on markets and transaction costs. Recent investigation into government contracting also looks to transaction cost economics for guidance. Some helpful transaction cost frameworks for measuring asset specificity and contract management difficulty have been explored. Government manager surveys were conducted to evaluate whether or not transaction costs are taken into consideration when procuring goods and services. These surveys also asked managers to measure asset specificity and management difficulty of contracts as a way to operationalize transaction costs. These studies contribute significantly to our understanding of present day government contracting and public sector management. However, there is a huge gap in the literature with regard to testing

these frameworks (Brown & Potoski, 2003; Hefetz & Warner, 2011). Will these transaction cost frameworks lead to cost savings if followed by government managers when contracting out goods and services to the private sector?

Using Transaction Cost Economics to Achieve Efficiency in Contracting

In existing government contracting studies, efficient contracting with regard to transaction cost is not happening. It seems to be the norm across local and state government management practices (Brown & Potoski, 2003; Hefetz & Warner, 2011). So, does it matter? Theory says it does, but the literature in government management hasn't provided much in the way of real-world examples. As Boyne states, there is a lot of strong theory models without empirical evidence to support it. My dissertation is a continuation of a contracting pattern analysis presented at the Midwestern Political Science Association conference in 2013 (Leland & Duscha, 2013). Using the same data set, I examine the effects of prison contracting patterns. In the contracting pattern analysis, most states in the sample do not follow contracting patterns logical to transaction cost economics. I hypothesized that states would have small, strong networks (showing relational patterns) for contracts high in asset specificity, and large, loose networks for services low in asset specificity. Overall, I did not find that states in their data sample followed efficient contracting patterns. If the patterns follow the framework set up by Williamson in his models on transaction cost economics, cost savings through contracting out should be realized.

In order to observe the effects of transaction costs, this study looks into prison operations to evaluate cost savings through contracting. The nature of the state corrections system is that the prisons are run as self-contained communities. As such,

diverse goods and services are needed to maintain a prison. Thus, departments of corrections are unique in their challenge of managing a variety of contracts from general goods and services to corrections-specific highly customized goods and services. This dissertation aims to provide evidence of cost savings through suitable contracting of prison services in the operation of state prison facilities. The hypotheses and methods are generalizable and can be used to evaluate the effectiveness of contracting for cost savings in other government sectors. The uniqueness of this study lies in the dataset, and the transaction cost measures devised from contracting network patterns relative to levels of asset specificity and contract management difficulty. Hefetz & Warner and Brown & Potoski's transaction cost studies focus on local government managers across departments, giving a more general overview (2011, 2003). While my study is more specific, focusing on state DOCs and their prison facility operations.

Hypotheses

Based on the above literature and previous empirical studies, this investigation will use multivariate ordinary least square regression analysis to test the following hypotheses to find evidence for cost savings in state prison contracting:

H1. Prison facilities with higher rates of contracting for high-asset specificity services will have higher per diem costs than those with lower rates of contracting for high-asset specificity services.

H2. Prison facilities with higher rates of contracting for services that are difficult to measure and manage will have higher per diem costs than those with lower rates of contracting for services that are difficult to measure and manage.

Asset Specificity

Contract-specific assets are those that are tailored to a particular use such as a custom-designed machine. There are fewer alternative uses to these goods or services, and thus these kinds of contracts are considered to be high in asset specificity, and are thus high-risk contracts with high transaction costs. Contracts that are high in asset specificity are vulnerable to opportunism, path dependency, and are at risk to being "locked-in" to a contract. General purpose assets, on the other hand, are low in asset specificity, and can be freely transferred across applications. For example a refrigerator, or food services are much lower in asset specificity than very prison specific services such as security equipment, or rehabilitation programs. General purpose contracts have many alternative uses, and are generally low-risk, have low transaction costs, and are more likely to result in cost savings from market competition (Lonsdale, 2001; Brown & Potoski, 2003; Brudney et al, 2005; Williamson, 2010; Werner & Hefetz, 2011).

Performance Measurement (Management Difficulty)

When performance outcomes are difficult to measure, Williamson's theory states that higher transaction costs are likely to result. Higher levels of measurement difficulty will lead to higher transaction costs. Contract performance may be difficult to measure for a number of reasons. When expected outcomes are difficult to identify, it becomes challenging to evaluate whether a good or service was effective or not. For example, substance abuse treatment may be difficult to evaluate because some patients have a more difficult time with rehabilitation due to individual characteristics. Law enforcement services are difficult to evaluate for effectiveness because of the absence of crime and the issue of reverse causality. Another aspect of performance measurement difficulty is the

clarity of the contract specifications. When activities necessary to carry out a contract are vague, this leads to performance measurement difficulty and increased transaction costs. Consulting contracts, such as gang intervention consulting, often have vague specifications on how a contract should be carried out. Thus, whether or not the contract is carried out to expectation is indeterminate. Transportation operations and building lease agreements are easy to measure because of easily identified performance metrics. When performance metrics are easy to identify with regard to service/goods quality and quantity, transaction costs are greatly reduced, and cost savings may be realized (Brown & Potoski, 2003, 2004; Brudney et al., 2005; Hefetz & Warner, 2012).

Economic Factors

Many factors affect the cost of running a prison. Prisons are small, contained communities, so economic factors that affect the cost of running institutions such as size, transaction costs, capital, and labor will also affect the cost of running prisons. Similar to other business operations, prisons, too experience economies of scale, and because of this, prison facilities that accommodate larger populations have lower per capita costs than facilities with smaller populations (Lukemeyer & McCorkle, 2006, Stigler, 1958).

Security Factors

Higher security level prisons have higher operating costs than minimum security prisons. Maximum and Closed Confinement prisons have highest per diem costs because of the use of more resources to contain more dangerous prisoner populations (Perone & Pratt, 2003, Lukemeyer & McCorkle, 2006).

Fiscal stress causes more contracting out

The recession caused a sharp increase in contract frequency to be seen across the board, regardless of political ideology. Literature informs that fiscal stress is a major factor in contracting frequency. Recently, federal budget cuts, and a national recession have caused much fiscal stress across states (Brudney et al., 2005; Conant, 2010). Fiscal stress, the Great Recession, and State budget outcomes, including an increase in privatization, as the public sector gets attacked. To capture the effects of fiscal change, and other governmental changes, I control for year and region.

Region Control Variables and Politics

Right to work states are more likely to be Republican and to contract out. This is because pro-union states have more unionized labor and tougher labor laws that may restrict government privatization. Other regional variables may come into effect, with regard to crime rates, and prison overcrowding situations. The literature informs that political ideology plays a role in contracting out. Republican governments are more likely to contract out because they favor reducing the size of government, while Democratic governments are less likely to contract out because they favor more government regulation and stronger government institutions, especially those that provide public services, like criminal justice. Recent empirical studies are mixed as to whether or not politics matter. The decision to contract out is complex, and involves political, economic, sociological, factors. Republican rhetoric quoted in media talks big about privatization and contracting (Price& Riccucci, 2005).

Summary

In recent decades, New Public Management has pushed a government privatization agenda throughout state and local governments. Based on best business

management practices, NPM emphasizes the outsourcing of government services to the private sector to achieve a more efficient government performance. Business literature finds evidence for cost savings through outsourcing. However, very little evidence of cost savings through private contracting is found in government management literature. This is a problem because government service provision is funded by tax-payer dollars. The government is accountable to tax-payers for efficient use of its budget. Government privatization is driven by two main factors: political ideology, and economic efficiency. Because it is impossible to separate politics from government, high-risk contracting decisions may be made for political reasons, rather than following the NPM agenda of running government as an efficient business. Another concern is that private contracting often runs into the problem of conflict of interests. For example, in the case of private prisons, it not in the best interest of the prison corporation to rehabilitate prisoners for release, since they make money by keeping them in prison. Using a transaction cost framework, this dissertation investigates how cost savings might be realized through privatization, and in doing so, improve government efficiency.

CHAPTER 3: THEORY

The Significance of Transaction Cost Economics in Government Contracting

Williamson's Transaction Cost Economics is the key to this dissertation, "Where Are Privatization's Cost Savings?" The recent trend of privatization is largely in reaction to difficult budget constraints. Local, state, and federal government agencies are contracting out services more and more in an effort to save money (Kettl, 1993; Kaboolian, 1998; Terry, 1998; Schick, 2015). Unfortunately, empirical evidence suggests that little or no cost savings are coming out of government contracting behavior (Bottomly & James, 1997; Toni, 1997; Gaes, 2002; Hood, 2004).

While theory tells implies that privatization should lead to cost savings, evidence shows that this is not the case (Savas 1987; Boyne 1998; Hirsch 1995; Lavery 1999; Sclar 2000; Milward & Provan 2003; Boyne, 2003; Hood, 2004; Brown, Potoski & Van Slyke 2006). Why doesn't evidence match theory? I propose that when more closely examined, the lack of cost savings in government privatization should be expected, given the circumstances surrounding most government contracting patterns (Brown & Potoski 2003, 2006; Hefetz & Warner, 2004). My dissertation seeks to find privatization's cost savings in the area of public prison facility operations. Ideally, my sample would have matching cross-national data, including operations contracts for privately managed

prisons. Unfortunately, I am limited to the data that I have access to. The sample used in this dissertation is from six purposely selected states in varying regions, over a period of five years, and is large enough to study and draw conclusions from (Babbie, 2010)[2].

Williamson's Transaction Cost Economics emphasizes the necessity of markets and hierarchies working together to realize the best economic outcome for each party, and in general, an outcome that is in the best public interest. He refers to this concept as the "Discriminating Alignment Hypothesis": different transactions are more efficiently governed by different combinations of government (hierarchies) and market influence. Government is needed to address market failures, and the market is needed to address government failures. In order for society to run in the most efficient way, there needs to be a balance between the two. Government, and capitalism play equally important roles (Williamson, 1975, 1979, 2010).

There are two intertwining stories to be discussed with regard to the significance of transaction cost economics in government contracting. First, it is best to discuss transaction cost relative to the research question, "Where are privatizations's cost savings?" Accepted best practice trends in public administration over the past few decades emphasizes the doctrine of New Public Management, with a religious-like mantra of running government like business (Hood, 1991, 1995; Boyne, 1998; Kaboolian, 1998; Terry, 1998; Box, 1999). The intention is to realize improved quality and efficiency (Boyne, 1998). The logic behind this is that businesses are run in the most

[2] According to the Bureau of Justice Statistics, there were 1,719 state prison facilities as of 2005. If we multiply the number of prisons by five years, we get a total population size of 8,595. Our sample size is 417 facilities, an average of 83.4 facilities per year. In order to keep the margin of error within 5%, a sample size of approximately 370 is needed, according to probability theory equation to calculate sampling error : $s = \sqrt{P} * \sqrt{\mathrm{Q}}/\sqrt{n}$.

profit-maximizing of ways, meaning their output must be high enough in quality to fill the demands of the consumer, without being too costly. In other words, running government like a business should result in providing the public with improved government services at a lower cost (Hood, 1991, 1995; Boyne, 1998; Box, 1999). The stakeholders in this scenario are taxpayers, and it is in their best interest that those hard-earned dollars are not wasted. Now, let's throw in some complexities: federalism- state and local governance is decentralized, and interpretation of "running government like a business" is infinitely variable. In a nutshell, for about thirty years, federal, state, and local governments, in a non-standard way, have been attempting to implement New Public Management, or running government like a business. The main way they've been doing this is by government contracting, privatization, and further decentralization of an already relatively decentralized government system (Kettl, 1993; Kaboolian, 1998; Terry, 1998; Hood & Peters, 2004; Dunleavy et al, 2006). Public Administration literature from the nineties heavily touts the advantages and expected positive outcomes, specifically higher quality and improved efficiency (especially with regard to cost savings) of implementing NPM (Hood, 1991, 1995; Boyne, 1998; Box, 1999). More recent public administration research is discovering that savings and increased quality were not realized after all, despite the wide-spread effort to implement NPM. NPM did not work (Boyne, 2003; Hood & Peters, 2004; Dunleavy et al, 2006). But why not? It should, right?

The answer to this question lies in the interdisciplinary theory of transaction cost economics. Transaction cost theory has evolved from Coase's economic musings, to the foundation of organizational science, encompassing law, sociology, and economics

(Williamson, 2001). In theory, privatization should lead to cost savings and improved quality due to market competition and economies of scale. However, contracts are always incomplete, due to bounded rationality, and therefore, transaction costs are always present and must be taken into consideration (Williamson, 2001). Bounded rationality refers to the idea that individuals do not possess complete knowledge and are bounded by incomplete information. They can only make rational decisions within the limits of their knowledge (Simon, 1997). If all knowledge is incomplete, then, all contracts are inherently incomplete.

In the 2000s, there is a collection of public administration research that examines transaction cost factors in contracting decisions of local government managers, notably carried out by Brown & Potoski, and Hefez & Warner (2004, 2006). Once again, laying blame to humankind's inescapably bounded rationality, these studies determine that while yes, transaction costs are taken into consideration, contracting patterns do not fall into the expected transaction cost framework. Contracts with high transaction costs (high risk) are being made, despite theory telling emphasizing that these contracts are at high risk for contract failure due to opportunism, and bilateral dependency, among other things. Granovetter has an answer for this type of behavior. He posits that social embeddedness, or relationships are governing contracting decisions rather than transaction cost measures (Granovetter, 1985). Simon also observes that people make decisions, not as individuals, but base their decisions on their group loyalties, seeking approval from families, organizations, ethnic groups, and nation states (Simon, 1998). Williamson finally agrees with this in later work, and incorporates these social relationships into his framework as a category of transaction costs. The prospect of

keeping, losing, or building new relationships, are factored into transaction costs (Williamson, 2010).

One answer to why contracting (a key component of NPM) was not resulting in cost savings is because transaction cost frameworks were not being used. In other words, government was not being run more like a business, because in businesses, according to theory and literature, transaction costs are taken into consideration, and when a transaction cost is high, production is kept in-house, or done via partnerships (Brown & Potoski, 2004; Hefez & Warner, 2006). Taking transaction cost theory into consideration, and implementing Public Administration literature's transaction cost framework for government managers, this dissertation looks at contracting patterns of various states' correction facilities to find evidence that when contracting patterns exhibit patterns of smart contracting, such as low transaction cost contracting behavior, privatizations' previously missing cost savings should be evident. This chapter first looks at the history, triumphs, and tribulations of the New Public Management movement, and then examines transaction cost economics as a possible solution to the NPM shortcomings, proposing that future contracting decisions be made in accordance with the transaction cost economics framework.

Progressive Public Administration

The literature speaks of Progressive Public Administration as the predecessor to the New Public Management. While there is considerable debate about whether or not PPA actually was done away with or not, it can be agreed that there was indeed a paradigm shift in public management from PPA to NPM in the 80s and 90s that contributed to today's hybrid best practices. Progressive Public Administration refers to

the traditional managerial approach that is marked by deeply entrenched bureaucracy, with a focus on tradition and procedures (Kaboolian, 1998; Terry, 1998; Rosenbloom, Kravchuk, & Clerkin, 2009).

The traditional managerial approach is characterized by "rigid hierarchy" and "machine bureaucracy" (Hood, 2000; Rosenbloom, Kravchuk, & Clerkin, 2009). Progressive Public Administration focused on processes and compliance, rather than results. It is also characterized by its clear division between the public sector and the private realm. Also known as the traditional managerial approach, PPA was a permanent bureaucratic fixture, while new public management is competitive and decentralized (Hood, 1995; Kaboolian, 1998; Terry, 1998; Rosenbloom, Kravchuk, & Clerkin, 2009).

What is New Public Management?

New Public Management came into popularity three decades ago as a widespread push to run government more like a business in an effort to lower cost and improve quality of government provisions. NPM recommends that big, centralized government be broken up, decentralized, and privatized, where possible. The idea is that businesses are more efficient because of market competition and profit incentive (Hood, 1995; Kaboolian, 1998; Terry, 1998; Rosenbloom, Kravchuk, & Clerkin, 2009).

Hood identifies seven general characteristics or "dimensions" of the New Public Management movement of the past few decades (1995). Clearly illustrated by the following list of characteristics, is the likeness to the private sector business administration best practices. Organizational science, as applied to corporate structures is to be applied to public governance.

Dimensions of NPM (Hood, 1991, 1995)

1. Disaggregation of public organizations
2. Competition (facilitation competition among private and public sectors, both public-to-private, and public-to-public
3. Private sector management practices
4. Emphasis on discipline and parsimony in resource use (actively improving cost efficiency in the delivery of public services, as opposed to previous PPA emphasis on institutional continuity
5. Hands-on management
6. Accountability (explicit and measurable standards of performance)
7. Homeostasis of output measures (preset output measures, consistency, rather than ad-hoc from the top demands)

One of the big changes in government operations was the increase in contracting out for public service provision. Types of services include waste management, corrections, and public transportation (Hood, 1991, 1995; Boyne, 1998). New Public Management brings about more government contracting, because privatization is thought to lead to increased efficiency due to market competition and economies of scale. In order for efficient contracting to occur, transaction costs need to be accounted for (O'Flynn, 2007). This is why transaction cost economics is so relevant to the New Public Management paradigm shift. Any problem that can be looked at as a contracting issue can be examined using TCE, transaction cost economics (Williamson, 2001). While NPM encompasses many business practices, one of the major changes that can be seen across the board (especially in the U.S) is the wave of privatization that washed over

government management at the federal, state, and local levels (Moe 1987; Hart, Shleifer & Vishny 1997; Price & Riccucci 2005). The following table, adapted from Hood, illustrates the paradigm shift from Progressive Public Administration to New Public Management.

Table 2: New public management paradigm shift:

PS Distinctiveness			
Doctrine	Typical Justification	Replaces	Most Recent Literature's outcome evaluation (what actually happened thus far)
Unbundling of the PS into corporatized units organized by product	Make units manageable; and focus blame; split provision and production to create anti-waste lobby	Belief in uniform and inclusive PS to avoid underlaps and overlaps in accountability	Too much unbundling resulted in chaos. Governments are not able to keep track of all the smaller units. Transparency and accountability are negatively affected. Public Service becomes less efficient in many cases.
More contract-based competitive provision, with internal markets and term contracts	Rivalry as the key to lower costs and better standards; contracts as the key to explicating performance standards	Unspecified employment contracts, open-ended provision, linking of purchase, provision, production, to cut transaction cost.	Higher transaction costs resulting from incomplete contracts. Bounded rationality, and opportunism, bilateral dependency.
Stress on private sector styles of management practice	Need to apply proven private sector management tools in the public sector	Stress on PS ethic fixed pay and hiring rules, model employer orientation centralized personnel structure, jobs for life	Public sector much more complex. Private sector management is not always effective.
More stress on discipline and frugality in resource use	Need to cut direct costs, raise labor discipline, do more with less	Stable base budget and establishment norms, minimum standards, union vetoes	Instability
Rules vs Discretion			
More emphasis on visible hands-on top management	Accountability requires clear assignment of responsibility not diffusion of power	Paramount stress on policy skills and rules, not active management	This makes it less uniform

Explicit formal measurable standards and measures of performance and success	Accountability means clearly stated aims; efficiency needs hard look at goals	Qualitative and implicit standards and norms	One-size does not fit all. Some services are difficult to measure.
Greater emphasis on output controls	Need for greater stress on results	Stress on procedure and control by collaboration	Increased accountability, however, this leads to less emphasis on process; sometimes high risk contracts are made as a result.

(Table enhanced from Hood, 1995)

The Current state of NPM

While Dunleavy and Hood cautioned about the challenges of NPM in their 1994 evaluation of the pros and cons of the implementation of NPM, they determine that their timidity of embracing NPM, or rather their caution, was warranted. New Public Management has a lot of unintended outcomes- the standards implemented did not always fit well with the government sector. Hood proposes a comparison between Soft Theory to Hard Cases, to see how NPM implementation played out, since there are now two decades of NPM to research. Despite a very sensible theory, NPM hasn't played out well overall. In 2004, Hood declares that NPM is middle aged, and not aging gracefully, while in 2006, Dunleavy pronounces NPM as dead altogether and replaced by the Digital Governance Era. The literature cites transaction costs as one of the prevalent challenges to New Public Management (Flynn, 2007, Dunleavy, 2006, Hood, 2004).

Over the past three decades, public administration management theory has gone between two extremes, of hierarchic bureaucracy, and market driven privatization, and finally, the realization that these two theories work best when implemented together (Kaboolian, 1998; Terry, 1998; Williamson, 2010). Williamson proposes that there needs

to be an appropriate balance (1979, 2010). Too much of one thing leads to a waste of government resources, and unsatisfactory government provision of public services. For public administration to optimally provide in the best public interest, transaction cost must be accounted for (Hefez & Warner, 2004, 2012). Other options such as in-house provision (vertical integration) or public/private partnerships (PPP) may be necessary in cases where transaction costs are high (Savas, 2000; Minnow, 2003; Ruzzier, 2009).

Public administration literature continues to express concern for the strong trend of ideas promoting running government like a business (Boyne, 1998; Box, 1999; Hood, 2004; Dunleavy et al, 2006). Box is concerned that core public-sector values of citizen self-governance and the administrator as servant of the public interest are jeopardized by new public management theory. He argues that new public management goes against the purpose and scope of government and the role of the public practitioner. He discusses the current political culture that embraces running government like a private business (1999). Politicians and citizens increasingly demand that government be operated like a business (Hood, 1991, 1995; Dunleavy & Hood, 1994; Domberger & Jensen, 1997; Price & Riccuci, 2005; Hefez & Warner, 2012). What this means is that government should be cost efficient, as small as possible, competitive, entrepreneurial, and dedicated to pleasing the customer (Dunleavy et al, 2006). In this case, the citizen is the customer. This causes concern for the quality of public service, especially with regard to issues of social justice, environmental protection, fairness, and other issues that may not fare well in a capitalist market system (Francois, 2000; Boyne, 2004; O'Flynn, 2007). A big concern is that citizens will no longer actively participate in government, since they will now take on the role of customers, and are assumed to turn away from the public spirit of a group

mentality (Kaboolian, 1998; Box, 1999; Francois, 2000; Dunleavy et al, 2006). The current popularity of NPM's mantra of running government like a business is not so strange or unexpected, taking into consideration that the American Public Sector (and much of the Western World) exists within the dual context of market capitalism and classic liberalism. The driving values in this society are limited, efficient government, combined with individual liberty and political competition (Box, 1999). Box argues that important issues such as economic inequality and collective citizen discourse and decision making are overlooked as a result. This is detrimental to a democratic government because without collective citizen discourse, government accountability becomes problematic. Public Administration scholars suggest that citizens should be educated about the leadership goals and strategies of government managers to promote citizen engagement and government accountability (Kaboolian, 1998).

It is not possible to reduce government to cost-benefit analysis because government is too complex. It is not the same as a business (Hood & Peters, 2004; Dunleavy et al, 2006). While some business management practices can be successfully implemented to improve government function, other business practices are not applicable or relevant to public service administration (Kaboolian, 1998; Terry, 1998; Hefetz & Warner, 2004). This again echoes Williamson's "Markets and Hierarchies" and the yin and yang that are Markets and Hierarchies.

Transaction cost economics becomes especially relevant in recent times, and in modern public administration scholarship because of the NPM paradigm of the 80s, 90s, 2000s. In fact, after 2010 there remains a strong push for NPM, most likely a result of the

budget cuts, and the dire situation our economy was left in after the Lehman Brothers Shock.

Williamson's Transaction Cost Theory

In Williamson's early work with transaction cost economics, he focuses on the boundaries of the firm, transaction costs in contracting, and the decision of vertical integration of production (1971). When contracts were high in asset specificity, firms should make the strategic decision to vertically integrate production. If the market was competitive, and transaction costs were low, outsourcing of production is a reasonable solution, free from risks of opportunism or bilateral dependency (Williamson, 2010). As transaction cost economics and organizational science scholarship grows, Williamson's vertical integration model becomes a paradigm for transaction cost economics, and is applied broadly to all forms of economic organization, including public sector management (Williamson, 2010). In 1985, Granovetter criticizes Williamson's theory of Markets and Hierarchies for its lack of explanation for network governance. He emphasizes that social relations are always a factor in all aspects of life, including economic transactions, and should be considered when evaluating contracting decision processes. Powell follows up on this in 1990 by implying that networks are an alternative form of governance when markets and hierarchies are not the most effective option. For example, vertical integration is not always a viable option for production because of administrative barriers, and temporal considerations. When time is an issue, cooperation among parties is a much faster alternative because knowledge and resources can be shared and leveraged. In such cases, relational contracting is the likely solution (Powell, 1990). Finally, Jones, Hesterly, and Boregotti synthesize network governance with

transaction cost economics, making the case that the circumstances of transaction costs, such as the aforementioned, predict the formation and effectiveness of network governance over standard hierarchical governance (1999). They build on existing transaction cost scholarship by including networks as part of the market-hierarchy framework (Jones, Hesterly, & Boregotti, 1999).

The inclusion of networks fits well with Williamson's discriminating alliance hypothesis. Each individual contract has a unique, optimal balance of market and hierarchy governance, creating a spectrum with markets on one end and hierarchies on the other. Networks have a place in the middle of the spectrum. While sociology traditionally looks at network governance as a separate type of governance to Williamson's Markets and Hierarchies, organizational science adopts the spectrum to include networks as part of the transaction cost economics framework (Williamson, 2010). Transaction cost levels are used to predict likelihood of network governance in specific scenarios of production contracting. Network alliances are considered to be measures of asset specificity, and in particular, high in human asset specificity (Jones, Hesterly, & Boregotti, 1999). The social resources involved in creating a strong network alliance is now included as a dimension of asset specificity operationalization, and becomes a considerable factor in determining asset specificity levels of contracts (Williamson, 2010).

A predictive theory of economic organization is the ultimate goal of Williamson's Transaction Cost Economics. Classic economic theory assumes perfect markets, but in the real world, perfect markets do not exist. Williamson links his body of transaction cost research to the 1930s, when economists, lawyers, and social scientists began to look

deeper into contract management. Ronald Coase is credited with coining the term, transaction cost, and raising the issue that transaction costs will impede efficiency of contract outcomes. In his seminal work "Theory of the Firm", Coase presents firms and markets as alternative modes of organization (1932). The choice between using the firm or the market should be decided by weighing transaction costs, also known as "the make-or-buy decision". The Economist, Commons contributed what became known as "The Commons Triple": bounded rationality, opportunism, and foresight (1937). He defined a transaction as having conflict, mutuality, and order. Because of bounded rationality, contracts are unavoidably incomplete, making them subject to opportunism. Commons emphasizes anticipation (foresight) of certain transaction costs before committing to a contract to protect parties from the risk of opportunism. Llewellyn contributes to modern TCE in his identification of contracts as a framework, and not a true reflection of how working relations will actually play out (1931). And finally, Williamson credits Barnard, a businessman, and a pioneer organizational theorist, with the idea that adaptation of a contract agreement is a major obstacle in contract fulfillment (1938). These core ideas have been synthesized into what is modern day Organizational Science, and serve as the foundation to Williamson's Transaction Cost Economics (Williamson, 1979, 1985, 2001).

Human Actors

Neoclassical economics fails in many ways to account for human nature, specifically, human behavior. The "Commons Triple" of bounded rationality, opportunism, and foresight is used to explain the behavior of human actors. Commons believed that all complex contracts are unavoidably incomplete due to bounded

rationality (Commons, 1937; Simon, 1997). There will always be unknown information. Because human have limited cognitive ability, their decisions are bound within these limits. Contracts are “mere promises”, and are vulnerable to opportunism, and because of this vulnerability, firms will use foresight to try to avoid the hazards of bounded rationality and opportunism (Commons, 1937; Williamson, 2001). Firms will weigh the benefits against the hazards, or rather weigh the balance of risk between the two parties. If the balance is in their favor, they should go through with the contract, and if the hazards weigh against them, they should decide against a contract (Williamson, 2001, 2010; Brown & Potoski, 2004; Hefetz & Warner, 2006). The goal is to avoid negative consequences of a contract transaction. This means that in reality, there is no such thing as a contract free of transaction costs. Zero sum game is only possible in theory, and not a real occurrence. Transaction Cost Economics aims to measure contract gains and losses as they would occur in the real world (Williamson, 2010).

Three aspects of a transaction that are important to consider when measuring transaction cost are frequency, uncertainty, and asset specificity. High levels of asset specificity can lead to bilateral dependency, which cause intertemporal governance issues (Williamson, 1975; Williamson 1991a, 1991b; Lonsdale 2001). Choices made by a firm in the past, based on contracting agreements, can have big consequences on their future profit outcomes if large transactions costs are undergone in a contract agreement (Lonsdale, 2001). For example, if much capital investment is undergone in order to provide specific products to a client, the firm will be dependent on the specific client for business, unless the product is transferable across market applications (Anderson, 1985; Klein, 1990; Brown & Potoski, 2003; Hefetz & Warner, 2004). In government

procurement, and as a rule of high transaction cost contracting, the greater the transaction cost, the longer the contract should be, in order to balance out the transaction cost investments, and to make sure that the transaction will be profitable in the long run. Of course, this causes bilateral dependency, and the vendor may not consistently produce a high quality product over the duration of the contract, hence, the risk of opportunism (Domberger & Jensen 1997). Uncertainty of a transaction refers to possible disturbances, and other unknowns. Because of the limits of bounded rationality, all contracts are uncertain (Williamson, 2001).

Herbert Simon illustrates the important implications of bounded rationality in political behavior (1985). He compares theories of bounded rationality (from public administration) with subjective rationality (from economics). He determines that empirical studies are not useless, however, bounded rationality makes it so that human decisions are unpredictable. However, decisions can be understood in hindsight by taking into consideration what knowledge the human had, or did not have, what interests, and what resources were available to the human in the process of making a decision. Simon provides important observations with regard to how scholars should go about examining theory of decision making in politics and economics. With regard to my dissertation, Simon's theory comparison enables a better understanding as to why transaction costs might not be taken into consideration, or why a transaction cost framework may not be observable in contracting decisions- it is not because the actors aren't rational, it is because they have bounded rationality. It may only be possible to learn what these bounds are in hindsight, and not possible predict them beforehand (Simon, 1985; Brown & Potoski, 2004).

Markets and Hierarchies

Firms are made up of many small parts. They are complex in organization, and as a result, interfirm communication is a challenge. The complexity of government poses significant challenges to running government like a private sector firm. This creates even more uncertainties in contracting out goods and service. The greater the uncertainties, the greater the transaction costs (Arrow, 1985). The concept of "Firm as a governance structure" is used by Williamson to compare different modes of governance using the following dimensions: incentive intensity, administrative controls, and the contract law regime. A Hierarchy or firm governance structure is defined by Williamson as one with weak incentive intensity, strong administrative command and control, and weak contract law regime. While Market governance structure is characterized as having strong incentive intensity, weak administrative control, and strong contract law regime. Using these three measures, Markets and Hierarchies have opposite governance structures. Because of these differences, Williamson's framework is designed so that Market and Hierarchy strengths and weaknesses can balance each other out. Markets and Hierarchies are polar modes of governance (Williamson, 2010). The operationalization of firm and market organization enables empirical analysis, which means that transaction cost economics can be used to guide contracting decisions. Government policy implications include contract decision frameworks.

The following diagrams illustrate the opposing characteristics of markets and hierarchies. Williamson describes a spectrum of possible transaction cost outcomes and emphasizes the use of his "discriminating alignment hypothesis" to decide how much government vs market influence would be optimal for a particular contract. The diagrams

are adapted from Williamson's Transaction Cost Economics: Then natural Progression (2010).

Three critical dimensions for describing alternative modes of governance

1. Incentive Intensity (weak/strong)
2. Administrative Command and Control (weak/strong)
3. Contract Law regime (weak/strong)

Table 3: Hybrid mode of transaction cost governance:

Hierarchy:			
	Incentive Intensity	Administrative Command and Control	Contract Law Regime
Weak	X		X
Strong		X	

Market:			
	Incentive Intensity	Administrative Command and Control	Contract Law Regime
Weak		X	
Strong	X		X

I employ an OLS regression model to determine if contracting patterns reflecting transaction costs would indeed lead to cost savings. I use per diem operating costs of a prison facility as our dependent variable, and test the transaction cost hypothesis using asset specificity ratios and management difficulty ratios adapted from transaction cost measurement scales from previous literature (Anderson, 1985; Klein, 1990; Brown & Potoski, 2003; Hefetz & Warner, 2004). In this current investigation, I find significant evidence for Williamson's transaction cost economics; if transaction costs are kept low,

prison facilities have lower per diem costs, on average, holding all other factors equal. While patterns in my sample tend towards social networks, if these patterns were to shift towards that resembling low transaction cost, low risk patterns, there would likely be more cost savings (Lonsdale, 2001; Brown & Potoski, 2003; Williamson, 2010).

Williamson's TCE is a framework, a skeleton to be used as a guide for making contracting decisions, based on awareness of transaction costs. While operationalization is an ongoing process, and formalization of TCE is still happening, empirical research is adding to the transaction cost literature. In summary, Williamson explains how to be efficient contractors within the confines of incomplete information.

Social Networks:

Humans trust their social connections and rely on them heavily even for transactions for products that have competitive markets. Social networks are considered to be a significant transaction cost (Williamson, 2010). This dissertation seeks to find cost savings if transaction costs are considered. I expect that when patterns fall within the TCE framework, the institution should realize cost savings through contracting, when compared to other institutions whose contracting patterns do not fall under the recommended low transaction cost framework.

The title question of this dissertation is "Where are Privatization's Cost Savings?" The answer lies in Williamson's transaction cost economics. When contracting patterns fall along transaction cost economic theory, cost savings are realized. Williamson speaks from an economics perspective.

A Contribution to Public Management Scholarship

Recent literature pleads that public administration scholars focus research on testing existing governance theory (Wolf, 1993; Boyne, 1998, 2003, 2004; Hood & Peters, 2004; Dunleavy et al, 2006; Williamson 2010). They maintain that the theory for government administration is beautiful, exceptional, does not need to be added to. There is too much theory, and not enough hard evidence. Wolf points out that there is already have a rich tradition in the West of political philosophy and theory, including an immense amount of very good governance theory (1993). Much like Boyne echoes, what is missing is the evidence to back up these beautiful theories (2003). Wolf recommends that scholars test these theories. He concludes that it is not necessary to keep create new theories. Current theories should be tested and implemented according to which ones are supported by solid empirical evidence (1993). This dissertation tests transaction cost economics theory, and finds evidence to support Williamson's call for balance of government and market, socialism and capitalism, markets and hierarchies (2010). This conclusion is echoed by Boyne, Lynn, and many other scholars contributing to the body of public administration literature (2003, 2001). Government and markets are necessary for checks and balances. Bureaucracy needs accountability, and capitalism needs government to provide for market failures. Markets are needed to provide for government failures. This also parallels the design of the United States government, by our forefathers, a system of checks and balances.

This study contributes some hard evidence to transaction cost economic theory and public management scholarship. While it is monetary evidence, it is in the public interest to be conservative with tax spending, since citizens are the source of this

resource. I use the theories of New Public Management and Transaction Cost Economics to test for cost savings. Simply using New Public Management, and Public Choice theory does not work, because it does not necessarily emphasize transaction costs. It emphasizes increasing privatization, wherever possible (Hood & Peters, 2006; O'Flynn, 2007).

While surveys of public managers imply that they do take into consideration transaction costs when contracting out, empirical evidence does not reflect this (Brown & Potoski 2004; Hefetz & Warner, 2006). The contract records examined for this dissertation also do not show use of transaction cost economics as a framework for contracting decisions. Many high transaction cost contracts are identified (see appendix); however, I isolate incidences where patterns do correspond to overall patterns of low transaction cost contracting and find that when contracting patterns do adhere to Williamson's transaction cost framework, cost savings are realized. Perhaps with replication of this analysis to other contract records in various state and local departments of government, more of the hard evidence can be found for transaction cost theory and NPM, previously missing from the public administration and privatization literature.

Williamson declares that transaction cost economics is an underused public policy perspective, despite its many possible applications to the government sector, including business regulation, and economic development and reform (2006). This is very similar to Brown and Potoski's concluding remarks in their 2003 study of government contract managers and their observations on contracting patterns in the public sector. Markets and Hierarchies are alternative modes of government that work together for a well-working government and a healthy economy (Shultz, 1995).

CHAPTER 4: DATA AND METHODS

Introduction

A major role of public administration is to disseminate limited government resources (tax dollars) to serve the public interest as efficiently as possible. One way to do this, is through privatization. Historically, the government has not been successful at realizing cost savings using private sector contracts. This dissertation asks the question, "Where are privatization's cost savings?" In this investigation, I look at government contracting in the private sector for goods and services in state corrections.

This investigation is relevant to current and future public administration best practices with regard to government expenditures. Transaction cost economics frameworks to inform contracting decisions. With a unique dataset, I test Williamson's Transaction Cost Economics Framework to find evidence that contracting patterns with lower transaction costs will result in overall cost savings, as predicted by TCE. Previous research has yet to formalize TCE, but formalization is the next step.

I present a formal model analysis. I use an ordinary least square multivariate regression model to find evidence for cost savings in state prison contracting. This chapter outlines all the variables used in the research analysis, and details how the variables were operationalized and acquired. It further explains the research design of this inquiry, including the rationale, and expected outcomes for the analysis that follows in the next chapter. The data for this investigation were gathered from state DOC websites.

Contract records were found at procurement links on the DOC websites[3]. Prison facility information including annual per diem costs, average population, and prison security levels were retrieved from state DOC aggregate annual reports and individual prison facility annual reports, depending on the state DOC reporting system. DOC reporting systems are not standard. These annual reports are provided by state DOC websites, or may be requested from their offices via email or telephone. The earlier annual reports (2007 and before) were often retrieved through email and telephone correspondence with the state DOC employees.

The unit of analysis for this model is the individual prison facility. The dependent variable is the annual average per diem operating cost of a prison facility. The main independent variable is contract transaction costs, measured by asset specificity and contract management difficulty. Control variables included in this investigation are fiscal year, region, prison facility population, and security level. My final sample includes three states, Arizona, Indiana[4], and Wisconsin, over a five year period, fiscal years 2007, 2008, 2009, 2010, and 2011. The sample size is n = 417.

[3]Arizona DOC website: https://corrections.az.gov/
Indiana DOC website: http://www.in.gov/idoc/
Wisconsin DOC website: http://doc.wi.gov/Home

[4] Facility level data for fiscal year 2008 was not available for the state of Indiana. It is omitted from our dataset.

The data codebook is presented in the following table

Table 4: Data codebook

Codebook:		
Per Diem Cost	perdiemcost	Average cost per day, per prisoner
Population	Avgpop	Average annual population of prison facility
Asset Specificity	Asratio	Contract Asset Specificity Ratio by state/year.
Management Difficulty	Dmratio	Contract Management Difficulty Ratio by state/year.
Minimum Security	min_security	Minimum security prison facilities
Maximum Security	max_security	Maximum security prison facilities
Close Security	cls_security	Close security prison facilities
Fiscal Year	Fiscalyear	Fiscal Year

Dependent Variable: Prison Facility Operating Costs

The main dependent variable is prison facility operating cost, operationalized by using the annual average per diem prison facility operating cost as reported in the state prison facilities annual reports retrieved from state DOC websites. The average per diem is the average cost a prison facility spends on a prisoner per day. While my original sample was intended to consist of six states of regional and political variation, over a period of five years (matching that of the originally collected contract records), because of data limitations, I end up with a sample of prison facilities in three states, over a period of five years. I could not access per diem records at the prison facility level for the states of Massachusetts, Louisiana, and Connecticut and I believe connecting data to cost is critical to answer my research question. The annual reports for these states aggregated facility statistics at the state level which does not give enough detail to accommodate my model. DOC offices were contacted via email and telephone whenever possible, but, facility-level data were not available for these states. With a sample size of 417, I can

conduct a regression analysis while keeping the margin of error within 5% (Babbie, 2010). However, the external validity with regard to region and politics is compromised because I was not able to get data for all six of our purposely chosen states (Babbie, 2010). Nonetheless, internal validity is strong because my data consist of generally regulated state prison facility records (Babbie, 2010). Operating cost, as an efficiency measure was chosen based on prior literature on prison cost. This research includes cost comparisons evaluations between private and public prison facilities (Johnston, 1990; Lanza-Kaduce, Parker, & Thomas, 1999; Gaes, 2005; Lukemeyer & McCorkle, 2006).

Explanatory Variables: Transaction Costs:

The main independent variables in the model are measures of transaction costs. Two measures are used in this analysis for transaction cost: contract asset specificity levels, and contract management difficulty levels. These measures were derived from a sample of state contracts from the Department of Corrections for the states of Arizona, Indiana, and Wisconsin, over five fiscal years, 2007, 2008, 2009, 2010, and 2011.[5] The contracting data is used in this investigation to devise transaction cost ratios by fiscal year and state as a method of operationalizing transaction costs for our OLS Regression Model.

Operationalization of transaction costs is challenging. I use previous transaction cost research as a guide for our transaction cost measures, but this study is limited by the data availability. Williamson and his contemporaries bemoan the fact that there are not strong formal models for measuring transaction costs, but encourage future research in

[5] The contract data was originally collected for Duscha and Leland's contracting pattern investigation in state corrections (2013).

this area (Williamson, 2010). This dissertation contributes to the formal model by picking up where recent transaction cost research leaves off. Specifically, it is a continuation of investigations by Brown and Potoski, and by Hefetz and Warner (2003, 2011). They explore the operationalization of transaction costs, while this dissertation takes their methods of operationalization and employs them in a formal model analysis.

Brown and Potoski explore transaction costs in government contracting, and propose a transaction cost framework from which to guide future government contracting decisions. In their investigation, they discover that while government managers are aware of transaction costs and provide responses to surveys measuring transaction costs, they still contract out for moderate and high transaction cost contracts. While they know that contracts with higher transaction costs are less desirable, they are aware of the economic theories, and they agree with the economic theories (according to their survey responses), they are not making contracting decisions based on these criteria. Brown and Potoski provide a good framework for transaction cost measurement based on expert feedback from their manager survey (2003).

What Affects Contracting Decisions?

Hefetz and Warner further this research, by inquiring as to what, exactly, affects contracting decisions, if transaction costs don't seem to matter as much as theory states that they should (2011). Their inquiry expands the survey conducted by Brown and Potoski by collaborating with ICMA and conducting a supplemental survey in 2007 to the ASD survey. They collected data from 118 municipalities about how they make service provision decisions. The service provision categories were public, intergovernmental, for profit, and non-profit. They used the 1-5 survey scale to measure

characteristics that drive servicing decisions including transaction costs (asset specificity and contract management difficulty), market competition, and citizen interest. They control for urban core and rural areas. They conduct a multinomial logit analysis, and find that contract decision patterns are not based so much on transaction costs, but are more influenced by market competition and citizen interest. From a cost savings perspective, the higher the market competition, the more cost savings is expected through contracting out for the good or service, and thus it is expected that the government managers would contract out for these goods and services.

Public Value and Citizen Interest

Citizen interest is not a cost-saving factor, but reflects the obligation of the government to serve according to public values. The government has pressure to keep services high in citizen interest in-house, to maximize government control and transparency. Examples of services high in citizen interest are law enforcement, and public safety, such as firefighters, crime prevention, and emergency services. Residential resources such as water distribution and residential waste disposal also have high measures of citizen interest, according to the manager surveys conducted by Hefetz and Warner (2011).

The Correlation of Market Competition with Asset Specificity

While citizen interest is not correlated to transaction costs, market competition is. This presents the issue of multicollinearity. However, it is not apparent as to whether or not Hefetz and Warner tested for multicollinearity. According to business theory, asset specificity indirectly affects market competition, thus, when making contracting decisions, or business expansion decisions, it is assumed in business literature that

products and services that are high in asset specificity will have less market competition because of the barrier to entry that acquisition of these assets may present (Porter, 1980; Walker & Weber, 1984; Klein et al, 1990). Perhaps their results do not show strong effects for asset specificity because of multicollinearity issues as a result of simultaneously including the market competition variable in their multinomial logit analysis. Nonetheless, their transaction cost results align with Brown and Potoski's findings, and they further the Brown and Potoski transaction cost investigation by answering the question, "What affects contracting decisions?" and finding strong results for market competition and citizen interest (2011).

Social Relations Drive Economic Decisions

Duscha and Leland take a closer look at transaction cost patterns by investigating individual contracts, rather than service categories (a zoom lens on the previous research), to see if transaction costs of individual contracts might affect contracting behavior (2013). Acquiring contract records from six state departments of corrections (DOCs), over a period of five years, and examining networking patterns relative to asset specificity, they find that contracting patterns fall into social networks, rather than a transaction cost framework. By conducting a network analysis, they find that states engage in repeat contracting even in competitive markets. To be cost effective, when contracting in competitive markets, multiple service providers should be used, rather than engaging in relational contracting. This aligns with previous research by Brown and Potoski and Hefetz and Warner, which finds transaction costs contracting patterns to be lacking in government management. Leland and Duscha's findings also provide preliminary evidence to support Granovetter's theory of social embeddedness having a

greater effect on contracting behavior than economics. According to Granovetter, social embeddedness, or social relations, drive economics by way of dictating contracting relationships. Because of the limitations of bounded rationality, and incomplete information, people tend to rely on their social networks, rather than economic factors such as market competition and transaction costs (Granovetter, 1985; Brown &Potoski, 2004; Hefetz & Warner, 2012; Duscha & Leland, 2013). Social economic literature warns of the risk of self-interest and malfeasance when relying on social networks. However, psychologically, the devil you know is better than the devil you don't, and empirical evidence suggests that network-based business transactions are based on this human tendency (Granovetter, 1985). But the tighter the network means there is less incomplete information, and the risk of malfeasance greatly increases.

Managers are Aware of Transaction Costs

Managers Agree that Contracts with Lower Transaction Costs are Less Risky, and Therefore, More Desirable. However, Brown and Potoski's observations show that managers may still contract out for high transaction cost services, and keep low transaction cost services in house despite contract risk and reduced cost savings, due to factors of public values, limits of the law, and limited resources. For example, payroll services were delivered in house 94 percent of the time despite being very low in transaction costs, and potential cost savings of contracting out for this service. Other low transaction cost services that were delivered in house, regardless of reduced cost savings were tax bill processing, residential solid waste collection, parks and landscape maintenance, street repair, and operation and maintenance of recreation facilities. For low transaction cost services with both low asset specificity and low management difficulty,

survey respondents in Brown & Potoski's research still provided these services in house. The percentage of respondents who indicated that low transaction cost services were kept in house ranged from 22-94 percent. These are services that should be all contracted out according to transaction cost economics. They are services that are very low risk due to low asset specificity and low management difficulty levels. On the contrary, services that were indicated by respondents to have high transaction costs, including high levels of asset specificity and high levels of management difficulty, were often contracted out. The percentage of respondents indicating that high transaction cost services were contracted out ranged from 11-81 percent. Theory implies that these contracts should be provided in house, due to high risks of contract failure. Brown and Potoski uncover large holes in government contracting efficiency (2003).

There's lots of room for cost savings, when looking at contracting behavior through a transaction cost perspective. Government managers have knowledge of transaction costs, but do not seem to make contracting decisions based on this. Especially for contracts that fall moderately on the transaction cost spectrum, or only fall under one high transaction cost category. For contracts that are either high in management difficulty or high in asset specificity (but not both), evidence shows that such services are often contracted out, despite the high risks of contract failure. Brown and Potoski's study implies that the managers understand, and are aware of transaction costs, however, they do not necessarily take transaction costs into consideration for a variety of reasons. Their behaviors, overall, do not correspond to a transaction cost framework. This results in inefficient spending, and risks of opportunism and contract failure (Anderson, 1985; Domberger & Jensen, 1997; Brown and Potoski, 2006).

Brown, Potoski, and VanSlyke examine what other factors affect the decision to contract (2006). Warner and Hefetz continue this where Brown and Potoski and VanSlyke leave off (2011). They take the factors mentioned in Brown, Potoski and VanSlyke's discussion of contracting management difficulties, and implement them in a research analysis. If transaction costs are not being taken into consideration when making contracting decisions, then what factors are? They expand the survey tool used by Brown and Potoski and find that managers are aware of transaction costs, and do take them into consideration, however, several factors come into play when making contracting decisions. It's not that managers are not aware of transaction costs. They are very aware of transaction costs, but often, other factors take precedence, such as politics, public values, and the law.

Contracting Decisions are not Made Based on Transaction Costs

Brown, Potoski, and VanSlyke examine existing literature to determine possible factors that contribute to contract making decisions (2006). They determine that the foundation of government contracting is the intersection of public values, institutions, and service markets. The balance of these factors vary depending on the type of contract. For this reason, transaction costs are often not the deciding factor of whether or not a service is contracted out or provided in-house. Transaction cost frameworks fall under the service markets factor. Brown and Potoski conclude that transaction costs matter, but only as far as they align with public values and institutional limitations (2006). Hefetz and Warner further this investigation by conducting a quantitative analysis based on these contracting decision factors (2011). They look at service, market, and management characteristics. Price and Riccucci's (2005) research on the decision to privatize finds

that political ideology is the strongest determinant of contracting decisions (Brown & Potoski, 2003; Hefetz & Warner, 2011; Leland & Duscha, 2013).

Contracting Decisions are Made Based on Citizen Interest, Market Competition, and Social Networks

When Hefetz and Warner further expand the survey tool used by Brown and Potoski, they find that contracting decisions appear to be based on citizen interest and market competition, rather than transaction costs (2011, 2003). Leland and Duscha find that contracting behavior is more reflective of social networks, rather than market competition, or transaction costs (2013). While rhetoric urges contracting out for the sake of cost savings, contracting decisions are more often based on citizen interest and institutional limitations (Brown, Potoski, & VanSlyke, 2006; Heftz & Warner, 2011).

Brown, Potoski, and VanSlyke mention that fail-safe service provision might trump contracting decisions based on transaction costs (2006). For example, if a government wants to make sure that a specific service, such as emergency medical services, are always available, they will make sure they can provide the service in-house, as well as contract out the service to the private sector, as a way to artificially create market competition. They propose that this type of behavior is based on degree of public interest. For example public safety must be ensured, but park-maintenance is not as urgent of an issue. The stakes are different.

Social networks, according to are taken into consideration especially with regard to those services that have a high degree of public interest. If it is a service that absolutely must be provided, rather than risk an unknown vendor, they are more likely to stick with

familiar networks, regardless of competition or transaction costs (Granovetter, 1985; Brown, Potoski, & VanSlyke, 2006).

Examples of high-level citizen interest services are crime prevention, emergency medical, fire prevention, policy, and water distribution (Hefetz & Warner, 2011). Examples of moderate levels of citizen interest services are recreation, libraries, waste collection, public health and inspection services, street repair, and snow plowing. Services with the lowest levels of citizen interest are support services such as parking meter maintenance, garage and parking lot operations, heavy equipment maintenance, vehicle maintenance, secretarial services, payroll, homeless shelter operations, and personnel services. Tax evaluation and processing services, on the other hand, scored higher on citizen interest scale. Citizen interest and institutional limits have more influence over contracting decisions than transaction cost levels, according to Hefetz and Warner's analysis (2011). This answers an important question as to why contracting patterns in government service provision do not reflect a transaction cost framework.

Institutional limitations are those created by the government's laws, and bureaucratic organization. Federal, state, and local regulations often mandate specific service provisions. Resources to provide these services may not be available through public provision, thus managers have no choice other than to contract out for these services. Examples of these situations include implementation of community initiatives such as prisoner re-entry programs, or drug rehabilitation services. In my prison contracts sample, these suddenly mandated contracts include psychological therapy for the rehabilitation of drug offenders, sex offenders, and anger management (Williamson, 2010; Brown, Potoski, & VanSlyke, 2006).

According to Theory, Transaction Costs Matter

More empirical evidence to support transaction cost theory is needed. As discussed earlier in the Theory Chapter of this dissertation, transaction cost economics is backed by strong theory, but suffers from lack of empirical evidence. While literature informs that contracting decisions are not always based on transaction costs, sometimes, they are. Williamson's Discriminating Alignment Hypothesis discussed in the previous chapter applies to my model. If public values and institutional limitations can be aligned with markets, cost benefits predicted by transaction cost theory should be realized. This is what the analysis in the next chapter attempts to achieve (Williamson, 1971, 2010; Boyne, 1998Brown & Potoski, 2003; Hefetz & Warner, 2011).

DOC Contracting Data

The data were collected from state procurement websites. Most state procurement websites enable direct public access to contracting information, or are in the process of making this data directly available.[6] Data organization formats are unique to each state. Some data can be extracted in convenient complete files, while other data must be extracted one contract at a time, creating access discrepancies. I was able to extract comparable data for each year from each state in our study. These data represent state reported Department of Corrections contracts over a period of five fiscal years: 2007, 2008, 2009, 2010, and 2011.

Data Attributes

The data are organized by individual contracts' begin dates. All contracts include vendor name and a brief description of the contract. Contract length varies from one-time

[6] The data on state government contracting should be available through the Freedom of Information Act. In conducting this research I found that many states did not have resources to compile such data, even when formally requested.

purchase contracts, year-long contracts, and those lasting for several years. In our sample of states, the majority of contracts are year-long. Longer contracts are rare and usually correlated with the life of facility maintenance equipment such as an HVAC system or a water management system. It is common for vendors to have multiple contracts within the same year, or a package contract for multiple services from the same vendor. There are two major types of multi-contract vendors. Vendors with multiple contracts in the same year may offer different types of goods or services requested by the Department of Corrections. This is often the case for different types of security and surveillance equipment. Several types of rehabilitative services may be offered by the same vendor to fulfill a variety of inmate needs resulting in one vendor being awarded several contracts within the same year. Depending on the state, separate contracts may be required for each correctional institution, thus vendors may have multiple contracts for the same good or service. While some states use blanket contracts, awarding larger contracts to vendors for use in all of a state's correctional institutions, other states may keep contract awards smaller, and contract out separately, for each institution. Contracts for rehabilitative and social services are often done by correctional institution rather than as a general contract for the entire state DOC, thus one vendor will have multiple contracts for similar services in different state correctional institutions. Package contracts are common for heavy equipment which includes purchase, installation, and servicing of the equipment. Examples of heavy equipment are HVAC systems, industrial kitchen equipment, and large printers. Water treatment facilities are also contracted out in multiple-service packages. These varying patterns may be attributed to a contract manager's efforts to stimulate market competition for specific goods and services (Brown & Potoski, 2004).

Common characteristics of prison contracting

Table 5: Department of corrections contract categories by industry

• Building maintenance service	• Prison-specific security maintenance
• educational materials	• Private prison (entire facility)
• Emergency housing	• Psychiatric program development
• Gang intervention consulting	• Psychological fitness to carry firearms evaluation
• General facilities management	• Rehabilitation services
• General services (kitchen, janitorial, barber)	• Safety inspection, repairs and upgrades
• General supplies (bedding, uniforms, food, hardware supplies)	• Safety inspections
• Ground based inmate transportation	• Security equipment and services
• Heavy equipment	• Security fence construction
• Highly specific medical services	• Substance abuse treatment
• Law enforcement services	• Temporary Medical treatment services
• Medical equipment	• Temporary Psychiatric services
• office space	• Waste management

Categories for department of corrections contracts are described in Table 2. These categories were derived from our sample of 1751 contracts in six states, over a five-year period. The nature of the state corrections system is that the prisons are run as self-contained communities. As such, diverse goods and services are needed to maintain a prison. Thus, departments of corrections are unique in their challenge of managing a variety of contracts from general goods and services to corrections-specific highly customized goods and services. General goods and services include food, kitchen equipment, uniforms, bedding, barber services, books, educational resources, janitorial services, religious counseling, hardware supplies, office space, etc. Moderately specific goods and services include general medical services, vocational services, education

services, rehab services, heavy equipment maintenance, facility equipment maintenance, etc. Highly asset specific goods and services include prison-specific goods and services such as security-based maintenance and construction, privately run prisons, prison housing, prisoner transportation, specific medical equipment and services, safety inspections, prison-specific waste management, etc.

An emerging pattern across states is the steep increase in contracting for rehabilitative services such as substance abuse counseling, cognitive therapy, including anger management and behavioral therapy, sex offender counseling, vocational training, and re-entry counseling. These contracts fall in the moderate asset specificity category, since they require significant customization to inmate needs. This increases transaction costs and may put the DOC in danger of getting locked into a contract (Lonsdale, 2001). Because of the increasing demand for rehabilitative services in the prison system, it may be more efficient for state DOCs to hire specialized corrections employees to perform these services.

It is important to note that contracting methods in certain categories such as medical services and waste management services may straddle the line between moderate and high asset specificity, and the nature of the contracting can cause the product to be more asset specific, putting the state agency at a disadvantage. For example, some states contract out to temp agencies for general medical services, while other states have more prisoner-specific medical services, such as an in-house hepatitis and HIV clinics. Contracting to set up a specific type of clinic creates a higher level of asset specificity than using temp agencies for general medical services.

Operationalization of Transaction Costs

In previous public administration research based on Williamson's Transaction Cost Economics framework, transactions costs are defined with respect to two main categories: management difficulty (sometimes referred to as measurement difficulty), and asset specificity levels. Asset specificity refers to the transferability of a service or product to other clients, for example, waste management services are transferable to many different settings, such as schools, offices, homes, and prisons. On the other hand, sex offender rehabilitation services are a very prison-specific service, requiring specialized skills. Thus, this type of service is highly asset specific, while a waste management service is not. Management difficulty concerns outcome measurement, and performance quality observation. For example, the outcome measurement of waste management services is easily observed, thus, waste management services are easily managed, and have low total transaction costs in this respect. On the other hand, sexual offender rehabilitation services are much more difficult to measure and thus manage. Some offenders may be rehabilitated much faster than others, despite having the same amount and quality of service. Thus, it is difficult to measure the quality of service, when outcomes may differ. Total transaction costs of sexual offender rehabilitations services would be very high, and contracts would be risky, and difficult to manage. Some contracts fall in the middle, either being high in asset specificity and easy to manage, or vice versa. In such cases, there is still contract failure risk, and Williamson's transaction cost framework cautions the manager against contracting for goods or services that fall into these mixed categories.

Operationalization of Management Difficulty

Using the contracting data from Duscha & Leland, I apply Brown and Potoski's scale to measure contract management difficulty, a second aspect of transaction costs. While measures for asset specificity were taken from Duscha and Leland, they did not examine performance measurement difficulty. Contract transaction costs are measured using two main characteristics: asset specificity and contract performance measurement difficulty (contract management difficulty). Literature often refers to two parts in transaction costs, when dealing with contracts: asset specificity and management difficulty (Brown & Potoski; Hefetz &Warner). Management difficulty is evaluated by ease or difficulty of performance evaluation. If a contracted service is difficult to evaluate, it means the effectiveness of the contract is vague or unknown. Examples of this in prison operations might be drug rehabilitation, or cognitive therapy services. Because individuals receiving the treatments respond differently, and at varying rates, performance outcome is difficult, if not impossible, to capture. A waste collection service, on the other hand, would be relatively easy to manage because performance measurement would be straight forward: if the trash is collected regularly, the service is satisfactory, and it would be logical to renew the contract based on performance. Table 3, shown below, lists prison operations contract categories for low, medium, and high levels of management difficulty.

Management difficulty was operationalized using methods from Brown and Potoski's survey of public managers. Their survey scale was then applied to the contract sample pulled from six states' DOC websites. Contracted goods and services were rated on a scale of 1 to 5 for management difficulty.

Table 6: Department of corrections contract categories by industry, management difficulty

Low Management Difficulty	Moderate Management Difficulty	High Management Difficulty
• General supplies (bedding, uniforms, food, hardware supplies) • General services (kitchen, janitorial, barber) • office space • educational materials • Building maintenance service • Heavy equipment • Medical equipment • Waste management • Ground based inmate transportation • Security fence construction • Prison-specific security maintenance • Emergency housing	• Temporary Medical treatment services (general, dental, optometry) • General facilities management • Security equipment and services • Safety inspections • Safety inspection, repairs and upgrades	• Psychiatric program development • Psychological fitness to carry firearms evaluation • Private prison (entire facility) • Law enforcement services • Highly specific medical services • Gang intervention consulting • Rehabilitation services • Substance abuse treatment • Temporary Psychiatric services

Defining Management Difficulty

Contracts are difficult to manage, when the services cannot be measured. Contract management difficulty is measured on a scale of 1-5 based on Brown and Potoski and Hefetz and Warner's scales (2004, 2012). Hefetz and Warner's survey tool operationalizes management difficulty by how easy or difficult services are to specify in a contract, and how easy or difficult it is to measure performance. For example, rehabilitation services, health care, and mental health treatment are difficult to specify in

a contract because each individual requires varying types of services. These same services are difficult to quantify because outcomes are not consistent, or even perceptible. Brown and Potoski's management difficulty measure description is similar to that of Hefetz and Warner (Hefetz and Warner adopted theirs from Brown and Potoski, whose investigation preceded theirs.), however, they have broken their description up into four important factors. Contracts are difficult to manage and therefore have higher transaction costs if the following characteristics apply:

Activities Required to Deliver the Service are Difficult to Monitor

Examples of services that are difficult to monitor are counseling services and security services. Security services are difficult to monitor, because the indicator that security services are effective is the lack of incidents. But it will always be a question of whether the lack of incidents such as escapes, fights, or smuggling is the result of the security service, or that there simply was no illegal activity in the first place. Similarly, prisoner counseling services used in drug rehab, anger management, and other cognitive behavioral therapies used in prisoner rehabilitation are dependent on tacit skills that are difficult to conceptualize. For example, some counselors might effectively connect with certain inmates, but not others, due to individual differences beyond our control (Lanza-Kaduce et al, 1999; Pratt & Maahs, 1999; Visher & Travis, 2003; Gaes, 2005).

Performance Measurement Difficulty

Performance measurements that accurately represent the quantity and quality of the service are not easy to identify. An example in prison operations is drug addiction rehabilitation services, and other psychiatric therapies. An equivalent treatment may be given to each patient, with varying outcomes. Some inmates may respond to certain

therapies, while others may not, or may need more intensive treatment to give the same results as another inmate. Thus the outcomes of quantity and quality of services is difficult to measure (Lanza-Kaduce et al, 1999; Pratt & Maahs, 1999; Visher & Travis, 2003; Gaes, 2005).

It is not easy to write a contract that clearly specifies expected service outcomes:

For example, expected outcomes may be difficult to specify in consulting service contracts. Contracts for gang intervention consulting may be very difficult to draw up. It may be impossible to specify clear expectations of service outcomes. On the other hand, food service contracts are clear- three meals a day are served to inmates. Food can be seen. General quality can be identified. Consulting requires tacit knowledge that is impossible to quantify, and thus defining expected outcomes may not be possible.

It is difficult to monitor service quality, quantity, and outcomes:

While some activities can be monitored, such as group therapy sessions, and performance measurements can be conceptualized, these measurements may still be difficult to observe. Safety inspections and employee evaluation services are examples of contracts where quality, quantity, and outcome may be difficult to monitor. While it is easy to see that the inspection or evaluation is carried out, the indicators for service quality and outcome are not apparent. With regard to quantity, thoroughness of an evaluation or inspection is difficult to monitor, making service comparison impossible.

Operationalization of Asset Specificity

Asset specificity measurements rely on contract descriptions given by the state corrections data websites. These descriptions were then applied to Klein's Asset

specificity scale. The results were cross-verified with two previous empirical studies done by Brown & Potoski (2005) and Hefetz & Warner (2012) (See Appendix 2).

Klein's Scale provides a detailed tool to operationalize asset specificity. Encompassing both tacit and explicit measures, the scale is generalizable to many types of manufacturing and service industries. Thus, it can be applied to the diverse nature of corrections contracts. It was adapted from Anderson's asset specificity model which includes company nature, type of products, and prevalence of confidential information, need to know accounts, customer complexity, customer loyalty, and importance of key accounts (Anderson, 1985). Intended as a survey tool for private industry, it is applied to government contracting to observe contracting patterns.

Table 7: Klein's asset specificity scale

Klein's Asset Specificity Scale:

1. It is difficult for an outsider to learn our ways of doing things.
2. To be effective, a salesperson has to take a lot of time to get to know the customers.
3. It takes a long time for a salesperson to learn about this product thoroughly.
4. A salesperson's inside information on our procedures would be very helpful to our competitors.
5. Specialized facilities are needed to market this product.
6. A large investment in equipment and facilities is needed to market this product.

(Adopted From Klein, 1991)

Adopting Klein's method, a scale of 1-7 was assigned for each of the six questions. The scale ranged from 1, "strongly disagree," to 7, "strongly agree." These scores were

then summed and averaged for a final asset specificity measurement. Contracts with high asset specificity were prison-specific products such as actual prisons, certain equipment such as high security doors, and prisoner transportation vehicles. Prison specific services also had high asset specificity scores. Moderate specificity products included services such as rehabilitation therapy, psychiatric evaluations, and transitional housing and counseling programs. Vocational training scored lower in asset specificity, since such services have similar value outside the prison system. General goods and services contracts such as kitchen equipment, uniforms, bedding, and janitorial services also scored lower on our asset specificity scale.

Asset specificity scores were given to each individual contract using the information reported by each state's Department of Corrections. Contracts were then placed in three separate groups depending on their asset specificity scores. Scores of 4.33 and below were considered to have low asset specificity. Scores ranging from 4.4-5.5 were considered to have moderate asset specificity, and scores higher than 5.5 were considered to have high asset specificity.

The following table details the contract categories found in the DOC contract dataset:

Table 8: Department of corrections contract categories by industry, asset specificity

Low Asset Specificity	Moderate Asset Specificity	High Asset Specificity
• General supplies (bedding, uniforms, food, hardware supplies) • General services (kitchen, janitorial, barber) • office space • educational materials	• Temporary Medical treatment services (general, dental, optometry) • Temporary Psychiatric services • Building maintenance service • Heavy equipment • Medical equipment	• Safety inspections • Psychiatric program development • Psychological fitness to carry firearms evaluation • Private prison (entire facility) • Law enforcement services • Ground based inmate transportation

• General facilities management	• Waste management • Rehabilitation services • Substance abuse treatment • Gang intervention consulting • Security equipment and services	• Highly specific medical services • Security fence construction • Prison-specific security maintenance • Safety inspection, repairs and upgrades • Emergency housing

Measurement Strengths and Limitations

Instrumental Validity

Instrumental validity means that similar observations can be generated by another procedure that is already accepted as valid. For example. If you can touch something and tell the temperature that matches the thermometer, consistently, then your touch-technique has instrumental validity (Kirk & Miller, 1986). My measurements of transaction costs have instrumental validity because they are based on, and closely match the measures found by Hefetz and Warner and Brown and Potoski. Brown and Potoski devised a survey tool using a scale based on Williamson's transaction cost framework, and contracts were measured for levels of asset specificity and management difficulty by a sample of city managers. Hefetz and Warner expanded the investigation by increasing the sample size and including other contracting decision factors (2011). Their transaction cost measures matched Brown and Potoski (2003). When compared with these previous studies, many common categories, show up across my contract analysis. Thus, I conclude that my measures are relatively reliable (see appendix for cross-study comparison). First I explored Klein's asset specificity scale (1990). Then I found that my derived measurements matched those extracted from the manager surveys used by Brown and Potoski and Hefez and Warner (2003, 2011).

Transaction Cost Scale Limitations

A limitation of this scale is that some of the questions are subjective in nature. More objective measurements are needed. In order to counteract this limitation, I cross-referenced our measures with measures from surveys conducted by Hefetz and Warner (2012), and Brown and Potoski (2005). Both studies corresponded with my sample's measures with regard to asset specificity. Brown and Potoski conducted a national survey of mayors and city managers, asking them to measure the level of asset specificity of 64 local services that are commonly contracted out. Hefetz and Warner conducted a survey in 2007 in collaboration with ICMA of city managers, asking about asset specificity levels of 67 local services. A comparative table of services is provided in the appendix (See table 8). Most of the services surveyed in these two studies correspond to similar services in prison operations. Prisons, as institutions, in many ways, demand similar services as local communities, including healthcare, transportation, food, and waste disposal. The important difference is the security involved in prison operations. The necessity of security makes many similar services higher in transaction costs, including asset specificity measures. For example, transportation of prisoners is more complicated than transportation of civilians, because of the security risks involved.

Face Validity

While important differences exist between services in prisons and services in communities, the six layers of questions used in my measures, coupled with a seven point scale give Klein's scale for the operationalization of asset specificity face validity. Moreover, the rigor of the questions and scaling weeds out some of the subjective

qualities. The most important question to ask when testing for asset specificity is: “Does the product have alternative uses?”(Anderson, 1985, Klein et al, 1990). In the cases of prison beds, actual prisons, and prison-specific goods such as security doors, there are few, if any, alternative uses. General goods and services, however, such as clothing, food, and basic facility maintenance, have many alternative uses outside the prison setting.

Asset Specificity vs. Fixed Costs

It is important not to confuse asset specificity with fixed costs. Fixed costs refer to costs independent of output, constant costs that do not change in the short run. Asset specificity, on the other hand, refers to the nature of these costs. Are the resources purchased as fixed costs easily used for other types of outputs, or are the fixed costs non-transferable. For example, capital outlay for a factory that produces prison uniforms can also be used to produce other types of uniforms. Specific prison rehabilitation programs may require specialized skills that are not as transferrable. This creates higher levels of asset specificity. (Shelanski & Klein, 1995).

Applying measures of asset specificity to state contracting is important because it illustrates patterns of efficiency in contracting (Lonsdale, 2001). High asset specificity greatly increases transactions costs and is a source of market failure that shouldn’t be ignored. Contracting out for products with lower asset specificity is considered a safer, more efficient type of contracting while higher asset specificity can lead to a higher rate of contract failure, and spending inefficiencies, among other issues (Anderson, 1985, Brown and Potoski, 2006). In the private sector, when goods or services are increasingly asset specific, corporations often decide to create a partnership with the vendor or produce the good or service in-house (Ruzzier, 2009). Similarly, the public sector should

also engage in this type of strategic contracting, given that higher levels of asset specificity means that sufficient market competition is unlikely. Contracts of medium and high asset specificity are more difficult to renege on if the product or service proves to be unsatisfactory. The higher the level of asset specificity, the more likely the agent is at risk of being locked into a contract with a vender (bi-lateral dependency) due to greater investment in resources to facilitate the transaction (Williamson, 1975; Williamson 1991a, 1991b; Londsdale, 2001).

It is important to note that the differences in wording may cause varying results from both investigations. Similarly, while I applied their five point scale to my transaction cost measures for prison contracts, there are many prison-specific services that had to be adjusted to fit Brown and Potoski and Hefetz and Warner's scales. For example, there are more transaction costs involved in providing prison transportation than there is in providing municipal transportation because prisoners have to be kept secure. Thus, prison buses are not as transferrable to other uses as municipal buses and vans may be.

Deriving Ratio Measurements for Transaction Costs Using Binary Measures

There are some important limitations to these scale measurements that should be taken into consideration. First, the scales may not be uniform. Second, the scales are subject to respondent bias. Third, the scales are subject to error because they are at the ordinal level or measurement. There is a need to numerically operationalize transaction cost so that it fits into the OLS regression model in this investigation. Hefetz & Warner, and Brown & Potoski use five-point scales to measure two main sources of transaction costs, management difficulty and asset specificity. Conforming to accepted political

science research methods, I categorize the management difficulty and asset specificity scales into two categories each: high and low, or 1 and 0. Moderate and High transaction costs are put in the high category, since moderate transaction costs are also a relevant risk, vulnerable to opportunism and bilateral dependency, and should be avoided, according to the literature (Lonsdale, 2001). Also, I converted the measures to binary/dichotomous variables so that I could use them in my regression, since the 1-5 scales used by Brown & Potoski and Hefetz & Warner are ordinal levels of measurement, not suitable to be used in an OLS regression analysis.

Thus, transactions are labeled either as 1, for moderate to high, or 0 for low. One more advantage of this method is that there is more room for error. It is easier to differentiate between low transaction costs and moderate/high ones, rather than by using a 1-5 scale, which has a higher likelihood of error (Lewis-Beck, 1980; Berry, 1993; Gujarati, 2003). Both moderate and high measures are undesirable. Thus, moderate and high measures are collapsed together in the transaction cost measure. An important contribution from this dissertation is the resulting formal model to measure the effects of transaction costs in contracts.

These binary measures are then categorized by state and fiscal year, and calculated into transaction cost ratios. There are two transaction cost ratios in this investigation: asset specificity, and management difficulty. The sample consists of contract records from three state DOCs over a period of five years, for a total of fifteen separate ratio measures for each of the transaction cost variables. Data are unavailable for Indiana from the 2008 fiscal year, so I omit it from the sample.

Table 9: Transaction cost ratios

Fiscal Year	State	Asset Specificity Ratio	Management Difficulty Ratio
2007	AZ	0.354167	0.1875
2007	IN	0.571429	0.806122
2007	WI	0.952381	0.52381
2008	AZ	0.541667	0.125
2008	WI	0.638889	0.583333
2009	AZ	0.265152	0.128788
2009	IN	0.64	0.693333
2009	WI	0.84375	0.703125
2010	AZ	0.794118	0.480392
2010	IN	0.741935	0.741935
2010	WI	0.84	0.613333
2011	AZ	0.828571	0.12381
2011	IN	0.933333	0.833333
2011	WI	0.869565	0.804348

Variable Summaries

Table 10: Variable summary tables

Variable	Observations	Mean	SD	Min	Max
Avgpop	417	751	629	28	3329
Perdiemcost	417	66.00	19.82	16.30	166.51
Asratio	417	0.66	0.22	0.27	0.95
Dmratio	417	0.40	0.26	0.12	0.83

Table 11: Fiscal year

Fiscal Year	Frequency	Percent	Cumulative Percent
2007	93	22.3	22.3
2008	71	17.03	39.33
2009	72	17.27	56.59
2010	95	22.78	79.38
2011	86	20.62	100
Total	417	100	

Table 12: State

State	Frequency	Percent	Cumulative Percent
Arizona	250	59.95	59.95
Indianna	56	13.43	73.38
Wisconsin	111	26.62	100
Total	417	100	

Table 13: Security

Security	Frequency	Percent	Cumulative Percent
Close	55	13.29	13.29
Maximum	57	13.77	27.05
Medium	132	31.88	58.94
Minimum	165	39.86	98.79
Intake	5	1.21	100
Total	414	100	

Control Variables: Year, Region, Population, and Prison Security

Four main control variables are included in this analysis: fiscal year, state, population, and prison security level. These control variables were chosen based on prior literature on prison cost. This research includes cost comparisons evaluations between private and public prison facilities (Johnston, 1990; Lanza-Kaduce, Parker, & Thomas, 1999; Gaes, 2005; Lukemeyer & McCorkle, 2006).

Population

Prisons facilities are affected by economies of scale. Prison facilities that accommodate larger populations have lower per capita costs than facilities with smaller populations (Lukemeyer & McCorkle, 2006, Stigler, 1958). I operationalize prison

population by using the average annual population data as indicated on facility annual reports.

Prison Security

Literature informs that higher security level prisons have higher operating costs than minimum security prisons. Maximum and Closed Confinement prisons use more resources to contain more dangerous prisoner populations (Perone & Pratt, 2003, Lukemeyer & McCorkle, 2006). Data for prison security was retrieved from DOC websites' annual reports. State annual reports indicate the security levels of their facilities. This information is also available from facility annual reports. Some facilities operate multiple security prisons; however, in most cases, these facilities provide separate annual reports for varying security. Most commonly, minimum security prisons are run completely separate from maximum security and closed security prisons. Sometimes minimum security and medium security services are provided by one facility. Dichotomous variables are used for prison security in the regression model to test for the significance of security level on prison facility operating costs.

State and Fiscal Year, and Facility-Level Fixed Effects

Because I have regional panel data, I test for state and fiscal year fixed effects to control for unknown variables correlated with year and region (Gujarati, 2003). Examples of these unknown variables might be external or internal shocks, such as recessions, or changes in state/federal corrections policies. Differences in political ideologies, state populations, and crime rates are examples of variables that may also contribute to region and year effects (Pozen, 2003; Price & Riccucci, 2005). However, as discussed earlier in Chapter 2, while political factors have been thoroughly examined to determine whether

or not politics matter in government decisions on privatization, evidence is mixed and inconclusive (Hefetz & Warner 2004; Brudney, Fernandez, Ryu, & Wright 2005; Choi, Cho, Wright, & Brudney 2005; Fernandez, Ryu, & Brudney 2008)[7]. I also test for fixed effects at the facility level to test for facility-specific differences.

Research Model Using OLS Regression

OLS Regression is appropriate in this investigation because the relationship between transaction cost and prison operations cost is a linear relationship. Also, I measure the dependent variable at the interval level. The main independent variables- the two transaction cost ratios, asset specificity and management/measurement difficulty, also lend themselves to multivariate linear regression because of the ratio level of measurement (Lewis-Beck, 1980; Berry, 1993; Gujarati, 2003). Finally, the sample of prison facilities was big enough to enable significant results. I use a fixed effects model because the data set is a short time series across five years and three states, with a total sample size of 417 (Lewis-Beck, 1980; Berry, 1993; Gujarati, 2003). Since I had a large enough sample size, and our assumptions were tested and met, OLS regression is a useful analysis tool, with the potential to give good insight into the effects of private contracting on prison operations costs. Transaction costs affect the success of contracts, and following economic theory, privatization, absent high transaction costs, should save money (Williamson, 2010).

[7] I controlled for Republican-held governments and did not find a significant effect. Thus, in my sample, did not find evidence to support political factors in increased contracting or spending in prison facilities.

The following model is used in the regression analysis:

$$Y = \alpha + AS\beta1 + DM\beta2 + Pop\beta3 + Security\beta4 + fe(State) + fe(FY) + \varepsilon$$

Where Y represents prison operating cost per diem, as a function of contract asset specificity (AS) ratios in a given state fiscal year, contract management difficulty (DM) ratios in a given state fiscal year, prison facility population (Pop), prison security level (Security), and state and year fixed effects (fe).

Assumptions of Regression

Prior to running the regression analysis for this dissertation, I check the assumptions of multiple linear regression. The key assumptions of multiple linear regression are, linear relationships, multivariate normality, little or no multicollinearity, no autocorrelation, and homoscedasticity (Gujarati, 2008). The legitimacy of my variables is backed by literature and theory- there is no specification error. Prison facility variables were included based on their use in previous research conducted on prison facilities (Bottomly & James, 1997; Farabee & Knight, 2002; Culp, 2005; Gaes, 2005). The transaction cost variables were included based on Williamson's transaction cost theory formal research suggestions (Williamson, 2010), and are a continuation of prior research by Hefetz and Warner, and Brown and Potoski.

Regression models, as prediction models, are based on the premise of linear relationships (Lewis-Beck, 1980; Berry, 1993; Gujarati, 2003). In this study, all variables are assumed to have a linear and additive relationship with the dependent variable. The dependent variable is operationalized at the interval level of measurement, and is continuous and unbound. The independent variables are operationalized into ratio, interval, and dichotomous measures. Literature and data scatterplots were used to verify

the assumption of linear additive relationships, and variance of the variables (see appendix). Scatterplots were also used to verify homoscedasticity of the data. The variance of the variables appears to be normal, and it can be assumed that the error terms along the regression line are equal. Also, based on the scatterplots, there appears to be no autocorrelation. The error term has an expected value of zero. Finally, Variance Inflation Factor (VIF) tests were run to verify the absence of high multicollinearity. The VIF results show that the variables used in this model are independent from each other. There is no concern of overlap or double measurement.

Summary

Transaction cost frameworks from business literature (Klein, Anderson), economics literature (Williamson), and public administration literature (Brown & Potoski, Hefetz & Warner) are incorporated into this investigation. This serves my analysis in the following chapter by leveraging previous investigations' findings to create a stronger formal model for transaction cost analysis than previous research has provided. From this, more concrete empirical findings may be drawn. In-depth review, categorization, and analysis of state contracts over five years was undergone to calculate transaction cost ratios to be used as the main indicator variables. Transaction cost variables are operationalized into ratios derived from actual state contracting patterns in a given fiscal year. This method of operationalization should serve to shine light on the effects of high risk and low risk contracting behavior. The transaction cost variables reflect contracting behavior patterns as the main indicator variables in the analysis discussed in the next chapter. They should provide convincing evidence of the effects of high risk contracting behavior on prison facility operations costs. The transaction cost

variables are a way to operationalize human behavioral patterns, and shine light on the subsequent outcomes from this behavior through empirical analysis. Control variables including fiscal year, state, and prison facility characteristics are used to tease out the effects of transaction costs. These control variables were chosen based on previous literature on prison effectiveness, government contracting, and privatization (Stigler, 1958; Perone & Pratt, 2003; Brudney et al, 2005; Lukemeyer & McCorkle, 2006; Conant, 2010). In the next chapter, regression models are run in search of empirical evidence that cost savings can be realized through contracts with lower transaction costs.

CHAPTER 5: ANALYSIS AND RESULTS

Introduction

As discussed in the previous chapter, this dissertation investigates the effects of transaction costs on contracting efficiency in state corrections. Efficiency is operationalized by prison facility operating costs. The main independent variables are transaction cost measures of asset specificity and contract management difficulty. These variables are operationalized as ratios developed from contracting patterns by state/fiscal year. Based on theory and prior empirical studies on prison effectiveness, controls are implemented for prison population, security levels, and fiscal year (Stigler, 1958; Perone & Pratt, 2003; Brudney et al, 2005; Lukemeyer & McCorkle, 2006; Conant, 2010). The model is set up to test my hypotheses that higher transaction costs in prison contracting will lead to higher facility operating costs. This is because contracts with higher transaction costs are at risk of contract failure, opportunism, and contract dependency (Moe, 1987, Lonsdale, 2001).

This inquiry is important because it answers the question of "Where are privatizations' cost savings?" Over the past two decades, privatization has been the buzz word in government budget management. Yet empirical evidence does not always show cost savings (Lanza-Kaduce, 1999, Bales, 2005, Bayer & Pozen, 2005; Grimsey & Lewis, 2005; Bel & Warner, 2008; Ponomariov, Kingsley, & Boardman, 2011; Smirnova

and Leland, 2013).This confounds accepted economic theory, and goes against empirical evidence found in the business literature (Anderson, 1985; Klein et al, 1990; Lonsdale, 2001; Ruzzier, 2009). The popularity of the government privatization movement comes from the expectation of cost savings. So why haven't other empirical inquiries uncovered the cost savings in government privatization? I propose that part of the answer to this question is in transaction costs. Business literature indicates that cost savings through outsourcing occurs only when transaction costs are low. Once transaction costs start to rise, businesses usually elect to keep production in-house, or engage in a partnership (Williamson, 1971; Williamson, 1999; Lonsdale, 2001; Ruzzier, 2009). I expect the results to be similar for government contracting. Using the following model in an OLS multivariate regression analysis, I expect to find that transaction costs increase operating costs, and cost savings can only be realized when transaction costs are low.

Model

As noted in the previous chapter, the following model is used in the OLS multivariate regression analysis:

$$Y = \alpha + AS\beta 1 + DM\beta 2 + Pop\beta 3 + Security\beta 4 + fe(State) + fe(FY) + \varepsilon$$

Where Y represents prison operating cost per diem, as a function of contract asset specificity (AS) ratios in a given state fiscal year, contract management difficulty (DM) ratios in a given state fiscal year, prison facility population (Pop), prison security level (Security), and state and year fixed effects (fe). The transaction cost ratios are aggregated at the state level, while the per diem costs, prison population, and prison security level are measured at the facility level. The regression analysis is run using STATA statistical analysis software.

Regression Analysis Results for Model Using Three-State, Five-Year Sample

Table 1: Linear regression

Number of obs =	414
F(6, 93) =	12.59
Prob > F =	0.00
R-squared =	0.30
Root MSE =	16.74

(Std. Err. adjusted for 94 clusters in cfid)

Robust

Per Diem Cost	Coef.	Std. Err.	t	P>t	[95%	Conf.Interval]
Population Squared	-3.64E-06	9.57E-07	-4	0	-5.54E-06	-1.74E-06
Asset Specificity	12.22**	3.6	3.4	0.00	5.07	19.36
Management Difficulty	27.87**	5.08	5.5	0.00	17.79	37.96
Close Security	18.24**	5.2	3.5	0.00	7.91	28.57
Maximum Security	13.35**	3.94	3.4	0.00	5.52	21.18
Minimum Security	1.92	3.11	0.6	0.54	-4.26	8.1
_cons	45.26	3.85	12	0.00	37.62	52.9

Note: * denotes significance level at $p < .05$. ** denotes significance level at $p < .001$

Model Results

Multivariable OLS linear regression was employed using a sample that included three states, Arizona, Indiana, and Wisconsin, over a five year period, fiscal years 2007, 2008, 2009, 2010, and 2011 (see table). The R-squared is .30 with an adjusted R-squared of .29 (see appendix). I interpret this to be that approximately 30% of the variance in the dependent variable, per diem prison facility costs, can be determined by the variables used in our model: contract asset specificity, contract management difficulty, average

daily population, security level, and fiscal year (Berry, 1993; Lewis-Beck, 2010; Babbie, 2010; Pollock, 2011; Gujarati, 2011). These results correspond to the literature on prison effectiveness, which says that population and security level matter. It also corresponds to the literature on transaction costs which says that contracts higher in transaction costs result in reduced cost effectiveness. The results indicate this because my transaction cost variables contribute to significant increases in average prison per diem costs. The results support my hypotheses, showing that transaction costs increase prison operating costs.

Transaction Costs

The main independent variables are the two transaction cost measures: asset specificity, and management difficulty. These variables are ratios derived from state corrections contracting patterns. Both transaction cost variables are significant at the .01 level, supporting hypotheses 1 and 2.

Asset Specificity:

My analysis provides evidence supporting the first hypothesis. The asset specificity ratio variable is significant at the .01 level. This means that it is more than 99% likely that these results did not happen by chance. As the asset specificity ratio increases by one unit, the per diem cost of a prison facility will increase by 12.22 dollars, on average, holding all other variables constant, according to our regression analysis. The standardized coefficient is moderate at 0.14 (see appendix). It can be inferred that higher levels of asset specificity in contracting is correlated with higher operating costs in state prison facilities.

Management Difficulty

I find strong evidence to support our second hypothesis. The management difficulty ratio has a much stronger effect on the dependent variable, correlated with an increase of 27.87 dollars for every one unit increase, on average, holding all other variables constant. The magnitude is .36, more than double that of the asset specificity variable, with a p-value of .000 indicating a strong relationship. This differentiates the effects of different types of transaction costs. Management difficulty costs more than asset specificity, according to our findings. I can infer from these results that as the proportion of contracts that are difficult to manage increase, so does the operating cost of a prison facility (Berry, 1993; Lewis-Beck, 2010; Babbie, 2010; Pollock, 2011; Gujarati, 2011).

Prison Population

As prison population increases, the average cost per prisoner decreases. This corresponds with the economic principle of economies of scale (Lukemeyer & McCorkle, 2006). I find strong evidence that prison population matters. I squared the population variable to adjust for the population driven per diem measure. The analysis finds the population variable to be significant with a p-value of .000. It is important to include such significant variables in our analysis to rule out other factors, and tease out the main independent variable effect of transaction costs.

Security Effects

Using dichotomous variables for prison security variables, I find considerable evidence that security level affects prison operating costs. Higher security prisons need more resources to ensure the safety of inmates, staff, and the public. Prisoners are

monitored closely and kept isolated, or with one other prisoner. Maximum and close security prisons in our sample have higher per diem costs, on average, than lower security prisons. Minimum security prisons have lower per diem costs, on average, than other prisons due to the lower security levels. The ratio of staff to prisoners is much lower, and they sleep in dormitories (Lanza-Kaduce et al, 1999; Gaes, 2005). These results correspond with the literature which indicates that maximum and closed confinement prisons cost more to operate because of the extra equipment and staff needed to keep their high-risk population safe and secure (Perone & Pratt, 2003, Lukemeyer & McCorkle, 2006).

Maximum Security

When controlling for maximum security facilities, the results show that prisons with maximum security have a slightly lower per diem cost on average, holding all other variables constant. According to the results, a maximum security prison spends 13.35 dollars more per day, on average, per prisoner, holding all other variables constant, when compared to prison facilities in our sample that are not maximum security facilities. The maximum security control variable is significant at the .001 level, with a magnitude of 0.23 (see appendix).

Close Security

I also controlled for close security prisons, a less severe form of maximum security, where inmates may leave their cells during the day for work assignments or correctional programs. Close security prisons increase per diem spending by 18.24 dollars, on average, the highest of the three security measures, with a magnitude of .31. These results are significant at the .001 level. The higher expense, in comparison to

maximum security is likely due to the resources needed to conduct programs under high security levels. Maximum security inmates remain in their cells almost all of the time, so extra resources are not needed to transport and monitor them, since they do not participate in other correctional programs (Lanza-Kaduce et al, 1999; Gaes, 2005).

Minimum Security

Controlling form minimum security prisons did not produced significant results. Minimum security does not have a significant effect on the operating cost of prisons.

Fiscal Year

Controlling for fiscal year, using fixed effects, I find that fiscal years 2008 and 2009 are significant at the .05 level in the negative direction. Prison facilities were 3.54 dollars cheaper to run in 2008, on average, according to my sample. Prison facilities in 2009 were 4.64 dollars cheaper to run, on average. However, the standardized coefficients are very low. Prison facilities were 3.29 dollars more expensive to run, on average, during the fiscal year 2011. Perhaps this is an effect of the Lehman Shock and the 2009 American Reform and Recovery Act. Stimulus money from the aftermath of the Lehman Shock most likely affected the end of the 2010 fiscal year and the beginning of the 2011 fiscal year, because of budgetary lag effects (Feyrer & Sacerdote, 2011). ARRA significantly contributed to the Federal Office of Justice Program's Edward Byrne Memorial Justice Assistance Grant (JAG)[8]. According to the OJP, JAG is the primary provider of criminal justice funding to state and local governments. With regard to prisons, JAG funds may be used towards corrections, community corrections, drug treatment programs, education, and prevention programs. Part of the increase in contract

[8] Bureau of Justice Assistance: https://www.bja.gov/recoveryact.html

spending behavior found in my dataset may be attributed to the ARRA investment in JAG. My contract data show a noticeable sudden increase in contracts in the years 2010 and 2011. However, further investigation is necessary to confirm the cause.

Facility Effects

Sixty-eight out of the 94 facilities represented in my dataset show significant fixed effects with regard to prison operating cost. A facility's individual characteristics such as management, or location may affect operating costs, separately from the other variables used in this model. Unfortunately, because the contracting data is aggregated at the state level, reasons for these differences cannot be identified using the available dataset. If facility-level contracting data can be acquired in the future, the facility-specific differences can be more accurately determined. This investigation finds that facility-specific differences exist, however, exactly what these differences are cannot be determined at this point. This is a limitation of the dataset (Pollock, 2011; Gujarati, 2011).

Testing for Multicollinearity

I test for multicollinearity using a Variance Inflation Factor (VIF) test, and did not find any indications of an issue with double-measuring. The generally accepted rule is that the variance inflation factor should not approach 10 (Gujarati, 2011). The VIF scores from my model range between 1.23 and 1.76, therefore, I conclude that multicollinearity is not a concern to this analysis. I did not control for states in this model because of a multicollinearity issue with the transaction-cost ratios, however, a state fixed effect model can be found in the appendix. Since the transaction cost ratios were created from aggregate state contracting behavior, the separate state effects became incorporated with

the transaction cost effects (Berry, 1993; Lewis-Beck, 2010; Babbie, 2010; Pollock, 2011; Gujarati, 2011).

Table 15: Test for multicollinearity

Variable	VIF	1/VIF
Asset Specificity	1.49	0.67
Management Difficulty	1.76	0.57
Population Squared	1.42	0.7
Close Security	1.35	0.74
Maximum Security	1.23	0.81
Minimum Security	1.6	0.63
Mean VIF 1.48		

Interaction Effects: Minimum Security and Management Difficulty

There is an interaction effect between management difficulty and minimum security facilities. The results are significant at the 0.01 level. Other security variables show an additive effect with the management difficulty variable. There were no interaction effects found between security variables and asset specificity (Berry, 1993; Lewis-Beck, 2010; Babbie, 2010; Pollock, 2011; Gujarati, 2011). According to the analysis, minimum security facilities are affected at a rate of $26.80 higher for every one unit increase in the management difficulty contract ratio. This implies that the context of contracting behavior matters. Minimum security prisons are affected by transaction costs more than other types of security levels in the dataset. This is likely because high transaction costs are more avoidable in minimum security prison operations. They do not need as many prison-specific services such as high security surveillance, or specialized psychological services (Lanza-Kaduce et al, 1999; Gaes, 2005).

Table 16: Results of OLS regression run with interaction effects:

Number of obs = 417						
R-squared = 0.36						
Root MSE = 16.11						
(Std. Err. adjusted for 5 clusters in fiscalyear)						
Robust						
Per Diem Cost	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]	
Population Squared	-2.55E-06	4.07E-07	-6.26	0.00	-3.68E-06	-1.42E-06
Interaction DM Min	39.19	3.29	11.93	0.00	30.07	48.31
Interaction DM Cls	7.65	17.41	0.44	0.68	-40.68	55.99
Interaction DM Max	-8.77	5.90	-1.49	0.21	-25.14	7.60
Interaction AM Min	7.24	15.02	0.48	0.66	-34.45	48.94
Interaction AM Cls	6.23	7.15	0.87	0.43	-13.63	26.09
Interaction AM Max	31.26	2.21	14.11	0.00	25.11	37.40
Minimum Security	-16.97	10.63	-1.6	0.19	-46.49	12.55
Maximum Security	-2.70	2.58	-1.05	0.35	-9.87	4.46
Close Security	10.19	5.36	1.9	0.13	-4.69	25.08
Management Difficulty	13.40	5.50	2.44	0.07	-1.86	28.65
Asset Specificity	2.09	9.61	0.22	0.84	-24.60	28.78
_cons	56.63	8.64	6.55	0.00	32.63	80.62

*The highlighted row indicates a significant interaction effect.

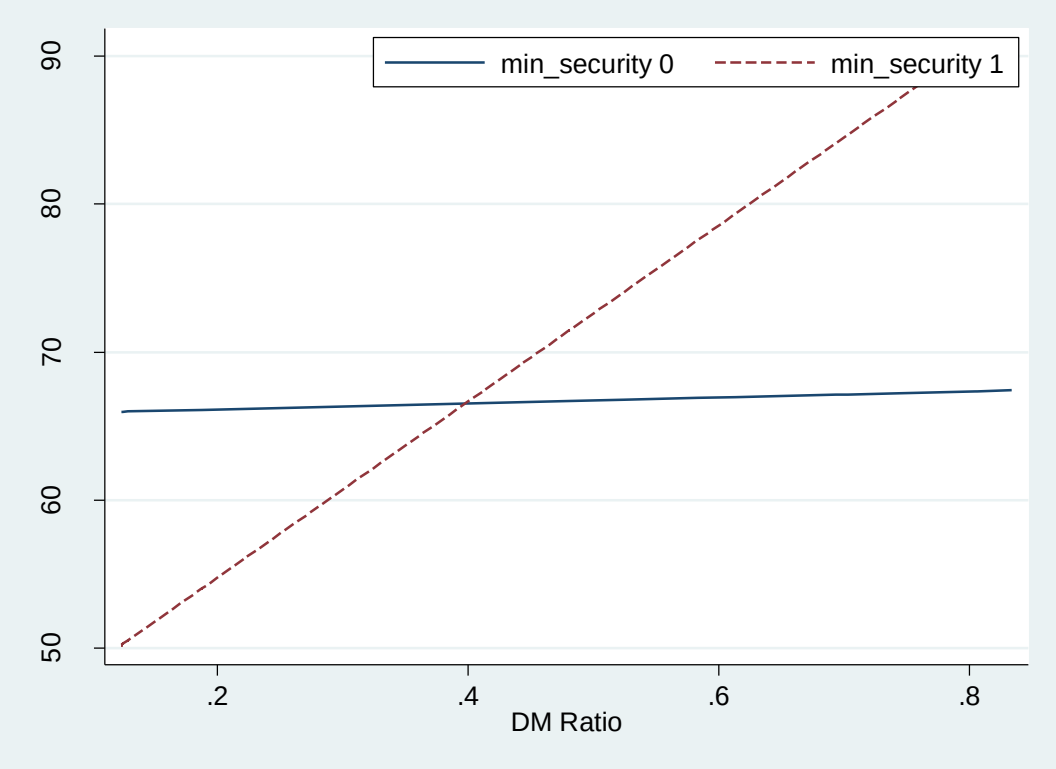

Figure 2: Graph of interaction effect of minimum security prisons and management difficulty

Discussion

I find substantial evidence that privatization's cost savings could be realized by contracting out state corrections if transaction cost theory is applied. Contracting out government services will save money if transaction costs remain low. As transaction costs increase, the savings resulting from private contracting diminishes. After evaluating my regression results, I find support for my transaction cost hypotheses, and discover fixed effects for fiscal year 2010. Other important variables contributing to prison operating costs are population, security level, and year fixed effects. This corresponds to previous prison cost research findings (Bottomly & James, 1997; Farabee & Knight, 2002; Gaes, 2005; Lukemeyer & McCorkle, 2006).

Management Difficulty Matters More Than Asset Specificity

Recent literature emphasizes the need for empirical evidence supporting transaction cost theory (Boyne, 1998; Brown & Pototski, 2003; Williamson, 2010; Hefetz & Warner, 2011). This investigation concludes by finding this evidence using transaction cost ratio measures of contract asset specificity and management difficulty. Contract management difficulty, referring to contract performance measurement, affects the variance in prison operating cost over twice as much as contract asset specificity. This is another important find, as previous research does not provide this kind of cost differentiation between the two. Of course, it is important to remember that the ratio measurements are devised from ordinal measurement scales from government management surveys, thus, these results should not be taken at face value. However, the standardized coefficients present a strong difference of magnitude between the two variables, and it can be inferred that contract management difficulty has a significantly higher effect on per diem operating costs, when compared to asset specificity. This matches theory and empirical literature (Walker & Weber, 1984; Hefetz & Warner, 2011).

One reason why management difficulty may matter more than asset specificity is because asset specificity is a market barrier that pushes against the force of market competition. One thing that needs to be further researched with regard to private contracting of government services is the importance of market competition. Transaction costs affect market competition, especially asset specificity. When production of a good or service requires capital, human and non-human, that is very high in asset specificity, the barriers to entry are higher, and it is very unlikely to result in market competition.

Take the example of a civil engineering firm specializing in hydroelectric dam design. The amount of capital needed to run an effective company lends this area to have little or no market competition. On the other hand, the level of asset specific capital needed by a landscaping company is much less. Some equipment, and knowledge of gardening is necessary, but the barriers to entry are much lower. Thus, the market for landscaping companies is likely to be very competitive. Market competition is a function of barriers to entry (Porter, Walker& Weber, 1984). Because of this, transaction costs are very much related to market competition. This has not been discussed in the previous public administration literature. This needs to be examined in subsequent research (Brown & Potoski, 2003; Hefetz & Warner, 2011).

Porter's Five Forces Model of Market Competition

In business strategy, when determining the viability of a business plan, the common thing to do evaluate the business plan using Porter's Five Forces. Porter's Fiver Forces are as follows: In business strategy, when determining the viability of a business plan, the common thing to do is to do is evaluate the business plan using Porter's Five Forces Model of Competition. The general model is shown below. This model of market competition, based on economic theory of supply and demand, is generally accepted in business literature and has decades of empirical evidence to back it up (Porter, 1980). This model describes market competition as a factor of bargaining power of suppliers, bargaining power of buyers, threat of substitute products, and threat of new entrants, and the existing market rivalry. High levels of asset specificity means that capital costs are high. The upfront investments are high, meaning that the threat of new market entrants is low. Market competition should be reduced because of the asset investment requirements.

Both buyers and suppliers may become locked into a contract because of high levels of asset specificity, so they cannot easily switch to new buyers and suppliers. With high asset specificity, the threat of substitutes is low because high asset specificity means that a product does not have alternative uses, meaning it is unlikely that the buyer has a substitute product to turn to. Thus, when applying the accepted definition of asset specificity to Porter's Five Forces Model of Competition, it becomes apparent how much asset specificity and market competition overlap. In fact, Walker & Weber use asset specificity measures as an indicator of the presence of market competition. They discuss market competition and asset specificity interchangeably (1984). That's how closely linked asset specificity is to market competition.

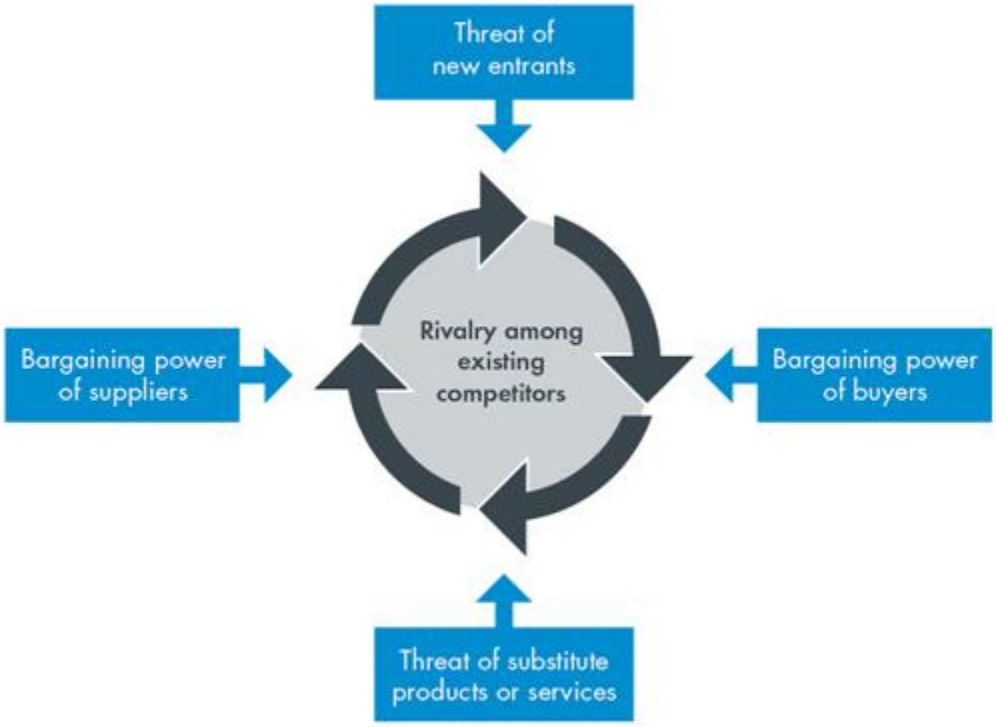

Figure 3: Porter's five forces (Porter, 1980)

Asset Specificity Creates Barriers to Entry

Asset specificity presents multiple barriers to entry, impeding market competition. High levels of asset specificity are attributed to monopolies (Walker & Weber, 1984). If literature and theory say that asset specificity and market competition are synonymous, then asset specificity would make it so that not so many highly asset specific services would be available in the marketplace in the first place. And, if they are contracted out, it is likely that both parties have enlisted protections. For example, the buyer has power because the service or good isn't easily transferred to other uses, thus, the supplier is dependent on the buyer. Literature discusses suppliers making very long contracts for these kind of highly asset specific goods and services so as to put them at lower risk. If the buyer doesn't renew a contract, then the supplier is stuck with the non-transferrable assets. So, the safe thing to do is make the contracts very long, so the supplier can profit from their investments (Williamson, 1975; Williamson 1991a, 1991b; Lonsdale 2001). Asset specificity is easier to identify, and adjustments are easier to make so that risk for the buyer and supplier is greatly reduced. Thus, a higher ratio of contracts high in asset specificity should have smaller effects on prison operating costs when compared to similar ratios of management difficulty.

Management Difficulty and the Problem of Incomplete Contracts

High management difficulty means that there is a lot of incomplete information. A contract that is difficult to manage is one where the service, or service outcome, or both are difficult to quantify. Quantity and quality of service is difficult to measure. Take the example of substance abuse rehabilitation services. The quality of service is based on outcome measures, however, rehabilitation outcomes are varied depending on the patient.

There will always be a significant unknown factor of whether or not the patient improved because of the rehab service, or because of other reasons (Williamson, 1991b, Williamson, 1999). Also, if the patient does not respond to the treatment, it may not be because the quality of treatment was bad or because the quantity was not enough, however, it will always be uncertain. It is difficult to assess services that are not quantifiable. Performance is difficult to measure in these cases. Contracts with higher management difficulty pose greater risk for contract failure than those contracts high in asset specificity. It is very difficult to correct for management difficulty. Thus, management difficulty is higher risk, and my results showing higher operating costs as a result of higher management difficulty ratios correspond to business and economic theory (Walker & Weber, 1984, Williamson, 1999).

A Generalizable Model

Where are privatization's cost savings? This dissertation provides answers to this question. I find evidence to support Williamson's Transaction Cost Economics. Some of privatization's cost savings are lost in the high transaction cost contracting. The contract sample is from state prisons, so this evidence is relevant to state prison contracting behavior, however, the model used to observe the effects of transaction costs is a generalizable model that can be applied in various government sectors including transportation, health and human services, and education (Babbie, 2010). The original studies on which this dissertation is based used contracting information from city managers. The transaction cost scales were applied from the general city contracts to prison-specific contracts. Similarly, future research can apply these same operationalization techniques to a variety of other government sectors. Of course, this

study can be expanded to include more states, and more years. If data can be acquire d for per diem cost for other states, I can better examine regional differences in contracting behavior. The important implication from this dissertation's findings is that contracting out does save money if transaction costs are taken into consideration. Meaning, if contracting patterns show lower transaction cost contracting, cost savings can be realized. When unravelling government contracting, services low in transaction costs are being provided in-house, and services high in transaction costs being contracted out. If this behavior is reduced, cost savings can be realized through smarter contracting (Brown, Potoski, & VanSlyke, 2006).

Keeping High Transaction Cost Services In-House

With regard to responsible use of public money, when a new mandate is passed in federal or state governments, implementation of these mandates should take into consideration transaction costs before contracting out the services to save time. While public values regarding the government's role may influence contracting decisions, much savings can be realized. Transaction costs are not the only factor to be considered when providing public service. Literature states that public value and government institutional environments can trump transaction costs in many cases. However, transaction costs affect cost savings. So, where possible, the government should keep those high transaction cost services in-house. Literature states that political factors often dictate the decision to privatize, however, from the perspective of economic efficiency and responsible use of taxpayer dollars, there is no practical reason to contract out for a high transaction cost service (Kettl, 1993; Brown, Potoski, & VanSlyke, 2006).

In the case of low transaction cost services, it may sometimes be the case that politics and public values mandate that certain services are kept in-house, even if it would result in greater cost-savings, because the cost-saving benefits may outweigh the loss of government control. This is often true in the case of social services such as foster care, law enforcement, and taxes. However, as mentioned by Brown, Potoski, and VanSlyke, easily outsourced contracts with low transaction costs such as secretarial work and payroll processing are often tied up in old-time bureaucracy. In such cases, efforts should be made to untangle these services so they can be contracted out appropriately (2006). These are areas where easy cost savings might be realized.

Compensating for Contract Management Difficulty

In transaction cost economics, it is assumed that both sides are self-interested and goals do not necessarily align (Williamson, 1971, 1975, 1979, 2010). If this is the case, asset specificity gives risk to the vendor, while measurement difficulty gives risk to the government. The vendor can compensate for asset specificity by locking into a contract, making the contract much longer. How can the government compensate for management difficulty? They might hire expensive experts, but the advantages are not equal; the vendor seems to have the advantage with regard to information. This matches up with Lonsdale's assertion that even moderate transaction costs are risky enough to be cause for concern; there's a high likelihood of contract failure- a high risk of falling victim to opportunism. What is the safeguard for measurement difficulty? There isn't an obvious solution that is as cost effective as the long contract for high asset specificity. Thus, the level of risk for contracts high in management difficulty is greater. Inefficiency is greater.

The operating is affected more by measurement difficulty than by asset specificity, and this is what the results show in this investigation.

Policy Implications

The public policy implications are that privatization does result in cost savings, if transaction costs are low. The sample used in this investigation was made up of state prison contracts from three states over a period of five years. While significant results supporting my hypothesis that higher transaction costs lead to higher operations costs, this research should be replicated in other states, adding more years. I was limited by the data that was available to me as a graduate student, but now that I've found some important results, perhaps this research can act as a catalyst to states providing facility level data that can then be used to expand on this research project and compare regional variables, as well as make sure these results are generalizable (Babbie, 2010). As mentioned earlier, because of the data limitations, my research is a pilot study, but the model is solid enough that I am confident when replicated, similar results will be found. I have strong theory, and now relatively revealing empirical evidence to support this.

Contracting Behavior Patterns

This dissertation contributes a unique way of investigating privatization efficiency by examining contracting behavior patterns. Initially, the transaction cost ratios were created because it was such a challenge to figure out how to operationalize the corrections contracting data into quantifiable terms that could be integrated into my OLS regression model. The ratio measurements are more than just a way to operationalize transaction costs. They have increased significance because they measure a behavior pattern, and not just a dollar amount. So, rather than setting up a framework that needs a

micro-lens, this dissertation presents a more generalizable, achievable framework for managers to follow. The patterns should tend toward a lower ratio. This doesn't mean every single contract has to be heavily scrutinized. Behavior patterns can be examined, and if need be, improved upon. Some contracting periods were quite low in transaction cost contracting patterns. This can be highlighted as optimal contracting behavior, and managers can be encouraged to continue similar patterns in the future.

Similarly, if a sudden trend of high transaction cost contracting is discovered, it can quickly be noted and corrected, as in the case of the sudden prevalence of high transaction cost contracting for rehabilitation services, specifically drug rehabilitation, and sex offender rehabilitation. These can be clearly linked to new federal mandates requiring such services to be provided in state prisons, under a block grant legislation. The states are compelled to contract out for these services, so that they can receive these grants, moreover, they are not prepared to provide the service, so the quickest way to provide this service is through contracting. This opens up the opportunity for risky contracting inefficient government spending. I suggest instead, that it would be more cost effective and responsible for the government to create the services inside the department of corrections or inside a related government service department, so that these services can be provided in house, and at least the risk of external opportunism is eliminated.

Limitations

The sample I used only has data on three states: Arizona, Wisconsin, and Indiana. The findings are limited by the available data, and so, for this analysis, the data were limited to three states across five years. Ideally, I would have liked to use all six states from the initial contract sample, but I could not get per diem prison operating costs at the

facility level for three of the states. So, I had to cut out the states of Louisiana, Massachusetts, and Connecticut. Initially, the data set was a purposefully chosen sample of 6 states that reflected diversity with regard to political ideology and regional differences. Because I could not access the prison facility data for all six states in the initial contract sample, I cannot compare regional and political effects as originally planned. Using only three states in the sample reduces the generalizability of my results; however, because of the generalizability of the model, future research can include other states from regional and political backdrops.

Another limitation to this research model is the operationalization of transaction costs. Since transaction cost measure is aggregated at the state level, detail at the facility level is lost. Because of the nature of our data and the measurement scales, binary measures were the most appropriate for running a quantitative analysis. Taking these results into consideration, I find support for transaction cost economics impacting cost savings in prison operations. This has important policy implications. It highlights the importance of informed contracting in government. While this dissertation focuses on a sample of prison facilities, this analysis is generalizable and can be conducted across many federal, state, and local institutions.

Strengths

An overarching strength of this dissertation is its strong construct validity (Kirk & Miller, 1986; Williamson, 2010; Boyne, 1998). This analysis provides evidence to support Williamson's Transaction Cost Economics Framework (Williamson, 1971). These results correspond with previous empirical research and established transaction cost theory (Lonsdale, 2001; Brown & Potoski, 2003; Williamson, 2010). This

dissertation tests the effects of transaction costs in contracting and finds significant evidence that transaction costs increase prison operating costs. Thus, an answer to my research question, “Where are privatizations’ cost savings?” Is that cost savings are lost because of high transaction costs. When transaction costs are low, privatization efforts may realize cost savings. When transaction costs are high, no cost savings are realized, and costs may even increase compared to providing the service in house.

CHAPTER 6: CONCLUSION

Lost in Transaction Costs

Where are privatization's cost savings? They are lost in transaction costs. In observing private contracting behavior in around one hundred costs are not high. My initial suspicions were correct. This dissertation finds significant evidence to support Williamson's transaction cost economics. The hypotheses were derived from literature and theory, and were heavily based on Williamson's transaction cost economics framework. The methods used to analyze the data drew from business theory, in the operationalization of transaction costs. Inferring from previous empirical research on transaction costs in government contracting, I was able to find a correlation between transaction costs and prison operating expenses. This is significant because it applies Williamson's theory to real world outcomes. From my analysis results I can draw the conclusion that when transaction costs are higher, prison operating costs also increase. Management difficulty affects operating costs more than asset specificity levels. This is likely due to market effects (Walker & Weber, 1984). My control variables were all significant, as expected, since they were all derived from previous empirical studies on prison facility operations (Lanza-Kaduce, 1999, Bales, 2005, Bayer & Pozen, 2005).

Prisons cost money. Currently, the United States spends more on our prison system than our education system. Citizens are not happy about this, largely because the

cost comes out of their pockets. It is the responsibility of the government to use taxpayer dollars wisely. One of the things the government has implemented recently in an effort to save taxpayer dollars is privatization. New Public Management theory has taken over and stressed the importance of running government like a business, in the interest of running a more efficient government, a government that doesn't waste money. However, this has largely backfired in state prisons, where privatization has resulted in little, or no cost savings, and even increased costs (Lanza-Kaduce, 1999, Bales, 2005, Bayer & Pozen, 2005).

The reason for the lack of cost savings is the high transaction costs connected to many prison services contracts. Literature tells informs that managers are aware of transaction costs, but the data show that they still contract out for high transaction cost services despite their knowledge of transaction cost and contract risk. Upon further investigation, I used triangulation to determine that the government is contracting out for high transaction cost contracts in many cases because they have no choice. Lacking resources, they have to provide a specific service mandated by the federal government in order to receive federal funds. The timeline in which they must implement these mandates does not enable them to develop in-house programs, thus they contract out to private companies, even though there is no market. Private companies such as Attic and Aro (in the case of Wisconsin) which provide prison rehabilitation services, and re-entry services, have a monopoly advantage, and thus, there is no bargaining power on the government side. These contracts are highly susceptible to opportunism. Thus, it is unlikely that savings will be realized, and more money may even be lost as a

consequence of high risk contracting (Lonsdale, 2001; Brown& Potoski, 2003; Brudney et al, 2005; Williamson, 2010; Werner & Hefetz, 2011).

Relative Uniformity through Regulation

I've been asked whether or not all the prisons in my sample provide similar services, and can therefore be compared using the performance measure of average per diem cost at the facility level. According to my observations, the three states in my sample provide similar services to their facilities. To gather the prison facility data, I looked through many prison facility annual reports. There are differences across facilities, but overall, the basic services did not differ for the most part, on paper, that is. State facilities are subject to state and federal regulations. They are pretty similar across the board within their categories. By controlling for security level, year, and region, my model captures some of these categorical, regional and temporal differences.

Implications for Practitioners

Practitioners can use the transaction cost framework when making contracting decisions. Instead of carefully scrutinizing each contract (literature implies that this is not useful, and is impossible to uphold (Brown, Potoski, & VanSlyke, 2006)), I recommend that practitioners focus on overall behavior patterns, by looking at yearly or quarterly transaction cost ratios, both for asset specificity and management difficulty. Alternatively, they could look up ratios for low market competition levels and management difficulty. These ratios should approach zero, ideally. Overall behavioral adjustments should be the focus. Problem areas can be identified and then the transaction cost framework can be applied to increase cost efficiency in private contracting of government services. This method is generalizable and can be applied to a variety of

government departments at the local, state, and federal levels. For example, contract data can be collected from a state's health and human services department, and transaction cost ratios can be devised, much in the same way they were operationalized in this dissertation. The higher ratio years can be more closely examined for behavioral patterns, and high transaction cost contracting tendencies can be addressed. In this way, contracting efficiency can be improved.

Triangulation

Triangulation can be used to identify problematic contracting areas to be revised to reduce transaction costs, and achieve future cost savings for the next budget season. In the case of my dissertation results and dissertation data sample, high transaction cost contracting patterns can be found in certain state/fiscal year periods, and this behavior causes higher operating costs in prison facilities. A solution to this problem is to identify which types of contracts are the culprits of these high transaction costs. Triangulation is done by examining the contract records for each of the three states in the sample over the five fiscal years, and identify which contracts are causing this high transaction cost pattern. When looking at the contracting records, I find that the trend that seems to be responsible for the most high transaction cost contracts is that of rehab programs, and psychological therapy. For example, cognitive behavioral therapy is listed as a service several times in the sample. This is very high in transaction costs. It is high in asset specificity because of the level of experience and training required to administer the service, and high in management difficulty, because the performance measurements are difficult to quantify. The reason I've zeroed in on the contracts for rehab therapy including alcohol and drug rehab therapy, anger management therapy, sex offender

rehabilitation, and family therapy, is that all three states are contracting out for these services at fairly high rates, despite the fact that they are extremely high in transaction costs. These are high risk contracts, and in my dataset, I observe a sudden spike in these contracts from 2008-2010.

Federal Grants and Government Contracting

Brown, Potoski, & VanSlyke connect high risk contracting with federal mandates on how to spend federal grants (2006). In many cases, in order to keep receiving Federal money, corrections departments must provide services as specified by the grant. A current example is federal funding for mental health services in prisons. More often than not, corrections departments do not have the resources to provide these new services right away. In order to fulfill specific requirements for a federal grant, they must find a way to immediately provide these services, and this, of course means that they contract out for the service. It isn't a coincidence that there are corporations that provide these federally mandated services, organized and ready to do business with the state corrections departments.

Monopoly in the Market for Prison Rehabilitation Services

Using the state of Wisconsin as a case study example, most of the DOC mental health and rehab services are provided by two non-profit corporations, ARO, and Attic. The rationale behind this risky contracting behavior is that it is meant to be temporary (Brown, Potoski, & VanSlyke, 2006). What ends up happening is that they apply for a continuation of these formula grants and renew contracts with the same corporation year after year (Brown, Potoski, & VanSlyke, 2006). They become locked into the contract.

There isn't any competition for sex offender rehab services. However, for the most part, after looking up the two corporations that provide these services for the Wisconsin DOC, I find that they are both non-profit organizations. According to Brudney, non-profit organizations are viewed as low-risk because it is assumed that they have altruistic intentions. This is impossible to verify (2005). Regardless of the intention of the non-profit agency, this type of service contract is high risk, and not cost-efficient. The bottom line is that tax payer money is being used in high risk contracts. The federal government should instead grant funding for the creation of these services in-house. Based on my dissertation results, I recommend that instead of state DOCs contracting out for rehabilitation service, the government should hire psychologists, and therapists to run in-house programs by government staff employed by the department of corrections. This corresponds to the business theory of vertical integration to avoid high transaction costs (Ruzzier, 2009).

Perhaps a compromise can be made. I propose that the contracts are temporary, and within the year, or two year period, the corrections department develops their own in-house service. Perhaps it can be an intragovernmental cooperation effort across states, instead of leaving it in the hands of private business. Because of the lack of market, these NGOs have a monopolistic advantage. There is no cushion for price negotiation. Also, because of the management difficulty issue, it is difficult to hold the company accountable for providing high quality service. Service quality may not be easily defined in these cases because rehabilitation outcomes are difficult to measure. Thus, the most efficient option is to provide the service in-house Ruzzier, 2009; Williamson, 2010).

Tracing Federal Grants to DOC Contract Records

This dissertation examines the specific question of where privatizations cost savings might be. I find that cost savings may be lost in high transaction costs. This dissertation provides empirical evidence for Williamson's Transaction Cost Economics. I propose that follow up research should be done to triangulate these mental healthcare services with federal block grants and their specific mandates. I began to investigate formula grants offered by the United States Bureau of Justice, and found corresponding Federal Block Grants for sex offender therapy, cognitive behavioral therapy, and drug rehab therapy in corrections. Wisconsin, Indiana, and Arizona were awarded these block grants over the five-year period examined in my dissertation from FY07-FY11. [9]Therefore, using the process of triangulation, I can conclude quite confidently, that this high risk contracting behavior pattern is a result of the federal grant fund requirements.

Implications for Mental Health Policy

An overlapping issue that makes solutions complicated is that of the role prisons play in governments' delivery of mental health services, specifically, the idea that prisons are the new asylums. According to the Substance Abuse and Mental Health Services Administration (SAMHSA), a division of the United States Department of Health and Human Services, most of the federal funding for mental health ends up being distributed for use in prisons. Government mental health institutions are no longer a resource option. Psychological therapy necessary for mental illness treatment is very high in transaction cost. Like other services for vulnerable populations, perhaps this is something that should be provided by the government, and not most commonly through the private sector.

[9] Justice Assistance Program website

Prison's Role as an Asylum

An important policy implication derived from this investigation is the issue of mental healthcare and our prison system's role as the new government asylum. Prisons cost a lot because they are essentially functioning as de facto asylums, without the proper resources (James & Glaze, 2006). My findings show that prisons are often contracting out for these much needed services. In general, it a good policy step that the government is offering grants to fund psychological services, however, what needs to happen in the near future is a rebuilding of mental hospitals for those who cannot function in society due to a mental illness, instead of dealing with them through the criminal justice system. I'm not suggesting going back to the old government institution system of locking people up. It is a very notorious and problematic past. I suggest an emphasis in providing mental healthcare for the community, to prevent the mentally ill from ending up in the criminal justice system in the first place. If people are educated and empowered to manage their mental health, many of them would not end up in prison. For those that cannot manage their mental illness (perhaps in severe cases) they might need to be hospitalized. The mentally ill shouldn't be kept in prison cells, but in government hospitals. If a mental healthcare infrastructure was built, this infrastructure could be used to serve government corrections, the criminal justice system, and other government areas such as the public school system. It would no longer be necessary to contract out for these services. Theory and literature imply that these services are high-risk contracts because of the high transaction costs involved, thus, contracting should not be an option. The government should provide this as a public service.

External Validity Limitations

One shortcoming of my research is that it only deals with three states over five years. I would like to look at all states, to makes sure there is external validity. I've only touched on this issue of transaction costs and cost savings, and while my results are significant, it is a small sample, so it cannot be assumed that the same results will pop up in other state corrections departments. The literature implies that I can predict similar results in other states, but I only have empirical evidence for three states. An important continuation of this research would be to replicate this study with data from other states. This would strengthen the validity of this investigation with regard to prisons. To reinforce Williamson's transaction cost economics framework, it would serve well to apply this study to other government departments, such as the transportation department, health and human services, or other public service departments to see if the transaction cost effects occur across departments. While my investigation has churned out some empirical evidence, it is just the tip of the ice burg. I would need to replicate this with larger data sets, several times, to provide stronger evidence so that a legitimate formalization of transaction cost economics can be established.

Transaction Costs Matter

As discussed in the previous chapter, management difficulty matters more than asset specificity due to available safety measures for highly asset specific contracts. Long contracts are often used to balance out risks. Both vendor and buyer are locked into contracts when asset specificity is high. Management difficulty is a horse of a different color. It does not have an easy fix. In such cases, partnerships may be established. Often

NGOs partner with the government, or NGOs are given contracts with the assumption that they have altruistic motivations (Savas, 2000).

Identifiable transaction costs can be avoided, according to theory and literature (Williamson, 2010; Hefetz & Warner, 2011). Sometimes, the problem is that transaction costs cannot be identified, for example, indirect transaction costs may be difficult to pinpoint (Williamson, 1999). However, avoiding identifiable transaction costs may result in significant cost savings. Economic concerns aren't the only determinants of private contracting decisions. Public value has a large influence as well. Citizen interest partly drives contracting decisions. However, the government has a certain responsibility to be cost effective when using taxpayer money. There's a certain moral duty not to squander taxpayer money on transaction costs, if it can be avoided.

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APPENDIX A: REGRESSION MODELS

Regression With Standardized Coefficients

Number of obs =	414
F(6, 407) =	29.31
Prob > F =	0
R-squared =	0.30
Adj R-squared =	0.29
Root MSE =	16.74

Per Diem Cost	Coef.	Std. Err.	t	P>t	Beta
Population Squared	-3.64E-06	5.66E-07	-6.43	0	-0.32
Asset Specificity	12.22	4.51	2.71	0.01	0.14
Management Difficulty	27.87	4.23	6.59	0.00	0.36
Close Security	18.24	2.84	6.42	0.00	0.31
Maximum Security	13.35	2.65	5.04	0.00	0.23
Minimum Security	1.92	2.12	0.91	0.37	0.05
_cons	45.26	3.02	14.99	0	
.					

Test for Multicollinearity: High levels of multicollinearity are not present.

Variable	VIF	1/VIF
dmratio	1.76	0.57
min_security	1.6	0.63
asratio	1.49	0.67
pop_square	1.42	0.70
cls_security	1.35	0.74
max_security	1.23	0.81
Mean VIF	1.48	

Fixed Effects by Prison Facilities, Fiscal Year, and State

Number of obs =	414
F(103, 310) =	13.76
Prob > F =	0
R-squared =	0.82
Adj R-squared =	0.76
Root MSE =	9.72

Perdiemcost	Coef.	Std.Err.	T	P>t	Beta
pop_square	-5.00E-06	1.90E-06	-2.63	0.01	-0.44
Asratio	-6.54	4.30	-1.52	0.13	-0.07
Dmratio	2.27	5.45	0.42	0.68	0.03
cls_security	1.80	3.46	0.52	0.60	0.03
max_security	4.22	5.39	0.78	0.43	0.07
min_security	-8.08	5.00	-1.62	0.11	-0.20
State					
3	34.44	22.27	1.55	0.12	0.59
6	33.37	8.79	3.8	0	0.74
Fiscalyear					
2008	-3.54	1.59	-2.23	0.03	-0.07
2009	-4.64	1.68	-2.76	0.01	-0.09

2010	-0.03	2.03	-0.01	0.99	0.00
2011	3.29	2.00	1.64	0.10	0.07
Cfid					
2	-14.07	6.22	-2.26	0.02	-0.08
3	-21.25	8.10	-2.62	0.01	-0.12
4	13.61	8.43	1.61	0.11	0.07
5	-48.49	18.34	-2.64	0.01	-0.24
6	-2.28	9.58	-0.24	0.81	-0.01
7	-11.00	8.17	-1.35	0.18	-0.06
8	-8.90	6.15	-1.45	0.15	-0.05
9	-4.65	9.42	-0.49	0.62	-0.03
10	-15.19	8.23	-1.85	0.07	-0.08
11	-21.87	8.72	-2.51	0.01	-0.11
12	-21.81	11.90	-1.83	0.07	-0.05
13	-11.70	8.00	-1.46	0.14	-0.06
14	-14.96	6.15	-2.43	0.02	-0.08
15	-18.07	8.57	-2.11	0.04	-0.09
16	-37.63	9.99	-3.77	0.00	-0.16
17	-15.48	8.32	-1.86	0.06	-0.09
18	-14.53	6.17	-2.36	0.02	-0.08
19	-42.48	17.92	-2.37	0.02	-0.21
20	-11.37	7.23	-1.57	0.12	-0.07
21	-19.07	12.92	-1.48	0.14	-0.05
22	-4.78	8.43	-0.57	0.57	-0.03
23	-19.16	7.37	-2.6	0.01	-0.11
24	-10.08	8.16	-1.24	0.22	-0.04
25	-9.67	6.15	-1.57	0.12	-0.05
26	-13.41	8.72	-1.54	0.13	-0.07
27	-19.21	8.72	-2.2	0.03	-0.09
28	8.76	11.94	0.73	0.46	0.02
29	-20.44	6.25	-3.27	0.00	-0.11
30	-20.51	8.12	-2.53	0.01	-0.11
31	-19.10	6.22	-3.07	0.00	-0.11
32	0.84	8.17	0.1	0.92	0.00
33	-18.75	8.43	-2.22	0.03	-0.10
34	-23.27	6.17	-3.77	0.00	-0.13
35	-21.63	8.44	-2.56	0.01	-0.12
36	-34.15	23.02	-1.48	0.14	-0.08
37	-28.01	14.42	-1.94	0.05	-0.14
38	-40.69	22.31	-1.82	0.07	-0.20

39	-33.87	8.41	-4.03	0.00	-0.14
40	-15.35	7.40	-2.08	0.04	-0.11
41	-30.12	8.72	-3.45	0.00	-0.15
42	-9.74	7.68	-1.27	0.21	-0.08
43	8.03	7.61	1.06	0.29	0.05
44	-11.42	6.15	-1.86	0.06	-0.06
45	-2.11	8.43	-0.25	0.80	-0.01
46	-12.94	8.43	-1.53	0.13	-0.07
47	-12.92	8.31	-1.56	0.12	-0.07
48	-9.92	7.09	-1.4	0.16	-0.05
49	46.74	7.88	5.93	0.00	0.30
50	8.14	8.04	1.01	0.31	0.04
51	-12.79	8.20	-1.56	0.12	-0.07
52	-30.06	13.34	-2.25	0.03	-0.15
53	-40.64	7.61	-5.34	0.00	-0.22
54	-10.56	6.47	-1.63	0.10	-0.06
55	-14.60	10.06	-1.45	0.15	-0.05
56	-29.24	8.43	-3.47	0.00	-0.16
57	-31.53	13.95	-2.26	0.02	-0.08
58	-32.46	21.45	-1.51	0.13	-0.14
59	-22.54	6.15	-3.66	0.00	-0.12
60	-34.25	16.67	-2.05	0.04	-0.17
61	4.18	6.15	0.68	0.50	0.02
62	-11.36	6.15	-1.85	0.07	-0.06
63	-36.66	17.26	-2.12	0.03	-0.18
64	-49.03	11.46	-4.28	0.00	-0.12
65	-30.56	11.18	-2.73	0.01	-0.15
66	-27.31	10.35	-2.64	0.01	-0.12
67	5.92	8.16	0.73	0.47	0.03
68	-40.04	20.81	-1.92	0.06	-0.20
69	-28.47	7.92	-3.6	0.00	-0.14
70	6.14	7.49	0.82	0.41	0.03
71	-44.07	19.02	-2.32	0.02	-0.22
72	-9.53	7.85	-1.21	0.23	-0.06
73	-11.41	6.23	-1.83	0.07	-0.06
74	-1.22	9.17	-0.13	0.89	-0.01
75	-12.67	6.15	-2.06	0.04	-0.07
76	-31.16	8.72	-3.57	0.00	-0.15
77	-22.84	8.02	-2.85	0.01	-0.13
78	-10.81	6.16	-1.75	0.08	-0.06
79	-9.74	7.41	-1.31	0.19	-0.05

80	-15.45	6.15	-2.51	0.01	-0.08
81	-17.21	8.01	-2.15	0.03	-0.09
82	17.89	8.43	2.12	0.04	0.10
83	-37.59	8.72	-4.31	0.00	-0.19
84	-17.85	8.21	-2.17	0.03	-0.10
85	-16.01	7.15	-2.24	0.03	-0.07
86	34.96	12.10	2.89	0.00	0.09
87	-22.63	8.72	-2.59	0.01	-0.11
88	-3.69	7.92	-0.47	0.64	-0.02
89	-15.27	15.58	-0.98	0.33	-0.08
90	-13.49	8.59	-1.57	0.12	-0.07
91	(omitted)				
92	-7.92	7.97	-0.99	0.32	-0.04
93	-31.59	8.72	-3.62	0.00	-0.16
94	(omitted)				
_cons	78.11049	7.003964	11.15	0	.

Green Denotes Significance at the p< 0.1 level.

APPENDIX B: CORRECTIONAL FACILITY ID LIST

cfid	correctionalfacility
1	Apache
2	Bachman
3	Barchey
4	Black River
5	Branchville
6	Browning
7	Buckley
8	Catalina
9	Central
10	Cheyenne
11	Chippewa Valley Correctional Treatment Facility (CVCT)
12	Cibola
13	Cimarron
14	Cocopah
15	Columbia Correctional Institution (CCI)
16	Complex Detention
17	Cook
18	Coronado
19	Correctional Industrial
20	Dakota
21	Dodge Correctional Institution (DCI)
22	Drug Abuse
23	East
24	Echo
25	Eggers
26	Felmers O. Chaney
27	Flambeau
28	Flamenco
29	Fort Grant
30	Fox Lake Correctional Facility
31	Gila

Cfid	correctionalfacility
48	Miami
49	Minors
50	Mohave
51	Morey
52	New Castle
53	New Lisbon Correctional Institution
54	North
55	Oakhill Correctional Institution
56	Oregon
57	Oshkosh Correctional Institution
58	PREF
59	Papago
60	Pendleton
61	Picacho
62	Piestewa
63	Plainfield
64	Prairie du Chien Correctional Institution
65	Putnamville
66	Racine Correctional Institution/Sturtevant Transitional Facility
67	Rast
68	Reception Diagnostic
69	Red Graniet Correctional Institution
70	Rincon
71	Rockville
72	Rynning
73	SACRC
74	SMU I
75	San Pedro
76	Sanger B. Powers
77	Santa Cruz
78	Santa Maria

32 Globe
33 Gordon
34 Graham
35 Green Bay Correctional Institution (GBCI)
36 IREF
37 Indiana State Prison
38 Indiana Womens Prison
39 Jackson Correctional Institution (JCI)
40 Kaibab
41 Kenosha
42 Lumley
43 Manzanita
44 Maricopa
45 Marshall Sherrer
46 Mc Naughton
47 Meadows
79 Santa Rita
80 Santa Rosa
81 South
82 St Croix
83 Stanley Correctional Institution
84 Stiner
85 Sunrise
86 TAYCHEEDAH CORRECTIONAL INSTITUTION
87 Thompson
88 Tonto
89 Wabash Valley
90 Wapun Correctional Institution
91 Westville Correctional
92 Winchester
93 Winnebago
94 Wisconsin Secure Program Facility

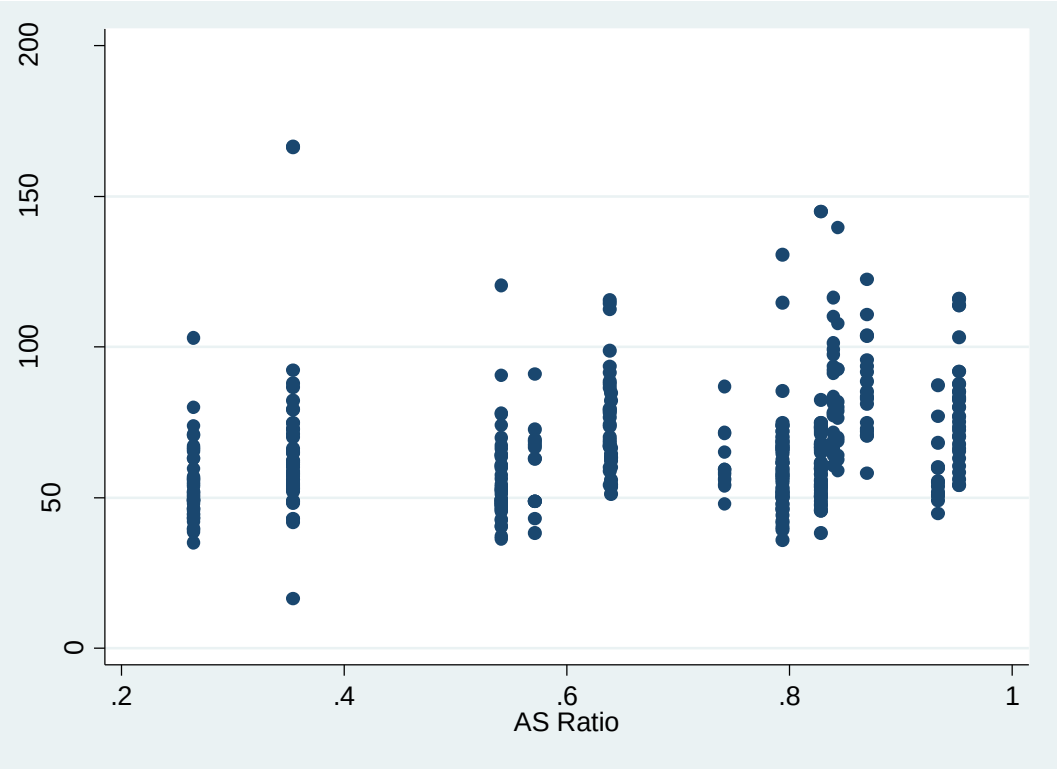
APPENDIX C: CONTRACT CATEGORIE CROSS-ANALYSIS

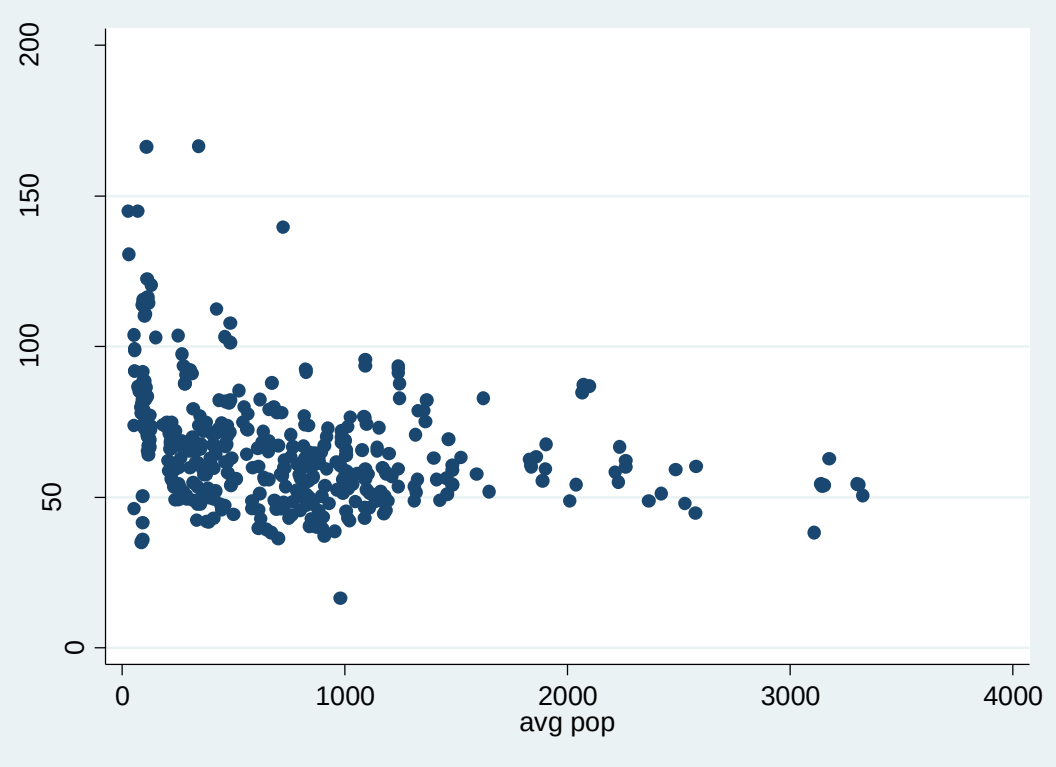
Brown and Potoski's measures:	**AS**	**MD**	**Warner and Hefetz measures:**	**AS**	**MD**	**DOC Contract Categories:**
service			**Service**			**goods/service**
						General supplies (bedding, uniforms, food, hardware supplies)
Secretarial services	1.75	2.92	Cemeteries maintenance	2.26	2.07	
Buildings and grounds maintenance	2	2.2	Lots/garages operation	2.18	2.04	General services (kitchen, janitorial, barber)
Vehicle towing and storage	2.07	1.97	Parking meter maintenance	1.87	2.07	office space
Tree trimming/planting on rights of way	2.14	2.36	Street/lot cleaning	2.4	1.94	educational materials
Building security	2.24	2.17	Vehicle towing and storage	2.23	2.14	General facilities management
Street/parking lot cleaning	2.26	2				
Tax bill processing	2.31	1.91				
Utility meter reading	2.32	2.03				
Parks and landscaping maintenance	2.33	2.11				
Operation of parking lots and garages	2.36	1.53				
Payroll	2.36	2.03				
Maintenance/administration of cemetaries	2.37	2.41				
Parking meter maintenance and collection	2.39	2.24				
Brown and Potoski's measures:			**Warner and Hefetz measures:**			**DOC Contract Categories:**
service			**Service**			**goods/service**
						Temporary Medical treatment services (general, dental, optometry)
Snow plowing/sanding	2.5	2.21	Animal control	2.98	2.83	
collection of delinquent processing	2.51	2.08	Animal shelter operation	3.1	2.69	Temporary Psychiatric services
Insect/rodent control	2.53	2.63	Building security	2.78	2.37	Building maintenance service
Personnel services	2.58	3.31	Buildings/grounds maintenance	2.94	2.45	Heavy equipment
Traffic control/ parking enforcement	2.59	2.53	Bus system maintenance	3.18	2.91	Medical equipment
Street repair	2.64	2.4	Child welfare programs	3.29	3.47	Waste management
Public relations/public information	2.65	3.31	Commercial waste collection	2.83	2.15	Rehabilitation services
Animal control	2.68	2.81	Convention centers/auditoriums operation	3.27	3.02	Substance abuse treatment
Operation of animal shelters	2.8	2.87	Cultural/arts programs operation	2.79	2.87	Gang intervention consulting
Traffic signal installation/maintenance	2.91	2.24	Daycare facilities operation	2.99	2.74	Security equipment and services
Tax assessing	2.93	2.87	Delinquent tax collection	3	2.53	

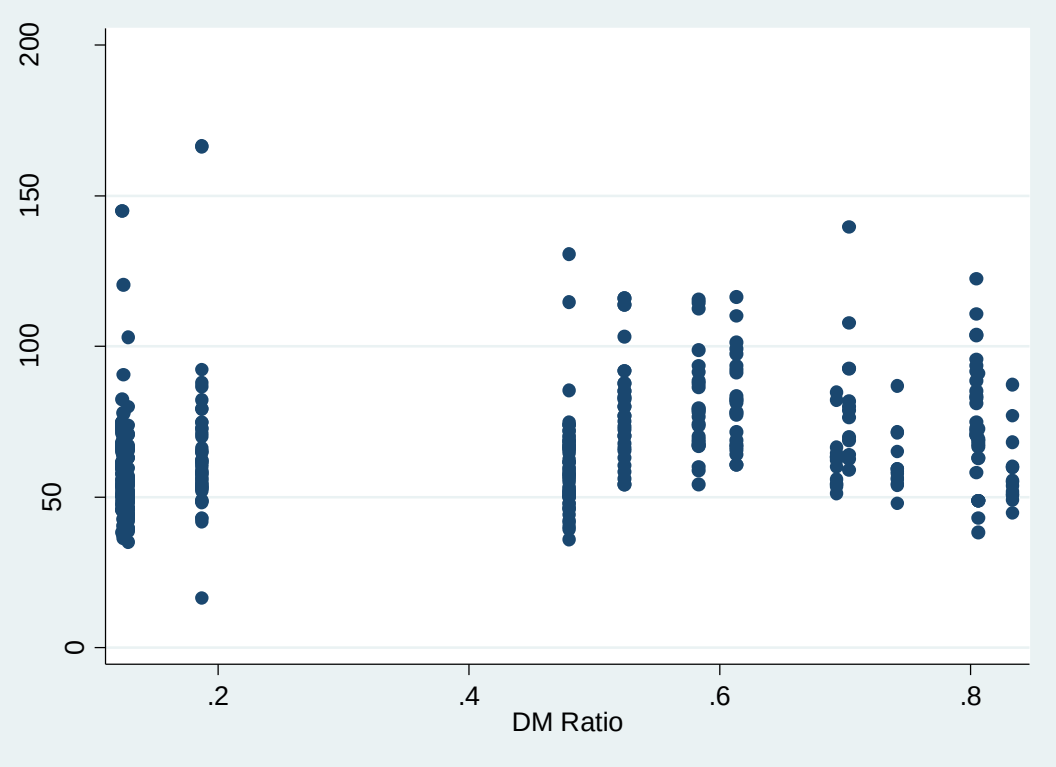
Recreation facility operation/maintenance	2.94	2.61	Drug/alcohol treatment programs	3.32	3.38	
Inspection/code enforcement	2.97	2.72	Elderly programs	3	2.99	
Operation of cultural and arts programs	3	2.06	Homeless shelters operation	2.65	2.92	
Residential solid waste collection	3	3.26	Insect/rodent control	2.74	2.44	
commercial solid waste collection	3.06	1.97	Job training programs	3.09	3.05	
Heavy equipment vehicle fleet maintenance	3.06	2.22	Paratransit system maintenance	3.1	2.92	
Sanitary inspection	3.06	2.57	Parks landscaping/maintenance	2.9	2.47	
Utility building	3.11	2.5	Payroll	3.33	2.37	
Operation of homeless shelters	3.12	3.42	Public relations/public information	3.1	2.77	
Data processing	3.14	2.61	Recreation facilities maintenance	3.3	2.83	
Programs for the elderly	3.14	3.48	Residential waste collection	2.91	2.17	
Titlel records/ plat map maintenance	3.21	2.58	Sanitary inspection	3.24	2.93	
Emergency vehicle fleet maintenance	3.28	2.11	Secretarial services	2.61	2.14	
Solid waste disposal	3.33	2.12	Snow plowing/sanding	2.7	2.37	
			Street repair	3.32	2.56	
			Tax bill processing	3.23	2.56	
			Traffic control/parking enforcement	2.91	2.77	
			Tree trimming/planting	2.61	2.34	
			Utility billing	3.03	2.45	
			Utility meter reading	2.88	2.37	
			Welfare eligibility determination	2.94	3.11	
Brown and Potoski's measures:			**Warner and Hefetz measures:**			**DOC Contract Categories:**
service			**Service**			**goods/service**
Operation of bus transit systems	3.35	2.48	Airport operation	3.99	3.47	Safety inspections
Operation of daycare facilities	3.36	3.44	All other vehicles maintenance	3.39	2.61	Psychiatric program development
Crime prevention patrol	3.37	3.6	Ambulance service	4.11	3.17	Psychological fitness to carry firearms evaluation
Legal services	3.39	3.46	Crime prevention/patrol	4.07	3.89	Private prison (entire facility)
Public health programs	3.46	3.74	Data processing	3.75	2.91	Law enforcement services
Operation of libraries	3.5	2.61	Electric utility management	4.2	3.59	Ground based inmate transportation
Operation of para-transit systems	3.5	2.69	Emergency medical service	4	3.42	Highly specific medical services

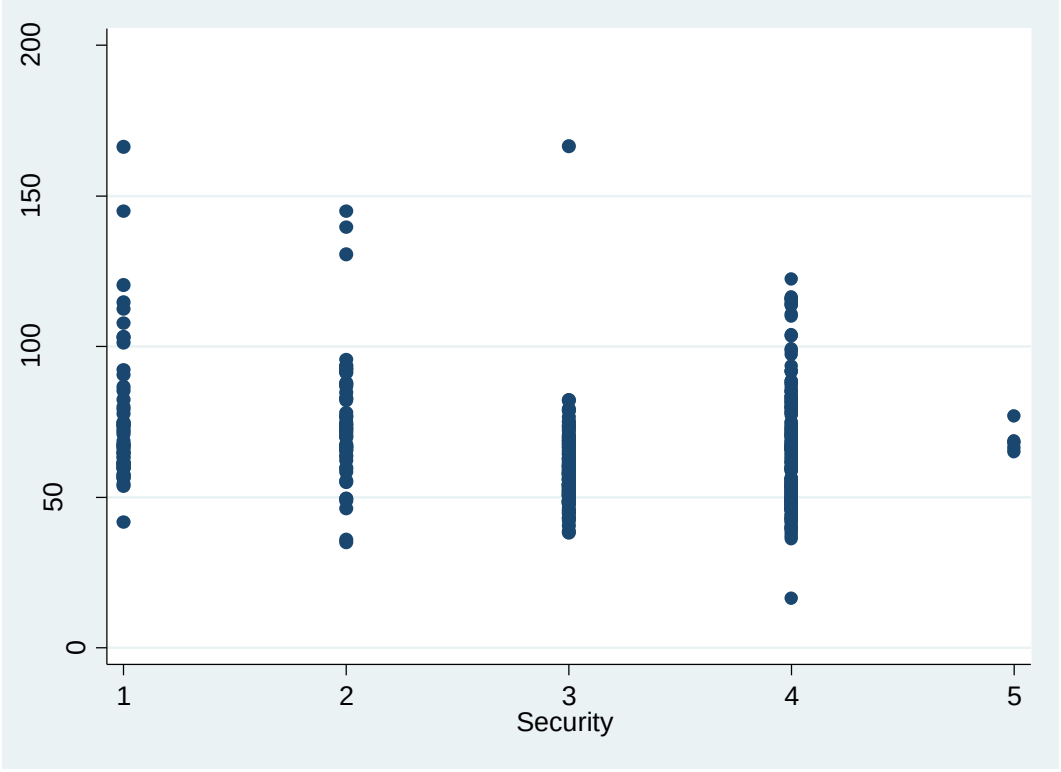
						Security fence construction
Child welfare programs	3.52	2.36	Emergency vehicles maintenance	3.74	2.7	
						Prison-specific security maintenance
Disposal of sludge	3.52	4.08	Fire prevention/suppression	4.35	3.64	
Operation of convention centers/auditoriums	3.58	2.77	Gas utility management	4.11	3.55	Safety inspection, repairs and upgrades
						Emergency housing
Operation of museums	3.59	2.85	Hazardous materials disposal	4.14	3.56	
Ambulance service	3.61	2.43	Heavy equipment maintenance	3.66	2.71	
Drug and alcohol treatment	3.63	4.12	Hospital operation/management	4.14	3.92	
Fire prevention/suppression	3.8	2.59	Inspection/code enforcement	3.94	3.43	
Police/fire communications	3.8	3.24	Legal services	4.2	2.9	
Emergency medical services	3.91	2.76	Libraries operation	3.53	3.07	
Water distribution	3.94	2.44	Mental health programs operation	3.63	3.53	
Operation of mental health programs	3.96	4.29	Museums operation	3.39	2.94	
Prisons/jails	4.04	3.21	Personnel services	3.4	2.78	
Electricity utility management	4.08	2.96	Police/fire communications	4.28	3.64	
Gas utility operation and management	4.08	3	Prison/jails	4.09	3.73	
Sewage collection and treatment	4.09	2.36	Public health programs	3.66	3.6	
Water treatment	4.12	2.36	Sewage collection/treatment	4.49	3.59	
Operation/management of hospitals	4.17	3.4	Sludge disposal	3.7	2.93	
Operation of airport	4.19	2.96	Tax assessing	3.72	3.02	
Disposal of hazardous materials	4.22	2.88	Title records/plat map maintenance	3.45	2.8	
			Traffic sign maintenance	3.6	2.61	
			Waste disposal	3.81	2.82	
			Water distribution	4.45	3.5	
			Water treatment	4.45	3.54	

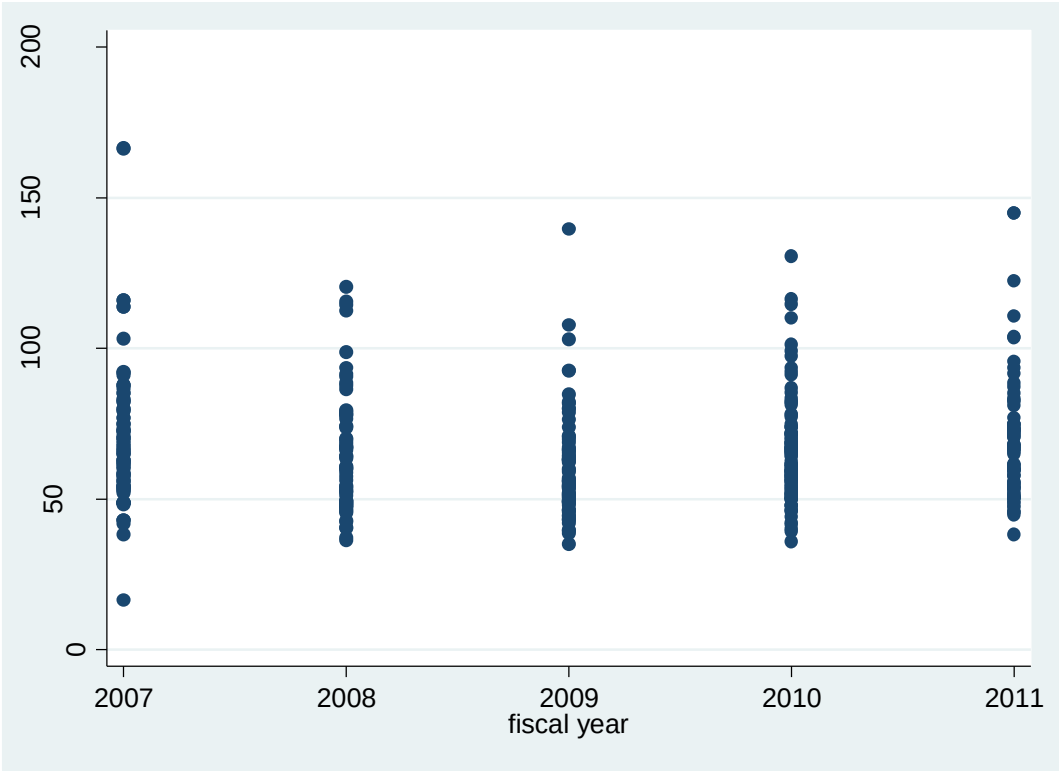
APPENDIX D: SCATTERPLOT TESTS



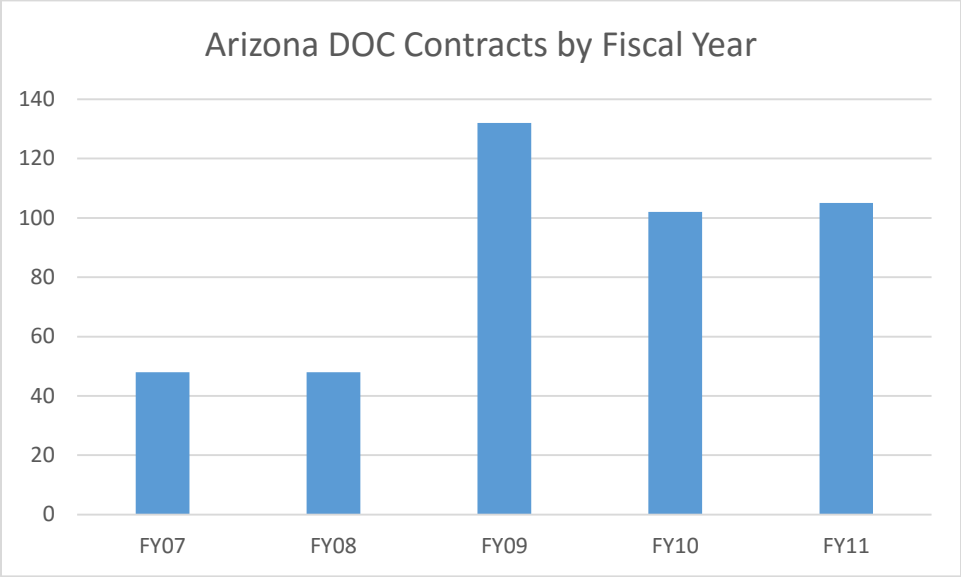

200
150
100
50
0
0
1000
2000
3000
4000
avg pop

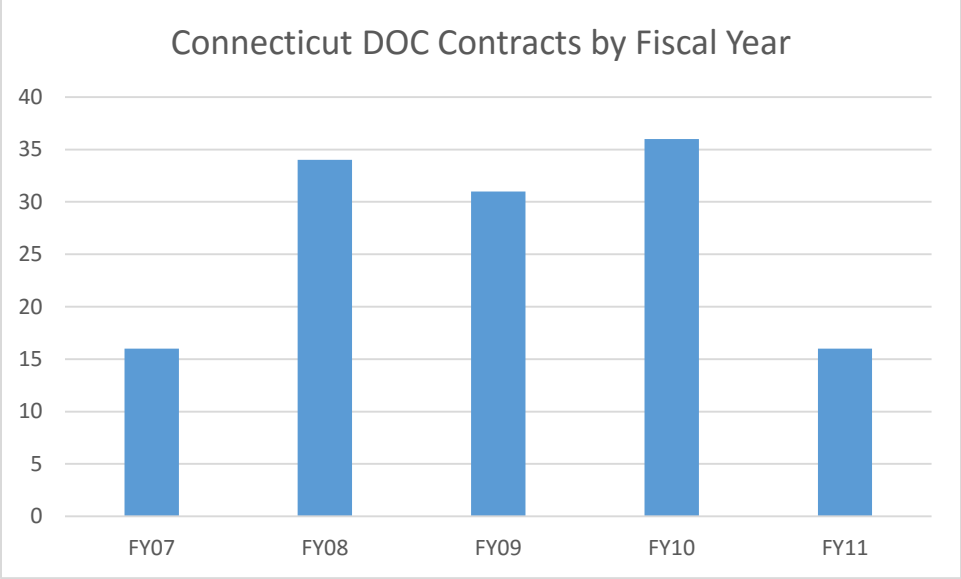

200
150
100
50
0
.2
.4
.6
.8
DM Ratio

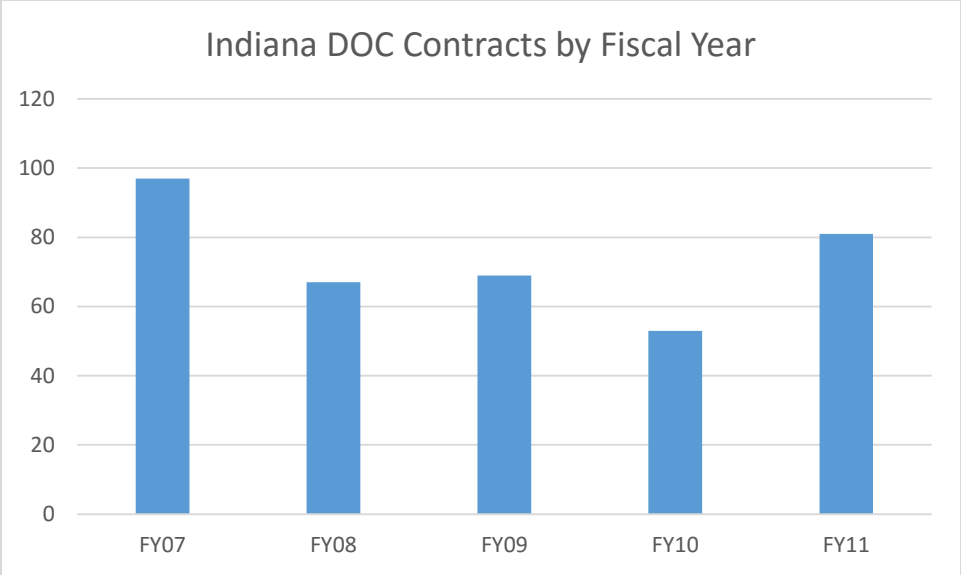

200
150
100
50
0
1
2
3
4
5
Security

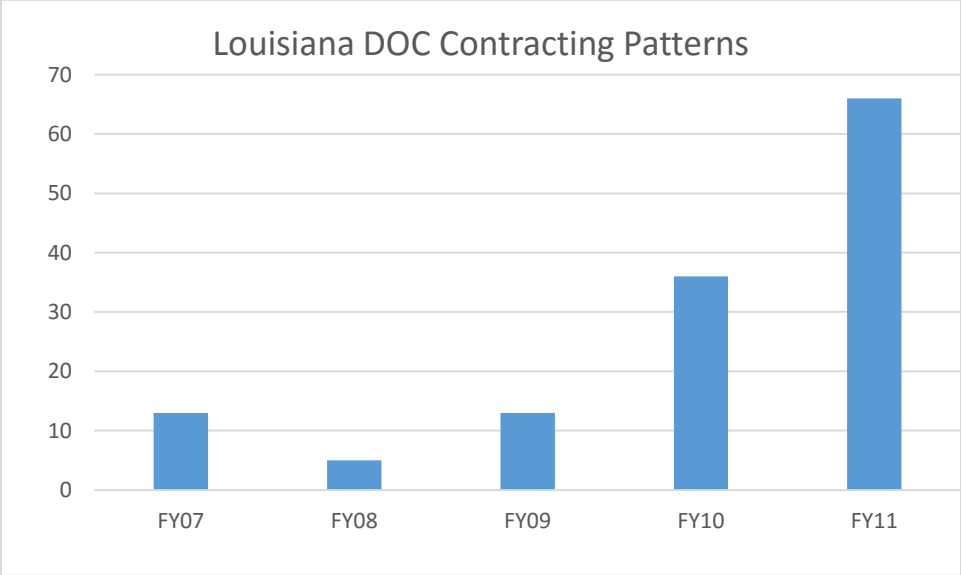

200
150
100
50
0
2007
2008
2009
2010
2011
fiscal year

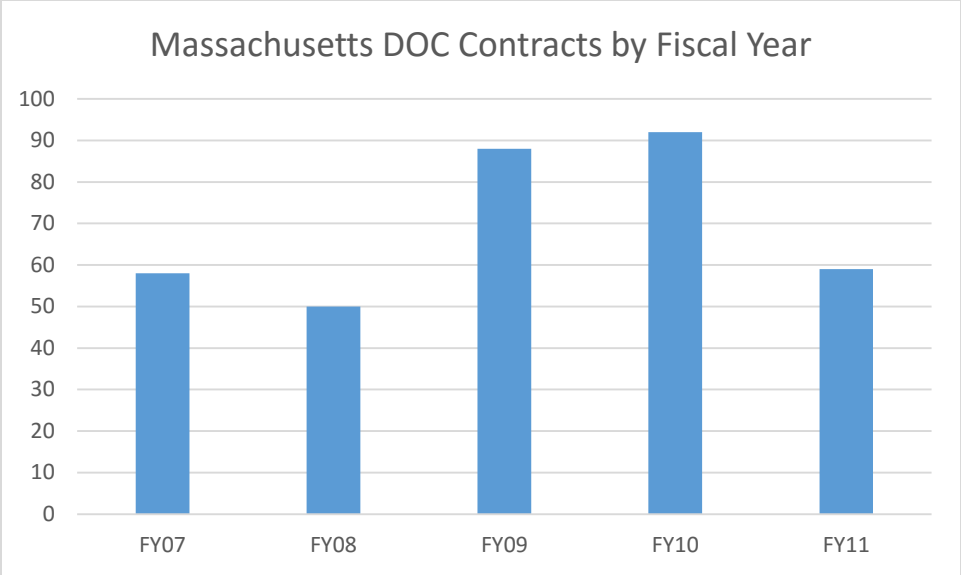
APPENDIX E: STATE DOC CONTRACT FREQUENCY CHARTS

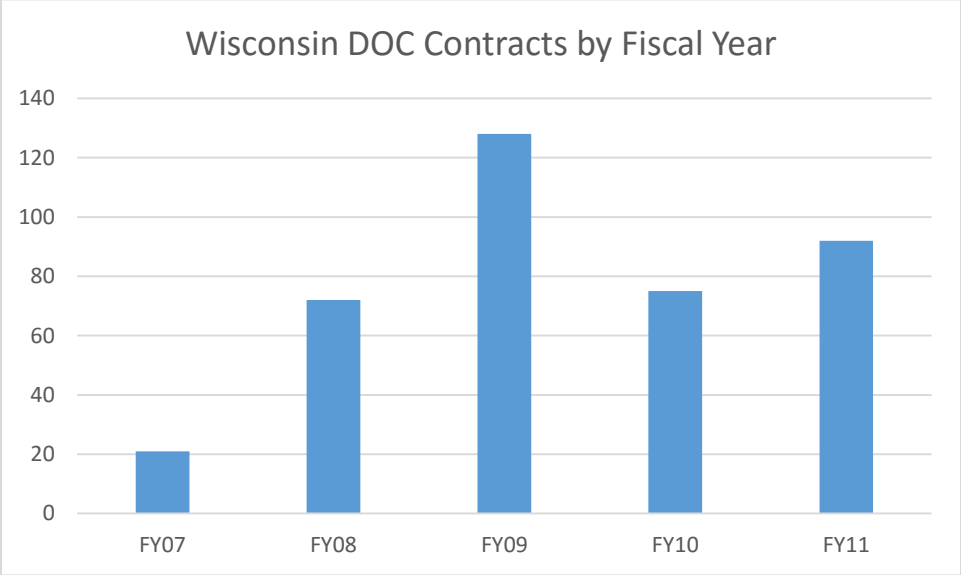





Indiana DOC Contracts by Fiscal Year
120
100
80
60
40
20
0
FY07
FY08
FY09
FY10
FY11


Louisiana DOC Contracting Patterns
70
60
50
40
30
20
10
0
FY07
FY08
FY09
FY10
FY11


Massachusetts DOC Contracts by Fiscal Year
100
90
80
70
60
50
40
30
20
10
0
FY07
FY08
FY09
FY10
FY11


Wisconsin DOC Contracts by Fiscal Year
140
120
100
80
60
40
20
0
FY07
FY08
FY09
FY10
FY11

APPENDIX F: CONTRACTING PATTERNS IN STATE CORRECTIONS

State of Arizona Department of Corrections Contracting Patterns FY07-FY11

Fiscal Year	Low Asset Specificity	Moderate Asset Specificity	High Asset Specificity	Total Contracts
FY07	31 (58%)	14 (14%)	3	48
FY08	22 (14%) (5%)*	25 (28%) (8%)*	1	48
FY09	97 (14%) (20%)*	35 (13%) (2%)*	0	132
FY10	21 (10%) (10%)*	79 (18%) (6%)*	2	102
FY11	18 (11%) (11%)*	86 (37%) (3%)*	1	105

(%) denotes percentage of repeat vendors within the year. (%)* denotes percentage of repeat vendors from the previous year.

Overall pattern for Arizona

Low AS	Moderate AS	High AS
Large, tighter networks	Large, tight networks	Small, weak networks

State of Indiana Department of Corrections Contracting Patterns FY07-FY11

Fiscal Year	Low Asset Specificity	Moderate Asset Specificity	High Asset Specificity	Total Contracts
FY07	42 (83%)	51 (51%)	4 (50%)	97
FY08	9 (44%) (44%)*	58 (50%) (31%)*	0	67
FY09	27 (85%) (0%)*	38 (58%) (29%)*	4 (100%)	69
FY10	16 (69%) (6.3%)*	32 (66%) (28%)*	5 (80%) (0%)*	53
FY11	6 (67%) (50%)*	63 (70%) (14%)*	12 (83%) (0%)*	81

(%) denotes percentage of repeat vendors within the year. (%)* denotes percentage of repeat vendors from the previous year.

Overall pattern for Indiana

Low AS	**Moderate AS**	**High AS**
Medium/Small, tight networks	Large, tight networks	Small, tight networks

State of Wisconsin Department of Corrections Contracting Patterns FY07-FY11

Fiscal Year	**Low Asset Specificity**	**Moderate Asset Specificity**	**High Asset Specificity**	**Total Contracts**
FY07	1	20 (20%)	0	21
FY08	26 (23%)	46 (70%) (11%)*	0	72
FY09	20 (0%) (5%)*	106 (72%) (56%)*	2	128
FY10	12 (0%) (8%)*	59 (53%) (44%)*	4	75
FY11	12(17%)	77 (57%) (38%)*	3	92

(%) denotes percentage of repeat vendors within the year. (%)* denotes percentage of repeat vendors from the previous year.

Overall pattern for Wisconsin:

Low AS	**Moderate AS**	**High AS**
Moderate, tighter networks	Large, tight networks	Small, weak networks

State of Connecticut Department of Corrections Contracting Patterns FY07-FY11

Fiscal Year	**Low Asset Specificity**	**Moderate Asset Specificity**	**High Asset Specificity**	**Total Contracts**
FY07	12 (17%)	4	0	16
FY08	21 (10%)*	13 (23%)	0	34
FY09	23 (9%)*	8	0	31
FY10	20 (35%) (10%)*	12	0	36
FY11	7 (14%)*	8 (13%)*	1	16

(%) denotes percentage of repeat vendors within the year. (%)* denotes percentage of repeat vendors from the previous year.

Overall pattern for Connecticut

Low AS	**Moderate AS**	**High AS**
Large, tighter networks	Larger, tighter networks	N/A

State of Louisiana Department of Corrections Contracting Patterns FY07-FY11

Fiscal Year	Low Asset Specificity	Moderate Asset Specificity	High Asset Specificity	Total Contracts
FY07	1	10 (40%)	2	13
FY08	0	3	2 (50%)*	5
FY09	0	8	5 (40%)*	13
FY10	7	20 (10%) (5%)*	9 (11%)*	36
FY11	16	36 (11%) (3%)*	14 (14%) (7%)*	66

(%) denotes percentage of repeat vendors within the year. (%)* denotes percentage of repeat vendors from the previous year.

Overall pattern for Louisiana

Low AS	Moderate AS	High AS
Small, weak networks	Large, tighter networks	Moderate, tighter networks

State of Massachusetts Department of Corrections Contracting Patterns FY07-FY11

Fiscal Year	Low Asset Specificity	Moderate Asset Specificity	High Asset Specificity	Total Contracts
FY07	27 (0%)	13 (23%)	4 (75%)	58
FY08	41 (29%) (0%)*	9 (0%) (22%)*	0	50
FY09	42 (14.3%) (0%)*	45 (0%) (0%)*	1	88
FY10	44 (0%) (2.3%)*	48 (17%) (0%)*	0	92
FY11	42 (0%) (0%)*	18 (11%) (0%)*	0	59

(%) denotes percentage of repeat vendors within the year. (%)* denotes percentage of repeat vendors from the previous year.

Overall pattern for Massachusetts

Low AS	Moderate AS	High AS
Medium, weak networks	Medium, weak networks	Very few

Political Variation by Region:

State	2006	2008	2010	2012
AZ	Divided	Divided	Rep	Rep
CT	Divided	Divided	Dem	Dem
IN	Divided	Divided	Rep	Rep
LA	Dem	Divided	Divided	Rep
MA	Dem	Dem	Dem	Dem
WIS	Divided	Dem	Rep	Rep
*Study Period 2007-2011				